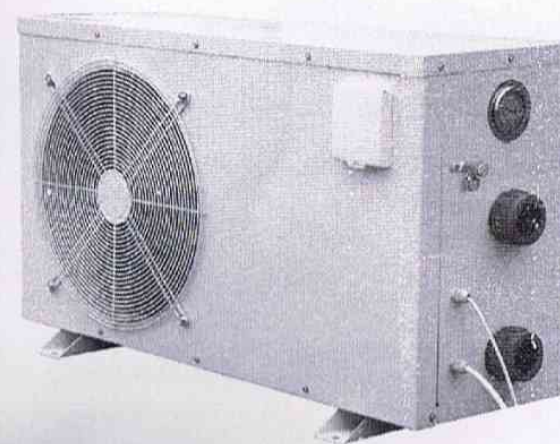


Swimming Pool Heat Pump

User Manual



CE

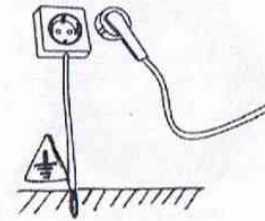
Before operating this product, please read the instructions carefully and save this manual for future use.

Contents

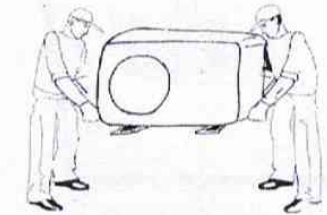
1. Safety precautions	5
2. Accessories	6
3. Outlines and Dimensions	7
4. Specification	8
5. Performance Curve	9
6. System and Main Components	11
7. Installation	14
8. Operation Instructions	19
9. Maintenance	25
10. Trouble Shoot	29
11 Explosive View	33
12 Wiring Diagram	34

1. Safety precautions

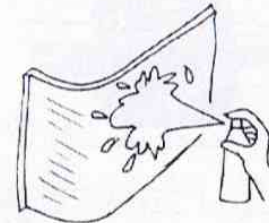
⚠ VITAL Electrical power must be switched off before starting any work on heat pump.



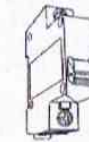
The unit must be earthed to avoid any risks caused by insulation defects.



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.



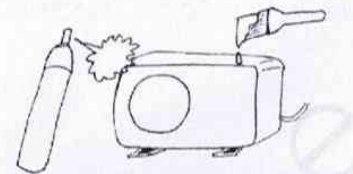
Clean the machine by washing with detergent and water at low pressure, and then rinsing with clean water.



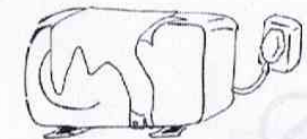
Steel Wire

Copper Wire

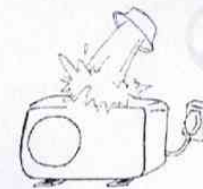
It is the responsibility of the installer to provide circuit breaker protection, corresponding to the machine's capacity (refer to the unit electrical characteristics table), near to the machine.



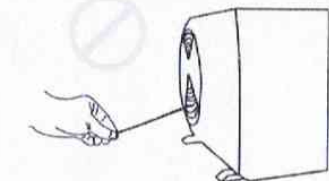
Do not spread over any paint or insecticidal material on the surface of the unit.



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

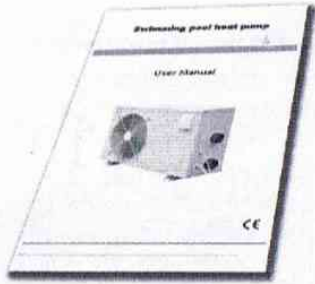


Do not pour any water on the unit.

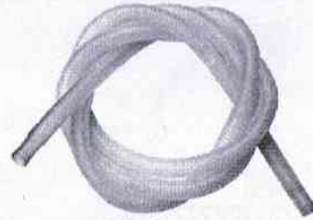


Do not touch the air outlet grill when fan motor is running.

2. Accessories



User manual, 1 piece



Drain pipe, 1 sets

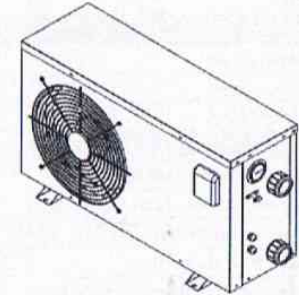
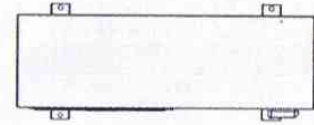
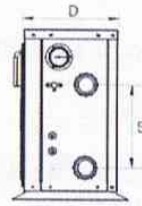
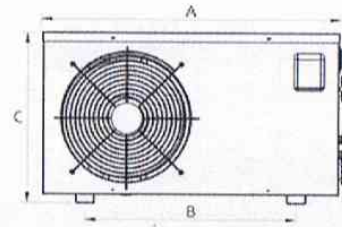


Drain connector, 1 piece



Absorber, 4 pieces

3. Outlines and Dimensions



Model	A	B	C	D
KP-38HS				
KP-50HS				
KP-80HS				
KP-160HS				

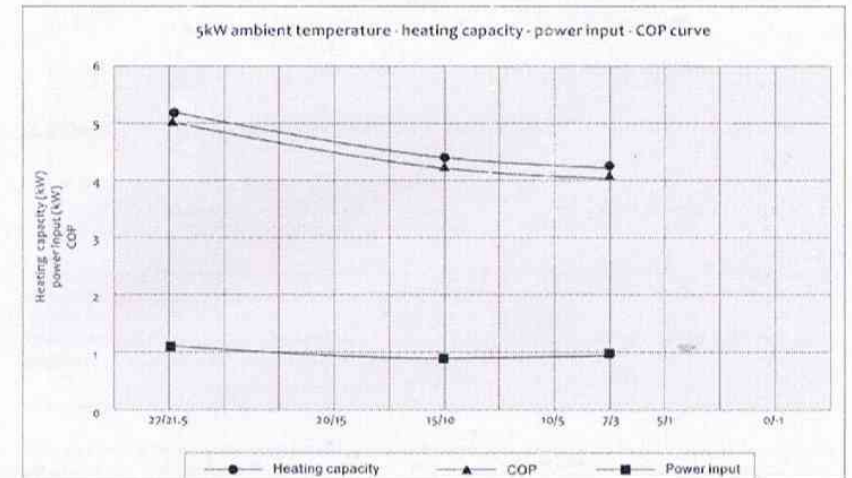
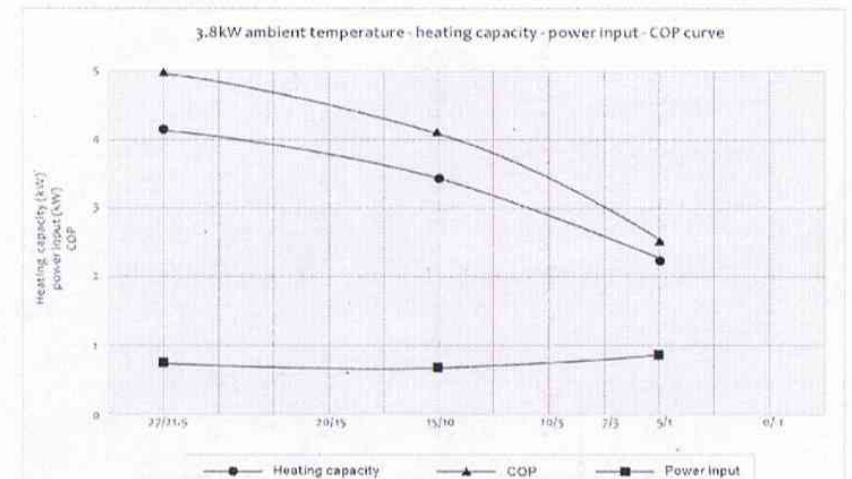
WARNING when receiving the heat pump, please check all items are not missing.

4. Specification

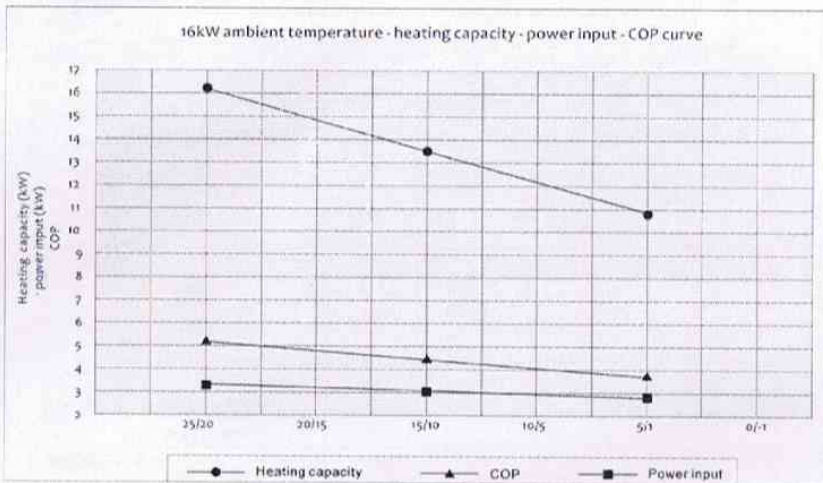
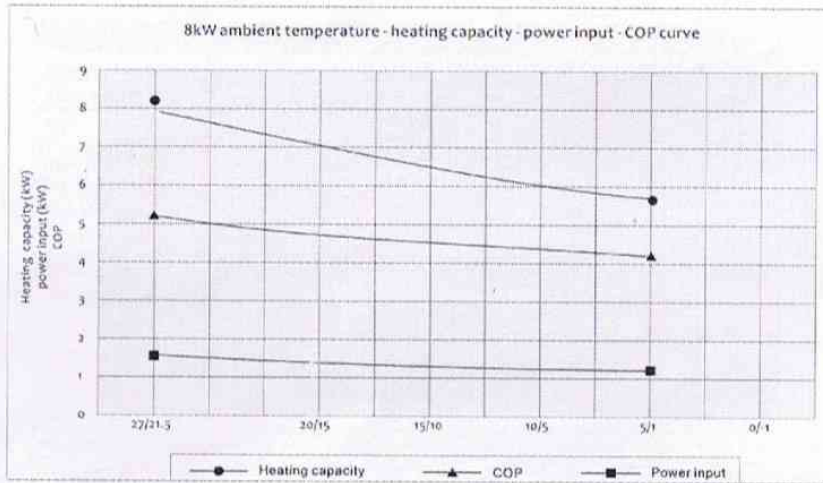
Model	unit	TS55	TS85	TS120	TS140
*heating tested condition: outdoor air temperature DB/WB: 27°C/21.5°C, water outlet temperature 27°C.					
Heating capacity	Kw	5.5	8.5	12	14
Power input	Kw	1.1	1.7	2.4	2.8
COP		5	5	5	5
*cooling tested conditions: outdoor air temperature DB/WB 35°C/30°C, water outlet temperature 27°C					
Cooling capacity	Kw	3.8	5.3	7.5	8.7
Power input	Kw	1.3	2.0	2.8	3.2
EER		2.9	2.65	2.7	2.7
Electric data					
Power supply	V/Hz/Ph	230/50/1			
Rated current	A	5.3	8.7	11.5	13.4
Advised fuse	A	20	20	30	35
Water data					
Rated water temperature	°C	27			
Max. water temperature	°C	40			
Water pressure drop	Kpa	12	15	15	15
Water pipe connection	mm	50			
Rated water different between inlet/outlet water	°C	2-3			
Min. water flow	m³/h	2	3	3.4	4.0
Refrigerant data					
Refrigerant		R410a			
Compressor type		Rotary			
Compressor quantity		1			
Air side heat exchanger		Mechanical expansion copper tube with blue aluminum fin			
Water side heat exchanger		PVC shell-titanium tube			
General data					
Ambient temperature	°C	0-35			
Fan type	Type	axial			
Fan quantity		1			
Noise(1m)	dB(A)	48	49	52	54
Unit net dimension(LXWXH)	Mm				
Package dimension(LXWXH)	mm				
Weight(Net/Gross)	kg				

The specification are subject to change without prior notice. For actual specification of the unit, please refer to the specifications stickers on the unit.

5. Performance Curve

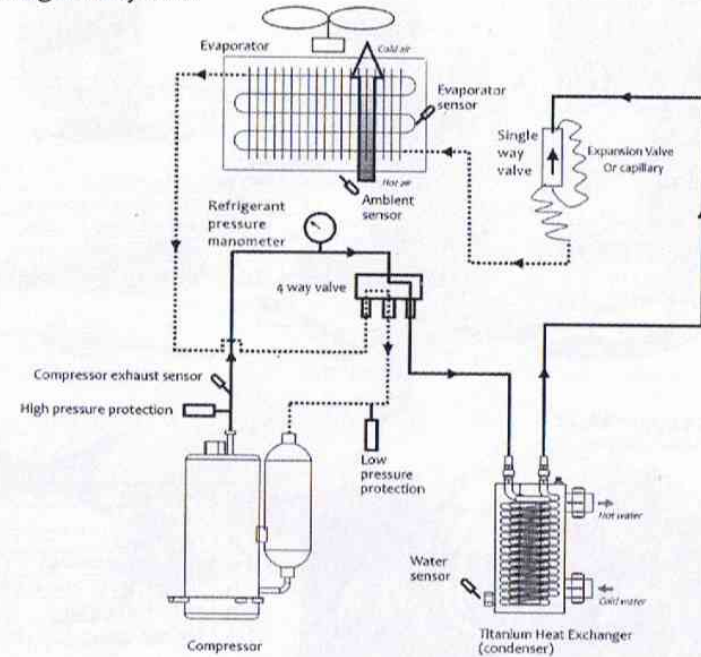


Performance Curve



6. System and Main Components

6.1 refrigerant system



6.2 Working principle of a Heat Pump :

The refrigerant system consists of 5 main components: compressor, 4-way-valve, titanium 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.

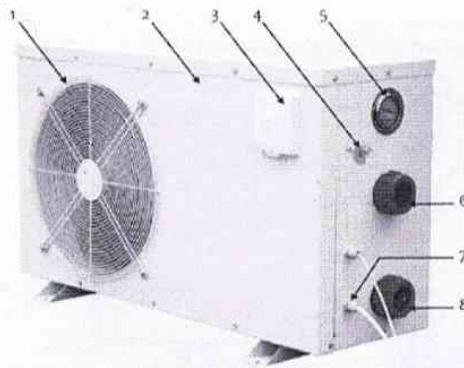
* Evaporator: low temperature, low pressure refrigerant go through evaporator, to boil and turn from liquid to gas. Refrigerant absorb heating from air source.

* 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 poor.

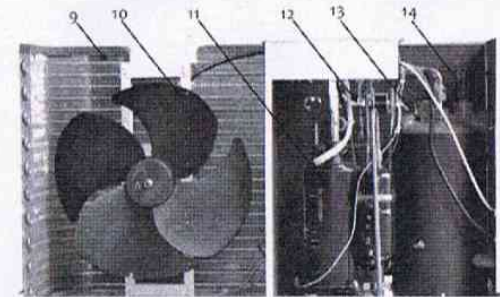
6.3 Outside appearance :



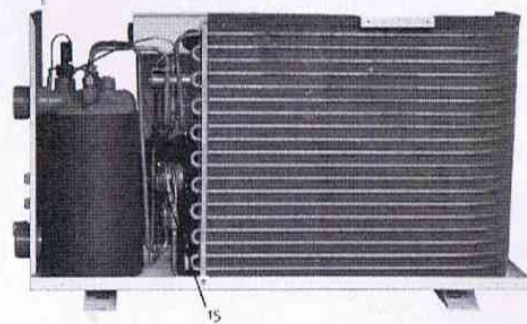
1	Fan protection grid (blow side)
2	Metal cabinet
3	Waterproof box cover and wire controller
4	Refrigerant charge valve
5	Refrigerant pressure manometer
6	Fast connection for water outlet
7	Wire connection for power supply
8	Fast connection for water inlet

6.4 Inside appearance:

(Front sheet cover and panel removed)



9	Evaporator
10	Fan
11	Compressor
12	4-way-valve
13	Titanium in PVC heat exchanger
14	Water flow switch
15	capillary



6.5 Main Components



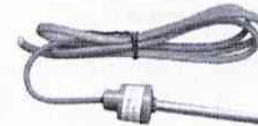
compressor



Titanium / PVC heat exchanger



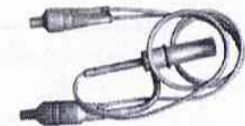
evaporator



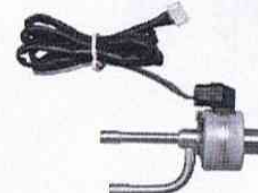
Pressure switch



Water flow switch



capillary



Electronic expansion valve



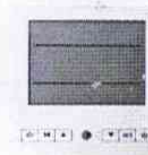
4-way-valve



Pressure meter



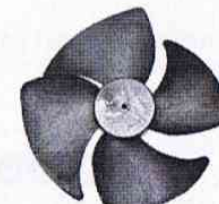
PCB



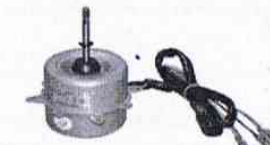
Wire controller



sensor



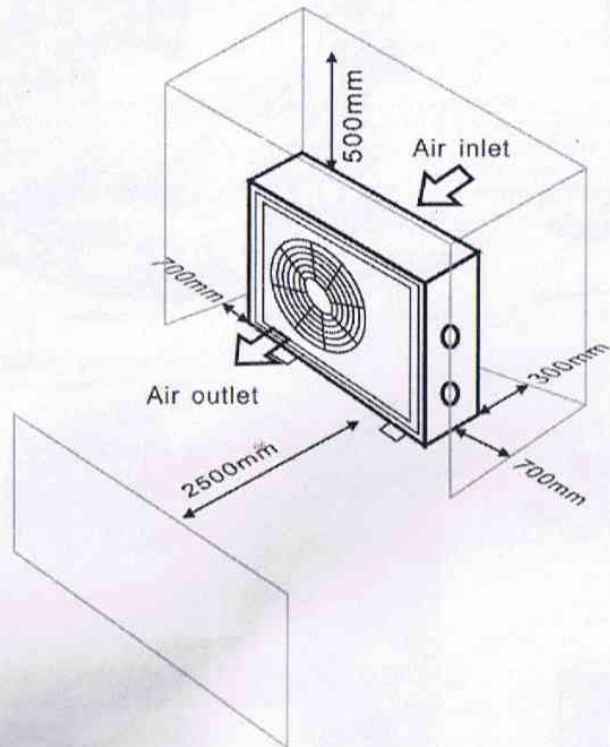
Fan blade



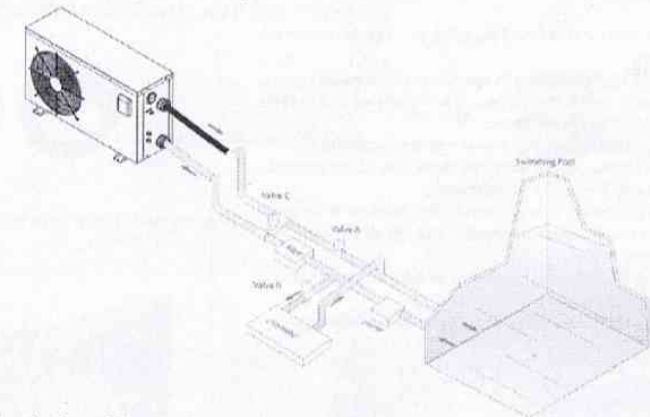
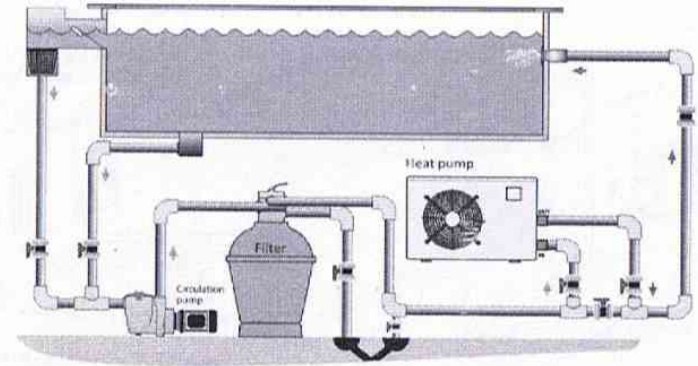
Motor

7. Installation

7.1 Installation Location



7.2 Plumbing System Figure



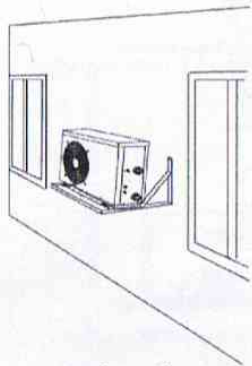
- When heating is needed:
Make valve A open, and then keep the water inlet and outlet Temp difference at 2°C by adjusting the open of valve C.
- When heating is not needed:
Make valve A and valve C fully open, so the water can be circulated through the filter only.
- When disinfection is needed:
Make valve A closed and valve B open, to guide the water go through the chlorinator.

7.3 Terminal insulation

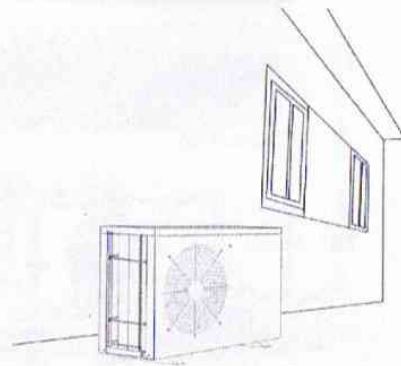
In order to proper keep power consumption low and to comply with standards in force, all hot water pipes must be insulated.

⚠ WARNING Please ensure the water flow inside the unit
No smaller than 80% of the rated water flow.

7.4 Location the unit

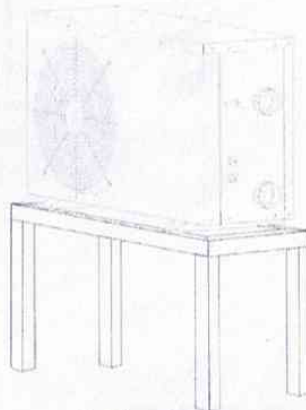


Install on wall



Install on floor

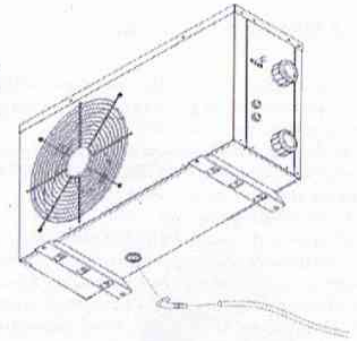
1. heat pump must install on a flat, solid, preferably cemented surface.
2. when install the heat pump in harsh climatic area, sub-zero temperatures, snow, humidity..., it is recommended to raise the unit over the ground 50cm.
3. rubber vibration absorbing mountings are recommended.
4. during installation, make sure sufficient free space around the heat pump for future maintenance.
5. the unit is air cooled. It must be installed outdoor in an area with sufficient clearance to provide enough air circulation through evaporator.
6. shield the unit from direct sunshine or rain, but never block the air ventilation.
7. the unit should be free from explosive and corrosive gas, and grease.



Install on bracket

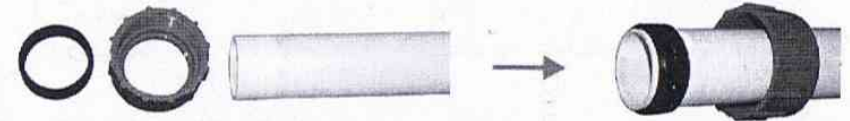
7.5 Installation of drain

Please install the drain connector as shown in the picture when necessary. In some cold areas (ambient temperature below 0°C), please do not use the drain connector, otherwise it may clogged by ice.

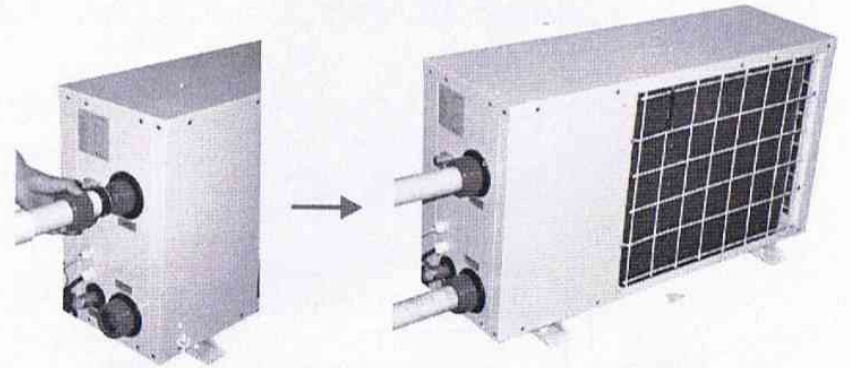


7.6 Installation of water pipe

1. install the rubber ring and nut to water pipe



2. install the water pipe to heat pump



WARNING the water from swimming pool heat pump should already pass by a filter before entering the unit. Some dirt perhaps damage or choke the Titanium / PVC heat exchanger and cause some failure.

7.7 Electrical Connection

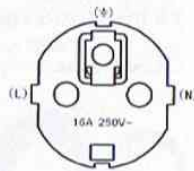
NOTE: although the unit heat exchanger is electrically insulated from the rest of the unit, this simply prevents the flow of electricity to or from the pool water. Grounding the unit is still required to protect you against short circuits inside the unit.

NOTE: ensure that the available electrical Power supply and the network frequency are matched to the required operating current, taking account of the appliance's specific location and the current required to supply any other appliances connected to the same circuit.

- 1) See the wiring diagram;
- 2) Ensure that the unit is supplied with the specified voltage. The terminal block is located on the right side of the unit. There are three connections for the Power supply and two connections for the filtering pump control (Enslavement). The Power supply line must be properly matched with a motor supply type fuse or a main circuit breaker to protect the circuit against voltage surges (refer to the nameplate for the voltage);
- 3) Always shut down the main Power supply before opening the electrical control box.

The assembly, the electric connection and the start up must be carried out by specialized and professional person.

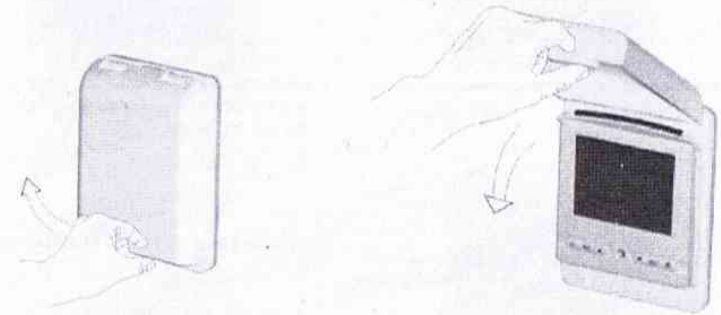
When connect plug to socket (power supply), please make sure that live wire, neutral wire, earth wire to plug should be connected as right drawing.



8. Operation Instructions

8.1 Waterproof box cover

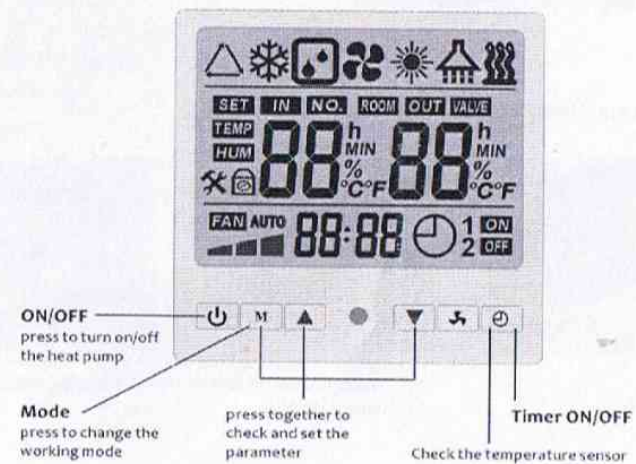
Waterproof box is used to protect the wired controller from rainwater and direct sunshine :



1. Open : pull the waterproof box cover up.

2. Close : press the waterproof box cover down.

8.2 Introduction of Wire Controller

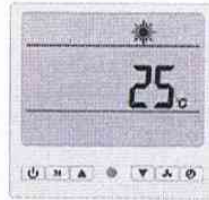


⚠ WARNING please do not forget to close the waterproof box cover after finishing the setting of the wire controller.

8.3 Start and Standby



1. the display will show all symbols when power on



2. the display will show mode and water temperature 5 seconds after power on. The unit is standby.

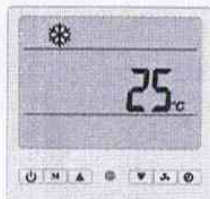


3. if PCB and wire controller can not communicate with each other properly, failure code EE 08 is shown on display. Please check the connection of single cable.

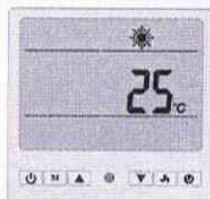
8.4 Mode selection (only for cool/heat heat pump)



Press M button to choose the operation mode



Cooling mode
(when available)

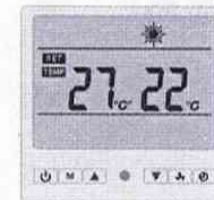


Heating mode

8.5 ON/OFF

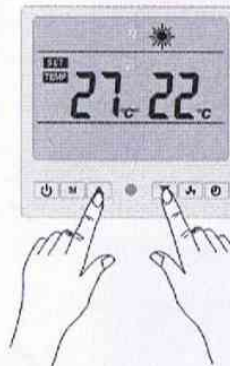


Press ON/OFF button to turn on the heat pump.



The display shows water setting temperature and current water temperature.

8.6 Water temperature setting



Press button to increase water setting temperature by 1°C.
Press button to reduce water setting temperature by 1°C.

8.7 parameter setting



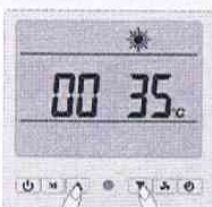
press **M** button 6 seconds to enter parameter setting interface.



The left data and right flash at the same time.



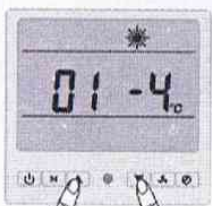
press **M** button to edit the value of parameter, only right data flash.



Press **▲** or **▼** button to change the value on right data.



press **M** button again to exit edit mode of parameter. Left data and right data flash at the same time.



Press **▲** or **▼** button to change to another parameter. Left data and right data flash at the same time.

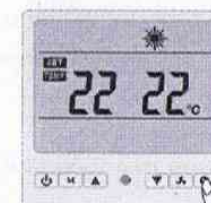
Ⓢ No press in 120 seconds, it will exit the parameter setting interface.

Parameter	Description	Range	remarks	Factory setting
0	Max. setting water temperature	7 - 65°C	adjustable	35°C
1	Defrosting start temperature	-20 - 10°C	Adjustable	-4°C
2	Defrost exit temperature	5 - 45°C	Adjustable	12°C
3	Turnround of defrosting under heat mode	30 - 150 min	Adjustable	30 min
4	Time of exit defrost under heat mode	1 - 15 min	Adjustable	8 min
5			No use	-
6			No use	-
7			No use	-
8	Automatic restart	0/1	Not change	1
9	Mode (heat/coo & heat/cool)	0/1/2	Not change	0
10	Water temperature difference to restart	1 - 10°C	Adjustable	2°C
11	Water pump/Condenser heater	0/1	Not change	0
12	Control of electrical expansion valve	0/1	Not change	1 manual
13	Super heat of electrical expansion valve on auto	-10 - 10	No use	1
14	EEV at ambient < 0°C and water < 45°C	10 - 45	Set by factory	
15	EEV at 0°C < ambient < 10°C and water < 45°C	10 - 45	Set by factory	
16	EEV at 10°C < ambient < 26°C and water < 45°C	10 - 45	Set by factory	
17	EEV at ambient > 26°C and water < 45°C	10 - 45	Set by factory	
18	EEV at ambient < 0°C and water > 45°C	10 - 45	Set by factory	
19	EEV at 0°C < ambient < 10°C and water > 45°C	10 - 45	Set by factory	
20	EEV at 10°C < ambient < 26°C and water > 45°C	10 - 45	Set by factory	
21	EEV at ambient > 26°C and water > 45°C	10 - 45	Set by factory	

8.8 check temperature sensor



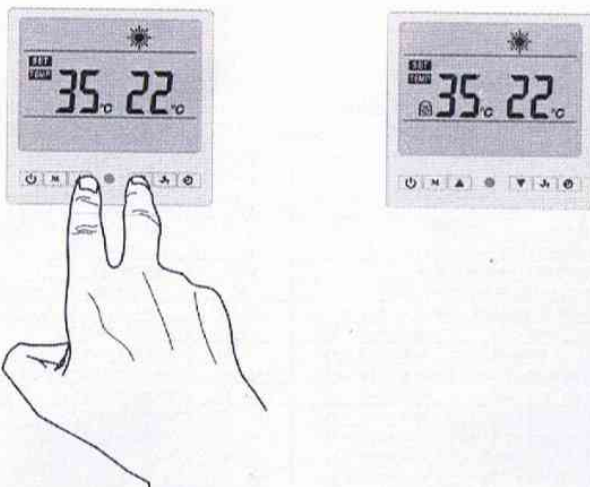
press **⊗** button 6 seconds to check temperature sensor.



press **⊗** button to check other temperature sensor.

Parameter	Description
22	Water temperature sensor
23	Ambient temperature
24	Compressor exhaust temperature sensor
25	Evaporator temperature sensor
26	Water 2 temperature sensor (No use)
27	Compressor return temperature sensor
28	Current step of EEV

8.9 Lock the wire controller



press and button 6 seconds at the same time, one buzzing will be heard to indicate that all buttons are locked. Please again to unlock all buttons.

9. Maintenance

9.1 Automatic defrosting

defrosting only run in heating mode.

● Start of defrosting :

- The defrosting will start when all following conditions are at the same time fulfilled:
 - the evaporator sensor temperature goes down to -4°C (parameter 01)
 - the compressor continue to runs 30 minutes (parameter 03)

When the evaporator sensor falls (Error Code), heat pump enters into TIMER defrosting operation, each time for 6 minutes after running for 30 minutes (parameter 03)

● Action of defrosting :

- The compressor and the fan stop
- After 20 seconds, the 4 way valve switch ON.
- 1 minute later, the compressor starts alone, and hot refrigerant will enter into evaporator, the ice on evaporator will be melt, that is generally with a steam.

● Stop of defrosting:

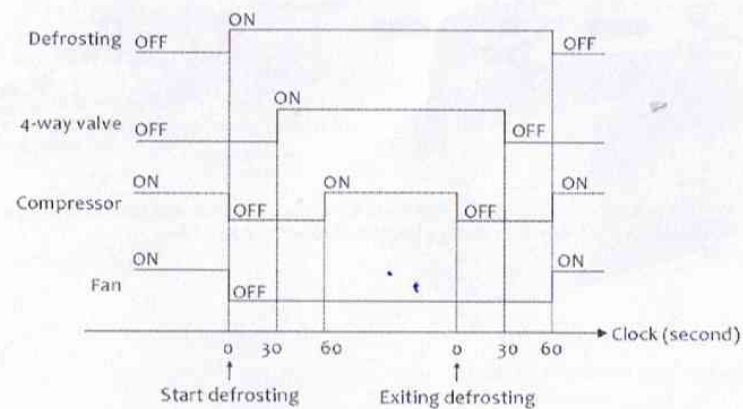
The defrosting stops when one of the following conditions is fulfilled:

- evaporator sensor increase to 12°C (parameter 01)
- compressor run totally 6 minutes (parameter 04)

● Action of exist defrosting :

- The compressor stops
- the 4 way valve switch off 30 seconds
- 1 minute later, compressor and fan start for restarting in heating mode.

WARNING if not necessary, please do not change defrosting parameter setting.



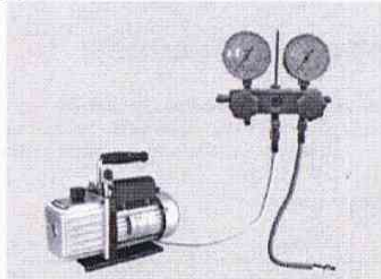
9.2 evaporator cleaning

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.

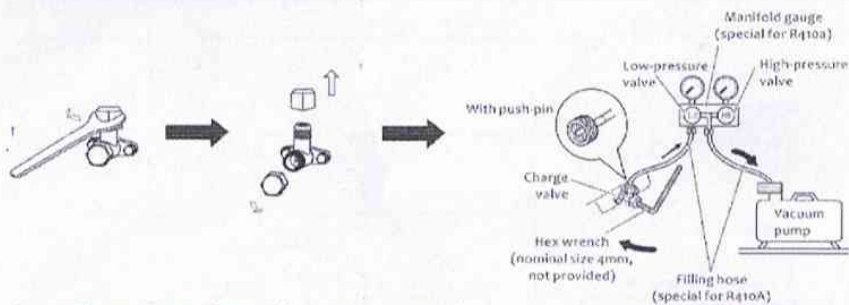
⚠ WARNING

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.

9.3 Vacuum



A vacuum pump and manifold gauge are needed.



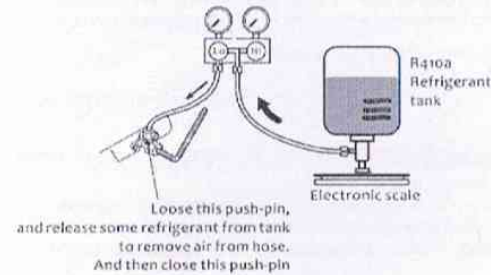
Remove the copper nut. Connect the pressure gauge to the vacuum pump. Vacuum heat pump at least 15 minutes till negative value shown on the pressure gauge, and close the charge valve.

9.4 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.

9.5 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.

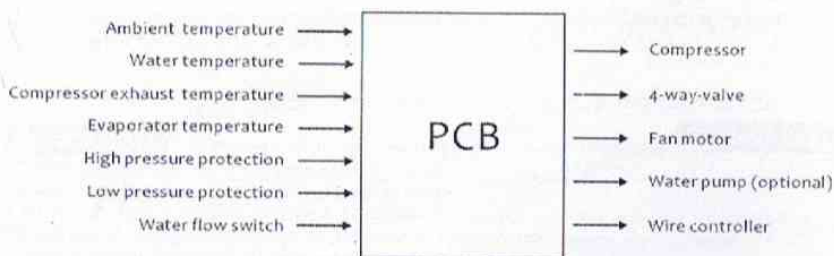
9.6 use in Winter

In cold winter (below 0°C), when the unit is no longer needed, please drain out all the water inside the heat pump.



Screw the water inlet connector away to drain water away from heat pump.

9.7 Working of PCB

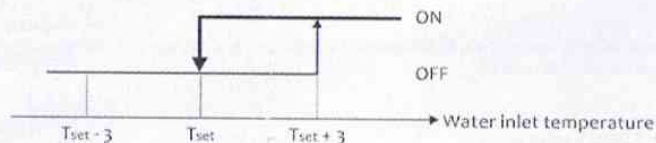


This PCB is specially designed for air cooled swimming pool heat pump, if can offer :

1. operation mode : heating, cooling
2. parameter adjustable for easy operation
3. water pump controlled (optional)
4. auto-protecting, alarming function
5. with a lots of protections : compressor 3 minutes delay protection, high/low pressure protection, over-heat protection, sensor protection, water flow protection.

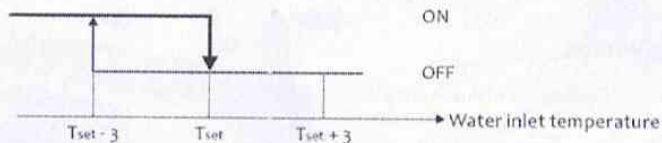
9.8 Water Cooling

Cold water setting temperature can be set in range 7 ~ 40°C.



9.9 Water Heating

Hot water setting temperature can be set in range 7 ~ 40°C.



10. Trouble Shoot

10.1 Regular maintenance

- (1) check regularly the water flow inside the system. A lack of enough water flow may damage the unit.
- (2) Check and clean the filter regularly.
- (3) The unit is installed in clean, dry, and well-ventilated places, and should not be blocked on its air inlet and outlet.
- (4) Clean regularly the evaporator in order to keep it in good performance.
- (5) Watch the functioning of each part and check the gas pressure regularly

10.2 Trouble shooting

Note : following is a simple analysis of the failures

- (1) see page 9 the heating capacity and performance of the unit varies with ambient and different models. This curve is just for reference when the unit works in different working conditions.
- (2) Please refer to page 10 for the failures and solutions of all the failure codes.

10.3 Not enough heating

Heat pump works normally but there is no or insufficient heating.

- (1) first check the ambient temperature, water temperature, refer to the performance curve, estimate the related heating capacity, power input.
- (2) Check if it has ventilation obstacle.
- (3) Check the general power supply is correct and if the refrigerant inside is enough.
solution : find the gas leakage and recharge the unit.
- (4) Lots of ice formation on evaporator.
solution : check the defrosting parameter setting from the wire controller.

10.4 heat pump do not work

The display do not light up and the fan, compressor do not start.

Possible reason : no electrical power supply

Solution : check the power supply, wiring, fuses...

10.5 abnormal lots of ice formed on evaporator

The evaporator is covered with ice, the unit does not start its defrosting function.

- (1) insufficient air flow : check the location of the heat pump and remove any dirt on the evaporator.
- (2) Incorrect setting of automatic defrost control : check the parameter setting.
- (3) Not enough refrigerant : contact refrigerant technician to check the heat pump
- (4) check if the evaporator temperature sensor, 4-way-valve or the controller is not connected properly or fails to work. Replace the broken components if needed.

Figure 4-1 : Error code, failures and solutions

Code	Error	Analyse	Solution
EE 1	Water temperature sensor failure	Sensor fail. Sensr is disconnected, or short-circuit	Check the value of sensor and change it Check the wiring connection of sensor
EE 2	Ambient temperature sensor failure		
EE 3	Compressor exhaust temperature failure		
EE 4	Evaporator temperature sensor failure		
EE 5	Compressor return sensor failure		
EE 6	Water 2 temperature sensor	(cancel)	
EE 7	Water flow protection	Insufficient water flow	Check water flow or water-flow-switch itself
EE 8	Wire control communication error	Signal cable of wire control is loose	Check the connection of signal cable
EE 9	High pressure protection	protector is disconnected, or defective. Refrigerant pressure failure	Water temperature is too high Ambient temperature is too high Capillary is blocked Call a refrigerating engineer who will do the necessary controls of the circuit pressure
EE a	Low pressure protection	protector is disconnected, or defective. Refrigerant pressure failure	Capillary is blocked, refrigerant leakage Call a refrigerating engineer who will do the necessary controls of the circuit pressure
EE b	Compressor over-heat protection Compressor exhaust temperature is more than 105°C.	Environment problem Refrigerant leakage Capillary is half blocked	

1) Alarm sensor (EE1, EE2, EE3, EE4, EE5, EE6)

Cause	Troubleshooting	remedy
Sensor fault alternatively cable fault.	<ul style="list-style-type: none"> * When reading the resistance of the sensors, the sensor leads must first be disconnected from the control equipment or terminal block. * First take a reading from the sensor including cable and check against the temperature sensor resistance table. * If the read off value does not correspond with the table, only measure the sensor and check the table. 	<p>If the sensor gives a correct value, the cable is defective, check if cable is broken.</p> <p>If the sensor does not give a correct value, the sensor is defective, replace it.</p>

2) Message: EE7 (water flow protection)

Cause	Troubleshooting	remedy
Water flow switch fault.	<p>Check what the water-flow-switch shows. Is it a plausible/actual value?</p> <p>Measure the connection of sensor.</p>	<p>If the water-flow-switch is defective, replace it.</p>
No or insufficient water circulation in the heating system.	<p>Check:</p> <ul style="list-style-type: none"> * That the circulation pump spins * That the shut-off valves are open. * That the strainer is not blocked. * That there is no air in the heating system. 	<p>The circulation pump may have jammed. If so, open the bleed screw and try to release the paddle wheel using a screwdriver for example.</p> <p>Open closed valves or taps.</p> <p>Check, and, if necessary, clean the strainer.</p> <p>If necessary, bleed the heating system according to the installation instructions</p>

3) Message: EEB (communication error between wire controller and PCB)

Cause	Troubleshooting	remedy
Cable is broken or connector is loose or wet.		Check cable and loose.

4) Message: EE9 (high pressure protection). Compressor is stopped.

Cause	Troubleshooting	remedy
Closed or partially closed electrical expansion valve/capillary in the refrigerant system.	Check that the thermostats/valves in the refrigerant system is open.	Open closed thermostats/valves.
The circulation pump that is defective or has jammed.	Is there voltage to the circulation pump?	Check if there is voltage to the circulation pump, if there is, and it does not run, the circulation pump is jammed. If this is the case, open the bleed screw and try to release the paddle wheel using a screwdriver for example.
Cable break or loose cable to high pressure switch	<ul style="list-style-type: none"> * Check that both cables are connected to the pressure switch. * Using the buzzer, check that there are no cable breaks. In order to do this, disconnect the cables from the pressure switch and circuit board. 	<p>If a cable has come loose, reconnect it.</p> <p>If there is a cable break, replace the cable.</p>
Overfilled refrigerant circuit.	Using manometer apparatus and thermometer, check that the unit's overheating is correct for the specific refrigerant.	Follow the correct procedure (depending on type of refrigerant) to add/remove the correct amount of refrigerant.
Blocked condenser on the water side.	<p>If there is no strainer in the heating water system, there is a risk of dirt sticking in the condenser and blocking it. Unfortunately there is no easy way of checking if the condenser is blocked.</p> <p>You can carry out a test by allowing the compressor and circulation pumps to remain in operation and after a while, check that the pressure pipe becomes hot and that the circulation pumps work (for circ.pumps with a bleed screw, unscrew it and feel if the pump rotor rotates using a screwdriver).</p> <p>Then read the temperature on both connection pipes to the condenser: If the temperature difference is <5°C, the condenser is not blocked. If the temperature difference is >13°C, the condenser is probably blocked.</p>	<p>If the condenser is thought to be blocked, try flushing it. If this does not work, it must be replaced.</p>
Blocked condenser on the refrigerant side.	Using manometer apparatus and thermometer, check that the unit's overheating is correct for the specific refrigerant.	<p>If the condenser is thought to be blocked by oil for example, try blowing nitrogen through it to release the oil. If this does not work, it must be replaced</p>

5) Message: EE a (low pressure protection) Compressor is stopped.

Cause	Troubleshooting	remedy
Lack of refrigerant.	Using manometer apparatus and thermometer, check that the unit's overheating is correct for the specific refrigerant.	Follow the correct procedure (depending on type of refrigerant) to add the correct amount of refrigerant. If there appears to be a leak in the refrigerant circuit, carry out leak tracing and any necessary corrective action.
Electronic expansion valve/capillary defective or incorrectly set.	* Using manometer apparatus and Thermometer check what the over heating reading of the unit is. * Also check that bulb and capillary tube are undamaged and that the bulb is correctly installed.	If the overheating reading does not correspond with the instructions for the specific refrigerant, adjust the expansion valve until the correct value is obtained. See separate instructions for cooling techniques. If overheating cannot be adjusted with the expansion valve or if the capillary tube/bulb is damaged, replace it.
Cable break or loose cable on low pressure switch	* Check that both cables are connected to the pressure switch. * Using the buzzer, check that there are no cable breaks. In order to do this, disconnect the cables from the pressure switch and circuit board.	If a cable has come loose, reconnect it. If there is a cable break, replace the cable.

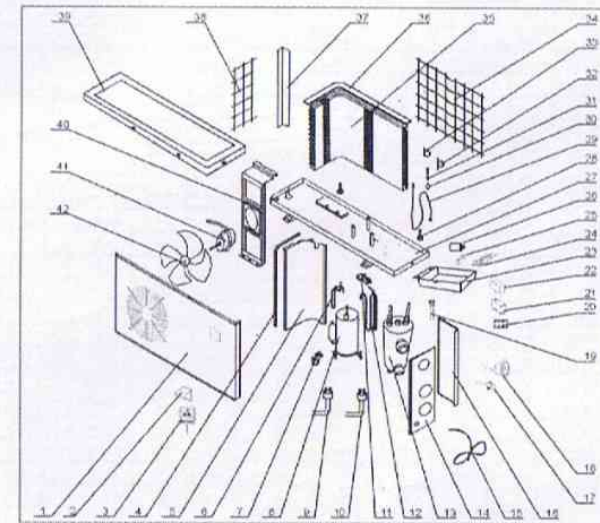
5) Message: EEb (compressor over-heat protection)

Cause	Troubleshooting	remedy
Lack of refrigerant, not enough refrigerant in the system.	Using manometer apparatus and thermometer, check that the unit's overheating is correct for the specific refrigerant.	Follow the correct procedure (depending on type of refrigerant) to add the correct amount of refrigerant. If there appears to be a leak in the refrigerant circuit, carry out leak tracing and any necessary corrective action. If leak tracer is not available, brush soap water on the suspected leak and look for bubbles. Also check for oil as this can come out from the refrigerant circuit.

★ unit noise

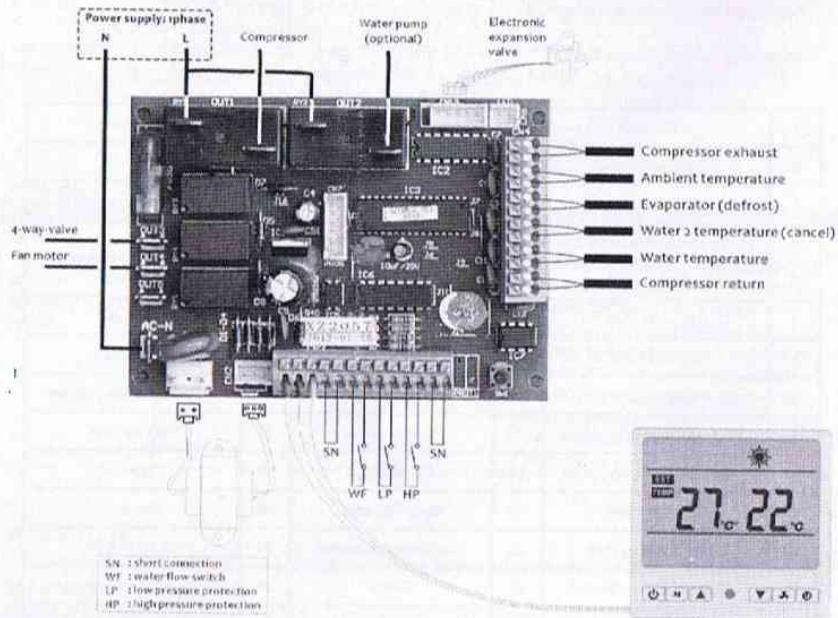
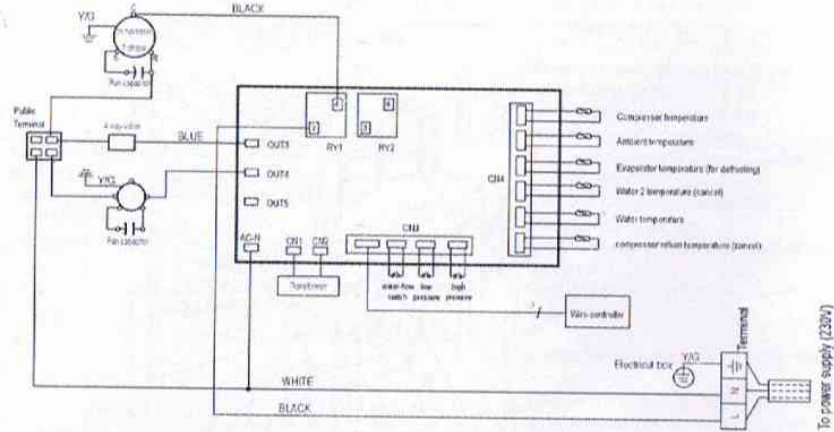
Solution : check if the unit is installed properly, and with the rubber vibration absorbing mountings.
Check if there is no rubber gasket between the outdoor fan and the front panel.
Check if the water circulating system works properly.

11 Explosive View



1	Front panel	15	Power cord	29	Defrost sensor
2	Control panel cover	16	Right ear board	30	Filter
3	Wire controller	17	Refrigerant charge valve	31	One way valve
4	Wedge board polyfoam	18	Pressure manometer	32	Auxiliary capillary
5	Wedge board	19	Mouth of injecting gas	33	Capillary
6	Exhaust pipe	20	Terminal	34	Rear net
7	Solenoid valve	21	AC contactor	35	Condenser
8	Compressor	22	Creepage switch	36	Condenser top polyfoam
9	High pressure interruptor (optional)	23	Electrical Box	37	Left carriage
10	Low pressure interruptor (optional)	24	Circuit Board	38	Left net
11	Four way valve	25	Motor Capacitor	39	Top cover
12	Gas returning pipe	26	Compressor capacitor	40	Motor bracket
13	Titanium heat exchanger	27	Frame	41	Fan motor
14	Right size board	28	Feet	42	Fan

12 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.

Temperature sensor resistance table

1 compressor exhaust temperature sensor resistance $t^{\circ}\text{C} - \text{k}\Omega$ 50 k

$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)
-30	866.96	-7	234.08	16	75.001	39	22.677	62	11.487	85	5.2629
-29	815.70	-6	222.02	17	71.625	40	26.578	63	11.083	86	5.0974
-28	767.21	-5	210.69	18	68.416	41	35.528	64	10.694	87	4.9379
-27	722.87	-4	199.98	19	65.368	42	24.524	65	10.321	88	4.7842
-26	680.87	-3	189.86	20	62.474	43	23.566	66	9.9628	89	4.6359
-25	641.59	-2	180.34	21	59.719	44	22.648	67	9.6187	90	4.4931
-24	604.82	-1	171.33	22	57.104	45	21.773	68	9.2882	91	4.3552
-23	570.34	0	162.81	23	54.620	46	20.935	69	8.9706	92	4.2222
-22	538.03	1	154.78	24	52.253	47	20.134	70	8.6655	93	4.0939
-21	507.74	2	147.19	25	50.000	48	19.368	71	8.3723	94	3.9700
-20	479.34	3	140.00	26	47.857	49	18.635	72	8.0903	95	3.8506
-19	452.68	4	133.21	27	45.817	50	17.932	73	7.8193	96	3.7351
-18	427.67	5	126.79	28	43.877	51	17.260	74	7.5586	97	3.6238
-17	404.17	6	120.72	29	42.027	52	16.616	75	7.3077	98	3.5162
-16	382.11	7	114.96	30	40.265	53	16.001	76	7.0667	99	3.4123
-15	361.35	8	109.51	31	38.585	54	15.410	77	6.8345	100	3.3120
-14	341.86	9	104.34	32	36.987	55	14.844	78	6.6109	101	3.2150
-13	323.53	10	99.456	33	35.462	56	14.302	79	6.3960	102	3.1214
-12	306.29	11	94.826	34	34.007	57	13.782	80	6.1890	103	3.0310
-11	290.06	12	90.426	35	32.619	58	13.284	81	5.9894	104	2.9435
-10	274.78	13	86.262	36	31.297	59	12.807	82	5.7976	105	2.8589
-9	260.44	14	82.312	37	30.034	60	12.354	83	5.6126	106	2.7772
-8	246.85	15	78.561	38	28.827	61	11.909	84	5.4346	107	2.6982

2 water/ambient/evaporator temperature sensor resistance $t^{\circ}\text{C} - \text{k}\Omega$ 5 k

$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)	$t^{\circ}\text{C}$	R(K Ω)
-20	37.4111	-7	19.6768	6	10.9033	19	6.3328	32	3.8354	45	2.4091
-19	35.5384	-6	18.7693	7	10.4393	20	6.0846	33	3.6961	46	2.3276
-18	33.7705	-5	17.9092	8	9.9987	21	5.8475	34	3.5626	47	2.2493
-17	32.1009	-4	17.0937	9	9.5794	22	5.6210	35	3.4346	48	2.1740
-16	30.5237	-3	16.3203	10	9.1801	23	5.4046	36	3.3120	49	2.1017
-15	29.0333	-2	15.5866	11	8.7999	24	5.1978	37	3.1943	50	2.0320
-14	27.6246	-1	14.8903	12	8.4377	25	5.0000	38	3.0815	51	1.9651
-13	26.2927	0	14.2293	13	8.0925	26	4.8109	39	2.9733	52	1.9007
-12	25.0330	1	13.6017	14	7.7635	27	4.6300	40	2.8694	53	1.8387
-11	23.8412	2	13.0055	15	7.4498	28	4.4569	41	2.7697	54	1.7790
-10	22.7133	3	12.4391	16	7.1506	29	4.2912	42	2.6740	55	1.7216
-9	21.6456	4	11.9008	17	6.8652	30	4.1327	43	2.5821	56	1.6663
-8	20.6345	5	11.3890	18	6.5928	31	3.9808	44	2.4939	57	1.6131