

ComfortStar®

Air Conditioning & Heating Products

Orbitseries™
AIR CONDITIONING & HEATING PRODUCTS

INVERTER

SPLIT TYPE AIR CONDITIONER INSTRUCTION MANUAL



CMIT-19-2Z
CMIT-27-3Z
CMIT-40-4Z
CMIT-55-5Z

This instruction manual contains important information and recommendations that we would ask you to comply with to obtain best results from air conditioner.

www.comfortstarusa.com

CONTENTS

INSTRUCTION FOR SERVICING(R454B)	1
INSTALLATION PRECAUTION(R454B)	6
SAFETY PRECAUTIONS	8
NAME OF PARTS	11
MATCH TABLES	12
OUTDOOR UNIT WORKING TEMPERATURE RANGE	12
INSTALLATION PRECAUTIONS	13
OUTDOOR UNIT INSTALLATION	17
SPLIT OUTDOOR UNIT MOUNTING DIMENSIONS	22
TEST RUN	23
TROUBLESHOOTING	25
DISPOSAL GUIDELINE	26

* The design and specifications are subject to change without prior notice for product improvement.
Consult with the sales agency or manufacturer for details.

* The shape and position of buttons and indicators may vary according to the model, but their function are the same.

INSTRUCTION FOR SERVICING(R454B)

1. Check the information in this manual to find out the dimensions of space needed for proper installation of the device, including the minimum distances allowed compared to adjacent structures.
2. Appliance shall be installed, operated and stored in a room with a floor area larger than 4m².
3. The installation of pipe-work shall be kept to a minimum.
4. The pipe-work shall be protected from physical damage, and shall not be installed in an unventilated space if the space is smaller than 4m².
5. The compliance with national gas regulations shall be observed.
6. The mechanical connections shall be accessible for maintenance purposes.
7. Follow the instructions given in this manual for handling, installing, cleaning, maintaining and disposing of the refrigerant.
8. Make sure ventilation openings clear of obstruction.
9. Notice: The servicing shall be performed only as recommended by the manufacturer.
10. Warning: The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
11. Warning: The appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) and ignition sources (for example an operating electric heater).
12. The appliance shall be stored so as to prevent mechanical damage from occurring.
13. It is appropriate that anyone who is called upon to work on a refrigerant circuit should hold a valid and up-to-date certificate from an assessment authority accredited by the industry and recognizing their competence to handle refrigerants, in accordance with the assessment specification recognized in the industrial sector concerned. Service operations should only be carried out in accordance with the recommendations of the equipment manufacturer. Maintenance and repair operations that require the assistance of other qualified persons must be conducted under the supervision of the person competent for the use of flammable refrigerants.
14. Every working procedure that affects safety means shall only be carried out by competent persons.
15. Warning:
 - * Do not use any means to accelerate the defrosting process or clean the frost on your own. Follow the recommended guidelines from the manufacturer .
 - * 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 .
 - * Do not pierce or burn.
 - * Be aware that refrigerants may not contain an odor .



A2L



A2L



Read operator's manual



Operating instructions



Read technical manual

INSTRUCTION FOR SERVICING(R454B)

16. Information on servicing:

1) Checks to the area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

2) Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

3) General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material

4) Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

5) Presence of fire extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

6) No ignition sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

7) Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any work that will produce heat. A degree of ventilation shall continue during the period that the work is carried out.

The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

8) Checks to the refrigeration equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed.

If in doubt consult the manufacturer's technical department for assistance.

INSTRUCTION FOR SERVICING(R454B)

The following checks shall be applied to installations using flammable refrigerants:

- The charge size is in accordance with the room size within which the refrigerant containing parts are installed;
- The ventilation machinery and outlets are operating adequately and are not obstructed;
- If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

9) Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- That no live electrical components and wiring are exposed while charging, recovering or purging the system;
- That there is continuity of earth bonding.

17. Repairs to sealed components

- 1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- 2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc. Ensure that apparatus is mounted securely. Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

18. Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use. Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

INSTRUCTION FOR SERVICING(R454B)

19. Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

20. Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

21. Leak detection methods

The following leak detection methods are deemed acceptable for systems containing flammable refrigerants.

Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/ extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

22. Removal and evacuation

When breaking into the refrigerant circuit to make repairs or for any other purpose conventional procedures shall be used. However, it is important that best practice is followed since inflammability is a consideration. The following procedure shall be adhered to:

- Remove refrigerant;
- Purge the circuit with inert gas;
- Evacuate;
- Purge again with inert gas;
- Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be flushed with OFN to render the unit safe. This process may need to be repeated several times.

Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

23. Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

INSTRUCTION FOR SERVICING(R454B)

- a) Become familiar with the equipment and its operation.
- b) Isolate system electrically.
- c) Before attempting the procedure,ensure that:
 - . mechanical handling equipment is available,if required,for handling refrigerant cylinders;
 - . all personal protective equipment is available and being used correctly;
 - . the recovery process is supervised at all times by a competent person;
 - . recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system,if possible.
- e) If a vacuum is not possible,make a manifold so that refrigerant can be removed from various parts of the system.
- F) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders.(No more than 80% volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder,even temporarily.
- J) When the cylinders have been filled correctly and the process completed,make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- K) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

24. Labeling

Equipment shall be labled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

25. Recovery

When removing refrigerant from a system,either for servicing or decommissioning,it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders,ensure that only appropriate refrigerant recovery cylinders are employed.Ensure that the correct number of cylinders for holding the total system charge are available.All cylinders to be used are designated for the recovered refrigerant and labled for that refrigerant(i.e.Special cylinders for he recovery of refrigerant).Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and,if possible,cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appriate refrigerants includeing,when applicable,flammable refrigerants.In addition,a set of calibrated weighing scales shall be available and in good working order.Hoses shall be complete with leak-free disconnect couplings and in good condition.Before using the recovery machine,check that it is in satisfactory working order,has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release.Consult manufacturer if in doubt. The recovered refrigerant shall be returned to the refrigerant supplier in the correct recover cylinder,and the relevant waste transfer note arranged.Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed,ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process.When oil is drained from a system,it shall be carried out safely.

INSTALLATION PRECAUTIONS(R454B)

Important Considerations

1. The air conditioner must be installed by professional personnel and the Installation manual is used only for the professional installation personnel! The installation specifications should be subject to our after-sale service regulations.
2. When filling the combustible refrigerant, any of your rude operations may cause serious injury or injuries to human body and objects.
3. A leak test must be done after the installation completed.
4. It is a must to do the safety inspection before maintaining or repairing an air conditioner using combustible refrigerant in order to ensure that the fire risk is reduced to minimum.
5. It is necessary to operate the machine under a controlled procedure in order to ensure that any risk arising from the combustible gas or vapor during the operation is reduced to minimum.
6. Requirements for the total weight of filled refrigerant and the area of a room to be equipped with an air conditioner (are shown as in the following Tables GG.1 and GG.2)

The maximum charge and the required minimum floor area

$$m_1 = (6m^3) \times LFL, m_2 = (52m^3) \times LFL, m_3 = (260m^3) \times LFL$$

Where LFL is the lower flammable limit in kg/m³, R454B LFL is 0.296kg/m³.

For the appliances with a charge amount $m_1 < M = m_2$:

The maximum charge in a room shall be in accordance with the following:

$$m_{max} = 2.5 \times (LFL)^{(5/4)} \times h_0 \times (A)^{1/2}$$

The required minimum floor area A min to install an appliance with refrigerant charge M(kg) shall be in accordance with following: $A_{min} = (M / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$

Where:

Table GG.1- Maximum charge (kg)

Category	LFL(kg/m³)	h ₀ (m)	Floor area (m²)						
			4	7	10	15	20	30	50
R454B	0.296	1	0.6	1.04	1.48	2.11	2.44	2.99	3.86
		1.8	1.1	1.86	2.66	3.81	4.39	5.38	6.95
		2.2	1.3	2.28	3.26	4.65	5.37	6.58	8.49
		2.5	1.5	2.59	3.70	5.28	6.10	7.47	9.65

Table GG.2- Minimum room area (m²)

Category	LFL(kg/m ³)	h ₀ (m)	Charge amount (M) (kg)						
			Minimum room area (m ²)						
R454B	0.296		1.224kg	1.836kg	2.448kg	3.672kg	4.896kg	6.12kg	7.956kg
		0.6	/	31	56	126	223	349	590
		1	/	12	20	45	80	126	212
		1.8	/	7	9	14	25	39	66
		2.2	/	6	8	11	17	26	44

Installation Safety Principles

1. Site Safety



Open Flames Prohibited



Ventilation Necessary



2. operation safety



Mind Static Electricity



Must wear protective clothing and anti-static gloves



Don't use mobile phone

INSTALLATION PRECAUTIONS(R454B)

3. Installation Safety
 - Refrigerant Leak Detector
 - Appropriate Installation Location



The left picture is the schematic diagram of a refrigerant leak detector.

Please note that:

1. The installation site should be well-ventilated.
2. The sites for installing and maintaining an air conditioner using Refrigerant R454B should be free from open fire or welding, smoking, drying oven or any other heat source higher than 548 which easily produces open fire.
3. When installing an air conditioner, it is necessary to take appropriate anti-static measures such as wear anti-static clothing and/or gloves.
4. It is necessary to choose the site convenient for installation or maintenance wherein the air inlets and outlets of the indoor and outdoor units should be not surrounded by obstacles or close to any heat source or combustible and/or explosive environment.
5. If the indoor unit suffers refrigerant leak during the installation, it is necessary to immediately turn off the valve of the outdoor unit and all the personnel should go out till the refrigerant leaks completely for 15 minutes. If the product is damaged, it is a must to carry such damaged product back to the maintenance station and it is prohibited to weld the refrigerant pipe or conduct other operations on the user's site.
6. It is necessary to choose the place where the inlet and outlet air of the indoor unit is even.
7. It is necessary to avoid the places where there are other electrical products, power switch plugs and sockets, kitchen cabinet, bed, sofa and other valuables right under the lines on two sides of the indoor unit.

Suggested Tools

Tool	Picture	Tool	Picture	Tool	Picture
Standard Wrench		Pipe Cutter		Vacuum Pump	
Adjustable/ Crescent Wrench		Screw drivers (Phillips & Flat blade)		Safety Glasses	
Torque Wrench		Manifold and Gauges		Work Gloves	
Hex Keys or Allen Wrenches		Level		Refrigerant Scale	
Drill & Drill Bits		Flaring tool		Micron Gauge	
Hole Saw		Clamp on Amp Meter			

SAFETY PRECAUTIONS

SAFETY RULES AND RECOMMENDATIONS FOR THE INSTALLER

1. Read this guide before installing and using the appliance.
2. During the installation of the indoor and outdoor units, access to the working area should be forbidden to children. Unforeseeable accidents could happen.
3. Make sure that the base of the outdoor unit is firmly fixed.
4. Check that air cannot enter the refrigerant system and check for refrigerant leaks when moving the air conditioner.
5. Carry out a test cycle after installing the air conditioner and record the operating data.
6. Protect the indoor unit with a fuse of suitable capacity for the maximum input current or with another overload protection device.
7. Ensure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby voiding the risk of electric shock or fire due to insufficient contact.
8. Check that the socket is suitable for the plug, otherwise have the socket changed.
9. The appliance must be fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under "over voltage category III conditions", and these means must be incorporated in the fixed wiring in accordance with the wiring rules.
10. The air conditioner must be installed by professional or qualified persons.
11. Do not install the appliance at a distance of less than 50 cm from inflammable substances (alcohol, etc.) Or from pressurized containers (e.g. spray cans).
12. If the appliance is used in areas without the possibility of ventilation, precautions must be taken to prevent any leaks of refrigerant gas from remaining in the environment and creating a danger of fire.
13. The packaging materials are recyclable and should be disposed of in the separate waste bins. Take the air conditioner at the end of its useful life to a special waste collection center for disposal.
14. Only use the air conditioner as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are therefore always recommended for installation, operation and maintenance.
15. The appliance must be installed in accordance with applicable national regulations.
16. Before accessing the terminals, all the power circuits must be disconnected from the power supply.
17. The appliance shall be installed in accordance with national wiring regulations.
18. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

SAFETY PRECAUTIONS

SAFETY RULES AND RECOMMENDATIONS FOR THE INSTALLER

19. **D**o not try to install the conditioner alone, always contact specialized technical personnel.
20. **C**leaning and maintenance must be carried out by specialized technical personnel. In any case disconnect the appliance from the mains electricity supply before carrying out any cleaning or maintenance.
21. **E**nsure that the mains voltage corresponds to that stamped on the rating plate. Keep the switch or power plug clean. Insert the power plug correctly and firmly into the socket, thereby avoiding the risk of electric shock or fire due to insufficient contact.
22. **D**o not pull out the plug to switch off the appliance when it is in operation, since this could create a spark and cause a fire, etc.
23. **T**his appliance has been made for air conditioning domestic environments and must not be used for any other purpose, such as for drying clothes, cooling food, etc.
24. **A**lways use the appliance with the air filter mounted. The use of the conditioner without air filter could cause an excessive accumulation of dust or waste on the inner parts of the device with possible subsequent failures.
25. **T**he user is responsible for having the appliance installed by a qualified technician, who must check that earthing/grounding is done in accordance with current legislation and insert a thermomagnetic circuit breaker.
26. **T**he batteries in the remote controller must be recycled or disposed of properly. For disposal of scrap batteries, please discard the batteries as sorted municipal waste at the accessible collection point.
27. **N**ever remain directly exposed to the flow of cold air for a long time. The direct and prolonged exposition to cold air could be dangerous for your health. Particular care should be taken in the rooms where there are children, old or sick people.
28. **I**f the appliance gives off smoke or there is a smell of burning, immediately cut off the power supply and contact the Service Center.
29. **T**he prolonged use of the device in such conditions could cause fire or electrocution.
30. **H**ave repairs carried out only by an authorised Service Center of the manufacturer. Incorrect repair could expose the user to the risk of electric shock, etc.
31. **U**nhook the automatic switch if you foresee not to use the device for a long time. The airflow direction must be properly adjusted.
32. **T**he flaps must be directed downwards in the heating mode and upwards in the cooling mode.
33. **E**nsure that the appliance is disconnected from the power supply when it will remain inoperative for a long period and before carrying out any cleaning or maintenance.
34. **S**electing the most suitable temperature can prevent damage to the appliance.

SAFETY PRECAUTIONS

SAFETY RULES AND PROHIBITIONS

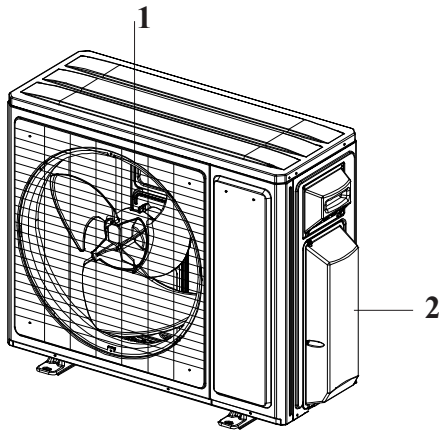
1. **D**o not bend, tug or compress the power cord since this could damage it. Electrical shocks or fire are probably due to a damaged power cord. Specialized technical personnel only must replace a damaged power cord.
2. **D**o not use extensions or gang modules.
3. **D**o not touch the appliance when barefoot or parts of the body are wet or damp.
4. **D**o not obstruct the air inlet or outlet of the indoor or the outdoor unit. The obstruction of these openings causes a reduction in the operative efficiency of the conditioner with possible consequent failures or damages.
5. **I**n no way alter the characteristics of the appliance.
6. **D**o not install the appliance in environments where the air could contain gas, oil or sulphur or near sources of heat.
7. **T**his appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
8. **D**o not climb onto or place any heavy or hot objects on top of the appliance.
9. **D**o not leave windows or doors open for long when the air conditioner is operating.
10. **D**o not direct the airflow onto plants or animals.
11. **A** long direct exposition to the flow of cold air of the conditioner could have negative effects on plants and animals.
12. **D**o not put the conditioner in contact with water. The electrical insulation could be damaged and thus causing electrocution.
13. **D**o not climb onto or place any objects on the outdoor unit.
14. **N**ever insert a stick or similar object into the appliance. It could cause injury.
15. **C**hildren should be supervised to ensure that they do not play with the appliance. 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.

NAME OF PARTS

WARNING

- Be sure to cut off the power supply before cleaning the air conditioner; otherwise electric shock might happen.
- Wetting of air conditioner may cause the risk of electric shock. Make sure not to wash your air conditioner in any case.
- Volatile liquids such as thinner or gasoline will cause damage to the appearance of air conditioner. (Only use soft dry cloth moist cloth clean the air conditioner cabinet).
- This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized electronic appliances.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

OUTDOOR UNIT	
No.	Description
1	Air outlet grille
2	Valve cover



Note: 1. The above figures are only intended to be a simple diagram of the appliance and may not correspond to the appearance of the units that have been purchased.

2. The prototype runs for a total of 8 hours. After shutting down, the fan will rotate 70s backwards to remove and clean the heat exchanger.

MATCH TABLE

Match Table					
ODU \ IDU	Voltage	2 Zone System indoor	3 Zone System indoor	4 Zone System indoor	5Zone System indoor
2 Zone System outdoor	230V	09+09 09+12 09+18 12+12	None	None	None
3 Zone System outdoor	230V	09+09 09+12 09+18 09+24 12+12 12+18 12+24 18+18	09+09+09 09+09+12 09+09+18 09+12+12 09+12+18 12+12+12	None	None
4 Zone System outdoor	230V	09+09 09+12 09+18 09+24 12+12 12+18 12+24 18+18 18+24 24+24	09+09+09 09+09+12 09+09+18 09+12+12 09+12+18 09+12+24 12+12+12 12+12+18 12+12+24 12+18+18	09+09+09+09 09+09+09+12 09+09+09+18 09+09+12+12 09+09+12+18 09+12+12+12 12+12+12+12	None
5 Zone System outdoor	230V	09+09 09+12 09+18 09+24 12+12 12+18 12+24 18+18 18+24 24+24	09+09+09 09+09+12 09+09+18 09+12+12 09+12+18 09+12+24 09+18+18 09+18+24 09+24+24 12+12+12 12+12+18 12+12+24 12+18+18 12+18+24 12+24+24 18+18+18 18+18+24	09+09+09+09 09+09+09+12 09+09+09+18 09+09+12+12 09+09+12+18 09+12+12+12 09+12+12+18 09+12+12+24 09+12+18+24 12+12+12+12 12+12+12+18 12+12+12+24 12+12+18+18	09+09+09+09+09 09+09+09+09+12 09+09+09+09+18 09+09+09+09+24 09+09+09+12+12 09+09+09+12+18 09+09+09+12+24 09+09+09+18+18 09+09+12+12+12 09+09+12+12+18 09+12+12+12+12 09+12+12+12+18 12+12+12+12+12

OUTDOOR UNIT WORKING TEMPERATURE RANGE

- ❶ Attempt to use the air conditioner under the temperature beyond the specified range may cause the air conditioner protection device to start and the air conditioner may fail to operate. therefore, try to use the air conditioner in the following temperature conditions.

Inverter air conditioner:

MODE \ Temperature	Heating	Cooling	Dry
Outdoor temperature	-15℃~24℃(5°F~75°F) (Low temperature heating: -25℃~24℃ (-13°F~75°F))	15℃~50℃(59°F~122°F) (Low temperature cooling: -15℃~55℃(5°F~131°F))	

With the power supply connected, restart the air conditioner after shut down, or switch it to other mode during operation, and the air conditioner protection device will start. The compressor will resume operation after 3 minutes.

- ❶ Characteristics of heating operation (applicable to Heat pump models)
Preheating:

During heating, when the outdoor unit frosted, the air conditioner will enable the automatic defrosting function to improve the heating effect. During defrosting, the indoor and outdoor fans stop running. The air conditioner will resume heating automatically after defrosting finish.

INSTALLATION PRECAUTIONS

Pipe Length and Additional Refrigerant

Inverter Models ODU Capacity(Btu/h)	2 Zone System	3 Zone System	4 Zone System	5 Zone System
Max. equivalent length for all indoor units	131ft/40m	197ft/60m	197ft/80m	295ft/90m
Max. length to farthest indoor unit	82ft/25m	98ft/30m	98ft/30m	98ft/30m
Max. height difference between indoor and outdoor unit	49ft/15m	49ft/15m	49ft/15m	49ft/15m
Max. height difference between indoor unit	33ft/10m	33ft/10m	33ft/10m	33ft/10m
Standard refrigerant pipe length (ft /m)	49ft/15m	74ft/22.5m	98ft/30m	123ft/37.5m
Additional refrigerant charge (Based on the IDU liquid line size)	1/4in 0.11oz/ft	1/4in 0.11oz/ft	1/4in 0.11oz/ft 3/8in 0.22oz/ft	1/4in 0.11oz/ft 3/8in 0.22oz/ft

Torque Parameters

Pipe Size	Newton meter[N x m]	Pound-force foot(lbf-ft)	Kilogram-force meter(kgf-m)
1/4 " (ϕ 6.35)	15 - 20	11.1 - 14.8	1.5 - 2.0
3/8 " (ϕ 9.52)	31 - 35	22.9 - 25.8	3.2 - 3.6
1/2 " (ϕ 12)	45 - 50	33.2 - 36.9	4.6 - 5.1
5/8 " (ϕ 15.88)	60 - 65	44.3 - 48.0	6.1 - 6.6

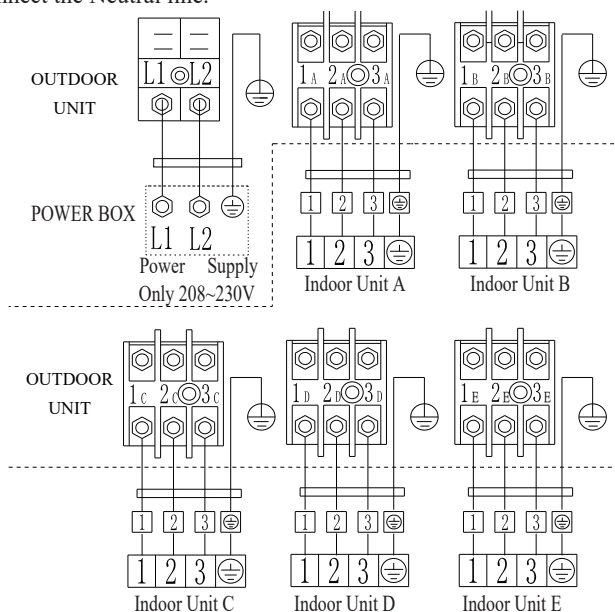
Cable Connection Between IDU To ODU

⚠ Note: Plug the connective cables to the corresponding terminals, as shown. For example, Terminal (A) of the outdoor unit must connect with Terminal (A) on the indoor unit.

Note: 1) 1: Connect to internal and external communication lines.

2) 2: Connect the Live line.

3) 3: Connect the Neutral line.



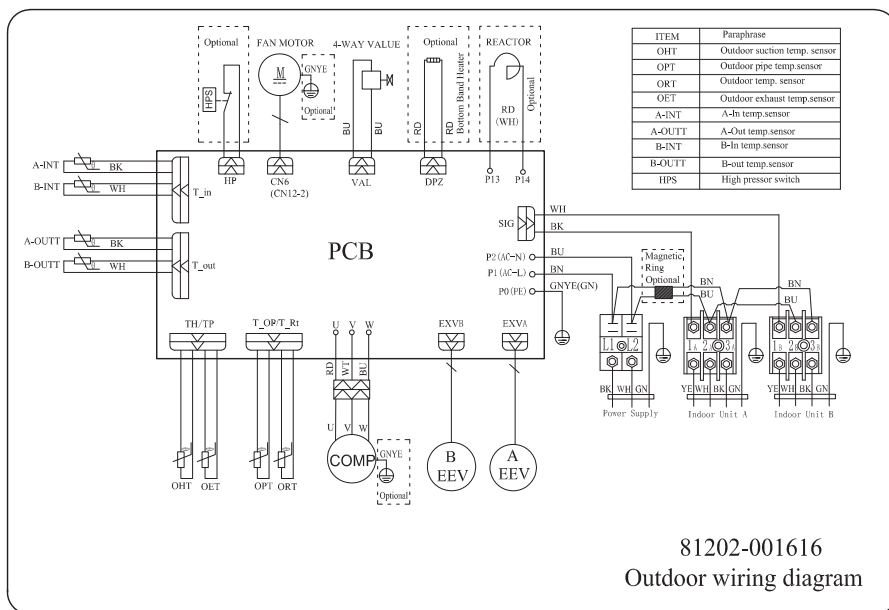
INSTALLATION PRECAUTIONS

⚠ Prepare a dedicated breaker capacity.

Air conditioner	Breaker capacity
2 Zone System	25A
3 Zone System	30A
4 Zone System	35A
5 Zone System	45A

⚠ Note:Inset the connective cables to the corresponding terminals,as shown.

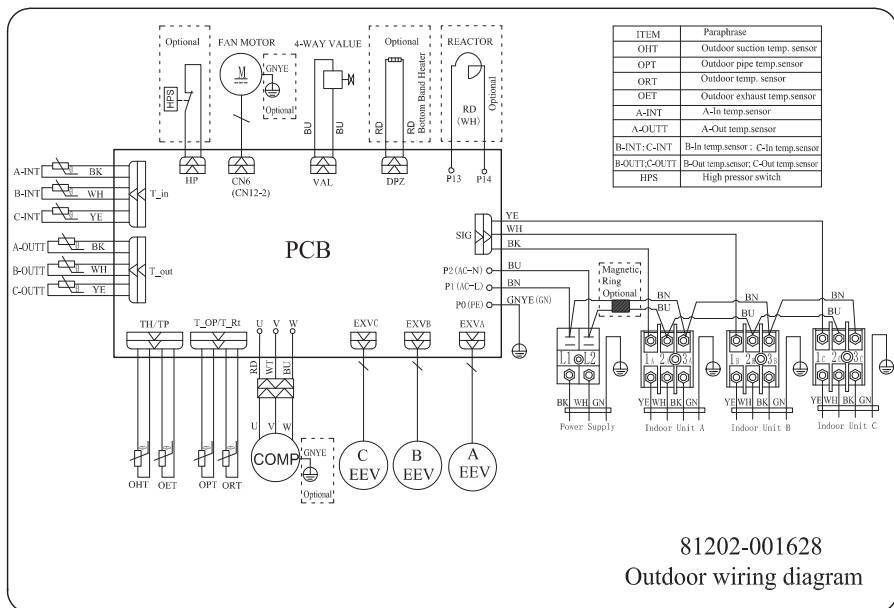
OUTDOOR UNIT



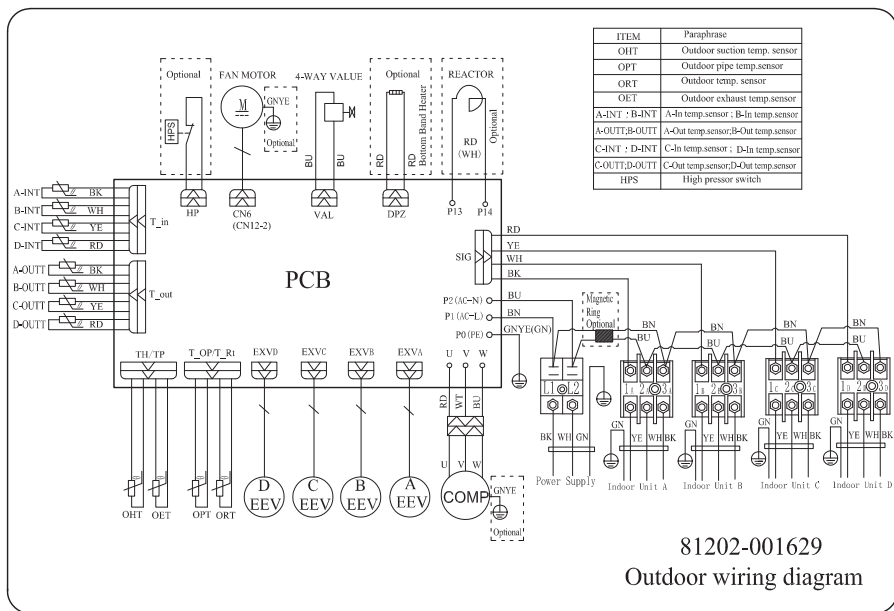
2 Zone System

INSTALLATION PRECAUTIONS

OUTDOOR UNIT



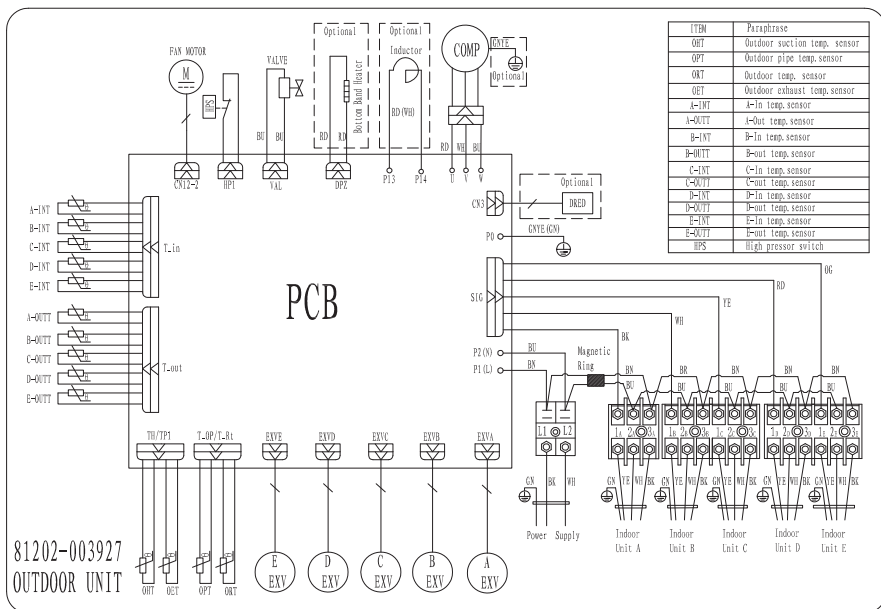
3 Zone System



4 Zone System

INSTALLATION PRECAUTIONS

OUTDOOR UNIT



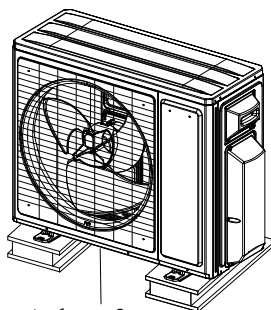
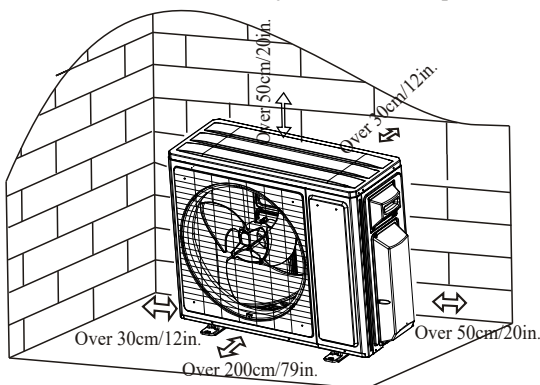
5 Zone System

OUTDOOR UNIT INSTALLATION

Step1: Select Installation Location

Select a site that allows for the following:

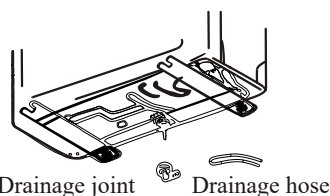
- 1.1 Do not install the outdoor unit near sources of heat, steam or flammable gas.
- 1.2 Do not install the unit near in to windy or dusty places.
- 1.3 Do not install the unit where people often pass. Select a place where the air discharge and operating sound will not disturb the neighbors.
- 1.4 Avoid installing the unit where it will be exposed to direct sunlight (otherwise use a protection, if necessary, that should not interfere with the air flow).
- 1.5 Reserve the spaces as shown in the picture for the air to circulate freely.
- 1.6 Install the outdoor unit in a safe and solid place.
- 1.7 If the outdoor unit is subject to vibration, place rubber blankets onto the feet of the unit.



At least 3cm
above the floor

Step2: Install Drainage Hose

- 2.1 This step only for heat pump models or RCACs.
- 2.2 Insert the drainage joint to the hole at the bottom of the outdoor unit.
- 2.3 Connect the drainage hose to the joint and make the connection well enough.

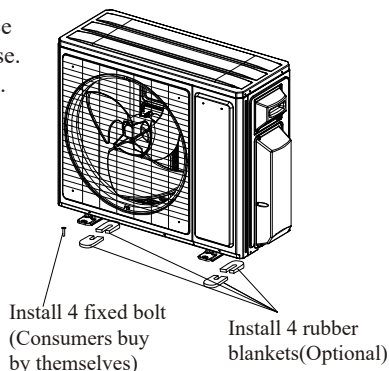


Step3: Fix Outdoor Unit

- 3.1 According to the outdoor unit installation dimensions to mark the installation position for expansion bolts.
- 3.2 Drill holes and clean the concrete dust and place the bolts.
- 3.3 If applicable install 4 rubber blankets on the hole before place the outdoor unit (Optional). This will reduce vibrations and noise.
- 3.4 Place the outdoor unit base on the bolts and pre-drilled holes.
- 3.5 Use wrench to fix the outdoor unit firmly with bolts.

Note:

The outdoor unit can be fixed on a wall-mounting bracket. Follow the instruction of the wall-mounting bracket to fix the wall-mounting bracket on the wall, and then fasten the outdoor unit on it and keep it horizontal. The wall-mounting bracket must be able to support at least 4 times of the weight of outdoor unit.



OUTDOOR UNIT INSTALLATION

Step4:Install Wiring(The following are 2 zone system and 5 zone system,and other analogies)

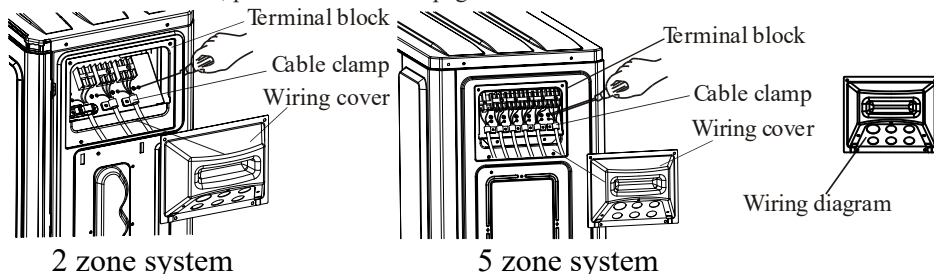
- 4.1 Use a phillips screwdriver to unscrew wiring cover grasp and press it down gently to take it down.
- 4.2 Unscrew the cable clamp and take it down.

4.3 According to the wiring diagram pasted inside the wiring cover, connect the connecting wires to the corresponding terminals, and ensure all connections are firmly and securely.

4.4 Reinstall the cable clamp and wiring cover

⚠ When connecting the wires of indoor and outdoor units, the power should be cut off.

Note: Install the cable, please refer to front page "Cable Connection Between IDU To ODU".



2 zone system

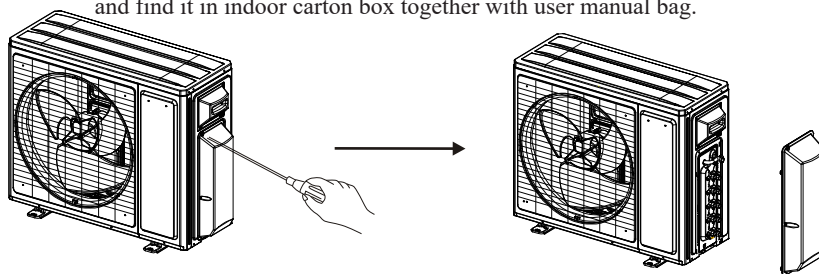
5 zone system

Step5:Connecting Refrigerant Pipe

- 5.1 Unscrews the valve cover, grasp and press it down gently to take it down(if the valve cover is applicable).
- 5.2 Remove the protective caps from the end of valves.
- 5.3 Take off the plastic cover in the pipe ports and check whether there is any sundry on the port of the connecting pipe and make ensure the port is clean.
- 5.4 After aligning the center, rotate the flare nut of the connecting pipe to tighten the nut as tightly as possible by hand.
- 5.5 Use a spanner to hold the body of the valve and use a torque wrench to tighten the flare nut according to the torque values in the torque requirements table.

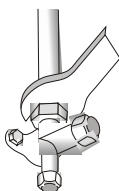
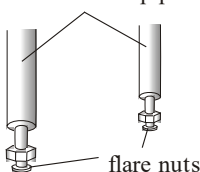
(Refer to the torque requirements table on section INSTALLATION PRECAUTIONS)

IMPORTANT: If need to connect to 1/2" or 5/8" connection pipe, please use the transit adapter, and find it in indoor carton box together with user manual bag.

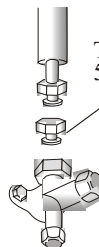


Take down the valve cover

connection pipes



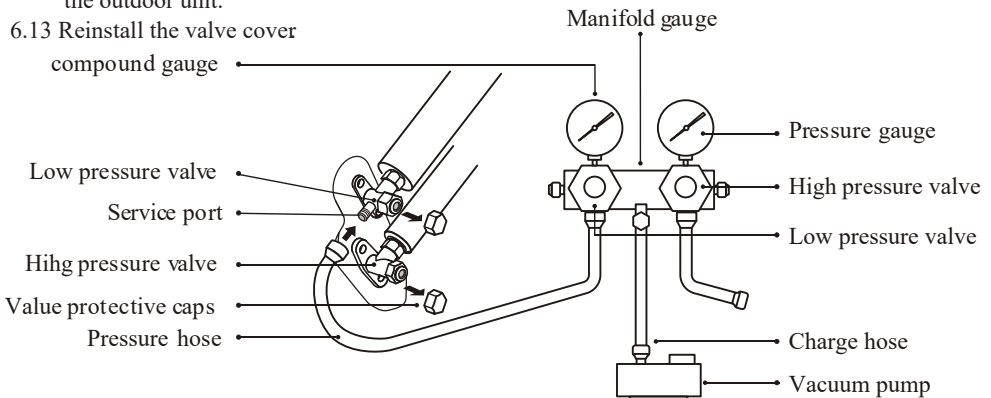
Take adapter for 1/2" or 5/8" connection pipe



OUTDOOR UNIT INSTALLATION (2 zone system)

Step6: Vacuum Pumping

- 6.1 Use a spanner to take down the protective caps from the service port, low pressure valve and high pressure valve of the outdoor unit.
- 6.2 Connect the pressure hose of manifold gauge to the service port on the outdoor unit low pressure valve.
- 6.3 Connect the charge hose from the manifold gauge to the vacuum pump.
- 6.4 Open the low pressure valve of the manifold gauge and close the high pressure valve.
- 6.5 Turn on the vacuum pump to vacuum the system.
- 6.6 The vacuum time should not be less than 15 minutes, or make sure the compound gauge indicates -0.1 MPa (-76 cmHg)
- 6.7 Close the low pressure valve of the manifold gauge and turn off the vacuum.
- 6.8 Hold the pressure for 5 minutes, make sure that the rebound of compound gauge pointer does not exceed 0.005 MPa .
- 6.9 Open the low pressure valve counterclockwise for $1/4$ turn with hexagonal wrench to let a little refrigerant fill in the system, and close the low pressure valve after 5 seconds and quickly remove the pressure hose.
- 6.10 Check all indoor and outdoor joints for leakage with soapy water or leak detector.
- 6.11 Fully open the low pressure valve and high pressure valve of the outdoor unit with hexagonal wrench.
- 6.12 Reinstall the protective caps of the service port, low pressure valve and high pressure valve of the outdoor unit.
- 6.13 Reinstall the valve cover



⚠ After install line set and before open the valve switch, must vacuum at first.

OUTDOOR UNIT INSTALLATION (3\4\5 zone system)

Step6: Vacuum Pumping

6.1 Preparations and Precautions

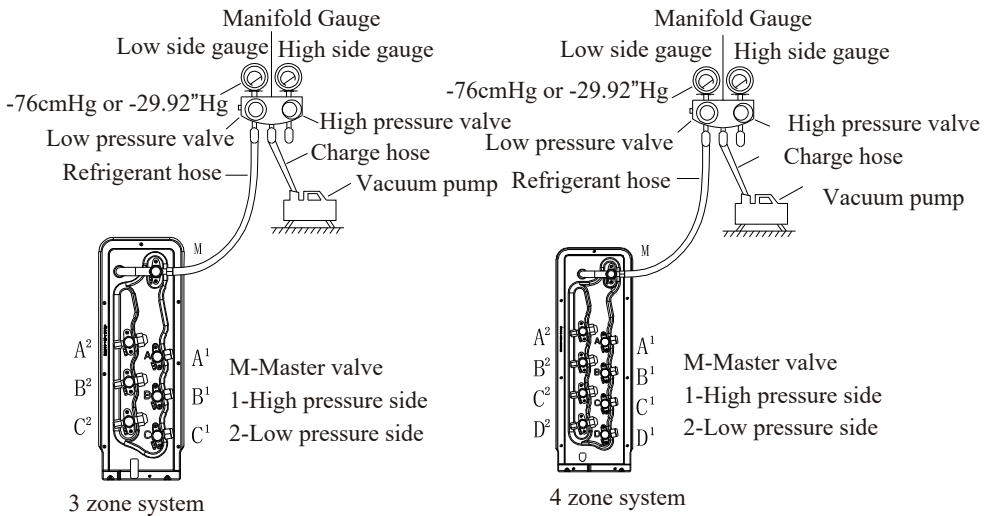
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation.

Before performing evacuation

- 1) Check to make sure that both high-pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant Piping Connection section of this manual.
- 2) Check to make sure all wiring is connected properly.
- 3) Perform nitrogen leak check on all refrigerant joints.

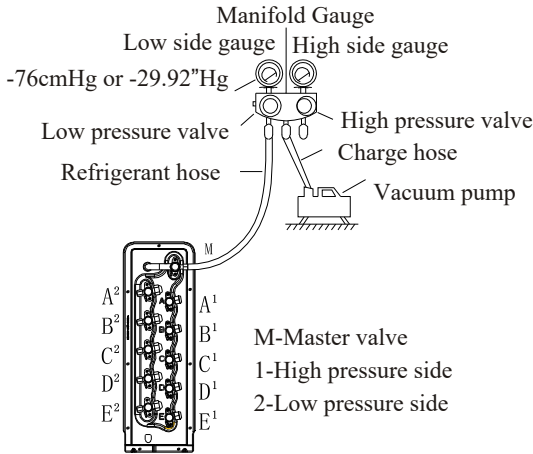
6.2 Evacuation Instructions

Before using the manifold gauge and vacuum pump, read their operation manuals to familiarize yourself with how to use them properly.

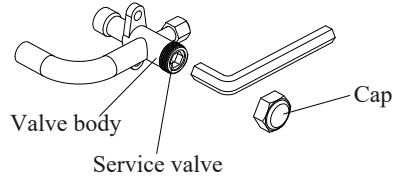


1. Connect the refrigeration hose from the low side manifold gauge to the master service valve port on the outdoor unit.
2. Connect charge hose from the manifold gauge to the vacuum pump.
3. Open the low pressure side service valves (A2, B2, C2, etc.) if the lineset was connected. But be careful not to open the high pressure side service valves (A1, B1, C1, etc.)

OUTDOOR UNIT INSTALLATION (3\4\5 zone system)



5 zone system

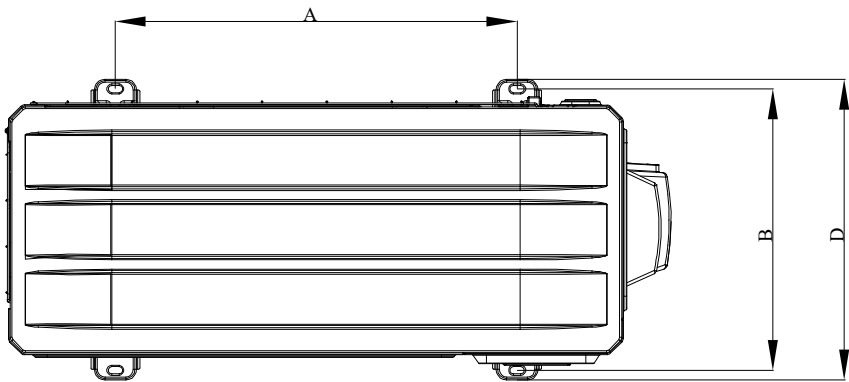
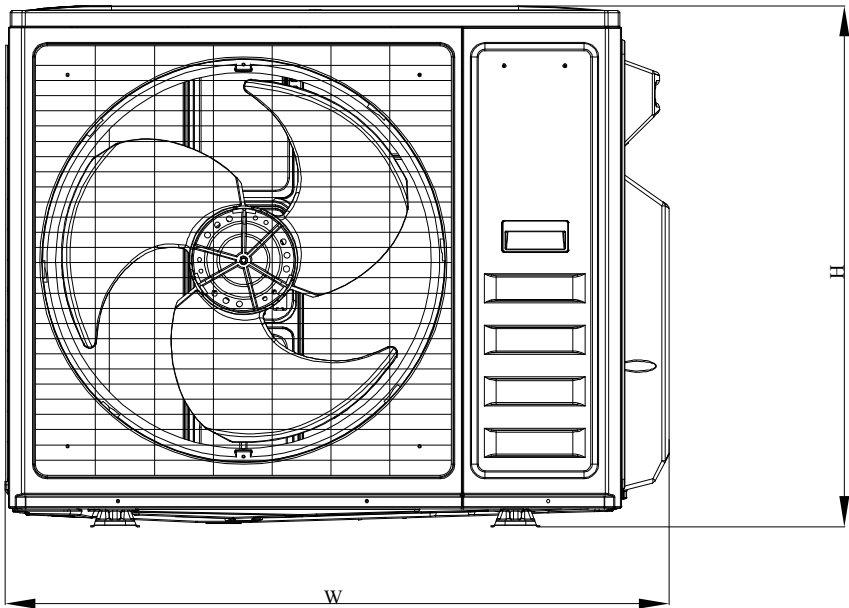


4. Open the Low Pressure side valve on the manifold gauge. Keep the High Pressure side valve closed.
5. Turn on the vacuum pump to evacuate the system.
6. Run the vacuum until the Compound Meter reads -76cmHg/-29.92"Hg (-101 kPa). It is recommended to use a micron gauge; run the vacuum until the micron gauge reads 350 to 500 microns or less.
7. After the vacuum process has been achieved, close the Low Pressure side valve on the manifold gauge, and turn off the vacuum pump.
8. Wait for approximately 10 to 15 minutes, then check that there has been no change in system vacuum. It is recommended to use a micron gauge; check to make sure the system is still below 500 microns.
9. If there is a change in system vacuum, refer to Gas Leak Check section for information on how to check for leaks. If there is no change in system vacuum, remove the charge hose from the service port.
10. Using allen wrench, fully open the master valves (M1, M2) on the top and the high pressure side service valves (A1, B1, C1, etc.).
11. Tighten valve caps on all valves (master valves, high side and low side services valves) by hand. You may tighten it further using a torque wrench if needed.

NOTICE: Open valve stems gently, When opening service valve, turn the allen wrench until it hits against the stopper. Do not try to force the valve to open further.

SPLIT OUTDOOR UNIT MOUNTING DIMENSIONS

Outdoor Model	Outdoor Unit Dimensions mm (in.)	Mounting Dimensions mm (in.)	
	W x H x D	A	B
18K	927x699x375(36.5x 27.5x 14.8)	586(23.1)	348(13.7)
27K	984x804x412 (38.8x 31.7x 16.2)	607(23.9)	390(15.4)
36K/42K	1094x858x494 (43.1x 33.8x 119.5)	660(26.0)	462(18.2)



TEST RUN

Inspections Before Test Run

Do the following checks before test run.

Description	Inspection method
Electrical safety inspection	• Check whether the power supply voltage complies with specification. • Check whether there is any wrong or missing connection between the power lines, signal line and earth wires. • Check whether the earth resistance and insulation resistance comply with requirements.
Installation safety inspection	• Confirm the direction and smoothness of drainage pipe. • Confirm that the joint of refrigerant pipe is installed completely. • Confirm the safety of outdoor unit, mounting plate and indoor unit installation. • Confirm that the valves are fully open. • Confirm that there are no foreign objects or tools left inside the unit. • Complete installation of indoor unit air inlet grille and panel.
Refrigerant leakage detection	• The piping joint, the connector of the two valves of the outdoor unit, the valve spool, the welding port, etc. where leakage may occur. • Foam detection method: Apply soapy water or foam evenly on the parts where leakage may occur, and observe whether bubbles appear or not, if not, it indicates that the leakage detection result is safe. • Leak detector method: Use a professional leak detector and read the instruction of operation, detect at the position where leakage may occur. • The duration of leak detection for each position should last for 3 minutes or more; If the test result shows that there is leakage, the nut should be tightened and tested again until there is no leakage; After the leak detection is completed, wrap the exposed pipe connector of indoor unit with thermal insulation material and wrap with insulation tape.

TEST RUN

Test Run Instruction

1. Turn on the power supply.
2. Press the ON/OFF button on the remote controller to turn on the air conditioner .
3. Press the Mode button to switch the mode COOLING and HEATING.
In each mode set as below:
COOLING-Set the lowest temperature
HEATING-Set the highest temperature
4. Run about 8 minutes in each mode and check all functions are properly run and respond the remote controller. Functions check as recommended:
 - 4.1 If the outlet air temperature responds to the cooling and heating modes
 - 4.2 If the water drains properly from the drainage hose
 - 4.3 If the Louver and deflectors(optional) rotate properly
5. Observe the test run state of the air conditioner at least 30 minutes.
6. After the successfully test run, return the normal setting and press ON/OFF button on the remote controller to turn off the unit.
7. Inform the user to read this manual carefully before use, and demonstrate to the user how to use the air conditioner, the necessary knowledge for service and maintenance, and the reminder for storage of accessories.

Note:

If the ambient temperature exceeds the range mentioned in the section OPERATION INSTRUCTIONS, and it can not run COOLING or HEATING mode, lift the front panel and refer to the emergency button operation to run the COOLING and HEATING mode.

TROUBLESHOOTING

MALFUNCTION	POSSIBLE CAUSES
The appliance does not operate	Power failour/plug pulled out.
	Damaged indoor/outdoor unit fan motor.
	Faulty compressor thermomagnetic circuit breaker.
	Faulty protective device or fuses.
	Loose connections or plug pulled out.
	It sometimes stops operating to protect the appliance.
	Voltage higher or lower than the voltage range.
	Active TIMER-ON function.
	Damaged electronic control board.
Strange odor	Dirty air filter.
Noise of running water	Back flow of liquid in the refrigerant circulation.
A fine mist comes from the air outlet	This occurs when the air in the room becomes very cold,for example in the “COOLING” or “DEHUMIDIFYING/DRY” modes.
A strange noise can be heard	This noise is made by the expansion or contraction of the front pane l due to variations in temperature and does not indicate a problem.
Insufficient airflow, eitherhot or cold	Unsuitable temperature setting.
	Obstructed air conditioner intakes and outlets.
	Dirty air filter.
	Fan an speed set at minimum.
	Other sources of heat in the room.
	No refrigerant
The appliance does not respond to commands	Remote control is not close enough to indoor unit
	The batteries of remote control need to be replaced.
	Obstacles between remote control and signal receiver in indoor unit
The display is opp	Active DISPLAY function.
	Power failure.
Switch off the air conditioner immediately and cut off the power supply in the event of :	Strange noises during operation.
	Faulty electronic control board.
	Faulty fuses or switches.
	Spraying water or objects inside the appliance.
	Overheated cables or plugs.
	Very strong smells coming from the appliance.

DISPOSAL GUIDELINE

1.Minimum installation height,minium room area (operating or storage) refer to installation manual.

1.La taille minimale d'installation, la surface minimale de pièce (opération ou stockage) se réfèrent au manuel d'installation.

2.Risk Of Fire-Auxiliary devices which may be ignition sources shall not be installed in the ductwork,other than auxiliary devices listed for use with the specific appliance. See instructions.

2.Risque d'incendie - l'équipement auxiliaire qui peut être une source d'inflammation ne doit pas être installé dans le système de tuyauterie, à l'exception de l'équipement auxiliaire utilisé avec un équipement spécifique. Voir les instructions.

3.Mount with the lowest moving parts at least 2.5m (8ft) above floor or grade level.

3.Installé avec la partie mobile la plus basse au moins 2.5m(8ft) au-dessus du sol ou du plan du sol.

4.Risk of electric shock. Can cause injury or death. Disconnect all remote electric power supplies before servicing.

4.Risque de choc électrique. Causer des blessures ou la mort. Avant la réparation, débranchez toute alimentation à distance.

5.Risk Of Fire. Flammable Refrigerant Used. To Be Repaired Only By Trained Service Personnel. Do Not Puncture Refrigerant Tubing.

5.Risque d'incendie. Utilisation de réfrigérants inflammables. L'entretien ne peut être effectué que par un personnel de maintenance formé. Ne pas percer la ligne de réfrigérant.

6.Risk Of Fire. Dispose Of Properly In Accordance With Federal Or Local Regulations.Flammable Refrigerant Used.

6.Risque d'incendie. Disposer correctement conformément à la réglementation fédérale ou locale. Utilisation de réfrigérants inflammables.

7.Risk Of Fire. Flammable Refrigerant Used. Consult Repair Manual/Owner's Guide Before Attempting To Service This Product.All Safety Precautions Must Be Followed.

7.Risque d'incendie. Utilisation de réfrigérants inflammables. Veuillez consulter le manuel de réparation/guide de l'utilisateur avant d'essayer de réparer ce produit. Toutes les précautions de sécurité doivent être respectées.

8.Risk Of Fire. Due to Flammable Refrigerant Used.Follow Handling Instructions Carefully in Compliance with National Regulations.

8.Risque d'incendie causé par l'utilisation de réfrigérants inflammables. Suivez attentivement les instructions de manutention conformément aux réglementations nationales.





TECHNICAL BULLETIN FOR INVERTER UNITS
Heat Sink Compound (Thermal Paste)

Make sure to use Heat Sink Compound (**not provided**) when replacing Mini-Split electronic boards. Clean up thoroughly old paste on chips located underneath the board, and radiator (fin surface). ***Evenly spread*** new paste on chips and radiator, and gently screw board back on radiator to maximize heat exchange.

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.