GREE
Change for life

Service Manual

Models: GPC12AL-K5NNA3A
GPH12AL-K5NNA3A
(Refrigerant R290)

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Table of Contents

Abbreviations Used Within this Manual:

Abbreviation	Clear Words
OFDN	Oxygen free and dry nitrogen
PPE	Personnel protective equipment
LFL	Lower flammability level
UFL	Upper flammability level
HC	Hydrocarbon

INTRODUCTION

ATTENTION

Please read this manual carefully before installing and operating the GREE Hydrocarbon Air– Conditioner unit.

Careless installation and operation could cause severe injuries to operators, workers and damage to the air-conditioner unit itself.

Keep this manual in a location for easy access as it is needed for reference during installation, maintenance, service and operation of the unit.

This manual does not cover all aspects of installation, maintenance and service of the chiller units; if additional information is needed, contact the GREE Costumer Service or Sales Office.

General Information

Warning and cautions appear at appropriate locations throughout this manual book.

Notices

General Safety Instructions

Please pay careful attention to these safety instructions, to avoid risks to people and property. Before starting work on maintenance read this manual thoroughly and pay particular attention to the relevant chapters.

Regardless of further requirements of the country, in which the equipment will be installed: assembly, first start up, technical service, maintenance and repair and as well as dismantling and disposal have to be carried out by authorised personnel only.

During every operation strictly follow the instructions within this manual. Pay attention to the specific rules of air conditioning, electrics and refrigerant handling of the country within which the equipment is installed.

Key sections and/or sentences are highlighted with specific icons and symbols to the right side of the page. Please pay particular attention to this information.

The Symbols Used in this Manual are as Follows

This is a specific remark and points out the importance of a specific section

Information window highlighting important content of the specific section or additional information to consider.

This sign will indicate that you are handling a flammable substance and the surrounding environment can possibly contain it.

This is a general warning sign.

The Label is used to indicate that the flammable refrigerant is present within the application and service equipment.

Images that indicate something what you should strictly avoid.

Specific bans!

Specific commandments!

Instructions for first aid!

Fire protection!

Carefully read the instructions!

Working on components with safety-relevant functions jeopardise the safe operation of the installation. In case it is necessary to replace components, only use approved parts from GREE Electric, the Original Equipment Manufacturer(OEM) or Gree released or authorised components. The system contains the refrigerant R-290 (propane). This condition requires special safety precautions to be observed. While working on the system, the presence of any kind of ignition sources (e.g. sparks, open flames, hot surfaces, static electricity) are strictly prohibited. At the installation site, no matter what kind of activities are executed, smoking is strictly prohibited!
Likewise, ensure the installation site is well ventilated. For further details as far as it concerns the handling of the refrigerant R-290 (propane) .
Do not charge the system with any refrigerant which is not R-290! Do not mix any refrigerants! Before filling the system, ensure that there is no air (or other non-condensable gases such as nitrogen) left in the system, otherwise there is severe danger of damage to the system caused by excessive high pressure.

After charging the system with refrigerant, carefully examine and confirm the tightness by the use of an appropriate electronic leak detector!

ONLY original GREE (OEM) spare-parts are permitted for Service and Repair!

The Symbols Used in this Manual are as Follows

Proceed according the manuals Instructions!

Electric operations (installation, repair, modification, maintenance, adjustment) have to be fulfilled by trained and authorised personnel only. When dealing with electrical issues, the specific rules of the country within which the equipment is installed must be followed, in addition to the instructions within this manual.

When working on the equipment or parts of it, the system has to be deenergised (by master switch, circuit breaker or separate cut-out) and made safe against restart of the system. Do not reconnect the system to the electric circuit until all work is done and all connections are tested. If handled unsafely or unprofessionally, severe electric shocks can occur. Consider the wiring diagram and follow the instructions of this manual very carefully whilst working on electrical parts. Wrong connections or incorrect grounding may lead to severe injuries and mortal danger.

Ground the system according to the particular requirements of the country within which the equipment is installed.
Connect all the wires properly and durably. Loose cables may lead to overheating or fire

Pay attention to the room size for indoor unit installation!

For specific information refer page XXX of this manual.

Minimum Room Size

HC R290 is a flammable refrigerant and can form explosive mixtures in low concentrations. To minimise the risk of fire or explosion, the system must be installed in a room with a minimum floor area.

Minimum Room Size

Unless there are further requirements, standards and legislation of the country within which the equipment is installed may apply. Any technicians that works on GREE hydrocarbon air– conditioners must be competent in the safe handling of flammable refrigerants, in addition to being in possession of knowledge and skills to maintain best refrigeration installation and servicing practices.

There are already training activities in place for engineers, technicians and sales staff to provide professional knowledge and skills for the handling of HC refrigerants and refrigeration systems operating with HCs.

Get your Best Practices knowledge and skills update for HC refrigerants and be certificated for these jobs!

Get trained and have your
“HC Refrigeration Professional” certification!

Basics in RAC

Knowledge of the basic SI standard units for temperature, pressure, mass, density, energy.

Understanding of the basic theory of refrigeration systems including the functions of the main components in the system (compressor, evaporator, condenser, thermostatic expansion valves).
Understanding how to read a refrigerant flow chart and an electrical circuit diagram.

The determination of non condensable gases in the refrigeration system and how to eliminate them.
The importance of the use of oxygen free dry nitrogen (OFDN) for system flushing, leak test and strength test.
The elimination of humidity from the refrigeration system and how to recover or vent HC refrigerant from a system.

Usage of tables and diagrams (log p/h diagram, saturation tables of a refrigerant, diagram of a single compression refrigeration cycle) and interpretation of these tables and diagrams.

Knowledge of the basic operation of the following components in a refrigeration system and their role and importance for refrigerant leakage prevention and identification:

- Temperature and pressure controls
- Sight class and moisture indicators
- Defrost controls, reverse cycle operation
- System protectors
- Measuring devices such as the pressure gauge manifold
- Thermometer
- Leak detector
- Refrigerant charging devices
- Vacuum pump
- Oxygen free dry nitrogen cylinder and pressure regulator

Fault finding – analysis and repair.
- Knowledge of flammable refrigerants
- Risk analysis for the application of flammable refrigerant and properties of flammable refrigerants
- Electrical circuit assessment and repair

Read More!
SAFETY CODE OF PRACTICE FOR REFRIGERATING SYSTEMS *UTILISING A2 & A3 REFRIGERANTS*

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1 872719 15 5

Checks before putting in operation, after a long period of nonuse, after maintenance or repair intervention or during operation.

Carry out a pressure and leak test to check the strength and the tightness of the system.
Usage of a vacuum pump.
Evacuation of the system to remove air and moisture according to standard practice.

Checks for Leakage

Knowledge of potential leakage points of refrigeration, air-conditioning and heat pump equipment. Making a visual and manual inspection of the whole system.
Carry out a check for leakage of the system using an indirect method and/or one of the direct methods.

Direct leak detection methods:
1. Fixed leakage detection systems
2. Portable electronic gas detectors
3. Ultraviolet (UV) indication fluids
4. Weak soapy water solution (bubble test) also in combination with OFDN
5. New installation tightness test for leakage detection procedure e.g. H2/N2
6. Operational system tightness test for leakage detection procedure

Indirect refrigerant detection methods:
1. Visual
2. Manual checks

Use of portable measuring devices such as pressure gauges, thermometers and multimeters for measuring Volt/Amp/Ohm in the context of indirect methods for leakage checking and interpretation of the measured parameters. It is very important to make use of an electronic gas detection device. Take care that the electronic gas detector is designed and certificated for the use with flammable refrigerants. Additionally, the electronic HC gas detector must be part of the Personnel Protective Equipment (PPE) of the technician because if this device is operational in the work area it will warn by detection and signalling if HC refrigerant is in the atmosphere.

The use of OFDN is important and the HC gas detector is indeed a personnel protection device (PPE)!

Handling of the refrigerant during installation, maintenance, servicing or recovery or venting

Usage of scales to weigh refrigerant. Knowledge of requirements and procedures for handling, storage and transportation especially of flammable refrigerants and especially of contaminated refrigerant and of oils. Safe HC refrigerant recovery and venting.

Installation, commissioning and maintenance of a compressor

The basic functioning of a compressor (including capacity control and lubricating system) and risks of refrigerant leakage to its operation. Installing a compressor properly, including control and safety equipment. Adjusting the safety and control switches. Checking the oil return system. Start up and shut down a compressor and checking the good working conditions of the compressor, including by making measurements during operation of compressor.

Installation, commissioning and maintenance of condensers

The basic functioning of a condenser. Installing a condenser properly, including control and safety equipment. Adjusting the safety and control switches. Checking the hot-gas and liquid lines in correct positions. Start up and shut down a condenser and check the good working conditions, including by making measurements during operation. Checking the surface of the condenser. Methods for condenser surface cleaning and fins adjustments.

Installation, commissioning and maintenance of evaporators

The basic functioning of an evaporator (including defrosting system). Installation of an evaporator including control and safety equipment. Adjusting the safety and control switches. Checking the liquid and suction pipelines in the correct position and checking the hot gas defrost pipeline. Start up and shut down an evaporator and check the good working of the evaporator, including by making measurements during operation. Functional checking of the reverse cycling control device. Checking the surface of the evaporator. Methods for evaporator surface cleaning and fins adjustments.

Preventive maintenance will improve the system efficiency

Piping

Professional brazing is another key component for safe and state of the art HC system installation and servicing. Brazing leak free joints on metallic tubes and pipes that can be used in refrigeration, air-conditioning or heat pump systems. Make/check pipe and component supports and vibration elimination. Knowledge about the designing and dimensioning of the different refrigeration system section pipes including risers. The behaviour of lubricants within the refrigeration system and the influences of the dimensioning of pipe work in relation to lubricants. Develop strategies to minimise mechanical connections like flaring or flanges and to provide a sealed (hermetic) system.

Regular professional brazing experience is an important precondition for the work with hydrocarbon refrigerants!

HC R290 Refrigerant Lssues

Please notice that the unit is filled with propane. Details to this refrigerant are found in chapter “refrigerant”. Propane is highly flammable and leads to explosion under certain conditions. Inappropriate treatment of the unit involves the risk of severe damages of people and material.

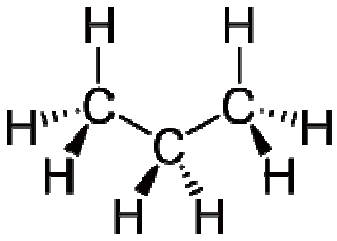
Basics

HC R-290 (propane) is an odourless and colourless gas of the group of hydrocarbons.
HC R-290 is heavier than air and at high concentrations can cause narcotic effects and eventually asphyxiation.
R-290 is highly flammable within the range of 2,1% and 9,5% by volume, or 38 g/m3 to 170 g/m3 in air. The auto-ignition temperature is about 470°C.
Since R-290 is an odourless and colourless gas, it is difficult to perceive that it is present (as with most other refrigerants).
Propane is often used as a fuel such as for heating or barbecues. However, for use on refrigeration systems, fuel-grade propane is not suitable since it contains high levels of impurities, which would damage the refrigeration system and may not provide the desired refrigerating capacity or efficiency.

HC R-290 refrigerant has a high grade of purity.

Propane as a cooking gas is not useful for refrigeration purpose!

The structural formula of HC R-290 (propane)



Important Refrigerant Properties and Parameters:

Molecular formula	C3H8
Melting point [°C]	-188
Boiling point under atmospheric pressure [°C]	-42
Molar mass [g mol -1]	44,10
Critical temperature [°C]	96,8
Critical pressure [bar]	42
Practical limit [g/m3]	8
Lower flammability level LFL [g/m3]	38
Lower flammability level LFL [%]	2,1
Upper flammability level UFL [g/m3]	171
Upper flammability level UFL [%]	9,5
Ignition temperature [°C]	470

Read More!

Guidlines for the safe use of hydrocarbon refrigerants

GIZ—PROKLIMA

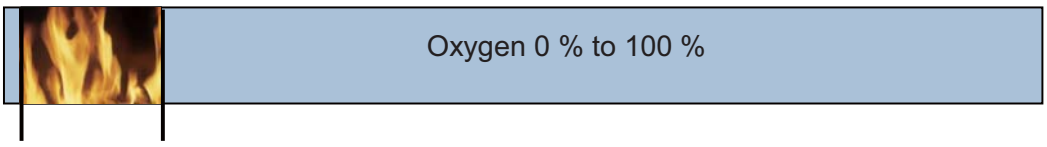
http://www.gtz.de/proklima

Flammability

Three components are needed simultaneously for causing fire:

1. Oxygen
2. Ignition source and
3. The flammable concentration of HC

For ignition, the concentration of HC in air has to be between the lower and upper flammable limits. If the concentration is below the lower flammability limit (LFL) of about 2% by volume in air, there is not enough HC for combustion. If the concentration is above the upper flammability limit (UFL) of about 10% there is insufficient oxygen for combustion.



By way of illustration please compare to the schematic view:

To ignite HC R-290, three (3) components must exist at the same time at work area to cause the refrigerant burning!

Possible ignition sources are:

1. A flame, for example from brazing torch, halide torch leak lamp, match or lighter, cigarette
2. A spark from an electrical component
3. Static electricity
4. Hot surfaces

Safety Data

Hazard Identification

1 kg of liquid HC R-290 refrigerant creates about 250 litres of gas

- Extremely flammable (F+).
- Readily forms an explosive air-vapour mixture at ambient temperatures.
- Vapour is heavier than air and may travel to remote sources of ignition (e.g. along drainage systems, into basements etc).
- Liquid releases generate large volumes of flammable vapour (approx 250:1)
- Cold burns (frostbite) will result from skin / eye contact with liquid.
- Liquid release or vapour pressure jets present a risk of serious damage to the eyes.
- Abuse involving inhalation of high concentrations of vapour, even for short periods, which can produce unconsciousness or may prove fatal. Inhalation may cause irritation to the nose and throat, headache, nausea, vomiting, dizziness and drowsiness. In poorly ventilated areas unconsciousness or asphyxiation may result.

Beside the flammability, most other safety properties are similar to other refrigerants!

Rely always on best service practices in refrigeration!

First Aid Measures

Inhalation:
Remove the affected person to fresh air. If breathing has stopped, administer artificial respiration. Give external cardiac massage if necessary. If the person is breathing but unconscious, place them in the recovery position. Obtain medical assistance immediately.

Skin:
In case of cold burns: flush with water to normalize temperature. Cover the burns with sterile dressings Do not use ointments or powders. Obtain medical assistance immediately.

Eyes:
Cold burns should be flushed with water to normalise temperature, cover the eye with a sterile dressing and obtain medical assistance immediately.

Fire Fighting Measures

HC R-290 is delivered, stored, and used at temperatures above their flash point. Avoid all naked flames, sparks, cigarettes etc.

- In case of fire, immediately alert fire brigade
- Ensure an escape path is always available from any fire
- If gas has ignited do not attempt to extinguish but stop gas flow and allowto burn out.
- Use water spray to cool heat-exposed containers, and to protect surroundingareas and personnel effecting the shut off
- Every precaution must be taken to keep containers cool to avoid the possibilityof a boiling liquid expanding vapour explosion (BLEVE)

Extinguishing Media:

In case of a large fire:
Release must be stopped and container cooled by water spray.
Water mist should be used to assist approach to the source of the fire.
Large fires should only be handled by Fire Brigade.

DO NOT USE WATER JET

Small fire:
Use dry powder extinguisher

DO NOT USE WATER JET

Special protective equipment for fire fighters:
In confined spaces use self-contained breathing apparatus

Hazardous combustion products:
Incomplete combustion may form carbon monoxide.

Accidental Release Measures

Immediate emergency action:
- Clear people away from the area to a safe place
- Do not operate electrical equipment unless “Ex”-rated
- Summon the emergency services
- Treat or refer casualties if necessary

Further action (when release is made safe):
- Extinguish all naked lights – avoid creating sparks
- Position fire fighting equipment
- Cover drains and disperse vapour with water spray.

Note: vapour may collectin confined spaces.

Further actions:
- Stop release
- Use dry powder or carbon dioxide extinguishers
- Cool containers exposed to fire by using water / mist spray.

Accidental Release Measures

Due to the flammability of R-290 and the risk of fire or explosion during servicing, special safety rules must be followed during operation. In order to avoid damage for people and property, particular requirements are listed hereafter.

Before servicing the unit, the surrounding area were the work will be done must be clear of safety hazards to ensure safe working. Nevertheless it is required to carry out a risk assessment in order to minimise the risk of ignition of R-290.

The following safety measures must be followed:

1. Any employees and other present persons must be informed about the service and the way the service is done, first.
2. It is recommended to isolate the working environment in order to keep out any unauthorised personnel.
3. It is useful to set up signs such as „no smoking“ or „access denied“.
4. It is prohibited to store any combustible goods within the working environment.
5. Within two (2) metres radius, ignition sources are not allowed in the working area.
6. Fire extinguisher (dry powder) must be easily accessible at any time.
7. During service work, proper ventilation of the environment must be ensured.

The HC leak detector is indeed a Personal Protective Equipment (PPE) device!

Sign plate to protect and mark the working area.

Appropriate detectors, suitable for hydrocarbons, must be available and operational all the time. Appropriate tools and appliances must be available and ready for operation.

Any employees need to be instructed extensively about the safety measures and the possible safety hazard.

Refrigerant Recovery

Before starting service work on the refrigerant circuit, the existing refrigerant must be removed. When carrying out removal of the refrigerant, the following must be considered:

- The recovery cylinder must be permitted for the use of R-290 (especially regarding the pressure and the compatibility of the connectors and the valves).
- The recovery machine must be suitable for operation with R-290. Importantly, the recovery machine must not itself be an ignition source.
- The filling of the recovery cylinder should be monitored closely by controlling the weight. It is recommended to place and then to leave the cylinder on a digital scale. Pay attention to not overfilling the cylinder. The cylinder is only allowed to be filled up to 80% of its complete volume by liquid refrigerant.
- The pressure must be controlled in order to ensure that the permissible pressure of the cylinder is not exceeded at any time.
- After filling, the cylinder must be marked with the mass and the type of refrigerant recovered.
- The recovery machine should be operated until the pressure reduces to 0,3 bar absolute pressure. R-290 is soluble to oil. This may lead to a rise of pressure because the refrigerant vaporises from oil. It may be necessary to operate the recovery machine for a second or even a third time.
- Small amounts of R-290 can be vented in safe manner to the environment.
- Remaining amounts of HC absorbed by the oil can be extracted from the system using a vacuum pump in combination with an exhaust vent hose.
- A second “two way excess” recovery cylinder can be used in serial connection to act as an oil-separator.
- After the systems‘ pump out, the system should be flushed with oxygenfree dry nitrogen (OFDN) in order to ensure no flammable gas are inside the system.

Repair of Leaks

System leaks must be immediately repaired by authorised personnel after becoming acquainted. If they cannot be repaired immediately, the refrigerant charge should be removed from the system until the point at which the leak can be properly repaired.

- Removing the refrigerant from the system in order to avoid an uncontrolled discharge.
- Examine the leak source, determining the reason for the leak and carry out the proper course of action
- Repair properly (NO „temporary repairing")
- Based on the results of the systems' examination, suitable measures need to be identified in order to avoid a recurrent appearance of the leak.
- Before embarking on the repair, ensure that the refrigerant has been removed and the system flushed with OFDN, especially if brazing is to take place
- After each intervention into a refrigeration system (repairing leaks, replacing components, brazing) the system must be subject to a leak test and following strength test of the system.

Regular professional brazing experience is an important precondition for the work with hydrocarbon refrigerants!

The use OFDN is an important precondition for professional leak repair!

1. **System flushing from HC**
2. **Inert gas brazing**
3. **Leak testing**
4. **Strength testing**
5. **Cleaning (blowing) agent**

Gas Detection

While servicing the unit it is recommended for the whole period of work — before,during and after — to monitor the gas concentration in the air within the work environment. By monitoring the air within the work environment the danger of a possible formation of flammable atmosphere can be detected early.

The HC leak detector is indeed a PPE device!

Doing the monitoring, ensure that the gas detectors are suitable for hydrocarbon detection. Never use open fire or a device with an ignition source for the detection of gas or for leak detection.

Before operation of the gas detector the instruction manual must be read carefully. In case of any questions refer to the detector manufacturer. Furthermore ensure the detector is correctly calibrated. Instructions for calibration can be found in the instruction manual of the detector or upon request from the manufacturer.

A possible re-calibration must be done within an area which is free of refrigerants.

In case of a positive detection by the detector any work must be stopped immediately. Any open flames or ignition sources must be extinguished or removed. In addition to a suitable and approved HC gas detectors, portable gas detectors can be used.

Such a detector can be clipped to clothing or placed on the floor within the working area. It should be switched on for the duration of the work, and set to alarm at 15% of the lower flammability level (LFL), to warn that flammable concentration may be nearby. In this way, technicians can be alerted whenever an inadvertent release of flammable refrigerant occurs, and can immediately act upon the relevant emergency procedures.

Portable HC Gas Detector

Cylinder Handling

R-290 is available in a large variety of different cylinders which are to be distinguished whether they are refillable or not. Most refillable cylinders are equipped with pressure relief valves, often with own special construction of valves in order to distinguish them from the cylinders of different refrigerants.

Often special legal requirements about the handling of flammable refrigerants exist in the different countries. These requirements must be studied and adhered to. Principally the following regulations in dealing with R-290 cylinders apply:

1. Do not remove or destroy official stickers of the cylinder
2. Close the cylinder with a cap any time the cylinder is not used
3. Never expose the cylinder to direct heat
4. Do not repair or modify the cylinder or the cylinders‘ connections
5. Only use suitable equipment for transportation of the cylinder, even for short distances. Never roll the cylinder across the ground.
6. Take appropriate measures in order to prevent impurities, water or oil from entering the cylinder.
7. Should it be necessary to warm the cylinder, only use warm water or air which temperature must not exceed 40 °C (104 °F). O pen flames or radiant heaters are not allowed at any time.

8. Weigh the cylinder and compare it against the tare weight (normally stamped on the cylinder) in order to make sure that it is empty. Pressure control is no secure method to find out if and how much refrigerant there is inside the cylinder.
9. For accurate charging, use a set of reliable scales with appropriate resolution (depending on the size of system charged with refrigerant) and use the smallest size of cylinder available.
10. For recovery of R-290, only use cylinders which are allowed to be filled with R-290.
11. Make sure that safety inspections are still valid (i.e. within date), specifically with regards to safety test certification.
12. For refillable recovery cylinders keep in mind that with recovered amounts of HC refrigerant, oil will always be present specific amounts may remain in the cylinder after emptying.

Charging HC!

Always use the smallest cylinder possible and relay on appropriate accurate and sensitive scales

The storage of R-290 cylinders is controlled by regulations. These regulations take priority over the present guidelines. Typically, such rules imply the following:

1. Cylinders should be stored in a separate area, preferably outside, otherwise in a dry, well ventilated place far away from any ignition source.
2. Admission to storage area must only be given to authorised personnel only. Storage areas must be labelled with “no smoking” and “no naked flames” sign.
3. Storage areas should be at ground level and never in the basement.
4. Access should be easy – exclude any obstacles.
5. Cylinders should be stored and operated only in an upright position.
6. Choose appropriate measures to prevent static charges
7. Please remember that the maximum quantity of stored refrigerant sometimes might be regulated by national regulations.

Read More!

Guidlines for the safe use of hydrocarbon refrigerants

GIZ—PROKLIMA

http://www.gtz.de/proklima

The transport of cylinders is controlled by laws in most countries. These laws must always be regarded first before the mentioned guidelines here. In many cases information about regulations for the transport of cylinders could be given by the dealer of the refrigerant.

Basically the following must be regarded concerning the transport of R290 cylinders:

1. During the transportation of R290 always carry along printed information about the refrigerant. In case of emergency these information must be easy accessible. There are often different demands to the transporters carrying a great quantity of gas. Inform yourself before the scheduled transport.
2. Make yourself familiar with the risks of the refrigerant and the emergency measures in case of accident or emergency.
3. Always carry a fire extinguisher during transportation with you. It should be a dry powder fire extinguisher with a capacity at least of 2 kg. Make sure that the driver is experienced in fire extinguisher operation.
4. Cylinders must be transported in an upright position and be tightly secured.
5. Make sure of a proper ventilation inside the van even though it might request a change in the vans‘ body construction.
6. Place the security advise „flammable gas“ upon the rear side of the van.
7. Smoking or open fire is strictly forbidden inside the van.
8. Do not leave cylinders in a locked van without surveillance longer than necessary.

Pressure—Temperature Chart

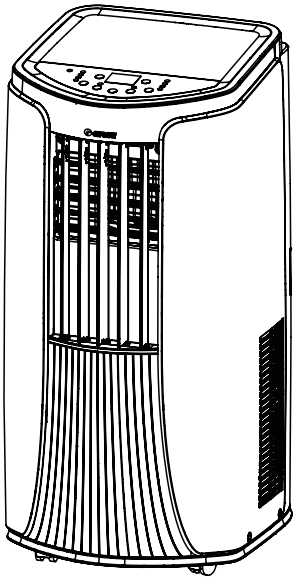
HC Refrigerant R-290							
Temperature		Absolute pressure			Gauge pressure		
°C	°F	kPa	bar	PSI	kPa(g)	bar(g)	PSI(g)
-40	-40	111,12	1,11	16,12	11,12	0,11	1,61
-39	-38,2	116,00	1,16	16,83	16,00	0,16	2,32
-38	-36,4	121,05	1,21	17,56	21,05	0,21	3,05
-37	-34,6	126,27	1,26	18,31	26,27	0,26	3,81
-36	-32,8	131,66	1,32	19,10	31,66	0,32	4,59
-35	-31	137,23	1,37	19,90	37,23	0,37	5,40
-34	-29,2	142,97	1,43	20,74	42,97	0,43	6,23
-33	-27,4	148,90	1,49	21,60	48,90	0,49	7,09
-32	-25,6	155,02	1,55	22,48	55,02	0,55	7,98
-31	-23,8	161,33	1,61	23,40	61,33	0,61	8,89
-30	-22	167,83	1,68	24,34	67,83	0,68	9,84
-29	-20,2	174,54	1,75	25,31	74,54	0,75	10,81
-28	-18,4	181,44	1,81	26,32	81,44	0,81	11,81
-27	-16,6	188,56	1,89	27,35	88,56	0,89	12,84
-26	-14,8	195,89	1,96	28,41	95,89	0,96	13,91
-25	-13	203,43	2,03	29,51	103,43	1,03	15,00
-24	-11,2	211,19	2,11	30,63	111,19	1,11	16,13
-23	-9,4	219,18	2,19	31,79	119,18	1,19	17,29
-22	-7,6	227,39	2,27	32,98	127,39	1,27	18,48
-21	-5,8	235,84	2,36	34,21	135,84	1,36	19,70
-20	-4	244,52	2,45	35,46	144,52	1,45	20,96
-19	-2,2	253,44	2,53	36,76	153,44	1,53	22,26
-18	-0,4	262,61	2,63	38,09	162,61	1,63	23,58
-17	1,4	272,03	2,72	39,45	172,03	1,72	24,95
-16	3,2	281,70	2,82	40,86	181,70	1,82	26,35
-15	5	291,62	2,92	42,30	191,62	1,92	27,79
-14	6,8	301,81	3,02	43,78	201,81	2,02	29,27
-13	8,6	312,27	3,12	45,29	212,27	2,12	30,79
-12	10,4	323,00	3,23	46,85	223,00	2,23	32,34
-11	12,2	334,00	3,34	48,44	234,00	2,34	33,94
-10	14	345,28	3,45	50,08	245,28	2,45	35,58
-9	15,8	356,85	3,57	51,76	256,85	2,57	37,25
-8	17,6	368,70	3,69	53,48	268,70	2,69	38,97
-7	19,4	380,85	3,81	55,24	280,85	2,81	40,73
-6	21,2	393,29	3,93	57,04	293,29	2,93	42,54
-5	23	406,04	4,06	58,89	306,04	3,06	44,39
-4	24,8	419,09	4,19	60,78	319,09	3,19	46,28
-3	26,6	432,45	4,32	62,72	332,45	3,32	48,22
-2	28,4	446,13	4,46	64,71	346,13	3,46	50,20
-1	30,2	460,13	4,60	66,74	360,13	3,60	52,23
0	32	474,46	4,74	68,82	374,46	3,74	54,31
1	33,8	489,11	4,89	70,94	389,11	3,89	56,44
2	35,6	504,10	5,04	73,11	404,10	4,04	58,61
3	37,4	519,43	5,19	75,34	419,43	4,19	60,83
4	39,2	535,10	5,35	77,61	435,10	4,35	63,11
5	41	551,12	5,51	79,93	451,12	4,51	65,43
6	42,8	567,49	5,67	82,31	467,49	4,67	67,80
7	44,6	584,22	5,84	84,74	484,22	4,84	70,23
8	46,4	601,31	6,01	87,21	501,31	5,01	72,71
9	48,2	618,77	6,19	89,75	518,77	5,19	75,24
10	50	636,60	6,37	92,33	536,60	5,37	77,83

HC Refrigerant R-290							
Temperature		Absolute pressure			Gauge pressure		
11	51,8	654,81	6,55	94,97	554,81	5,55	80,47
12	53,6	673,40	6,73	97,67	573,40	5,73	83,17
13	55,4	692,38	6,92	100,42	592,38	5,92	85,92
14	57,2	711,75	7,12	103,23	611,75	6,12	88,73
15	59	731,51	7,32	106,10	631,51	6,32	91,59
16	60,8	751,68	7,52	109,02	651,68	6,52	94,52
17	62,6	772,25	7,72	112,01	672,25	6,72	97,50
18	64,4	793,24	7,93	115,05	693,24	6,93	100,55
19	66,2	814,64	8,15	118,16	714,64	7,15	103,65
20	68	836,46	8,36	121,32	736,46	7,36	106,82
21	69,8	858,71	8,59	124,55	758,71	7,59	110,04
22	71,6	881,39	8,81	127,84	781,39	7,81	113,33
23	73,4	904,51	9,05	131,19	804,51	8,05	116,69
24	75,2	928,07	9,28	134,61	828,07	8,28	120,10
25	77	952,07	9,52	138,09	852,07	8,52	123,58
26	78,8	976,53	9,77	141,64	876,53	8,77	127,13
27	80,6	1001,45	10,01	145,25	901,45	9,01	130,75
28	82,4	1026,83	10,27	148,93	926,83	9,27	134,43
29	84,2	1052,68	10,53	152,68	952,68	9,53	138,18
30	86	1079,00	10,79	156,50	979,00	9,79	141,99
31	87,8	1105,79	11,06	160,38	1005,79	10,06	145,88
32	89,6	1133,08	11,33	164,34	1033,08	10,33	149,84
33	91,4	1160,85	11,61	168,37	1060,85	10,61	153,87
34	93,2	1189,12	11,89	172,47	1089,12	10,89	157,97
35	95	1217,88	12,18	176,64	1117,88	11,18	162,14
36	96,8	1247,16	12,47	180,89	1147,16	11,47	166,38
37	98,6	1276,94	12,77	185,21	1176,94	11,77	170,70
38	100,4	1307,24	13,07	189,60	1207,24	12,07	175,10
39	102,2	1338,07	13,38	194,07	1238,07	12,38	179,57
40	104	1369,42	13,69	198,62	1269,42	12,69	184,12
41	105,8	1401,31	14,01	203,25	1301,31	13,01	188,74
42	107,6	1433,73	14,34	207,95	1333,73	13,34	193,44
43	109,4	1466,71	14,67	212,73	1366,71	13,67	198,23
44	111,2	1500,23	15,00	217,59	1400,23	14,00	203,09
45	113	1534,31	15,34	222,54	1434,31	14,34	208,03
46	114,8	1568,96	15,69	227,56	1468,96	14,69	213,06
47	116,6	1604,18	16,04	232,67	1504,18	15,04	218,17
48	118,4	1639,97	16,40	237,86	1539,97	15,40	223,36
49	120,2	1676,34	16,76	243,14	1576,34	15,76	228,63
50	122	1713,30	17,13	248,50	1613,30	16,13	233,99
51	123,8	1750,86	17,51	253,94	1650,86	16,51	239,44
52	125,6	1789,02	17,89	259,48	1689,02	16,89	244,98
53	127,4	1827,79	18,28	265,10	1727,79	17,28	250,60
54	129,2	1867,17	18,67	270,81	1767,17	17,67	256,31
55	131	1907,17	19,07	276,62	1807,17	18,07	262,11
56	132,8	1947,80	19,48	282,51	1847,80	18,48	268,01
57	134,6	1989,07	19,89	288,49	1889,07	18,89	273,99
58	136,4	2030,98	20,31	294,57	1930,98	19,31	280,07
59	138,2	2073,54	20,74	300,75	1973,54	19,74	286,24
60	140	2116,75	21,17	307,01	2016,75	20,17	292,51

Part Ⅰ : Technical Information

1. Summary

GPC12AL-K5NNA3A
GPH12AL-K5NNA3A



Remote Controller:

YB1F2(XFAN)

Model	Product Code	Remote Controller
GPC12AL-K5NNA3A	CK010031700	YB1F2(XFAN)
GPH12AL-K5NNA3A	CK010031600	YB1F2(XFAN)

2. Specifications

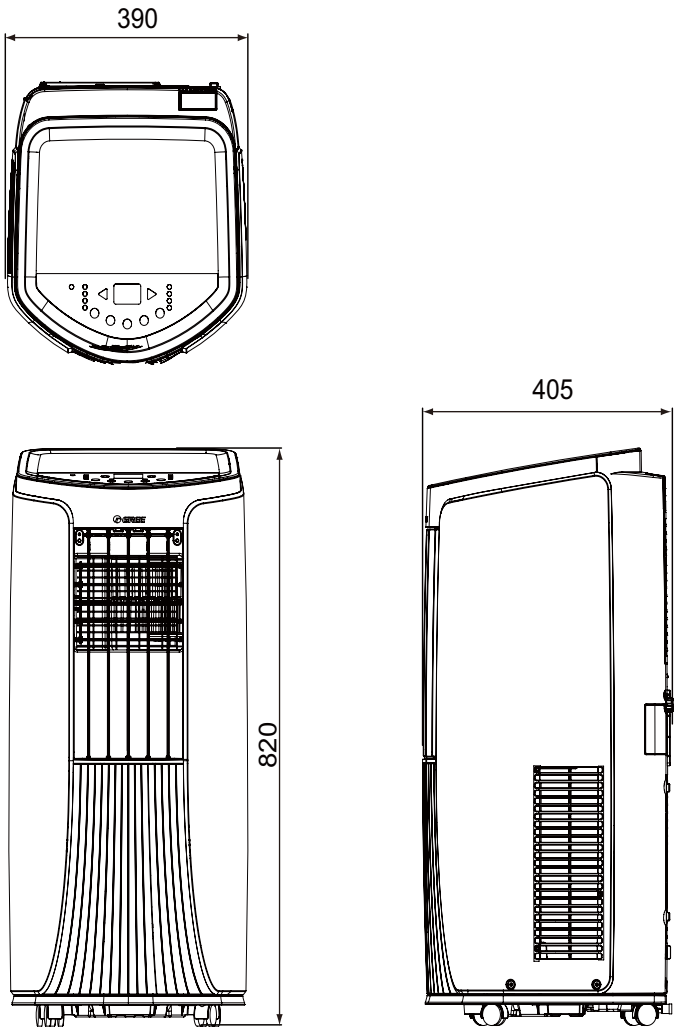
Parameter		Unit	Value	
Model			GPC12AL-K5NNA3A	GPH12AL-K5NNA3A
Product Code			CK010031700	CK010031600
Power Supply	Rated Voltage	V ～	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Cooling Capacity		W	3500	3500
Heating Capacity		W	/	3300
Cooling Power Input		W	1345	1345
Heating Power Input		W	/	1175
Cooling Power Current		A	5.8	5.8
Heating Power Current		A	/	5.1
Rated Input		W	1550	1550
Rated Current		A	7.8	7.8
Air Flow Volume(H/M/L)		m^3/h	360/330/300	360/330/300
Dehumidifying Volume		L/h	1.8	1.8
EER		W/W	2.6	2.6
COP		W/W	/	2.8
SEER			/	/
HSPF			/	/
Application Area		m^2	15-22	15-22
Climate Type			T1	T1
Isolation			I	I
Moisture Protection			IPX0	IPX0
Permissible Excessive Operating Pressure for the Discharge Side		MPa	3.0	3.0
Permissible Excessive Operating Pressure for the Suction Side		MPa	1.5	1.5
Throttling Method			Capillary	Capillary
Defrosting Method			/	/
Fuse current		A	3.15	3.15
Operation Temp		°C	16~30	16~30
Ambient Temp (Cooling)		°C	16~35	16~35
Ambient Temp (Heating)		°C	/	/
Sound Pressure Level (H/M/L)		dB (A)	53/51/49	53/51/49
Sound Power Level (H/M/L)		dB (A)	64/63/62	65/64/63
Dimension (WXHXD)		mm	390X820X405	390X820X405
Dimension of Carton Box (LXWXH)		mm	578X452X847	578X452X847
Dimension of Package (LXWXH)		mm	581X455X862	581X455X862
Net Weight		kg	35	36.5
Gross Weight		kg	40	41.5
Refrigerant			R290	R290
Refrigerant Charge		kg	0.30	0.30

Compressor	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO., LTD	ZHUHAI LANDA COMPRESSOR CO., LTD
	Compressor Model		QXD-B222A030	QXD-B222A030
	Compressor Oil		5GSD-TB /Equivalent	5GSD-TB /Equivalent
	Compressor Type		Rotary	Rotary
	L.R.A.	A	26	26
	Compressor RLA	A	4.5	4.5
	Compressor Power Input	W	1000	1000
	Overload Protector		HPA-030	HPA-030
Evaporator	Fan Type		Centrifugal	Centrifugal
	Diameter Length(DXL)	mm	Φ187.6X108.2	Φ187.6X108.2
	Fan Motor Speed(H/M/L)	rpm	1050/960/870	1050/960/870
	Output of Fan Motor	W	16	16
	Fan Motor RLA	A	0.3	0.3
	Fan Motor Capacitor	μF	3.5	3.5
	Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Row-fin Gap	mm	3-1.3	3-1.3
	Coil Length (LXDXW)	mm	442X38.1X228.6	442X38.1X228.6
	Swing Motor Model		/	/
	Output of Swing Motor	W	/	/
Condenser	Fan Type		Centrifugal	Centrifugal
	Fan Diameter	mm	Φ224.5X80	Φ224.5X80
	Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ5	Φ5
	Rows-fin Gap	mm	3-1.3,1-1.4	3-1.3,1-1.4
	Coil Length (LXDXW)	mm	572X22.8X304.8/468X11.4X266.7	592X34.2X304.8/475X11.4X266.7
	Fan Motor Speed	rpm	1040/850	1040/850
	Output of Fan Motor	W	50	50
	Fan Motor RLA	A	0.5	0.5
	Fan Motor Capacitor	μF	3.5	3.5

The above data is subject to change without notice. Please refer to the nameplate of the unit.

3. Outline Dimension Diagram

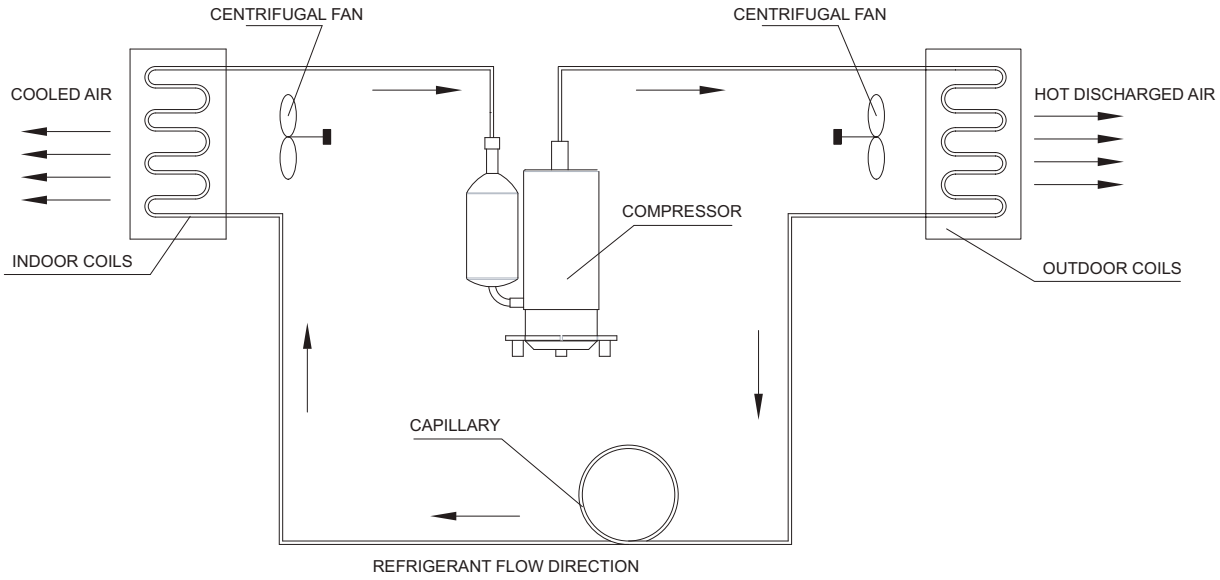
GPC12AL-K5NNA3A GPH12AL-K5NNA3A



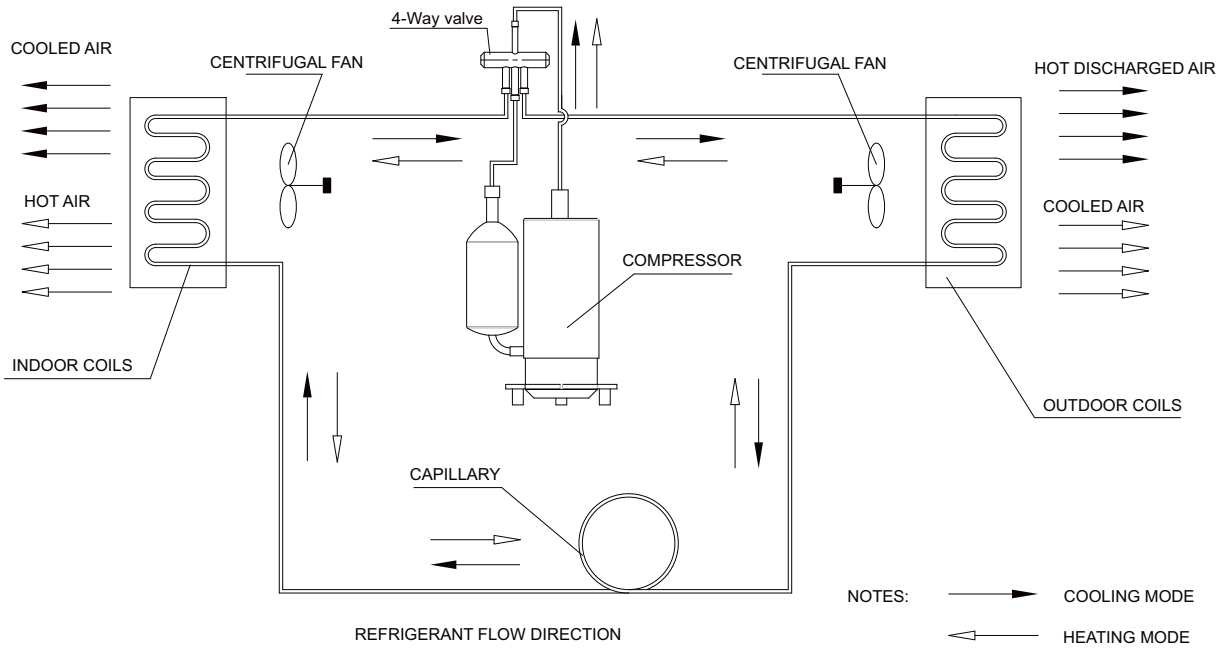
Unit:mm

4. Refrigerant System Diagram

Cooling Only Model



Cooling & Heating Model



5. Electrical Part

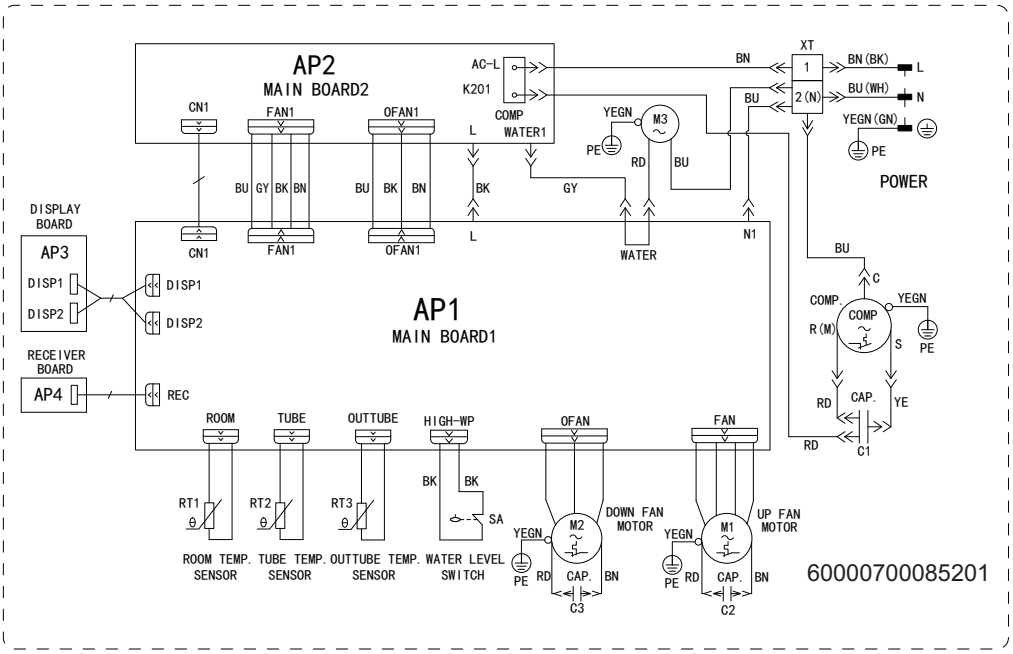
5.1 Wiring Diagram

●Instruction

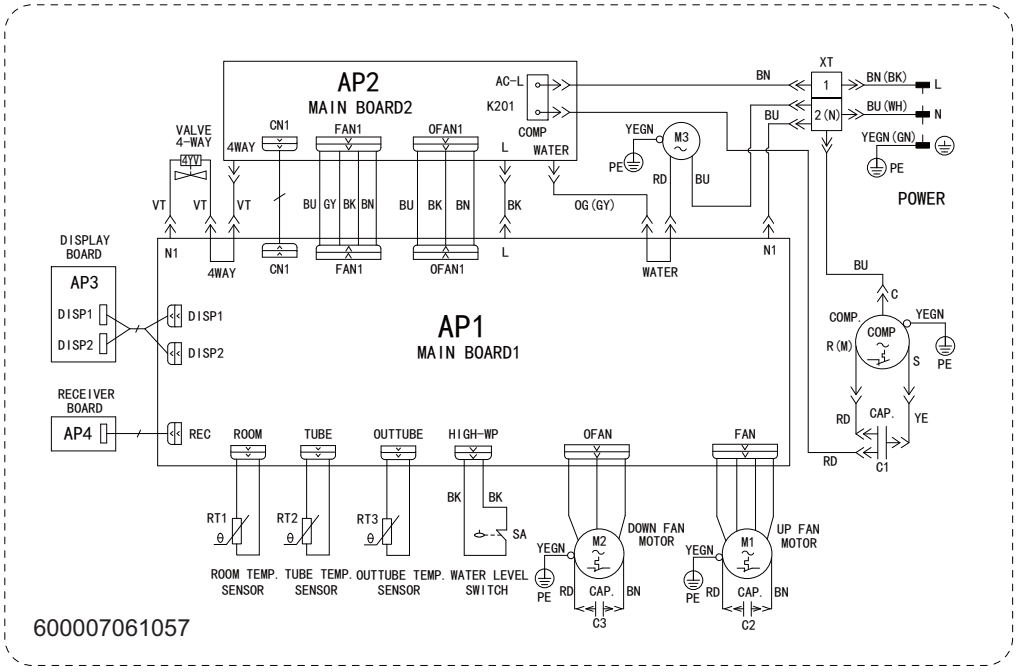
Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	COMP	Compressor
YE	Yellow	BN	Brown	⏚	Grounding wire
RD	Red	BU	Blue	/	/
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

●Electric Diagram

Model:GPC12AL-K5NNA3A



Model:GPH12AL-K5NNA3A

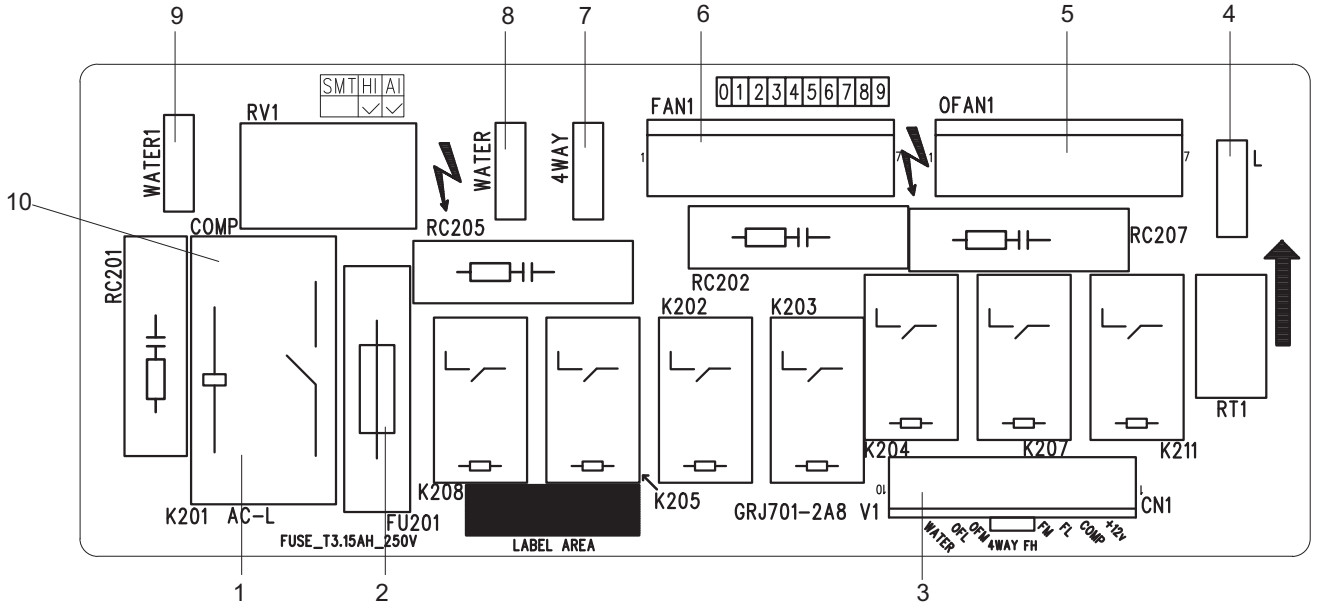


These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

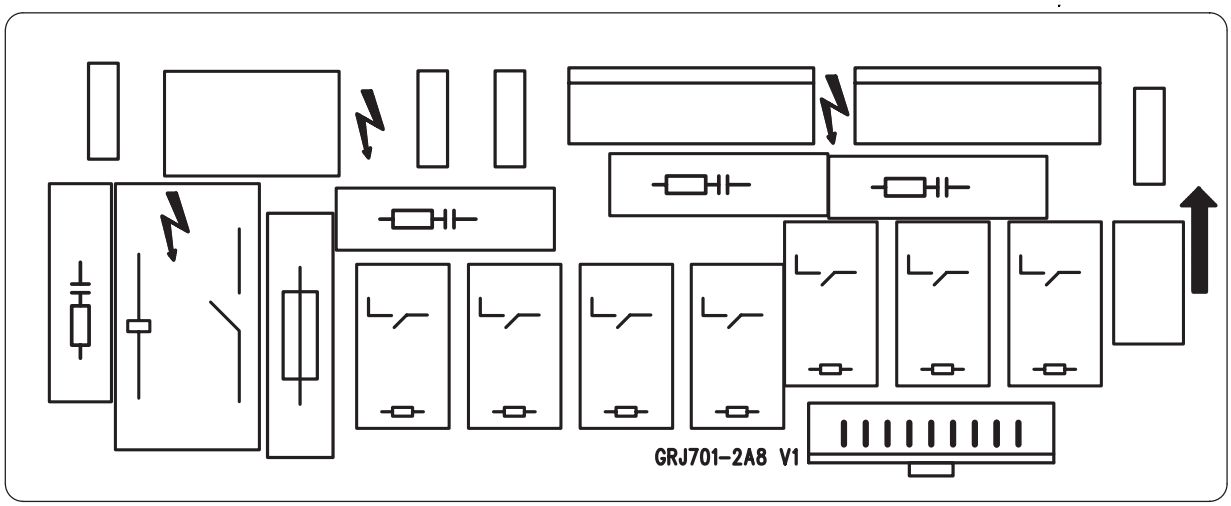
(1)Silk screen on main board

● **TOP VIEW**



NO.	NAME	NO.	NAME
1	Interface of live wire	6	Interface of up fan motor between two main boards
2	Fuse	7	Interface of four-way valve between two main boards
3	Interface of control signal between two main boards	8	Interface of water motor between two main boards
4	Interface of live wire between two main boards	9	Interface of water motor between two main boards
5	Interface of down fan motor between two main boards	10	Compressor relay

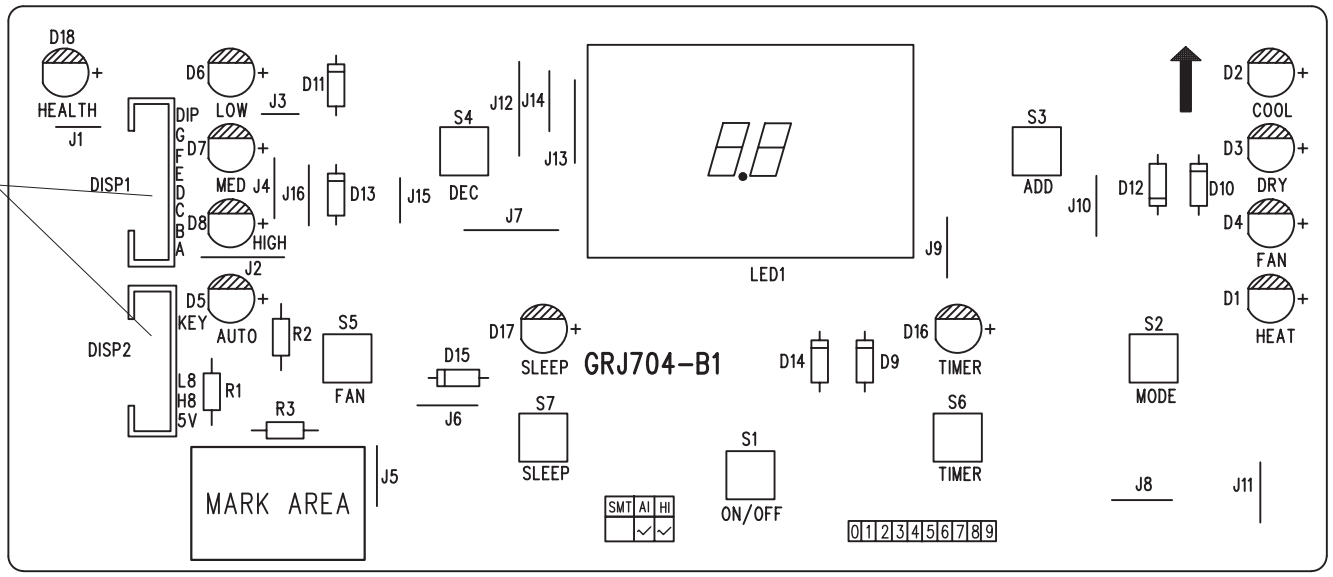
● **BOTTOM VIEW**



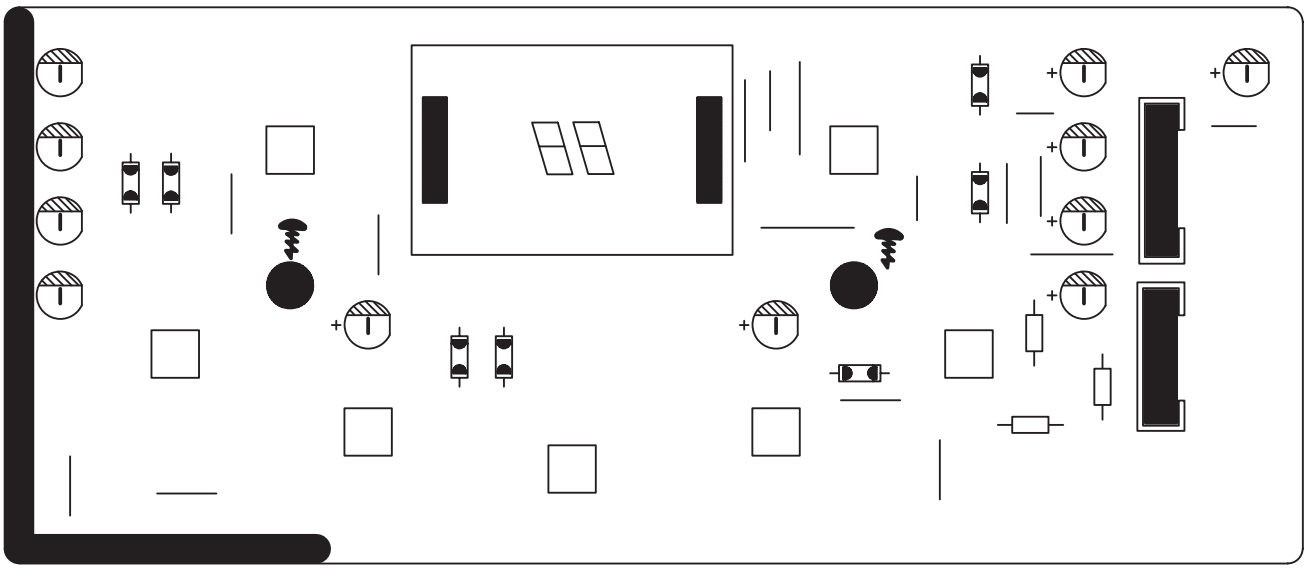
(2)Silk screen on display board

● **TOP VIEW**

Interface of main board

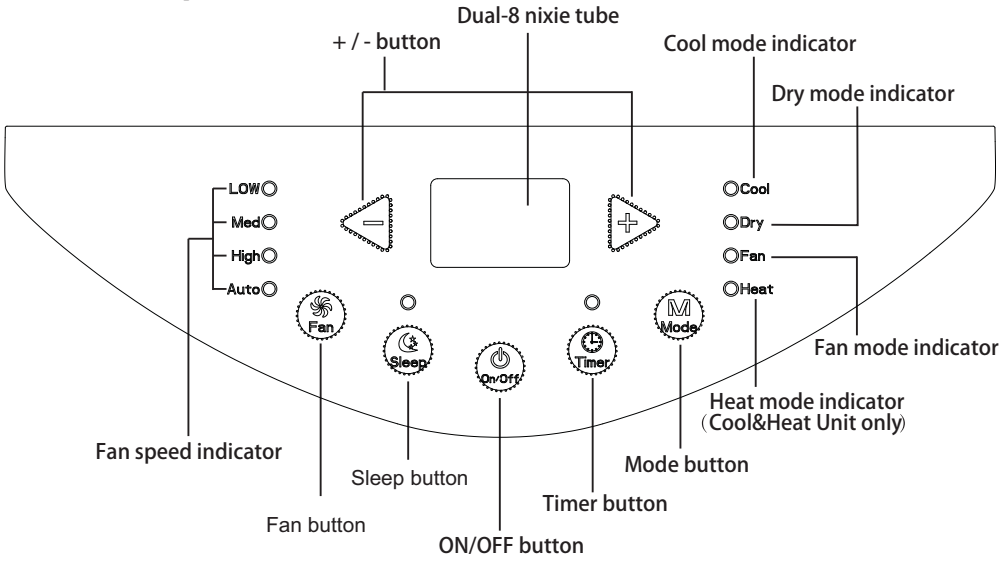


● **BOTTOM VIEW**



6. Function and Control

6.1 Introduction of control panel



Operation of control panel

Note:

●After putting through the power, the air conditioner will give out a sound. After that, you can operate the air conditioner by the control panel.

● Under ON status, after each pressing of the button on control panel, the air conditioner will give out a sound. Meanwhile, corresponding indicator on control panel will be bright.

● Under OFF status, dual-8 nixie tube on control panel wont display.
Under ON status, dual-8 nixie tube on control panel will display set temperature.
Under cooling mode and Heating mode (Cool&Heat Unit only), while it won't display under other modes.

1. ON/OFF button

Press this button to turn on or turn off air conditioner.

2. + / - button

Under cooling mode, press "+" or "-" button to increase or decrease set temperature by1°C(°F). Set temperature range is 16°C(61°F)~30°C(86°F). Under auto, drying or fan mode, this button is invalid.

3. Mode button

Press this button and the mode will circulate according to below sequence:

COOL→DRY→FAN→HEAT(Cool&Heat Unit only)

COOL: Under this mode, cooling mode indicator is bright. Dual-8 nixie tube displays set temperature. Temperature setting range is16°C~30°C.

DRY: Under this mode, drying mode indicator is bright. Dual-8 nixie tube wont display.

FAN: Under this mode, air conditioner operates at set fan speed. Fan indicator and corresponding speed indicator is ON. Dual-8 nixie tube wont display.(Note: You must connect the heat-discharge pipe before operating cooling or drying mode. No need for only fan mode.)

Heat Cool&Heat Unit only : Under this mode, heating mode indicator is bright.
Dual-8 nixie tube displays set temperature.
Temperature setting range is 16°C~30°C.

4. FAN button

Press this button and the fan speed will circulate as "low speed→medium speed →high speed→auto fan→low speed".

5. Timer button

Press timer button to enter into timer setting mode. Under this mode, press " + " or " - " button to adjust the timer setting. Timer setting will increase or decrease 0.5 hour by pressing " + " or " - " button within 10 hours, while timer setting will increase or decrease 1 hour by pressing " + " or " - " button beyond 10 hours.After timer setting is finished, the unit will display temperature if theres no operation for 5s. If timer function is started up, the upper indicator will keep the display status. Others, it wont be displayed. Under timer mode, press timer button again to cancel timer mode.

6. Sleep button

● Press sleep button to enter into sleep mode. If the controller operates at cooling mode, after sleep mode is started up, preset temperature will increase by 1°C within 1 hour ;preset temperature will increase by 2°C within 2 hours and then the unit will operate at this temperature all the time;

● Press sleep button to enter into sleep mode. If the controller operates at heatingmode, after sleep mode is started up, preset temperature will decrease by 1°C within 1 hour ;preset temperature will decrease by 2°C within 2 hours and then the unit will operate at this temperature all the time;

● Sleep function is not available for fan mode, drying mode and auto mode. If sleepfunction is started up, the upper indicator will keep the display status. Others, it won't be displayed.

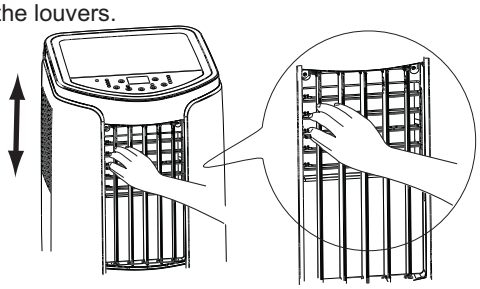
Use for air conditioner

To change air flow direction

1. Up/down air flow direction

• Hold the horizental louvers as shown in the diagram and adjust the air flow direnction.

• Do not adjust the horizontal louvers to the lowest or the highest position in the COOL or DRY mode with the fan speed set to Low for an extended period of time, Condensation may form on the louvers.

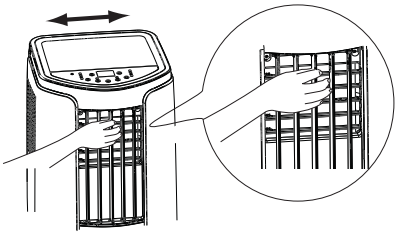


2. Left/right air flow direction Hold the vertical louver as shown in the diagramand adjust the air flow direction.

CAUTION:

• Do not adjust the vertical louvers to the extreme left or right in the COOL or DRY mode with the fan speed set to Low for an extended period of time.

Condensation may form on the louvers.



Using the remote control

This is a general use remote controller, it could be used for the air conditionerswith multifunction; For some function, which the model doesn't have, if press thecorresponding button on the remote controller that the unit will keep the originalrunning status.

How to use the remote control

Point the remote control toward the Signal receiver and press the desired button. The unit generates a beep when it receives the signal.

• Make sure nothing, such as curtains, blocks the signal receiver window.

• The signal effective distance is 8m.

CAUTION:

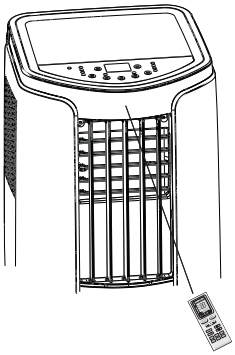
• Do not expose the receiver window to direct sunlight.

This may adversely affect its operation.

• Use of certain fluorescent lamp in the same room htsignal receiver window.

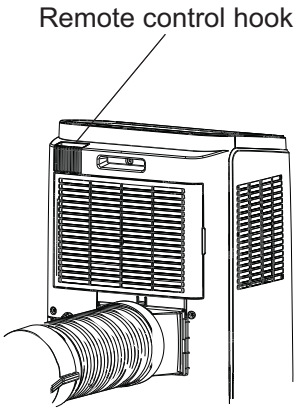
This may adversely affect its operation.

• Do not leave the remote control in direct sunlight or near a heater. Protect the remote control from moisture and shock.



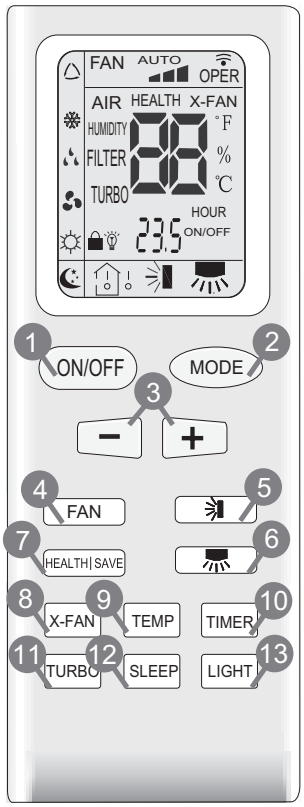
To prevent the remote control from beingmisplaced, hook it to the unit when not in use.

When attached, to remove the remote control from the unit, lift the remote control up slightly and pull it out.



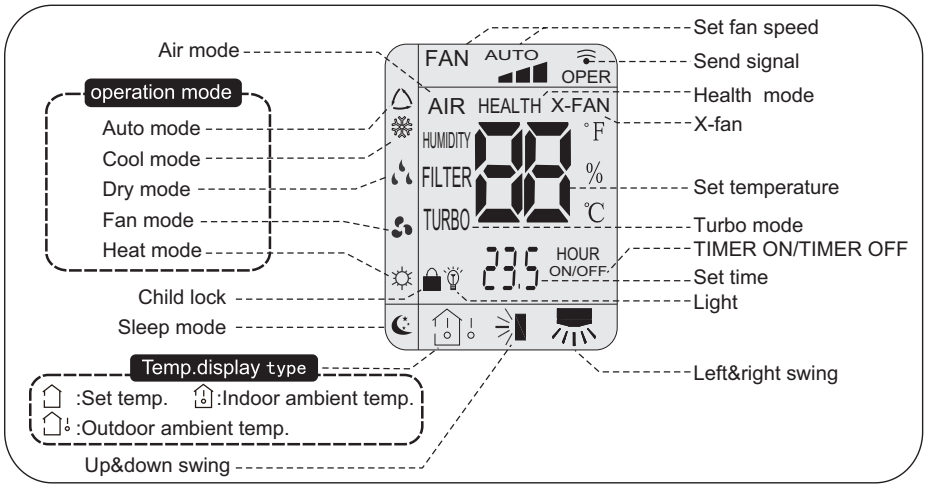
6.2 Remote Controller Introduction

Buttons on Remote Controller



1. **ON/OFF Button**
2. **MODE Button**
3. **+/- Button**
4. **FAN Button**
5. **Button**
6. **Button**
7. **HEALTH|SAVE Button**
8. **X-FAN Button**
9. **TEMP Button**
10. **TIMER Button**
11. **TURBO Button**
12. **SLEEP Button**
13. **LIGHT Button**

Introduction for Icons on Display Screen



Introduction for Buttons on Remote Controller

Note:

- This is a general use remote controller, it could be used for the air conditionerswith multifunction; For some function, which the model doesn't have, if pressthe corresponding button on the remote controller that the unit will keep the original running status.
- After putting through the power , the air conditioner will give out a sound.Operation indicator "⏻" is ON (red indicator,the colour is different for different models). After that,you can operate the air conditioner by using remote controller.
- At ON status, after each pressing button on remote controller, the signal icon"📶"on remote controller will flash once. Air conditioner will give out a sound, which indicates the signal has been sent to air conditioner.
- At OFF status, display screen on remote controller displays set temperature.

At on status, display screen on remote controller displays the corresponding startup function's icon.

1. ON/OFF Button

Press this button to turn on the unit. Press this button again to turn off the unit.

2. MODE Button

Press this button to select your required operation mode.

• After selecting auto mode, air conditioner will operate automatically according to ambient temperature. Set temperature can't be adjusted and also can't be displayed. Press "FAN" button can adjust fan speed. Press" "button and" "button can adjust swing angle

• After selecting cool mode, air conditioner operates under cool mode. Cool indicator" "on indoor unit is ON(This indicator is not available for some models). You can press "+" or "-" button to adjust set temperature. Press "FAN" button can adjust fan speed. Press" "button and" "button can adjust swing angle.

• After selecting dry mode, air conditioner operates under dry mode at low speed. Dry indicator" "on indoor unit is ON(This indicator is not available for some models) . Under dry mode,fan speed can't be adjusted. Press" "button and" "button to adjust swing angle.

• After selecting fan mode, air conditioner operates only under fan mode, All mode indicators on indoor unit is OFF. Press "FAN" button can adjust fan speed. Press" "button and" "button to adjust swing angle.

• After selecting heat mode, air conditioner operates under heat mode. Heat indicator" "on indoor unit is ON. (This indicator is not available for some models).You can press "+"or "-" button to adjust set temperature. Press "FAN" button to adjust fan speed. Press" " button and" "button to adjust swing angle. (Cooling only unit can't receive the signal for heating mode.)

Note: For preventing cold wind, after starting up heating mode, indoor fan will blow fan after delaying 1-5min. (Details time is decided by indoor ambient temperature)

Temperature setting range on remote controller: 16℃ -30℃ . Fan speed setting range: auto, low speed, medium speed and high speed.

3. "+"or "-" button

• After each pressing of "+"or "-" button, it can increase or decrease set temperature 1℃ . Hold "+"or "-" button, 2s later, set temperature on remote controller will change quickly. After reaching to your required time, loosen the button. Temperature indicator on indoor unit will also change accordingly. (Temperature can't be adjusted under auto mode)

• Under TIMER ON, TIMER OFF or Clock setting, you can press "+"or "-" button to adjust time. (Refer to TIMER button for details)

4. FAN button

Press this button you can select the fan speed in sequence: auto (AUTO),low speed( ), medium speed,)high speed( ).

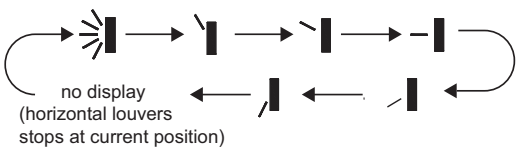
Note:

• Under auto mode, air conditioner will select proper fan speed according to ex-factory setting automatically. Air conditioner will select proper fan speed according to ex-factory setting automatically.

• Low speed under dry mode.

5. button

Press this button can select up&down swing. Swing angle can be selected in sequence as below:

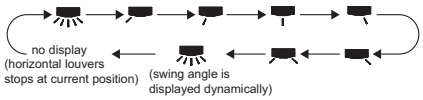


When selecting" "with remote controller, it's auto swing. Horizontal louver of air conditioner will swing up&down automatically at the maximum angle.

When selecting" 、 、 、 、 "with remote controller, it's the fixed position swing. Horizontal louver of air conditioner will stop at that position as shown by the icon to swing.

Under unit off status, press "+" button and button simultaneously to switch between simple swing setting and fixed-angle swing setting. During switching the two swing settings, icon will blink for 2s.

6. button (This function is applicable to partial of models.)
Press this button can select left&right swing. Swing angle can be selected circularly in sequence as below:

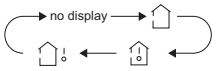


When selecting“ ”with remote controller, it’s auto swing. Horizontal louver of air conditioner will swing left&right automatically at the maximum angle.
When selecting“ ”with remote controller, it’s the fixed position swing. Horizontal louver of air conditioner will stop at that position as shown by the icon to swing.
When selecting“ (swing angle is displayed dynamically) ”it’s the circulating swing. Horizontal louver of air conditioner will swing circularly according to the angle as shown by the icon.

7. HEALTH/SAVE button
HEALTH FUNCTION:
After pressing HEALTH button, remote controller will switch circularly as below:
“HEALTH”→ “AIR” → “AIR HEALTH” → “no display”
When selecting “HEALTH” by remote controller, HEALTH function will be started up.
When selecting “AIR” by remote controller, AIR function will be started up.
When selecting “AIT HEALTH”, AIR and HEALTH function will be started up.
When there’s no display on remote controller, AIR and HEALTH function will be turned off.
SAVE function:
Under cool mode, press SAVE button and the unit will operate under SAVE mode. Dual-8 nixie tube on remote controller displays “SE”. Air conditioner will operate at auto speed. Set temperature can’t be adjusted. Press SAVE button again to exit SAVE mode. Air conditioner turn back to original set speed and set temperature.
Note:This function is applicable to partial of models.

8. X-FAN button
After pressing this button under cooling or dry mode, remote controller displays the character of “X-FAN” and X-FAN function is started up. Press this button again to cancel X-FAN function. The character of “X-FAN” will disappear.
Note:
• After starting up X-FAN function, when turning off the unit, indoor fan will continue to operate for a while at low speed to dry the residual water inside the indoor unit.
• When the unit operates under X-FAN mode, press “X-FAN” button can turn off X-FAN function. Indoor fan stops operation immediately.

9. TEMP button
Press this button can see indoor set temperature, indoor ambient temperature or outdoor ambient temperature on indoor unit’s display. Temperature is set circularly by remote controller as below:



When selecting“ ”by remote controller or no display, temperature indicator on indoor unit displays set temperature;
When selecting“ ”by remote controller, temperature indicator on indoor unit displays indoor ambient temperature;
When selecting“ ”by remote controller, temperature indicator on indoor unit displays outdoor ambient temperature.
Note:
• Outdoor ambient temperature display may can’t be selected for some models. When indoor unit receives“ ”signal, it displays indoor set temperature.
• Only for the model whose indoor unit has dual-8 display.

10. TIMER button
• At ON status, press this button once can set TIMER OFF. The character of HOUR and OFF will flash. Press “+” or “-” button within 5s can adjust the time of TIMER ON. After each pressing of “+” or “-” button, time will increase or decrease half an hour. When holding “+” or “-” button, 2s later, the time will change quickly until to reach to your required time. After that, press “TIMER” button to confirm it. The character of HOUR and OFF won’t flash again.
Cancel TIMER OFF: Press “TIMER” button again under TIMER OFF status.

• At OFF status, press this button once can set TIMER ON. Please refer to TIMER off for detailed operation.
Cancel TIMER ON: Press “TIMER” button again under TIMER ON status.

Note:

• Time setting range: 0.5-24 hours.

• Time interval between two operations can’t exceed 5s. Otherwise, remote controller will exit the setting status automatically.

11. TURBO button

When pressing this button under cooling or heating mode, air conditioner will enter into quick cooling or quick heating mode. The character of “TURBO” is displayed on remote controller. Press this button again to exit turbo function and the character of “TURBO” will be disappeared on remote controller.

12. SLEEP button

Press this button under cooling, heating mode can start up sleep function. "☾" icon will be displayed on remote controller. Press this button again to cancel sleep function. "☾"icon on remote controller will be displayed.

13. LIGHT button

Press this button can turn off the light for indoor unit’s display“ ☼ ”icon on remote controller will disappear. Press this button again to turn on the light for indoor unit’s display“ ☼ ”icon on remote controller will be displayed.

Function Introduction for Combination Buttons

Child lock function:

Press “+” and “-” buttons simultaneously can turn on or turn off child lock function. When child lock function is started up“ 🔒 ”icon will be displayed on remote controller. If operate remote controller“ 🔒 ”icon will flash three times, while remote controller won’t send signal.

Switchover function for temperature display:

After turning off the unit by remote controller, press “-” button and “MODE” button simultaneously to switch between ℃ and ℉ .

Operation Guide

1. After putting through the power, press “ON/OFF” button on remote controller to turn on the air conditioner.
2. Press "MODE" button to select your required mode:AUTO,COOL,DRY,FAN,HEAT.
3. Press “+” or “-“ button to set your required temperature. (Temperature can’t be adjusted under auto mode).
4. Press ‘FAN” button to set your required fan speed: auto, low, medium and high speed.
5. Press “ ”button and“ ”button to select fan blowing angle.

Replacement of Batteries in Remote Controller

1.Press the back side of remote controller marked with“ OPEN ”as shown in the fig, and then push out the cover of battery box along the arrow direction.

2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the position of “+” polar and “-“ polar are correct.
3. Reinstall the cover of battery box.

Note:

● During operation, point the remote control signal sender at the receiving window on indoor unit.

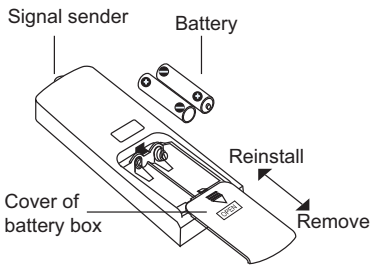
● The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.

● Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.

● Replace new batteries of the same model when replacement is required.

● When you don’t use remote controller for a long time, please take out the batteries.

● If the display on remote controller is fuzzy or there’s no display, please replace batteries.



6.3 Introduction of Basic Mode Function

1. Temperature Parameter

◆ Indo or setting temperature (Tpreset)

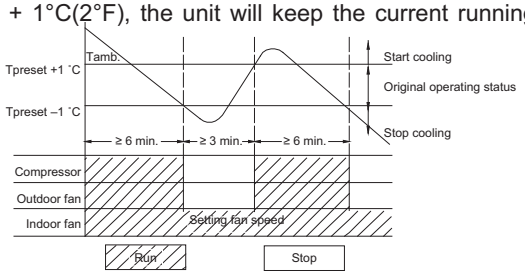
◆ Indoor ambient temperature (Tamb.)

2. Basic Functions of System

After the unit is energized, the interval of start-up time for compressor is no less than 3min under any conditions; when the compressor is started, the unit is off without the temperature change in 6min.

2.1 Cool Mode

2.1.1 Working conditions and process of cooling
a) When Tabm.≥Tpreset + 1°C(2°F), the unit will start to run in cooling mode, the compressor and kick motor start to run, and fan motor runs under preset fan speed.
b) When Tabm.≤ Tpreset - 1°C(2°F), the compressor and kick motor stop to run, and fan motor runs under preset fan speed.
c) When Tpreset - 1°C(2°F)<Tamb.<Tpreset + 1°C(2°F), the unit will keep the current running status.Under this mode, the temperature setting range is 61°F-86°F (16°C -30°C).



a) Under cooling mode, after 1h of setting sleep process, Tpreset increases 2o°F(1°C); 2h later, Tpreset increases 4o°F(2°C). After 2h, the setting temperature never increases, but the upper limit of increased setting temperature is 86o°F(30°C)
b) Under heating mode, after 1h of setting sleep process, Tpreset decreases 2o°F(1°C); 2h later, Tpreset decreases 4o°F(2°C). After 2h, the setting temperature never decreases, but the upper limit of decreased setting temperature is 61o°F(16°C)
c) There is no sleep function under fan and dry mode.
d) When set sleep function, shift mode will cancel sleep function.
e) The setting temperature display is the same with remote controller; it is not influenced by the setting temperature increases/ decreases.

2.2 Heating mode

When Tamb. ≤Tpreset+3°C(6°F), the unit operates in heating mode. Meanwhile, 4-way valve, compressor operates, and indoor fan operates at cold air prevention condition;
When Tpreset+3°C(6°F)<Tamb.<Tpreset+5°C(10°F), the unit keeps original operation status,
When Tamb.≥Tpreset+5°C(10°F), compressor stop operation simultaneously. 4-way valve stop operation after the compressor has stopped for 2 minutes. Indoor fan operates at blowing residual heat conditioner.
Under this mode, the temperature setting range is 16-30°C(61-86°F).

3.3 Auto Fan

a) Auto fan speed under	Cooling mode;
Tamb≥Tpreset+4°F(2°C)	High fan;
Tpreset<Tamb.< Tpreset+4°F(2°C)	Med fan;
Tamb≤Tpreset	Low fan;

b) There is 3.5min delay for auto fan shift.

3.4 TIMER Function

● General timer

a) TIMER ON: It can set timer on when the system is off, the setting time range is 0.5h-24h, when the time of setting timer on reaches, and the system runs with the previous setting mode.
b) TIMER OFF: It can set timer on when the system is on, the setting time range is 0.5h-24h, when the time of setting timer off reaches, the system stop to work.

● Clock timer

a) TIMER ON: If set timer on when the system is running, it continues to run; if set timer on when the system is off, when the time of setting timer on reaches, and the system runs with the previous setting mode.
b) TIMER OFF: If set timer off when the system is off, the system keeps the stand-by status when setting timer off; if set timer off when the system is on, when the time of timer off reaches, the system stops to run.

3.5 Memory Function

The system memories the setting running status of previous power-off, and runs automatically with the setting running status before it power-off when it is energized again. If the unit is on before power-off, the compressor will 3min delay protection when it is energized again.

3.6 Indicator Lamp, dual-8 digital pipe

a) When the unit runs, under cooling mode, cooling indicator lamp lights, dual-8 displays preset temperature.
b) When the unit runs, under fan mode, fan indicator lamp lights, dual-8 does not display.
c) When the unit runs, under dry mode, dry indicator lamp lights, dual-8 does not display.
d) When the unit runs, under heating mode, heating indicator lamp lights, dual-8 displays preset temperature.

3.7 Setting button function

a) ON/OFF button: It controls systems switch.

b) Mode button: Mode setting cycle with below sequence: Cooling only unit: cooling-> dry-> fan.

c) Temp. ▼ button: Set temperature when the unit is on, the setting temperature decreases 1°C or °F per press Temp. ▼ button; it will never setting when the setting reaches to 16°C or 61°F. The button is not valid under auto, dry and fan mode.

d) Temp. ▲ button: Set temperature when the unit is on, the setting temperature increases 1°C or °F per press Temp. ▲ button; it will never setting when the setting reaches to 30°C or 86°F. The button is not valid under auto, dry and fan mode.

3.8 Light Control

If set the light is on with remote control, the indicator lamp and dual-8 display the current setting status; if set the light is off with remote control, turn off the lamp immediately. If there is front panel button or remote control button operation when setting light off with remote control, the indicator lamp and dual-8 display current setting status, and turn off the light 5S later. Remote control light button does not controlled by failure display.

3.9 Protection Function

● Anti-freeze Protection

When the anti-freeze protection is inspected, the compressor stops, fan motor runs with setting fan speed.

When the anti-freeze protection is canceled and reaches to the 3min time-delay, it runs with the original status.

Temperature sensor failure inspection

a) Environment temperature sensor is open, short circuit: dual-8 displays F1, the cooling indicator lamp goes out 3S and blinks 1 time, and it will light up 0.5S and go out 0.5S when it is blinking.

b) Indoor pipe temperature sensor is open, short circuit: dual-8 displays F2, the cooling indicator lamp goes out 3S and blinks 2 times, and it will light up 0.5S and go out 0.5S when it is blinking.

c) Outdoor pipe temperature sensor is open, short circuit: dual-8 displays F4, the cooling indicator lamp goes out 3S and blinks 4 times, and it will light up 0.5S and go out 0.5S when it is blinking.

● Over-flow Protection

If the over-flow is detected for 3S, it will enter into over-flow protection. Display error code H8.

Part Ⅱ : Installation and Maintenance

7.Notes Maintenance Safety Precautions:

Important!

Please read the safety precautions carefully before installation and maintenance.
The following contents are very important for installation and maintenance.
Please follow the instructions below.
●The installation or maintenance must accord with the instructions.
●Comply with all national electrical codes and local electrical codes.
●Pay attention to the warnings and cautions in this manual.
●All installation and maintenance shall be performed by distributor or qualified person.
●All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
●Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.

Warnings

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
3. Make sure each wiring terminal is connected firmly during installation and maintenance.
4. Have the unit adequately grounded. The grounding wire cant be used for other purposes.
5. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
6. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
7. The power cord and power connection wires cant be pressed by hard objects.
8. If power cord or connection wire is broken, it must be replaced by a qualified person.
9. For the air conditioner without plug, an air switch must be installed in the circuit. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.
10. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
11. Replace the fuse with a new one of the same specification if it is burnt down; dont replace it with a cooper wire or conducting wire.
12. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Refrigerant Safety Precautions:

1. Avoid contact between refrigerant and fire as it generates poisonous gas. Recycle the refrigerant inside the unit completely before welding pipes.
2. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.
3.If refrigerant is leaking seriously, it may cause suffocation or explosion. When using the combustible refrigerant, please put the unit at ventilated place.
4. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

Improper installation may lead to fire hazard explosion, electric shock or injury.


Appliance filled with flammable gas R290.


Before install and use the appliance, read the owner's manual first.


Before install the appliance, read the installation manual first.

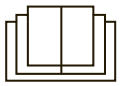

Before repair the appliance, read the service manual first.

The Refrigerant

- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R290, which is specially cleaned.
  The refrigerant is flammable and inodorous. Furthermore, it can leads to explosion under certain conditions.
- Compared to common refrigerants, R290 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect is also lower. R290 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.
- Please refer to the nameplate for the charging quantity of R290.

WARNING:

- Appliance filled with flammable gas R290.
- Appliance shall be installed, operated and stored in a room with a floor area larger than 15 m^2.
- The appliance shall be stored in a room without continuously operating ignition sources . (for example: open flames, an operating gas appliance or an operating electric heater.)
- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified foroperation.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- Ducts connected to an appliance shall not contain an ignition source.
- Keep any required ventilation openings clear of obstruction.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by themanufacturer.
- Servicing shall be performed only as recommended by the manufacturer.
- Should repair be necessary, contact your nearest authorized Service Centre.
  Any repairs carried out by unqualified personnel may be dangerous.
- Compliance with national gas regulations shall be observed.
- Read specialist's manual.

1 Safety Principle of Maintenance

1. The maintenance spot must have good ventilation. Do not close the door or the window.
2. Do not use naked flame, including welding, smoking. Do not use mobile phone. Tell the user not to cook with naked flame.
3. Take antistatic measures, including wearing pure cotton clothes and gloves etc.
4. If flammable refrigerant leakage is found during maintenance, it is a must to reinforce ventilation, and block the leak source.
5. During maintenance, it is necessary to keep the spot safe when fetching the lacked spare parts.
6. It is necessary to keep the case of the air conditioner grounded during maintenance.
7. When carrying the refrigeration steel cylinder to the user's place, the refrigeration inside shall not exceed the rated value. The steel cylinder must be vertical and away from the heat source, fire source, radiation source and electric appliance.
8. It is necessary to carry the unit to the service center for maintenance, when
(1) inner refrigerant pipe must be welded;
(2) disassembling the heat exchanger; e.g. replacing chassis of outdoor unit, removing condenser;
(3) replacing compressor or components of cooling system.
9. The maintenance irrelated to refrigerant vessel, inner refrigerant pipe and cooling component can be performed in the user's place, including cleaning the cooling system and sludging.
10. Ensure that the density tester is working during maintenance.
11. Ensure there is necessary safety precaution and emergency measures on the spot. Put suitable fire extinguishers(CO_2 or dry powder) in the nearest area.
12. There must be natural ventilation in the maintenance spot.
13. The maintenance staff shall take safety actions.
14. Paste suitable signs such as "No Smoking" and "No Entry".

2 Preparation before Maintenance

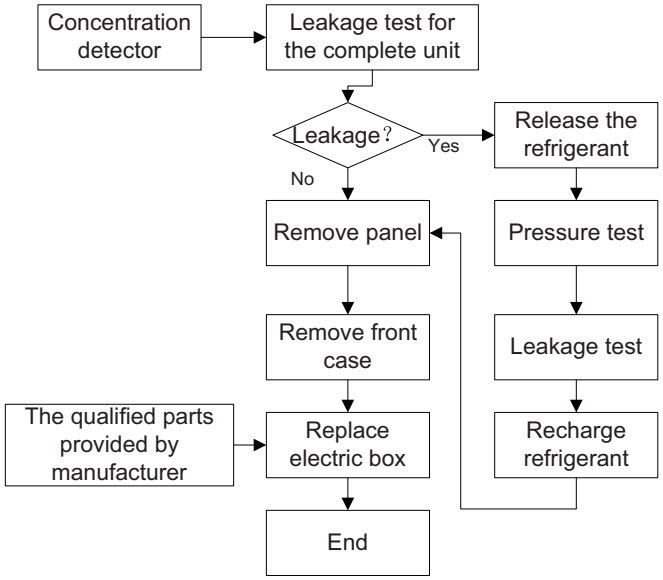
1. Inspection of Environment
(1) Ensure that electric product with radiation is power off in the maintenance area. All the persons in the room shall turn off the mobile phone.
(2) Check if there is refrigerant leakage in the maintenance area. Ensure that all the leak testers are suitable for this air conditioner.
(3) Ensure that the room area reaches the requirement.
(4) Check if the maintenance area is ventilated. Keep the room ventilated.
2. Inspection of Air Conditioner
(1) Ensure that the air conditioner is reliably grounded.
(2) Ensure that the power supply of the air conditioner is cut off. Discharge the electricity of the capacitor. If power supply is necessary, perform leak test to prevent the potential danger.
3. Inspection of Maintenance Equipment
(1) Check if the maintenance equipment is suitable for the refrigerant. Only the special equipment recommended by the air conditioner supplier can be used.
(2) The set alarm density of the leak tester shall not be higher than 25% of the LEL. The tester must keep operating during maintenance.
4. Leak Test before Maintenance
(1) After cutting off the power supply, perform leak test with the recommended leak detector or density tester (pump suction type) (ensure the equipment is calibrated; leakage ratio of leak detector is 2g/year.)
Note: do not use resolvent with chlorine in case causing corrosion of the steel pipe.
(2) If leakage is found, remove all fire source ensure good ventilation of the area.
5. Check List

No.	Check information	Result	Yes/No
1	Maintenance equipment is complete		
2	Persons in the maintenance area turn off the mobile phone.		
3	Power supply of tools is 2m away.		
4	Density tester can be used.		
5	Other tools are normal.		
6	Maintenance staffs are qualified.		
7	The spare parts are provided by the manufacturer and qualified.		
8	The air conditioner needed to be serviced is under safe state.		
9	The wire of power socket is reliably connected.		
10	There is natural ventilation in maintenance area.		
11	There is no operating electric appliance or naked flame within 2m of Maintenance area.		

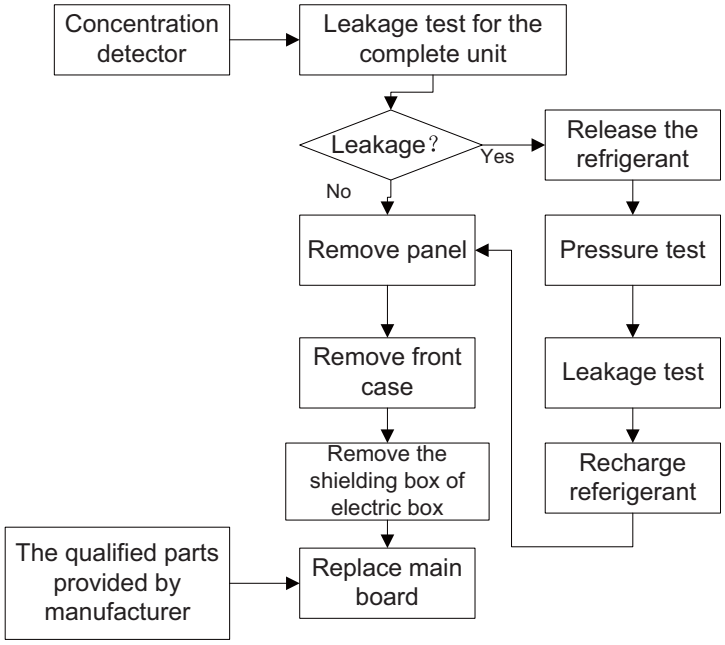
3 Maintenance Cautions

If it is necessary to replace components, all the components used shall be made by manufacturer. Otherwise, the supplier shall not bear the responsibility.
1.Maintenance of Electrical Parts
(1)Replace the power cord and connecting wire with that of the same specification.
(2)When inspecting the circuit with power on, check if there is electric leakage for the metal component such as evaporator or condenser. During inspection, do not touch the circuit so as to prevent electric shock.
(3)When inspecting the capacitor, ensure that the maintenance area is well ventilated. After conforming there is no refrigeration leakage, discharge electricity of capacitor.
(4)Before replacing the component, cut of the power supply of the air conditioner.
(5)Cut off the power before disconnecting and connecting the wire. Disconnect the live wire first and then ground wire.
(6)During maintenance, do not remove the protective component. Use the component of same supplier and specification.
(7)When servicing the hermetic parts, cut of the power of the air conditioner before opening the sealing cover. If it is necessary to use power
supply, perform leak test to prevent potential danger.
(8)Do not replace the case which may affect the protective grade.
(9)Ensure that the sealing material is not degraded and that it can prevent entry of flammable gas. The parts used for replacement must reach the requirement of the suppler.
2.Maintenance of Refrigeration System
(1) Do not lengthen or cut the connecting pipe.
(2) If the system component (such as evaporator, condenser, compressor, pipe) is needed to be serviced, discharge the refrigerant of the system completely before maintenance.
(3) The parts used for replacement must be made by manufacturer.
(4) It is necessary to perform leak test before and after maintenance and ensure there is no leakage.

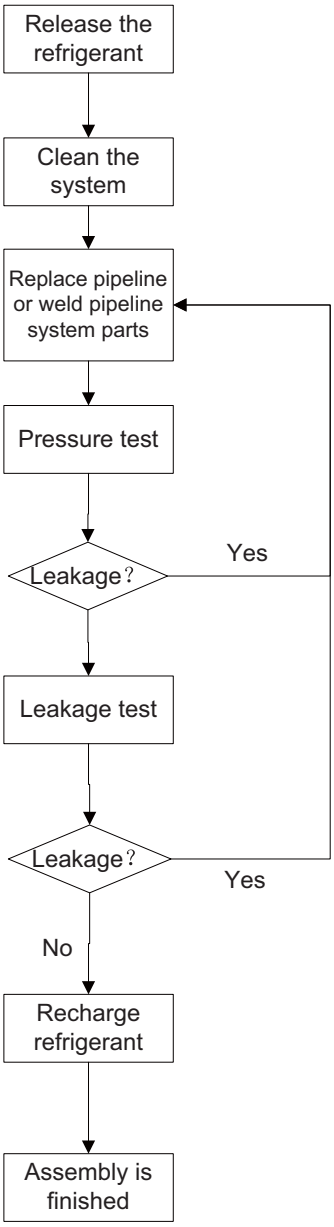
(5).Replace electric box



(6).Replace main board



(7).Replace pipeline or repair welding



8. Installation Precaution

⚠ WARNING:

- Observe all governing codes and ordinances.
- Do not use damaged or non-standard power cord.
- Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.

Selection of installation location

Basic requirement

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:

1.The place with strong heat sources,vapors,flammable or explosive gas,or volatile objects spread in the air.

2. The place with high-frequency devices (such as welding machine, medical equipment).

3. The place near coast area.

4. The place with oil or fumes in the air.

5. The place with sulfureted gas.

6. Other places with special circumstances.

7. It's not allowed to be installed on the unstable or motive base structure (such as truck) or in the corrosive environment (such as chemical factory).

Requirement of air conditioner

1. Air inlet should be far away from obstacles and do not put any objects near air outlet.Otherwise, it will affect the radiation of heat discharge pipe.

2. Select a location where the noise and outflow air emitted by the outddor unit will not affect neighborood.

3. Please try your best to keep far away from fluorescent lamp.

4.The appliance shall not be installed in the laundry.

Requirements for electric connection

Safety precaution

1. Must follow the electric safety regulations when installing the unit.

2. According to the local safety regulations, use qualified power supply circuit.

3. For appliances with type Y attachment,the instructions shall contain the substance of the following.If the supply cord is damaged,it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

4. Properly connect the live wire, neutral wire and grounding wire of power socket.

5. Be sure to cut off the power supply before proceeding any work related to electricity and safety.

6. Do not put through the power before finishing installation.

7.The air conditioner is first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.

8. The yellow-green wire or green wire in air conditioner is grounding wire, which can't be used for other purposes.

9. The grounding resistance should comply with national electric safety regulations.

10. The appliance shall be installed in accordance with national wiring regulations.

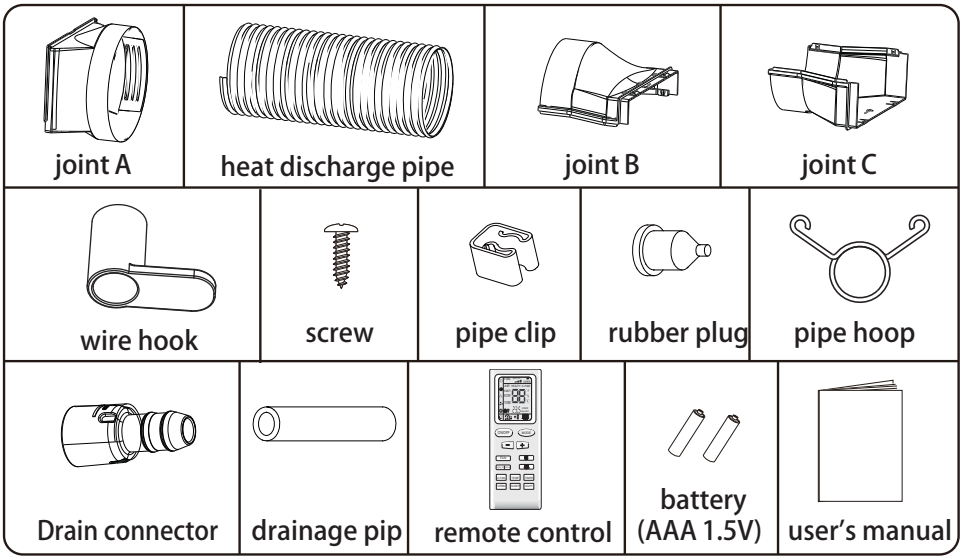
11. To be in compliance with IEC 61000-3-11, impedance value of power-supply system connected to product must be less than or equal to the allowable maximum value of |Zsys| in the following sheet:

models	max |Zsys| unit:ohms
GPC12AL-K5NNA3A	0.12
GPH12AL-K5NNA3A	

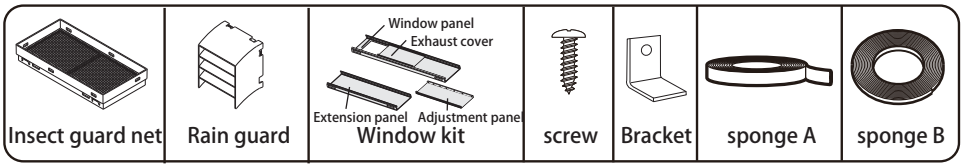
Preparation before Installation

Note: check if the accessories are available before installation

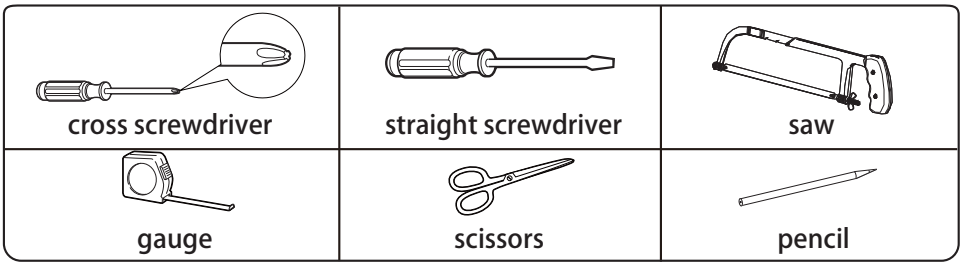
Accessory list



Optional



Tools needed for installation



9. Install

9.1 Install Wire Hook

● Assemble the wire hook at the back of the unit with screws.(As show in Fig.1)

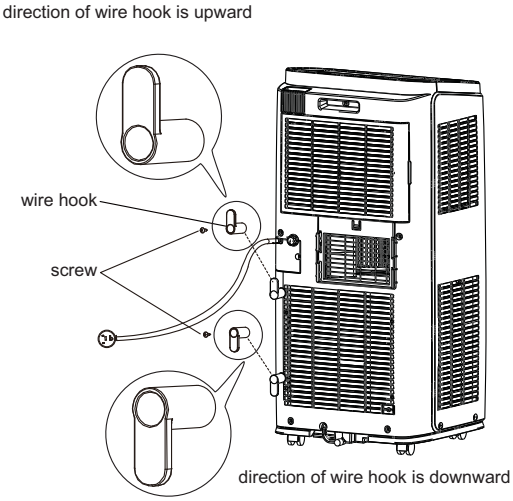


Fig.1

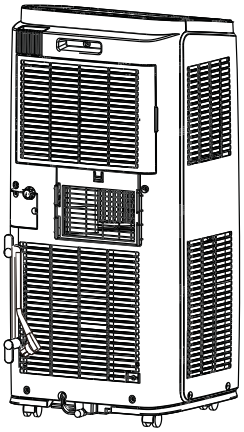


Fig.2

● Wind the power cord around the wire hook.(As show in Fig.2)

9.2 Removing Collected Water

There are 2 ways to remove collected water:

1. Use the continuous drainage option from the lower hole.

NOTICE: When using the continuous drainage option from the bottom hole, install drainage pipe as follow before using, otherwise poor drainage will affect normal operation of the unit.

● Instructions for drainage pipe installation.

(1) Fix the drainage pipe clip on the right of rear side plate near drainage port with a screw.(As show in Fig.3)
(2) Remove the rubber plug at drainage port.(As show in Fig.4)
(3) Put the drainage pipe into drainage port and screw it up, and then bind it with pipe hoop.
(4) Put the rubber plug into the other side of drainage pipe, fix it with pipe hoop and then fix it in the drainage pipe clip.(As show in Fig.5)

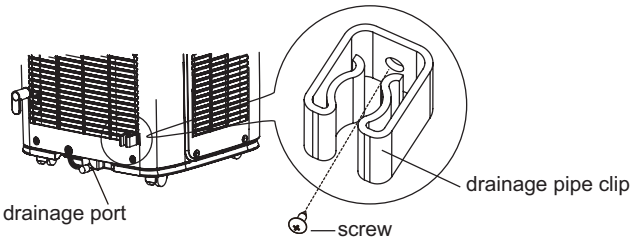


Fig.3

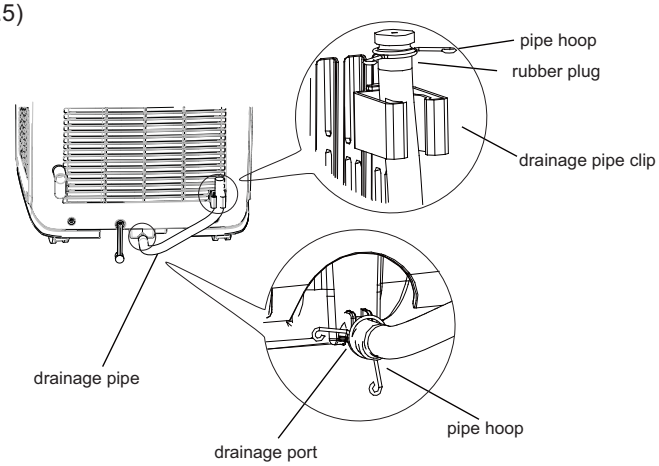


Fig.5

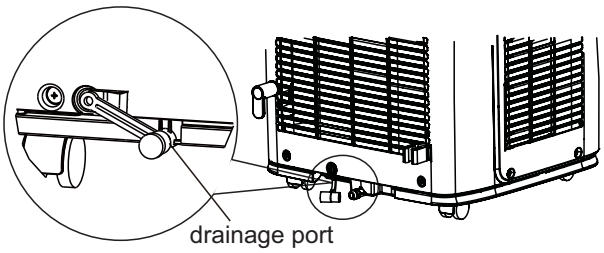


Fig.4

● Drainage way as follows.
1. In Cool, Dry or Heat mode operating, the condensation water will be drained to the chassis.(As show in Fig.6)
2. When the chassis is full with water, the buzzer will give out 8 sounds and "H8" is displayed to remind user to discharge water,the unit will turned off about 2min latter,and all buttons are invalid.

To empty the chassis, please follow the instructions bellow.

● Turn the unit off and unplug from the electrical outlet;
● Use a small pan or move the unit to a suitable place to drain the water;
● Take the drainage pipe from the clip and pull out the rubber plug on the drainage pipe to drain the water;
● Drain the water into the small pan or a suitable place.
● Once draining is complete,re-install drain cap.
● Press ON/OFF button to restart the unit.

2.Use the continuous drainage option from the middle hole

NOTICE: Water can be automatically emptied into a floor drain by attaching 14mm inner diameter hose (not included).

(1) Remove the continuous drain cap 1 by turning it counter clockwise then remove the rubber stopper 2 from the spout. (As show in Fig.7)

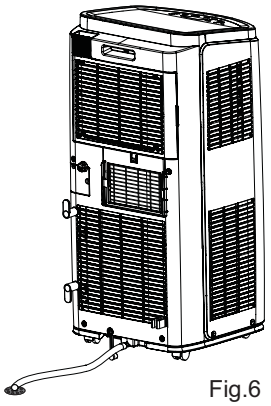


Fig.6

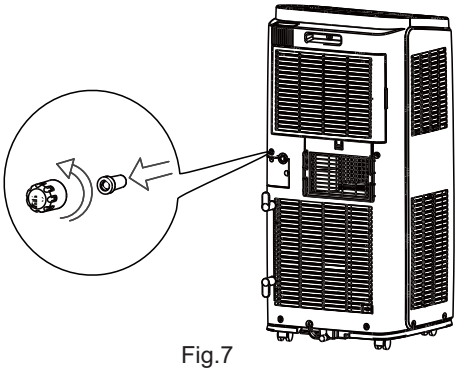


Fig.7

(2) Screw the drain connector to(included in the package) the spout by turning clockwise.(As show in Fig.8)
(3) Insert the drainage hose into drain connector.(As show in Fig.9)

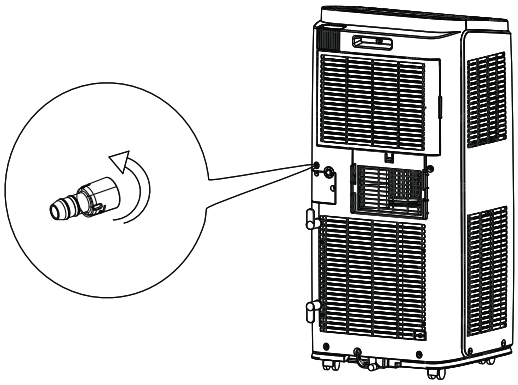


Fig.8

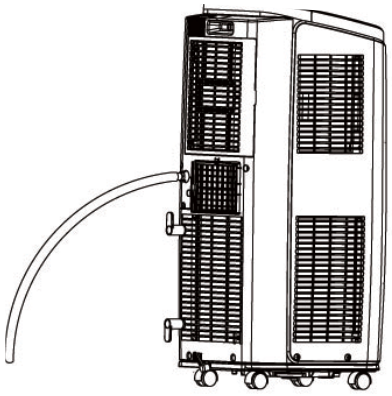
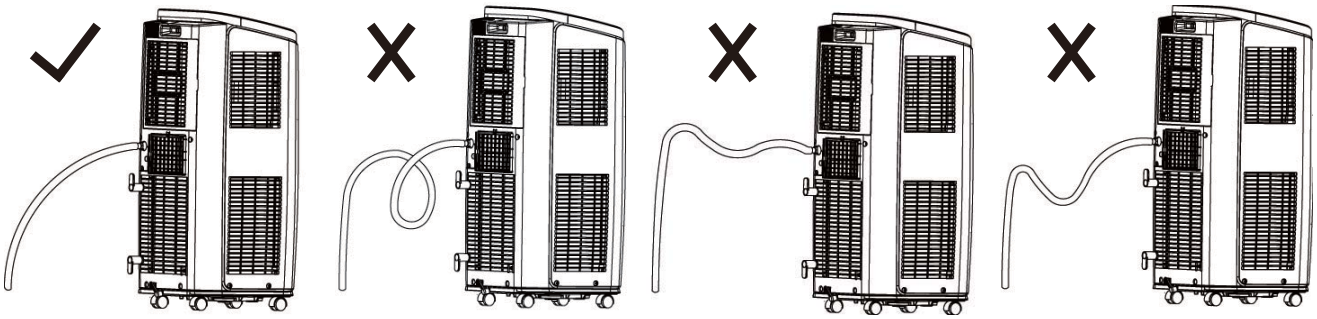


Fig.9

ATTENTION:

When using continuous drainage option from the middle hole, place portable on a level surface and make sure garden hose is clear of any obstructions and is directed downward. Placing portable on an uneven surface or improper hose installation may result in water filling up the chassis and causing the unit to shut off. Empty water in the chassis if shut off occurs, then check portable location and hose for proper setup.



9.3 Installation in a double-hung sash window

1. Connect the rain guards to the insect guard net.(As show in Fig.10)
   Insert all three projections on each rain guard into the holes in the insect guard net.
   Side “A” will now be at the top, as indicated in the diagram.
2. Attach the guard combined above to the window panel.(As show in Fig.11)
   Push the insect guard net firmly to ensure that its four projections fit into the holes in
   Side “A” will now be at the top, as indicated in the diagram.

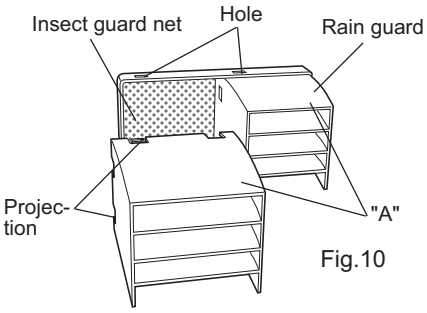


Fig.10

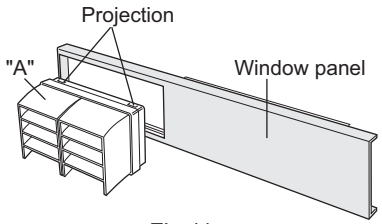


Fig.11

3. Cut the foam seal A to the proper length and attach it to the window stool.(As show in Fig.12)
4. Attach the window panel to the window stool.
   Make sure that the exhaust cover is attached to the window panel.
   Inner width of the window:20.5"(520mm)
   Use the window panel.
   The window panel cannot be installed in windows less than 20.5" (520mm) wide,as you will be unable to shut the exhaust cover.
   (1) Open the window sash and place the window panel on the window sill. (As show in Fig.13)
   (2) Secure the window panel to the window stool with 2 screws.(As show in Fig.14)

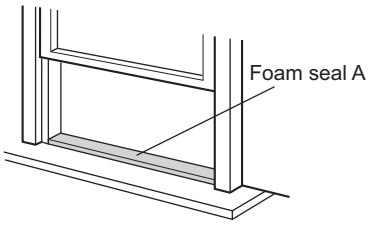


Fig.12

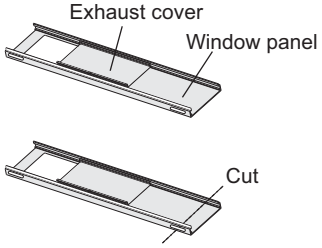


Fig.13

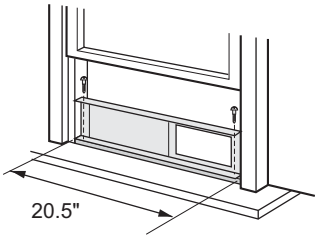


Fig.14

Inner width of the window:20.5" (520mm)- 38.5" (980mm)
Use the window panel and the adjustment panel.
(1) Open the window sash and place the window panel on the window sill.
(2) Slide the adjustment panel to fit the window frame width.(As show in Fig.15)
(3) Secure the window panel to the sill with 3 screws.(As show in Fig.16)

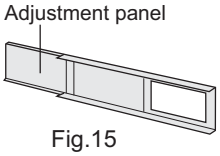


Fig.15

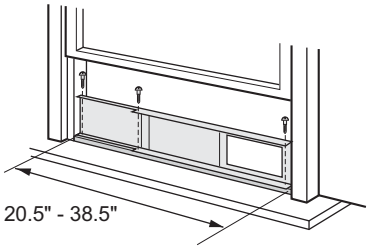


Fig.16

Inner width of the window:38.5" (980mm) - 59" (1500mm)
Use the window panel, the adjustment panel and the extension panel.
(1) Open the window sash and place the window panel on the window sill.
(2) Slide the adjustment and extension panels to fit the window frame width.(As show in Fig.17)
(3) Secure the window panel to the window sill with 4 screws.(As show in Fig.18)

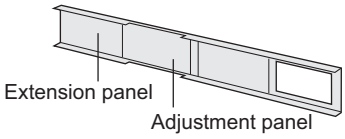


Fig.17

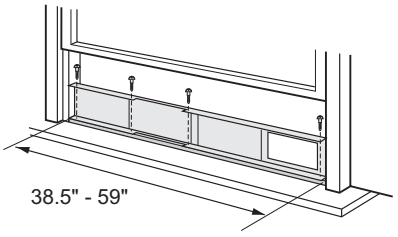


Fig.18

5. Close the window sash securely against the Window panel.(As show in Fig.19)
6. Stuff the sponge B between the glass and the window to prevent air and insectsfrom getting into the room.(As show in Fig.20)

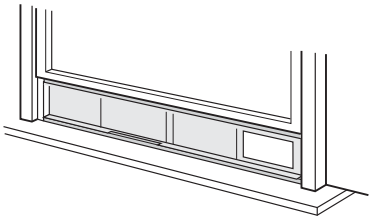


Fig.19

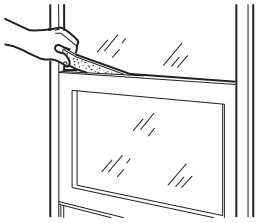


Fig.20

7. Attach the bracket with a screw.(Recommended)(As show in Fig.21)

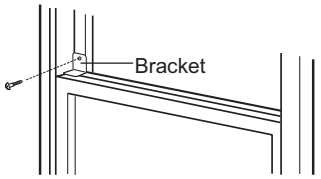


Fig.21

Please lay a tabular material underneath the window panel in case you could not attach the rain guard or the window adapter properly due to the deep window sill.

9.4 Installation in a sliding sash window

1.Connect the rain guards to the insect guard net.(As show in Fig.22)
Insert all three projections on each rain guard into the holes in the insect guard net.
Side “A” will now be at the top, as indicated in the diagram.
2.Attach the guard combined above to the window panel. (As show in Fig.23)
Push the insect guard net firmly to ensure that its four projections fit into the holes in the window panel.
Side “A” will now be at the top, as indicated in the diagram, when it is installed in the window.

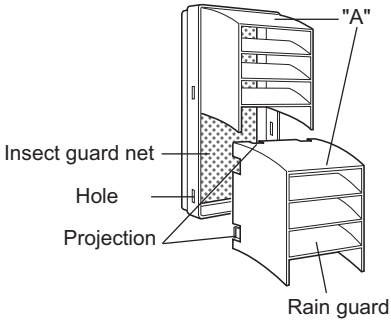


Fig.22

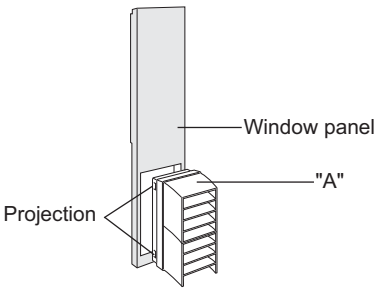


Fig.23

3. Cut the foam seal A (adhesive type) to the proper length and attach it to the window frame.(As show in Fig.24)
4. Install the window panel into the window frame.(As show in Fig.25)
Make sure that the exhaust cover is attached to the window panel.
Inner height of the window:20.5"(520mm)
Use the window panel.
The window panel cannot be installed in windows less than 20.5" (520mm) high, as you will be unable to shut the exhaust cover.(As show in Fig.26)
(1) Open the window sash and place the window panel on the window frame.
(2) Secure the window panel to the window frame with 2 screws.

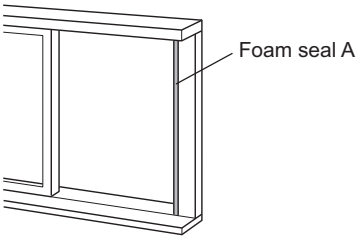


Fig.24

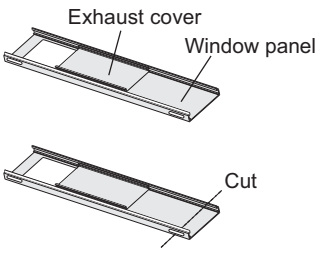


Fig.25

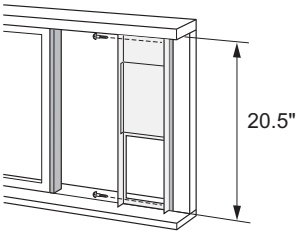


Fig.26

Inner height of the window:20.5" (520mm)- 38.5" (980mm)
Use the window panel and the adjustment panel.
(1) Open the window sash and place the window panel on the window frame.
(2) Slide the adjustment panel to fit the window frame height.(As show in Fig.27)
(3) Secure the window panel to the window frame with 3 screws.(As show in Fig.28)

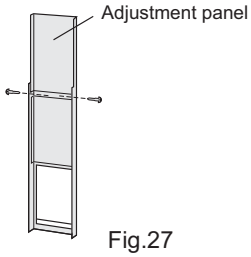


Fig.27

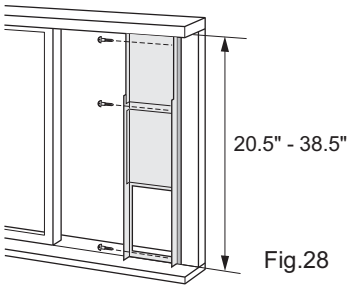


Fig.28

Inner height of the window:38.5" (980mm) - 59" (1500mm)
Use the window panel, the adjustment panel and the extension panel.
(1) Open the window sash and place the window panel on the window frame.
(2) Slide the adjustment and extension panels to fit the window frame height.(As show in Fig.29)
(3) Secure the window panel to the window frame with 4 screws.(As show in Fig.30)

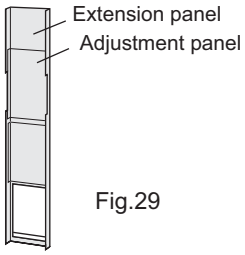


Fig.29

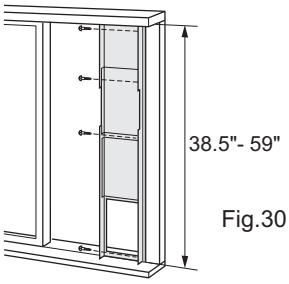


Fig.30

5.Close the window sash securely against the Window panel.(As show in Fig.31)
6. Stuff the foam seal B between the glass and the window to prevent air and insects from getting into the room.(As show in Fig.32)

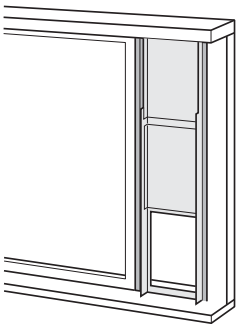


Fig.31

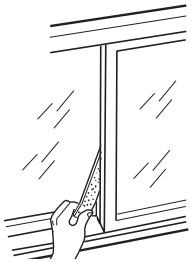


Fig.32

7. Attach the bracket with a screw.(Recommended)(As show in Fig.33)

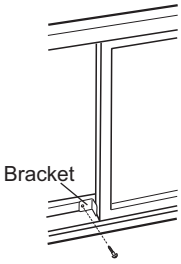


Fig.33

Please lay a tabular material underneath the window panel in case you could not attach the rain guard or the window adapter properly due to the deep window sill.

9.5 Installation and Disassembly of heat Discharge Pipe

A. Install heat discharge pipe

(1) Rotate joint A and joint B clockwise into the two ends of heat discharge pipe.(As show in Fig.10)
(2) Insert joint A of heat discharge pipe (the side with "TOP" is upwards) into the groove until you hear a sound.(As shown in Fig.11)
(3) Lead the exhaust hose outdoors.(As shown in Fig.12)
(4) Slide and open the exhaust cover on the window panel, and attach the window adapter. (Optional) (As shown in Fig.13)

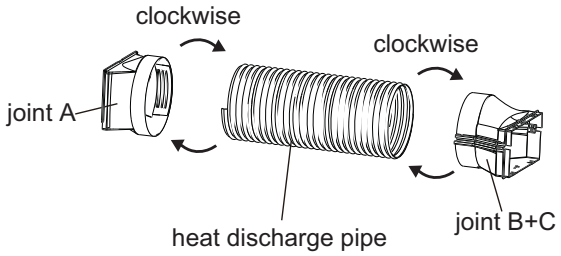


Fig.10

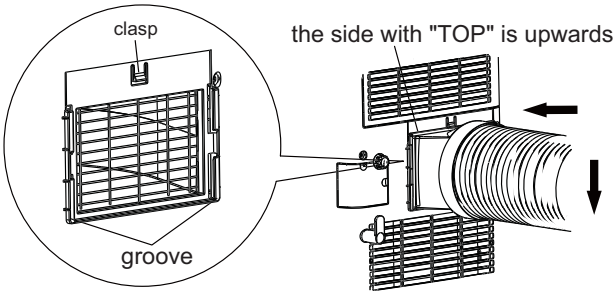


Fig.11

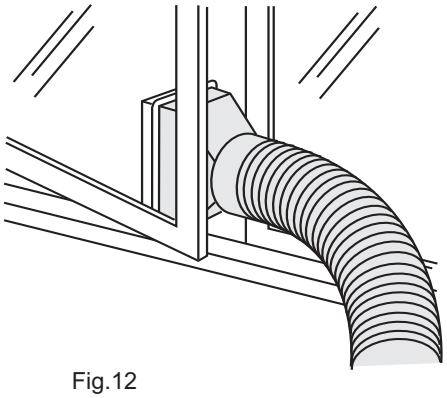


Fig.12

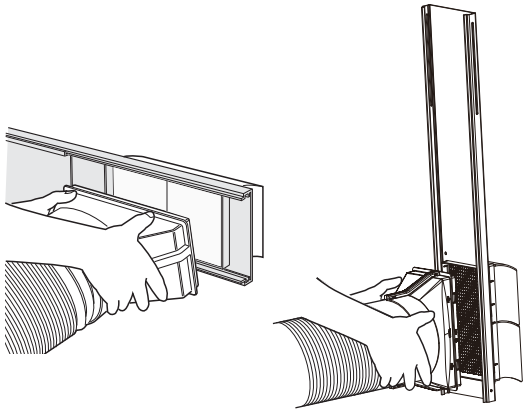


Fig.13

Note of Install heat discharge pipe

In order to improve cooling efficiency, the heat discharge pipe should be as short as possible and flat without curve to ensure smooth heat discharge.(As shown in Fig.13)
●The length of the heat discharge pipe is less than 1m. It is recommended to use it with shortest length.
●The length of the heat discharge pipe is less than 1m. It is recommended to use it with shortest length.(As shown in Fig.14)

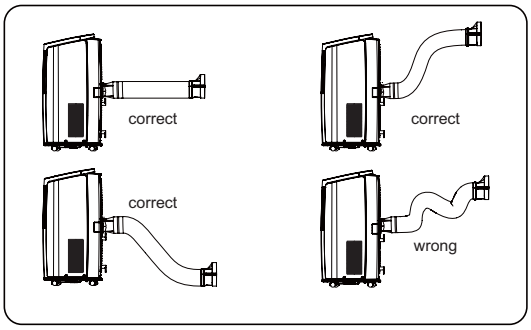


Fig.13

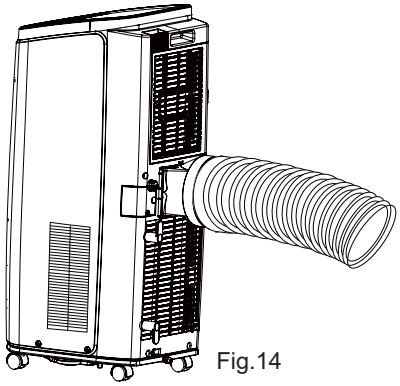


Fig.14

●Correct installation is as shown in figure (When installing it on wall, height of hall should be about 40cm-130cm from floor).(As shown in Fig.15)
●Wrong installation is shown in following figure (If the pipe is bent too much, it would easily cause malfunction.(As shown in Fig.16)

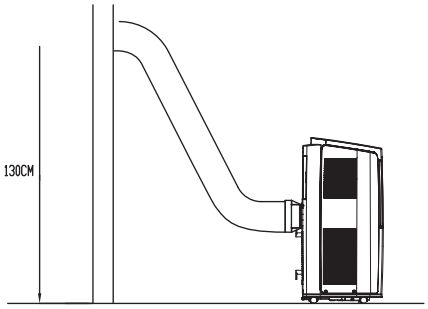


Fig.15

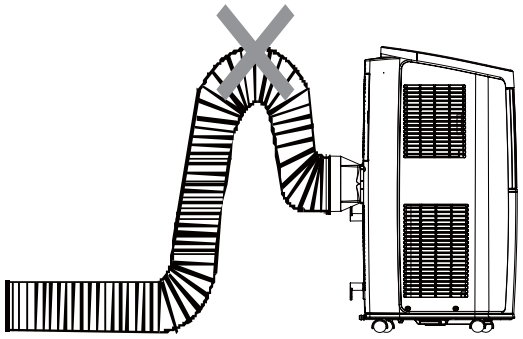


Fig.16

B. Disassemble heat discharge pipe

(1) Remove joint B
remove joint B from joint C.(As shown in Fig.17)
(2) Remove joint A: Press the clasp and lift joint A upwards to remove it.(As shown in Fig.18)

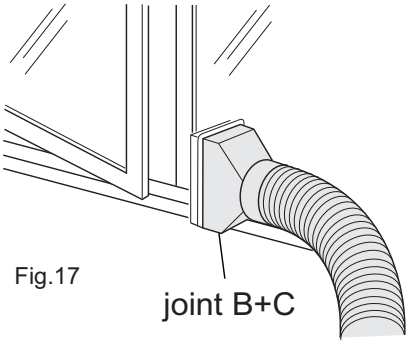


Fig.17

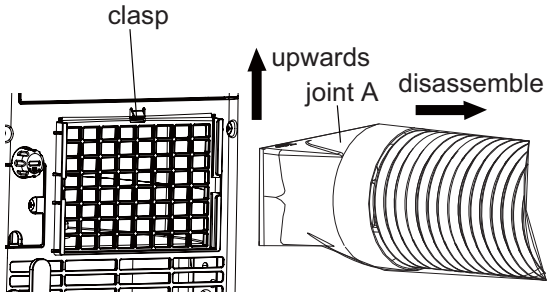
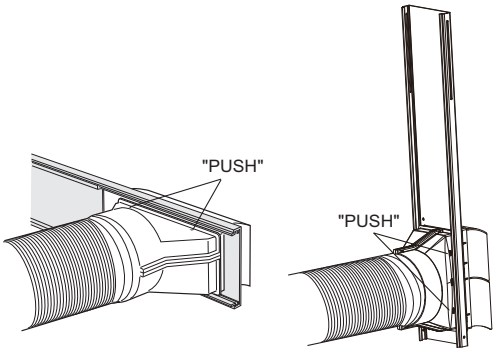


Fig.18

(3) Remove the window adapter. Pull out and remove the window adapter by pushing down two "PUSH" markings, and slide and close the exhaust cover in the window panel. (Optional)



9.6 Operation test

●Put through the power supply and then press ON/OFF button on remote controller to start the unit.
●Press mode button to select auto, cooling, drying, fan or heating function, and then check if the unit operates normally.
●If ambient temperature is below 16°C, the unit cant operate in cooling mode.

10. Maintenance

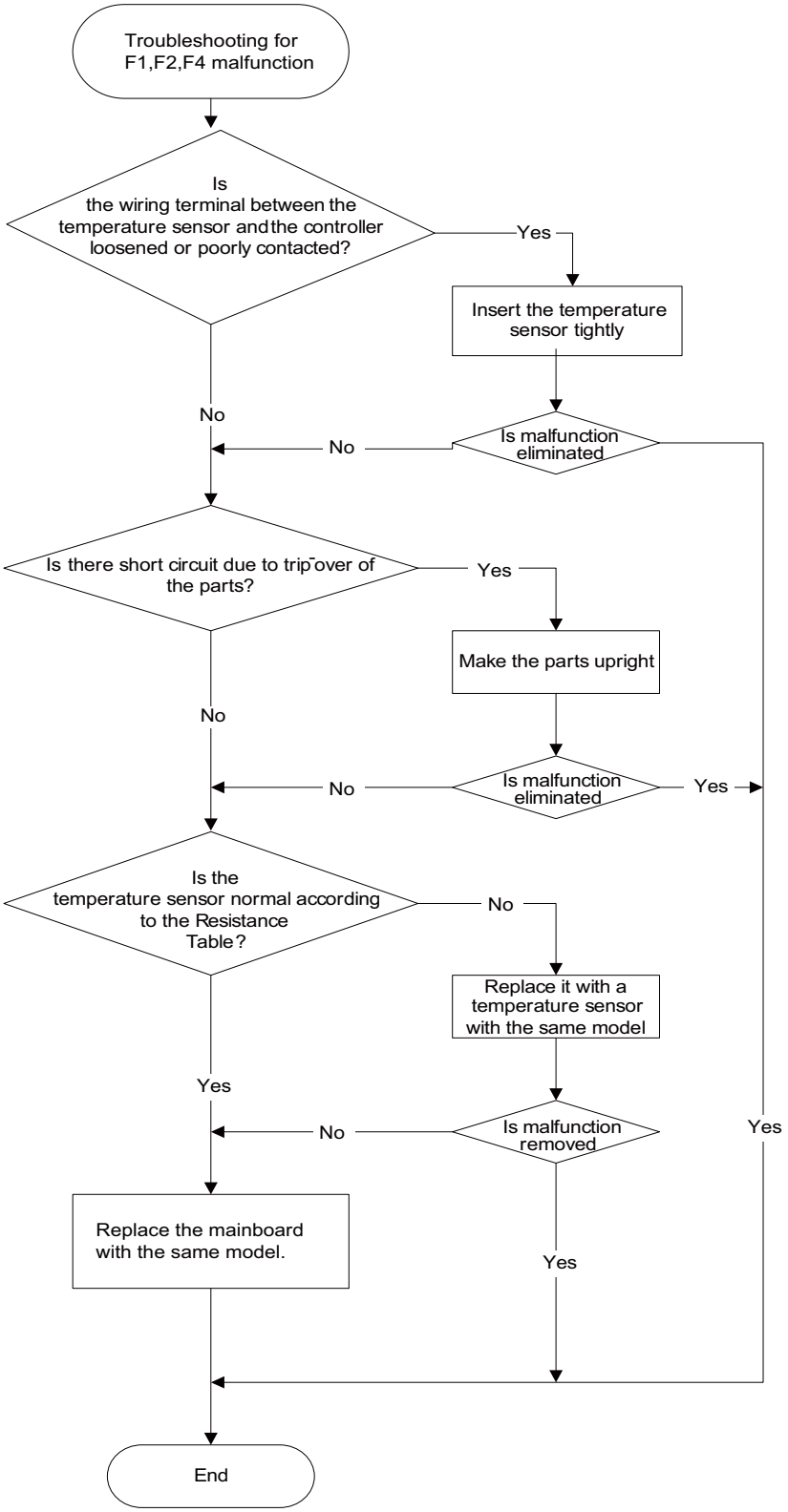
10.1 Error Code

NO.	Malfunction Name	Display Method of Indoor Unit				A/C Status	Possible Causes
		Error Code	Indicator lamp (During blinking, ON for 0.5S and OFF for 0.5 S)				
			Operation Inidicato	COOL Indicator	HEAT Indicator		
1	Indoor ambient temperature sensor is open/short-circuited	F1		OFF 3S and blinks once		Compressor and draw water motor stop operation. Fan stop operation after 2min.	1. The wiring terminal between indoor ambient temperature sensor and main board is loosened or poorly contacted. 2. Theres short circuit due to trip-over of the parts on main board. 3.Indoor ambient temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor). 4. Main board is damaged.
2	Indoor evaporator temperature sensor is open/short-circuited	F2		OFF 3S and blinks twice		Compressor and draw water motor stop operation. Fan stop operation after 2min.	1. The wiring terminal between indoor evaporator temperature sensor and main board is loosened or poorly contacted. 2. Theres short circuit due to the trip-over of the parts on main board. 3.Indoor evaporator temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor). 4. Main board is damaged.
3	Outdoor condenser temperature sensor is open/short-circuited	F4		OFF 3S and blinks 4 times		Compressor and draw water motor stop operation. Fan stop operation after 2min.	1. The wiring terminal between outdoor condenser temperature sensor and main board is loosened or poorly contacted. 2. Theres short circuit due to the trip-over of the parts on main board. 3. Outdoor condenser temperature sensor is damaged (Please check it by referring to the resistance table for temperature sensor). 4. Main board is damaged.

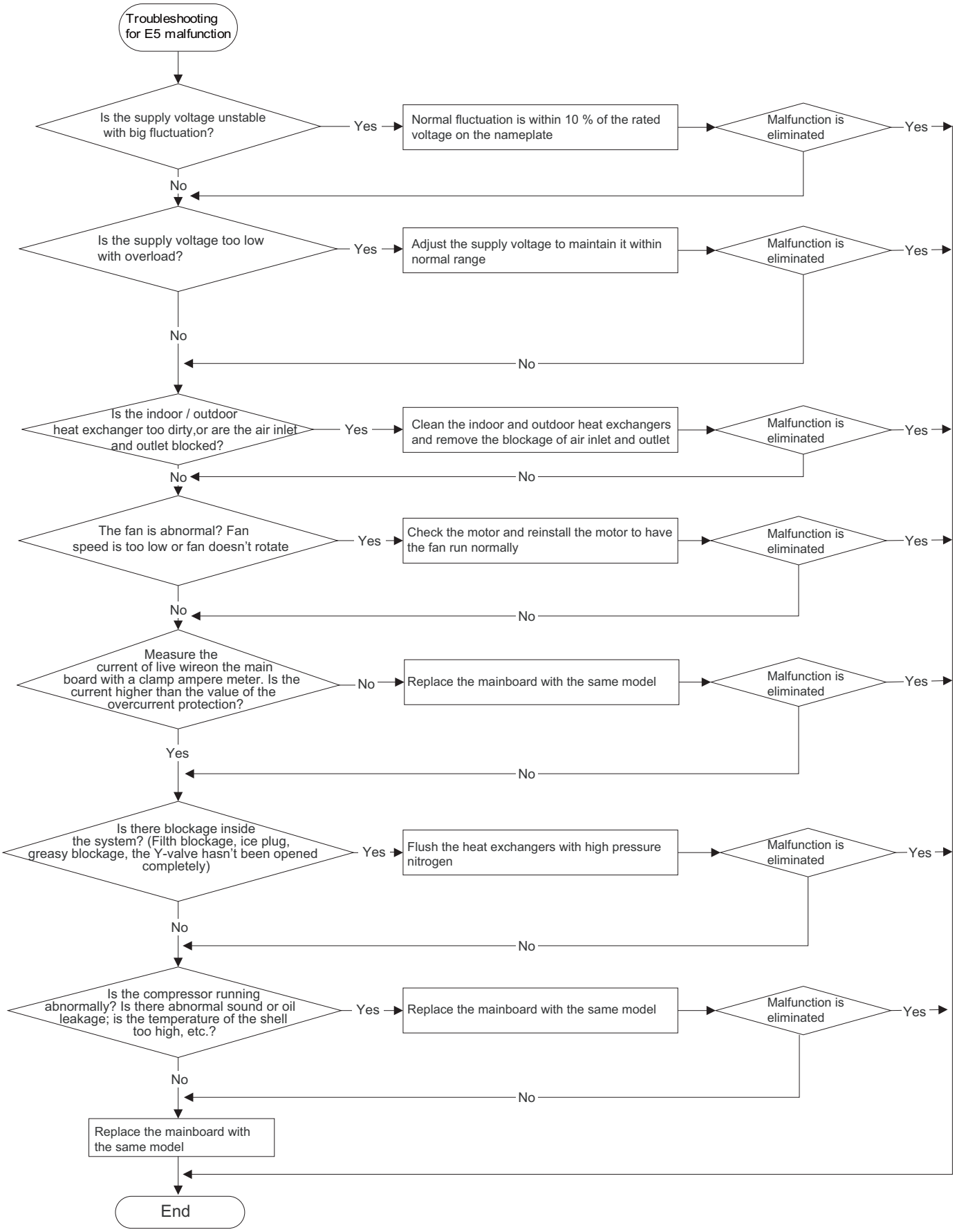
NO.	Malfunction Name	Display Method of Indoor Unit				A/C Status	Possible Causes
		Error Code	Indicator lamp (During blinking, ON for 0.5S and OFF for 0.5 S)				
			Operation Inidicato	COOL Indicator	HEAT Indicator		
4	Water over-flow protection	H8				The unit stops operation	During cooling or drying operation,condensate water will flow into chassis. If its detected that water inside water chassis is full for 3s successively, it comes into water over-flow protection. Buzzer will give out 8 sounds and dual-8 nixie tube displays error code “H8”.
5	Insufficient fluorine protection	F0				Indoor and outdoor fan keeps on running,other loads stop operation	1. Heat exchangers are too dirty or the air inlet/outlet is blocked. 2. Compressor doesnt work normally. Strange noise or leakage occurs. Temperature of the shell is too high. 3. System is blocked inside(dirt block, ice block, oil block, Y-valve not fully open). 4. The refrigerant is leaking.
6	Overload protection for compressor	H3				Indoor and outdoor fan keeps on running,other loads stop operation	1. Heat exchangers are too dirty or the air inlet/outlet is blocked. 2. Fan motor is not working Abnormal fan speed; fan speed is too low or the fan doesnt run. 3. Compressor doesnt work normally. Strange noise or leakage occurs. Temperature of the shell is too high. 4. System is blocked inside(dirt block, ice block, oil block, Y-valve not fully open). 5. Draw-water motor cant operate normally. 6. Water outlet hasnt been blocked well by rubber cork . 7. The refrigerant is leaking and cause overheating protection to compressor.
7	Overload malfunction	E8				Indoor and outdoor fan keeps on running,other loads stop operation	1. The environment is formidable. 2. Heat exchangers are too dirty or the air inlet/outlet is blocked. 3. Fan motor is not working Abnormal fan speed; fan speed is too low or the fan doesnt run. 4. Compressor doesnt work normally. Strange noise or leakage occurs. Temperature of the shell is too high. 5. System is blocked inside(dirt block, ice block, oil block, Y-valve not fully open). 6.Temperature sensor of main board cant detect correctly.

10.2 Malfunction Detection Flowchart

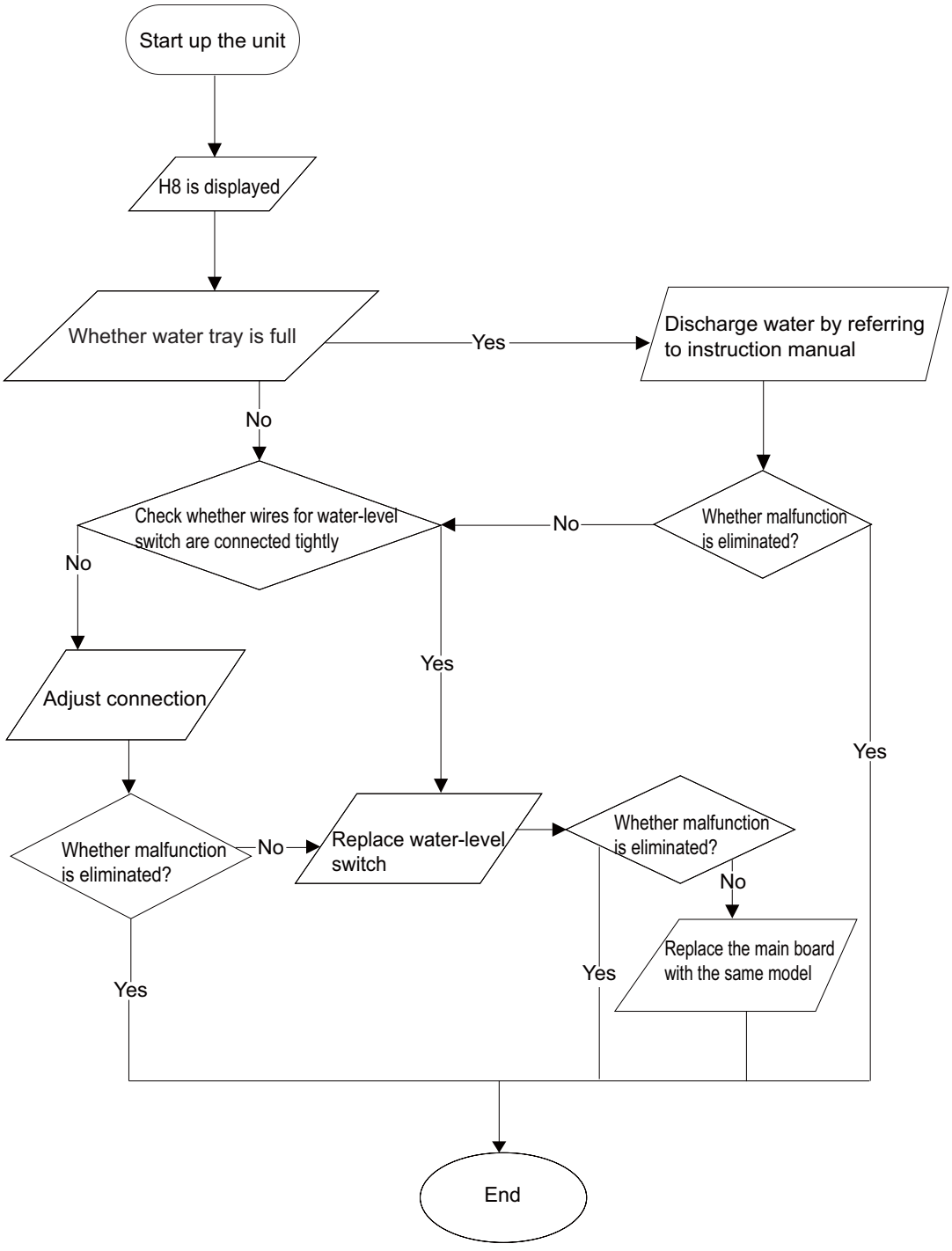
(1) Malfunction of temperature sensor F1, F2, F4



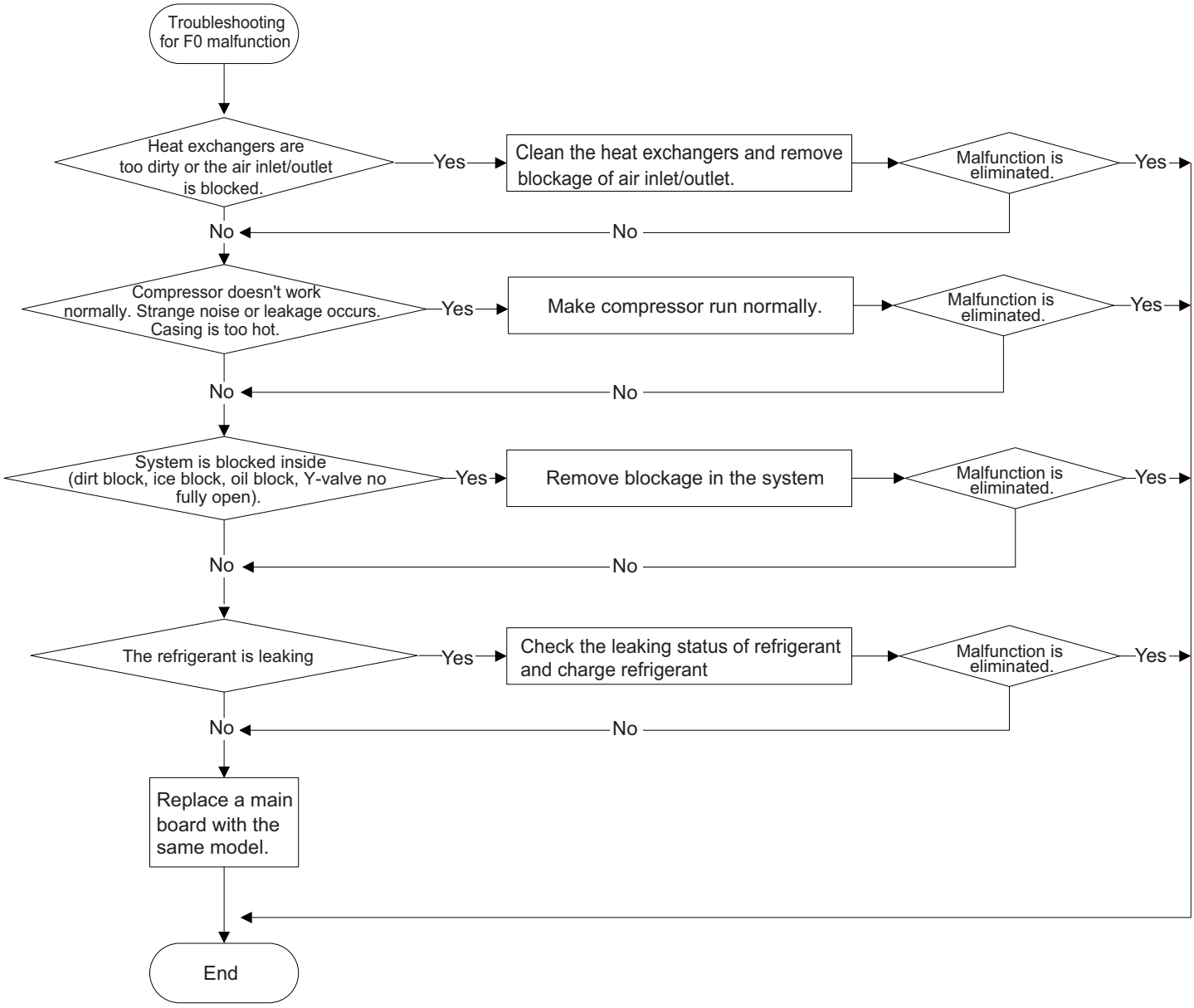
(2) Malfunction of Overcurrent Protection E5



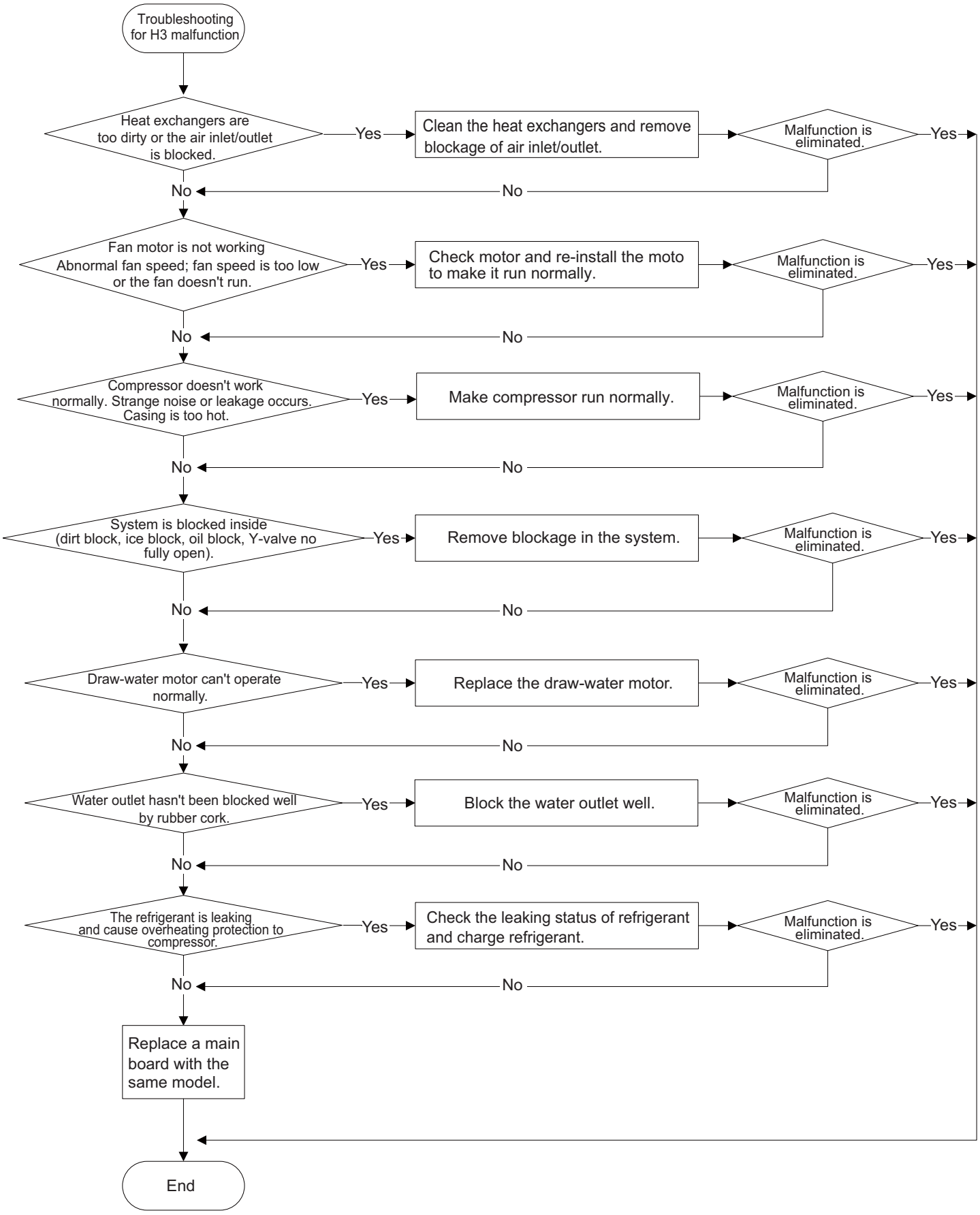
(3) Bucket full protection H8



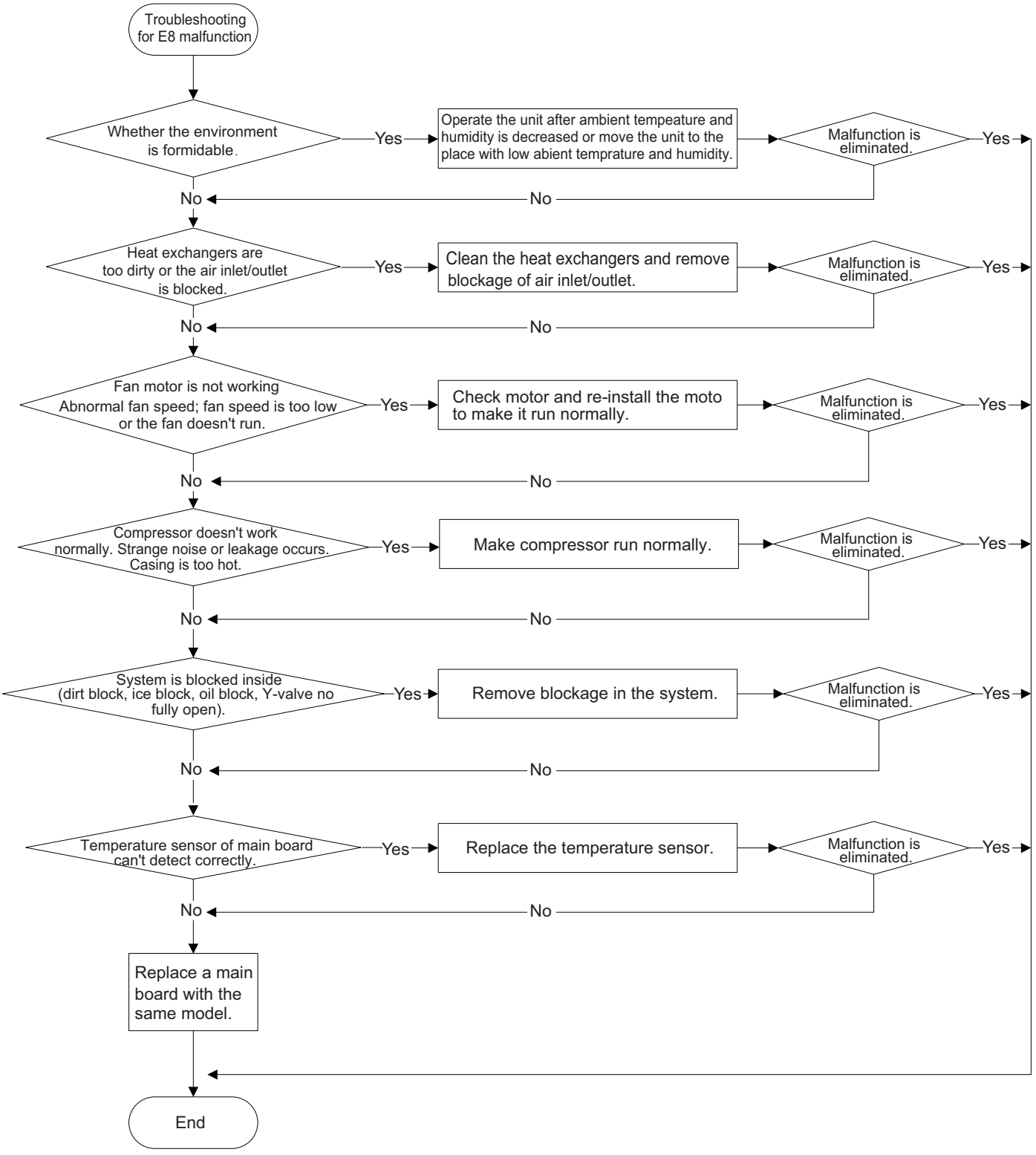
(4) Malfunction of Insufficient fluorine protection F0



(5) Malfunction of Overload protection for compressor H3



(6) Overload malfunction E8



10.3 Maintenance Method for Common Malfunction

1. Air Conditioner Cant be Started Up

Possible Causes for Malfunction	Distinguish Method (A/C status)	Maintenance Method
No power supply; power plug hasnt been inserted tightly and poorly connected; wires hasnt been connected well.	Operation indicator is OFF and buzzer wont give out sound.	Check whether theres power supply; Check power plug and wire connection.
Ambient temperature sensor is damaged (no connection, loosen, wires are damaged, resistance value for temperature sensor is abnormal).	After energization, the unit will give out a sound, while it cant be started up after pressing ON/OFF button.	Check wire connection of temperature sensor or replace temperature sensor.
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once.	Make sure the air conditioner is grounded reliably. Make sure wires of air conditioner is connected correctly. Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off.	Select proper air switch.
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller. Repair or replace remote controller.
Water inside water chassis is full	Dual8 nixie tube displays H8 and buzzer gives out 8 sounds (water over-flow protection).	Discharge condensate water.
Malfunction of water-level switch		Check water-level switch and connection (refer to detection flow chart 3).

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature.
Fan speed is set too slow	Small fan blow at air outlet	Set the fan speed at high or medium.
Filter unit is blocked	Check the filter to see whether its blocked by sundries	Clean the filter.
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Evaporator is frosted	Has set COOL (DRY) mode, but theres no cool fan	The system is defrosting. Resume operation after defrosting is finished.
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unitt pressure is much lower than regulated range. If refrigerant isnt leaking, part of capillary is blocked	Replace the capillary.
Malfunction of fan	Fan cant operate	Refer to point 3 for detailed maintenance method.
Malfunction of compressor	Compressor cant operate	Refer to point 4 of maintenance method for details.

3. Fan Cant Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Fan capacitor is damaged	Use universal meter to measure voltage at both ends of fan capacitor	Replace fan capacitor
Supply voltage is too low or too high	Use universal meter to measure the voltage	You are suggested to equip with voltage regulator
Motor is damaged	Above circumstances are normal, while the fan cant operate	Repair or replace motor

4. Compressor Cant Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and its 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor cant operate	Repair or replace compressor

5. Unit hasnt stop operation afer bucket full or bucket full protection occurs frequently

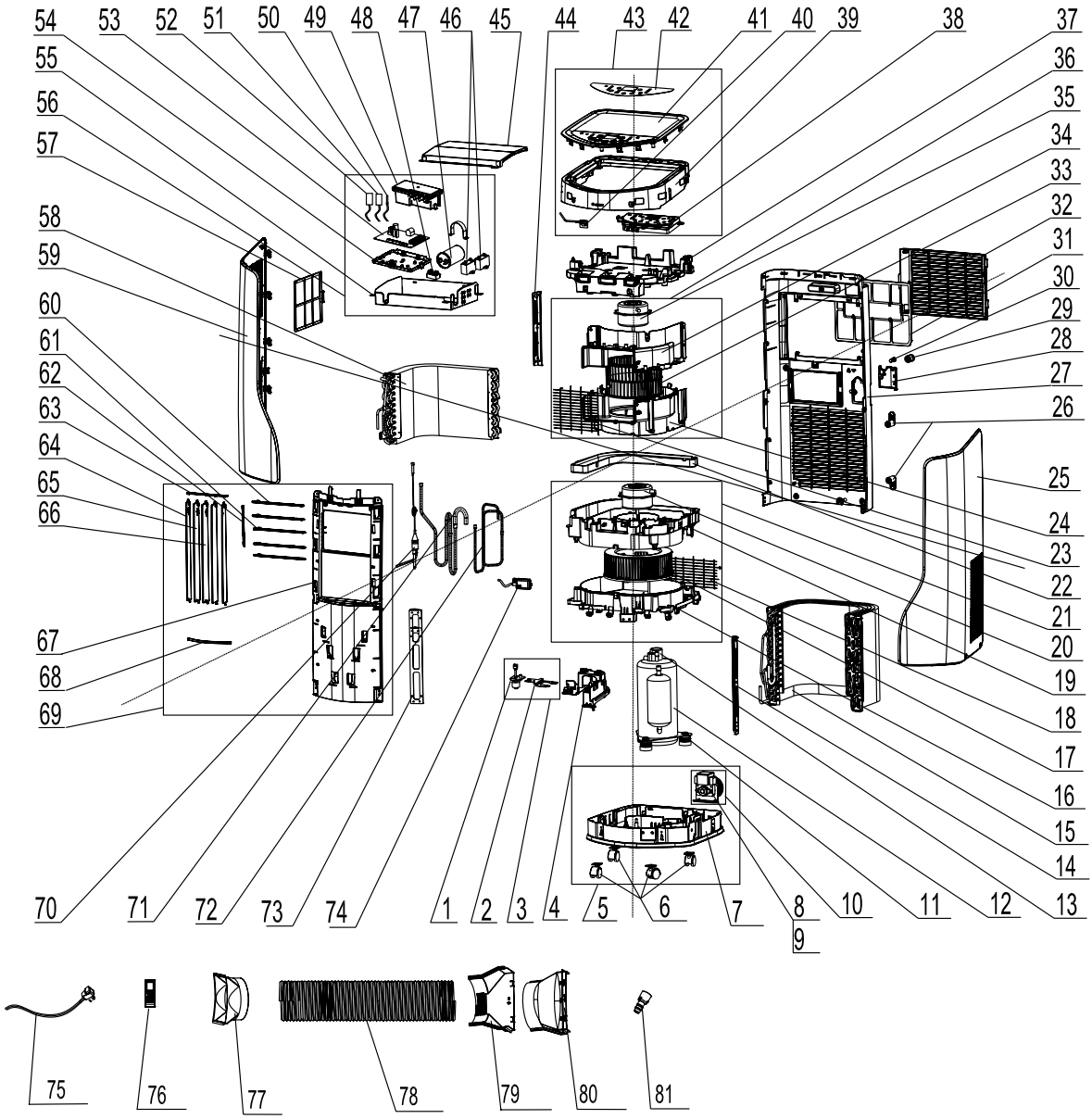
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Water-level switch is open-circuited	The unit hasnt stop operation when water is full and theres water leakage	Check and repair the water-level switch
Draw water motor is damaged	Water over-flow protection occurs frequently and H8 is displayed	Replace draw water motor

6. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and theres abnormal sound	Theres the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, theres abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Therere foreign objects inside air conditioner or parts are contacting with each other	Abnomal sound	Take out foreign objects. Adjust the position of parts. Stick damping plaster between contacting parts.
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts.
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

11. Exploded View and Parts List

GPC12AL-K5NNA3A



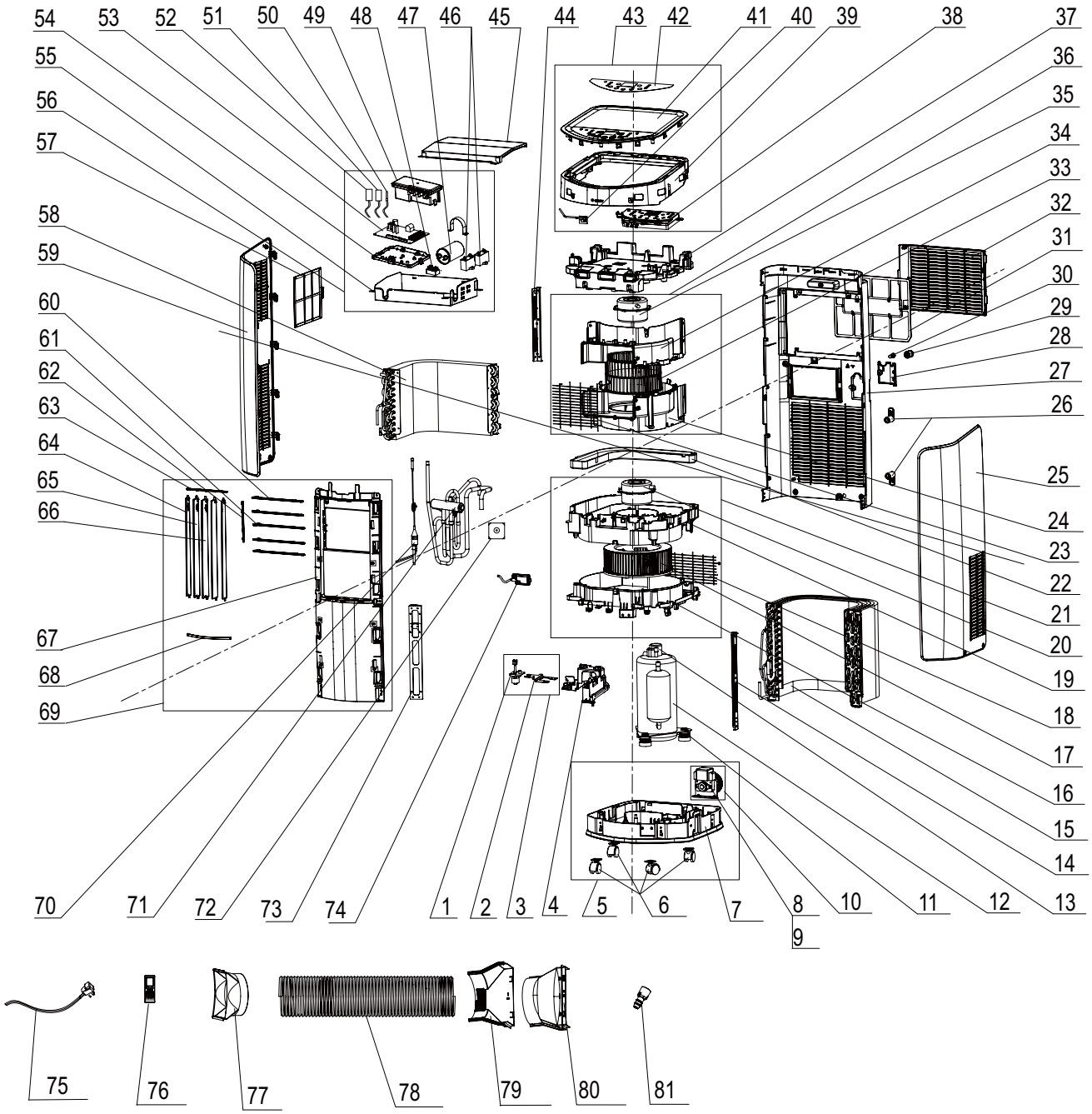
The component picture is only for reference please refer to the actual product.

NO.	Description	Part Code	Qty
		GPC12AL-K5NNA3A	
	Product Code	CK010031700	
1	Liquid Level Switch	45010080	1
2	Supporter(LiquidLevelSwitch)	012060001586	1
3	Liquid Level Switch Sub-assy	000194000009	1
4	Fixed support (Compressor)	20011500074	1
5	Chassis Assy	209058000030	1
6	Castor	24236009	4
7	Chassis Sub-assy	2090200002006	1
8	Fan Motor	15010100013402	1
9	Splash Water Flywheel	10336003	1
10	Motor Sub-assy(Flutter)	000089060002	1
11	Compressor Gasket	009012000022	3
12	Compressor and Fittings	009001060138	1
13	Covering Plate	01256026A	1
14	Supporting Board 1	01796035	3
15	Condenser Assy	011002060344	1
16	Diversion Circle (lower)	10376064	1
17	Centrifugal Fan	10316079P	1
18	Rear Grill	01476050	1
19	Motor Holder (Lower)	26156103	1
20	Fan Motor	15010100013402	1
21	Air Duct Sub-assy 1	017107000021	1
22	Foam (Water Tray)	120000060023	1
23	Rear Grill	01476050	1
24	Diversion Circle (Upper)	10376065	1
25	Right Side Plate	200086000002	1
26	Clamp	7101600502	2
27	Rear Plate	2002450001001	1
28	Cable Cross Plate	2611622601	1
29	Cover of drainage hole	2224609703	1
30	Rubber Plug	76716054	1
31	Filter Sub-assy 1	1112604201	1
32	Front Grill	2241607401	1
33	Centrifugal Fan	10316071	1
34	Motor Holder (Upper)	26156104	1
35	Fan Motor	15010100013402	1
36	Air Duct Sub-assy 2	017107000017	1
37	Cover of Propeller Housing	20022300013	1
38	Display Board	300001000086	1
39	Fixed support (top cover)	2001150007501T	1
40	Display Board	300001000086	1
41	Coping	22246157	1
42	Membrane	600006000015	1
43	Top Cover Assy	000097060034	1
44	Supporting Board 3	01207200097	1
45	Electric Box Cover	01202000107	1
46	Capacitor CBB61S	3301074705	2
47	Capacitor CBB65	3300008101	1
48	Terminal Board	42011103	1
49	Electric Box Sub-assy (Strong Current)	017007000412	1
50	Temperature Sensor	390000453	1
51	Temperature Sensor	390000453	1
52	Temperature Sensor	390000453	1
53	Main Board 2	300002060544	1
54	Fixed support (mainboard)	200115000024	1

55	Electric Box Sub-Assy	01700700101	1
56	Electric Box Assy	100002063283	1
57	Filter Sub-assy 2	11126043	1
58	Evaporator Assy	011001060422	1
59	Left Side Plate	200085000002	1
60	Guide Louver 2	1051609801	4
61	Guide Louver 1	1051609901	1
62	Guide Blade Lever	2002350001101	1
63	Swing Lever	2000350002501	1
64	Air Louver 1	1051610001	1
65	Air Louver 2	1051610101	2
66	Air Louver 3	1051610201	2
67	Front Panel	200003000009	1
68	Decorative Strip	2300010007101	1
69	Front Panel Sub-Assy	209004000025	1
70	Capillary Sub-assy	030006060314	1
71	Inhalation Tube Sub-assy	030010000240	1
72	Discharge Tube	035008060733	1
73	Supporting Strip	01796007	1
74	Detecting Plate	/	/
75	Power Cord	4002046423	1
76	Remote Controller	305100611	1
77	Tie-in 1	20010900023	1
78	Pipe	05236058	1
79	Rear Clip (upper)	26116132	1
80	Rear Clip (nether)	26116135	1
81	Adaptor sub-assy	26116155	1

Above data is subject to change without notice.

GPH12AL-K5NNA3A



The component picture is only for reference please refer to the actual product.

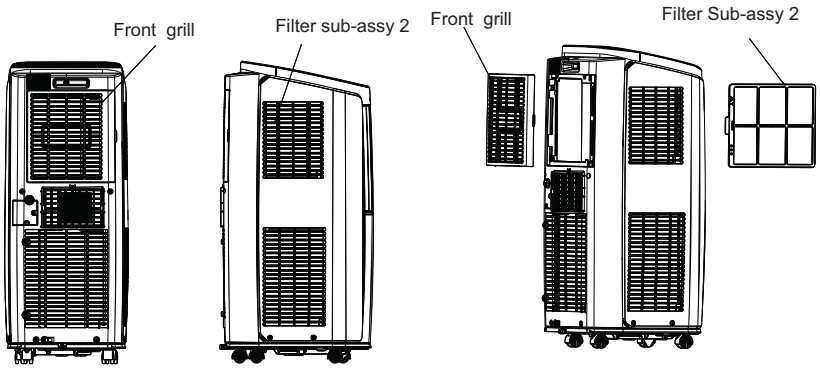
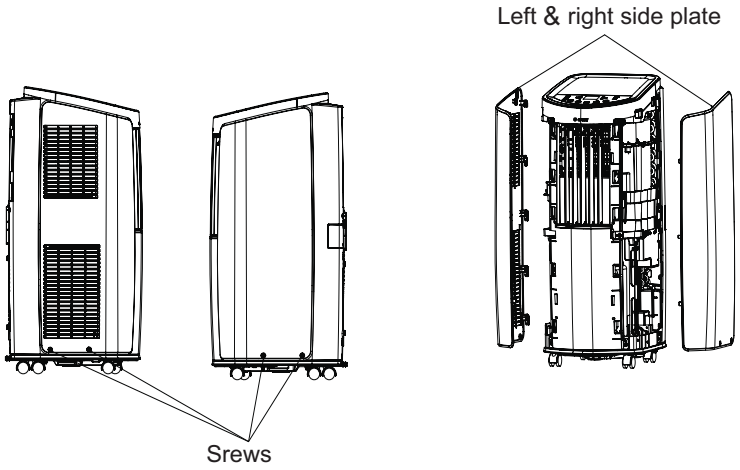
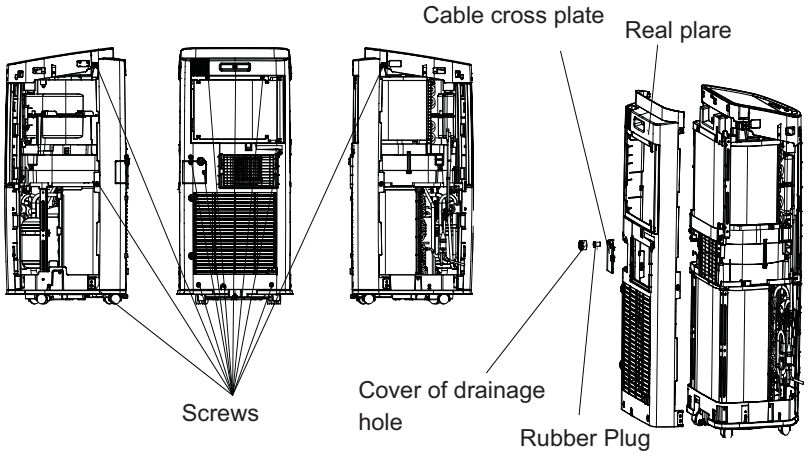
NO.	Description	Part Code	Qty
		GPH12AL-K5NNA3A	
	Product Code	CK010031600	
1	Liquid Level Switch	45010080	1
2	Supporter(LiquidLevelSwitch)	012060001586	1
3	Liquid Level Switch Sub-assy	000194000009	1
4	fixed support (Compressor)	20011500074	1
5	Chassis Assy	209058000030	1
6	Castor	24236009	4
7	Chassis Sub-assy	2090200002006	1
8	Fan Motor	15010100013402	1
9	Splash Water Flywheel	10336003	1
10	Motor Sub-assy(Flutter)	000089060002	1
11	Compressor Gasket	009012000022	3
12	Compressor and Fittings	009001060138	1
13	Covering Plate	01256026A	1
14	Supporting Board 1	01796035	3
15	Condenser Assy	011002000507	1
16	Diversion Circle (lower)	10376064	1
17	Centrifugal Fan	10316079P	1
18	Rear Grill	01476050	1
19	Motor Holder (Lower)	26156103	1
20	Fan Motor	150101000003	1
21	Air Duct Sub-assy 1	017107000021	1
22	Foam (Water Tray)	120000060023	1
23	Rear Grill	01476040	1
24	Diversion Circle (Upper)	10376065	1
25	Right Side Plate	200086000002	1
26	Clamp	7101600502	2
27	Rear Plate	2002450001001	1
28	Cable Cross Plate	2611622601	1
29	Cover of drainage hole	2224609703	1
30	Rubber Plug	76716054	1
31	Filter Sub-assy 1	1112604201	1
32	Front Grill	2241607401	1
33	Centrifugal Fan	10316071	1
34	Motor Holder (Upper)	26156104	1
35	Fan Motor	15010100000301	1
36	Air Duct Sub-assy 2	017107000017	1
37	Cover of Propeller Housing	20022300013	1
38	Display Board	30567033	1
39	fixed support (top cover)	2001150007501T	1
40	Display Board	300001000001	1
41	Coping	22246157	1
42	Membrane	600006000013	1
43	Top Cover Assy	000097060033	1
44	Supporting Board 3	01207200097	1
45	Electric Box Cover	01202000107	1
46	Capacitor CBB61S	3301074705	2
47	Capacitor CBB65	3300008101	1
48	Terminal Board	42011103	1
49	Electric Box Sub-assy (Strong Current)	017007060525	1
50	Temperature Sensor	390000453	1
51	Temperature Sensor	390000597	1
52	Temperature Sensor	3900032101	1
53	Main Board 1	300002060474	1
54	fixed support (mainboard)	200115000024	1

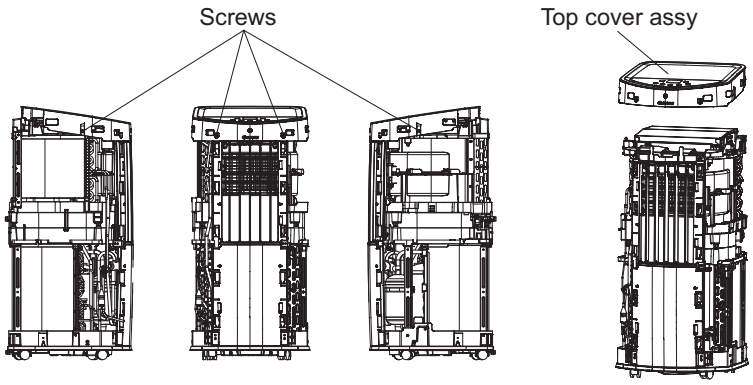
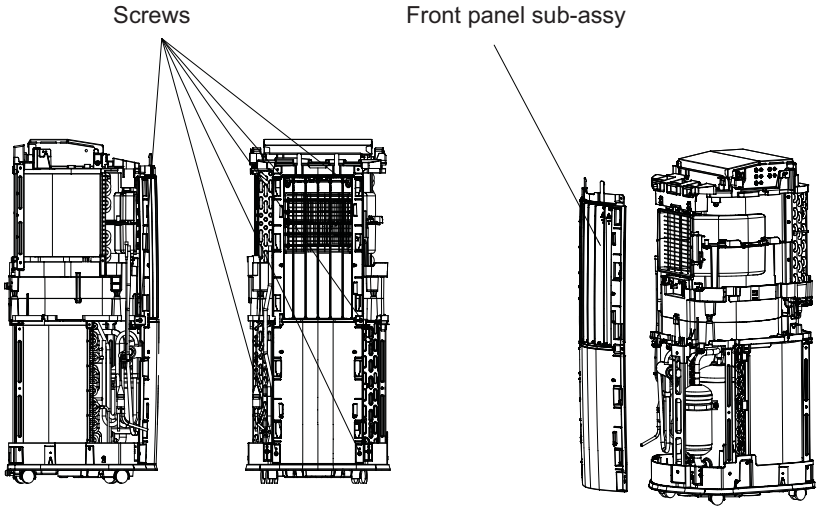
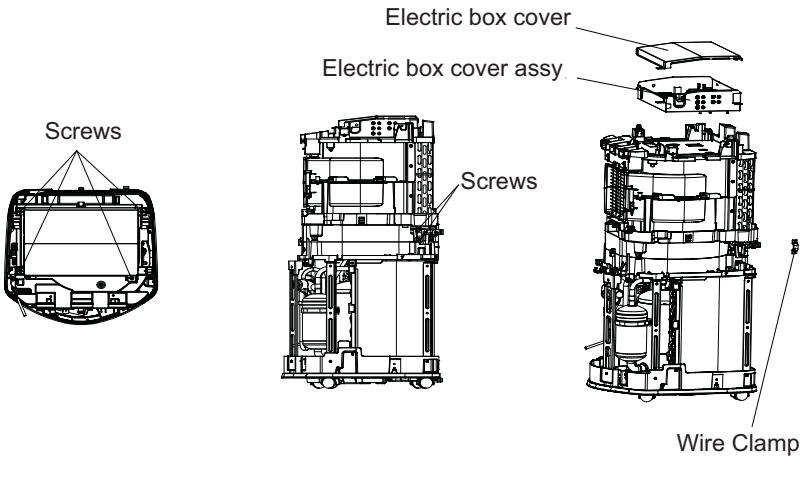
55	Electric Box Sub-Assy	01700700101	1
56	Electric Box Assy	100002063284	1
57	Filter Sub-assy 2	11126043	1
58	Evaporator Assy	011001060422	1
59	Left Side Plate	200085000002	1
60	Guide Louver 2	1051609801	4
61	Guide Louver 1	1051609901	1
62	Guide Blade Lever	2002350001101	1
63	Swing Lever	2000350002501	1
64	Air Louver 1	1051610001	1
65	Air Louver 2	1051610101	2
66	Air Louver 3	1051610201	2
67	Front Panel	200003000009	1
68	Decorative Strip	2300010007101	1
69	Front Panel Sub-Assy	209004000025	1
70	Capillary Sub-assy	030006060315	1
71	4-Way Valve Assy	030152060181	1
72	Magnet Coil	430004017	1
73	Supporting Strip	01796007	1
74	Detecting Plate	/	/
75	Power Cord	4002046423	1
76	Remote Controller	11122471	1
77	Tie-in 1	20010900023	1
78	Pipe	05236058	1
79	Rear Clip (upper)	26116132	1
80	Rear Clip (nether)	26116135	1
81	Adaptor sub-assy	26116155	1

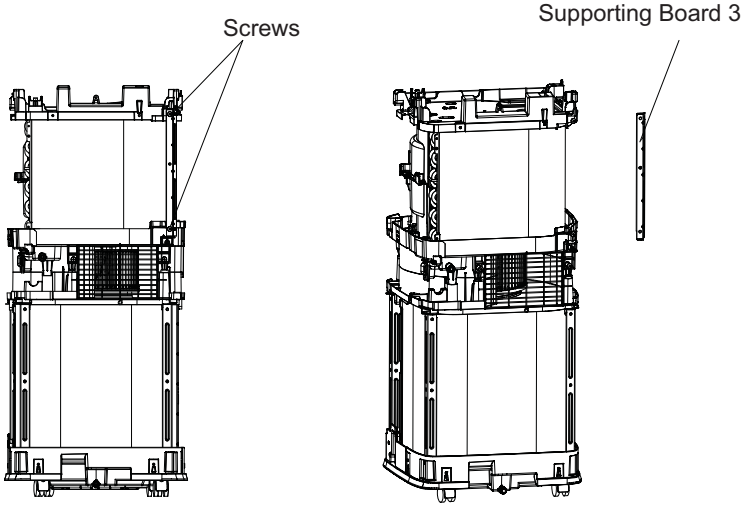
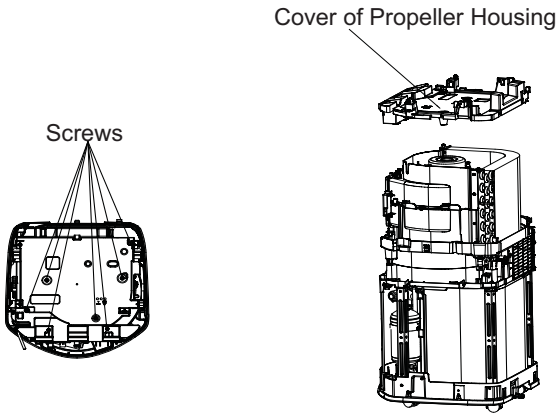
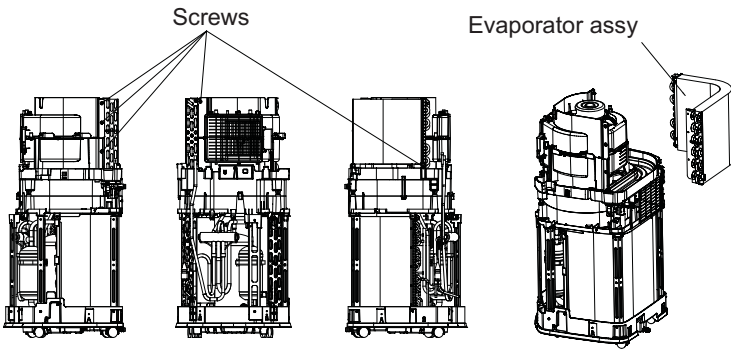
Above data is subject to change without notice.

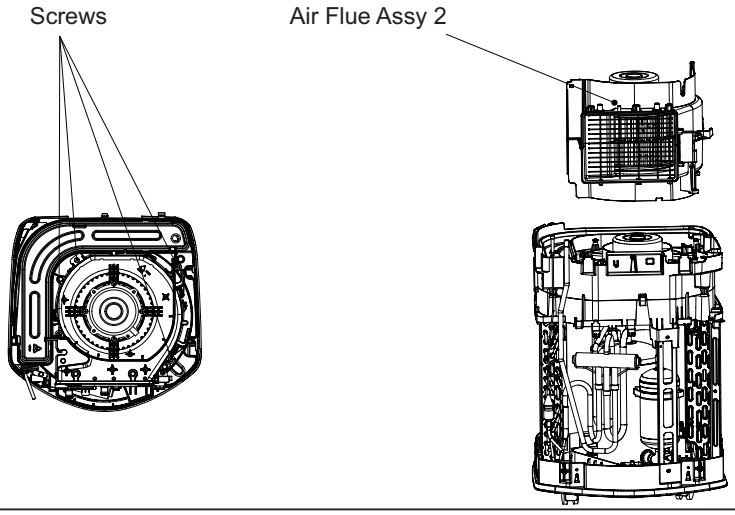
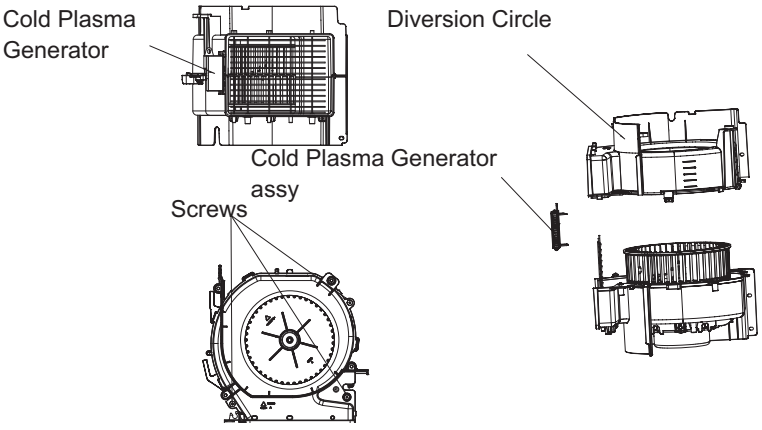
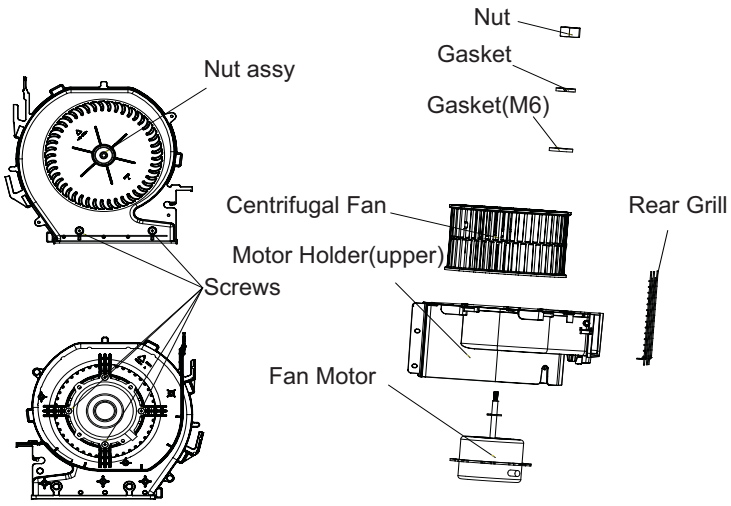
12. Removal Procedure

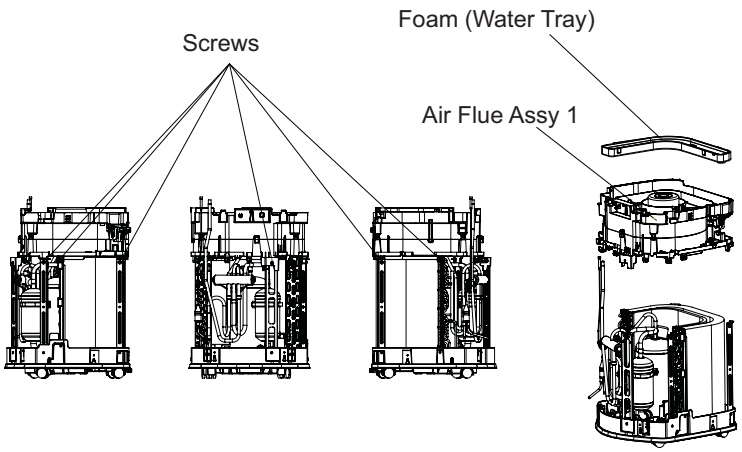
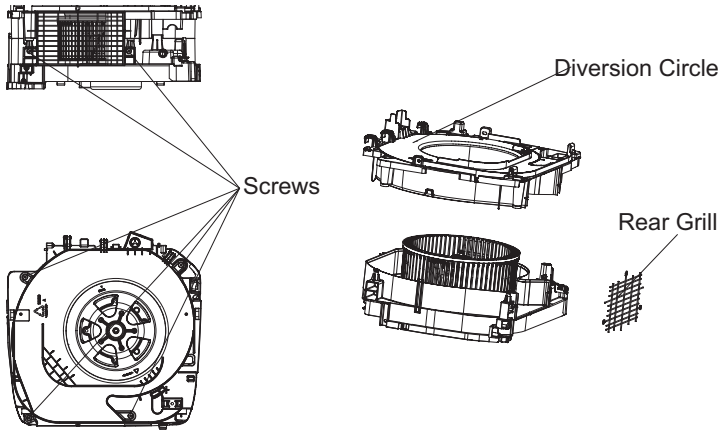
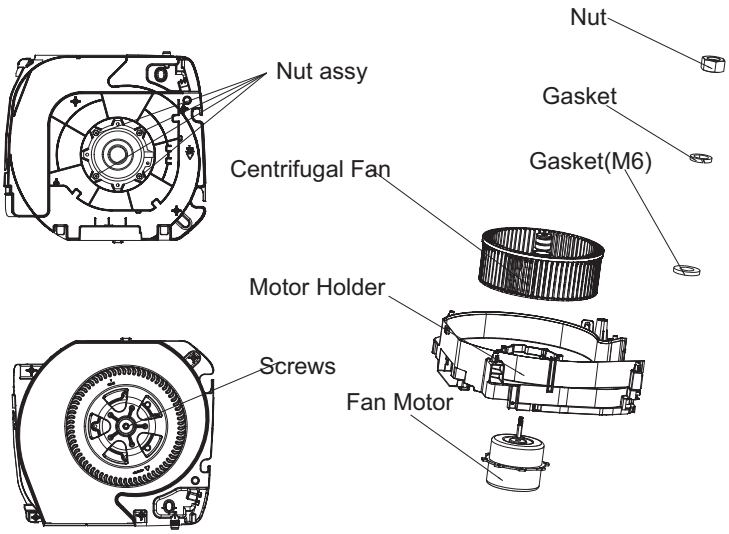
Warning: disconnect power supply before removal; discharge the refrigerant completely before unsoldering the pipes.

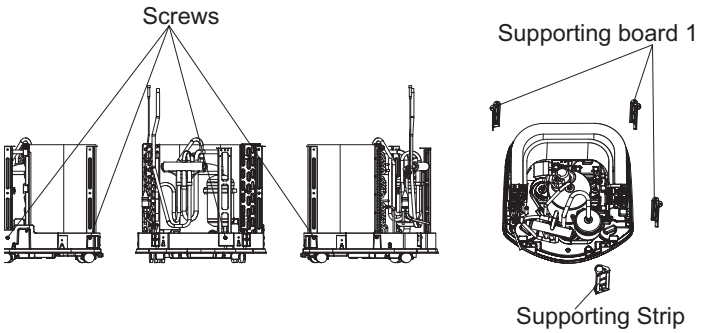
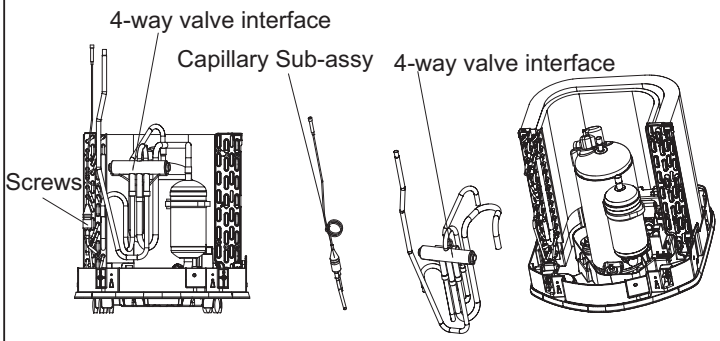
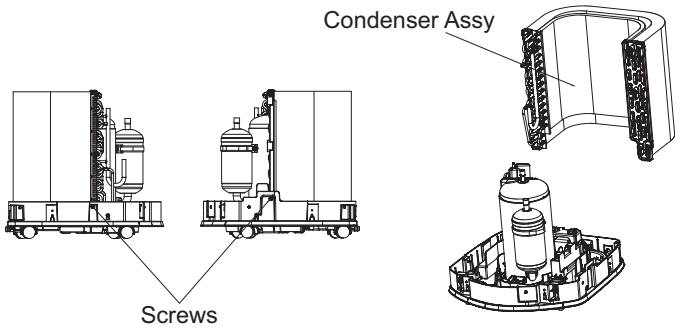
Step	Procedure
1.Remove front grill and filter sub-assy 2	
Pull the filter sub-assy 2 outward by hand to remove the filter.	
2. Remove left & right side plate	
Remove left side plate: unscrew 2 screws as diagram shown to remove left side plate. Remove right side plate: unscrew 2 screws of right side plate to remove it.	
3.Remove rear plate	
Remove the 12 screws fixing rear plate to remove the rear plate and cable cross plate and cable cross plate and rubber plug.	

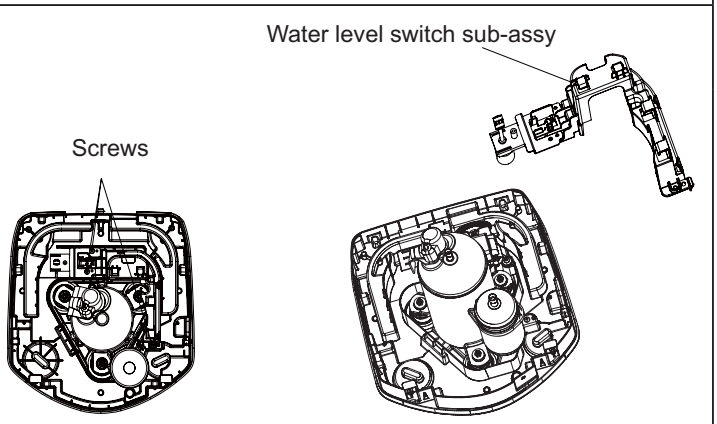
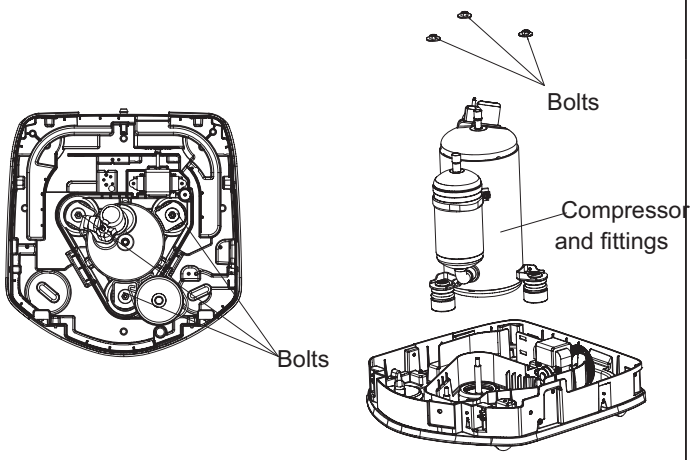
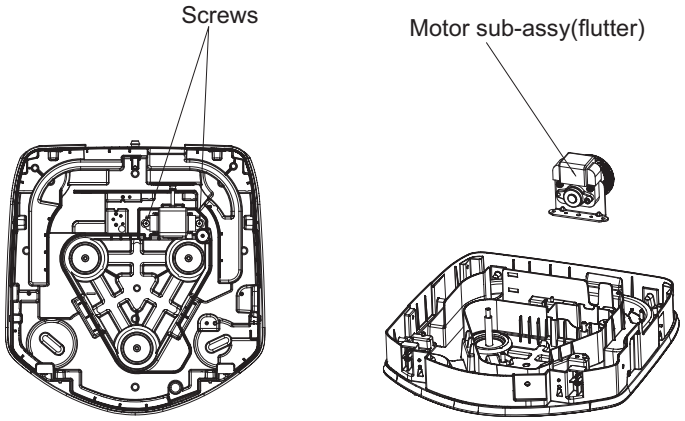
Step	Procedure
4.Remove top cover assy	
Remove the 4 screws to remove the top cover assy.	
5.Remove front panel assy	
Remove the four screws fixing front panel to remove the front panel sub-assy.	
6.Remove electric box cover	
Unscrew 4 screws to remove the electric box cover assy and wire clamp.	

Step	Procedure
7. Remove Supporting Board 3	
Unscrew 2 screws to remove the Supporting board 3.	
8. Remove Cover of Propeller Housing	
Unscrew 7 screws to remove the cover of propeller housing.	
9. Remove Evaporator Assy	
Unscrew 5 screws to remove the evaporator assy.	

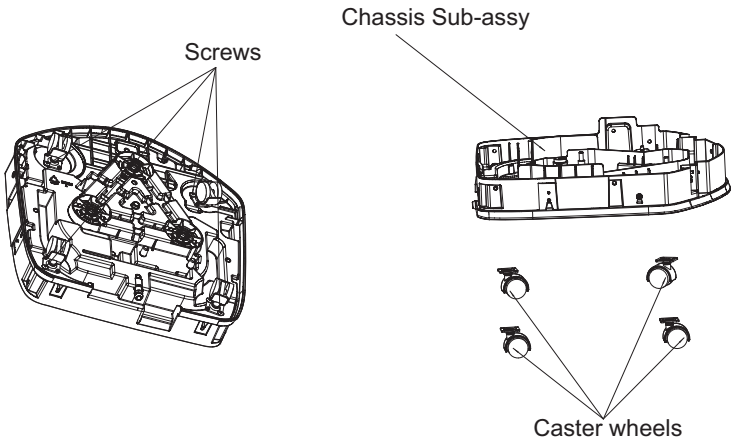
Step	Procedure	
10. Remove Air Flue Assy 2		
a	Unscrew 4 screws to remove the air flue assy 2.	
b	Unscrew 3 screws to remove the diversion circle and cold plasma generator assy.	
c	Unscrew 5 screws to remove the nut assy and gasket and centrifugal and motor holder(upper).	

Step	Procedure	
11. Remove Air Flue Assy 1		
a	Unscrew 6 screws to remove the air flue assy 1 and foam(water tray).	
b	Unscrew 6 screws to remove the diversion circle and rear grill.	
c	Unscrew screws to remove the nut assy and gasket and centrifugal and motor holder.	

Step	Procedure
12. Remove supporting board and supporting strip	
	Unscrew 4 screws to remove supporting board 1 and supporting strip.
	
13. Remove 4-way valve interface	
	Unscrew screws to remove the 4-way valve interface and capillary sub-assy.
	
14. Remove condenser assy	
	Unscrew screws to remove condenser assy.
	

Step	Procedure
15. Remove water level switch sub-assy	
Unscrew 3 screws to remove the water level switch sub-assy.	
16 Remove compressor and fittings	
Unscrew 3 bolts of compressor chassis, then take out gasket to remove compressor.	
17. Remove motor sub-assy(flutter)	
Unscrew 2 screws of bottom of sub-assy to remove motor sub-assy.	

Step	Procedure
18. Remove chassis sub-assy	
	Unscrew 4 screws fixing caster wheel to remove the 4 caster wheels.



Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: Tf=Tcx1.8+32

Set temperature

Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)		Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)		Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)
61	60.8	16		69/70	69.8	21		78/79	78.8	26
62/63	62.6	17		71/72	71.6	22		80/81	80.6	27
64/65	64.4	18		73/74	73.4	23		82/83	82.4	28
66/67	66.2	19		75/76	75.2	24		84/85	84.2	29
68	68	20		77	77	25		86	86	30

Ambient temperature

Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)		Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)		Fahrenheit display temperature (˚F)	Fahrenheit (˚F)	Celsius (˚C)
32/33	32	0		55/56	55.4	13		79/80	78.8	26
34/35	33.8	1		57/58	57.2	14		81	80.6	27
36	35.6	2		59/60	59	15		82/83	82.4	28
37/38	37.4	3		61/62	60.8	16		84/85	84.2	29
39/40	39.2	4		63	62.6	17		86/87	86	30
41/42	41	5		64/65	64.4	18		88/89	87.8	31
43/44	42.8	6		66/67	66.2	19		90	89.6	32
45	44.6	7		68/69	68	20		91/92	91.4	33
46/47	46.4	8		70/71	69.8	21		93/94	93.2	34
48/49	48.2	9		72	71.6	22		95/96	95	35
50/51	50	10		73/74	73.4	23		97/98	96.8	36
52/53	51.8	11		75/76	75.2	24		99	98.6	37
54	53.6	12		77/78	77	25				

Appendix 2: List of Resistance for Temperature Sensor

Resistance table of temperature sensor (15K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Resistance table of temperature sensor (20K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

Resistance table of temperature sensor (50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64

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