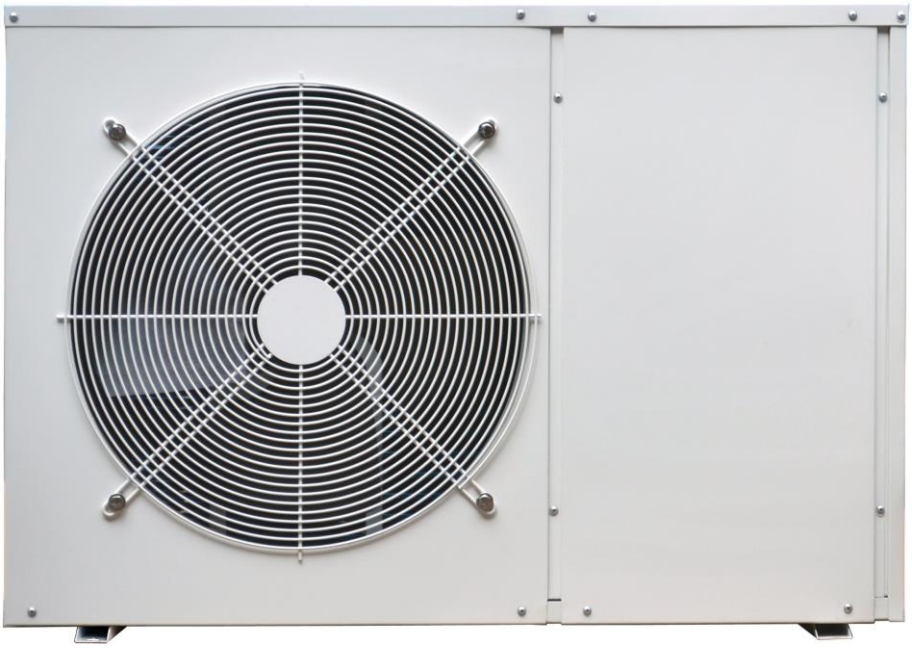
Domestic Heat Pump with built-in water pump

OPERATING INSTRUCTION MANUAL



CE

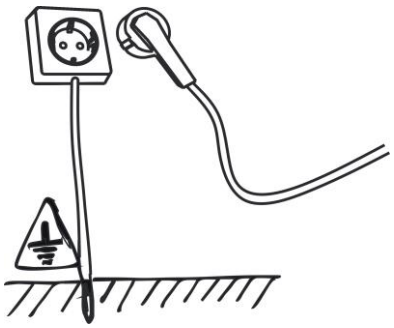
MIMICO JOINT STOCK COMPANY

Before operating this product, please read the instructions carefully and save this manual for future use.

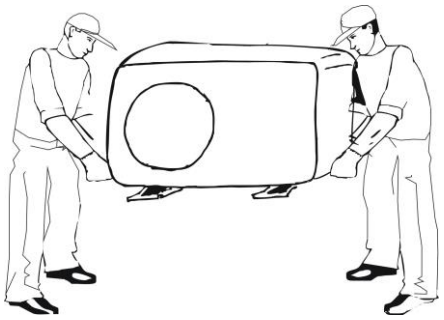
CONTENT

1. Safety precautions

VITAL Electrical power must be switched off before starting any work on heat pump.

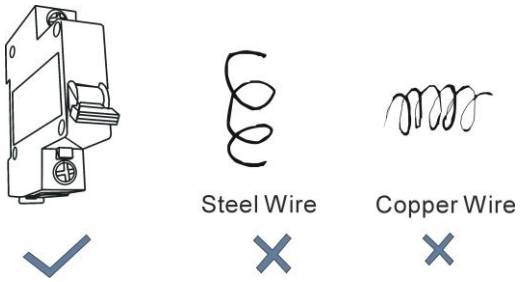


The unit must be earthed to avoid any risks caused by insulation defects.

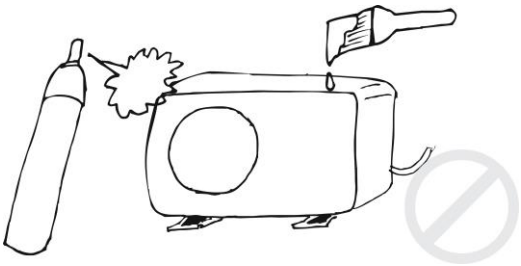


The installation, commissioning and maintenance of these machines should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

Clean the machine by washing with detergent and water at low pressure, and then rinsing with clean water.



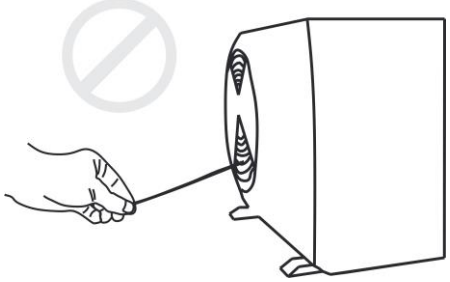
It is the responsibility of the installer to provide circuit breaker protection, corresponding to the machine's capacity (refer to the unit electrical characteristics table), near to the machine.



Do not spread over any paint or insecticidal material on the surface of the unit.

Do not block the evaporator by paper or any other foreign bodies, to keep the unit well ventilated.

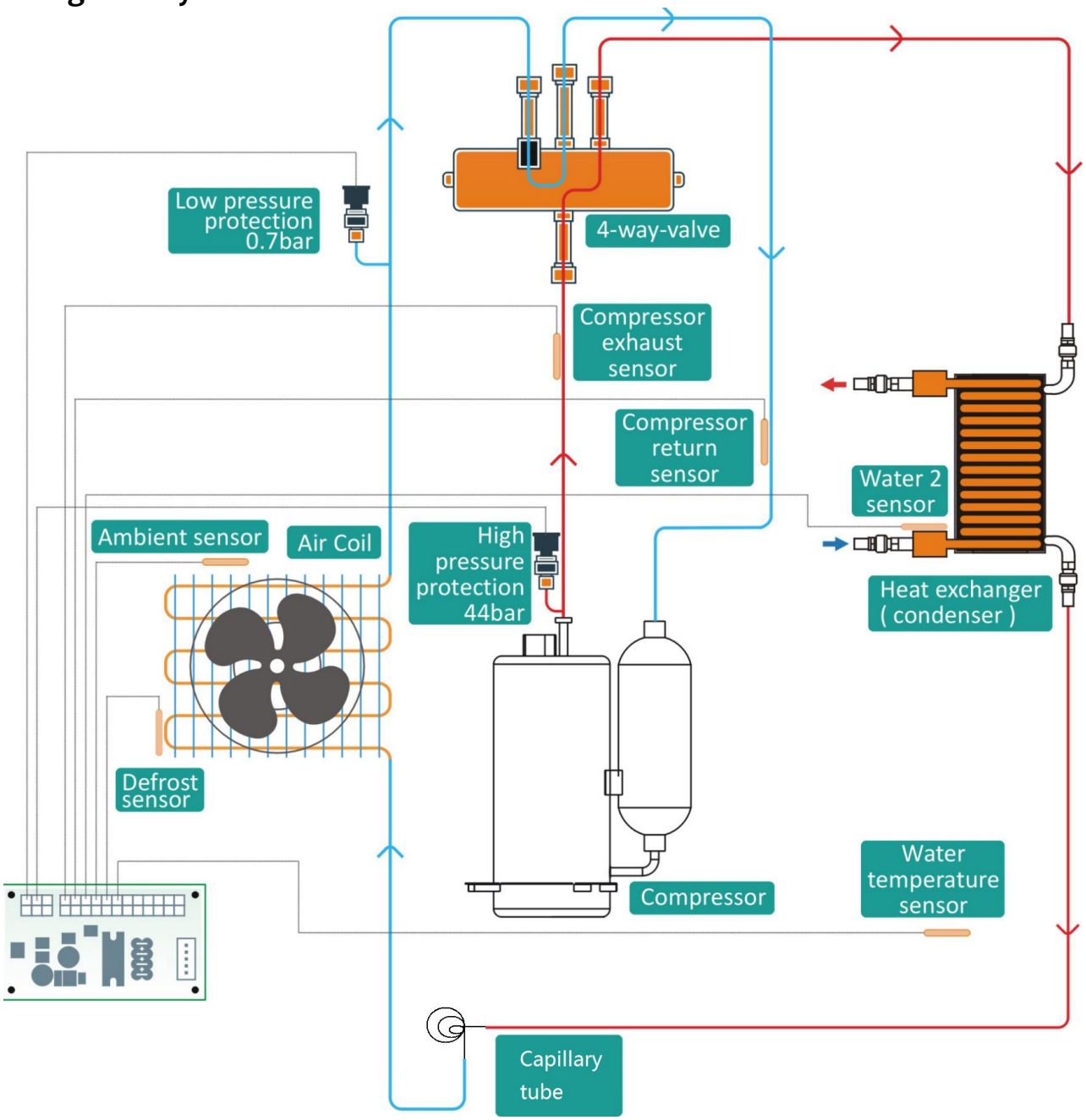
Do not pour any water on the unit.



Do not touch the air outlet grill when fan motor is running.

2. Refrigerant system

2.1 refrigerant system



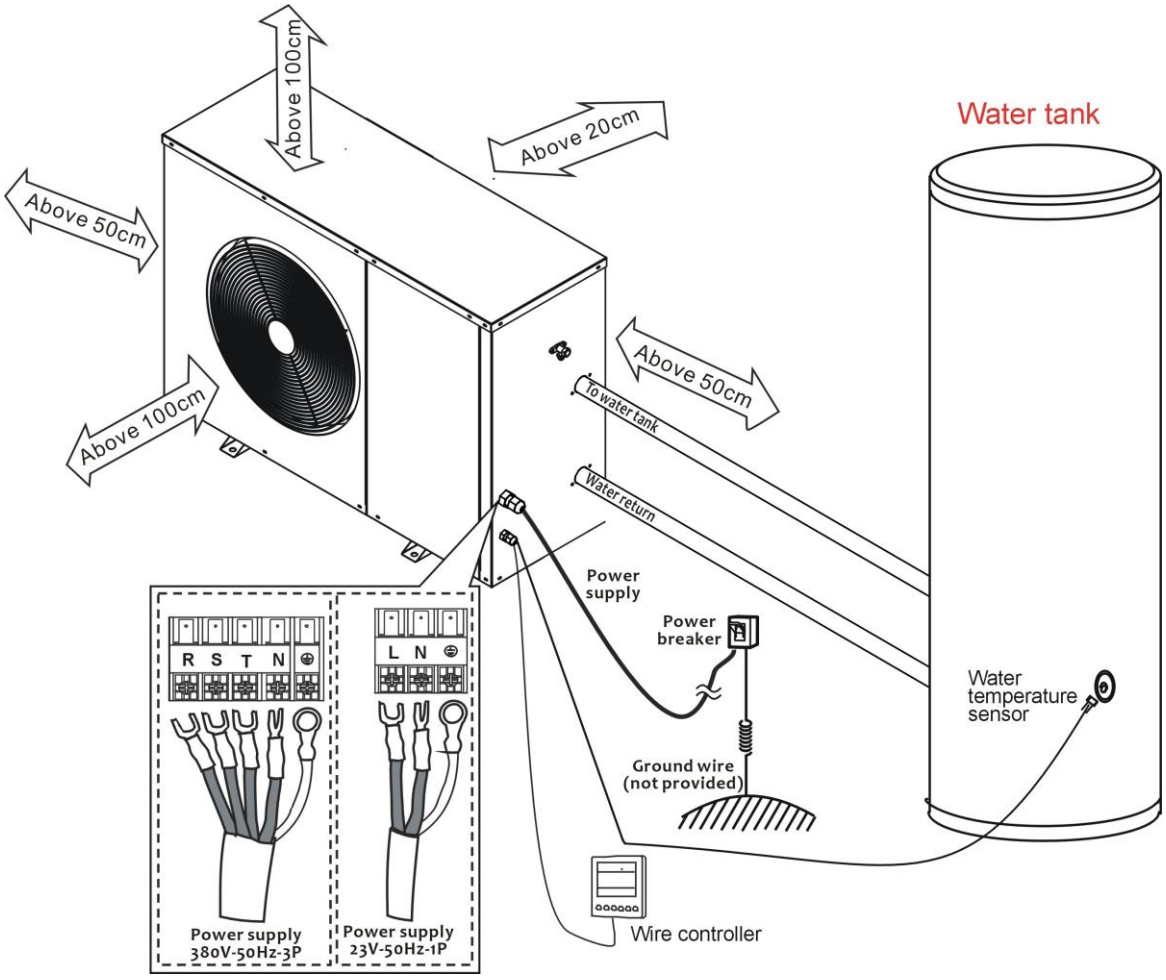
2.2 Working principle of a Heat Pump :

The refrigerant system consists of 5 main components:
compressor, 4-way-valve, heat exchanger (condenser, refrigerant to water), electronic expansion valve/capillary, evaporator (air to refrigerant).

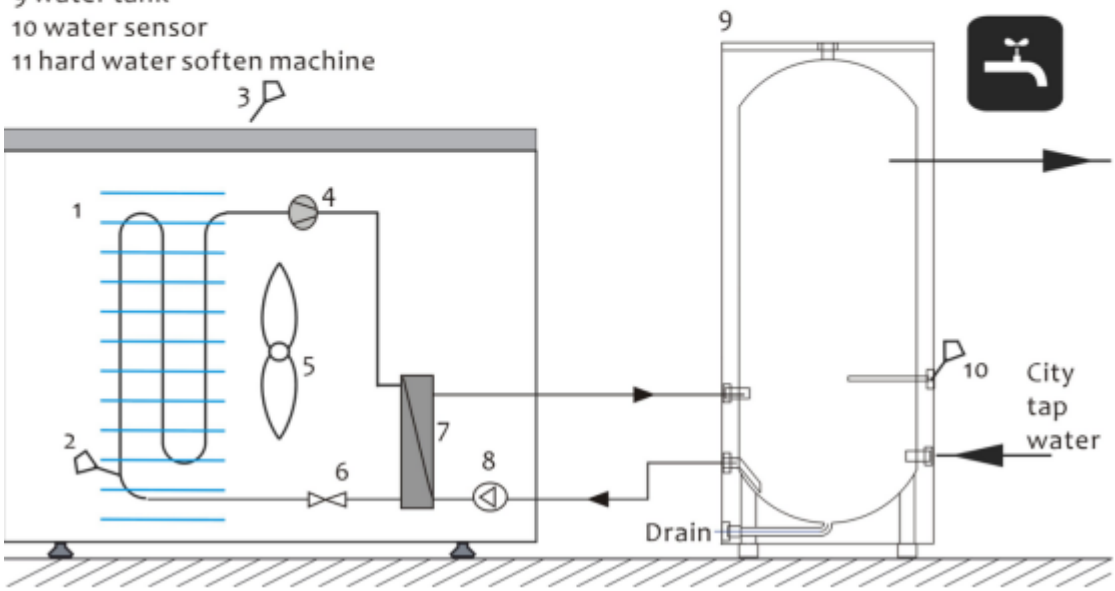
Heat pump can absorb the heating from air source. This makes the heat pump a very environmentally friendly and economically sound alternative for space heating.

*** Evaporator: low temperature, low pressure refrigerant go through evaporator, to boil and turn from liquid to gas. Refrigerant absorb heating from air source.**
*** Compressor: compressor absorb refrigerant, and compress to high temperature, high pressure status.**
*** Condenser: refrigerant release heat energy to heat exchanger. Refrigerant temperature reduces, and it returns from gas status to liquid status.**
The heat energy is absorbed by water, circulated by a circulation pump to water.

3. Installation

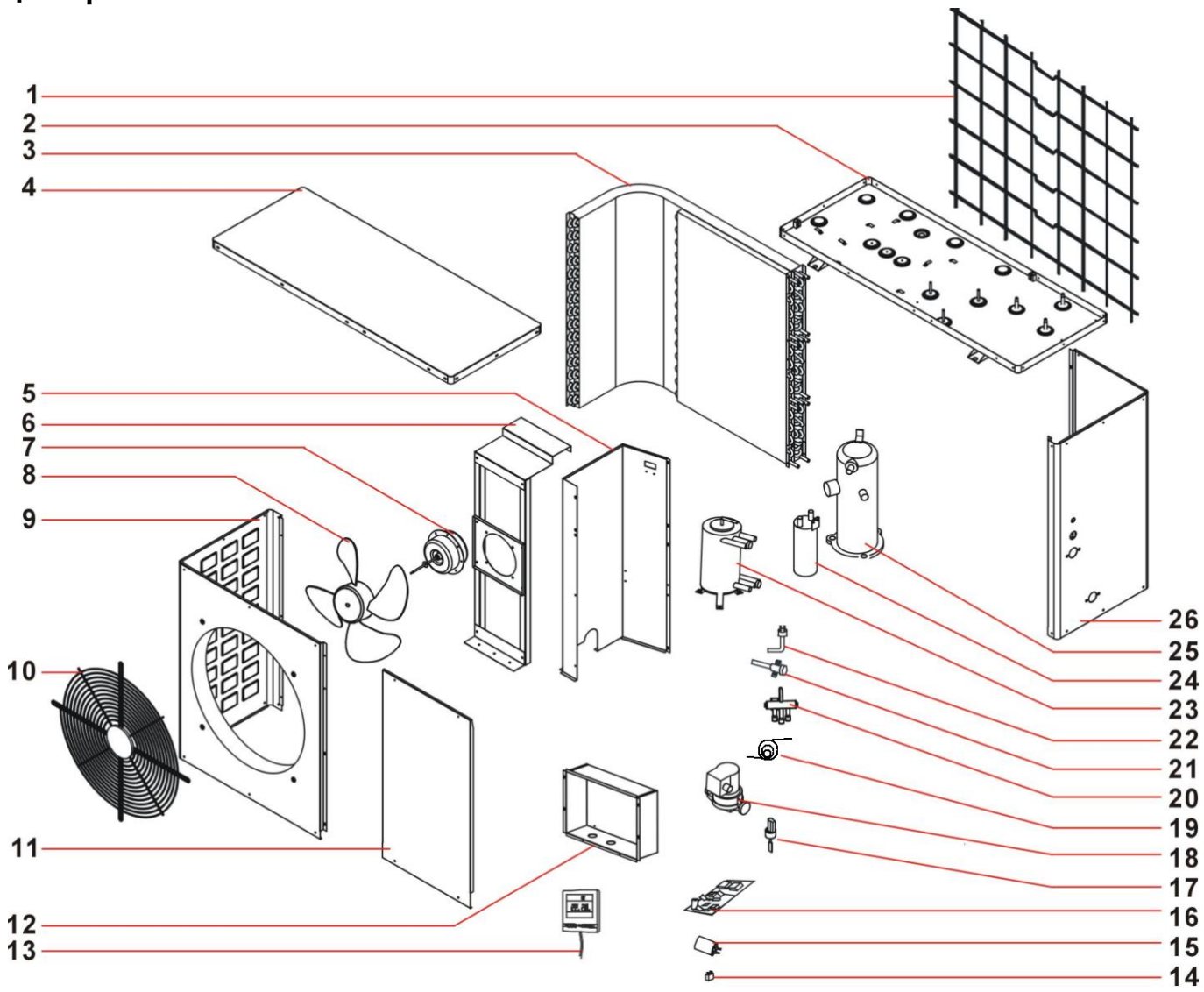


1 evaporator
2 defrost sensor
3 ambient temperature sensor
4 compressor
5 fan
6 capillary tube
7 heat exchanger
8 circulation pump
9 water tank
10 water sensor
11 hard water soften machine



4. Explored view & and Main Components

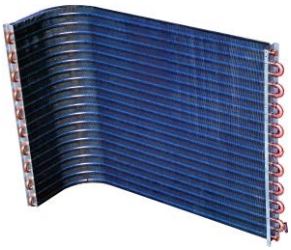
4.1 explored view



1	Back net		14	Capacitor for motor
2	Bottom board		15	Capacitor for compressor
3	Evaporator		16	PCB
4	Top board		17	Water-flow-switch
5	Separator board		18	Water pump
6	Motor bracket		19	Capillary tube
7	Motor		20	4-way-valve
8	Fan blade		21	Service valve (vacuum, filling R410a)
9	Front board		22	High/low pressure switch
10	Front net		23	Heat exchanger
11	Service board		24	Receiver
12	Electronic control box		25	Compressor
13	Wire controller		26	Right board

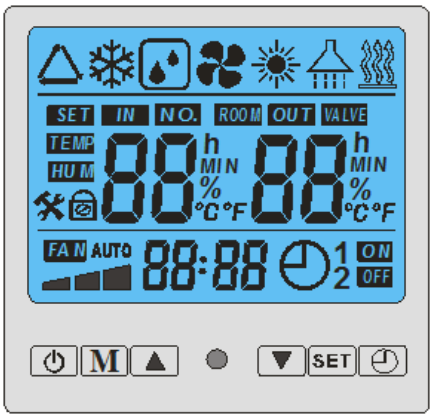
4.2 Inside appearance:

4.3 Main Components

 compressor	 heat exchanger	 evaporator
 Pressure switch	 4-way-valve	 Water pump
 Motor	 Fan blade	 Sensor
 PCB	 Wire controller	

5. Operation Instructions

5.1 Introduction of Wire Controller



5.1.1. On / off button

- On the main interface, press this button to control the startup or shutdown of the heat pump.
- On other interfaces, press this button to return to the main interface.

5.1.2. up button, down button

- In the main interface, directly operate the up or down buttons to increase or decrease the setted temperature.
- In the main interface, long press + at the same time to realize keyboard lock/unlock

5.1.3. Function button M

- Press this button directly to enter the temperature inquiry function (water tank temperature, coil temperature, ambient temperature, exhaust temperature, suction temperature). **(Please refer to the table 1 as below)**

SERIAL NO.	DESCRIPTION	DISPLAY RANGE
0	Water tank temperature	-20℃—99℃
1	Coil temperature	-20℃—99℃
2	Exhaust gas temperature	0℃—C5℃
3	Suction gas temperature	-20℃—99℃
4	Ambient temperature	-20℃-99℃

- In the power-on state, long press this button for 10 seconds to enter the parameter query. Press the up /down button to query parameters 0 to 8. Press SET button in the query state to enter the parameter setting. Press the up / down button to adjust this parameter. Press the SET button to confirm the parameter's modification and return to the query status. **(Please refer to the table 2 as below)**

SERIAL NO.	Parameter name	Set range	Default value
0	Set temperature	28℃—60℃	55℃
1	Return difference for compressor's restart	1℃—10℃	5℃
2	Defrosting enter temperature	-9℃ — -1℃	-5℃
3	Defrosting exit temperature	5℃—25℃	12℃
4	Defrosting interval	10M - 90M	45M
5	Defrosting running period	5M - 18M	10M
6	Electric heater's set temperature	30℃—75℃	60℃
7	Temperature compensation	0℃—15℃	0℃
8	Exhaust temperature overheat	95-125℃	105℃
9	High-low pressure chosing	0/1/2	0
A	Model	0:refrigerant cycle/1:water	1

		cycle	
b	High temperature to stop fan	10-45	25
c	High exhaust temperature to stop fan	80-120	95
d	Return difference for fan motor's restart	2-10	5

- When the operation is stopped for 10 seconds during setting, the setting is automatically exited.

5.1.4. SET button

- On the main interface, press this button to enter the clock setting. Press the SET button again, and the clock's hour flashes. Press the up  or down  button to adjust the hour. After adjusting, press the SET button to enter the minute's setting. Press the up  or down  button to adjust the clock's minute, and press the SET button to confirm the minute and return to the main interface.
- In the power-on state, long press this button to enter the **forced defrosting**, judge the coil temperature, and enter the forced defrosting if the coil temperature is lower than the defrosting exit temperature.
- In the shutdown state, long press this button to enter the **refrigerant recovery.** If the recovery time is longer than the defrosting time, exit the refrigerant recovery or press the on/off  button to exit.

5.1.5. Timer button 

- On the main interface, press the timer button to enter the timer setting. The setting method is the same as the clock setting. In the setting state, press the SET button to cancel the timer.
- On the main interface, long press this button to **forcibly turn on the electric heating**. After the forced electric heating is turned on, when the electric heating is not turned on, the electric heating symbol flashes.

5.1.6. Icon display status:

- The symbol  is normally on when defrosting.
- When refrigerant recycling, the symbol  flashes.
- The symbol  is normally on when the hot water mode is turned on.
- Wen the electric heating starts, the symbol  is normally on, and the symbol  flashing indicates that the electric heating is manually turned on but the electric heating does not reach the condition of opening.

5.2 error message:

Heat pump is equipped with regulation and safety components; when a regulation component is defective or a safety is activated, a message is posted like it's illustrated below; see the explanation of these messages in the paragraph "Error codes ". Call your installation contractor for help.

SERIAL NO.	DESCRIPTION	ERROR CODE	REACTION
1	Low pressure switch fault	04E	All the outputs will be closed
2	Exhaust temperature sensor fault	11E	All the outputs will be closed
3	Coil temperature sensor fault	12E	All the outputs will be closed
4	Water temperature sensor fault	13E	All the outputs will be closed
5	High pressure switch fault	03E	All the outputs will be closed
6	Exhaust temperature overheat	05E	All the outputs will be closed
7	Communication failure	08E	Normal running
8	Ambient temperature sensor fault	06E	Normal running
9	Suction temperature fault	07E	Normal running
10	Water flow switch fault	10E	All the outputs will be closed
11	Anti-freezing protection	09E	The heat pump will start and heat

Code	Error	Analyze	Solution
13E	Water temperature sensor failure	Sensor fail.	Check the value of sensor and
06E	Ambient Air temperature sensor	Sensor is disconnected, or	change it

	failure	short-circuit	Check the wiring connection of sensor
11E	Compressor exhaust temperature failure		
12E	Evaporator coil temperature sensor failure		
07E	Suction temperature fault		
10E	**Water flow protection**		
08E	**Wire control communication error**	**Signal cable of wire control is loose**	**Check the connection of signal cable**
03E	**High pressure protection**	**protector is disconnected, or defective. Refrigerant pressure abnormal Water inlet temperature is too high Air inlet temperature is too high**	**Call a refrigerating engineer to check refrigerant pressure**
04E	**Low pressure protection**	**protector is disconnected, or defective. Refrigerant pressure abnormal Water inlet temperature is too high Air inlet temperature is too high**	**Call a refrigerating engineer to check refrigerant pressure**
05E	Compressor over-heat protection Compressor exhaust temperature is more than 105'c.	**Environment problem Refrigerant leakage**	**Call a refrigerating engineer to check refrigerant pressure**
09E	Anti-freeze protection		

6. Maintenance

6.1 auto defrosting

- **Conditions to enter the defrosting: (both conditions should be met)**
  - ① Compressor continuous working time ≥ defrosting interval time;
  - ② Defrosting sensor temperature ≤ setted temperature of entering defrosting.

Enter the defrosting operation: meet the conditions of entering the defrosting, the compressor and the fan stop, and **the circulating water pump starts.**
After the delay of 55 seconds, the four-way valve is opened, and after a delay of 5 seconds, the compressor starts and the defrosting operation is entered.

- **Conditions to exit the defrosting: (only need to meet one of the conditions)**
  - ① Defrosting sensor temperature ≥ defrosting exit temperature.
  - ② Defrost time ≥ defrosting running time.

Exit the defrosting operation: meet the conditions of exiting the defrosting, the compressor stops, and the fan starts. After a delay of 55 seconds, the four-way valve is closed, and after 5 seconds delay, the compressor starts, the defrosting is exited, and the normal heating operation is entered.

6.2 electric heater

- Meet any of the following conditions for stopping:
  - ① Shutdown status
  - ② T water tank ≥ electric heating setted temperature (parameter 6)
  - ③ Coil temperature >10

- Meet any of the following conditions for starting:
  - ① Manually forced start electric heating in the power-on state (do not judge the coil temperature, only judge the water temperature: water tank temperature ≤ electric heating setted temperature -5 ° C)
  - ② Coil temperature <5 and water tank temperature ≤ electric heating setted temperature -5 ° C
  - ③ Entering defrosting (do not judge the coil, only judge the water temperature: water tank temperature ≤ electric heating setted temperature -5 ° C)

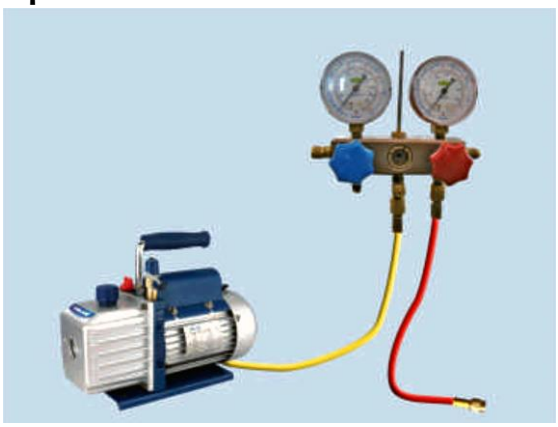
6.3 evaporator cleaning

The evaporator do not require any special maintenance, except when it is clogged by paper or any other obstacle. Cleaning is by washing with detergent and water at low pressure, and the rinsing with clean water.

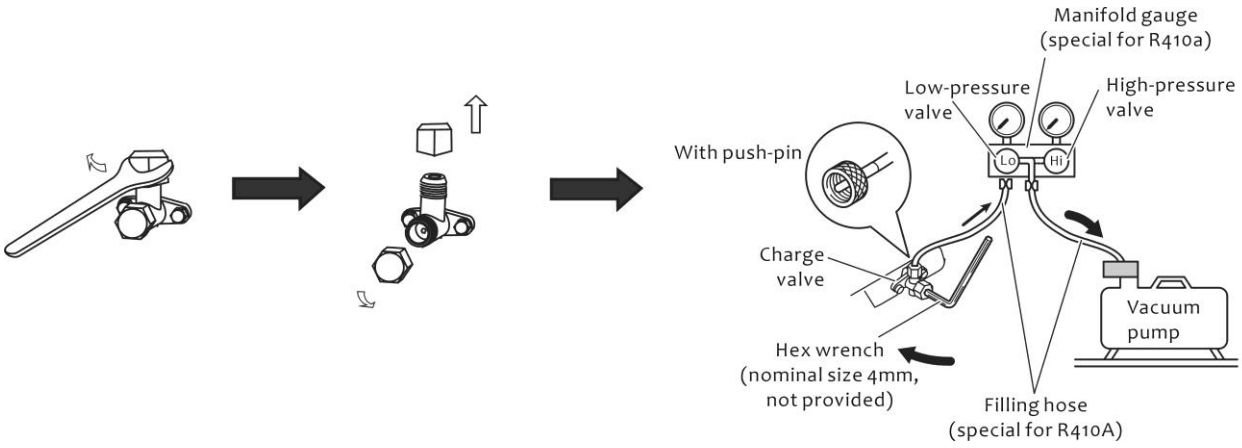
⚠ WARNING

1. before cleaning, make sure that heat pump is power OFF.
2. inside of heat pump must be cleaned by qualified person.
3. do not use gasoline, benzene, detergent etc. to clean the heat pump. And do not spray with insecticide, the unit may be damaged. The cleanser special made for air conditioner cleaning is recommended.
4. spray air conditioner cleanser into the evaporator, let the cleanser sit for 5~8 minutes.
5. then, spray the evaporator by clean water.
6. an old hairbrush works well for brushing surface dirt and lint off the fins. Brush in the same direction as the slots between the fins so the bristles go between the fins.
7. after cleaning, use a soft and dry cloth to clean the unit.

6.4 Vacuum



A vacuum pump and maniflod gauge are needed.



Remove the copper nut. Connect the pressure gauge to the vacuum pump.Vacuum heat pump at least 15 minutes till negative value shown on the pressure gauge, and close the charge valve.

6.5 Water Flow Failure

A water flow switch is installed as standard on the water outlet pipe to ensure adequate water flow on heat exchanger before start the compressor.

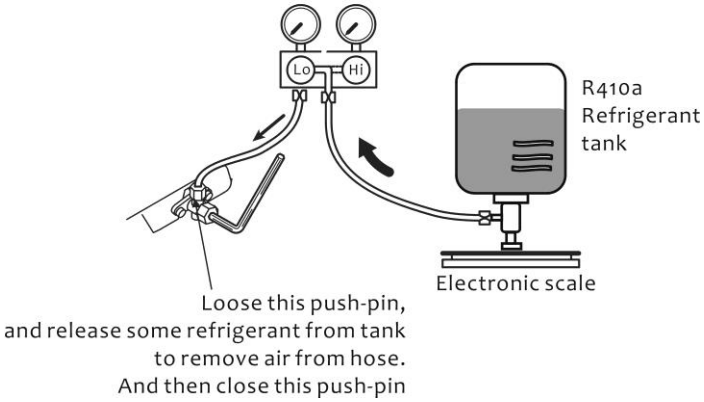
It acts if partial block, or less water flow.

The hydraulic module requires no special maintenance. Install a mesh filter by user on the water inlet pipe is strongly advised.

6.6 Filling refrigerant

Refrigerant is very stable and should not degrade or break down even under severe operating conditions. If the unit has a leak in the sealed refrigeration system, please locate the leakage and repaired before charge refrigerant.

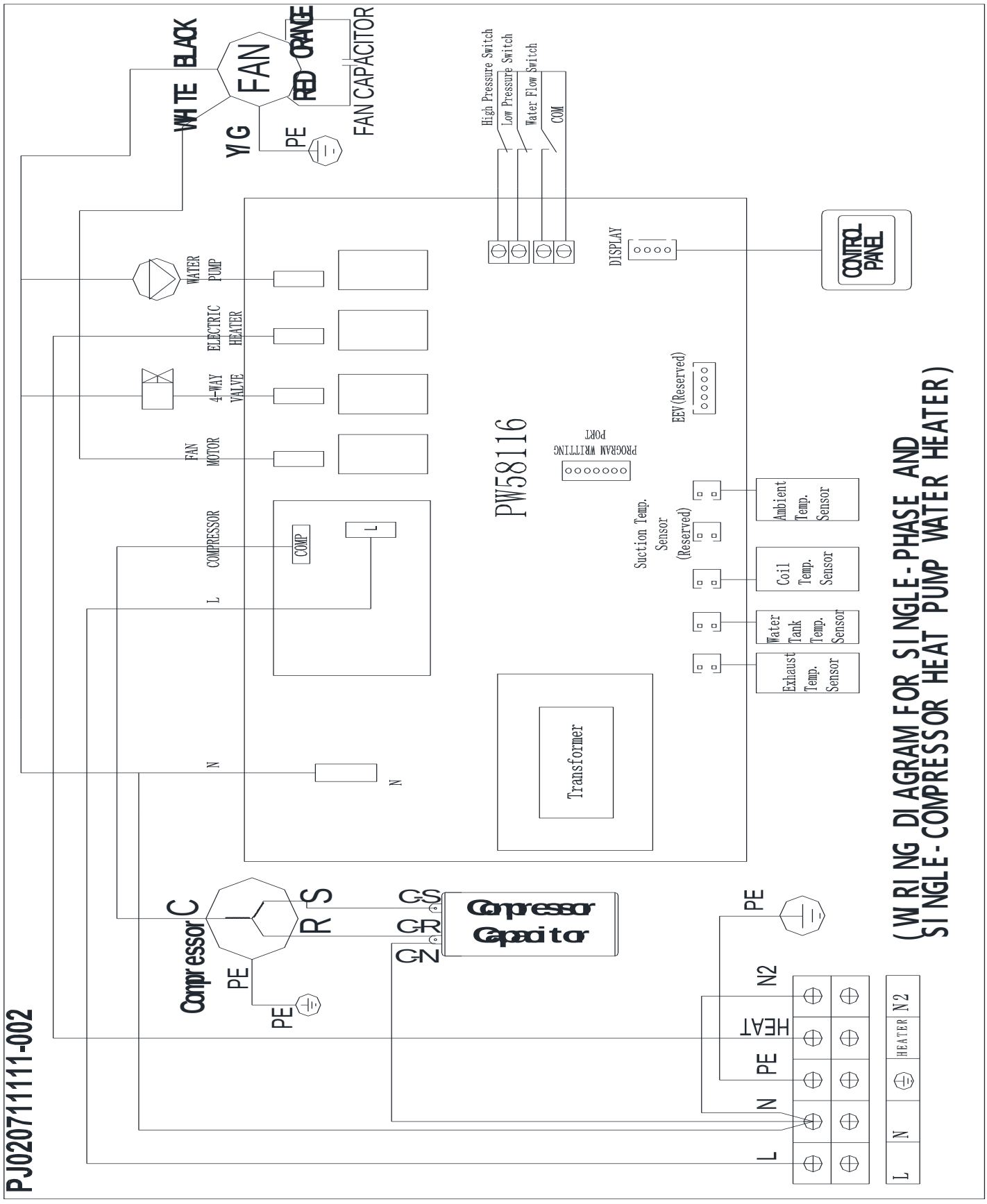
WARNING refrigerant charging must be performed by qualified person.



Loose the push-pin, and release some refrigerant from tank to remove air from hose. And then close push-pin.

Open the charge valve by hex wrench, fill refrigerant into heat pump. And close the charge valve when fill enough refrigerant into heat pump.

7. Wiring Diagram



Note:
This diagram is correct at the time of publication, manufacturing changes could lead to modifications.
Always refer to the diagram supplied with the heat pump.

MIMICO JOINT STOCK COMPANY

Address: 19A Cong Hoa · Tan Binh · Ho Chi Minh City · Vietnam
Tel/Fax: +84 28 6292 5250 Hotline: +84 906631316 / +84 948 631316
Email: info@mimico.com.vn Website: www.mimico.com.vn