
MDV Swimming Pool Type Heat Pump Water Heater Technical Manual



Applicable Models:

LRSJ-60/NYN1

LRSJ-80/NYN1

LRSJ-120/NYN1

LRSJ-140/NYN1

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Part 1

General Information

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1. Measurements

Model	Dimension (mm: W*H*D)	Net weight / Gross weight (kg)	Power Supply
CE-LRSJ-60/NYN1	1015*705*385	64/73	220~240V-1ph-50Hz
CE-LRSJ-80/NYN1	1015*705*385	66/77	220~240V-1ph-50Hz
CE-LRSJ-120/NYN1	1050*855*315	75/85	220~240V-1ph-50Hz
CE-LRSJ-140/NYN1	1050*855*315	75/85	220~240V-1ph-50Hz

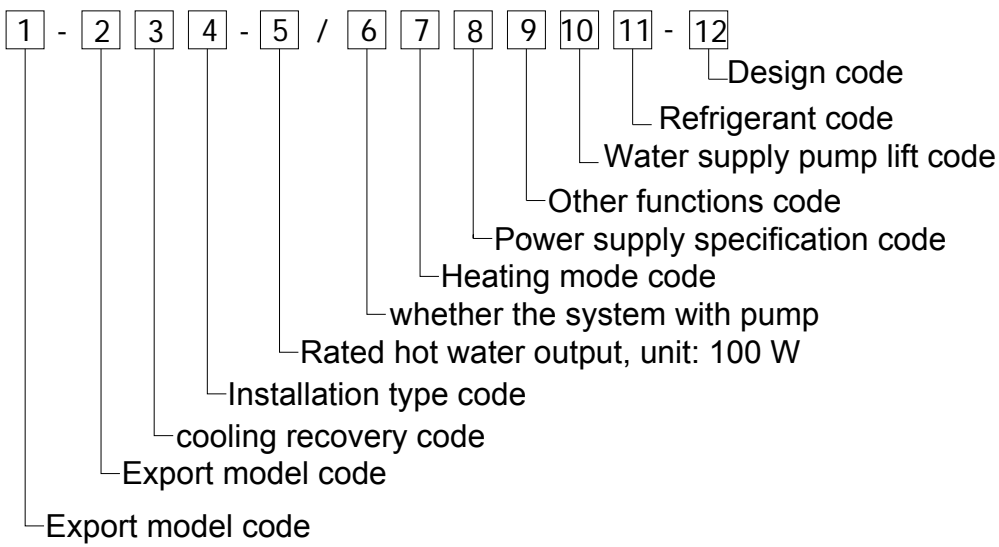
2. External Appearance

LRSJ-60/NYN1 LRSJ-80/NYN1 LRSJ-120/NYN1 LRSJ-140/NYN1

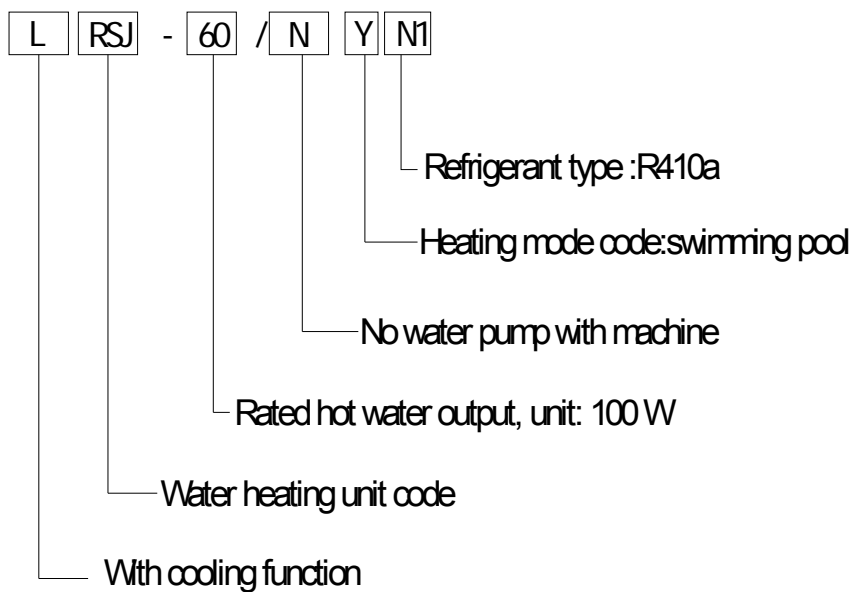


3. Nomenclature

Household Water Heating Unit



For example:



4. Features

4.1 Titanium heat exchanger

- a. Excellent prevent eroding material,keep the machine long life.
- b. High energy efficiency.

4.2 LCD display and build in high pressure meter in refrigerant side

User can see the machine running parameter and the state quickly.

Engineer can see the machine discharge pressure quickly, get hold of the machine running reliability .

4.3 About the 3-minute protection

Restart or open the manual switch after the unit has shut, down. Unit will not start immediately until 3 minutes later,because of the self-protect function of the compressor.

4.4 Dsfrosting function

In case of the unit requiring deicing during heating operation,TO prevent the heating efficiency from decreasing, defrosting operation will turn on automatically (approx. 2~8 minutes) .

In the process of defrosting operation, the unit air supply motor will stop running.

4.5 Safety

- a. Realize isolation between water and electricity. No electric shock problem, more safety.
- b. No fuel tubes and storage, no potential danger from oil leakage, fire, explosion etc.

4.6 Autmatic Control:

Automatic start-up and shutdown, automatic defrosting by revising refrigerant cycle. Save you much extra operation.

4.7 R410a gas, Environmental protection.

- a. No discharge of poisonous gas.
- b. No pollution to atmosphere and environment

4.8 All-the-weather Running.

Within the temperature range from -7 to 38°C, it will not be affected by night, cloudy sky, rain even snow whether.



Part 2

Outdoor Units

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1. Specifications

HPWH SPECIFICATION						
Model			CE-LRSJ-60/NYN1	CE-LRSJ-80/NYN1	CE-LRSJ-120/NYN1	CE-LRSJ-140/NYN1
Power supply		Ph-V-hz	220-240V 50Hz 1Ph	220-240V50Hz1Ph	220-240V 50Hz 1Ph	220-240V 50Hz 1Ph
Water Heating	Capacity	kW	6	8	12	14
	Input	kW	1.15	1.52	2.40	2.55
	Outdoor ambient temperature		(-7℃~38℃)	(-7℃~38℃)	(-7℃~38℃)	(-7℃~38℃)
Water Cooling	Capacity	kW	4.0	5.8	8.4	10.35
	Input	kW	1.25	1.5	2.4	2.9
	Outdoor ambient temperature		(15℃~43℃)	(15℃~43℃)	(15℃~43℃)	(15℃~43℃)
COP			5.2	5.3	4.9	5.3
Max power		kW	1.45	1.9	3.3	3.5
Outdoor noise level		dB(A)	58	58	58	58
Refrigerant type/Quantity		Kg	R410A/1.0	R410A/1.25	R410A/1.6	R410A/1.85
Heat exchanger	Heat exchanger material		Titanium-tube thermal exchanger	Titanium-tube thermal exchanger	Titanium-tube thermal exchanger	Titanium-tube thermal exchanger
	Water inlet and outlet pipe diameter	mm	DN50	DN50	DN50	DN50
	Drain pipe diameter	mm	DN25	DN25	DN25	DN25
	Max. pressure	MPa	0.4	0.4	0.4	0.4
Air side exchanger	Fin type		Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium	Hydrophilic aluminium
	Tube outer type		innergroove tube	innergroove tube	innergroove tube	innergroove tube
	Air outflow mode		air flow from rear	air flow from rear	air flow from rear	air flow from rear
Outdoor unit	Dimension (W*H*D)	mm	1015*705*385	1015*705*385	1050*855*315	1050*855*315
	Packing (W*H*D)	mm	1095*755*455	1095*755*455	1170*905*410	1170*905*410
	Net/Gross weight	kg	64/73	66/77	75/85	75/85
Water contented capacity (m3)			40.0	50.0	60~85	75~100
Hot Water Yield		m ³ /h	2.3	2.8	3.8	3.8
Wire controller			KJRH-90B/E	KJRH-90B/E	KJRH-90B/E	KJRH-90B/E
Water Heating Outwater Temp		℃	11℃~35℃	11℃~35℃	11℃~35℃	11℃~35℃
Water Cooling Outwater Temp		℃	6℃~30℃	6℃~30℃	6℃~30℃	6℃~30℃
Compressor current protection value		A	10	12	20	22

Remark:

1. The test conditions: outdoor temp.

Water Heating: outdoor temp. 24/19℃(DB/WB), inlet water temp. 27℃, outlet water temp. 29℃

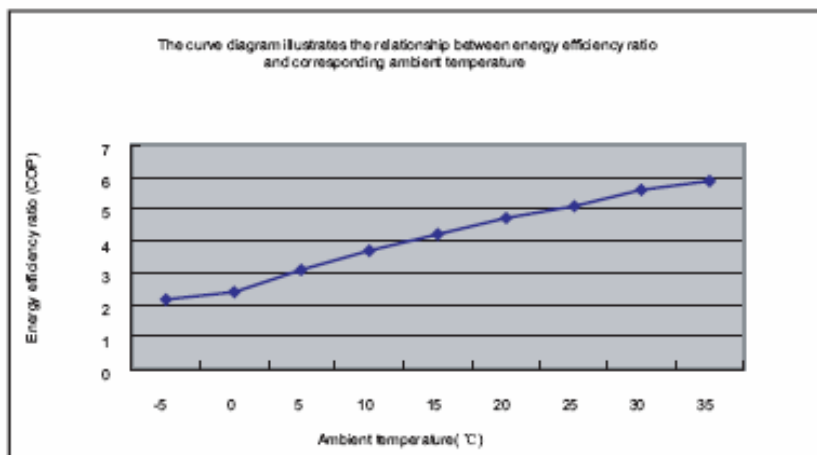
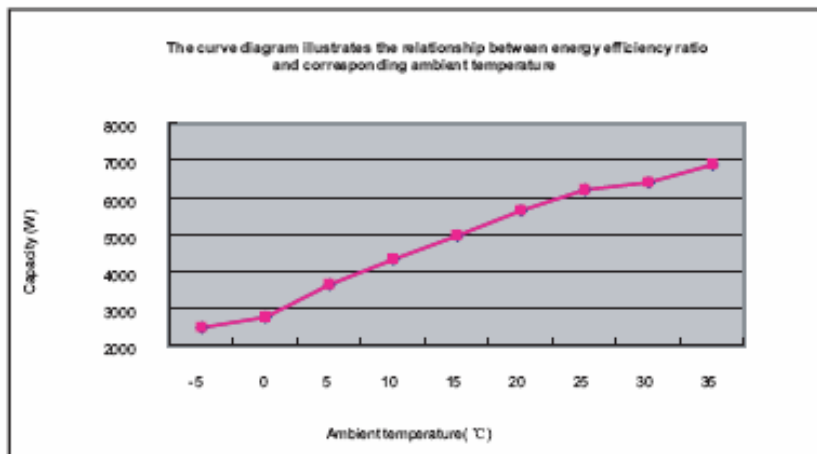
Water Cooling: outdoor temp. 35/24℃(DB/WB), inlet water temp. 27℃

2. The specification may be changed for product improvement, please refer to the nameplate.

2. Capacity & COP curve

MODEL: 6kW

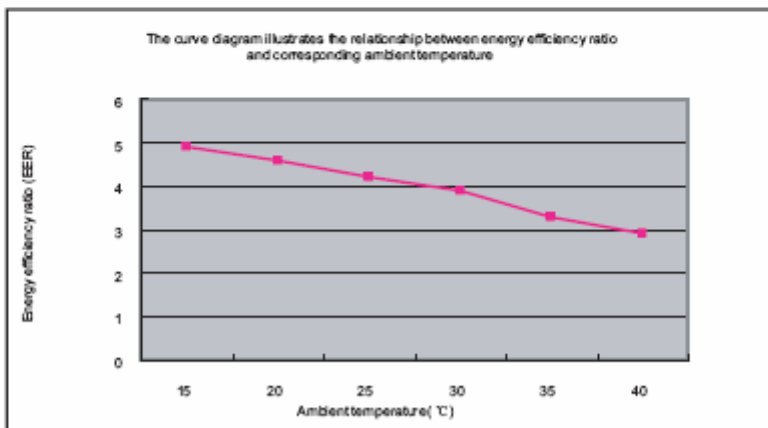
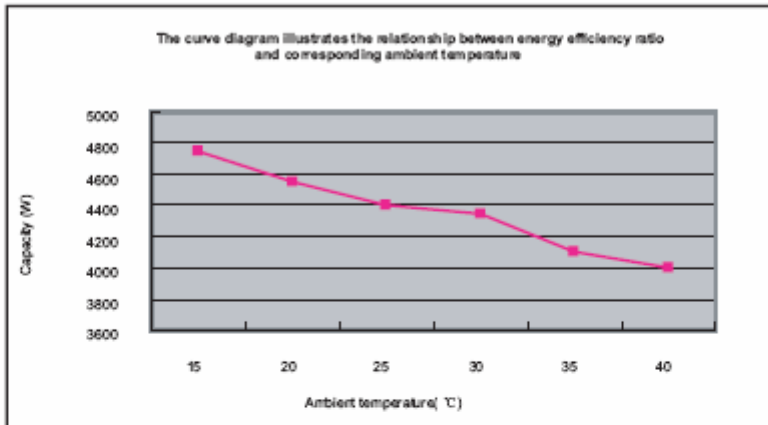
Heating Mode



Test Condition : inlet water temperature of the units is 27°C , outlet water temperature 29°C.

MODEL : 6 kw

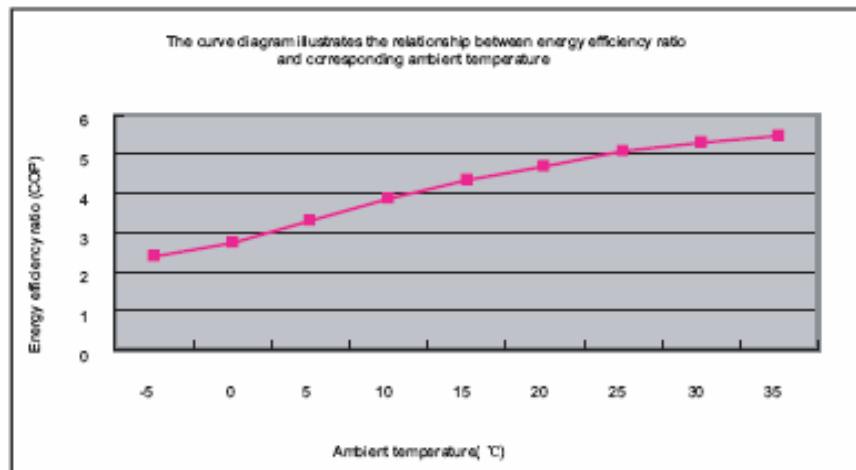
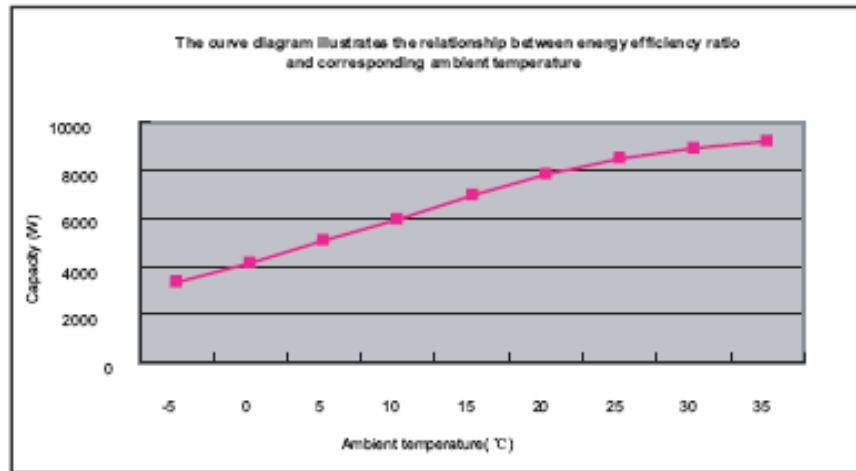
Cooling Mode



Test Condition : inlet water temperature of the units is 27°C , Water flow volumn is 2.6m³/h.

MODEL: 8kW

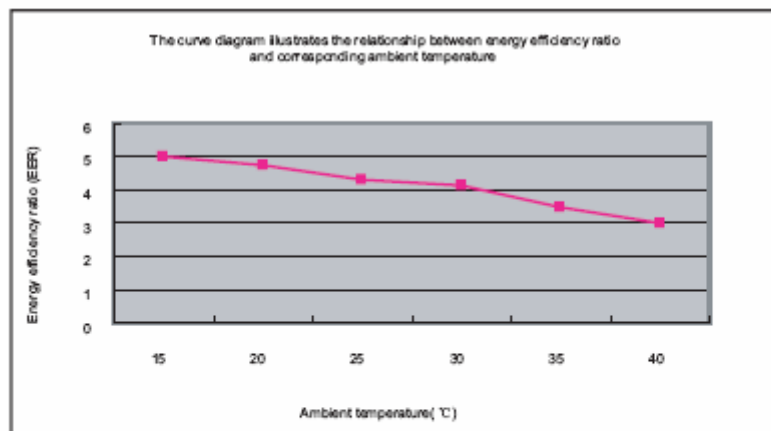
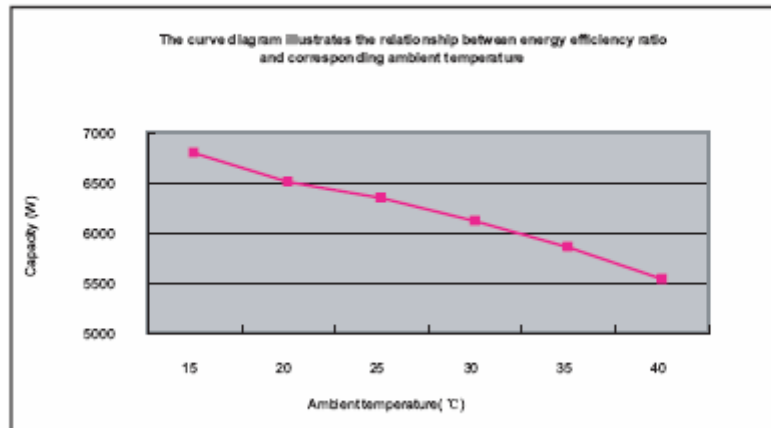
Heating Mode



Test Condition : inlet water temperature of the units is 27°C , outlet water temperature 29°C.

MODEL :8 kw

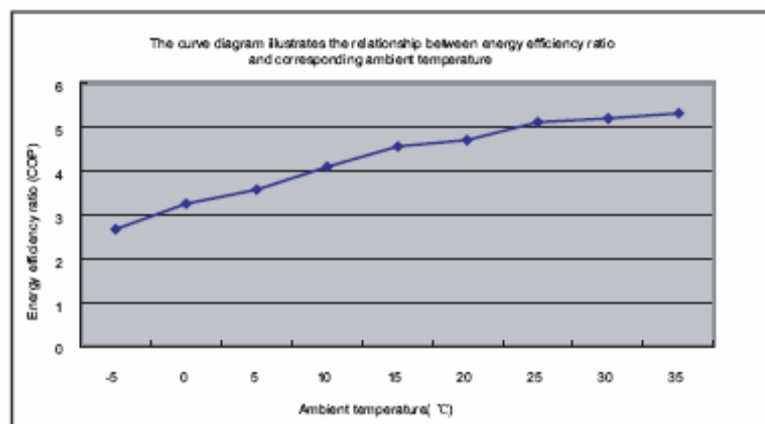
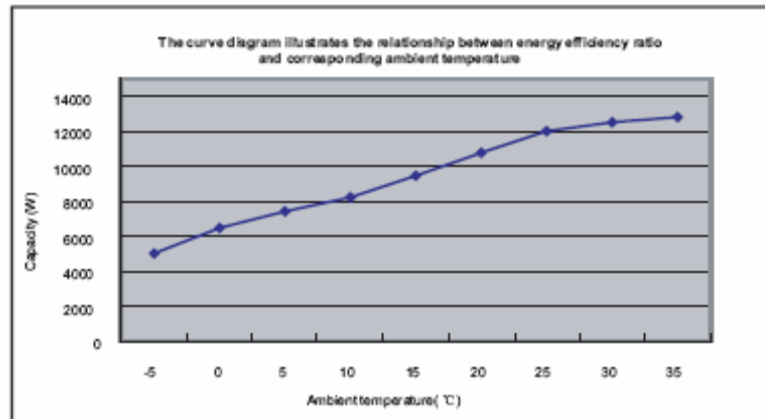
Cooling Mode



Test Condition : inlet water temperature of the units is 27°C , Water flow volumn is 3.5m³/h.

MODEL: 12kW

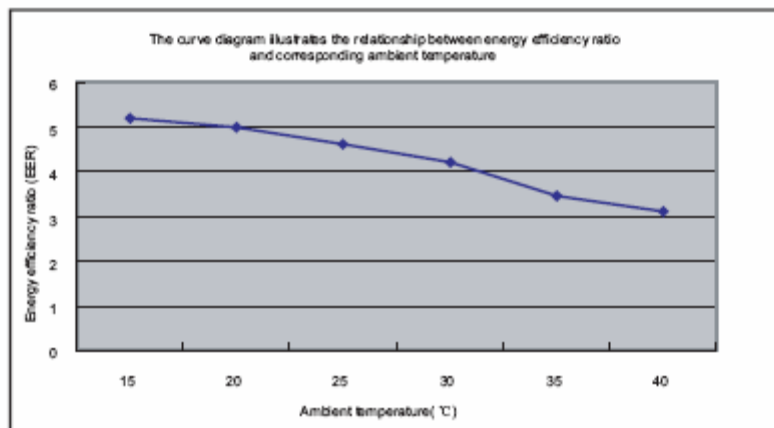
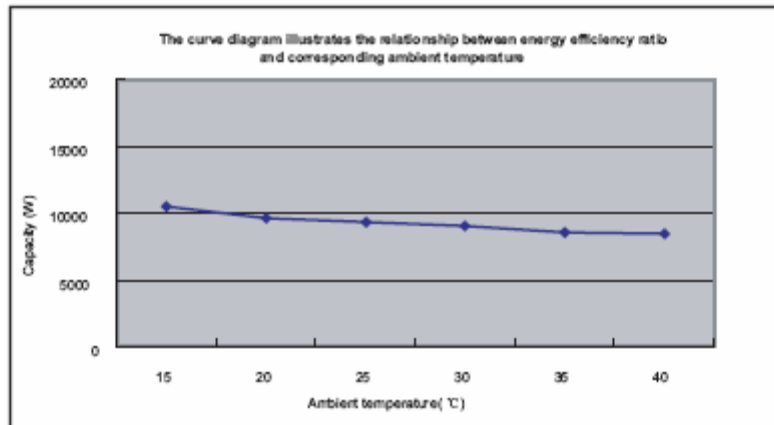
Heating Mode



Test Condition : inlet water temperature of the units is 27°C , outlet water temperature 29°C.

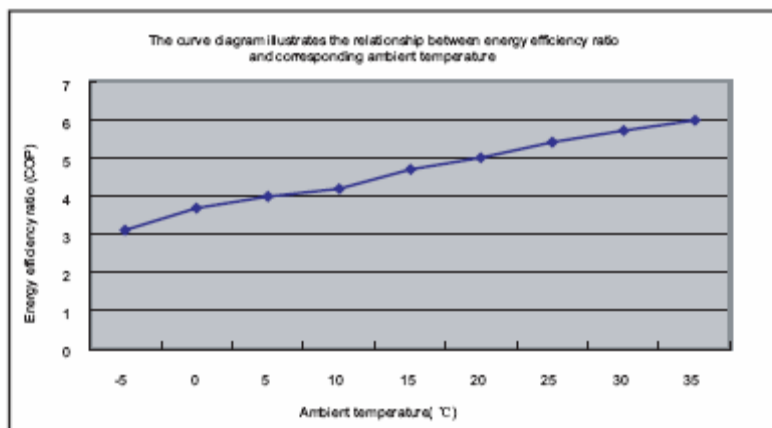
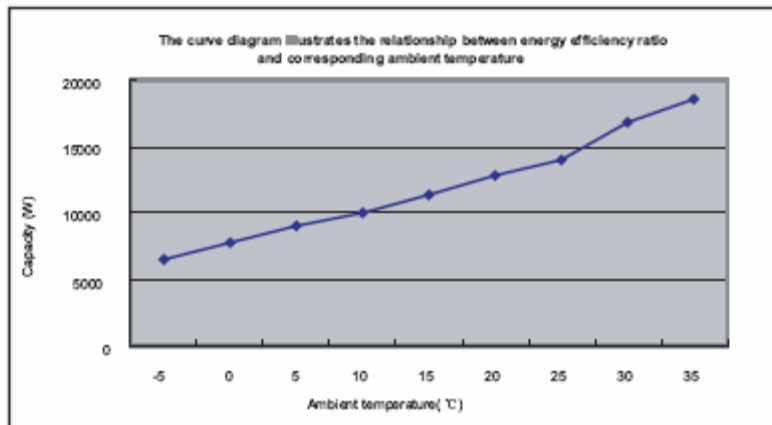
MODEL :12 kw

Cooling Mode



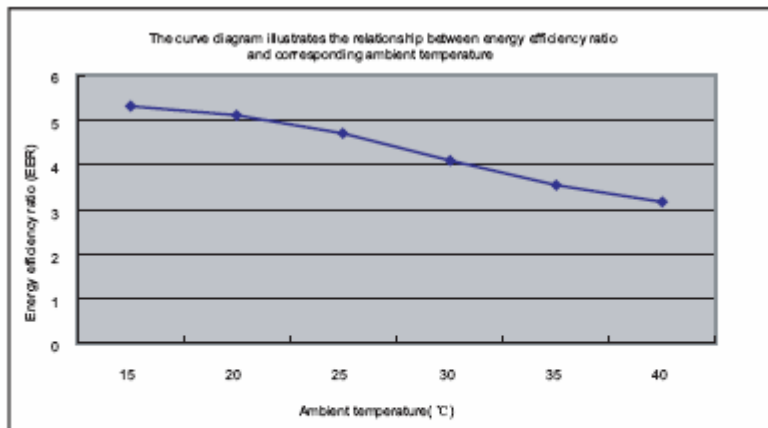
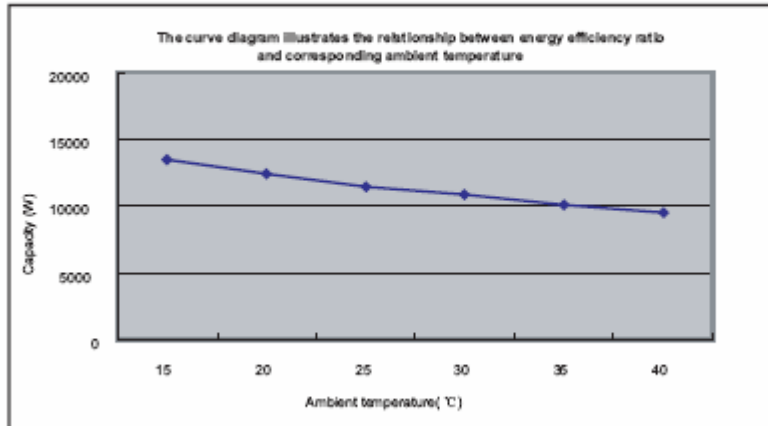
Test Condition : inlet water temperature of the units is 27°C , Water flow volumn is 5.0m³/h.

Heating Mode



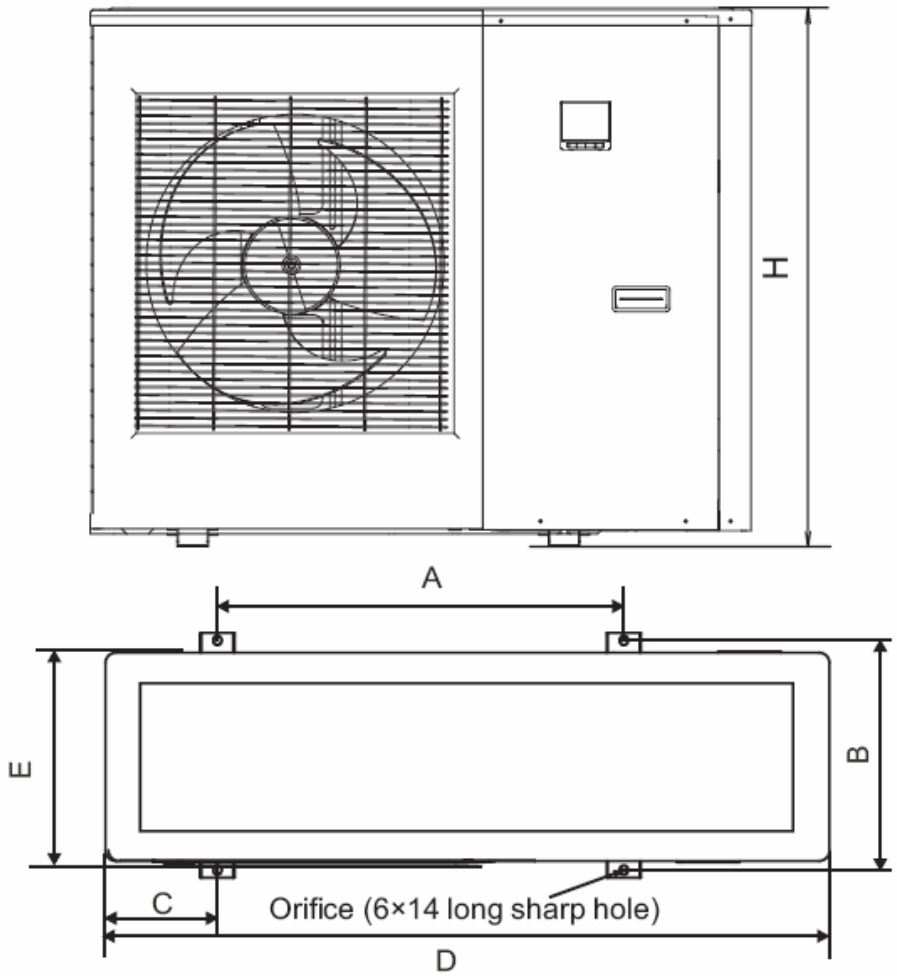
Test Condition : inlet water temperature of the units is 27°C , outlet water temperature 29°C.

Cooling Mode



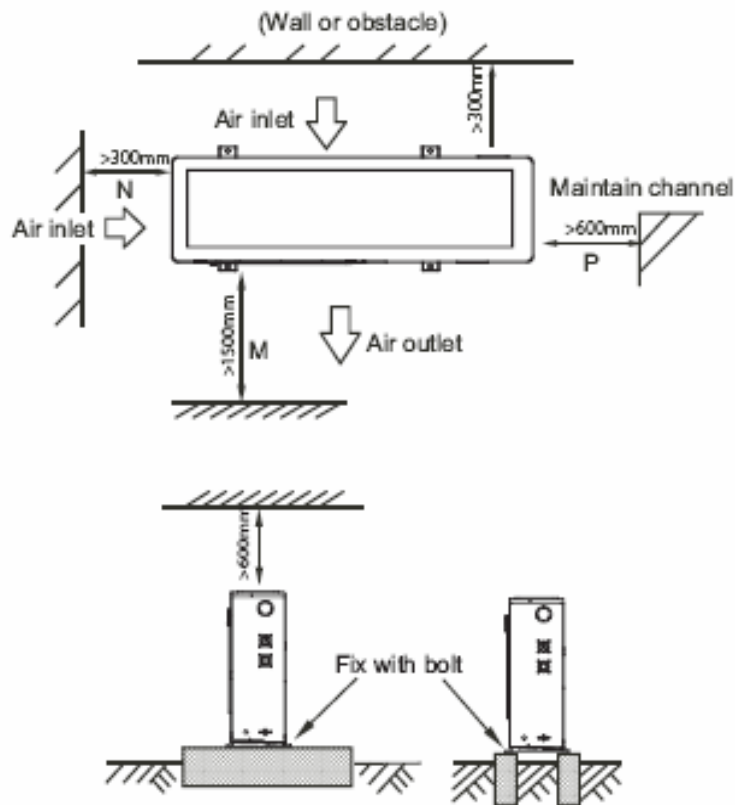
Test Condition : inlet water temperature of the units is 27°C , Water flow volume is 5.8m³/h.

3. Dimensions



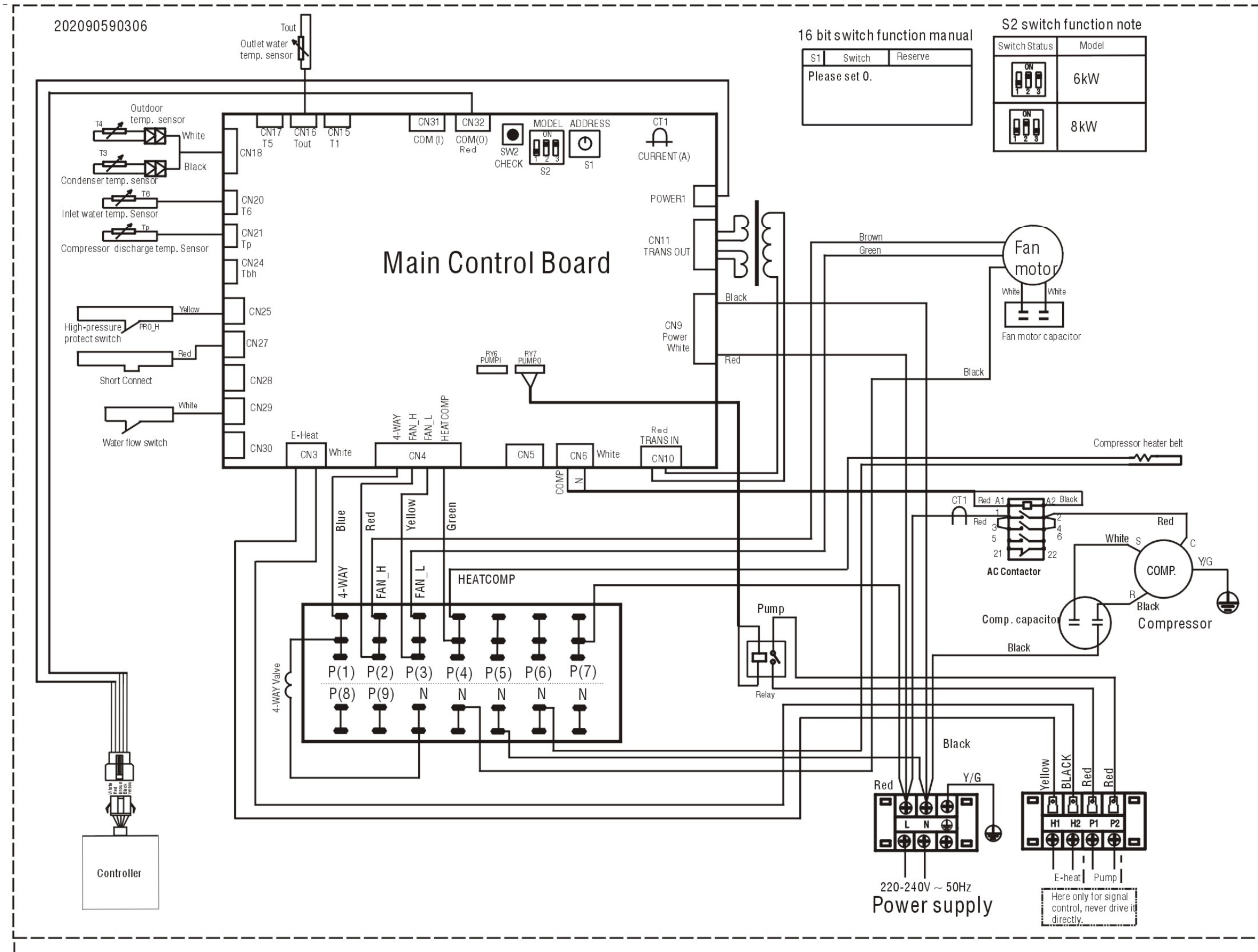
MODEL	6KW 8KW	12KW 14KW
A	610	590
B	390	333
C	170	165
D	1015	1050
E	385	315
H	705	855

4. Service Space

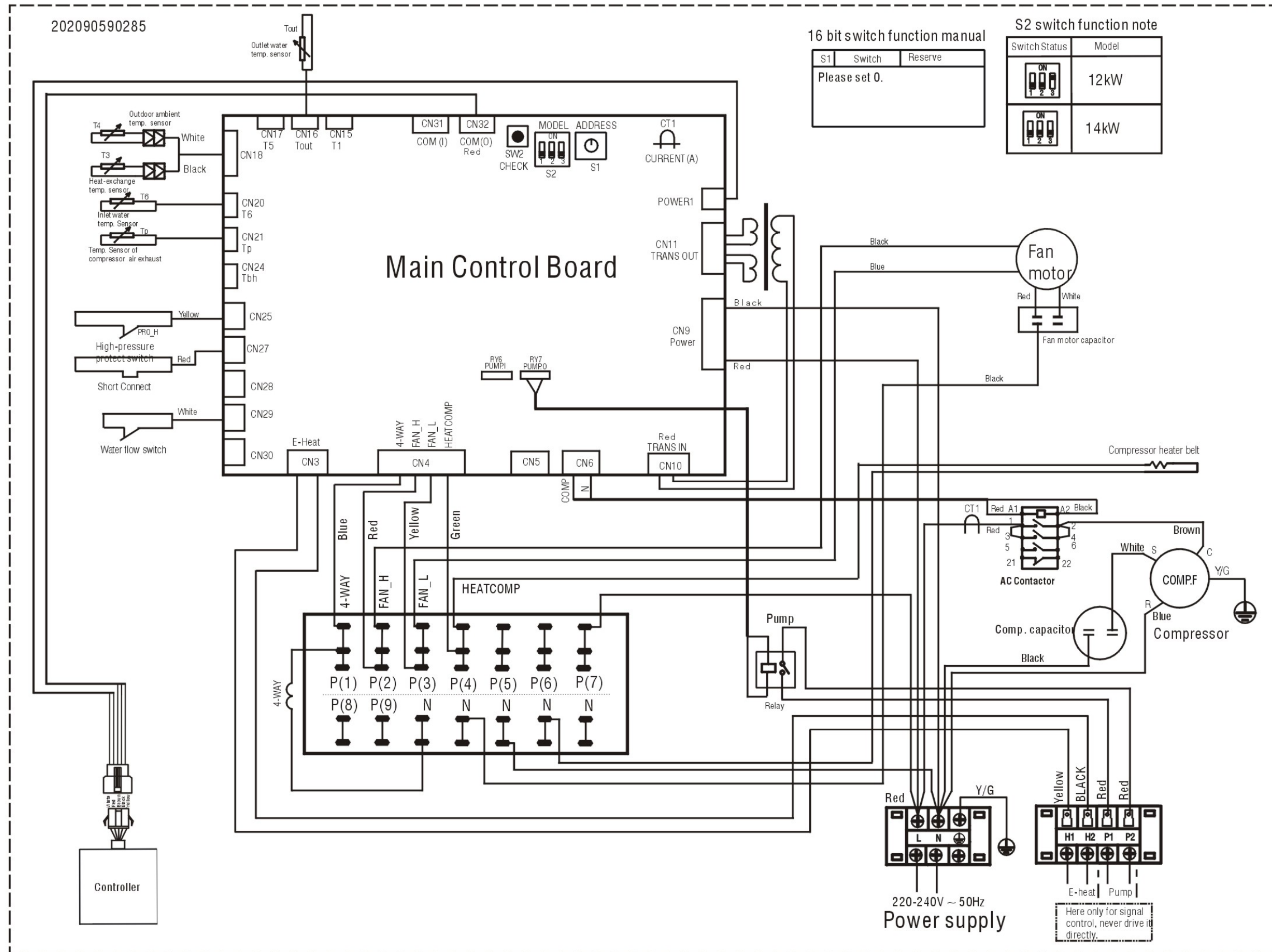


5. Wiring Diagrams

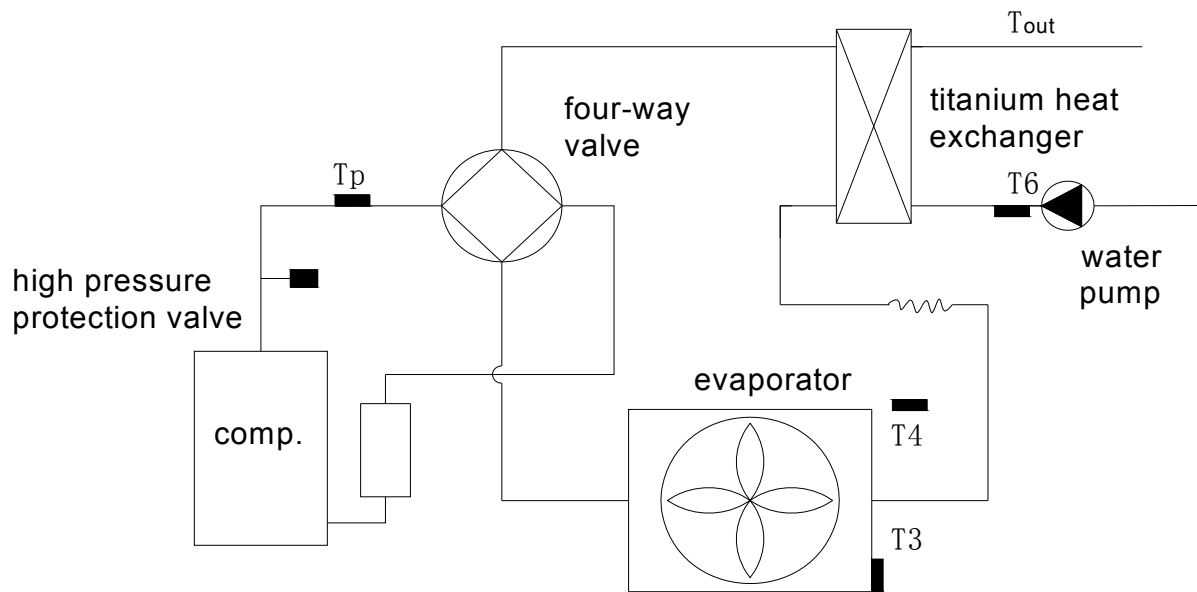
6Kw and 8Kw wiring diagrams:



12Kw and 14Kw wiring diagrams:

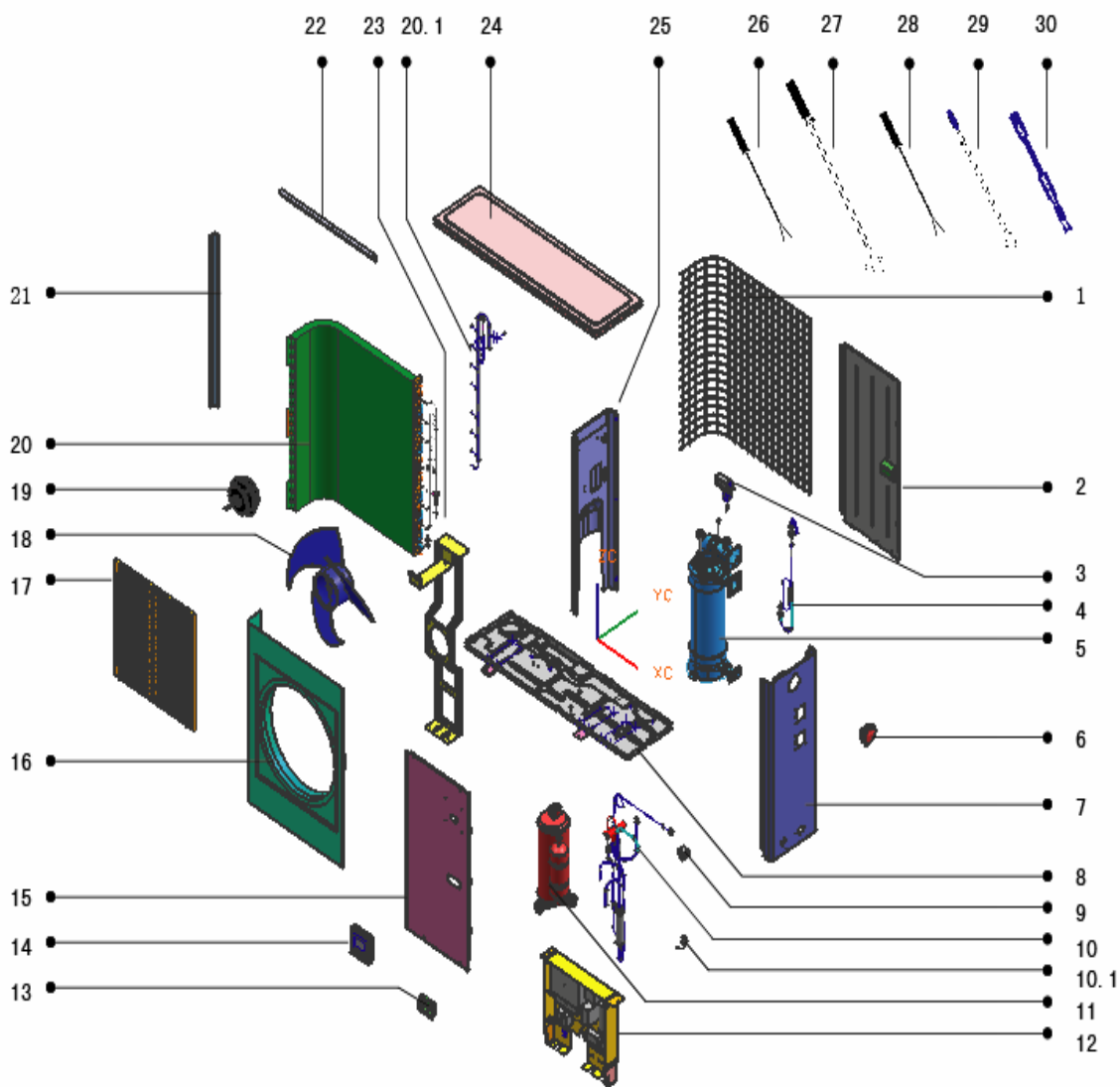
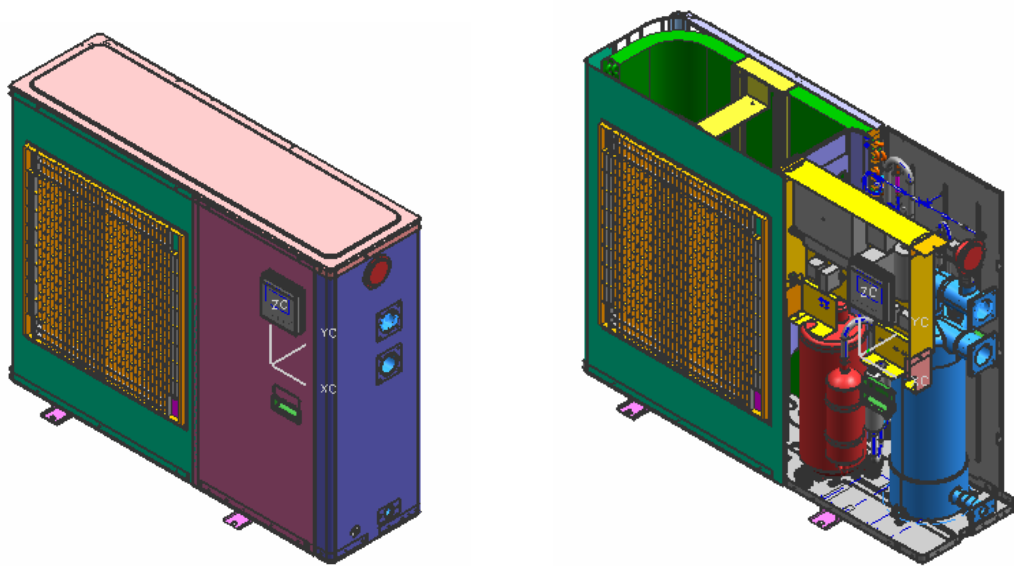


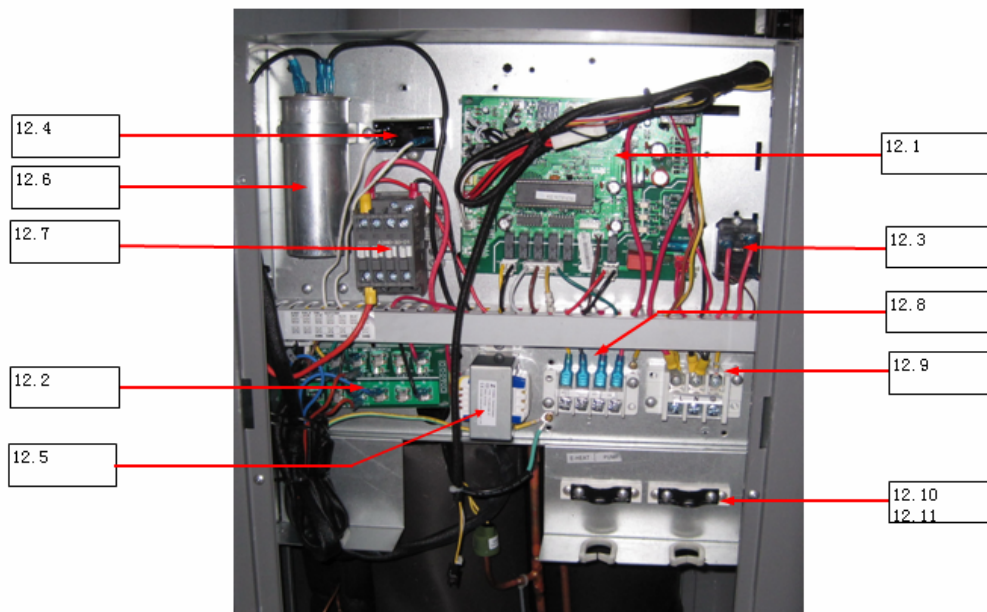
6. System Refrigerant Diagrams



7. Exploded View

MODEL: LRSJ-120/NYN1 & LRSJ-140/NYN1

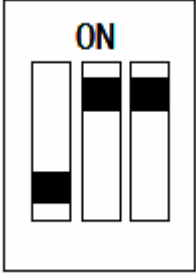
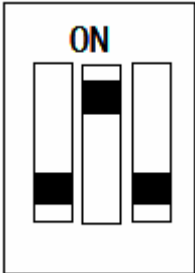
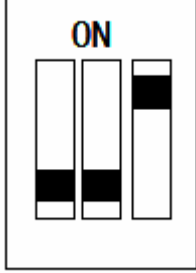
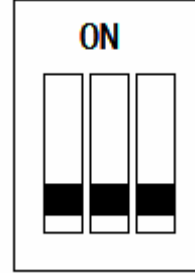




No.	Part Name	Quantity
1	Rear net	1
2	Side board	1
3	Target switch	1
4	Main capillary ass'y	1
5	Titanium heat exchanger	1
6	Hight pressure meter	1
7	right side board	1
8	Base ass'y	1
9	Solenoid	1
10	4-way valve ass'y	1
10.1	Pressure controller	1
10.2	4-way valve	1
10.3	Accumulator tank	1
11	Compressor	1
12	E-part box ass'y	1
12.1	Main controller board ass'y	1
12.2	Middle connection board ass'y	1
12.3	Relay	1
12.4	Motor capacitor	1
12.5	Transformer	1
12.6	Compressor capacitor	1
12.7	Contactior	1
12.8	Wire joint	1

No.	Part Name	Quantity
12.9	Wire joint	1
12.10	Wire clamp	2
12.11	Wire joint	2
13	Handle	2
14	Wire controller	1
15	Front side board	1
16	Front panel	1
17	Grille	1
18	Axial flow fan	1
19	Motor	1
20	Condenser ass'y	1
20.1	Flute shape pipe ass'y	1
21	Left bracket	1
22	Rear supporter	1
23	Motor bracket ass'y	1
24	Cover	1
25	Partition board ass'y	1
26	Temperature sensor	2
27	Temp. sensor ass'y	1
28	Discharge temp sensor ass'y	1
29	room temp sensor ass'y	1
30	Compressor electric heater	1

■ **A : appliance type dial code**

 <p>The diagram shows three vertical bars. The top bar has a black segment at the bottom. The middle bar has a black segment in the middle. The right bar has a black segment at the top.</p>	<p>CE-LRSJ-60/NYN1</p> <p>self-checking address : 0</p>	 <p>The diagram shows three vertical bars. The top bar has a black segment at the bottom. The middle bar has a black segment in the middle. The right bar has a black segment at the bottom.</p>	<p>CE-LRSJ-80/NYN1</p> <p>self-checking address : 1</p>
 <p>The diagram shows three vertical bars. The top bar has a black segment at the bottom. The middle bar has a black segment in the middle. The right bar has a black segment at the top.</p>	<p>CE-LRSJ-120/NYN1</p> <p>self-checking address : 2</p>	 <p>The diagram shows three vertical bars. The top bar has a black segment at the bottom. The middle bar has a black segment in the middle. The right bar has a black segment at the bottom.</p>	<p>CE-LRSJ-140/NYN1</p> <p>self-checking address : 3</p>

Part 3

Installation

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1. Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety instructions are listed to which close attention must be paid.

WARNING

Failure to observe a warning may result in death.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

WARNING

- The water heating unit must be earthed effectively.
- A creepage breaker must be installed near the power supply.
- Ask your supplier for installation of the air source heat pump water heating units. Incomplete installation performed by yourself may result in water leakage, electric shock, or fire.
- Ask your supplier for the repair and maintenance. Incomplete repair and maintenance may result in water leakage, electric shock or fire.
- In order to avoid electric shock, fire or injury, if any abnormality is detected, such as smell of fire, turn off the power supply and call your supplier for instructions.
- Never replace a fuse with that of wrong rated current or other wires when a fuse blows out. Use of wrong wire or copper wire may cause the unit to break down or a fire.
- Do not insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.
- Never use a flammable spray such as hair spray, lacquer paint near the unit. It may cause a fire.
- Never touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may become caught or the unit may break down.
- Never put any objects into the air inlet or outlet. Objects touching the fan of high speed can be dangerous.
- Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.
- The appliance shall be installed in accordance with national wiring regulations.

CAUTION

- Do not use the air-source water heater for other purposes.
- Before cleaning, be sure to stop the operation and turn the breaker off or pull out the power cord. Otherwise, an electric shock and injury may be caused.
- In order to avoid injury, do not remove the fan guard on the outdoor unit.
- Do not operate the air-source water heater with a wet hand. An electric shock may be caused.
- In the place and the wall where water may be splattered, the installation height must be more than 1.8m.
- At the water inlet, the One Way valve must be installed.
- It's normal if some water drips from the hole of PT valve in operation. But, if the water is in a great amount, call your supplier for instructions.
- After a long use, check the unit stand and fittings. If damaged, the unit may fall and result in injury.
- Arrange the drain hose to ensure smooth drainpipe. Incomplete drainpipe may cause wetting of the building, furniture etc.
- Never touch the internal parts of the controller.

-
- Do not remove the front panel. Some parts inside are dangerous to touch, and a machine malfunction may be caused.
 - Never expose babies, plants or animals directly to the air flow. Adverse influence to babies, animals and plants may be resulted.

2. Installation information

- Enough space is installation and maintenance shall be preserved.
- The air inlet and outlet should be free from obstacles and strong wind.
- The bearing surface should be flat, able to bear weight of the unit and suitable for installing the unit horizontally without increasing noise or vibration.
- The operation noise and air flow expelled shall not affect neighbors.
- No flammable gas is leaked nearby.
- It is convenient for piping and wiring.
- The maximum pressure is 0.4 Mpa, when the pressure more than 0.4 Mpa, Please add a pressure relief valve.

CAUTION

- Installing the equipment in any of the following places may lead to malfunction of the equipment (if it is inevitable, consult the supplier):
 - 1) The site contains mineral oils such as cutting lubricant.
 - 2) Seaside where the air contains much salt.
 - 3) Hot spring area where corrosive gases exist, e.g., sulfide gas.
 - 4) Factories where the power voltage fluctuates seriously.
 - 5) Inside a car or cabin.
 - 6) Place like kitchen where oil permeates.
 - 7) Place where strong electromagnetic waves exist.
 - 8) Place where flammable gases or materials exist.
 - 9) Place where acid or alkali gases evaporate.
 - 10) Other special environments.
- Precautions before installation
 - 1) Decide the correct way of conveying the equipment.
 - 2) Try to transport this equipment with the original package.
 - 3) If the unit has to be installed on a metal part of the building, electric insulation must be installed, and the installation must meet the relevant technical standards for electric devices.
- Installation space

Before installing the unit, reserve the space of maintenance .

WARNING

- Ask your supplier to install the air source heat pump water heating units. Incomplete installation performed by yourself may result in a water leakage, electric shock, or fire.
- The place without direct sunlight and other heat supplies. If there's no way to avoid these, please install a covering.
- The unit must be securely fixed, or else, noise and shaking will be resulted.
- Make sure that there's no remora around the unit.
- In the place where there is strong wind like seashore, fix the unit in the location protected from the wind.

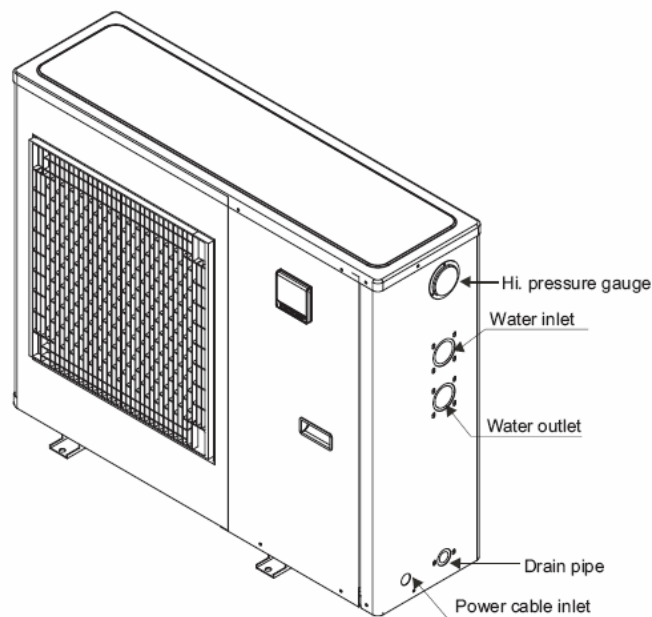
- Carry the unit onto the site
- 1) In order to avoid scratch or deformation of the unit surface, apply guard boards to the contacting surface.
 - 2) No contact of fingers and other things with the vanes.
 - 3) Don't incline the unit more than 45° in moving, and keep it vertical when installing.
- Install the unit.
- 1) The circulating air for every unit should be more than 2400m³/h.
 - 2) Make sure there is enough Installation space.e
 - 3) Outline dimensional drawing

Water treatment

In order to use our appliances under the best conditions, the following parameters must be respected: free chlorine: max. 2.5mg/l, total bromine: max. 5.5 mg/l, PH between 6.9 and 8.0. If chemical or electrophysical disinfection systems are used, the installer and user must contact the supplier to ensure they are compatible with our materials. These systems must be installed after the heating system.

Ingredient	Contented precentage
Free chlorine	Max.2.5 mg/l
Total bromine	Max. 5.5 mg/l
PH	Between 6.9 and 8.0

3. Unit Appearance



MODEL: 6kW 8kW 12kW 14kW

4. Accessories



Check whether the following assemblies are complete.

Name	Quantity	Note	Purpose
Installation & Operation Manual	1	—	Installation and Operation instruction
Seal ring	1	—	Discharge condensate water
Water outlet jointing pipe	1	—	Discharge condensate water

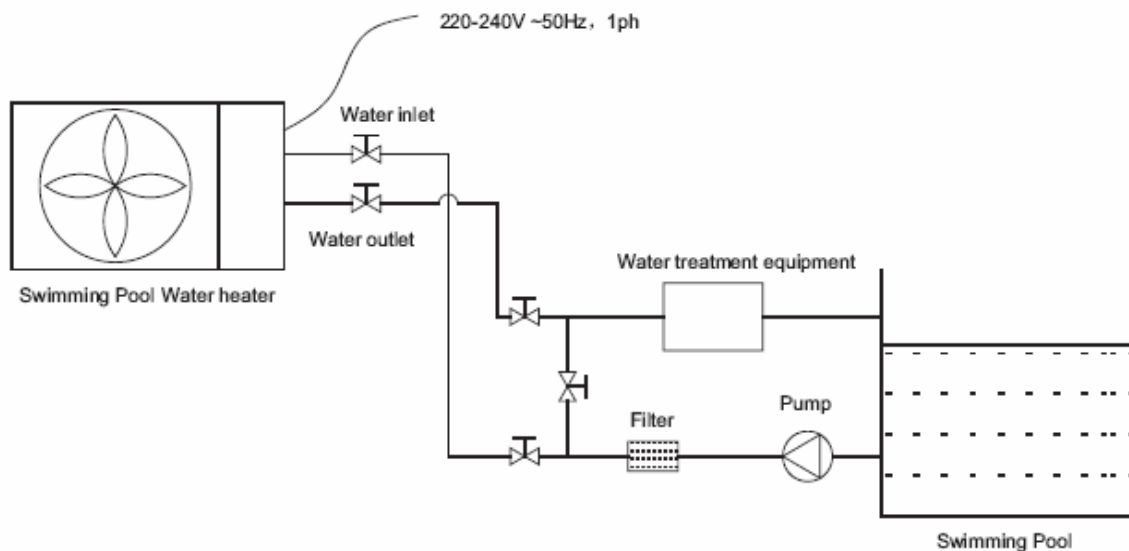
5. Inspecting and Handling the Unit

After delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

-  Fragile, handle the unit with care.
-  Keep the unit upright in order to avoid compressor damage.
- Choose before hand the path along which the unit is to be brought in.
- Move this unit with original package.
- When lifting the unit, always use protectors to prevent belt damage and pay attention to the balance of the unit's gravity.

6. Water pipeline diagram



MODEL: 6kW 8kW 12kW 14kW

Fig.5-2

8.1 Connection is established with a by-pass on the pool filtration circuit after the filter and before the water treatment device (see diagrams upper). In order to connect other heat source

8.2 During installation of connective pipe, you must beware not to let any dust or other foreign substance intrude into pipe system.

8.3 Water inlet and outlet pipes can be installed as long as the water-heating A/C have been fixed.

8.4 Thermal insulation materials should be employed to seal up water outlet and inlet pipes.

8.5 Before operation, please confirm that the specifications of connective pipes are correct, and thermal insulation layer have been wrapped on pipes. It requires that all pipes have been sealed up, and no water leakage has been detected.

8.6 Hydraulic circuit test pressure: 3 bars - Hydraulic circuit operating pressure: 1.5 bar
pressure drop 2.2 mCE (0.22 bar)

7. Water pump selection

Model	Water flow	Recommendatory flow
LRSJ-60/NYN1	0.8~20m ³ /h	3m ³ /h
LRSJ-80/NYN1	0.8~20m ³ /h	4m ³ /h
LRSJ-120/NYN1	1.5~20m ³ /h	5m ³ /h
LRSJ-140/NYN1	1.5~20m ³ /h	5.8m ³ /h

8. Tools required for installation

- 1 set of flat head screwdrivers
- 1 set of crosshead screwdrivers
- 1 cutter
- 1 wire stripper
- 1 pipe or round head spanner 13
- 1 ratchet spanner
- 1 pliers
- 2 straps (for handling)

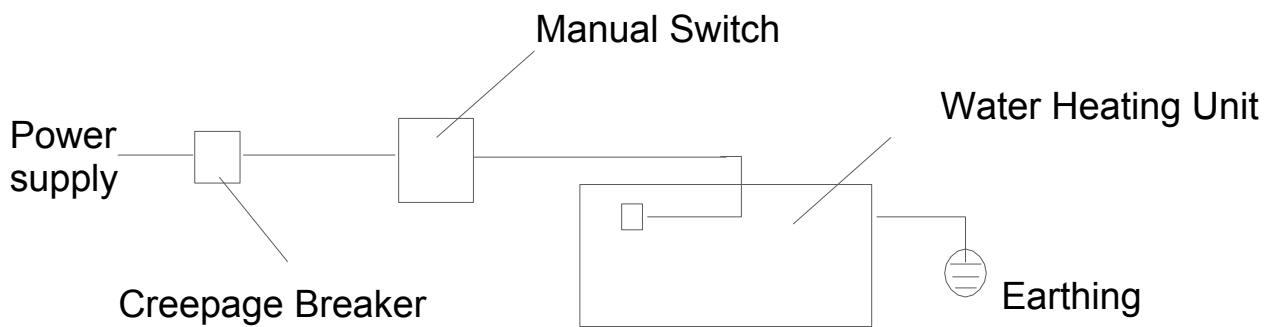
9. Electric connection

9.1 Power specification

Model \ Item	Power Supply	Diameter of the thinnest cable (mm ²) (Metal pipe and synthetic resin pipe wiring)		Manual Switch (A)	
		Size (continuous length < 30 m)	Earthing Wire	Capacity	Fuse
LRSJ-60/NYN1	220~240V-1ph-50Hz	2.5	2.5	≥30	20
LRSJ-80/NYN1	220~240V-1ph-50Hz	2.5	2.5	≥30	20
LRSJ-120/NYN1	220~240V-1ph-50Hz	4.0	4.0	≥30	25
LRSJ-140/NYN1	220~240V-1ph-50Hz	4.0	4.0	≥30	25

9.2 Power Supply Wiring .

A. Power Supply Schematic Diagram



Warning:

Although there is a leakage protector in the electric control box of the unit, for the security reason, it is required that a leakage protection equipped cable and Earthing should be applied for the unit according to the requirement on the above diagram.

B. Cable Diameter Selection

The power supply wiring refers to the wiring to the main line (a) of junction box and the wiring (b) to the power supply equipment. Please select the cable diameter according to the following methods

1) Diameter of the main line (a):

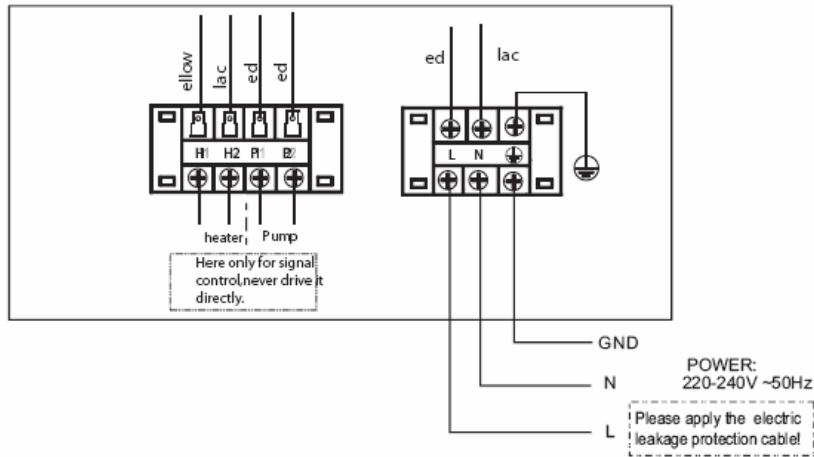
Get from the power supply specification table according to the sum of horsepower of the unit.

2) Diameter of the wiring from the junction box to the power supply equipment:

When the water heaters are less than 5 sets, the diameter the wiring from the junction box to the power supply equipment should be the same as the main line (a); when the water heaters are more than 6 sets, the power supply equipment should have two sets of electric control box and the diameter should be get from the power supply specification table according to the sum of horsepower of the units connected by the electric control box.

9.3 Electric wiring diagram

Electric wiring diagram for Model 6kW 8kW 12kW 14kW



Part 4

Trial Operation

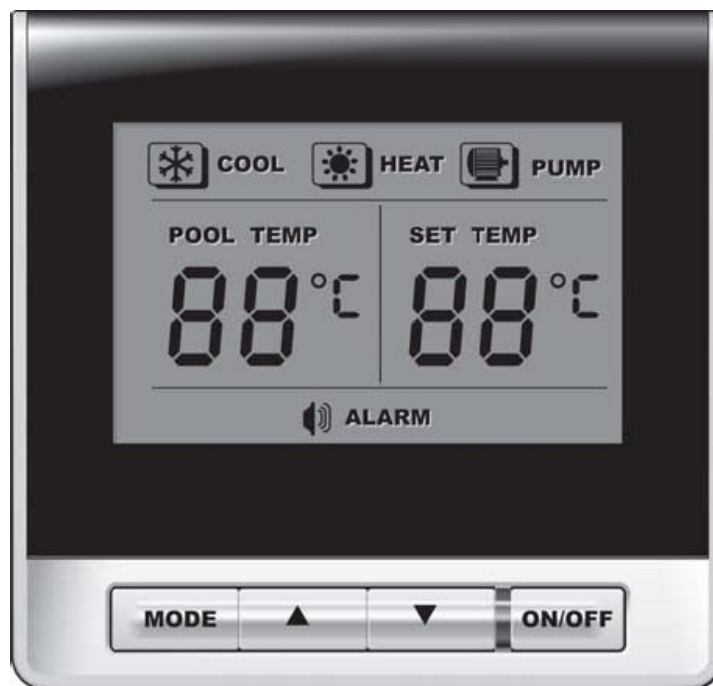
1. Confirmation Before the Trial Operation	34
2. Operating Instruction	34
3. Fault code list.....	
4. Self-checking.....	

1. Confirmation Before the Trial Operation

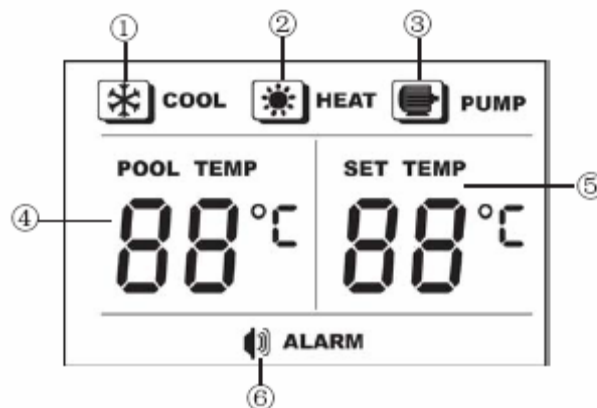
- 1.1 All the installation is complete.
- 1.2 Water heater is installed correctly.
- 1.3 The pipelines and wiring are correct.
- 1.4 The accessories are installed correctly.
- 1.5 The drainage is smooth.
- 1.6 The thermal insulation is sound.
- 1.7 The earthing wire is connected correctly.
- 1.8 The power voltage is consistent with the rated voltage of the heater.
- 1.9 No obstacle at the air inlet and outlet of the unit.
- 1.10 The leakage protector can work effectively.

2. Operating Instruction

2.1 The appearance of controller



2.2 Name and function description of LCD screen of wire controller



①	COOL indicator: When user sets the cooling water mode, it lights up.
②	HEAT indicator: When user sets the heating water mode, it lights up.
③	PUMP indicator: When user sets the pump mode, it lights up.
④	POOL TEMP indicator: The outlet water temp.
⑤	SET TEMP indicator: Show the setting .erature and blank when screen protection. Codes are show at the malfunction or protection time
⑥	ALARM indicator: It will flashing at the malfunction or protection time

2.3 Names of keys on the wire controller and the keypad operation description



⑦	MODE key, used to set different modes
⑧	UP key, used to add time or temp.
⑨	DOWN key, used to abate time or temp.
⑩	LIGHT, lighting: Working Light off: Standby,Light up in 0.2S, and then off in 0.2S:Reparable error,Light up in 1S, and then off in 1S: Data storage chip error
⑪	ON/OFF key, used to turn the unit on or off

2.4 Application of wire controller

- Preparation before running the unit.

When you run the unit for the first time, all the indicators on the wire controller will light for 3s, and then, display the fiducial web page. After no operation for 40s, all indicators will go out automatically except POOL TEMP indicator lighting. When the unit is running, if there is no operation or malfunction for 10s, the backlight of the display will go out automatically.After 30s ,all indicator will disappear except operation mode and pool temp.

By default, the unit operates Heat Mode. Change:

- Mode Selection

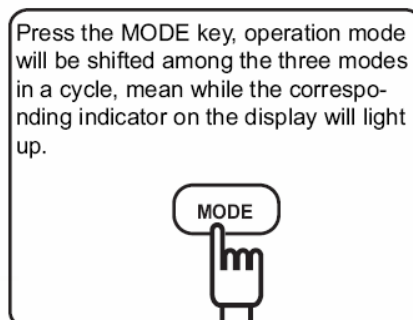
The unit is enhanced with three operation modes, Cool Mode, Heat Mode and Pump Mode.

Cool Mode: The unit cools down swimming pool water by compressor drive according to heat-pump principle. Used when the swimming temp. is high in summer.

Heat Mode:The unit heats swimming pool water by compressor drive according to heat-pump principle. Used when the ambient temp. is low.

Pump Mode:The pump run for circling the water. Used when trial run or other necessary situation.

By default, the unit operates Heat Mode. Change:



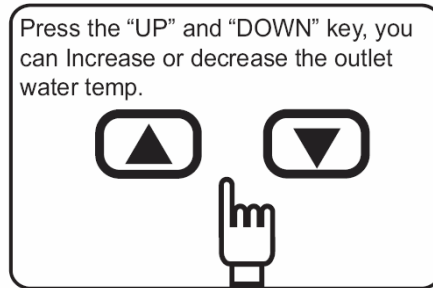
- Temperature set

Temp. displayed is the setting

water temp. Default is 28°C and the Cool mode setting range is

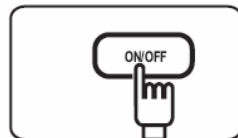
10~30°C the heat mode setting range is 20~35°C

Method for set



- Power on/Power off

Press Power On/Power Off button after all the above have finished and the system will run as the setting. And simply press the same button to stop it.



- Operation status display



3. Fault code list

Display	Malfunction Description
E2	Outdoor unit and wire Controller communication error
E3	Outlet water temperature sensor error
E4	Inlet water temperature sensor error
E5	Discharge pipe temp.sensor error
E7	Ambient temperature sensor error
E9	Waterflow switch error
EE	Evap. pipe temperature temp. sensor error
P0	Discharge pipe temperature overhigh protection
P1	Discharge pipe temperature overhigh protection
P4	Compressor current overhigh protection
P6	Discharge pipe temp. overhigh protection
Pb	Anti-frozen protection
PF	Evap. pipe temperature overhigh protection

4. Self-checking function

1. Normal display : T6 ;
2. Mode code : (0 6KW; 1 8KW; 2 12KW; 3 14KW);
3. Operate mode: (1 cooling; 16 water heating; 4 pump);
4. Fan speed (0 stop; 1 low ; 2 high);
5. T4;
6. Tp;
7. T3;
8. T6;
9. Tout;
10. Compressor current ;
11. Ts;
12. The last error code“— —”