DAIKIN

INSTALLATION AND OPERATION MANUAL

SPLIT SYSTEM Air Conditioner

MODELS

Floor Standing type

INDOOR	OUTDOOR
FVFC71AV16	RZVF71BSV16
FVFC100AV16	RZVF100BSV16
FVFC140AV16	RZMF140BSV16

R-32 Split Type Air Conditioner

English

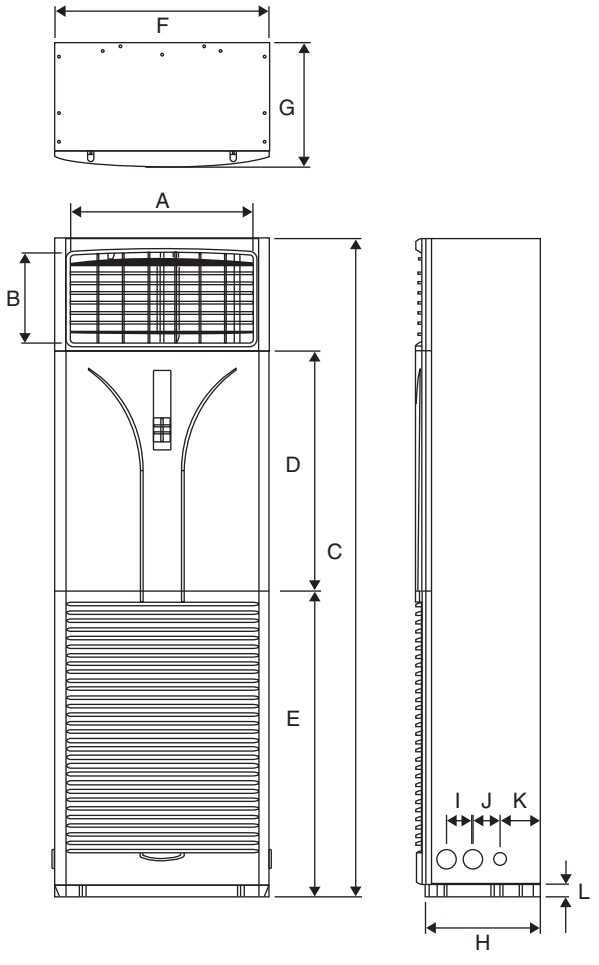
CAREFULLY READ THESE INSTRUCTIONS BEFORE INSTALLATION.

CONTENTS

OUTLINE DIMENSION

INDOOR UNIT [FVFC]

All dimensions are in mm



Dimension / Model	A	B	C	D	E	F	G	H	I	J	K	L
71A	514	254	1850	676	859	600	270	242	73	77	31	34
100/140A	514	254	1850	676	859	600	350	322	73	77	115	34

DAIKIN

DAIKIN AIR CONDITIONER
INSTALLATION MANUAL

SAFETY PRECAUTIONS

	**Read the precautions in this manual carefully before operating the unit.**		**This appliance is filled with R32.**

- The precautions described herein are classified as WARNING and CAUTION.
  They both contain important information regarding safety. Be sure to observe all precautions without fail.
- Meaning of WARNING and CAUTION notices.

⚠ WARNING	Failure to follow these instructions properly may result in personal injury or loss of life.
⚠ CAUTION	Failure to observe these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstances.

- The safety marks shown in this manual have the following meanings:

	Be sure to follow the instructions.		Be sure to establish an earth connection.		Never attempt.

- After completing installation, conduct a trial operation to check for faults and explain to the customer how to operate the air conditioner and take care of it with the aid of operation manual.

⚠ WARNING

- Ask your dealer or qualified person to carry out installation work. Do not attempt to install the air conditioner yourself. Improper installation may result in water leakage, electric shocks or fire.
- This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.
- This 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.
- Children should be supervised to ensure that they do not play with the appliance.
- Install the air conditioner according to the instructions given in this manual. Incomplete installation may cause water leakage, electrical shock, or fire.
- Be sure to use only the specified accessories and parts for installation work. Failure to use the specified parts may result in the unit falling, water leakage, electric shocks or fire.
- Install the air conditioner on a foundation strong enough to withstand the weight of the unit. A foundation of insufficient strength may result in the equipment falling and causing injury.
- Electrical work must be performed in accordance with relevant local and national regulations and with instructions in this installation manual. Be sure to use a dedicated power supply circuit only. Insufficiency of power circuit capacity and improper workmanship may result in electric shocks or fire.
- Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
- Use a cable of suitable length. Do not use tapped wires or an extension lead, as this may cause overheating, electric shocks or fire.
- Make sure that all wiring is secured, the specified wires are used, and that there is no strain on the terminal connections or wires. Improper connections or securing of wires may result in abnormal heat build-up or fire.
- When wiring the power supply and connecting the wiring between the indoor and outdoor units, position the wires so that the control box lid can be securely fastened. Improper positoning of the control box lid may result in electric shocks, fire or overheating terminals.
- After connecting interconnecting and supply wiring, be sure to shape the cables so that they do not put undue force on the electrical covers or panels. Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shocks, or fire.
- When installing or relocating the air conditioner, be sure to bleed the refrigerant circuit to ensure it is free of air, and use only the specified refrigerant (R32). The presence of air or other foreign matter in the refrigerant circuit cause abnormal pressure rise, which may result equipment damage and even injury.
- If refrigerant gas leaks during installation, ventilate the area immediately.
  Toxic gas may be produced if the refrigerant comes into contact with fire. 
- After completing installation, check for refrigerant gas leakage.
  Toxic gas may be produced if the refrigerant gas leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker. 
- Be sure to switch off the unit before touching any electrical parts.

⚠ WARNING

- During pump down, stop the compressor before removing the refrigerant piping. If the compressor is still running and stop valve is open during pump-down, air will be sucked in when the refrigerant piping is removed, causing abnormal pressure in refrigeration cycle, which may result equipment damage and even injury.
- During installation, attach the refrigerant piping securely before running the compressor. If the refrigerant pipes are not attached and the stop valve is open when compressor is running, air will be sucked in when the refrigerant piping is removed, causing abnormal pressure in refrigeration cycle, which may result equipment damage and even injury.
- Be sure to earth the air conditioner.
  Do not earth the unit to a utility pipe, lightning conductor or telephone earth lead. Imperfect earthing may result in electric shocks.
- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electrical shocks, or fire.
- All electrical wiring must not touch the water piping or any moving parts of the fan motors.
- Confirm that the unit has been switched OFF before installing or servicing the unit.
- Disconnect from the main power supply before servicing the air conditioner unit.
- DO NOT pull out the power cord when the power is ON.
  This may cause serious electrical shocks which may result in fire hazards.
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1m from TVs and radios, to prevent distorted pictures and static.
  Depending on the type and source of the electrical waves, static may be heard even when more than 1m away.
- Do not use means to accelerate the defrosting process (if applicable) or to clean, other than those recommended by the manufacturer.
- The appliance must 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 odour.
- The appliance must be installed, operated and stored in a room with a floor area larger than Xm^2 (refer to “Special Precaution when dealing with R32 Unit”). In case it is not satisfy minimum floor area, it requires to install at good ventilation room.
- NOTE: The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odour.

⚠ CAUTION

- While following the instructions in this installation manual, install drain piping to ensure proper drainage and insulate piping to prevent condensation. Improper drain piping may result in indoor water leakage and property damage.
- Tighten the flare nut according to specified method such as with a torque wrench. If the flare nut is too tight, it may crack after prolonged use, causing refrigerant leakage.
- Do not overcharge the unit.
  Overcharge will cause over-current or damage to the compressor.
- Ensure that the unit’s panel is closed after service or installation.
  Unsecured panels will cause the unit to operate noisily.
- Sharp edges and coil surfaces are potential locations which may cause injury hazards.
  Avoid from being in contact with these places.
- Before turning off the power supply set the remote controller’s ON/OFF switch to the “OFF” position to prevent the nuisance tripping of the unit. If this is not done, the unit’s fans will start turning automatically when power resumes, posing a hazard to service personnel or the user.
- Make sure to provide for adequate measure in order to prevent the outdoor unit be used as a shelter by small animals. Small animal making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.
- The temperature of refrigerant circuit will be high, please keep the inter-unit wiring away from copper pipes that are not thermally insulated.
- Only qualified personnel can handle, fill, purge and dispose of the refrigerant.
- Do not install the air conditioner in places such as the following:
  a. Where there is mist of oil, oil spray or vapour for example a kitchen. Resin parts may deteriorate, and cause them to fall out or water to leak.
  b. Where corrosive gas, such as sulfurous acid gas, is produced. Corrosion of copper pipings or brazed parts may cause the refrigerant to leak.
  c. Where there is machinery which emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
  d. Where flammable gases may leak, where carbon fibre or ignitable dust is suspended in the air or where volatile flammables, such as thinner or gasoline, are handled. If the gas should leak and remained around the air conditioner, it may cause ignition and a fire to break out.
- Do not install in places filled with smoke, gas, chemicals, etc. There is a possibility that the sensors inside the indoor unit could detect these and display a refrigerant leak abnormality (only for R32 refrigerant).
- This unit is equipped with a refrigerant leak detector for safety. To be effective, the unit must be electrically powered at all times after installation, other than short service intervals (only for R32 refrigerant).

BEFORE INSTALLATION

- Make sure to use R32 refrigerant before the installation work. Otherwise, the unit cannot operate normally.
- Do not throw away the accessories required for installation until the installation is finished.
- Be sure to instruct the customer how to properly operate the system (particularly the cleaning of air filter, operation method, temperature adjusting method) showing the attached operation and installation manual to the person.
- Do not install the unit where the atmosphere is salty such as near the seaside, where the voltage frequently fluctuates or in a vehicle or a boat.

1 ACCESSORIES

- **Check the following accessories are included in the indoor unit.**

Ⓐ Wireless Remote Controller 	1	Ⓑ Screws 	2

2 CHECKLIST

a. Item to be checked after completion of installation work.

Items to be checked	In case of defection	Check column
Is the indoor unit fixed firmly?	The unit may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the component burn out.	
Are wiring and piping correct?	The unit may malfunction or the component burn out.	
Is the unit safely grounded?	Dangerous at electric leakage.	
Is wiring size according to specifications?	The unit may malfunction or the component burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

b. Item to be checked at delivery.

Items to be checked	Check column
Have you explained how to operate the air conditioner showing the operation and installation manual to the customer?	
Have you explain about scan of QR code of the installation and operation manual to customer?	

c. Points for explanation about operations.

The items with ⚠ WARNING and ⚠ CAUTION marks in the instruction manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the instruction manual.

CHOOSING AN INSTALLATION SITE

- Before choosing the installation site, obtain user approval.

Indoor Unit

The indoor unit should be sited in a place where:

- The restrictions on installation specified in the indoor unit installation drawing are met.
- The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
- The space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available.
- Drain water can be properly drained.
- Both air intake and exhaust have clear paths met.
- The unit is not in the path of direct sunlight.
- The unit is away from the sources of heat or steam.
- There is no source of machine oil vapour (this may shorten indoor unit life).
- Cool air is circulated through out the room.
- The unit is away from electronic ignition type flourescent lamps (inverter or rapid start type). As these may shorten the remote controller range.
- The unit is at least 1 metre away from any television or radio set (unit may cause interference with the picture or sound).
- Do not install the units at or near doorway.
- Do not operate any heating apparatus too close to the air conditioner unit or use in room where mineral oil, oil vapour or oil, steam exist, this may cause plastic part to melt or deform as a result of excessive heat or chemical reaction.
- When the unit is used in kitchen, keep flour away from going into suction of the unit.
- This unit is not suitable for factory used where cutting oil mist or iron powder exist or voltage fluctuates greatly.
- Do not install the units at area like hot spring or oil refinery plant where sulphide gas exists.
- Ensure the color of wires of the outdoor unit and the terminal markings are same to the indoors respectively.
- IMPORTANT : DO NOT INSTALL OR USE THE AIR CONDITIONER UNIT IN A LAUNDRY ROOM.
- Do not use joined and twisted wires for incoming power supply.
- The equipment is not intended for use in a potentially explosive atmosphere.
- The piping length between indoor unit and outdoor unit is within the allowable limit.

Wireless Remote Controller

- Do not expose the remote controller to direct sunlight (this will hinder receiving signals from the indoor unit).
- Turn on all the fluorescent lamps in the room, if any, and find the site where remote controller signals are properly received by the indoor unit (within 7 metres).

⚠ CAUTION

Do not install the unit at altitude over 2000m for both indoor and outdoor.

INDOOR UNIT INSTALLATION

1 INSTALLATION DIAGRAM

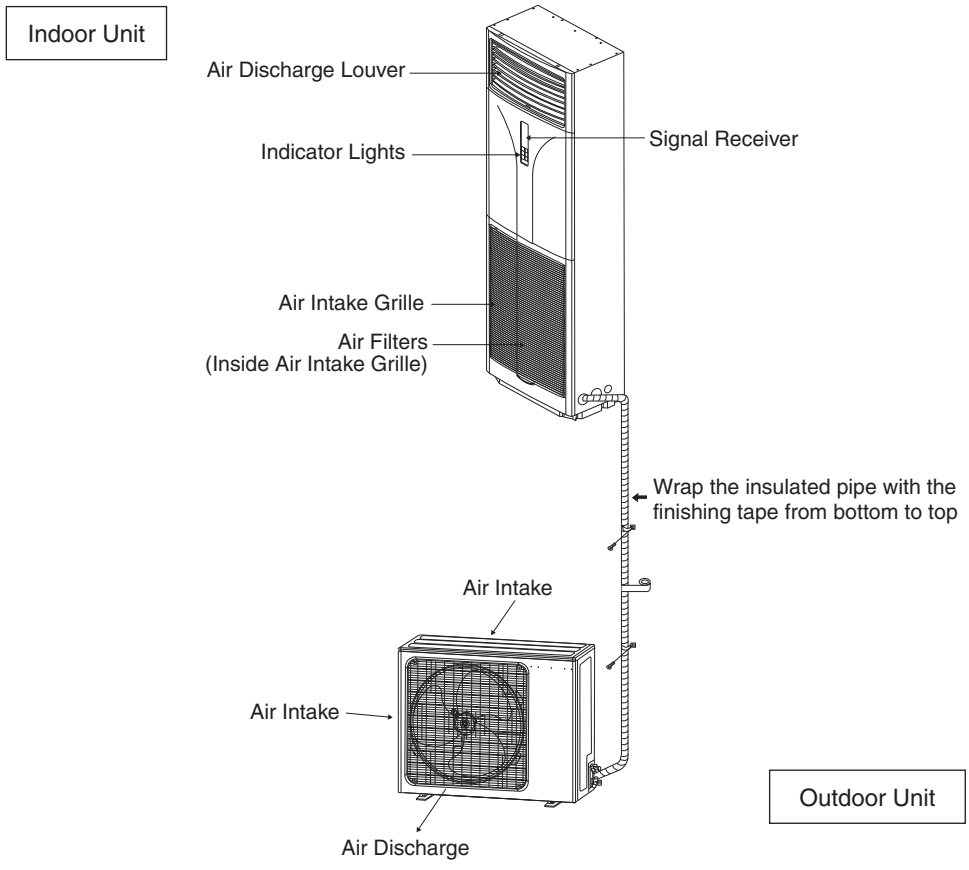


Figure A

2 INSTALLATION CLEARANCE

Standard Mounting

Ensure that the overhead supports are strong enough to hold the weight of the unit. Position the hanger rods (wall mounting bracket for floor standing), and check for its alignment.
Also, check that the hangers are secured and the base of the fan coil unit is leveled in both horizontal directions.

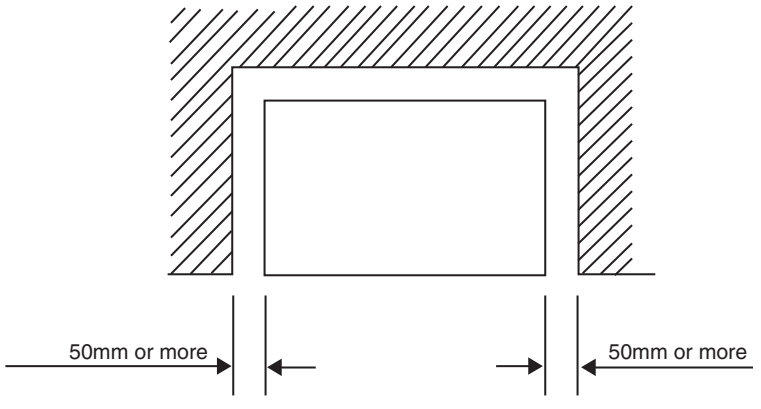


Figure B

Please ensure that the following steps are taken:

– The drain pipe slope shall be kept at least 1:100.
– Provide clearance for easy servicing and optimal air flow as shown in Figure B.
– The indoor unit must be installed such that there is no short circuit of the cool discharge air with the warm return air.
– Do not install the indoor unit where there is direct sunlight shining on the unit. The location should be suitable for piping and drainage installation. The unit must be a large distance away from the door.

3 INDOOR UNIT INSTALLATION

Fixing Procedure

- Fix the indoor unit by using embedded bolt, etc. to prevent falling down of the vertically-long shaped unit.

1. Detach the air intake grille.

Remove the screw (Right, Left, total 2) holding the grille. Then, (1) lean the grille forward you, and (2) lift upward and out. Refer Figure C.

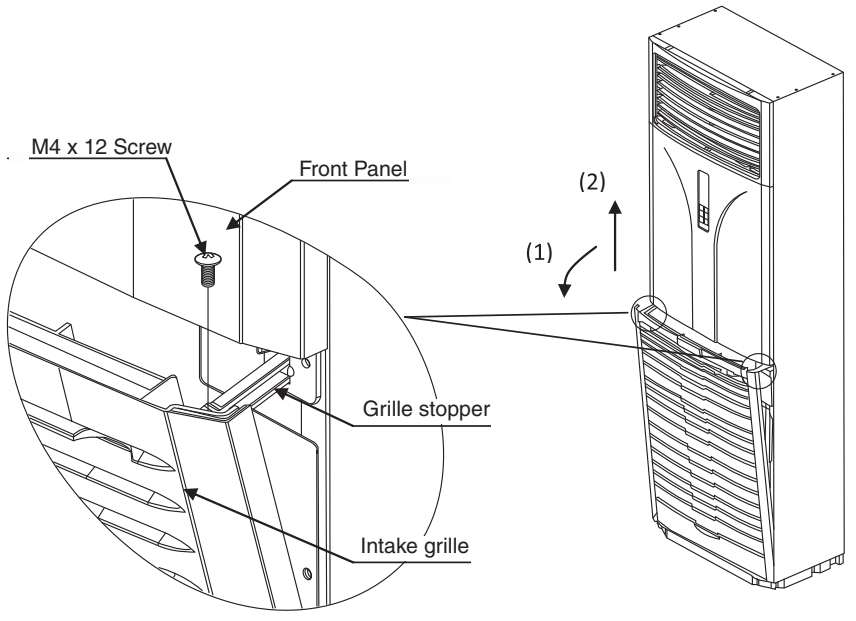


Figure C

2. Install the indoor units.

< Method 1 >

Fix the bracket with the attached screws to the top panel as shown in Figure D.
Then fix the indoor unit to the wall surface.

All dimensions are in mm

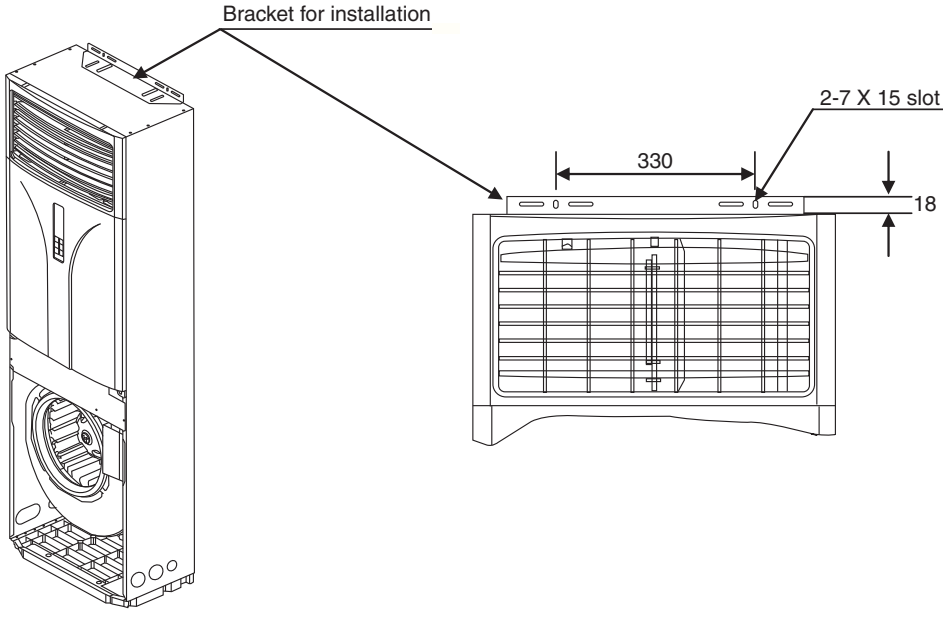
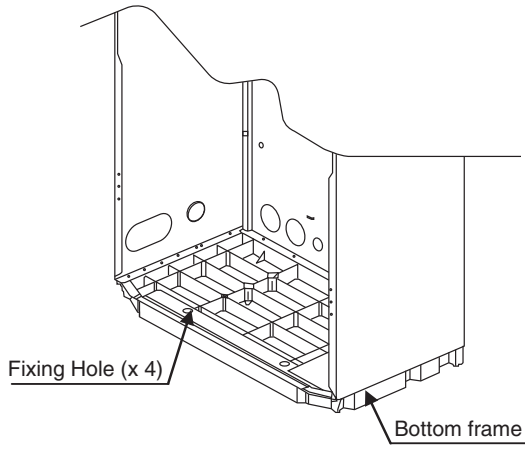


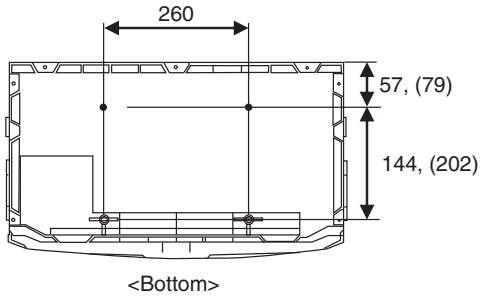
Figure D

< Method 2 >

Fix the indoor unit to the floor with Anchor bolts (to be locally procured) using fixing holes (x4) on the bottom frame.

All dimensions are in mm





* Dimension in ( ) for 40-60 models.

Figure E

For more safety precaution, fix the indoor unit with < Method 1 > and < Method 2 > during installation.

Piping and Drain Hose Installation.

- Detach the pipe retainer,

< In case of left or right piping >

1. Open the holes on the Right (Left) side panel. **(Refer to Figure F).**
2. Pass refrigerant pipes, drain pipes, and unit wiring through the hole on the side panel.

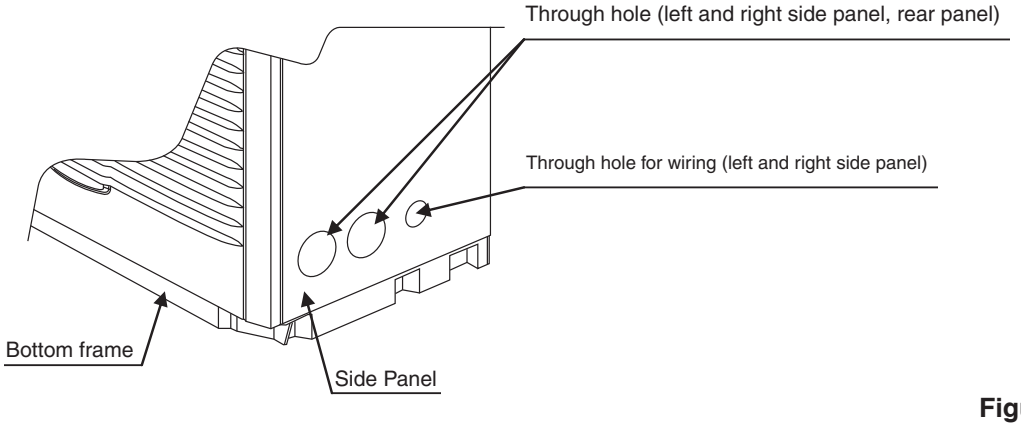


Figure F

< In case of rear piping >

1. Open the holes on the rear panel. **(Refer to Figure G).**
2. Pass refrigerant pipes, drain pipes, and unit wiring through the hole on the rear panel.

< In case of downward piping >

1. Cut holes in the indicated area of the bottom frame. **(Refer to Figure G)**.
2. Pass refrigerant pipes, drain pipes, and unit wiring through the hole on the bottom frame.

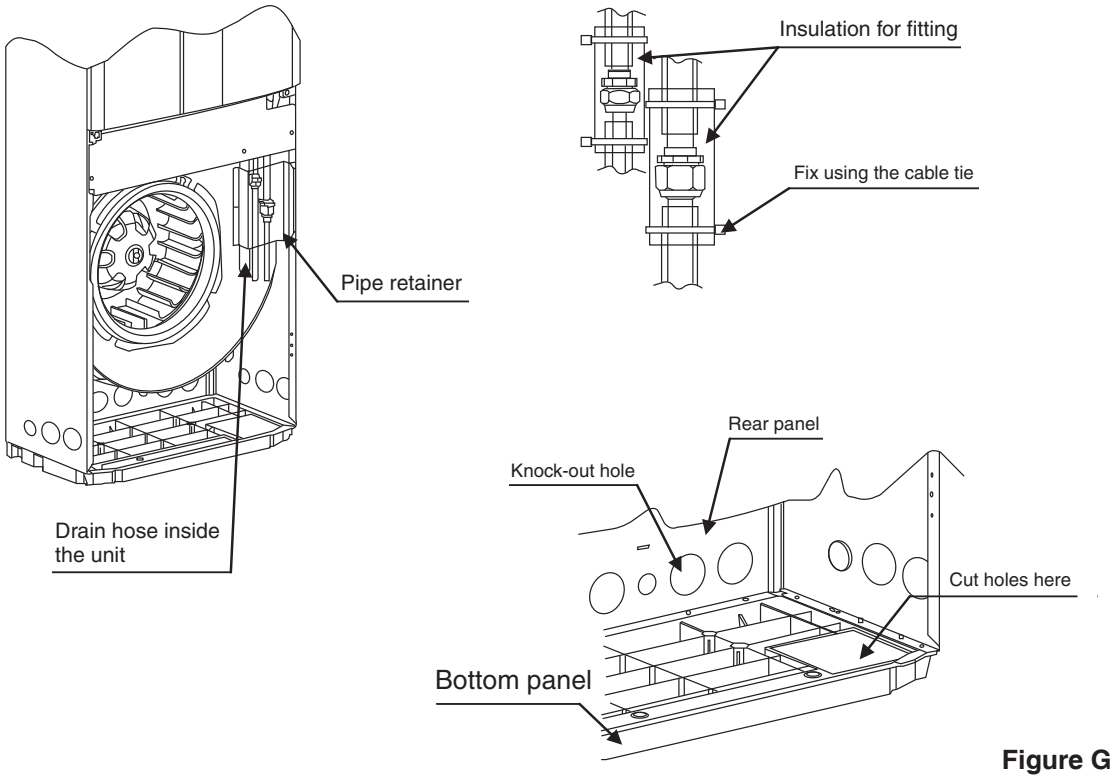


Figure G

After rigging pipes and wiring, lock down the refrigerant pipes, drain hose inside the unit, indoor-out-door unit. Transmission wiring and grounding line, in the piping guide.

Drain Piping Work

1. Rig the drain piping.

Rig the drain line to ensure proper drainage. Also, observe the following to prevent leaks.

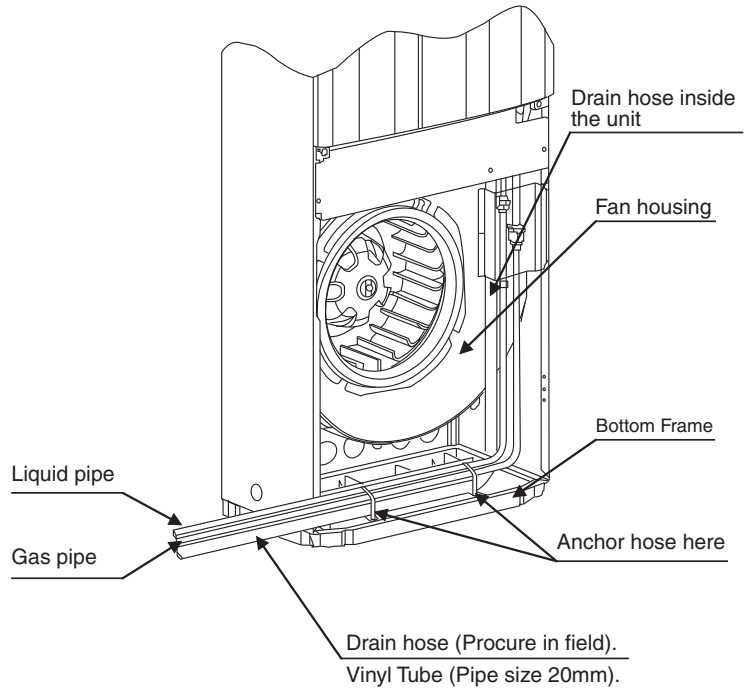


Figure H

- Bundle the drain hose to the refrigerant pipes as shown at right or take other means to anchor it down, so as not to apply pressure to the hose inside the unit. This is necessary to prevent the drain hose from disconnecting and to ensure proper insulation. Keep the drain hose sloping at a minimum 1/100 gradient, to prevent air pockets.
- Condensate can form on the hose and leak from the unit. Therefore, definitely insulate the hose in at least the below two places.
  - All hose in the room and inside the unit.
  - At connection between the unit's drain hose and building drain pipe.

2. After rigging the drain hose, check that drainage flows smoothly and that water does not leak from connections.

- Carefully pour approximately 1,000cc of water through the air discharge outlet so that it falls directly onto the heat exchanger at an angle without splashing. **(Refer to Figure I)**.

* If water is poured too fast or it water pressure is too high, the water will pass through the heat exchanger and drip on the fan motor below it.

* If water gets on the inner front wall, it will leak onto the floor.

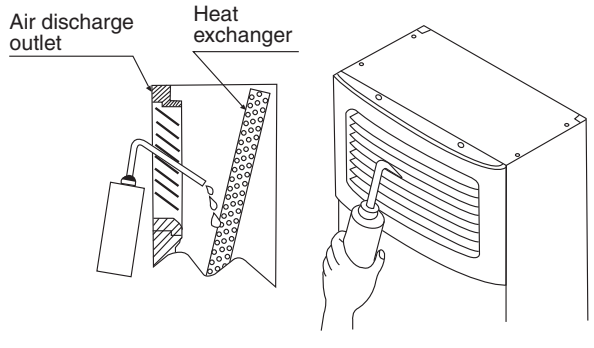


Figure I

Intake Grille

Intake grille must be installed as step below.

1. Hook the air intake grille on the groove on the unit's bottom frame in order of (1) -> (2). **(Refer to Figure J)**.

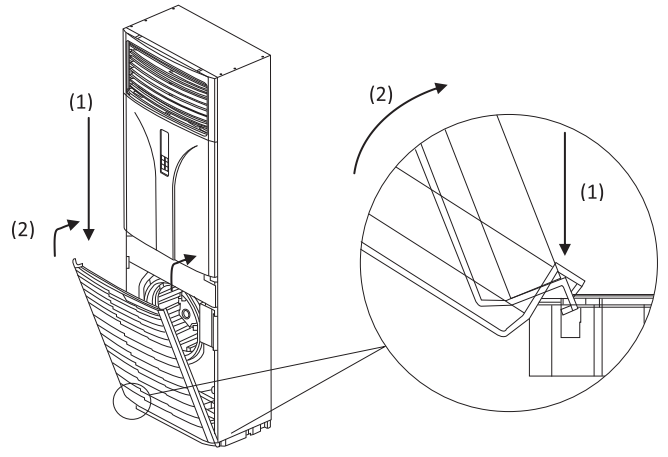


Figure J

2. Fit the grille stopper (front panel) into the groove on the air intake grille and lock the grille down in its original place by screw. **(Refer to Figure K)**.

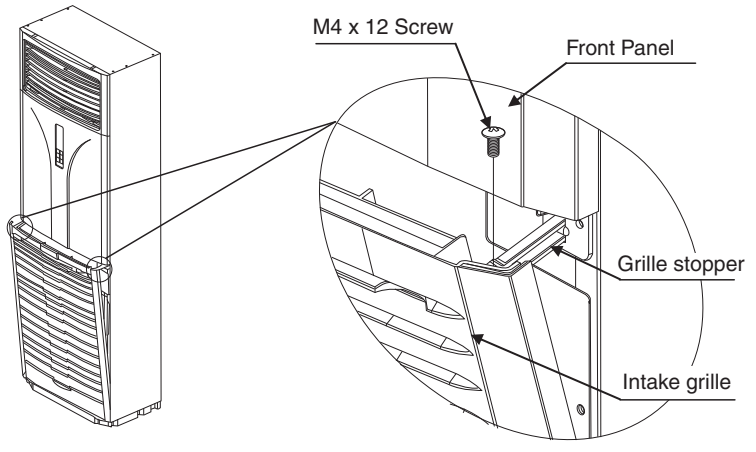


Figure K

If the unit needs to be service, steps below shall be followed:

1. Confirm that the unit had been switched off before servicing the unit.
2. Use screwdriver to unlock the screw on the intake grille.
3. Install the intake grille and screw the grille stopper after service and make sure the unit is proper install.

Filter Cleaning work

1. Take out the filter from the unit in order of (1) -> (2). **(Refer to Figure L)**.

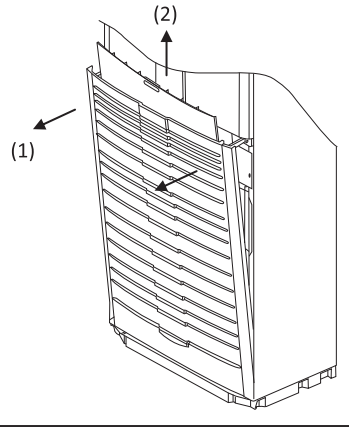
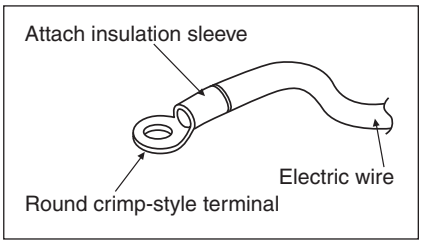


Figure L

2. Clean the filter, either use a vacuum cleaner, or wash them in water and dry in the shade.
3. Re-insert the filter to the original position.

ELECTRICAL WIRING CONNECTION

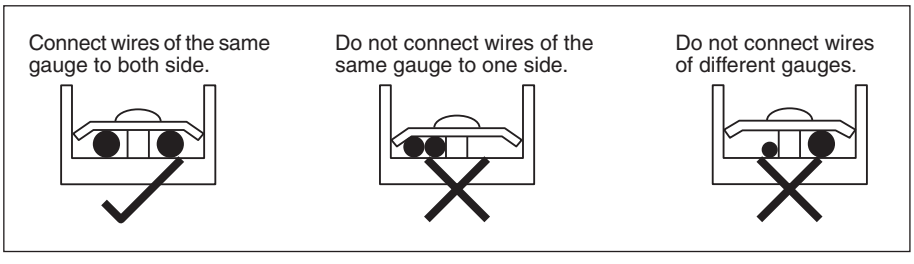
- All wires must be firmly connected.
- Make sure all the wire do not touch the refrigerant piping, compressor or any moving parts.
- The connecting wire between the indoor unit and the outdoor unit must be clamped by using provided cord anchorage.
- In the case when protected pipes are used, use H05VV-U4G for the connecting wire between the indoor unit and the outdoor unit. Use H07RN-F when protected pipes are not used.
- Make sure no external pressure is applied to the terminal connectors and wires.
- Make sure all the covers are properly fixed to avoid any gap.
- Use round crimp-style terminal for connecting wires to the power supply terminal block. Connect the wires by matching to the indication on terminal block. (Refer to the wiring diagram attached on the unit).



⚠ WARNING

- Transmission wire must be routed at least 50mm away from the power cable.
- Transmission wire should be a shielded wire.

- Use the correct screwdriver for terminal screws tightening. Unsuitable screwdrivers can damage the screw head.
- Over tightening can damage the terminal screws.
- Do not connect wire of different gauge to same terminal.
- Keep wiring in an orderly manner. Prevent the wiring from obstructing other parts and the terminal box cover.
- For wiring connection between INDOOR and OUTDOOR unit, see Outdoor installation manual and wiring diagram.



REFRIGERANT PIPING WORK

- **For the outdoor unit refrigerant piping, refer to the installation manual attached to the outdoor unit.**

1 FLARING THE PIPE END

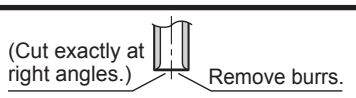
1) Cut the pipe end with a pipe cutter.
2) Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.
3) Put the flare nut on the pipe.
4) Flare the pipe.
5) Check that the flaring is properly made.

⚠ WARNING

- Do not use mineral oil on flared part.
- Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- Never use piping which has been used for previous installations.
- Only use parts which are delivered with the unit.
- Do never install a drier to this R32 unit in order to guarantee its lifetime.
- The drying material may dissolve and damage the system.
- Incomplete flaring may cause refrigerant gas leakage.

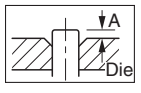
⚠ CAUTION

Do not reuse joints which have been used once already.



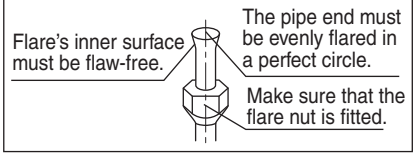
Flaring

Set exactly at the position shown below.



Pipe Size, mm (in)	A (mm)		
	Flare Tool for R32/R410A	Conventional flare tool	
	Clutch-type	Clutch-type (Ridgid-type)	Wing-nut type (Imperial-type)
6.4 (1/4")	0-0.5	1.0-1.5	1.5-2.0
9.5 (3/8")	0-0.5	1.0-1.5	1.5-2.0
12.7 (1/2")	0-0.5	1.0-1.5	2.0-2.5
15.9 (5/8")	0-0.5	1.0-1.5	2.0-2.5
19.1 (3/4")	0-0.5	1.0-1.5	2.0-2.5

Check



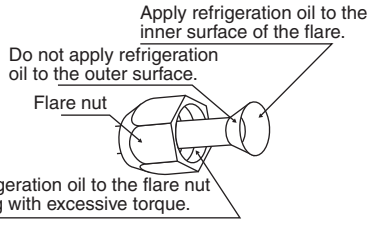
2 REFRIGERANT PIPING

⚠ CAUTION

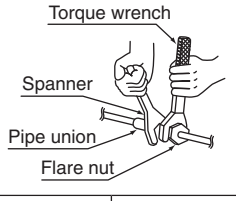
1) Use the flare nut fixed to the main unit. (To prevent cracking of the flare nut by aged deterioration.)
2) To prevent gas leakage, apply refrigeration oil only to the inner surface of the flare. (Use refrigeration oil for R32.)
3) Use torque wrenches when tightening the flare nuts to prevent damage to the flare nuts and gas leakage.

Align the centres of both flares and tighten the flare nuts 3 or 4 turns by hand. Then tighten them fully with the torque wrenches.

[Apply oil]



[Tighten]



Pipe Size, mm (in)	Torque, Nm/(ft-lb)
6.4 (1/4")	18 (13.3)
9.5 (3/8")	42 (31.0)
12.7 (1/2")	55 (40.6)
15.9 (5/8")	65 (48.0)
19.1 (3/4")	78 (57.6)

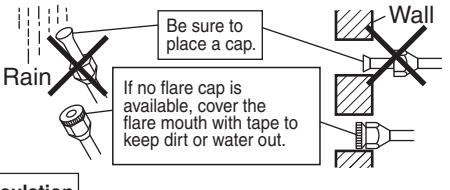
1. Cautions on pipe handling

1) Protect the open end of the pipe against dust and moisture.
2) All pipe bends should be as gentle as possible. Use a pipe bender for bending.

2. Selection of copper and heat insulation materials

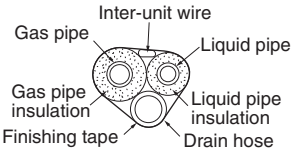
When using commercial copper pipes and fittings, observe the following:

1) Insulation material: Polyethylene foam
Heat transfer rate: 0.041 to 0.052W/mK (0.035 to 0.045kcal/(mh •˚C))
Refrigerant gas pipe's surface temperature reaches 110˚C max.
Choose heat insulation materials that will withstand this temperature.



2) Be sure to insulate both the gas and liquid piping and to provide insulation dimensions as below.

Piping size, mm (in)	Minimum bend radius	Piping thickness	Thermal insulation size	Thermal insulation thickness
6.4 (1/4")	30mm or more	0.8mm (C1220T-O)	I.D. 8-10mm	10mm Min.
9.5 (3/8")	30mm or more		I.D. 12-15mm	
12.7 (1/2")	40mm or more		I.D. 14-16mm	
15.9 (5/8")	50mm or more	1.0mm (C1220T-O)	I.D. 16-20mm	
19.1 (3/4")	50mm or more		I.D. 20-24mm	



3) Use separate thermal insulation pipes for gas and liquid refrigerant pipes.

⚠ WARNING

Prior to installation, ensure risk of ignition is minimised and avoid working in confined space. Ensure adequate ventilation is available by opening windows or doors.

- When flared joints are reused indoors, the flare part shall be re-fabricated.
- Avoid installation of the air conditioner in a place where there is danger of exposure to continuously operating open flames (for example an operating electric heaters).
- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.

- **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. nonsparking, adequately sealed or intrinsically safe.

- **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 CO^2 fire extinguisher adjacent to the charging area.

- **No ignition sources**

All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space. “No Smoking” signs shall be displayed.

- **The following checks shall be applied to installations:**
  - 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.

- **Initial safety checks shall include:**
  - that capacitors are discharged, this shall be done in a safe manner to avoid possibility of sparking
  - there shall be no live electrical components and wiring are exposed while charging, recovering or purging the system;

- **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.
Replace components only with parts specified by the manufacturer.

- **Leak detection methods**

Ensure that the detector is not a potential source of ignition (for example a halide torch) and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant (for R32, LFL is 13%) 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.

- **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 flammability 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.

- **Labelling**

This unit shall be labelled 'de-commissioned and emptied of refrigerant'. This label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

- **Charging procedures**

In addition to conventional charging procedures, the following requirements shall be followed.

  – Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
  – Cylinders shall be kept upright.
  – Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  – Label the system when charging is complete (if not already).
  – Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

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.

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.

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 labelled for that refrigerant (i.e. special cylinders for the 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.

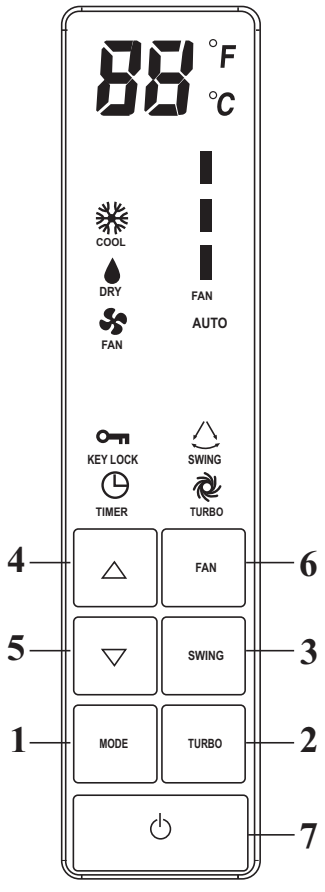
The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete 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 recovery 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.

CONTROLLER PART NAMES AND FUNCTIONS

Cooling Model



1	**OPERATION MODE SELECTOR BUTTON** Press the button to select OPERATION MODE (Cool/Dry/Fan)	5	**TEMPERATURE SETTING BUTTON** Press the button to decrease set temperature in °C or °F
2	**TURBO BUTTON** Press the button to active/deactivate TURBO function	6	**FAN SPEED CONTROL BUTTON** Press the button to select fan speed, High/Medium/Low, of your choice
3	**SWING BUTTON** Press the button to active/deactivate SWING function	7	**ON/OFF BUTTON** Press the button and the system will start. Press the button again and the system will stop.
4	**TEMPERATURE SETTING BUTTON** Press the button to increase set temperature in °C or °F		

OPERATING INSTRUCTION

1.1 MODE Button

- Press the **MODE** button to select the type of operating mode.
- For cooling only unit, the available modes are: **COOL (❄), DRY (💧)** and **FAN (🌀)**.
- For heat pump unit, the available modes are: **AUTO (△), COOL (❄), DRY (💧), FAN (🌀)** and **HEAT (☀)**.

1.2 **TURBO** Fan Speed

Press the TURBO key once to activate Turbo fan speed. Turbo symbol will be shown. To disable Turbo fan speed and back to previous fan speed, press the Turbo key once again. If user presses the FAN button or turn off the unit, the turbo speed will be disabled. This speed is only valid during COOL mode for selected models.

1.3 Automatic air swing

- Press the **SWING** button to activate the automatic air swing function.
- To distribute the air to a specific direction, press the **SWING** button and wait until the louver move to the desired direction and press the button once again.

1.4 "▲" or "▼" Set Temperature Button

Press the temperature button and set the temperature of your choice by pressing "▲" or "▼" button once, temperature changes by 1°C or 1°F. The default temperature setting range is from 16°C to 30°C (60°F to 86°F). When the Option 20 - 30°C is set, the temperature range limit is set to 20°C to 30°C (68°F to 86°F). Pressing both keys simultaneously will toggle the temperature setting between °C and °F. No temperature setting is allowed during FAN mode (No set temp display). There is no room temperature display.

1.5 **FAN** Speed Function

Fan speed can be changed via pressing the FAN key:

Low > Med > High > Auto >

*FAN speed is not available in DRY mode.

1.6 **ON/OFF** Button

Please allow 10 seconds for initialization during manual power on.

Starting Operation:

– Press the ON/OFF button, the LCD will show full display and the unit is turned on.

Stopping Operation:

– Press the ON/OFF button, the unit is turn off.

1.7 Power up Settings

The unit will start up with main board's last state setting during power up. If last state information is not available, the unit will use the default settings. The default settings are as below:

Unit:	Off
Mode:	Cool
Fan Speed:	High
Swing:	Off
Turbo:	Disable

1.8 Key Lock

These key lock function inhibits any setting change. Press and hold both TURBO and SWING keys for 5 seconds will activate/deactivate the key lock function; "KEYLOCK" will be shown/disappear on Display panel. Upon all the keys are locked, only ON/OFF, TURBO and SWING (to unlock) can be pressed.

INDICATOR LIGHTS

FAULT DIAGNOSIS

When there is an abnormality happens, error code may show on display panel, refer to error code list below for fault diagnosis.

ERROR CODE	MEANING
00	NORMAL
A0	RISK OF REFRIGERANT LEAKAGE
A1	INDOOR PCB ERROR
A3	DRAIN PUMP ABNORMAL
A5	ANTIFREEZE (COOLING)/HEAT EXCHANGER OVERHEAT (HEATING)
A6	INDOOR FAN MOTOR ABNORMAL
AH	ELECTRICAL AIR CLEANER ABNORMAL
C4	INDOOR HEAT EXCHANGER (1) THERMISTOR SHORT/OPEN
C5	INDOOR HEAT EXCHANGER (2) THERMISTOR SHORT/OPEN
C7	LOUVER LIMIT SWITCH ERROR
C9	INDOOR ROOM THERMISTOR SHORT/OPEN
CH	DISCONNECTION/MALFUNCTION OF REFRIGERANT LEAKAGE SENSOR
E1	OUTDOOR PCB ERROR
E3	HIGH PRESSURE PROTECTION
E4	LOW PRESSURE PROTECTION
E5	COMPRESSOR MOTOR LOCK/COMPRESSOR OVERLOADED
E6	COMPRESSOR START-UP ERROR
E7	OUTDOOR DC FAN MOTOR LOCK
E8	AC INPUT OVER CURRENT
E9	EXV ERROR
EA	4 WAY VALVE ERROR
F3	DISCHARGE PIPE OVERHEAT
F6	HEAT EXCHANGER OVERHEAT
HO	COMPRESSOR SENSOR SYSTEM ERROR
H3	HIGH PRESSURE SWITCH ERROR
H6	COMPRESSOR FEEDBACK DETECTION ERROR
H7	FAN MOTOR OVERLOADED/OVERCURRENT/SENSOR ABNORMAL
H8	AC CURRENT SENSOR ERROR
H9	OUTDOOR AIR THERMISTOR SHORT/OPEN
J1	PRESSURE SENSOR ERROR
J3	COMPRESSOR DISCHARGE PIPE THERMISTOR SHORT/OPEN/MISPLACED
J5	SUCTION PIPE THERMISTOR SHORT/OPEN
J6	OUTDOOR HEAT EXCHANGER THERMISTOR SHORT/OPEN
J7	SUBCOOLING HEAT EXCHANGER THERMISTOR SHORT/OPEN
J8	LIQUID PIPE THERMISTOR SHORT/OPEN
J9	GAS PIPE THERMISTOR SHORT/OPEN
L1	INVERTER OUTDOOR PCB ERROR
L3	OUTDOOR CONTROL BOX OVERHEAT
L4	HEAT SINK OVERHEAT
L5	IPM ERROR/IGBT ERROR
L8	INVERTER COMPRESSOR OVERCURRENT
L9	COMPRESSOR OVERCURRENT PREVENTION
LC	COMMUNICATION ERROR (OUTDOOR CONTROL PCB AND INVERTER PCB)
P1	OPEN PHASE OR VOLTAGE UNBALANCE
P4	HEAT SINK THERMISTOR SHORT/OPEN
PJ	CAPACITY SETTING ERROR
U0	INSUFFICIENT GAS
U2	DC VOLTAGE OUT OF RANGE
U4	COMMUNICATION ERROR
U7	COMMUNICATION ERROR (OUTDOOR CONTROL PCB AND IPM PCB)
UA	INSTALLATION ERROR
UF	PIPING & WIRING INSTALLATION MISMATCH/WRONG WIRING/INSUFFICIENT GAS
UH	ANTIFREEZE (OTHER ROOMS)

TROUBLESHOOTING

For any enquiries on spare parts, please contact your authorized dealer. If any malfunction of the air conditioner unit is noted, immediately switch off the power supply to the unit. Check the following fault conditions and causes for some simple troubleshooting tips.

Fault	Causes / Action
1. The compressor does not operate 3 minutes after the air conditioner unit is started.	– Protection against frequent starting. Wait for 3 to 4 minutes for the compressor to start operating.
2. The air conditioner unit does not operate.	– Power failure, or the fuse need to be replaced. – The power plug is disconnected. – It is possible that your delay timer has been set incorrectly. – If the fault persist after all these verifications, please contact the air conditioner unit installer.
3. The air flow is too low.	– The air filter is dirty. – The doors or windows are open. – The air suction and discharge are clogged. – The regulated temperature is not high enough.
4. Discharge air flow has bad odor.	– Odors may be caused by cigarettes, smoke particles, perfume etc. which might have adhered onto the coil.
5. Condensation on the front air grille of the indoor unit.	– This is caused by air humidity after an extended long period of operation. – The set temperature is too low, increase the temperature setting and operate the unit at high fan speed.
6. Water flowing out from the air conditioner unit.	– Switch off unit and call dealer.

If the fault persists, please call your local dealer / serviceman.

OVERALL CHECKING

- **Ensure that**
  1) The unit has been mounted solidly and rigid in position.
  2) The piping and connections are leak-proof after the charging.
  3) Proper wiring has been installed.
- **Drainage check**
  – pour some water into the left side of the drain pan (the drainage is at the right side of the unit).
- **Test run:**
  1) Conduct a test run on the unit after having perform the water drainage test and the gas leakage test.
  2) Check the following items:
     a) Is the electrical plug inserted firmly into the socket?
     b) Is there any abnormal sounds from the unit?
     c) Is there any abnormal vibrations on the unit or the piping?
     d) Is the drainage of water smooth?
- **Confirm that**
  1) The condenser fan is running. Check the warm air blowing from the condensing unit.
  2) The evaporator blower is running and discharge coolair.
  3) The suction (low side) pressure is as recommended.
  4) The remote controller incorporates a 3-minute delay protection in the circuit, whereby the outdoor condensing unit requires about 3 minutes delay before it can start operating.

SERVICE AND MAINTENANCE

Service Parts	Maintenance Procedures	Period
Indoor Air Filter	1. Remove any dust adhering to the filter by using a vacuum cleaner or wash in lukewarm water (below 40°C) with a neutral cleaning detergent. 2. Rinse the filter well and dry before placing it back onto the unit. 3. Do not use gasoline, volatile substances or chemicals to clean the filter.	At least once every 2 weeks. More frequently if necessary.
Indoor Unit	1. Clean any dirt or dust on the grille or panel by wiping it with a soft cloth soaked in lukewarm water (below 40°C) and a neutral detergent solution. 2. Do not use gasoline, volatile substances or chemicals to clean the indoor unit.	At least once every 2 weeks. More frequently if necessary.
Indoor Fan	1. Check for any abnormal noise.	When necessary.

⚠ CAUTION

Avoid direct contact of any coil treatment cleaners on plastic part. This may cause plastic part to deform as a result of chemical reaction.

OPERATING RANGE

If the temperature or the humidity is beyond the following conditions, safety devices may work and the air conditioner may not operate, or sometimes, water may drop from the indoor unit.

COOLING

OUTDOOR UNIT	INDOOR			OUTDOOR TEMPERATURE	
	TEMPERATURE		HUMIDITY		
RZV/MF	D B	21 to 35	80% or below	D B	21 to 52
	W B	14 to 24			

DB: Dry bulb temperature (°C)

WB: Wet bulb temperature (°C)

The setting temperature range of the remote controller is 16°C to 30°C.

Split System Air Conditioner

INSTALLATION MANUAL <FOR OUTDOOR UNIT>

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION.

NEW REFRIGERANT (R32) SERIES

RZVF71BSV16

Note : Read the precautions in this manual carefully before operating the unit.
This appliacnce is filled with R32.

CONTENTS

⚠ WARNING THERE IS A RISK OF EXPLOSION OR FIRE

- Do not mix air in the refrigerating cycle during pump down operation.
- Do not use oxygen for air tight test.
- Do not use refrigerant other than the specified one or flammable material (e.g. propane) in the refrigerant cycle. They may cause over pressure in the refrigerating cycle and result in explosion, fire or injury. Our company assumes no responsibility for failure or malfunction caused by filling or mixing of anything other than the specified refrigerant.

⚠ CAUTION ABOUT ISOLATING RESISTANCE OF COMPRESSOR

If refrigerant accumulates in the compressor after completing installation, the insulation resistance can drop, but if it at least 1 MΩ, then the unit will not break down.

- Connect the power supply to the unit and after 6 hours check if the insulation resistance of the compressor rises. (Energize and heat the compressor to vaporize the refrigerant accumulated in the compressor.)
- If the earth leakage breaker actuates, check if the earth leakage breaker is equipped with a device to cope with high harmonics. To prevent wrong actuation of the earth leakage breaker due to the inverter, make sure to adopt an earth leakage breaker equipped with a device to cope with high harmonics.

1. Please make sure to confirm that R32 (new refrigerant) is used in installation work in advance. (It may not operate normally, if refrigerant type is different.)
2. The refrigerant R32 requires that strict precautions be observed for keeping the system clean, dry and tightly sealed.
   - Clean and dry
     Strict measures must be taken to keep impurities (Including SUNISO oil and other mineral oils as well as moisture) out of the system.
   - Tightly sealed
     R32 contains no chlorine, does not destroy the ozone layer and so does not reduce the earth's protection against harmful ultraviolet radiation. R32 will contribute only slightly to the greenhouse effect if released into the atmosphere. Therefore, sealing tightness is particularly important in installation.
     Carefully read the chapter **5 REFRIGERANT PIPING WORK** and strictly observe the correct procedures.
3. The design pressure of this unit : High/Low pressure area are shown in the right table.
   The refrigerant piping is a high pressure area,
   Use the refrigerant piping which supports the design pressure.
   The piping specifications, please refer to chapter
   5 REFRIGERANT PIPING WORK

Outdoor Unit	Design pressure	Cooling
RZVF71BSV16	High	4.17
	Low	2.21

(Units: MPa)

4. Be sure to connect the indoor unit, which is dedicated to R32. See the catalog for indoor unit models which can be connected.
   (Normal operation is not possible when connected to other units.)

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

- This manual classifies the precautions into WARNINGS and CAUTIONS.
  Be sure to follow all the precautions below. They are all important for ensuring safety.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be uesd to alert against unsafe practices.

- After the installation is completed, test the air conditioner and check if the air conditioner operates properly.
  Give the user adequate instructions concerning the use and cleaning of the indoor unit according to the operation manual.
  In particular, make sure to explain with regard to “SAFETY PRECAUTIONS” and “Not malfunction of the air conditioner”.
  Ask the user to keep this manual and the operation manual together in a handy place for future reference.
- This air conditioner comes under the term “appliances not accessible to the general public”.

⚠ WARNING

- Ask your local dealer or qualified personnel to carry out installation work.
  Improper installation may result in water leakage, electric shocks or a fire.
- Perform installation work in accordance with this installation manual.
  Improper installation may result in water leakage, electric shocks or a fire.
- Consult your local dealer regarding what to do in case of refrigerant leakage.
  When the indoor unit is installed in a small room, it is necessary to take proper measures so that the amount of any leaked refrigerant does not exceed the concentration limit in the event of a leakage. Otherwise, this may lead to an accident due to oxygen deficiency.
- Be sure to use only the specified parts and accessories for installation work.
  Failure to use the specified parts may result in the air conditioner fall down, water leakage,electric shocks, a fire, etc.
- Install the air conditioner on a foundation that can withstand its mass.
  Insufficient strength may result in the air conditioner fall down and causing injury.
- Carry out the specified installation work in consideration of strong winds, typhoons, or earthquakes.
  Improper installation may result in an accident such as the air conditioner falling.
- Make certain that all electric work is carried out by qualified personnel according to the applicable legislation (note 1) and this installation manual, using a separate circuit. In addition, even if the wiring is short, make sure to use a wiring that has sufficient length and never connect additional wiring to make the length sufficient. Insufficient capacity of the power supply circuit or improper electric construction may lead to electric shocks or a fire.
  (note 1) Applicable legislation means “All international, national and local directives, laws, regulations and/or codes which are relevant and applicable for a certain product or domain.”
- Earth the air conditioner.
  Do not connect the earth wiring to gas or water piping, lightning conductor or telephone earth wiring.
  Incomplete earthing may cause electric shocks or a fire.
- Be sure to install an earth leakage circuit breaker.
  Failure to do so may cause electric shocks or a fire.
- The appliance must be stored in a room without continuosly operating ignition sources (for example : open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerant may not contain an odour.
- Comply with national gas regulations.
- Be sure to switch off the unit before touching any electrical parts.
  Touching a live part may result in electric shocks.
- Make sure that all wiring is secure, using the specified wiring and ensuring that external forces do not act on the terminal connections or wiring. Incomplete connection or fixing may cause overheating terminals or fire.
- When wiring between the outdoor and indoor units, and wiring the power supply, from the wiring orderly so that the structual parts such as a cover can be securely fastened.
  If the cover is not in place, electric shocks or a fire may be caused.
- Do not add wiring. It may result in heat generation. Electric shocks or fire.
- When installing or relocating the air conditioner, be sure to bleed the refrigerant circuit to ensure,it is free of air, and use only the specified refrigerant (R32).
  The presence of air or other foreign matter in the refrigerant circuit causes abnormal pressure rise, which may result in equipment damage and even injury.
- If refrigerant gas leaks during installation work, ventilate the area immediately.
  Toxic gas may be produced if refrigerant gas comes into contact with a fire.
- After completing the installation work, check to make sure that there is no leakage of refrigerant gas.
  Toxic gas may be produced if refrigerant gas leaks into the room and comes into contact with a source of a fire, such as a fan heater, stove or cooker.
- Never directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Do not stand on the outdoor unit or put things on it.
  The unit may fall down or drop, and cause accidents.
- Do not charge any refrigerant into the refrigeration cycle other than the designated refrigerant.
  It may cause an explosion or a fire due to leakage or a burst due to abnormally high pressure in the refrigeration cycle.
- Do not extend wiring on the way.
  It may cause heat generation, electric shocks or fire.
- At the installation work, install the refrigerant piping firmly before operating the compressor.
  If the compressor is operated without installing firmly and the service valve is in open condition,
  it sucks the air, etc., and the pressure inside the refrigerant circle becomes abnormally high. It may cause injury and breakage.
- At pump down work, stop the compressor before removing the refrigerant piping.
  If removing the refrigerant piping when the compressor is operated with its service valve in open condition, it sucks the air,etc., and the pressure inside the refrigerant circle become abnormally high, which may cause injury and breakage.
- The appliance **RZVF71BSV16** shall be installed operated and stored in a room with floor area larger than 5.49 m^2 (wall 71).

- When flared joints are reused indoors, the flare part shall be re-fabricated.

⚠ CAUTION

- Install drain piping according to this installation manual to ensure good drainage, and insulate the piping to prevent condensation. Improper drain piping may cause water leakage, make the furniture get wet.
- Install the indoor and outdoor units, power cord and connecting wires at least 1 meter away from televisions or radio to prevent picture interference and noise. (Depending on the incoming signal strength, a distance of 1 meter may not be sufficient to eliminate noise.)
- Install the indoor unit as far as possible from fluorescent lamps. If a wireless remote controller kit is installed, the transmission distance of the remote controller may be shorter in a room where an electronic lighting type (inverter or rapid start type) fluorescent lamp is installed.
- In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
- Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.
- Disposal requirements
  Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation.
- Only qualified personnel can handel, fill, purge and dispose of the refrigerant.
- Do not install the air conditioner in places such as following:
  1. Where there is mist of oil, oil spray or vapor for example a kitchen.
     Resin parts may deteriorate, and cause them to fall out or water to leak.
  2. Where corrosive gas, such as sulfurous acid gas, is produced.
     Corrosion of copper pipings or brazed parts may cause the refrigerant to leak.
  3. Where there is machinery which emits electromagnetic waves.
     Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
  4. Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the air or where volatile flammables, such as thinner or gasoline, are handled. If the gas should leak and remain around the air conditioner, it may cause ignition.
  5. The place that the vibration or the voltage fluctuation give influence.Vehicles, vessels, etc.
     The vibration may cause a damage and the voltage fluctuation may cause an abnormal operation.
  6. Where small animals may build a nest, fallen leaves are accumulated, or weeds are overgrown.
     If small animals touch the electrical parts inside, this may cause malfunction, smokes or a fire.

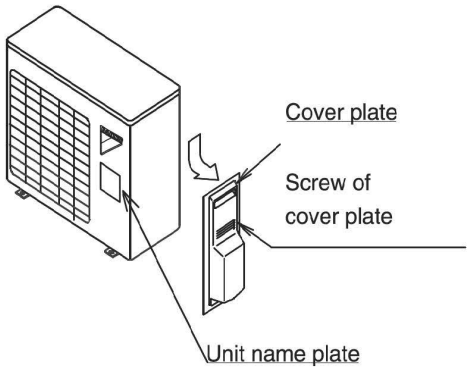
■ Important information regarding the refrigerant used
This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.
Refrigerant type: R32
GWP(1) value: 675
(1)GWP = global warming potential
- The refrigerant quantity is indicated on the unit name plate.

1 BEFORE INSTALLATION <DO NOT THROW AWAY ACCESSORIES FOR INSTALLATION>

⚠ CAUTION

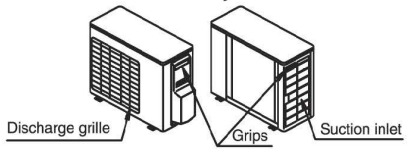
- Read these instructions carefully before installation. For installation of the indoor unit, refer to the indoor unit installation manual.

RZVF71BSV16

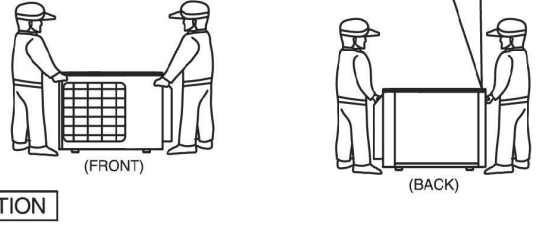


HANDLING

As shown in the figure, bring the unit slowly by grabbing the left and right grips.
(Take care not to let hands or objects come in contact with rear fins.)



Place your hands on the corner instead of holding the suction inlet in the side of the casing, otherwise the casing could be deformed.



INSTALLATION CONSTRUCTION ACCESSORIES

Be sure only to use accessories made by DAIKIN which are specifically designed for use with the equipment.

CAUTION

Work in a team of at least two people when carrying the outdoor unit

2 SELECTING INSTALLATION SITE (1/2)

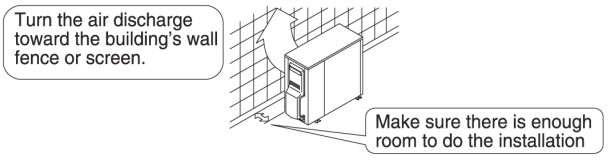
(1) Select the installation location that meets the following conditions and get approval of the customer.
- Places where is no risk of flammable gas leakage.
- Places where the outdoor unit does not bother next-door neighbors.
- Safe places where can withstand the unit's mass and vibration and where the air conditioner can be installed level.
- Places where are well-ventilated and where servicing space can be well ensured.
  The minimum required space is shown in chapter 3 INSTALLATION SERVICE SPACE
- Where the piping length between the indoor and the outdoor units is ensured within the allowable piping length. (Please see chapter 5 REFRIGERANT PIPING WORK)
- Do not allow wind from the same direction to blow frequently toward the outlet or inlet of the outdoor unit. If the wind is likely to blow as mentioned above, make sure to keep a sufficient service space and install a wind protective shield.

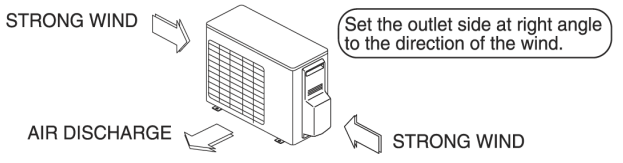
⚠ CAUTION
Inverter air conditioners may cause noise to occur in electrical appliances. As shown in the right drawing, select an installation site well away from radios, PCs, and stereos.
Especially in the areas where the incoming signal strength is weak, keep the indoor remote controller 3 meter or more from electrical appliances.
Put the power supply and transmission wiring in a metal piping and ground the metal piping.

2 SELECTING INSTALLATION SITE (2/2)

⚠ CAUTION

1) In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
2) When installing the unit in a place exposed to strong wind, pay special attention to the following.
   Strong winds of 5 m/sec or more blowing against the outdoor unit's air outlet causes short circuit (suction of discharge air) and this may have the following consequences:
   - Deterioration of the operational capacity.
   - Disruption of operation due to rise of high pressure.
   - When a strong wind blows continuously on the face of the unit, the fan can start rotating very fast until it breaks.
     Refer to the figures for installation of this unit in a place where the wind direction can be foreseen.
3) Following the installation place, it is expected that the influence of the strong wind is great.
   - The flat area which receives the adverse wind such as typhoon directly since there is no obstacles such as buildings and mountains. (Including coast line, shoreline of lake and mountain region.)
   - The installation place that no obstacles around the outdoor unit to prevent the adverse wind, for example, walls and buildings that are higher than the applicable outdoor unit, etc. Please take measures when installing especially on a rooftop.
   - Since the outdoor unit may fall down, attach the fixture for preventing overturning(option).





4) Prepare a water drainage channel around the foundation, to drain waste water from around the unit.
5) If the water drainage of the unit is not easy, please build up the unit on a foundation of concrete blocks, etc. (the height of the foundation should be maximum 150 mm).
6) If you install the unit on a frame, please install a waterproof plate within 150 mm of the underside of the unit in order to prevent the invasion of water from the lower direction.

3 INSTALLATION SERVICE SPACE (1/3)

- The installation servicing spaces shown in these drawings are based on the outdoor unit inlet area temperature of 35°C(DB) for COOLING operation.
  If the planned inlet area temperature exceeds 35°C(DB), or if the heat load of all outdoor units is increased significantly and exceeds the maximum operating capacity, secure a larger space than that indicated by the inlet dimensions in these drawings.
- For installation, consider both pedestrian and air flow paths and choose a suitable pattern from these drawings to match the space available field. (If the number of units to be installed exceeds the patterns in these drawings, consider there is nothing short-circuits.)
- Regarding the front space, position the units with consideration to the space required for the refrigerant piping work. (Consult your dealer if the work conditions do not match those in the drawings.)
- Secure appropriate space when using a side piping outlet.

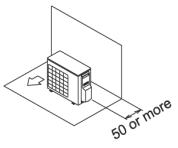
STAND-ALONE INSTALLATION

- To secure service space, more than 250 mm of each products at right side in needed.

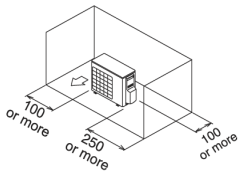
(Units: mm)

No Obstacle above

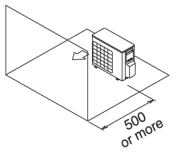
1) Obstacle on the suction side only



2) Obstacle on both sides and suction side, too

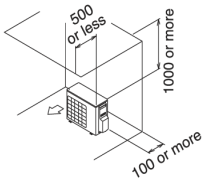


3) Obstacle on the discharge side only

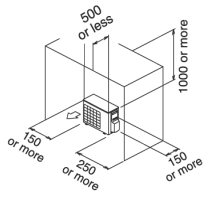


Obstacle above, too

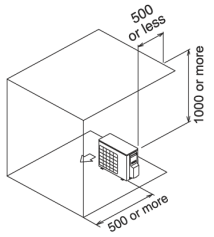
1) Obstacle on the suction side, too



2) Obstacle on both sides and suction side, too



3) Obstacle on the discharge side only, too



3 INSTALLATION SERVICE SPACE (2/3)

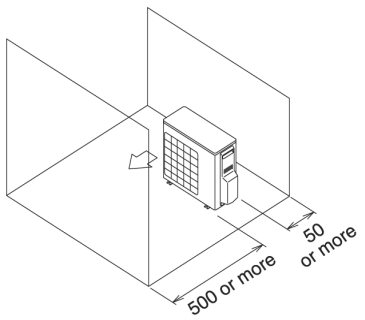
(Units: mm)

When there are obstacles on both suction and discharge sides

• To secure service space, more than 250 mm of each products at right side in needed.

Pattern 1 When the obstacles on the discharge side is higher than the unit

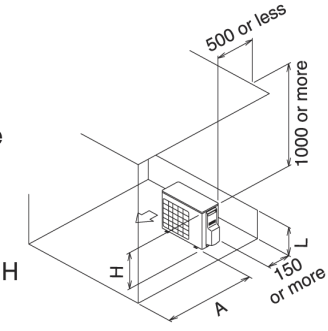
1) No obstacle above (There is no limit for the height of obstructions on the suction side.)



2) Obstacle above, too
The relations between H, A and L are as follows.

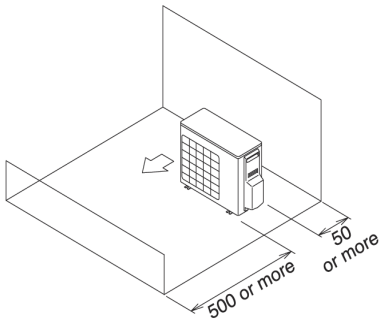
	L	A
L ≦ H	L ≦ 0.5H	750 or more
	0.5H<L≦H	1000 or more
L > H	Set the stand as: L ≦ H	

※ - Close the bottom of the stand to prevent the discharged air from being bypassed.
- The limitation of facilities connection is untill 2 unit only.
- In case of more than dimension in ( ), It is no need to establish the stand although L > H



Pattern 2 When the obstacle on the discharge side is lower than the unit

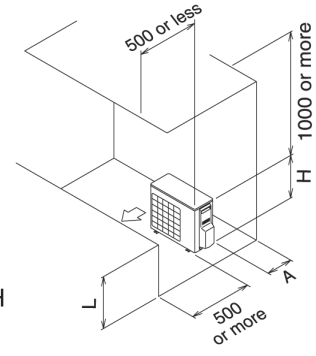
1) No obstacle above (There is no limit for the height of obstructions on the suction side.)



2) Obstacle above, too
The relations between H, A and L are as follows.

	L	A
L ≦ H	L ≦ 0.5H	50 or more
	0.5H<L≦H	100 or more
L >H	Set the stand as: L ≦ H	

※ - Close the bottom of the stand to prevent the discharged air from being bypassed.
- The limitation of facilities connection is untill 2 unit only.
- In case of more than dimension in ( ), It is no need to establish the stand although L > H



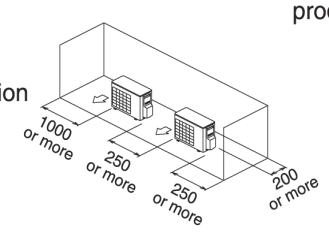
SERIES INSTALLATION (2 OR MORE)

※ Inside extraction, please provide the space of piping.
• To secure service space, more than 250 mm of each products at right side in needed.

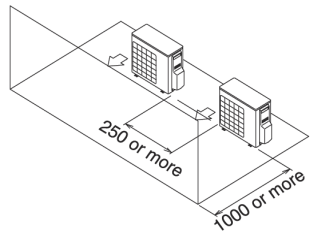
(Units: mm)

No obstacle above

1) Obstacle on the suction side and both sides

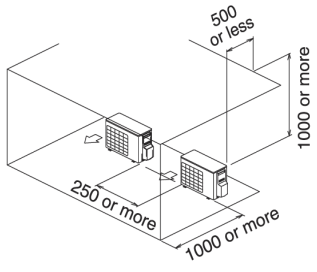


2) Obstacle on the discharge side only

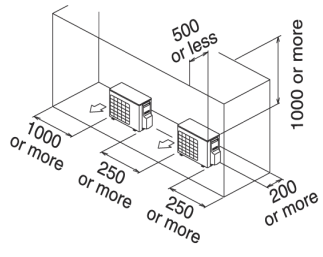


Obstacle above, too

1) Obstacle on the discharge side



2) Obstacle on the suction side and both sides



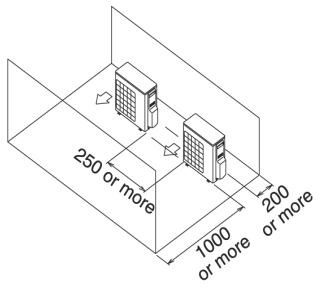
3 INSTALLATION SERVICE SPACE (3/3)

When there are obstacles on both suction and discharge sides

- To secure service space, more than 250 mm of each products at right side in needed.

Pattern 1 When the obstacles on the discharge side is higher than the side unit

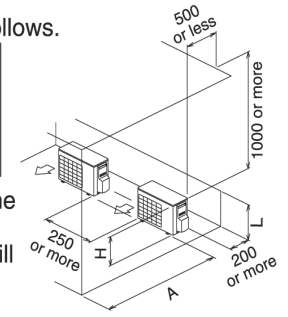
1) No obstacle above (There is no limit for the height of obstructions on the suction side.)



2) Obstacle above, too

The relations between H, A and L are as follows.

	L	A
L ≦ H	L ≦ 0.5H	1000 or more
	0.5H<L≦H	1250 or more
L > H	Set the stand as: L ≦ H	



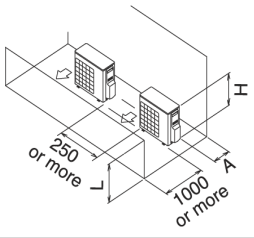
※ - Close the bottom of the stand to prevent the discharged air from being bypassed.
- The limitation of facilities connection is untill 2 unit only.
- In case of more than dimension in ( ), It is no need to establish the stand although L > H

Pattern 2 When the obstacle on the discharge side is lower than the unit

1) No obstacle above
(There is no limit for the height of obstructions on the suction side.)

The relations between H, A and L are as follows.

L	A
L ≦ 0.5H	150 or more
0.5H<L≦H	200 or more

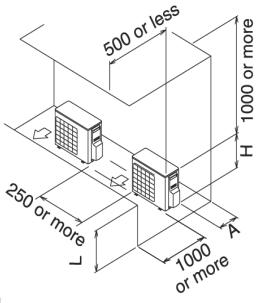


2) Obstacle above, too

The relations between H, A and L are as follows.

	L	A
L ≦ H	L ≦ 0.5H	150 or more
	0.5H<L≦H	200 or more
L > H	Set the stand as: L ≦ H	

- Close the bottom of the stand to prevent the discharged air from being bypassed.
- The limitation of facilities connection is untill 2 unit only.
- In case of more than dimension in ( ), It is no need to establish the stand although L > H



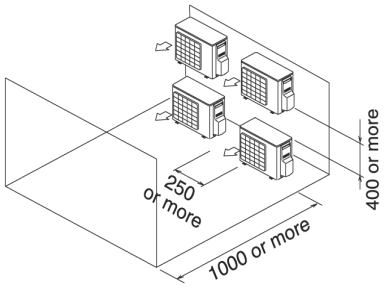
(Units: mm)

DOUBLE-DECKER INSTALLATION

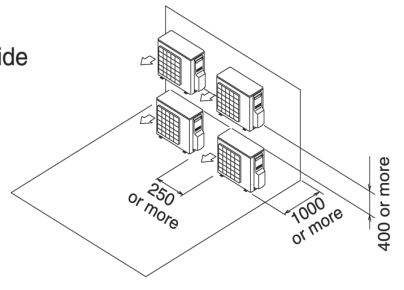
(Units: mm)

- Do not stack more than two unit.
- The drain piping construction size of upper side outdoor unit is needed about 100 mm.
- In side extraction, please provide the space of piping.

1) Obstacle on the discharge side

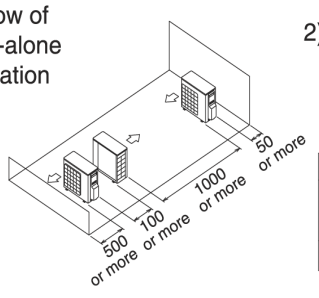


2) Obstacle on the suction side



MULTIPLE ROWS OF SERIES INSTALLATION (ON THE ROOFTOP, ETC.)

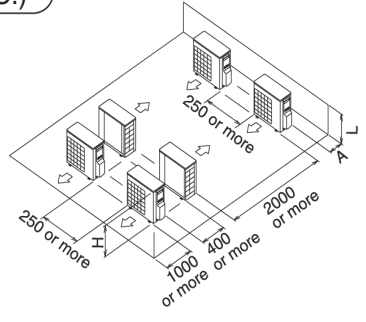
1) One row of stand-alone installation



2) Rows of series installation (2 or more)

The relations between H,A and L are as follows.

	L	A
L ≦ H	L ≦ 0.5H	150 or more
	0.5H<L≦H	200 or more
L > H	Can not be installed	



4 PRECAUTIONS ON INSTALLATION

- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installed.
- In accordance with the foundation drawing in Fig. 1, fix the unit securely by means of the foundation bolts. (Prepare 4 sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- It is best to screw in the foundation bolts until their length are 20 mm from the foundation surface.
- Fix the outdoor unit to the foundation bolts using nuts with resin washers. (See the left-hand of Fig. 1 drawing)
  If the coating on the fastening area is stripped off, the nuts rust easily.

<Drain pipe disposal>

- If drain pipe disposal from the outdoor unit causes trouble, (for example, if the drain water may splash on people) provide the drain piping by using of the drain plug (optional).
- Then, coat the area around the bored holes with rust preventive coating to cover the metal exposure.
- Make sure the drain works properly.

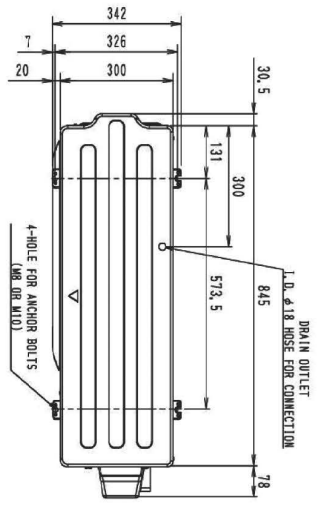
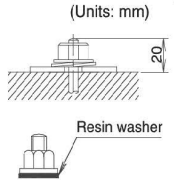


Fig : 1 BOTTOM VIEW



5 REFRIGERANT PIPING WORK (1/4)

⚠ CAUTION

To plumbing person

- Important information regarding the refrigerant used. This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.
  GWP (global warming potential) of R32 refrigerant type = 675
- Use R32 as additional for charging.
- Do not use flux when brazing refrigerant piping.
  Use phosphor copper brazing filler metal (BCuP-2:JIS Z 3264/B-Cu93P-710/795:ISO 3677) that does not require flux.
  (If chlorinated flux is used, the piping will be corroded and, in addition if fluorine is contained, the refrigerant oil will be deteriorated and the refrigerant circuit will be affected badly.)
- After chapter ❼ CHARGING REFRIGERANT is completed, be sure to open the stop valves before performing ❾ LOCAL SETUP.
  (Operating the unit with the valve shut will break the compressor.)

《Precaution when reuse existed refrigerant pipe》

Please keep below points in order to reuse existed pipe, failure may caused if have a fault.

- Below are pipes shall always make new construction, do not reuse piping.
  - When removed from indoor unit or outdoor unit for a long time.
    (Moisture entry to internal pipe, wastes entry can be occured.)
  - When copper tube is corroded.
  - When pipe thickness is insufficient (refer to 5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH table).
  - Do not reuse flare for refrigerant leak protection, please make flare processing.
  - Do not reuse flare nut, please use flare nut in product accessories.
  - Make sure to do refrigerant leak check in case there is brazing area while perform field piping.
  - If insulation is deteriorate, make sure to exchange to new one.

5-1 INSTALLATION TOOLS

Be sure to use the dedicated tools to ensure sufficient pressure resistance and prevent the entry of any impurities.

Manifold gauge Charging hose	To ensure sufficient pressure resistance and prevent the entry of any impurities (mineral oils such as Suniso oil and liquids), use the R410A or R32 dedicated item (the screw specifications for R410A or R32 differ).
Vacuum pump	Be extremely careful not to flow the pump oil backward to inside the piping when the pump is stopped. Use a pump which enables vacuuming to -0.1 MPa(-755mmHg) of the gauge pressure.

5-2 SELECTION OF PIPING MATERIAL

- Use the piping whose inside and outside are clean and with no harmful substances for use such as sulphur, oxide, dust, dust from cutting, grease, or liquid (contamination) is attached.
- For the refrigerant piping, use the following material.
  Material: Deoxidised phosphorous seamless copper piping
  Temper grade: Use piping with temper grade in function of piping diameter as listed in the table on section
  5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH
  Size: Decide based on section 5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH
  Thickness: Comply with applicable legislation. The minimal piping thickness for R32 piping must be in accordance with the table on section
  5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH
- Be sure to perform piping work using measurements within the maximum allowable length and height difference described on section
  5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH

5 REFRIGERANT PIPING WORK (2/4)

<Please refer to installation manual of indoor unit about indoor unit's refrigerant piping>

5-3 CARE OF PIPE

- Prevent contamination or moisture from getting into the piping.
- Pay special attention when running the copper piping through the through-hole or when leading the edge of the piping outside the room.
- Refrigerant piping must be protected from physical damage. Install a plastic cover or equivalent.

PLACE	INSTALLATION PERIOD	PROTECTION METHOD
OUTDOOR	More than a month	Pinch the pipe
	Less than a month	Pinch or tape pipe

PLACE	INSTALLATION PERIOD	PROTECTION METHOD
INDOOR	Unquestioned	Pinch or tape pipe

5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH

- One way maximum allowable piping lenght means the maximum length of liquid side piping or gas side piping.
- Equivalent length is the pressure loss due to L joints, traps, and so on along the refrigerant piping converted to a straight piping length of the same size and added to the overall value.
  Please see the Engineering Data for calculation of equivalent length.
- Please give the vertical interval between the indoor and outdoor as 20m or less.

CAUTION

- This unit is chargeless specification. Due to chargeless length and allowable piping length will be different depend on field pipe size.

Piping bend radius

(Units : mm)

Piping diameter	Pipe thickness (material)	Bend radius
Ø 9.5mm	0.8 mm (C1220T-O, Type O)	30mm or more
Ø 15.9mm	1.0 mm (C1220T-O, Type O)	50mm or more

Refrigerant pipe size and chargeless length

Outdoor unit type	Liquid pipe size (type)	Chargeless length
RZVF71BSV16	Ø 9.5mm x t 0.8 mm (type O)	15m

⚠ WARNING

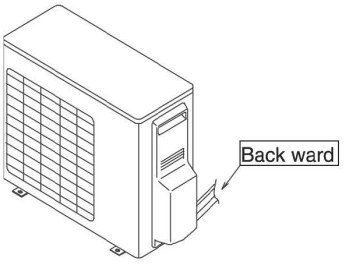
- When flared joints are reused indoors, the flared part shall be re-fabricated.

⚠ CAUTION

- Use dedicated piping cutters and flaring tools for R410A or R32.
- When making a flare connection, apply ether or ester oil only to the flare inner surface.
- Use only the flare nuts attached to the unit. If other flare nuts are used, it may cause refrigerant leakage.
- To prevent contamination, dust or moisture from getting into the piping, take measures such as pinching or taping the piping.

5-5 CONSTRUCTION OF REFRIGERANT PIPING

- Field pipes can be installed in Back - side connection. <Fig.2>
- Do not allow any substances other than the specified refrigerant such as air to mix into the refrigerant circuit.



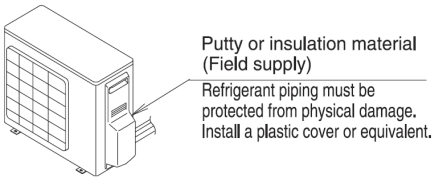
<Fig. 2>

5 REFRIGERANT PIPING WORK (3/4)

<Please refer to installation manual of indoor unit about indoor unit's refrigerant piping>

PREVENTING FOREIGN OBJECTS FROM ENTERING

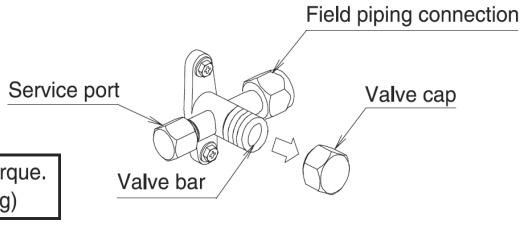
- Plug the pipe through-holes with putty or insulating material (field supply) to cover all gaps, as shown in the figure.
- Insects or small animals entering the outdoor unit may cause a short circuit in the electrical box.



CAUTIONS FOR HANDLING STOP VALVE

DO NOT OPEN THE STOP VALVE UNTIL 7 CHARGING REFRIGERANT FINISHED.

- The stop valves for indoor-outdoor connecting piping are closed at shipment from the factory. The names of parts are shown in figure on the right.
- Since the side boards may be deformed if only a torque wrench is used when loosening or tightening flare nuts, always lock the stop valve with a wrenches and then use a torque wrench.

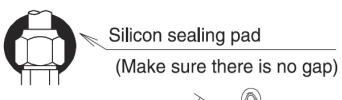


When tightening the flare of the stop valves, make sure to tighten by the rated torque. The rated torque is shown on CAUTION FOR FLARE CONNECTION (Following)

DO NOT APPLY FORCE ON THE VALVE CAP, THIS MAY RESULT IN A REFRIGERANT LEAK.

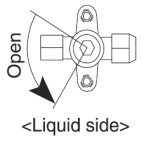
- For cooling operation under low ambient temperature or any other operation under low pressure, apply silicon pad or similar to prevent freezing of the gas stop valve flare nut (see figure).

Freezing of the flare nut may cause refrigerant leak.

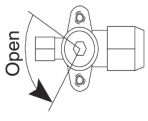


How to operate the stop valve

Use hexagonal wrenches 5mm.



<Liquid side>



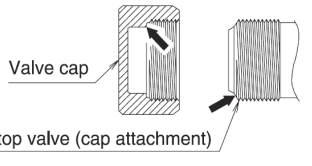
<Gas side>

Opening the valve
1. Place the hex wrench on the valve bar and turn counter-clockwise.
2. Stop when the valve bar no longer turns. (It is now open.)

Closing the valve
1. Place the hex wrench on the valve bar and turn clockwise.
2. Stop when the valve bar no longer turns. (It is now close.)

CAUTIONS FOR HANDING VALVE CAP

- A seal is attached to the point indicated by the arrow. Take care not to damage it.
- Be sure to tighten the valve cap securely after operating the valves.



	Valve size (mm)	Tightening torque(N•m)
Liquid side	Ø9.5	23.0 ± 2
Gas side	Ø15.9	33.0 ± 3

CAUTIONS FOR HANDLING SERVICE PORT

- Always use a flexible charge hose with a push-rod and valve to enable recovery of remaining refrigerant in the charge hose.
- After the work, tighten the valve cap in place.
- Tightening torque: 12.7 ± 1.2 N•m

Prohibited: Do not use a charging hose of which pressing stick is slipped out from the center. (It may cause refrigerant leakage due to deformation fo the valve stem of the service port)

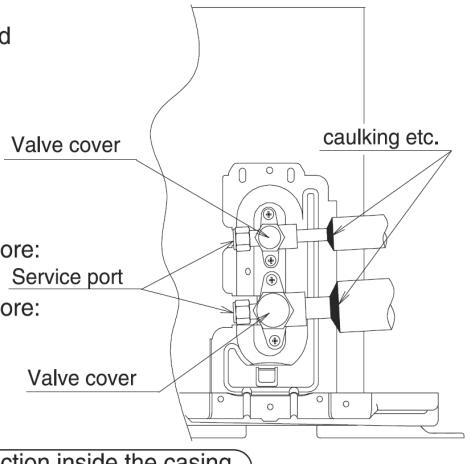
PRECAUTIONS FOR CONNECTING PIPING

- Take caution so that the refrigerant piping between the outdoor and indoor may not touch and sound proof cover and the plate as shown figure.
- If installing the outdoor unit higher than the indoor unit, caulk the space around insulation and tubes because condensation on the stop valves can seep through to the indoor unit side.

PRECAUTIONS REGARDING INSULATION

Enhance the insulation of the refrigerant piping according to the installation conditions. If this is not done, condensation may form on the surface of the insulation. Please refer to the target values shown below.

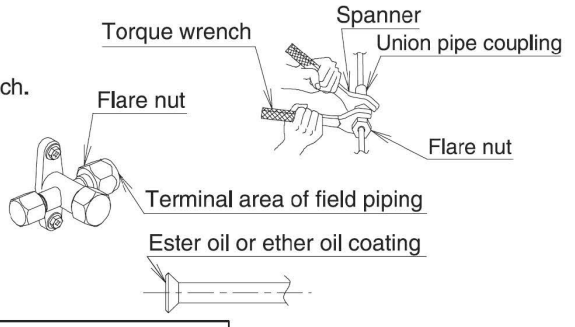
- When the temperature and humidity conditions are 30°C and RH 75% or more: thickness of the insulation is 15 mm or more.
- When the temperature and humidity conditions are 30°C and RH 80% or more: thickness of the insulation is 20 mm or more.
- Be sure to insulate the liquid and gas sides interunit piping. It may become the cause of refrigerant leakage if it dose not insulate. (Be sure to use insulating material which can resistant.)



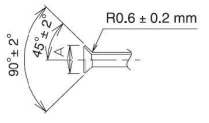
⚠ Caution: Insulation of interunit piping must be carried out up to the connection inside the casing. If the piping is exposed to the atmosphere, it may cause sweating or burn due to touching the piping, electric shocks or a fire due to the wiring touching the piping.

5 REFRIGERANT PIPING WORK (4/4)

CAUTION FOR FLARE CONNECTION



- Please be sure to remove a flare nut with a two-dish spanner, and to bind after connection of piping using a spanner and a torque wrench.
- Refer to the following table for a flare part processing size.
- When connecting the flare nut, apply refrigeranting machine oil to the flare (inside) and at first screw the nut 3 or 4 turns by hand. Coat here with ether or ester oil.
- Refer to the table for the dimensions for processing flares and for the tightening torques. (Too much tightening will end up in splitting of the flare.)
- After completing the installation, carry out a gas leak inspection of the piping connections with nitrogen and such.

PIPING SIZE (mm)	TIGHTENING TORQUE	A DIMENSIONS FOR PROCESSING FLARES (mm)	FLARE SHAPE
Ø6.4	15.7 ± 1.5 N•m	8.9 ± 0.2	
Ø9.5	36.3 ± 3.6 N•m	13.0 ± 0.2	
Ø12.7	54.9 ± 5.4 N•m	16.4 ± 0.2	
Ø15.9	68.6 ± 6.8 N•m	19.5 ± 0.2	
Ø19.1	108.0 ± 10.8 N•m	23.8 ± 0.2	

- If a torque wrench is not available, be aware that the tightening torque may increase suddenly. Do not tighten nuts any further than to the angle as listed.
- When work is completed, be sure to check that there is no gas leakage.
  ① A flare nut is bound tight with a spanner to the position whose torque with a bundle increases suddenly.
  ② Only the angle of a right table is further bound tight from the position.

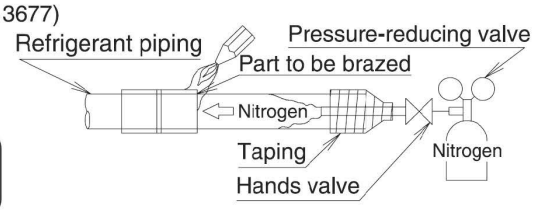
PIPING SIZE (mm)	FURTHER TIGHTENING ANGLE	RECOMMENDED ARM LENGTH OF TOOL
Ø6.4	60 to 90 degrees	About 150 mm
Ø9.5	60 to 90 degrees	About 200 mm
Ø12.7	30 to 60 degrees	About 250 mm
Ø15.9	30 to 60 degrees	About 300 mm
Ø19.1	20 to 35 degrees	About 450 mm

PRECAUTIONS WHEN BRAZING THE REFRIGERANT PIPINGS

<Do not reuse joint which have been used once alredy>

- When brazing the refrigerant piping, carry out brazing work (NOTE 2) after substituting nitrogen for air (flow nitrogen into the piping and substitute nitrogen for air (NOTE 1) (see the drawing below)).

NOTES
1. The proper pressure for having nitrogen flow through the piping is approximately 0.02MPa, a pressure that makes one feel like breeze and can be obtained through a pressure reducing valve.
2. Do not use flux when brazing refrigerant piping. Use phosphor copper brazing filler metal (BCuP-2:JIS Z 3264/B-Cu93P-710/795:ISO 3677) that does not require flux. (If chlorinated flux is used, the piping will be corroded and, in addition if fluorine is contained, the refrigerant oil will be deteriorated and the refrigerant circuit will be affected badly.)

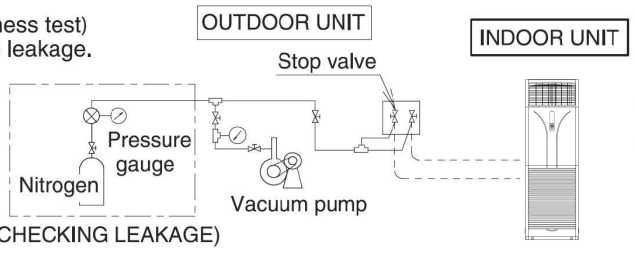


Prohibited — Do not use anti-oxidants when brazing the piping joints. (Residue can clog pipes and break equipment.)

6 AIRTIGHTNESS TEST AND AIR-PURGE

AIRTIGHTNESS TEST

- Perform a refrigerant leakage check using nitrogen gas (airtightness test) with the outdoor unit stop valve close, to make sure there are no leakage.
- For the airtightness test, raise the pressure to the design pressure in the high pressure section (4.17 MPa) For the airtightness test, the unit passes the test if the pressure in the high pressure section does not drop for 24 hours after increasing to the design pressure. A correction is required since the pressure decreases approx. 0.01Mpa when the ambient temperature of 1°C decreases.



(CHECKING LEAKAGE)

- If the pressure drop is confirmed, perform the airtightness test again after checking and modifying the leakage points.

AIR-PURGE

- Evacuate by the vacuum pump for more than 2 hours until the internal pressure decreases below -0.1MP. After that, leave it with -0.1MPa or less for more than one hour and confirm that the value of vacuum gauges does not increase.
- If the value of vacuum gauge increases, there is moisture inside the refrigerant piping or there are leakage points. Perform evacuation again after checking and improving the leakage points.

NOTE
- After doing an air-purge with a vacuum pump, the refrigerant pressure may not rise even if the stop valves are opened. This is because the refrigerant piping path is closed off by the outdoor unit electronic expansion valve, etc. There are no problems if the outdoor unit is run.

7 CHARGING REFRIGERANT (1/2)

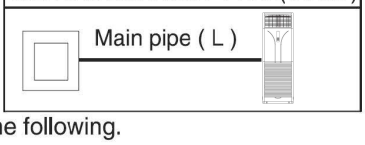
〈 Be sure to use R32 as refrigerant. 〉

ADDITIONAL REFRIGERANT CHARGING

This model is chargeless type, so it is not necessary to charge additionaly if pipe does not exceed the maximum allowable length without additional charge.
Please refer to the following table about the maximum allowable length without additional charge.

Liquid piping size	Length for which additional charging is not required
ø9.5mm x t 0.8mm	15m

ONE INDOOR UNIT TYPE(PAIR)



When piping length exceeds its of a top table,
or only when you perform recharging, Please be correctly charged according to the following.
For future servicing, please describe the amount of additional refrigerant charging, or the amount of recharging in the collective label in accessary set or back side of right side plate.

- **In case of additional refrigerant charging**

Please select the amount of additional refrigerant which suited piping length from the following table, and add it from the service port of liquid stop valve.

Outdoor units type	Liquid piping size	Length for which additional charging is not required	Length of piping exceeding the length for which additional charging is not required, R32 additional amount (kg)
			30m or less
RZVF71BSV16	ø9.5mm x t0.8mm	15m	0.375

- **Total refrigerant charging (When recharging due to exchange compressor, etc.)**

Please charge refrigerant base on pipe length mentioned on the following table.

Outdoor units type	Liquid piping size	Piping length, R32 complete additional amount (kg)	
		5m~15 m	30m or less
RZVF71BSV16	ø9.5mm	1.30	1.675

When recharging refrigerant, follow the procedure below.

① In case of recharge refrigerant (cause of refrigerant leak) please follow suggestion below (reference detail from service guide)
- In case of outdoor PCB (A1P) set refrigerant recovery mode at ON please press switch (BS1 for RZVF71BSV16) during 5 second.

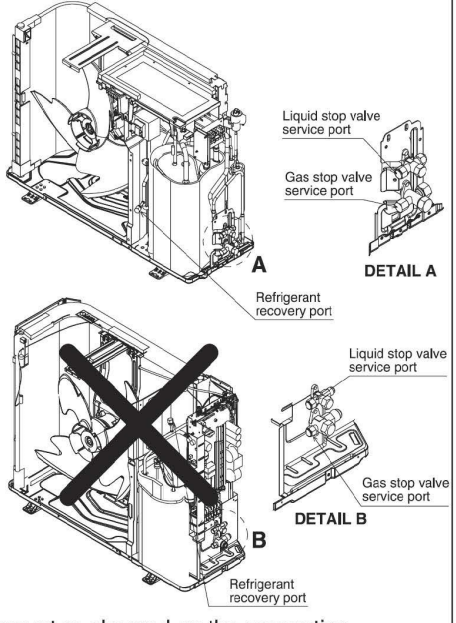
② Shut down the power at least 1 minute after setting process (1) is performed.
- If the power is turned on before the process (3) - (6) are completed, the refrigerant recovery mode is turned off and the refrigerant cannot be recovered or charged normally. If the power is turned on by necessary, turn on Refrigerant recovery mode again.

③ Recover the refrigerant from both the refrigerant recovery port and liquid stop valve service port (or gas stop valve service port) simultaneously until the pressure drops below 0.09MPa (gauge pressure: -0.011MPa) by using a refrigerant recovery machine.

④ Modify the leakage points.

⑤ Perform the airtightness test and air-purge accordance with (6) AIRTIGHTNESS TEST AND AIR-PURGE.

⑥ Charge the refrigerant from the service port of the liquid side stop valve when recharging refrigerant.
(Note) Do not turn on power during evacuation.
The motor may be damaged due to vacuum discharge.



Be sure to write down the additional amount of refrigerant charged or the entire amount re-charged on the precaution plate on the rear of the front panel, as this information is needed in case of after-sales service.

7 CHARGING REFRIGERANT (2/2)

Precautions when adding R32 • Before charging, check whether the cylinder has a siphon attached or not.

Charging a cylinder with an attached siphon

Stand the cylinder upright at charging.
(There is a siphon piping inside, so that cylinder need not be upside-down to charge with liquid.)

Charging other cylinders

Stand the cylinder upside-down and charge.
(Turn the cylinder upside-down at charging.)

- To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A or R32.
- The refrigerant should be charged from the service port of the liquid side stop valve.

⚠ WARNING

To persons incharge of piping work

- Please be sure to open a stop valve after a refrigerant charging end (if it operates shut, a compressor will break down).
- After complete charging of refrigerant carry out refrigerant leak check and heat insulation work.
- Please do not emit a refrigerant into the atmosphere indiscriminately.

8 ELECTRICAL WIRING WORK (1/3)

⚠ WARNING

- Install the earth leakage circuit breaker. (A duty of installation of a earth leakage circuit breaker is imposed for an electric shock and fire accident prevention.
  The inverter is provided in the air conditioner. In order to prevent malfunction of the earth leakage breaker itself, use a breaker resistant to higher harmonics)
- Electrical wiring must be carried out by qualified personnel.
- Before obtaining access to terminal devices, all supply circuits must be interrupted.

⚠ CAUTION

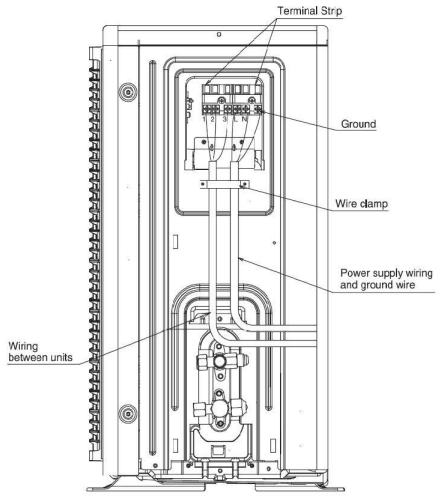
To the electricain

- Make sure to install a current balance type earth leakage breaker coping with high harmonics.
  (This unit is equipped with an inverter device. Use an earth leakage breaker coping with high harmonics to prevent wrong actuation.)
- Do not run the unit until the refrigerant charging is complete. (Operating the unit before the completion will break the compressor.)
- Do not remove the thermistors or sensors when the power supply and transmission wiring are connected.
  (Operating the unit with the thermistors and sensors removed will break the compressor.)
- Make certain that all electric wiring work is carried out by qualified personnel according to the applicable legislation and this installation manual, using a separate circuit. Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or a fire.
- An insufficient power supply capacity or improper electric work may lead to electric shocks or a fire.
- The wiring between the indoor unit and outdoor unit must be for 230V.
- For electric wiring work, refer to also the " WIRING DIAGRAM ".
- When doing the electrical wiring, always shut off the power source before working, and do not turn on the branch switch until all work is complete.
- Make sure to earth the air conditioner. Earthing resistance should be according to applicable legislation.
- Do not connect the earth wiring to gas or water piping, lightning conductor or telephone earth wiring.
  - Gas piping.....Ignition or explosion may occur if the gas leaks.
  - Water piping.....Hard vinyl tubes are not effective earths.
  - Lightning conductor or telephone earth wirring.....Electric potential may rise abnormally if struck by a lightning bolt.
- The earth is needed in order to reduce the noise generated by the unit's inverter and influence on other appliances and to release the charged electric charge on the outdoor unit surface by leaked current.
- Do not install a phase advance capacitor for improvement of power factor. Since this unit is mounted with an inverter device, the effect of power factor improvement not only cannot be expected, but also there is a risk of the capacitor getting abnormally overheated due to harmonics.
- Be sure to use earth leakage breaker dedicated for earth leakage protection in combination with the load break switch with fuse or breaker for wiring.
- In case of three-phase. Machine, electric wiring must be connected in normal phase connection.
- For wiring, use the designated power supply wiring and connect firmly, then secure to prevent external force being exerted on the terminal attachment (power supply wiring, transmission wiring, earth wiring).
- Left-over wiring should not be wrapped and stuffed into the outdoor unit.
- To prevent the power wiring from being damaged by the knock hole edges, put it in a wiring piping or use insulated bush, etc. to protect it.
- To prevent the wiring from coming in contact with piping (particularly the high-pressure piping), secure it with the included clamping material as shown page 36.
- When wiring, form the wiring so that the front plate does not float and make sure the front plate is securely fastened.
- Fix the power supply wiring, the earth wiring and the transmission wiring by clamps as shown in the figure.

8 ELECTRICAL WIRING WORK (2/3)

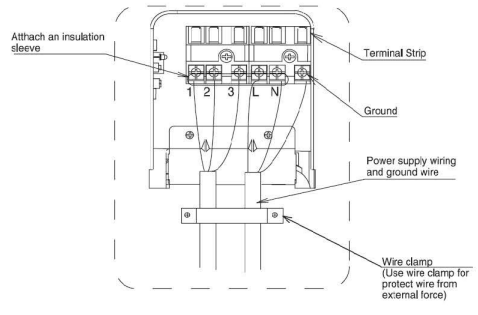
• As shown in the following figure, please fix power supply wiring, field wiring and ground wire by clamp material.

RZVF71BSV16



• Carry out insulated processing of attaching an insulated sleeve.
Power supply wiring, wiring between units and ground wire with tying as clamp as shown below.

⚠ Do not connect power supply to terminal block of transmission wiring. All system may get damaged.

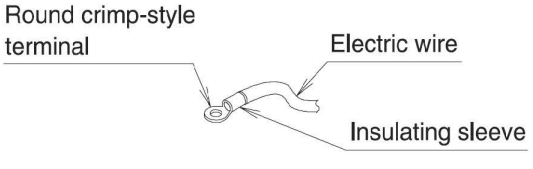


RZVF71BSV16

Connection of wiring

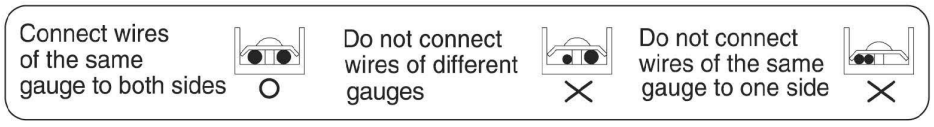
Precautions on wiring

• Use a round crimp-style terminal for connection to the power supply terminal board.
In case it cannot be used due to unavoidable reasons, be sure to observe the following instruction.
• Do not connect wires of different gauge to the same power supply terminal.
(Looseness in the connection may cause overheating.)



8 ELECTRICAL WIRING WORK (3/3)

When connecting wires of the same gauge, connect them according to the below figure.

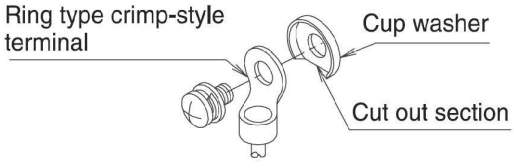


- Never use the stranded wiring which is soldered. (Slack in the electric wiring may cause abnormal heat.)
- Use the required wirings, connect them securely and fix these wirings so that external force may not apply to the terminals.
- Use a proper screw driver for tightening the terminal screws. If an improper screw driver is used, it may damage the screw head and a proper tightening cannot be carried out.
- If a terminal is over tightened, it may be damaged. Refer to the table shown below for tightening torque of terminals.

Tightening torque (N•m)	
M4 (Wire between units terminal board)	1.50±0.30
M4 (Power supply terminal board)	1.50±0.30
M4 (Ground wire between units)	1.69±0.25
M5 (Ground wire between units)	3.55±0.50

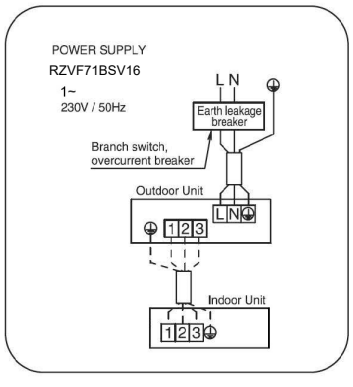
Precautions on connecting terminal of grounding

- Ground wiring should be taken out from the cut out section of a cup washer. (Otherwise, contact of ground wiring is inadequate and it is ineffective.)



WIRING OF POWER SUPPLY AND THE UNITS

For details on the wiring of the indoor unit and wiring between units refer to the installation manual of the indoor unit.



- SPECIFICATIONS OF STANDARD WIRING COMPONENTS

Outdoor Unit	Power supply			Wire type of wiring between the units
	Recommended field fuse	Wire type (*)	Size	
RZVF71BSV16	16	H05VV-U3G	Wiring size and length must comply with local codes or [IEC 60335-1 (Table 11)]	H05VV-U4G2.5

(*) Only in protected piping, use H07RN-F when protected pipes are not used.
(Supply cords shall not be lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC 57))

NOTES

1. Select and install the power supply wiring in accordance with [IEC 60335-1 (Table 11)] or local laws and regulations. The maximum current of the outdoor and indoor units are shown on each name plate.
2. When installing wiring in a location that can easily come in contact with people, be sure to install an earth leakage breaker coping with high harmonics to prevent electric shock.
3. Breaker type and capacity shall be selected in accordance with local laws and regulations.

⚠ CAUTION

TO PERSONS INCHARGE OF ELECTRICAL WIRING WORK

- Do not operate the unit until the refrigerant charging is completed. (Running it before the piping is ready will break the compressor.)

9 CHECK ITEMS BEFORE TEST OPERATION

PRE-RUN CHECKS

	ITEM TO CHECK	CHECK
Power supply Wiring	Is the wiring as mentioned on the wiring diagram? make sure no wiring has been forgotten and that there are no missing phases or reverse phases.	
	Does wiring between units put in and changed in continuation installation?	
	Is the unit properly grounded?	
	Are any of the wiring attachment screws loose?	
	Is the insulation resistance at least 1MΩ? • Use a 500V mega-tester when measuring insulation • ☒ Do not use a mega-tester for circuits which except 230V.	
	Is an earth leakage circuit breaker used a current operated type which is compatible to the higher harmonic wave?	
	Does the earth leakage circuit breaker have appropriate rated current?	
Refrigerant piping	Is the size of the piping appropriate?	
	Is the insulation material for the piping attached securely? Are both the liquid and gas pipes insulated?	
	Are the stop valves for both the liquid side and the gas side open?	
Extra refrigerant	Did you write down the extra refrigerant and the refrigerant piping length?	
Indoor unit	Is the indoor unit fully installed? When the test run is started, the fan automatically begins turning.	

⚠ WARNING

- When a power supply is switched on, when you leave from the outdoor unit, be sure to close the cover plate. (It becomes the cause of an electric shock).

10 TEST OPERATION

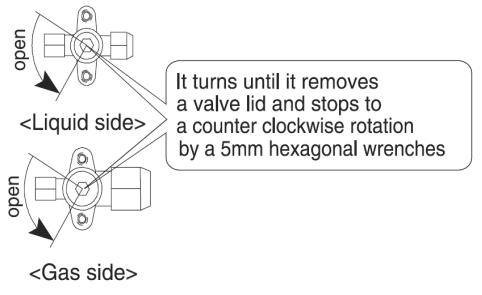
⚠ WARNING

- Never perform a test operation with the discharge piping thermistor(R2T) and suction piping thermistor(R3T) removed, as this might break the compressor.
- If the technician must leave the outdoor unit for some reason, switch places with another installation technician or close the plates. (It may cause electric shocks.)

HOW TO TEST OPERATION

After the indoor and outdoor unit installation, be sure to perform the test operation in accordance with the following procedure.

1. Open the stop valve cover and check that the liquid and gas sides of the stop valves are open.
   <Be sure to close the front plate before the operation (there is a risk of electric shock)>
   Note: After doing an air-purge with a vacuum pump, the refrigerant pressure may not rise even if the stop valves are opened. This is because the refrigerant piping path is closed off by the outdoor unit electronic expansion valve, etc. There are no problems if the unit is run.
2. Attach the stop valve cover to the outdoor unit and turn the power on at least 6 hours before operating the outdoor unit to protect the compressor.
3. Set to COOLING operation with the remote controller.
4. Perform the test operation.
5. Operate normally
6. Confirm function of the indoor and outdoor units according to the operation manual.



MALFUNCTION DIAGNOSIS

- At the time of a test run, when the following malfunction code is displayed on remote control, the fault of installation construction can be considered.

Malfunction code	Installation error	Remedial action
[E3] [E5] [U0] [L8]	A failure of a stop valve to open	"Open" operation of a stop valve
[E3] [E5] [L4] [L8]	Closing of an air passage	Removing closing thing from air passage
[U1]	Missing phase, negative phase	2 Phase of power supply 3 Phase (L1, L2, L3 Phase) are replaced
[U2]	Power supply unbalancing	Unbalanced dissolution
[U4] [UF]	Incorrect connection of field wiring	Correction of wiring
[UA]	Connection of incompatible indoor unit	Connect appropriate indoor unit (Refer to the catalogue)
NO INDICATION	Mistake wiring or not connect wiring of power supply, indoor, outdoor, field wiring between indoor unit	To correct wiring or connect correctly

- When malfunction codes other than the above are displayed on remote control, considering that the failure of between an indoor and an outdoor unit may have.
  For the malfunction codes, please refer to the indoor unit's installation manual or outdoor service manual.
  (A malfunction code has what has a display according to the form of the interior of a room and an outdoor unit, and the thing which is not.)
- The followings can be considered causes when the breaker for power supply trips.
  - The capacity of a breaker for power supply is smaller than the required capacity of the leakage circuit breaker.
  - The leakage circuit breaker is not compatible to the higher harmonic wave.
- In case of already checking all equipment that not have any problem, but found air conditioner not cooling. Please re-check Motor operate valve coil not tighten or remove for 1st checking. If normally please re-confirm problem following service manual to solve problem.

⚠ CAUTION

To persons incharge of piping work and electric work

- Please check having attached the front board and the piping cover after a test run end when giving production over to customer.

DAIKIN

Split System Air Conditioner

INSTALLATION MANUAL <FOR OUTDOOR UNIT>

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION.

NEW REFRIGERANT (R32) SERIES

RZVF100BSV16, RZMF140BSV16

Note : Read the precautions in this manual carefully before operating the unit.
This appliance is filled with R32.

CONTENTS

⚠ WARNING THERE IS A RISK OF EXPLOSION OR FIRE

- Do not mix air in the refrigerating cycle during pump down operation.
- Do not use oxygen for air tight test.
- Do not use refrigerant other than the specified one or flammable material (e.g. propane) in the refrigerant cycle. They may cause over pressure in the refrigerating cycle and result in explosion, fire or injury. Our company assumes no responsibility for failure or malfunction caused by filling or mixing of anything other than the specified refrigerant.

⚠ CAUTION ABOUT ISOLATING RESISTANCE OF COMPRESSOR

If refrigerant accumulates in the compressor after completing installation, the insulation resistance can drop, but if it at least 1 MΩ, then the unit will not break down.

- Connect the power supply to the unit and after 6 hours check if the insulation resistance of the compressor rises. (Energize and heat the compressor to vaporize the refrigerant accumulated in the compressor.)
- If the earth leakage breaker actuates, check if the earth leakage breaker is equipped with a device to cope with high harmonics. To prevent wrong actuation of the earth leakage breaker due to the inverter, make sure to adopt an earth leakage breaker equipped with a device to cope with high harmonics.

1. Please make sure to confirm that R32 (new refrigerant) is used in installation work in advance. (It may not operate normally, if refrigerant type is different.)
2. The refrigerant R32 requires that strict precautions be observed for keeping the system clean, dry and tightly sealed.
   - Clean and dry
     Strict measures must be taken to keep impurities (Including SUNISO oil and other mineral oils as well as moisture) out of the system.
   - Tightly sealed
     R32 contains no chlorine, does not destroy the ozone layer and so does not reduce the earth's protection against harmful ultraviolet radiation. R32 will contribute only slightly to the greenhouse effect if released into the atmosphere. Therefore, sealing tightness is particularly important in installation.
     Carefully read the chapter 5 REFRIGERANT PIPING WORK and strictly observe the correct procedures.
3. The design pressure of this unit : High/Low pressure area are shown in the right table.
   The refrigerant piping is a high pressure area,
   Use the refrigerant piping which supports the design pressure.
   The piping specifications, please refer to chapter
   5 REFRIGERANT PIPING WORK

Outdoor Unit	Design Pressure	
RZVF100BSV16	High	4.17
RZMF140BSV16	Low	3.30

(Units: MPa)

4. Be sure to connect the indoor unit, which is dedicated to R32. See the catalog for indoor unit models which can be connected.
   (Normal operation is not possible when connected to other units.)

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

- This manual classifies the precautions into WARNINGS and CAUTIONS.
  Be sure to follow all the precautions below. They are all important for ensuring safety.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

- After the installation is completed, test the air conditioner and check if the air conditioner operates properly.
  Give the user adequate instructions concerning the use and cleaning of the indoor unit according to the operation manual.
  In particular, make sure to explain with regard to “SAFETY PRECAUTIONS” and “Not malfunction of the air conditioner”.
  Ask the user to keep this manual and the operation manual together in a handy place for future reference.
- This air conditioner comes under the term “appliances not accessible to the general public”.

⚠ WARNING

- Ask your local dealer or qualified personnel to carry out installation work.
  Improper installation may result in water leakage, electric shocks or a fire.
- Perform installation work in accordance with this installation manual.
  Improper installation may result in water leakage, electric shocks or a fire.
- Consult your local dealer regarding what to do in case of refrigerant leakage.
  When the indoor unit is installed in a small room, it is necessary to take proper measures so that the amount of any leaked refrigerant does not exceed the concentration limit in the event of a leakage. Otherwise, this may lead to an accident due to oxygen deficiency.
- Be sure to use only the specified parts and accessories for installation work.
  Failure to use the specified parts may result in the air conditioner fall down, water leakage,electric shocks, a fire, etc.
- Install the air conditioner on a foundation that can withstand its mass.
  Insufficient strength may result in the air conditioner fall down and causing injury.
- Carry out the specified installation work in consideration of strong winds, typhoons, or earthquakes.
  Improper installation may result in an accident such as the air conditioner fall down.
- Make certain that all electric work is carried out by qualified personnel according to the applicable legislation (note 1) and this installation manual, using a separate circuit. In addition, even if the wiring is short, make sure to use a wiring that has sufficient length and never connect additional wiring to make the length sufficient. Insufficient capacity of the power supply circuit or improper electric construction may lead to electric shocks or a fire.
  (note 1) Applicable legislation means “All international, national and local directives, laws, regulations and/or codes which are relevant and applicable for a certain product or domain.”
- Earth the air conditioner.
  Do not connect the earth wiring to gas or water piping, lightning conductor or telephone earth wiring.
  Incomplete earthing may cause electric shocks or a fire.
- Be sure to install an earth leakage circuit breaker.
  Failure to do so may cause electric shocks or a fire.
- The appliance must be stored in a room without continuosly operating ignition sources (for example : open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerant may not contain an odor.
- Comply with national gas regulations.
- Be sure to switch off the unit before touching any electrical parts.
  Touching a live part may result in electric shocks.
- Make sure that all wiring is secure, using the specified wiring and ensuring that external forces do not act on the terminal connections or wiring. Incomplete connection or fixing may cause overheating terminals or fire.
- When wiring between the outdoor and indoor units, and wiring the power supply, from the wiring orderly so that the structural parts such as a cover can be securely fastened.
  If the cover is not in place, electric shocks or a fire may be caused.
- Do not add wiring. It may result in heat generation. Electric shocks or fire.
- When installing or relocating the air conditioner, be sure to bleed the refrigerant circuit to ensure, it is free of air, and use only the specified refrigerant (R32).
  The presence of air or other foreign matter in the refrigerant circuit causes abnormal pressure rise, which may result in equipment damage and even injury.
- If refrigerant gas leaks during installation work, ventilate the area immediately.
  Toxic gas may be produced if refrigerant gas comes into contact with a fire.
- After completing the installation work, check to make sure that there is no leakage of refrigerant gas.
  Toxic gas may be produced if refrigerant gas leaks into the room and comes into contact with a source of a fire, such as a fan heater, stove or cooker.
- Never directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Do not stand on the outdoor unit or put things on it.
  The unit may fall down or drop, and cause accidents.
- Do not charge any refrigerant into the refrigeration cycle other than the designated refrigerant.
  It may cause over pressure in the refrigeration cycle and result in explosion, fire, and injury.
- Do not extend wiring on the way.
  It may cause heat generation, electric shocks or fire.
- At the installation work, install the refrigerant piping firmly before operating the compressor.
  If the compressor is operated without installing firmly and the service valve is in open condition, it sucks the air, etc., and the pressure inside the refrigerant circuit becomes abnormally high. It may cause injury and property damaged.
- At pump down work, stop the compressor before removing the refrigerant piping.
  If removing the refrigerant piping when the compressor is operated with its service valve in open condition, it sucks the air,etc., and the pressure inside the refrigerant circle become abnormally high, which may cause injury and property damage.
- The appliance shall be installed operated and stored in a room with floor area larger than 3.68 m^2 .
- When flared joints are reused, the flare part shall be re-fabricated.

⚠ CAUTION

- Install drain piping according to this installation manual to ensure good drainage, and insulate the piping to prevent condensation. Improper drain piping may cause water leakage, make the furniture get wet.
- Install the indoor and outdoor units, power cord and connecting wires at least 1 meter away from televisions or radio to prevent picture interference and noise. (Depending on the incoming signal strength, a distance of 1 meter may not be sufficient to eliminate noise.)
- Install the indoor unit as far as possible from fluorescent lamps.
- In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
- Make sure to provide for adequate measures in order to prevent that the outdoor unit be used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean.
- Disposal requirements
  Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation.
- Only qualified personnel can handle, fill, purge and dispose of the refrigerant.
- Do not install the air conditioner in places such as following:
  1. Where there is mist of oil, oil spray or vapor for example a kitchen.
     Resin parts may deteriorate, and cause them to fall out or water to leak.
  2. Where corrosive gas, such as sulfurous acid gas, is produced.
     Corrosion of copper pipings or brazed parts may cause the refrigerant to leak.
  3. Where there is machinery which emits electromagnetic waves.
     Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
  4. Where flammable gases may leak, where carbon fiber or ignitable dust is suspended in the air or where volatile flammables, such as thinner or gasoline, are handled. If the gas should leak and remain around the air conditioner, it may cause ignition.
  5. The place that the vibration or the voltage fluctuation give influence.Vehicles, vessels, etc.
     The vibration may cause a damage and the voltage fluctuation may cause an abnormal operation.
  6. Where small animals may build a nest, fallen leaves are accumulated, or weeds are overgrown.
     If small animals touch the electrical parts inside, this may cause malfunction, smoke or a fire.

■ Important information regarding the refrigerant used
This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.
Refrigerant type: R32
GWP(1) value: 675
(1)GWP = global warming potential
- The refrigerant quantity is indicated on the unit name plate.

1 BEFORE INSTALLATION

<DO NOT THROW AWAY ACCESSORIES THAT ARE REQUIRED FOR INSTALLATION.>

1 Carefully read these instructions before installation.
- For installation of the indoor unit, refer to the indoor unit installation manual.

< Transporting Unit >

As shown in the Fig.2, bring the unit slowly.(Take care not to let hands or things come in contact with rear fins.)

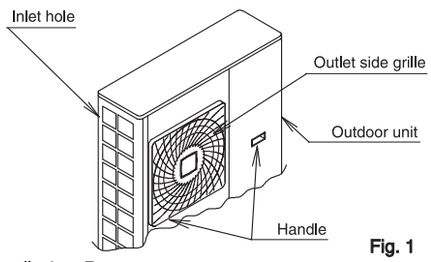


Fig. 1

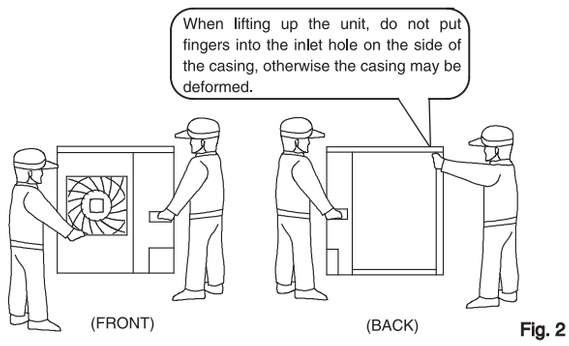


Fig. 2

< Installation Parts >

Always use accessory parts or those of designated specification as parts required for installation.

< CAUTION >
- Work in a team of at least two people when carrying the outdoor unit

2 SELECTING INSTALLATION LOCATION (1/2)

(1) Select the installation location that meets the following conditions and get approval of the customer.
- Places where is no risk of flammable gas leakage.
- Places where the outdoor unit does not bother next-door neighbors.
- Safe places where can withstand the unit's mass and vibration and where the air conditioner can be installed level.
- Places where are well-ventilated and where servicing space can be well ensured.
  The minimum required space is shown in chapter 3 INSTALLATION SERVICE SPACE
- Where the piping length between the indoor and the outdoor units is ensured within the allowable piping length. (Please see chapter 5 REFRIGERANT PIPING WORK
- Do not allow wind from the same direction to blow frequently toward the outlet or inlet of the outdoor unit. If the wind is likely to blow as mentioned above, make sure to keep a sufficient service space and install a wind protective shield.

⚠ CAUTION

Inverter air conditioners may cause noise to occur in electrical appliances.
Select an installation site well away from radios, PCs, and stereos. Especially in the areas where the incoming signal strength is weak, keep the indoor remote controller 3 meter or more from electrical appliances. Put the power supply and transmission wiring in a metal piping and ground the metal piping.

2 SELECTING INSTALLATION LOCATION (2/2)

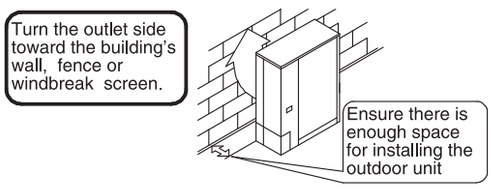
(2) When installing the outdoor unit's in a place exposed to strong wind, pay special attention to the following.
5 m/sec or more strong wind blown against the outdoor unit's outlet side causes the oudoor unit to deteriorate in air volume and suck in the air blown out of its outlet side (short circuit), and the following effects may result.

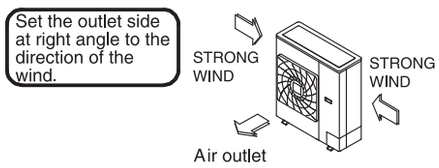
- Performance is degraded.
- Operation stop due to increase in pressure.

If a very high fan strength is used continuously from the front of the oudoor unit outlet side, the fan might turn in reverse at high speed, and become damaged.

(3) Following the installation place, it is expected that the influence of the strong wind is great.

- The flat area which receives the adverse wind such as typhoon directly since there is no obstacles such as buildings and mountains. (Including coast line, shoreline of lake and mountain region.)
- The installation place that no obstacles around the outdoor unit to prevent the adverse wind, for example, walls and buildings that are higher than the applicable outdoor unit, etc. Please take measures when installing especially on a rooftop.
- Since the outdoor unit may fall down, attach the fixture for preventing overturning(option).





3 INSTALLATION SERVICE SPACE (1/3)

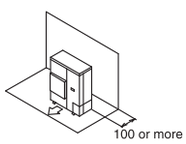
- The installation servicing spaces shown in these drawings are based on the outdoor unit inlet area temperature of 35°C for COOLING operation.
  If the planned inlet area temperature exceeds 35°C(DB), or if the heat load of all outdoor units is increased significantly and exceeds the maximum operating capacity, secure a larger space than that indicated by the inlet dimensions in these drawings.
- For installation, consider both pedestrian and air flow paths and choose a suitable pattern from these drawings to match the space available field. (If the number of units to be installed exceeds the patterns in these drawings, consider there are no short-circuits.)
- Regarding the front space, position the units with consideration to the space required for the refrigerant piping work. (Consult your dealer if the work conditions do not match those in the drawings.)
- Secure appropriate space when using a side piping outlet.

3-1 INSTALLATION OF SINGLE UNIT

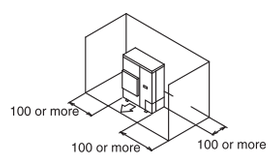
(Units: mm)

When nothing is obstructing the top

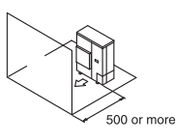
(1) In case obstacles exist only in front of the inlet side.



(2) In case obstacles exist in front of the inlet side and on both sides of the outdoor unit.

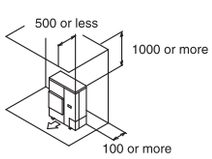


(3) In case obstacles exist only in front of the outlet side.

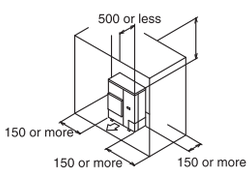


When something is obstructing the top

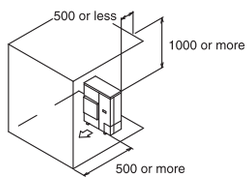
(1) In case obstacles exist in front of the inlet side



(2) In case obstacles exist in front of the inlet side and on both sides of the outdoor unit.



(3) In case obstacles exist only in front of the outlet side.



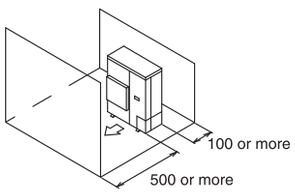
3 INSTALLATION SERVICING SPACES (2/3)

(Units: mm)

In case obstacles exist in front of both inlet and outlet sides

Pattern 1 When obstacles in front of the outlet side is higher than the outdoor unit.

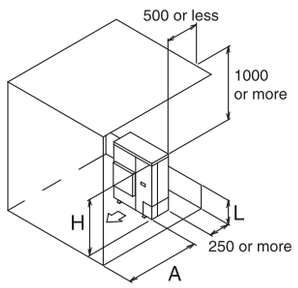
(1) When nothing is obstructing the top. (There is no height limit for obstructions on the inlet side.)



(2) When something is obstructing the top. The relations between H, A and L are shown in the table below.

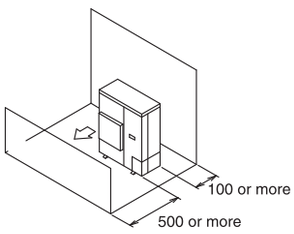
	L	A
L ≦ H	L ≦ 0.5H	750 or more
	0.5H<L≦H	1000 or more
L > H	Set the frame to be L ≦ H Refer to the column of L ≦ H for A.	

Get the lower part of the frame sealed so that air from the outlet does not bypass.



Pattern 2 Where obstacles in front of the outlet side is lower than the outdoor unit

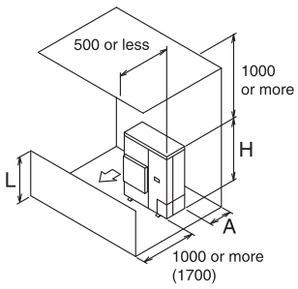
(1)When nothing is obstructing the top. (There is no height limit for obstructions on the inlet side.)



(2) When something is obstructing the top. The relations between H, A and L are shown in the table below.

	L	A
L ≦ H	L ≦ 0.5H	100 or more
	0.5H<L≦H	200 or more
L > H	Set the frame to be L ≦ H Refer to the column of L ≦ H for A.	

Get the lower part of the frame sealed so that air from the outlet does not bypass.
If the dimensions is ( ) or more, you do not need to place the frame including the case of L>H.

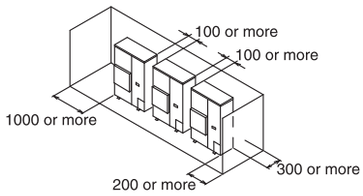


3-2 IN CASE OF INSTALLING MULTIPLE UNITS (2 UNITS OR MORE) IN LATERAL CONNECTION PER ROW

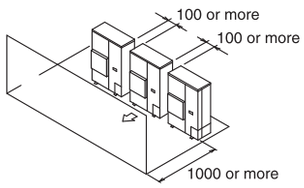
(Units: mm)

When nothing is obstructing the top

(1) In case obstacles exist in front of the inlet side and on both sides of the outdoor unit

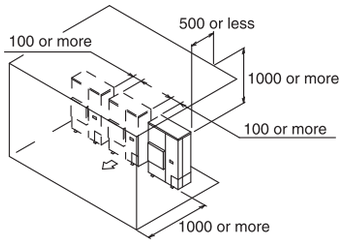


(2) In case obstacles exist only in front of the outlet side

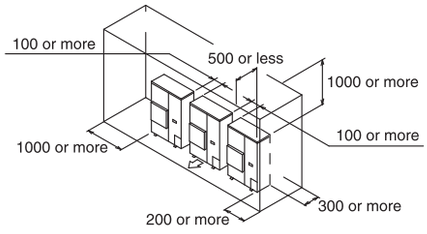


When something is obstructing the top

(1) In case obstacles exist only in front of the outlet side



(2) In case obstacles exist in front of the inlet side and on both sides of the outdoor unit



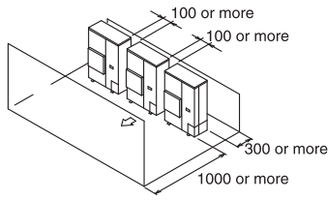
3 INSTALLATION SERVICING SPACES (3/3)

(Units: mm)

In case obstacles exist in front of both inlet and outlet sides

Pattern 1 When obstacles in front of the outlet side is higher than the outdoor unit.

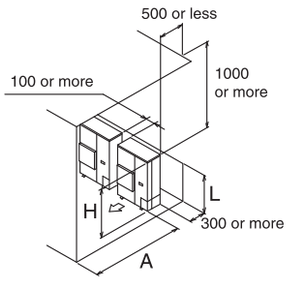
(1) When nothing is obstructing the top.
(There is no height limit for obstructions on the inlet side.)



(2) When something is obstructing the top.
The relations between H, A and L are shown in the table below.

	L	A
L ≦ H	L ≦ 0.5H	1000 or more
	0.5H<L≦H	1250 or more
L > H	Set the frame to be L ≦ H Refer to the column of L ≦ H for A.	

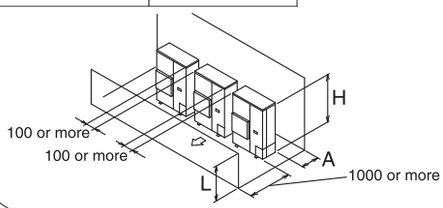
Get the lower part of the frame sealed so that air from the outlet does not bypass.
Only two units at most can be installed in series.



Pattern 2 Where obstacles in front of the outlet side is lower than the outdoor unit

(1)When nothing is obstructing the top.
(There is no height limit for obstructions on the inlet side.)
The relations between H, A and L are shown in the table below.

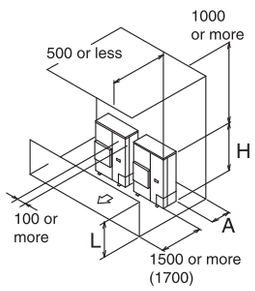
L	A
L ≦ 0.5H	250 or more
0.5H<L≦H	300 or more



(2) When something is obstructing the top.
The relations between H, A and L are shown in the table below.

	L	A
L ≦ H	L ≦ 0.5H	250 or more
	0.5H<L≦H	300 or more
L > H	Set the frame to be L ≦ H Refer to the column of L ≦ H for A.	

Get the lower part of the frame sealed so that air from the outlet does not bypass.
If the dimensions is ( ) or more, you do not need to place the frame including the case of L>H.

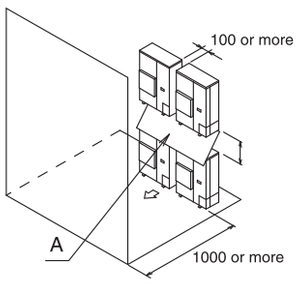


(Units: mm)

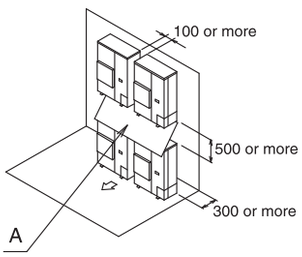
3-3 IN CASE OF STACKED INSTALLATION

When nothing is obstructing the top

(1) In case obstacles exist in front of the outlet side .



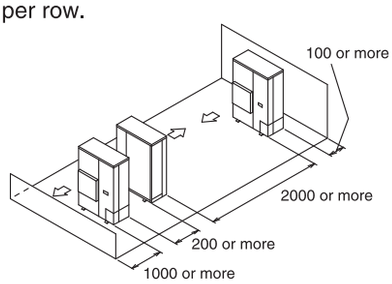
(2) In case obstacles exist in front of the inlet side.



- Do not exceed two levels for stacked installation.
- Install a roof cover similar to A (field supply), as the outdoor units with downward drainage are prone to dripping.
- Install the upper-level outdoor unit so that its bottom frame is a sufficient height above the roof cover. This is to prevent the buildup of ice on the underside of the bottom frame. (A space of at least 500mm is recommended.)
- It is not necessary to install a roof cover if there is no danger of drain dripping. In this case, the space between the upper and lower outdoor units should be at least 100mm. (Close off the gap between the upper and lower units so there is no reintake of discharged air.)

3-4 IN CASE OF MULTIPLE-ROW INSTALLATION (FOR ROOF TOP USE, ETC.)

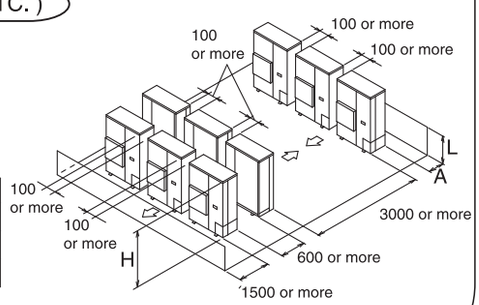
(1) In case of installing one unit per row.



(2) In case of installing multiple units (2 units or more) in lateral connection per row.
The relation of dimensions of H,A and L are as shown in the table below.

	L	A
L ≦ H	L ≦ 0.5H	250 or more
	0.5H<L≦H	300 or more
L> H	Can not be installed	

- In case of side piping outlet, ensure a space sufficient for piping.



4 PRECAUTIONS ON INSTALLATION

<Drain work>

Potentially problematic locations for the outdoor unit drainage. In locations where, for example, drain may fall on passersby may cause passersby to slip over, install in enclosure (field supply) to prevent people approaching the outdoor unit.
Then, coat the area around the bored holes with rust preventive coating to cover the metal exposure.

- Make sure the drain works properly.

<Installation method of the outdoor unit>

- Check the strength and level of the installation ground so that the outdoor unit will not cause any operating vibration or noise after installed.
- In accordance with the foundation drawing in Fig. 3, fix the unit securely by means of the foundation bolts. (Prepare four sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- It is best to screw in the foundation bolts until their length are 20 mm from the foundation surface.
- Fix the outdoor unit to the foundation bolts using nuts with resin washers. (See the right-hand drawing)
  If the coating on the fastening area is stripped off, the nuts rust easily.

<Installation method of fixure for preventing overturning>

- If steps need to be taken to prevent the unit from tipping over. Use the fixure for preventing overturning (option).

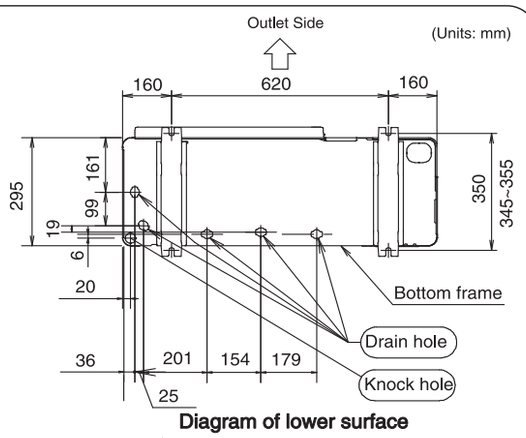
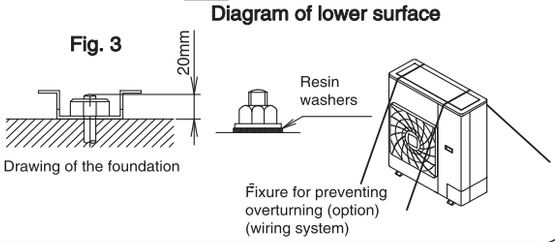


Diagram of lower surface

Fig. 3



5 REFRIGERANT PIPING WORK (1/5)

⚠ CAUTION

To plumbing persons

- Important information regarding the refrigerant used. This product contains fluorinated greenhouse gases covered by the Kyoto Protocol.
  Do not vent gases into the atmosphere.
  GWP (global warming potential) of R32 refrigerant type = 675
- Use R32 as additional for charging.
- Do not use flux when brazing refrigerant piping.
  Use phosphor copper brazing filler metal (BCuP-2:JIS Z 3264/B-Cu93P-710/795:ISO 3677) that does not require flux.
  (If chlorinated flux is used, the piping will be corroded and, in addition if fluorine is contained, the refrigerant oil will be deteriorated and the refrigerant circuit will be affected badly.)
- After chapter 7 CHARGING REFRIGERANT is completed, be sure to open the stop valves before performing.
  (Operating the unit with the valve shut will break the compressor.)

《Precaution when reuse existed refrigerant pipe 》

Please keep below points in order to reuse existed pipe, failure may caused if have a fault.

- Below are pipes shall always make new construction, do not reuse piping.
  - When removed from indoor unit or outdoor unit for a long time.
    (Moisture entry to internal pipe, wastes entry can be occured.)
  - When copper tube is corroded.
  - When pipe thickness is insufficient (refer to 5-4 REFRIGERANT PIPE SIZE AND ALLOWABLE PIPE LENGTH)
  - Do not reuse flare for refrigerant leak protection, please make flare processing.
  - Do not reuse flare nut, please use flare nut in product accessories.
  - Make sure to do refrigerant leak check in case there is brazing area while perform field piping.
  - If insulation is deteriorate, make sure to exchange to new one.

5-1 INSTALLATION TOOLS

Be sure to use the dedicated tools to ensure sufficient pressure resistance and prevent the entry of any impurities.

Manifold gauge Charging hose	To ensure sufficient pressure resistance and prevent the entry of any impurities (mineral oils such as Suniso oil and liquids), use the R410A or R32 dedicated item (the screw specifications for R410A or R32 differ).
Vacuum pump	Be extremely careful not to flow the pump oil backward to inside the piping when the pump is stopped. Use a pump which enables vacuuming to -0.1 MPa(-755mmHg) of the gauge pressure.

5-2 SELECTION OF PIPING MATERIAL

- Use the piping whose inside and outside are clean and with no harmful substances for use such as sulphur, oxide, dust, dust from cutting, grease, or liquid (contamination) is attached.
- For the refrigerant piping, use the following material.
  Material: Deoxidised phosphorous seamless copper piping
  Temper grade: Use piping with temper grade in function of piping diameter as listed in the table on section
  5-4 REFRIGERANT PIPING SIZE AND ALLOWABLE PIPING LENGTH
  Size: Decide based on section 5-4 REFRIGERANT PIPING SIZE AND ALLOWABLE PIPING LENGTH
  Thickness: Comply with applicable legislation. The minimal piping thickness for R32 piping must be in accordance with the table on section
  5-4 REFRIGERANT PIPING SIZE AND ALLOWABLE PIPING LENGTH
- For the handling of the stop valves, see "precautions when the handling piping stop valves" on section
  5-4 5EFRIGERANT PIPING WORK
- Be sure to perform piping work using measurements within the maximum allowable length and height difference described on section
  5-4 REFRIGERANT PIPING SIZE AND ALLOWABLE PIPING LENGTH

5 REFRIGERANT PIPING WORK (2/5)

<Please refer to installation manual of indoor unit about indoor unit's refrigerant piping>

5-3 PIPING PROTECTION

- Prevent contamination or moisture from getting into the piping.
- Pay special attention when running the copper piping through the through-hole or when leading the edge of the piping outside the room.
- Refrigerant piping must be protected from physical damage. Install a plastic cover or equivalent.

Location	WORK PERIOD	PROTECTION METHOD
Outdoor	One month or more	Pinching
	Less than one month	Pinching or taping

Location	WORK PERIOD	PROTECTION METHOD
Indoor	N/A	Pinching or taping

5-4 REFRIGERANT PIPING SIZE AND ALLOWABLE PIPING LENGTH

CAUTION

This unit is chargeless specification. Due to chargeless length and allowable piping length will be different depend on field pipe size.

Piping bend radius

(Units : mm)

Piping diameter	Pipe thickness (material)	Bend radius
Ø 9.5mm	0.8 mm (C1220T-O, Type O)	30mm or more
Ø 15.9mm	1.0 mm (C1220T-O, Type O)	50mm or more

Refrigerant pipe size and chargeless length

Outdoor unit type	Liquid pipe size (type)	Chargeless length
RZVF100BSV16 RZMF140BSV16	Ø 9.5mm x t 0.8 mm (type O)	30m

- One way maximum allowable piping length means the maximum length of liquid side piping or gas side piping.
- Equivalent length is the pressure loss due to L joints, traps, and so on along the refrigerant piping converted to a straight piping length of the same size and added to the overall value.
  Please see the Engineering Data for calculation of equivalent length.
- Please give the vertical interval between the indoor and outdoor as 20m or less.

Pair Connection Refrigerant piping size and one way maximum allowable piping length.

Outdoor unit type	Liquid pipe size (type)	Maximum allowable piping length (It is equivalent length in the inside)	Gas pipe size (type)	Maximum allowable piping length (It is equivalent length in the inside)
RZVF100BSV16 RZMF140BSV16	Ø 9.5mm x t 0.8 mm (type O)	50m (70m)	Ø 15.9mm x t 1.0 mm (type O)	50m (70m)

⚠ WARNING

- When flared joints are reused, the flared part shall be re-fabricated.

⚠ CAUTION

- Use dedicated piping cutters and flaring tools for R410A or R32.
- When making a flare connection, apply ether or ester oil only to the flare inner surface.
- Use only the flare nuts attached to the unit. If other flare nuts are used, it may cause refrigerant leakage.
- To prevent contamination, dust or moisture from getting into the piping, take measures such as pinching or taping the pipings.

5 REFRIGERANT PIPING WORK (3/5)

<Please refer to installation manual of indoor unit about indoor unit's refrigerant piping>

5-5 REFRIGERANT PIPING WORK

- The refrigerant piping is connectable in four directions. (See Fig. 4)
- Do not let anything other than the designated refrigerant (such as air or water) enter the refrigerant system.
- When connecting in a downward direction, open the knock out hole by making 4 round holes around the knock out hole by using a 6mm drill. (see Fig.5)
- Cutting out the two slits makes it possible to install as shown in Fig. 6 (Use metal saw to cut out the slits)

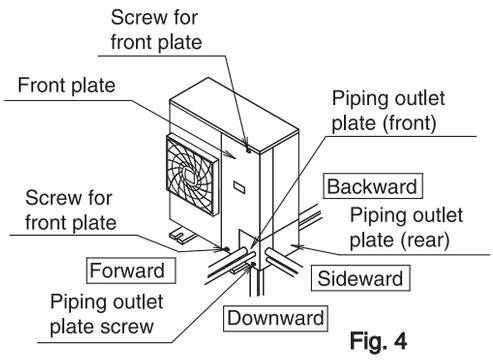


Fig. 4

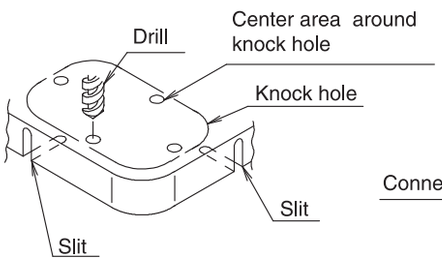


Fig. 5

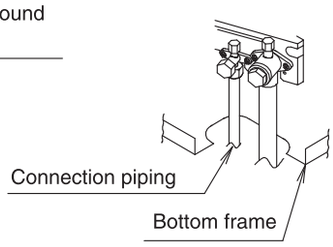
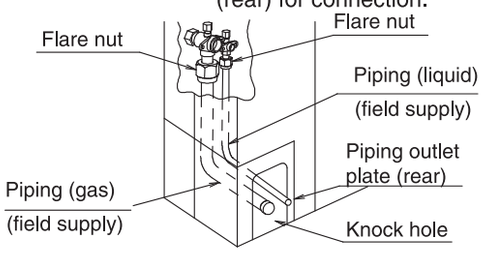


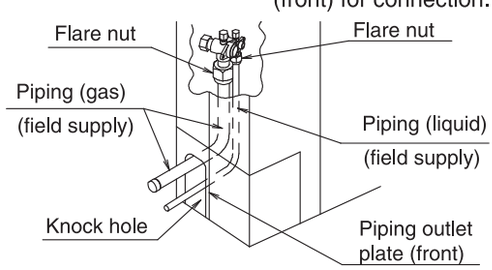
Fig. 6

- After knocking out the knock hole, it is recommended to apply repair paint to the edge and the surrounding end surfaces to prevent rusting.

Back side (rear) connection Remove the piping outlet plate (rear) for connection.



Side (lateral) connection Remove the piping outlet plate (front) for connection.



CAUTION

Prevention against small animals entering into the casing

Fill up the space with putty or thermal insulation(field supply) Where the piping through as shown in Fig. 7.

(If small animals touch the electrical parts inside, this may cause malfunction, smoke or fire.)

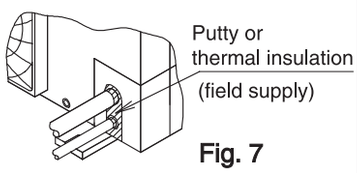


Fig. 7

PRECAUTIONS WHEN THE HANDLING PIPING STOP VALVES

DO NOT OPEN THE STOP VALVE UNTIL THE 7 CHARGING THE REFRIGERANT FINISHED.

The names of the parts necessary for handling the piping stop valves for the indoor and outdoor units are described in Fig. 8. The valves are closed before shipment.

When tightening the flare of the stop valves, make sure to tighten by the rated torque. The rated torque is shown on Precautions when tightening flare nuts (following)

Applying force by exceeding the rated tightening torque may cause the sheet surface inside the stop valve to twist, the refrigerant to leak inside the valve, and the flare nut to break.

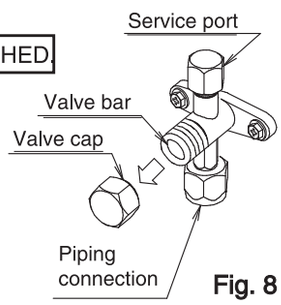


Fig. 8

Prohibited

Do not apply force to the valve cap or the valve body when tightening the flare nut.

(It may cause refrigerant leakage due to deformation of the valve body

- When using the low outdoor temperature cooling mode etc., the pressure on the low pressure side might drop, so the flare nut on the stop valves should be sealed completely with silicon sealant or the like in order to prevent frost from forming on it (both gas and liquid sides). (Refer to Fig. 9)

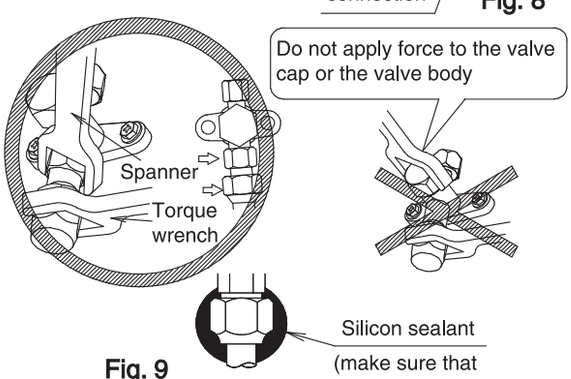


Fig. 9

5 REFRIGERANT PIPING WORK (4/5)

How to operate the stop valve (Refer to Fig. 10)

Use hexagonal wrenches 5mm.

To open:

1. Insert one hex-wrench onto the valve rod and turn counter-clockwise.
2. Stop when the valve rod no longer turns. It is now open.

To close:

1. Insert one hex-wrench on the valve rod and turn clockwise.
2. Stop when the valve rod no longer turns. It is now closed.

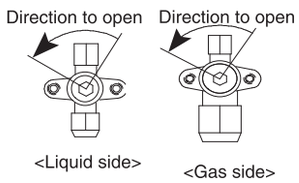


Fig. 10

PRECAUTIONS FOR HANDLING VALVE CAP

- A seal is attached to the point indicated by the arrow. Take care not to damage it.
- Be sure to tighten the valve cap securely after operating the valves.

	Valve size (mm)	Tightening torque(N•m)
Liquid side	Ø9.5	22.0 ± 2

	Valve size (mm)	Tightening torque(N•m)
Gas side	Ø15.9	32.0 ± 3

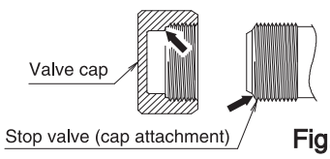


Fig. 11

PRECAUTIONS FOR HANDLING SERVICE PORT

- Use a push-rod provided charging hose for operation.
- Be sure to tighten the valve cap securely after operation.

Tightening torque(N•m)
32.0 ± 3

Prohibited — Do not use a charging hose of which pressing stick is slipped out from the center. (It may cause refrigerant leakage due to deformation fo the valve stem of the service port)

PRECAUTIONS FOR CONNECTING PIPING

- Take caution so that the refrigerant piping between the outdoor and indoor may not touch the compressor bolt and sound proof cover and the plate as shown Fig 12.
- If installing the outdoor unit higher than the indoor unit, caulk the space around insulation and tubes because condensation on the stop valves can seep through to the indoor unit side.

PRECAUTIONS REGARDING INSULATION

Enhance the insulation of the refrigerant piping according to the installation conditions. If this is not done, condensation may form on the surface of the insulation. Please refer to the target values shown below.

- When the temperature and humidity conditions are 30°C and RH 75% or more: thickness of the insulation is 15 mm or more.
- When the temperature and humidity conditions are 30°C and RH 80% or more: thickness of the insulation is 20 mm or more.

- Be sure to insulate the liquid and gas sides interunit piping.

It may become the cause of refrigerant leakage if it is not insulated.
(Be sure to use insulating material which can resistant.)

CAUTION

Insulation of interunit piping must be carried out up to the connection inside the casing.
If the piping is exposed to the atmosphere, it may cause sweating or burn due to touching the piping, electric shocks or a fire due to the wiring touching the piping.

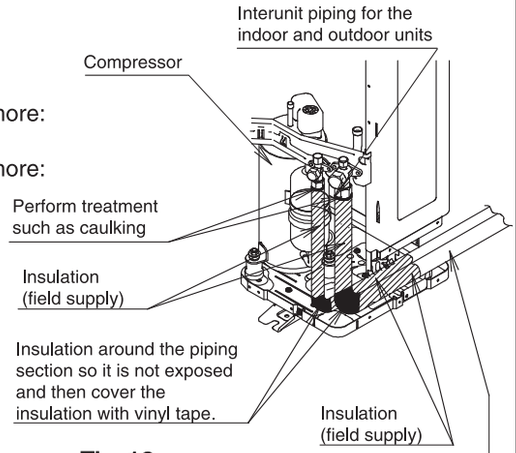
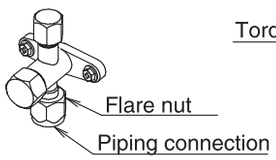
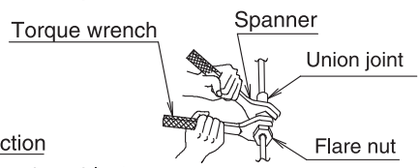


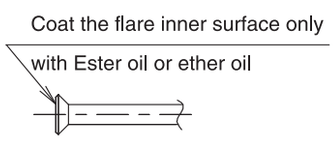
Fig. 12 Refrigerant piping must be protected from physical damage. Install a plastic cover or equivalent.

PRECAUTIONS WHEN TIGHTENING FLARE NUTS

- Be sure to remove the flare nuts with two spanners.
  Then after the piping connection, tighten them using a spanner and torque wrench.
- For the dimension of flared part, see the table 1.
- When making a flare connection. coat ether or ester oil only to the flare inner surface.
  Then, turn the nut 3 to 4 times with your hand and screw in the nut.







- For the tightening torque, see the table 1.
- After all the piping has been connected, use nitrogen to perform a refrigerant leakage test.

Table 1

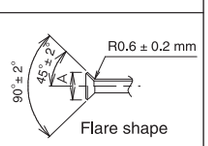
PIPING SIZE (mm)	TIGHTENING TORQUE	A DIMENSIONS FOR PROCESSING FLARES (mm)	FLARE SHAPE
Ø6.4	16 ± 2 N•m	8.9 ± 0.2	
Ø9.5	22 ± 2 N•m	13.0 ± 0.2	
Ø12.7	32 ± 2 N•m	16.4 ± 0.2	
Ø15.9	50 ± 2 N•m	19.5 ± 0.2	
Ø19.1	70 ± 2 N•m	23.8 ± 0.2	

Table 2

PIPING SIZE (mm)	FURTHER TIGHTENING ANGLE	RECOMMENDED ARM LENGTH OF TOOL
Ø6.4	60 to 90 degrees	About 150 mm
Ø9.5	60 to 90 degrees	About 200 mm
Ø12.7	30 to 60 degrees	About 250 mm
Ø15.9	30 to 60 degrees	About 300 mm
Ø19.1	20 to 35 degrees	About 450 mm

If there is no torque wrench, use table 2 as a rule of thumb. When tightening a flare nut with a spanner harder and harder, there is a point where the tightening torque suddenly increases. From that position, tighten the nut additionally the angle shown in table 2. After the work is finished, check securely that there is no gas leakage. If the nut is not tightened as instructed, it may cause slow refrigerant leakage and result in malfunction(such as does not cool / heat).

5 REFRIGERANT PIPING WORK (5/5)

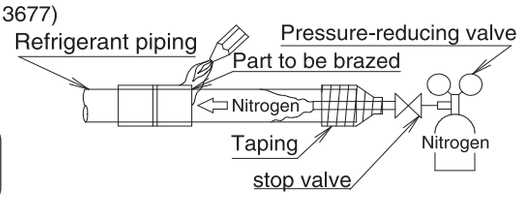
PRECAUTIONS WHEN BRAZING THE REFRIGERANT PIPINGS

<Do not reuse joint which have been used once already>

- When brazing the refrigerant piping, carry out brazing work (NOTE 2) after substituting nitrogen for air (flow nitrogen into the piping and substitute nitrogen for air (NOTE 1) (see the drawing below)).

NOTES

1. The proper pressure for having nitrogen flow through the piping is approximately 0.02MPa, a pressure that makes one feel like breeze and can be obtained through a pressure reducing valve.
2. Do not use flux when brazing refrigerant piping. Use phosphor copper brazing filler metal (BCuP-2:JIS Z 3264/B-Cu93P-710/795:ISO 3677) that does not require flux. (If chlorinated flux is used, the piping will be corroded and, in addition if fluorine is contained, the refrigerant oil will be deteriorated and the refrigerant circuit will be affected badly.)

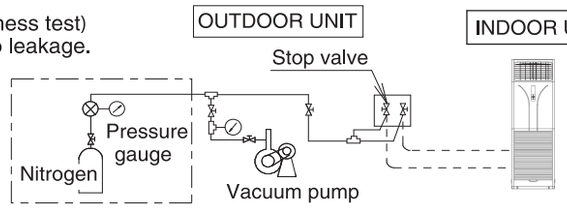


Prohibited — Do not use anti-oxidants when brazing the piping joints. (Residue can clog pipes and break equipment.)

6 AIRTIGHTNESS TEST AND AIR-PURGE

AIRTIGHTNESS TEST

- Perform a refrigerant leakage check using nitrogen gas (airtightness test) with the outdoor unit stop valve close, to make sure there are no leakage.
- For the airtightness test, raise the pressure to the design pressure in the high pressure section (4.17 MPa) For the airtightness test, the unit passes the test if the pressure in the high pressure section does not drop for 24 hours after increasing to the design pressure. A correction is required since the pressure decreases approx. 0.01Mpa when the ambient temperature of 1°C decreases.



(CHECKING LEAKAGE)

- If the pressure drop is confirmed, perform the airtightness test again after checking and modifying the leakage points.

AIR-PURGE

- Evacuate by the vacuum pump for more than 2 hours until the internal pressure decreases below -0.1MP. After that, leave it with -0.1MPa or less for more than one hour and confirm that the value of vacuum gauges does not increase.
- If the value of vacuum gauge increases, there is moisture inside the refrigerant piping or there are leakage points. Perform evacuation again after checking and improving the leakage points.

NOTE

- After doing an air-purge with a vacuum pump, the refrigerant pressure may not rise even if the stop valves are opened. This is because the refrigerant piping path is closed off by the outdoor unit electronic expansion valve, etc. There are no problems if the outdoor unit is running.

7 CHARGING THE REFRIGERANT (1/2)

〈 Be sure to use R32 as refrigerant. 〉

7-1 PRECAUTIONS FOR ADDING REFRIGERANT

This unit does not require charging. So if the piping length is within the lengths shown in the table below, no additional refrigerant needs to be charged.

Liquid piping size	Length for which additional charging is not required
ø9.5mm x t 0.8mm	30m

In case where the piping length exceeds that shown in the left table or recharging needs to be performed, charge as described below.

Be sure to write down the additional amount of refrigerant charged or the entire amount recharged on the indications label to the back side of the front plate, after the unit installed.

7.2 ADDING REFRIGERANT

From the table below, select a refrigerant amount that is suitable for a piping length exceeding the length for which charging is actually needed. Then add the refrigerant from the service port of the liquid side stop valve.

Outdoor units type	Liquid piping size	Length for which additional charging is not required	Length of piping exceeding the length for which additional charging is not required, R32 additional amount (kg)		
			30m or less	40m or less	50m or less
RZVF100BSV16 RZMF140BSV16	ø9.5mm	30m		0.25	0.50

(Note) If the length of the refrigerant piping is within the range shown by ▨, additional charge is not required.

7.3 COMPLETE RECHARGING OF THE REFRIGERANT

(When recharging for compressor replacement, etc.)

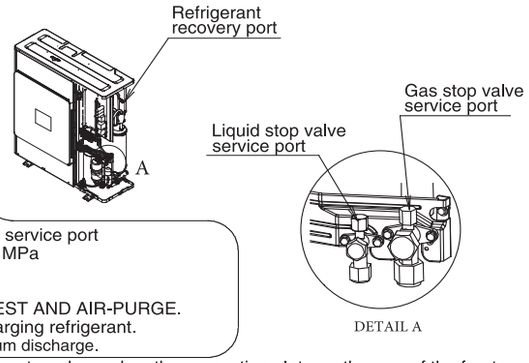
Recharge the amount of refrigerant selected from the table below.

Outdoor units type	Liquid piping size	Piping length, R32 complete additional amount (kg)				
		10m or less	20m or less	30m or less	40m or less	50m or less
RZVF100BSV16	ø9.5mm	2.90	2.90	2.90	3.15	3.40
RZMF140BSV16	ø9.5mm	2.90	2.90	2.90	3.15	3.40

7 CHARGING THE REFRIGERANT (2/2)

When recharging refrigerant, follow the procedure below.

1. In case of recharge refrigerant (cause of refrigerant leak) please follow suggestion below (reference detail from service guide)
   - In case of outdoor PCB (A1P) set refrigerant recovery mode at ON please press switch BS2 during 5 second.
   - In case remote was set refrigerant recovery mode ON please follow caution label that sticked at backside of front plate.
2. Shut down the power at least 1 minute after setting process (1) is performed.
   - If the power is turned on before the process (3) - (6) are completed, the refrigerant recovery mode is turned off and the refrigerant cannot be recovered or charged normally. If the power is turned on by necessary, turn on refrigerant recovery mode again.
3. Recover the refrigerant from both the refrigerant recovery port and liquid stop valve service port (or gas stop valve service port) simultaneously until the pressure drops below 0.09 MPa (gauge pressure: -0.011MPa) by using a refrigerant recovery machine.
4. Modify the leakage points.
5. Perform the airtightness test and air-purge accordance with (6) AIRTIGHTNESS TEST AND AIR-PURGE.
6. Charge the refrigerant from the service port of the liquid side stop valve when recharging refrigerant.
   (Note) Do not turn on power during evacuation. The motor may be damaged due to vacuum discharge.



Be sure to write down the additional amount of refrigerant charged or the entire amount re-charged on the precaution plate on the rear of the front panel, as this information is needed in case of after-sales service.

Precautions when adding R32

- Before charging, check whether the cylinder has a siphon attached or not.

Charging a cylinder with an attached siphon

Stand the cylinder upright at charging.
(There is a siphon piping inside, so that cylinder need not be upside-down to charge with liquid.)

Charging other cylinders

Stand the cylinder upside-down and charge.
(Turn the cylinder upside-down at charging.)

- To prevent entry of any impurities and ensure sufficient pressure resistance, always use the special tools dedicated for R410A or R32.
- The refrigerant should be charged from the service port of the liquid side stop valve.

⚠ CAUTION

To plumbing persons

- After completing installation, be sure to open the valves.(Operating the unit with the valve shut will break the compresssor).
- After complete charging of refrigerant carry out refrigerant leak check and heat insulation work. (Failure to carry out heat insulation work may result in leakage of water)
- Do not allow refrigerant to escape into the atmosphere recklessly for earth environment protection..

8 ELECTRICAL WIRING WORK (1/3)

⚠ WARNING

Make sure to install the earth leakage breaker.
(The earth leakage breaker is required in order to prevent electric shocks or a fire.)

- Electrical wiring must be carried out by qualified personnel.
- Before obtaining access to terminal devices, all supply circuits must be interrupted.

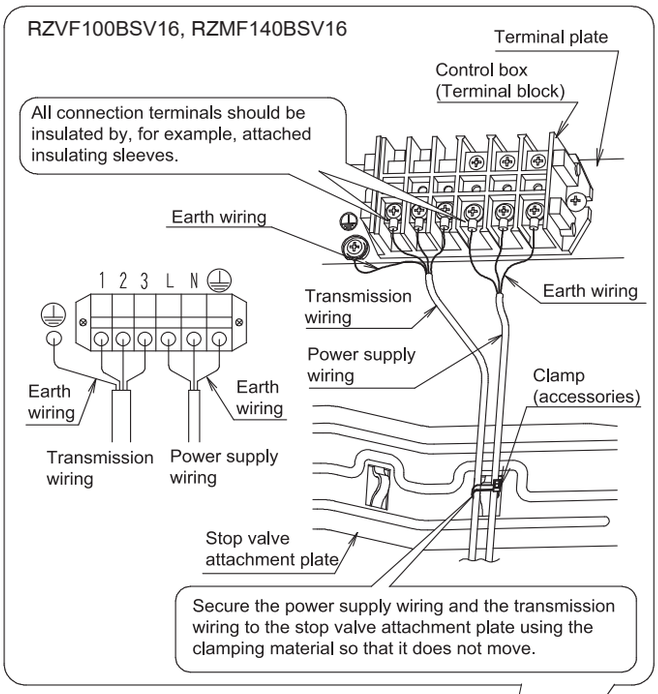
⚠ CAUTION

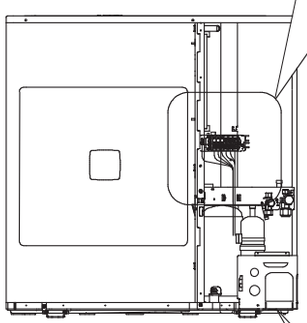
To the electrician

- Make sure to install a current balance type earth leakage breaker coping with high harmonics.
  (This unit is equipped with an inverter device. Use an earth leakage breaker coping with high harmonics to prevent wrong actuation.)
- Do not run the unit until the refrigerant charging is complete. (Operating the unit before the completion will break the compressor.)
- Do not remove the thermistors or sensors when the power supply and transmission wiring are connected.
  (Operating the unit with the thermistors and sensors removed will break the compressor.)
- Make certain that all electric wiring work is carried out by qualified personnel according to the applicable legislation and this installation manual, using a separate circuit. Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or a fire.
- An insufficient power supply capacity or improper electric work may lead to electric shocks or a fire.
- The wiring between the indoor unit and outdoor unit must be for 230V.
- For electric wiring work, refer to also the " WIRING DIAGRAM ".
- When doing the electrical wiring, always shut off the power source before working, and do not turn on the branch switch until all work is complete.
- Make sure to earth the air conditioner. Earthing resistance should be according to applicable legislation.
- Do not connect the earth wiring to gas or water piping, lightning conductor or telephone earth wiring.
  - Gas piping.....Ignition or explosion may occur if the gas leaks.
  - Water piping.....Hard vinyl tubes are not effective earths.
  - Lightning conductor or telephone earth wiring..... Electric potential may rise abnormally if struck by a lightning bolt.
- The earth is needed in order to reduce the noise generated by the unit's inverter and influence on other appliances and to release the charged electric charge on the outdoor unit surface by leaked current.
- Do not install a phase advance capacitor for improvement of power factor. Since this unit is mounted with an inverter device, the effect of power factor improvement not only cannot be expected, but also there is a risk of the capacitor getting abnormally overheated due to harmonics.
- Be sure to use earth leakage breaker dedicated for earth leakage protection in combination with the load break switch with fuse or breaker for wiring.
- In case of three-phase. Machine, electric wiring must be connected in normal phase connection.
- For wiring, use the designated power supply wiring and connect firmly, then secure to prevent external force being exerted on the terminal attachment (power supply wiring, transmission wiring, earth wiring).
- Left-over wiring should not be wrapped and stuffed into the outdoor unit.
- To prevent the power wiring from being damaged by the knock hole edges, put it in a wiring piping or use insulated bush, etc. to protect it.
- To prevent the wiring from coming in contact with piping (particularly the high-pressure piping), secure it with the included clamping material as shown page 32.
- When wiring, form the wiring so that the front plate does not float and make sure the front plate is securely fastened.
- Fix the power supply wiring, the earth wiring and the transmission wiring by clamps as shown in the figure.

8 ELECTRICAL WIRING WORK (2/3)

• Please fix power supply wiring, transmission wiring, and earth wiring by clamp material as below figure.

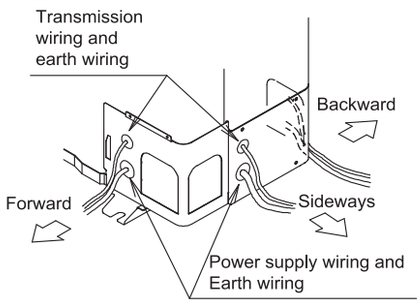




Direction for pulling out the wiring

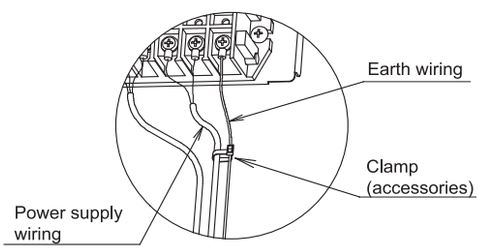
- Plug the piping through-hole with putty or insulating material (field supply) so as not to leave any gap and prevent entry of small animals.
- Use the knock hole, on the front and side for the conduit (composite) operation.

❈ When punching knock hole remove pipe outlet plate from unit and open knock hole



When wiring, using single core wires for the earth wiring, tie the power supply wiring and the earth wiring by clamp material as shown in the right figure.

⚠ Do not connect power supply to terminal block of transmission wiring. All system may get damaged.



8 ELECTRICAL WIRING WORK (3/3)

Wiring connection method

Precautions when laying power supply wiring.

- For connection to the terminal block, use ring type crimp style. terminals with insulation sleeve or treat the wiring with insulation. (Refer to fig. 32)
- If it is inevitable to use ring type crimp style terminals, make sure to observe the following items. (Abnormal heating may occur if the wiring are not tightened securely.)

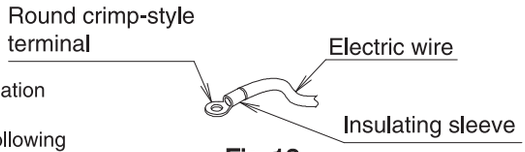


Fig. 13

Connection of 2 wirings of same must be carried out on both sides. ○

Connection of 2 wirings on one side is prohibited. ×

Connection of wirings of different sizes is prohibited. ×

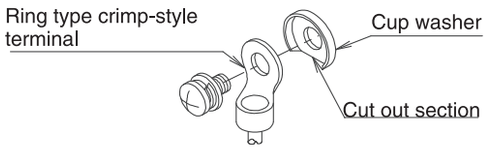
- Never use the stranded wiring which is soldered. (Slack in the electric wiring may cause abnormal heat.)
- Use the required wirings, connect them securely and fix these wirings so that external force may not apply to the terminals.
- Use a proper screw driver for tightening the terminal screws. If an improper screw driver is used, it may damage the screw head and a proper tightening cannot be carried out.
- If a terminal is over tightened, it may be damaged. Refer to the table shown below for tightening torque of terminals.

Tightening torque (N•m)	
M4 (Wire between units terminal board)	1.50±0.30
M4 (Power supply terminal board)	1.50±0.30
M4 (Ground wire between units)	1.69±0.25
M5 (Ground wire between units)	3.55±0.50

Precautions when connecting the earth terminal

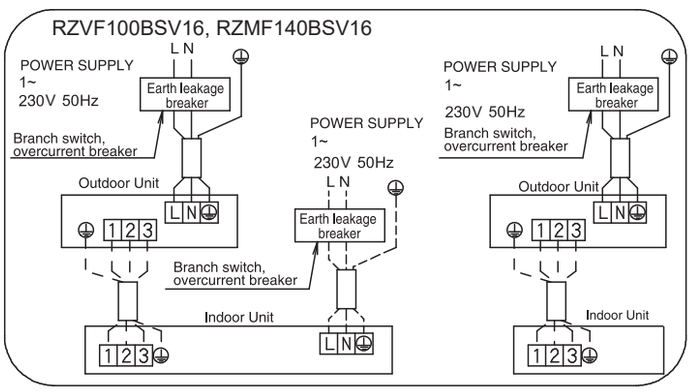
⚠ CAUTION

Conduct wiring so that the earth wiring comes out from the notched part of the cup washer. Otherwise, earth wiring contact will be insufficient and earth effect may be lost.



Specification for field supplied wiring

For the indoor unit wiring and transmission wiring (broken lines in the drawing), follow the instructions in the indoor unit's installation manual.



- SPECIFICATIONS OF STANDARD WIRING COMPONENTS

Outdoor Unit type	Power supply		Wire type of wiring between the units
	Wiring type (*)	Size	
RZVF100BSV16 RZMF140BSV16	H05VV-U3G	Wiring size and length must comply with local codes or [IEC 60335-1 (Table 11)]	H05VV-U4G2.5

(*) Only in protected piping, use H07RN-F when protected pipes are not used.
(Supply cords shall not be lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC 57))

NOTES

1. Select and install the power supply wiring in accordance with [IEC 60335-1 (Table 11)] or local laws and regulations. The maximum current of the outdoor and indoor units are shown on each name plate.
2. When installing wiring in a location that can easily come in contact with people, be sure to install an earth leakage breaker coping with high harmonics to prevent electric shock.
3. Breaker type and capacity shall be selected in accordance with local laws and regulations.

⚠ CAUTION

To the electrician

- Do not operate the unit until the refrigerant charging is completed. (If it is operation before that, the compressor will be broken.)

9 CHECK ITEMS BEFORE TEST OPERATION

PRE-RUN CHECKS

	ITEM TO CHECK	CHECK
Power supply Wiring	Is the wiring as mentioned on the wiring diagram? make sure no wiring has been forgotten and that there are no missing phases or reverse phases.	
	Does wiring between units put in and changed in continuation installation?	
	Is the unit properly grounded?	
	Are any of the wiring attachment screws loose?	
	Is the insulation resistance at least 1MΩ? • Use a 500V mega-tester when measuring insulation • ※ Do not use a mega-tester to low voltage circuit except 230 V.	
	Is an earth leakage circuit breaker used as a current operated type which is compatible to the higher harmonic wave?	
	Does the earth leakage circuit breaker have appropriate rated current?	
Refrigerant piping	Is the size of the piping appropriate?	
	Is the insulation material for the piping attached securely? Are both the liquid and gas pipes insulated?	
	Are the stop valves for both the liquid side and the gas side open?	
Extra refrigerant	Did you write down the extra refrigerant and the refrigerant piping length?	
Indoor unit	Is the indoor unit fully installed? When the test run is started, the fan automatically begins turning.	

⚠ WARNING

- When a power supply is switched on, when you leave from the outdoor unit, be sure to close the cover plate. (It becomes the cause of an electric shock).

10 TEST OPERATION

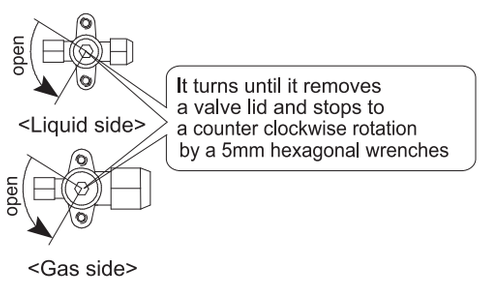
⚠ WARNING

- Never perform a test operation with the discharge piping thermistor(R2T) and suction piping thermistor(R3T) removed, as this might break the compressor.
- If the technician must leave the outdoor unit for some reason, switch places with another installation technician or close the plates. (It may cause electric shocks.)

HOW TO TEST OPERATION

After the indoor and outdoor unit installation, be sure to perform the test operation in accordance with the following procedure.

1. Open the stop valve cover and check that the liquid and gas sides of the stop valves are open.
   <Be sure to close the front plate before the operation (there is a risk of electric shock)>
   Note: After doing an air-purge with a vacuum pump, the refrigerant pressure may not rise even if the stop valves are opened. This is because the refrigerant piping path is closed off by the outdoor unit electronic expansion valve, etc. There are no problems if the unit is run.
2. Attach the stop valve cover to the outdoor unit and turn the power on at least 6 hours before operating the outdoor unit to protect the compressor.
3. Set to COOLING operation with the remote controller.
4. Perform the test operation
   - **When doing trial operation, it may take about 1 minute until the compressor begins to function, but this is not abnormal.**
   - **When using the system the first time after installation, even if heating operation is selected, cooling operation will take place for about 3 to 5 minutes.**
     Thereafter, it will change to heating operation, but this is not abnormal.
     (In this case, the remote controller display will continue to display "heating operation.") This is in order to detect if someone has forgotten to open the stop valve during trial operation.
   - **If the outside air temperature is about 24˚C or more, even if HEATING operation is set, the system may not operate, but this is not abnormal.**
5. Operate normally.
6. Confirm function of the indoor and outdoor units according to the operation manual.



MALFUNCTION DIAGNOSIS

- At the time of a test run, when the following malfunction code is displayed on remote control, the fault of installation construction can be considered.

Malfunction code	Installation error	Remedial action
[E3] [E5] [U0] [L8]	A failure of a stop valve to open	"Open" operation of a stop valve
[E3] [E5] [L4] [L8]	Closing of an air passage	Removing closing thing from air passage
[U1]	Missing phase, negative phase	2 Phase of power supply 3 Phase (L1, L2, L3 Phase) are replaced
[U2]	Power supply unbalancing	Unbalanced dissolution
[U4] [UF]	Incorrect connection of field wiring	Correction of wiring
[UA]	Connection of incompatible indoor unit	Connect appropriate indoor unit (Refer to the catalogue)
NO INDICATION	Mistake wiring or not connect wiring of power supply, indoor, outdoor, field wiring between indoor unit	To correct wiring or connect correctly

- When malfunction codes other than the above are displayed on remote control, considering that the failure of between an indoor and an outdoor unit may have.
  For the malfunction codes, please refer to the indoor unit's installation manual or outdoor service manual.
  (A malfunction code has what has a display according to the form of the interior of a room and an outdoor unit, and the thing which is not.)
- The followings can be considered causes when the breaker for power supply trips.
  - The capacity of a breaker for power supply is smaller than the required capacity of the leakage circuit breaker.
  - The leakage circuit breaker is not compatible to the higher harmonic wave.
- In case of already checking all equipment that not have any problem, but found air conditioner not cooling. Please re-check Motor operate valve coil not tighten or remove for 1st checking. If normally please re-confirm problem following service manual to solve problem.

⚠ CAUTION

To persons incharge of piping work and electric work

- Please check having attached the front board and the piping cover after a test run end when giving production over to customer.

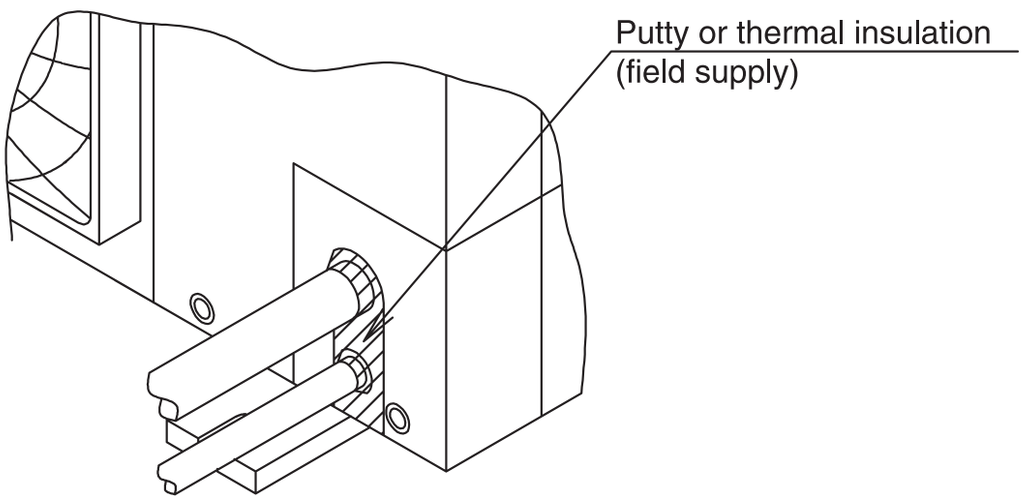
11 CAUTION (RZVF100BSV16, RZMF140BSV16)

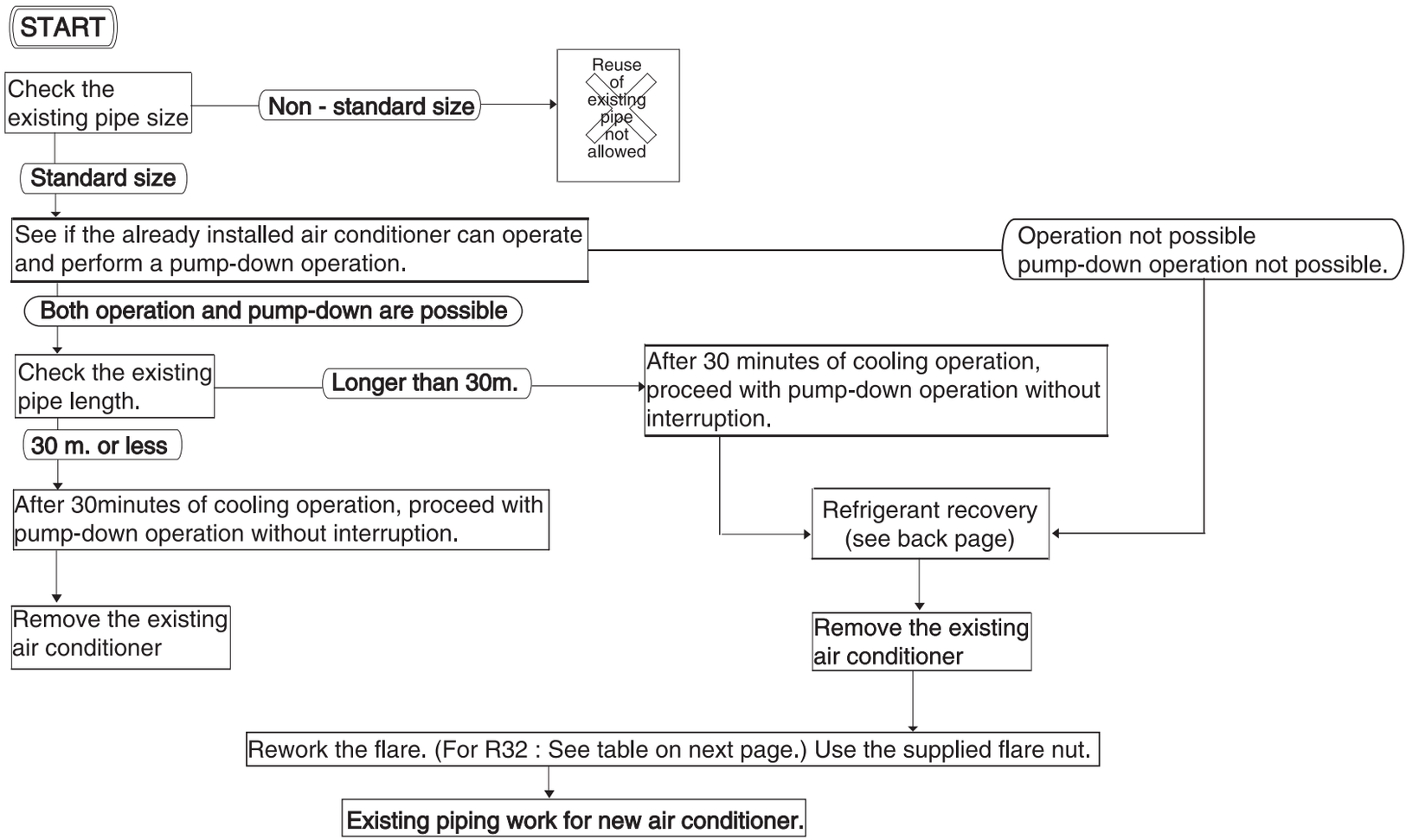
⚠ CAUTION

■ To those who carry out the piping work

Caution to be given when connecting pipes.

● Fill up the space with putty or thermal insulation (field supply) where the pipes through as shown below.
(If small animals like insects enter into the outdoor units, they may cause short circuit in the control box.)





PRECAUTIONS ON REFRIGERANT PIPING

- Clean pipe if existing air conditioner is heat pump type contains leftover oil.
- Clean pipe if used compressor oil in existing air conditioner is other than [SUNISO, MS, HAB, Barrel freeze, JOMO, Ethereal oil, Ester oil]. Clean pipe
- if existing indoor and outdoor unit is disconnected.
- Change new pipe if refrigerant leakage or it should adding refrigerant.
- Change new heat insulation if existing part is peeling off.

(Note)

1. Clean the pipe if refrigerant leakage and unit has not service port on gas-liquid stop valve.
2. If indoor unit equipped with EV valve, open that valve before recovery refrigerant.
3. **Maximum pipe length as per specified on next page.**

13 REFRIGERANT RECOVERY

[Working procedure]

1. **Recovery retaining oil in existing pipe Approx. 1 min**
   Close gas stop valve (liquid stop valve: open)
   and recovery refrigerant from gas stop valve port.(Fig.1)
2. **Recovery retaining oil in existing liquid pipe Approx. 1 min**
   Recovery refrigerant from liquid stop valve port. (Fig.2)
3. **Recovery refrigerant in outdoor unit Approx. 2-3 min**
   Recovery refrigerant from outdoor unit refrigerant recovery port *1 .(Fig.3)
   NOTE 1 Can be omit this procedure if there is no refrigerant recovery port
4. **Recovery refrigerant in accordance with Fluorocarbons Recovery and Destructive Law**
   If refrigerant recovery port *2 pressure become lower than gas stop valve port pressure, refrigerant will recover at the simultaneous from the gas stop valve port, open gas stop valve (Fig.3-1) gradually to avoid from pressure rising rapidly. (Fig.3-2)
   NOTE 1 Can be omit this procedure if there has no refrigerant recovery port

Retaining oil recovery amount improved approx. 5 times from regular refrigerant recovery method

(pipe length, height difference, pipe path etc. is difference by installation condition)

Fig. 1

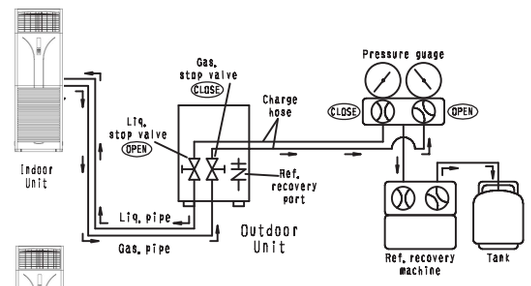


Fig. 2

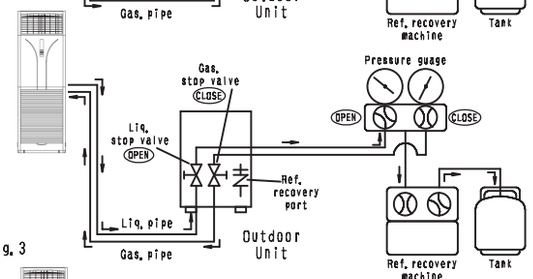
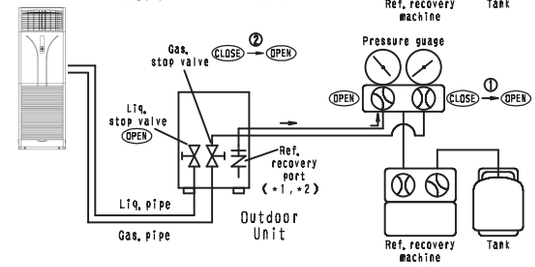


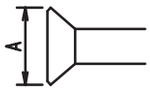
Fig. 3



ABOUT FLARE PROCESSING

- Flare connection area of existed piping will cause processing deterioration, make sure to do newly re-processing.
- Please use flare nut which attached with product (Do not use existed flare nut)

■ Flare processing
[Unit: mm]



Piping outside diameter	A (+0 , -0.4)
	For R32
ϕ 9.5	13.2
ϕ 15.9	19.7

■ Flare nut
[Unit: mm]

Piping outside diameter	B (+0 , -0.6)
	For R32
ϕ 9.5	22
ϕ 15.9	29

REFRIGERANT PIPE SIZE TABLE

Outdoor Unit		Existing pipe size	9.5/15.9	Height difference	Design pressure (High pressure)
RZVF100BSV16 RZMF140BSV16	9.5/15.9	Standard pipe length	7.5m	Max 30m	4.17 MPa
		Max. pipe length	50m		
		Chargeless pipe length	30m		

- Refer to the installation manual for details other than those mentioned above table such as additional refrigerant charge amount.
- Clean the existing piping if it length is exceed 30m.
- Clean the existing pipe if chargeless length is exceed limit of existing pipe pump down refrigerant recovery.

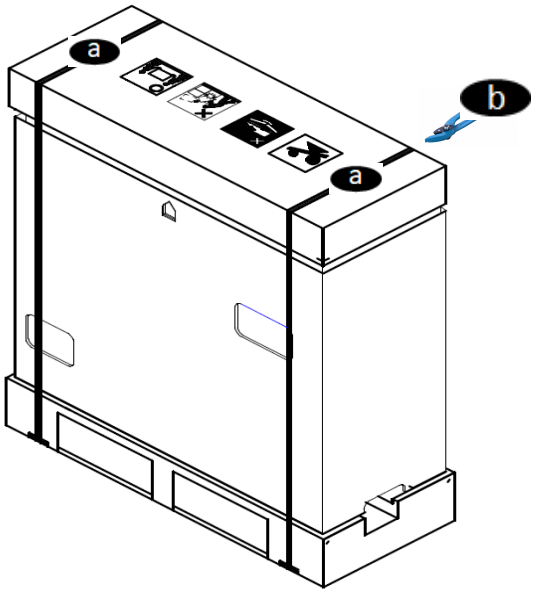
■ Standard pipe (R32)

Pipe size (mm)	ϕ 9.5	ϕ15.9
Thickness (mm)	t 0.8	t 1.0

14. Unpacking & Packing of the Outdoor Unit

14-1 Unpacking

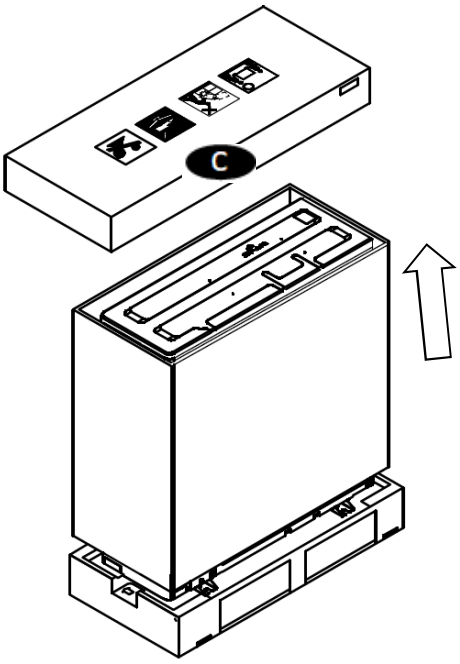
1



a) Strap
b) Starp Cutter
c) Top corrugated cardboard sheet with EPS
d) Cardboard Box
e) Bottom Skid

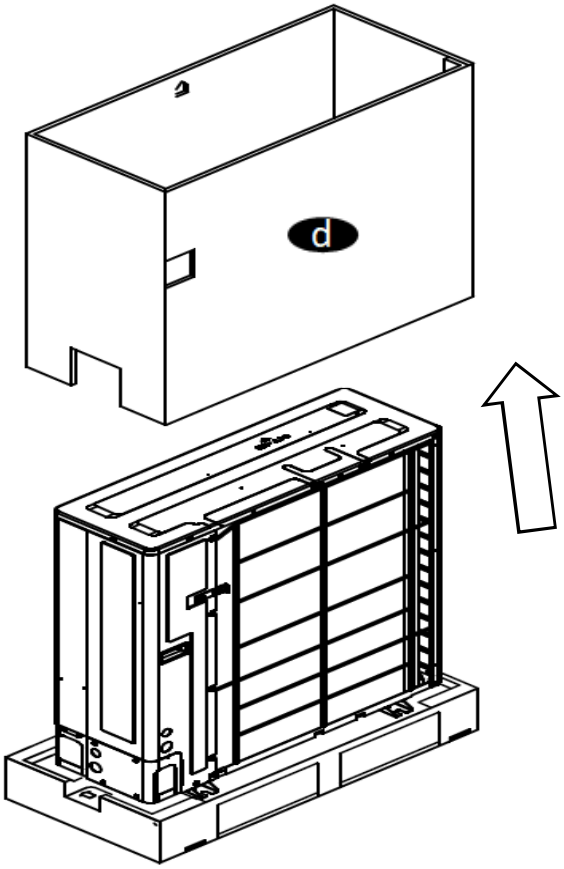
- Cut all the straps (a) from the unit using strap cutter(b) as shown in figure.

2



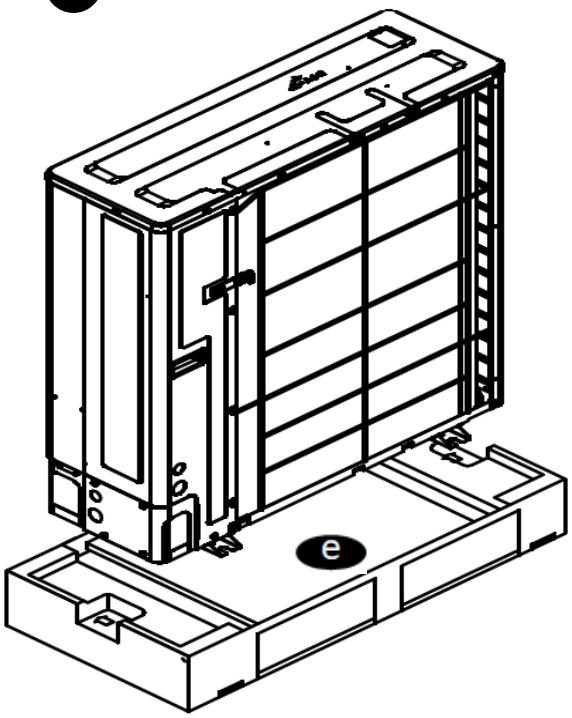
- Remove the Top corrugated cardboard sheet with EPS from the unit by pulling it up as shown in figure.

3



- Remove the cardboard box from the unit by pulling it up as shown in figure.

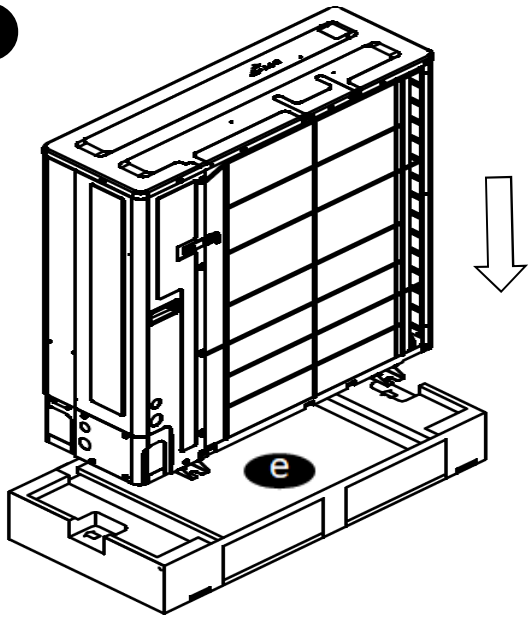
4



- Remove the bottom skid(d) with EPS by pulling the unit up, then remove the polythene product cover by pulling it up

14-2 Packing

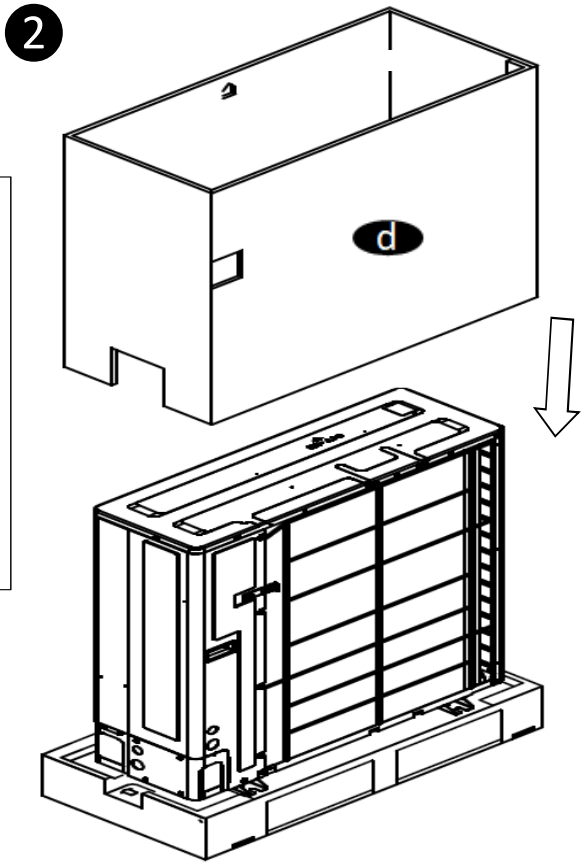
1



a) Strap
b) Starp Cutter
c) Top corrugated cardboard sheet with EPS
d) Cardboard Box
e) Bottom Skid
f) Portable strap fixing machine

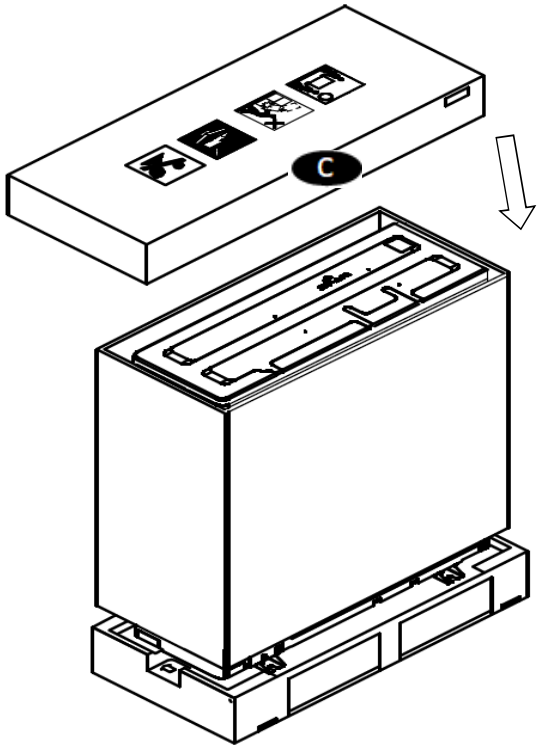
- Cover the unit with polythene product cover, then pick the unit up and settle it down on the bottom skid(e) as shown in figure.

2



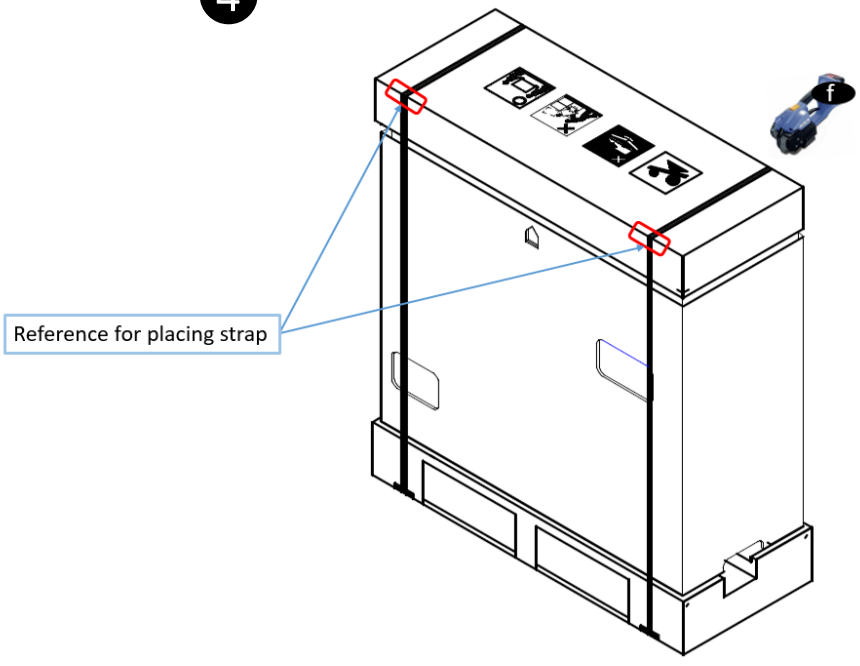
- Put the cardboard box (d) upon the unit as shown in figure.

3



- Put the top corrugated cardboard sheet and EPS (c) on the top of the unit as shown in figure.

4

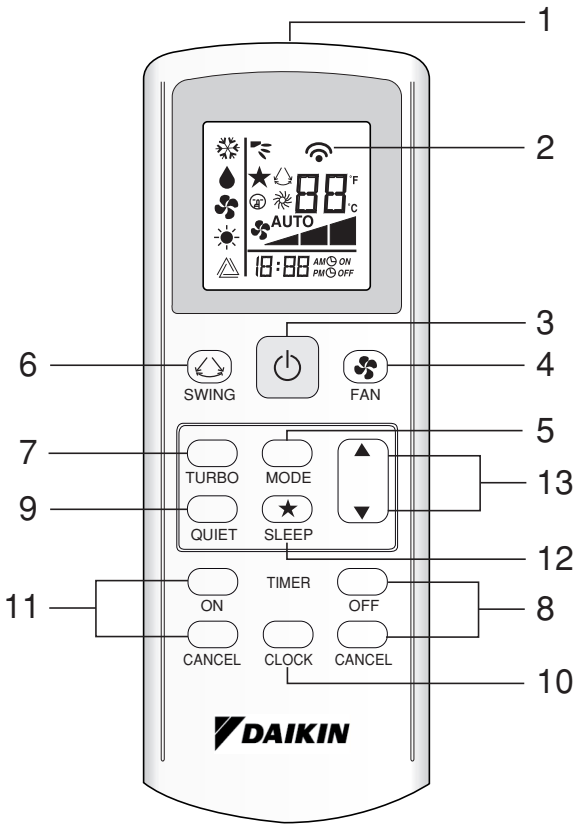


- Fix the straps (a) on the unit with help of strap fixing machine (f) as shown in figure.(Use marked reference for placing straps)

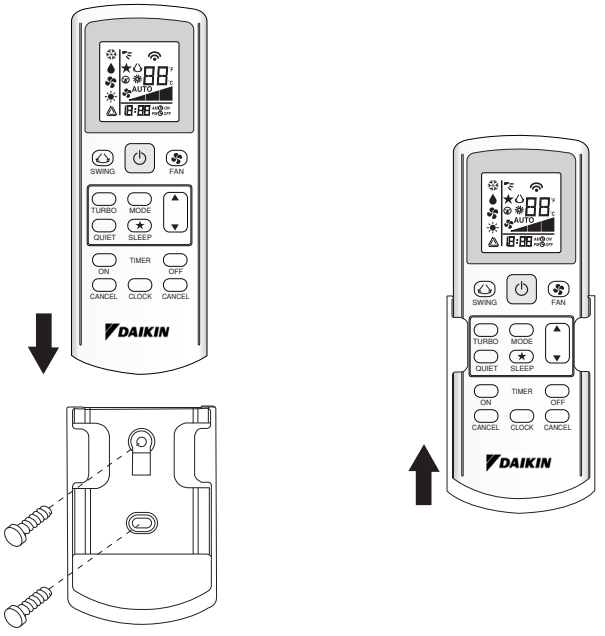
OPERATION MANUAL

Handset Wireless

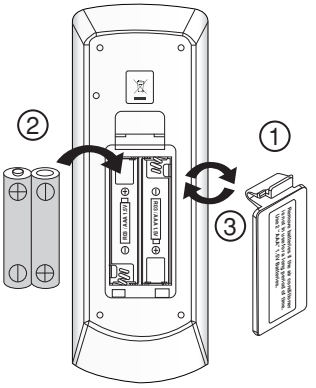
BRC52A61/62/63 Remote Control Indication



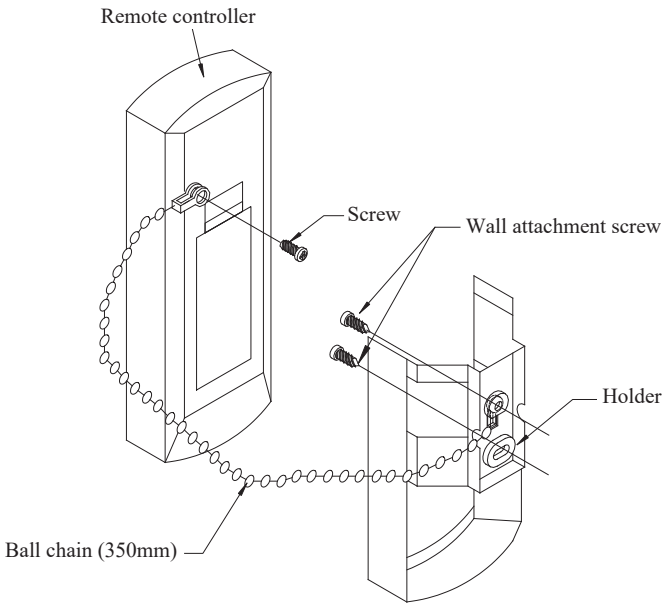
HOW TO MOUNT ONTO THE WALL



TO INSERT BATTERIES (AAA.R03)



REMOTE CONTROLLER LOSS PREVENTION WITH BALL CHAIN (OPTIONAL)



Installation

1. Match the ring at the end of the ball chain with the screw hole on the back of the remote controller and secure it with the screw.
2. Attach the holder and the ball chain as above at the position where signals from the remote controller can be received easily.
3. Pass the ball chain through the back of the holder and match the ring at the end of the ball chain to the upper hole of the holder. Fix the holder to the wall by putting through 2 screws across it.

OPERATING GUIDE

1. Transmission source

- The source where the signal will be transmitted.

2. Signal transmission indication

- Blink to confirm that the last setting has been transmitted to the unit.

3. "ON/OFF" Button

- Press once to start the air conditioner unit.
- Press again to stop the unit.

4. Fan speed selection

- Pressing the button continuously will toggle the fan speed in the following order:

  Low ⟶ Med ⟶ High ⟶ Auto
- Stop pressing when the desired fan speed appears on the display screen.

5. Operation mode

- Press the **MODE** button to select the type of operating mode.
- For cooling only unit, the available modes are: **COOL** (), **DRY** () and **FAN** ().
- For heat pump unit, the available modes are: **AUTO** (), **COOL** (), **DRY** (), **FAN** () and **HEAT** ().
- The **AUTO** () mode is unavailable for chilled water system except 4-pipe system.

6. Automatic air swing

- Press the **SWING** button to activate the automatic air swing function.
- To distribute the air to a specific direction, press the **SWING** button and wait until the louver move to the desired direction and press the button once again.

Swing mode selection method (model dependent)

- Press **SWING** () button for 4 seconds to enter field setting mode. While in field setting mode, it will only show **SWING MODE** ().
- Press temperature ▲ and ▼ button to select **SWING MODE** () rotation from Swing Mode 1 to Swing Mode 3.
- There are 3 different **SWING MODE**, which are:

  Swing mode 1 Swing mode 2 Swing mode 3

  SWING MODE will not activate unless **SWING** is activated.

  Swing is indicated by the logo:
- If no mode changes within 4 seconds, unit will operate according to the selected **SWING MODE** ().

7. Turbo function (model dependent)

- Press for fast cooling or heating operation.
- Fan speed turn to maximum speed.
- Press again to deactivate the function.
- Available under **HEAT** and **COOL** modes only.
- Any change of fan speed will deactivate this function.

8. OFF timer setting

- Press the **OFF TIMER** button will activate the off timer function.
- Set the desired off time by pressing the **OFF TIMER** button continuously.
- Press the **CANCEL** button to cancel the off timer setting.

9. Quiet function (model dependent)

- Press ⓠ for quiet operation.
- Fan speed turn to minimum speed.
- Press again to deactivate the function.
- Available under HEAT and COOL modes only.
- Any change of fan speed will deactivate this function.

10. Clock time setting

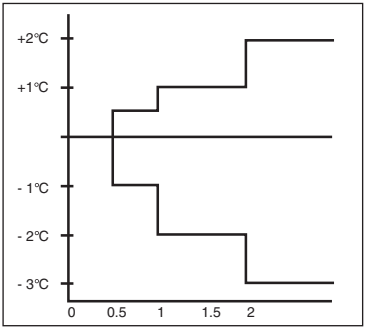
- Press and hold ◷ button to set the clock time.

11. ON timer setting

- Press the **ON TIMER** button will activate the on timer function.
- Set the desired on time by pressing the **ON TIMER** button continuously. If the timer is set to 7.30am, the air conditioner will turn on at 7.30am sharp.
- Press the **CANCEL** button to cancel the on timer setting.

12. Sleep mode setting

- Press the ★ button will activate the sleep mode function.
- This is an energy saving option. When the unit is operating under cooling mode, the set temperature is increased by 0.5°C after the first half an hour, another 0.5°C after the second half an hour and 1°C after the following 1 hour.
- When the unit is operating under heating mode, the set temperature is decreased by 1°C after the first half an hour, another 1°C after the second half an hour and 1°C after the following 1 hour.
- This function is available under **COOL**, **HEAT** and **AUTO** mode.



13. Temperature setting

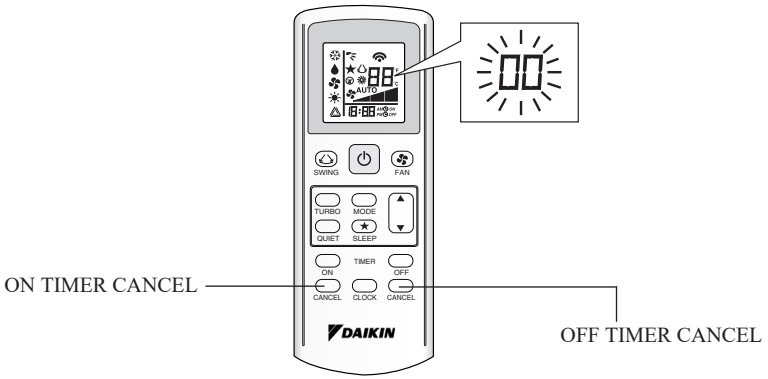
- To set the desired room temperature, press the ▲ or ▼ button to increase or decrease the set temperature.
- The temperature setting range is from 16°C to 30°C (Optional setting 20°C to 30°C).
- Press both buttons ▲ and ▼ simultaneously to toggle from °C to °F setting.

FAULT DIAGNOSIS (For Inverter only EXCEPT Floor Type)

FAULT DIAGNOSIS BY REMOTE CONTROLLER

The temperature display sections indicate corresponding codes.

1. **When the ON TIMER CANCEL button or OFF TIMER CANCEL button is held down for 5 seconds, a "00" indication flashes on the temperature display section.**



2. **Press the ON TIMER CANCEL button or OFF TIMER CANCEL button repeatedly until a continuous beep is produced.**
   - The code indication changes as shown below, and notifies with a long beep.

ERROR CODE	MEANING
00	NORMAL
A1	INDOOR PCB ERROR
A3	DRAIN PUMP ABNORMAL
A5	ANTIFREEZE (COOLING)/HEAT EXCHANGER OVERHEAT (HEATING)
A6	INDOOR FAN MOTOR ABNORMAL
AH	ELECTRICAL AIR CLEANER ABNORMAL
C4	INDOOR HEAT EXCHANGER (1) THERMISTOR SHORT/OPEN
C5	INDOOR HEAT EXCHANGER (2) THERMISTOR SHORT/OPEN
C7	LOUVER LIMIT SWITCH ERROR
C9	INDOOR ROOM THERMISTOR SHORT/OPEN
E1	OUTDOOR PCB ERROR
E3	HIGH PRESSURE PROTECTION
E4	LOW PRESSURE PROTECTION
E5	COMPRESSOR MOTOR LOCK/COMPRESSOR OVERLOADED
E6	COMPRESSOR START-UP ERROR
E7	OUTDOOR DC FAN MOTOR LOCK
E8	AC INPUT OVER CURRENT
E9	EXV ERROR
EA	4 WAY VALVE ERROR
F3	DISCHARGE PIPE OVERHEAT
F6	HEAT EXCHANGER OVERHEAT
HO	COMPRESSOR SENSOR SYSTEM ERROR
H3	HIGH PRESSURE SWITCH ERROR
H6	COMPRESSOR FEEDBACK DETECTION ERROR
H7	FAN MOTOR OVERLOADED/OVERCURRENT/SENSOR ABNORMAL
H8	AC CURRENT SENSOR ERROR

ERROR CODE	MEANING
H9	OUTDOOR AIR THERMISTOR SHORT/OPEN
J1	PRESSURE SENSOR ERROR
J3	COMPRESSOR DISCHARGE PIPE THERMISTOR SHORT/OPEN/MISPLACED
J5	SUCTION PIPE THERMISTOR SHORT/OPEN
J6	OUTDOOR HEAT EXCHANGER THERMISTOR SHORT/OPEN
J7	SUBCOOLING HEAT EXCHANGER THERMISTOR SHORT/OPEN
J8	LIQUID PIPE THERMISTOR SHORT/OPEN
J9	GAS PIPE THERMISTOR SHORT/OPEN
L1	INVERTER OUTDOOR PCB ERROR
L3	OUTDOOR CONTROL BOX OVERHEAT
L4	HEAT SINK OVERHEAT
L5	IPM ERROR/IGBT ERROR
L8	INVERTER COMPRESSOR OVERCURRENT
L9	COMPRESSOR OVERCURRENT PREVENTION
LC	COMMUNICATION ERROR (OUTDOOR CONTROL PCB AND INVERTER PCB)
P1	OPEN PHASE OR VOLTAGE UNBALANCE
P4	HEAT SINK THERMISTOR SHORT/OPEN
PJ	CAPACITY SETTING ERROR
U0	INSUFFICIENT GAS
U2	DC VOLTAGE OUT OF RANGE
U4	COMMUNICATION ERROR
U7	COMMUNICATION ERROR (OUTDOOR CONTROL PCB AND IPM PCB)
UA	INSTALLATION ERROR
UF	PIPING & WIRING INSTALLATION MISMATCH/WRONG WIRING/INSUFFICIENT GAS
UH	ANTIFREEZE (OTHER ROOMS)

NOTE

1. **A short beep and two consecutive beeps indicate non-corresponding codes.**
2. **To cancel the code display, hold the ON TIMER CANCEL button or OFF TIMER CANCEL button down for 5 seconds. The code display also cancel itself if the button is not pressed for 1 minute.**

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