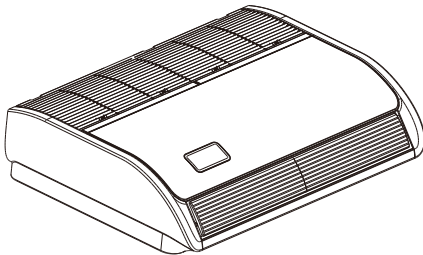


HITACHI SPLIT AIR CONDITIONERS

Installation and Maintenance Manual

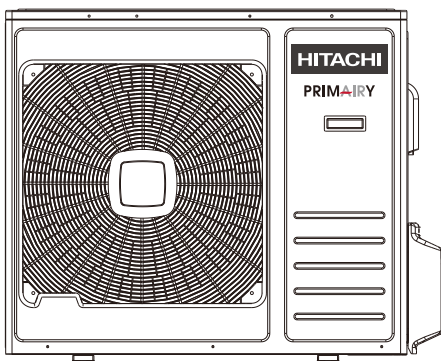
Models

< IndoorUnits >



Heat Pump Type
RPFC-2.0UNE1NH*
RPFC-3.0UNE1NH
RPFC-4.0UNE1NH
RPFC-5.0UNE1NH
RPFC-6.0UNE1NH
RPFC-6.5UNE1NH

Cooling Only Type
RPFC-2.0TNE1NH*
RPFC-3.0TNE1NH*
RPFC-4.0TNE1NH*
RPFC-5.0TNE1NH*
RPFC-6.0TNE1NH*
RPFC-6.5TNE1NH*



< OutdoorUnits >

Heat Pump Type
RAS-2.0UNESNH1*
RAS-3.0UNESNH1
RAS-4.0UNESNH1
RAS-5.0UNESMH1
RAS-6.0UNESMH1
RAS-6.5UNESMH1

Cooling Only Type
RAS-2.0TNESNH1*
RAS-3.0TNESNH1*
RAS-4.0TNESNH1*
RAS-5.0TNESMH1*
RAS-6.0TNESMH1*
RAS-6.5TNESMH1*

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NOTE

- This air conditioner is designed for the following temperatures. Operate the air-conditioner within this range:

Series	Mode	Outdoor operating temperature range	
		Maximum(°C)	Minimum(°C)
Heat Pump	Cooling Operation	48	-15
	Heating Operation	24	-15
Cooling Only	Cooling Operation	48	-15

- Storage condition: Temperature -25~60°C
Humidity 30%~80%
- The numbers in the model represent the cooling capacity HP. For example, RPFC-2.0UNE1NH or RAS-2.0UNESNH1 represent 2.0HP.

Alert Symbols:

-  **DANGER** : The symbol refers to a hazard which can result in severe personal injury or death.
-  **WARNING** : The symbol refers to a hazard or an unsafe practice which may result in severe personal injury or death.
-  **CAUTION** : The symbol refers to a hazard or an unsafe practice which may result in personal injury, product or property damage.
- NOTE** : It refers to the remarks and instructions for the operation, maintenance, and service.

Caution Statements

- We recommend that this air-conditioner is installed properly by qualified installation technicians in accordance with the installation instructions provided with the unit.
- Before installation, check if the voltage of the power supply at installation site is the same as the voltage shown on the nameplate.

DANGER

- You must not carry on any transformation to this product, otherwise, it may possibly cause water leakage, breakdown, short-circuit, electric shock, fire, etc.
- Piping and welding works should be carried out far away from flammable explosive materials, including the air-conditioner refrigerant, to guarantee the security of the site.
- To protect the air-conditioner from heavy corrosion, avoid installing the outdoor unit where saline water can splash directly onto it or in sulphurous air near a spa. Do not install the air-conditioner where excessive heat-generating objects are placed.

WARNING

- If the supply cord is damaged, it must be replaced by the factory or its service department in case of danger.
- The place where this product is installed must have reliable electrical earth facility and protections. Please do not connect the grounding of this product to various kinds of air-feeding ducts, drain piping, lightning protection facility as well as other piping lines to avoid receiving an electric shock and damages caused by other factors.
- Wiring must be done by a qualified electrician. All the wiring must comply with the local and national electrical standards.
- Consider the capacity of the electric current of your electrical meter and socket before installation.
- The power wire with which this product is installed should be connected with one independent leakage protective device and one electric current over-load protection device
- The appliance should not be used by persons who lack of experience and knowledge of using air conditioner, unless they are supervised or instructed. Children should be supervised not to play with the appliance.
- Means for disconnection, to provide complete disconnection in all poles, must be incorporated in the fixed wiring as per the wiring rules.

- **Read this manual carefully before using this air-conditioner. If you still have any difficulties or problems, consult your dealer for help.**
- **The air-conditioner is designed to provide comfortable room conditions. Use this unit only for its intended purpose as described in this instruction manual.**

WARNING

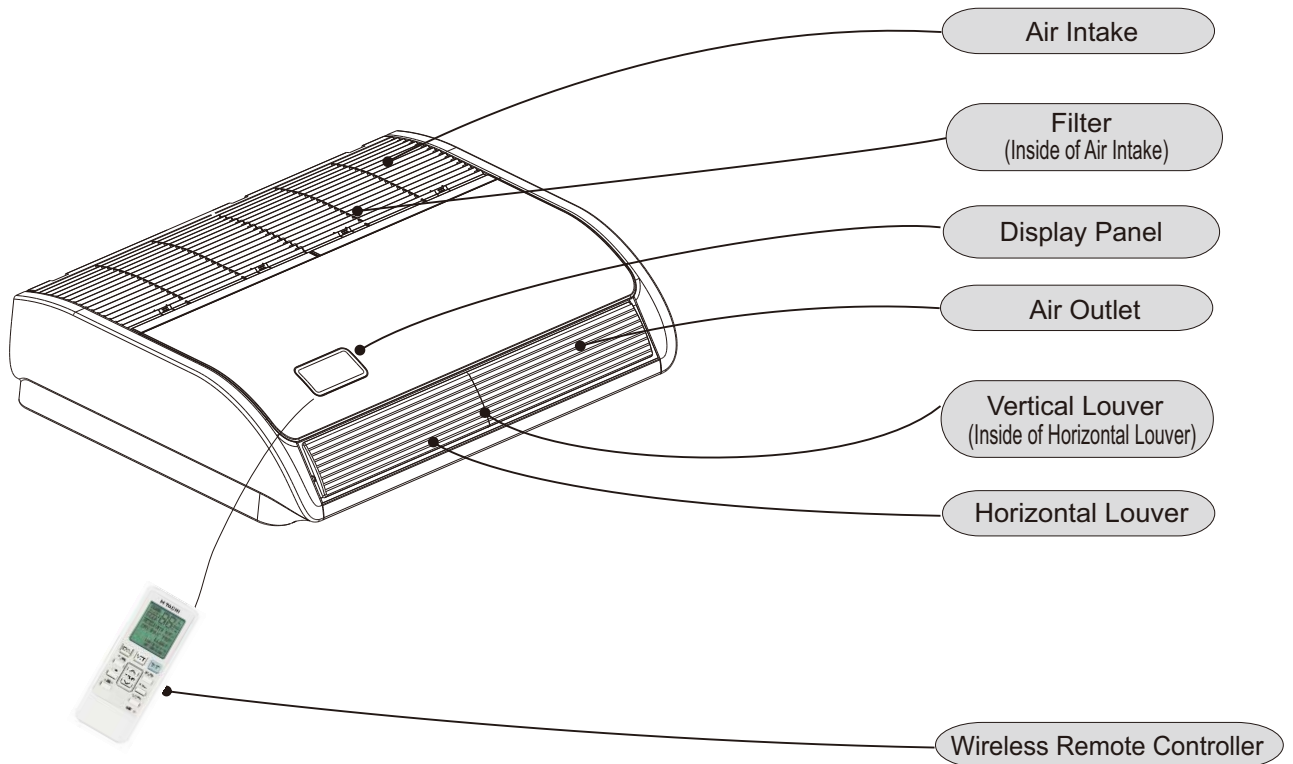
- Never use gasoline or other inflammable gas near the air-conditioner, which is very dangerous.
- When the air conditioner operation is abnormal and you notice burnt smell, deformation, fire, smoke, and so on, it is forbidden to continue using the air conditioner.

CAUTION

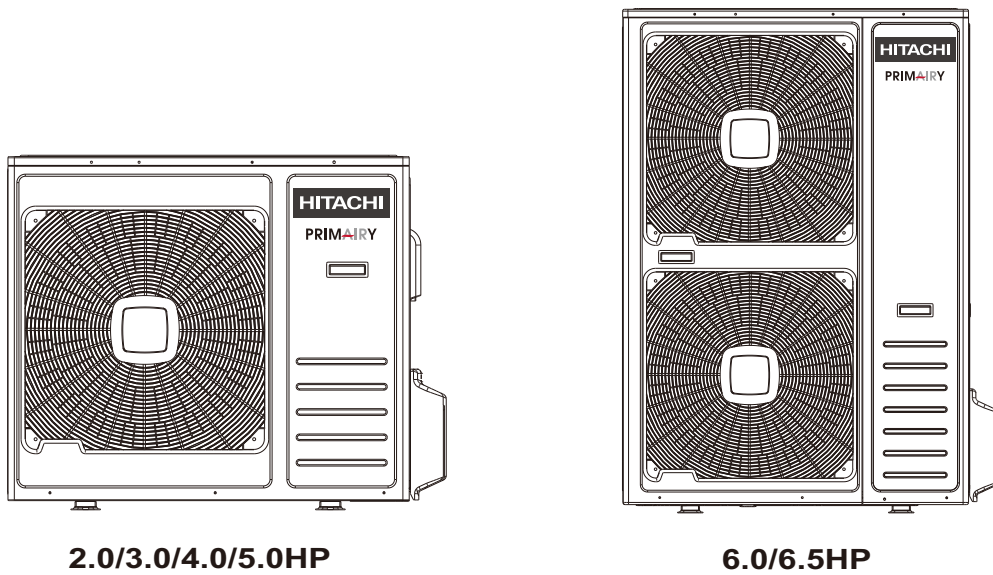
- Do not turn the air-conditioner on and off from the main power switch. Use the ON/OFF operation button.
- Do not place/stick any foreign materials inside the air inlet and air outlet of both the indoor and outdoor units. This is dangerous because the fan is rotating at a high speed.

Composition of the Air-conditioner

Indoor Unit



Outdoor Unit



Notes:

Figures in the manual are only simple representation of the appliance, it may not comply with the appearance of the air conditioner you have purchased.

Vertical adjustment louver swing automatically function is only available for some models.

Composition of the Air-conditioner

Wire remote controller (optional)

You can control the air-conditioner with the wired controller or remote controller. It is used for power ON/OFF, setting the operating mode, temperature, fan speed and other functions. There are different types of remote controllers which can be used. Operation instruction will be further specified in remote controller's manual separately. Please read it carefully before using this appliance and keep it for future reference.

Wired controller



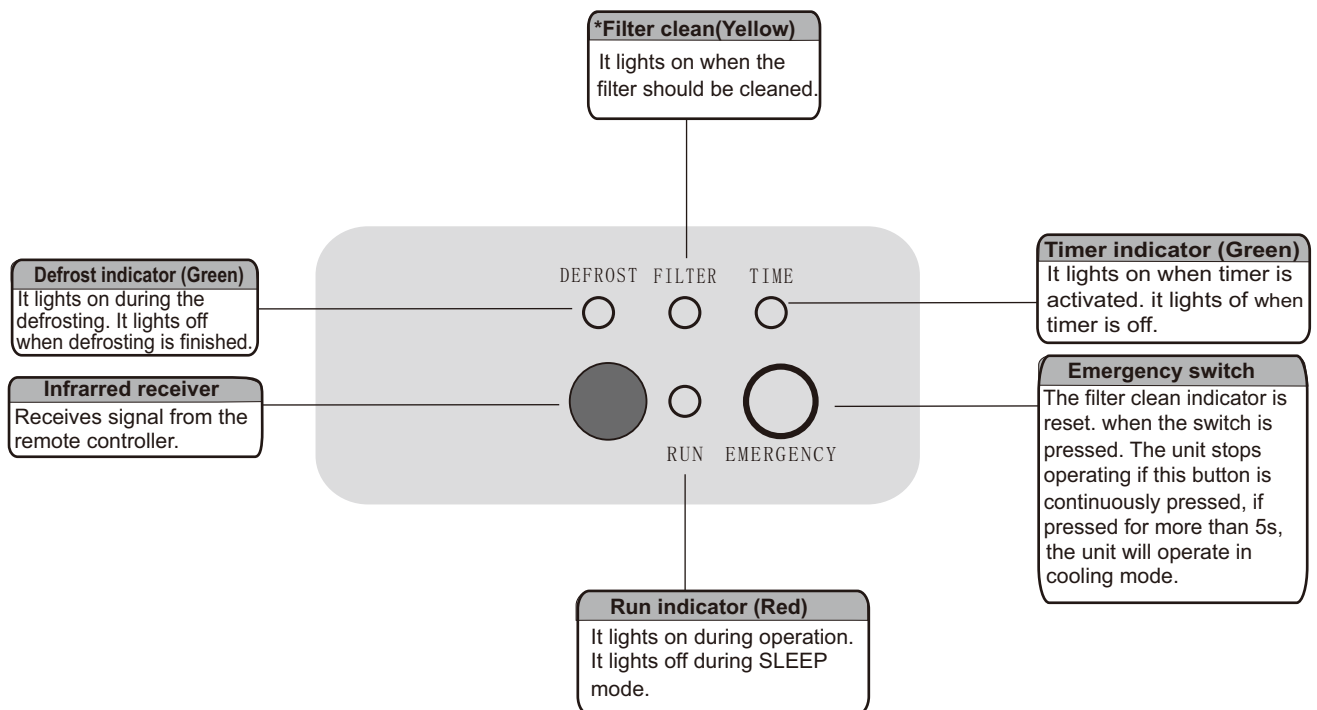
HCWA21NEWH

remote controller



HCRA31NEWH

Display Panel



- The figures in this manual are based on the external view of a standard model. Consequently, the shape may differ for the air conditioner model you have selected.
- * It can be set or canceled by professional after-sale staff.

Special Remarks

- 3 minutes protection after compressor stop
To protect compressor, it will be to be continue off for at least 3 minutes once it has stopped.
- 5 minutes protection
Compressor must run at least for 5 minutes once it starts running. In this 5 minutes, compressor will not stop even if the room temperature reaches the set point unless you use remote control switch to turn off the unit (all indoor unit can be turned off by user).
- Cooling operation
The fan of the indoor unit will never stop running in cooling operation. It remains running even if the compressor stops working.
- Heating operation
Heating capacity depends on external factors as outdoor unit temperature. Heating capacity might decrease if outdoor ambient temperature is too low.
- Anti-freezing function during cooling
When the temperature of the air from the indoor outlet is too low, the unit will run for some time under the fan mode, to avoid frost or ice forming in the indoor heat exchanger.
- Cold air prevention
In several minutes after the heating mode is started, the fan of the indoor unit will not run until the heat exchanger of the indoor unit reaches a certain temperature to prevent cold draft.
- Defrosting
When the outdoor temperature is too low, frost or ice may form on the outdoor heat exchanger, reducing heating performance. When this happens, a defrosting system of the air conditioner will operate. At the same time the fan in the indoor unit stops (or runs at a very low speed in some cases), to prevent cold draft. After defrosting is over, the heating operation and fan speed restarts.
- Blowing out the residual heating air
When air conditioner is stopped during normal operation, the fan motor will run with low speed for a while to blow out the residual heating air.
- Auto restart from Power Break
When the power supply is recovered after power break, all presets are still effective and the air conditioner will run according to the previous setting.

Trouble Shooting



If drain water overflows from indoor unit, stop the operation and contact your dealer.

If you smell or see white smoke coming from the unit, turn OFF the main power supply and contact your dealer.

1. If Trouble Still Remains ...

If the trouble still remains even after checking the following, contact your dealer and inform them of the following items.

- (1) Unit Model Name
- (2) Content of Trouble

2. No Operation

Check whether the SET TEMP is set at the correct temperature.

3. Not Cooling or Heating properly

- Check for obstruction of air flow at outdoor or indoor units.
- Check if too many heating sources are located in the room.
- Check if the air filter is clogged with dust.
- Check if the doors or windows are open.
- Check if the temperature condition is above the normal operation range.

4. This is Not Abnormal

● Smell from indoor unit

Smell adheres on indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.

● Sound from Deforming Parts

During system starting or stopping, a sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.

● Steam from Outdoor Heat Exchanger

During defrosting operation, ice on the outdoor heat exchanger is melted, resulting in steam.

● Dew on Air Panel

When the cooling operation continues for a long period of time under high humidity conditions (higher than 27°C / 80%R.H.), dew can form on the air panel.

● Refrigerant Flow Sound

While the system is being started or stopped, sound from the refrigerant flow may be heard.

5. Filter removing and installing

● Removing filter from air return grille

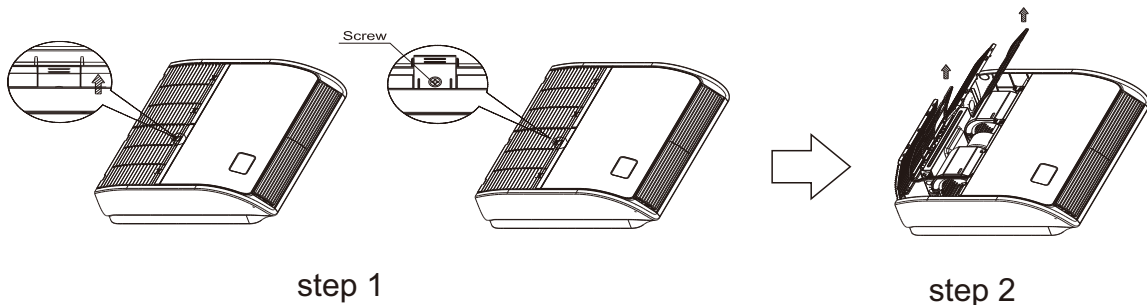
Take out the air filter according to the following steps.

Step 1

Slide the air return grille holding knobs(4), then remove the holding screws (4 or 6) as indicated by the arrow marks.

Step 2

Open the air return grille at an angle of more than 45° and take out the air filter from the air inlet grille by holding the air grille and lifting the air filter after detaching the filter from the hinges.



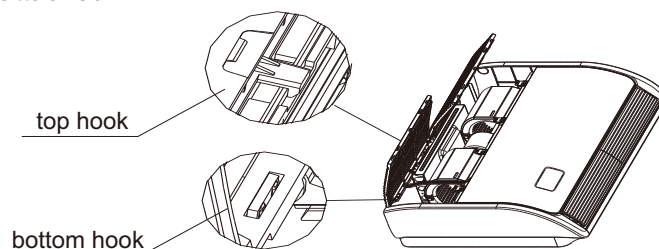
● Installing the filter

Step 1:

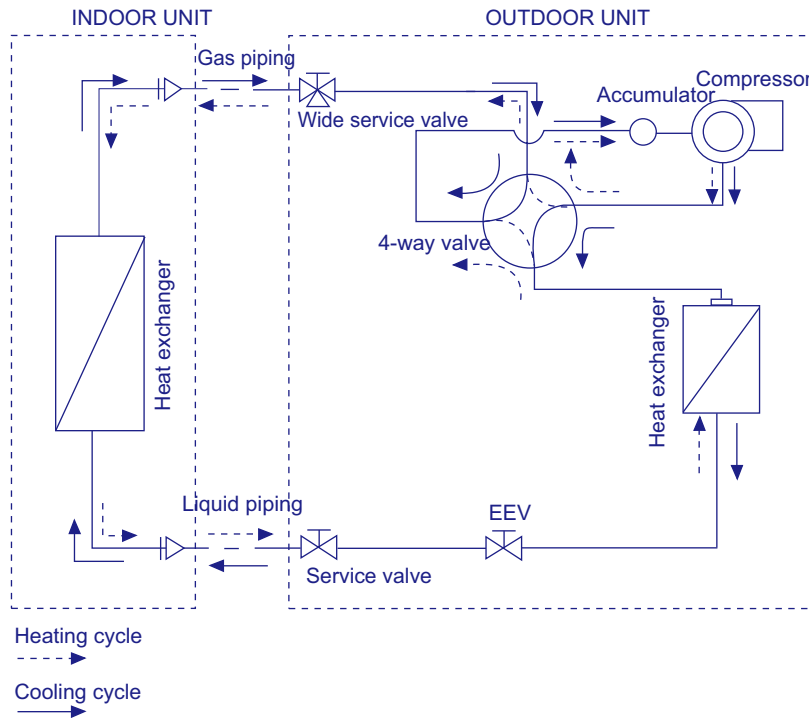
Insert the filter to the grille and aim the bottom hooks. Pay attention to grille as top hooks are locked.

Step 2: Fix screws (4 or 6).

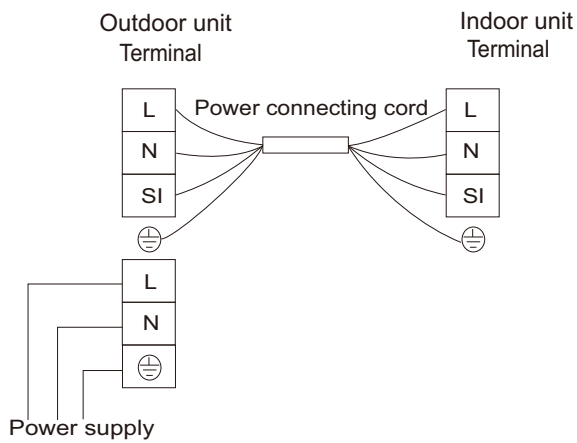
Step 3: The inlet grille is attached.



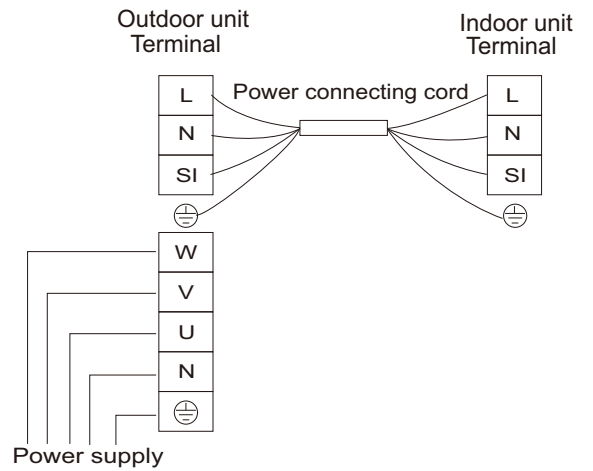
1. Refrigerant Flow Diagram



2. Electrical Wiring Diagram



1.0/1.5/2.0/3.0/4.0HP



5.0/6.0/6.5HP

1. Safety Notice

WARNING

- Installation should be performed by a qualified personnel. (Improper installation may cause water leakage, electrical shock or fire.)
- Install the unit according to the instructions given in this manual. (Incomplete installation may cause water leakage, electrical shock or fire).
- Be sure to use the supplied or specified installation parts. (Use of other parts may cause the unit to loosen, water leakage, electrical shock or fire).
- Install the air conditioner on a solid base that can support the unit weight. (An inadequate base or incomplete installation may cause injury if falls off the base).
- Electrical work should be carried out in accordance with the installation manual along with local and national electrical wiring rules or code of practice.
(Insufficient capacity or incomplete electrical work may cause electrical shock or fire).
- Be sure to use a dedicated power circuit. (Never use a power supply shared by another appliance).
- For wiring, use a cable long enough to cover the entire distance, do not use an extension cord.
- Do not put other loads on the power supply, use a dedicated power circuit.
- Use the specified types of wires for electrical connections between the indoor and outdoor units. (Firmly clamp the interconnecting wires so that the terminals receive no external stresses).
- Incomplete connections or clamping may cause terminal overheating or fire.
- After establishing connection between all the wires be sure to fix 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 shock or fire).
- When installing or relocating the system, be sure to keep the refrigerant circuit free from Substances (such as air) other than the specified refrigerant. (Any presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury).
- If any refrigerant has leaked out during the installation work, ventilate the room.
- After all installation is complete, check to make sure that there is no refrigerant leakage. (The refrigerant produces a toxic gas if exposed to flames).
- When carrying out piping connection, do not to let air substances other than the specified refrigerant enter the refrigeration cycle. (Otherwise, it will cause lower performance, abnormal high pressure in the refrigeration cycle, explosion and injury).
- Make sure the installation has a proper earth connection. Do not earth the unit to a utility pipe, arrester, or telephone grounding. Incomplete grounding may cause electrical shock. (A high surge current from lightning or other sources may damage the air conditioner).
- An earth leakage circuit breaker may be required depending on the site condition to prevent electrical shock.
- Disconnect the power supply before wiring, piping, or checking the unit.
- When moving the indoor unit and outdoor unit, please be careful, do not make the outdoor unit incline over 45 degree. Pay attention to the sharp edges of the air conditioner to avoid any injury.
- During remote controller installation, ensure that the length of the wire between the indoor unit and remote controller is within 40 meters.

CAUTION

- Do not install the air conditioner in a place where there is danger of exposure to inflammable gas leakage. (If the gas leaks and builds up around the unit, it may catch fire).
- Establish drain piping according to the instructions in this manual. (Inadequate piping may cause flooding).
- Tighten the flare nut according to the torque specifications with a torque wrench. (If the flare nut is tightened too hard, the flare nut may crack after a long time and cause refrigerant leakage).

2. The Tools and Instruments for Installation

Number	Tool	Number	Tool
1	Standard screwdriver	8	Knife or wire stripper
2	Vacuum pump	9	Leveller
3	Charge hose	10	Hammer
4	Pipe bender	11	Churn drill
5	Adjustable wrench	12	Tube expander
6	Pipe cutter	13	Inner hexagon spanner
7	Cross head screw-driver	14	Measuring Tape

3. The Installation of the Indoor Unit














During installation, do not damage the insulation material on the surface of the indoor unit.

3.1 Before Installation

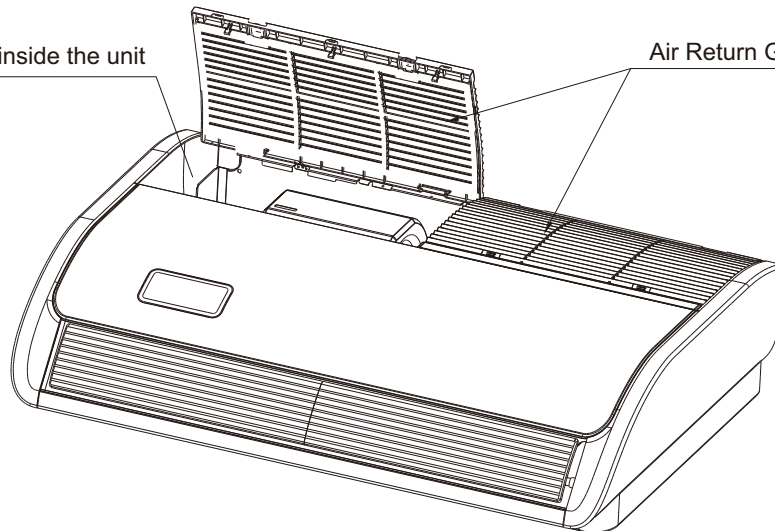
- When moving the unit during or after unpacking, make sure to lift it by holding its lifting lugs.
Do not exert any pressure on other parts, especially the refrigerant piping, drain piping and flange parts.
- Wear protective gears when installing the unit.
- Install correctly according to the installation manual.
- Confirm the following points:
 - Unit type/Power supply specifications
 - Pipes/Wires/Small parts
 - List of accessories

LIST OF ACCESSORIES

Accessory	Q'ty	Purpose
Washer (M10) 	8	For Unit Hanging
Paper Pattern 	1	For Unit Hanging And Adjustment
Insulation 	1	For Refrigerant Piping Connection
Insulation 	1	
Cord Clamp 	10	For Pipe Cover Fixing
Drain Hose 	1	For Drain Pipe Connection
Hose Clamp 	2	For Joint Socket Connection
HeavyInsulation 	2	For Drain Hose Cover
Joint Socket 	1	For Drain Hose Connection
Jump Ring 	1	For Drain Hose Connection
Plastic Sheath 	1	For Drain Hose And Piping Connection

Accessories are found inside the unit

Air Return Grille



3.2 Installation Location

- Select the suitable areas to install the unit with approval of the user.
- Ensure that the air path is not blocked.
- Ensure that condensate can drain properly.
- Ensure that the ceiling is strong enough to bear the weight of the indoor unit.
- Sufficient clearance for maintenance and servicing is ensured. (See Fig.3.2.1)
- Piping between the indoor and outdoor units is within the allowable limits. (refer to the installation of the outdoor unit)
- The indoor unit, outdoor unit, power supply wiring and transmission wiring should be at least 1 meter away from televisions and radio, to prevent interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if one-meter distance is maintained.)
- Use suspension bolts to install the unit, check whether or not the ceiling is strong enough to support the weight of the unit. If there is a risk that the ceiling is not strong enough, reinforce the ceiling before installing the unit.
- If there are 2 units of wireless type, keep them at least 6 m away to avoid malfunction due to cross communication.
- When several indoor units are installed nearby, keep them away for more than 4-5m.

Space for installation and service

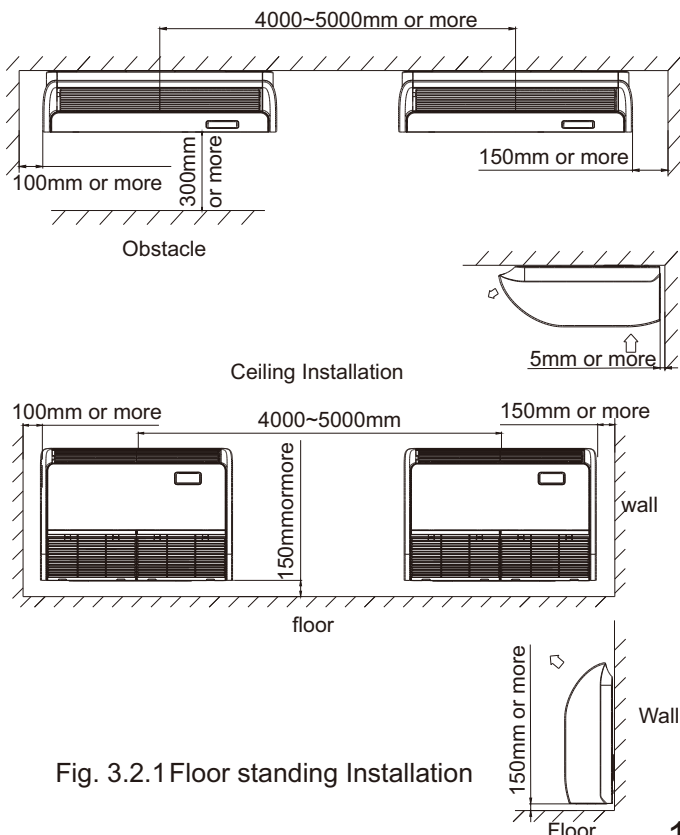


Fig. 3.2.1 Floor standing Installation

3.3 Installation

According to the actual installation space, installation can be done at in the ceiling or on the floor.

3.3.1 Suspension bolts

- (1) Consider the pipe direction, wiring and maintenance access carefully, and choose the proper direction and location for installation.
- (2) Install the suspension bolts as shown in Fig. 3.3.1 below.

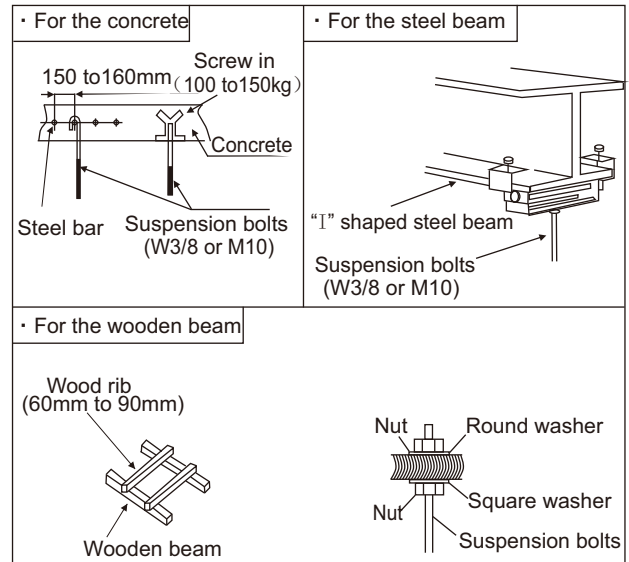
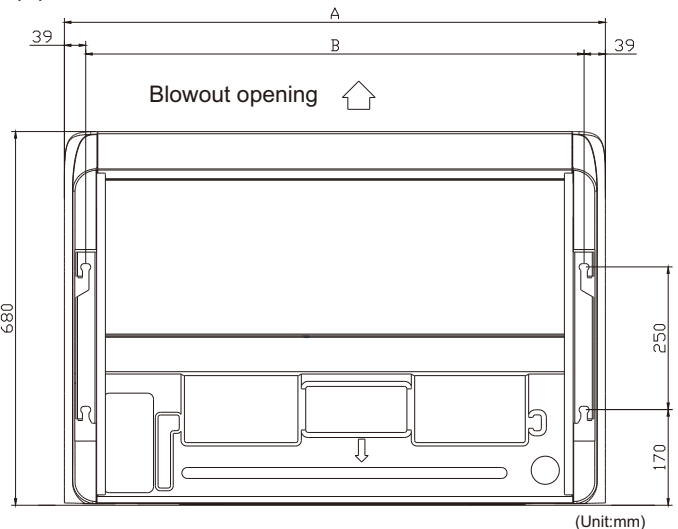


Fig. 3.3.1 Fixing the suspension bolts

3.3.2 The position of the suspension bolts and the pipes

- (1) Mark the positions of the suspension bolts, the positions of the refrigerant pipes and the drain pipes.
- (2) The dimension are shown below.



Capacity(HP)	A	B
2.0/3.0	990	912
4.0	1285	1207
5.0/6.0/6.5	1580	1502

Fig. 3.3.2 Suspension bolts

※The outlet through which the pipings are taken out is available in three directions.

※Pipes can be taken out in 3 directions (rear, right or top). (See Fig.3.3.3)

Make holes using nippers or needle-nose pliers. Make holes for the pipes along the cutoff line on the rear cover.

Cut the top face cover aligning to the piping position.

When taking out the pipe to right-hand side, make a hole along the groove inside the side panel. After installing pipes and wires, seal clearances around pipes and wires with putty to make them dust proof.

Make sure to install the covers at rear and top to protect the inside of unit from intrusion of dust and to prevent wire damage by sharp edges. When taking them out to the right-hand side, remove burrs or sharp edges from the cutout.

(2) Remove side panel.

Remove the screw and detach the side panel by sliding it towards the direction indicated by the arrow mark.

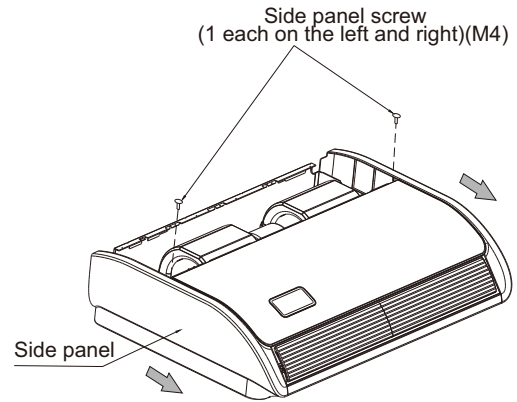


Fig. 3.3.5

(3) Remove the hanging plate.

Remove the screw and then fixing bolts.

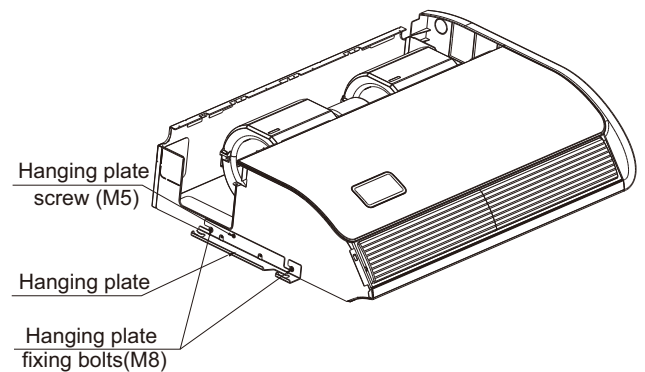


Fig. 3.3.6 Suspension bolts and nuts

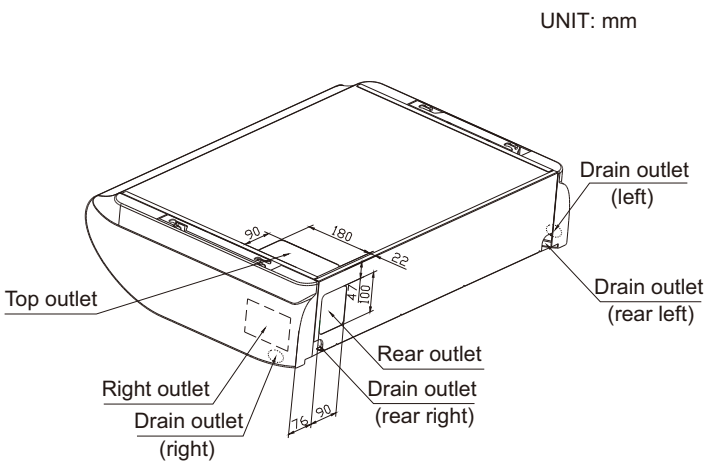


Fig. 3.3.3

3.3.3 Indoor unit preparation

(1) Remove the air return grille.

Slide stoppers (4 places) from the catches, then remove the screws (4 or 6 places).

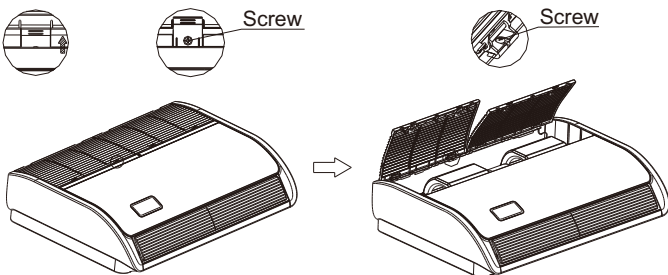


Fig. 3.3.4

3.3.4 Install the indoor unit

Ceiling type installation

(1) Select the suspension bolt locations and the pipe hole location.

i. Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe.

Note: Decide the locations based on the direct measurements.

ii. Once the locations are properly placed, the paper pattern can be removed.

2) Install the suspension bolts in place.

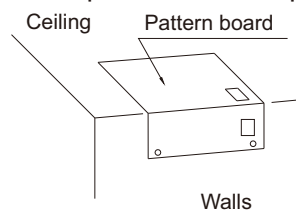


Fig. 3.3.7

Installation and Maintenance

- (2) Place the left hanger bracket on the nuts and washers of the suspension bolts.
- Make sure that the left hanger bracket is fixed on the nuts and washers securely, install the right hanger bracket suspension hook on the nuts and washers.
(When installing the indoor unit, you can slightly remove the suspension bolts.)

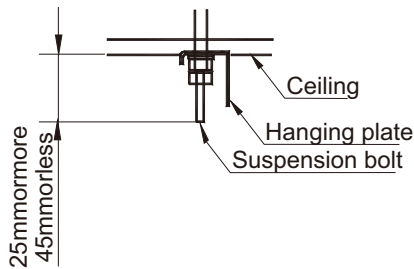


Fig. 3.3.8

- (3) Fix with 4 suspension bolts, which can endure load of 530N.
- (4) Check the measurements of the length of the suspension bolts.
- (5) Fasten the hanging plate onto the suspension bolts.
- (6) Install the unit to the hanging plate.
 - i. Slide the unit from front side to hang on the hanging plate with bolts.
 - ii. Fasten the four fixing bolts (M8:2 each on the left and right sides) firmly.
 - iii. Fasten the two screws (M5:1 each on the left and right sides).

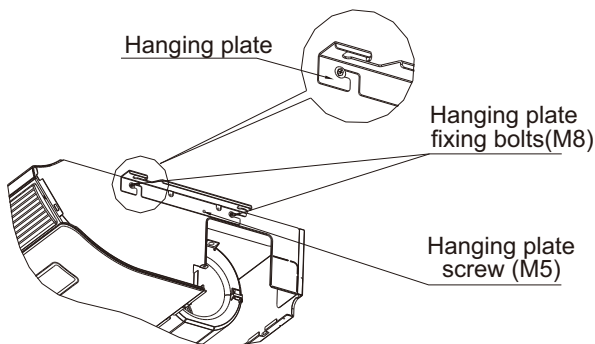


Fig. 3.3.9

Floor standing type installation

- (1) Select the suspension bolt locations and the pipe hole location.
 - i. Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe.

Note:
Decide the locations based on the direct measurements.

 - ii. After the locations are properly placed, the paper pattern can be removed.
- (2) Install the suspension bolts in place.

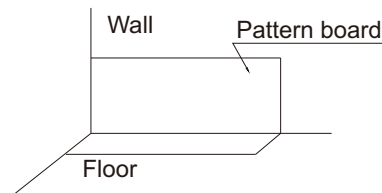


Fig. 3.3.10

- (3) Fix with 4 suspension bolts, and fasten the four fixing bolts (M8:2 each on the left and right sides) firmly.
- (4) Fasten the two screws of Air Intake Grille (M5:1 each on the left and right sides).

3.3.5 The horizontal adjustment of the indoor unit

- (1) Make sure that the hanger bracket is fixed by the nut and the washer.
- (2) Adjust the height of the unit.
- (3) Check if the unit is positioned horizontally.

*To ensure smooth drain flow, install the unit with a descending slope (0-3mm) towards the drain outlet.
- (4) After the adjustment, tighten the nut and smear the thread locker on the suspension to prevent the nuts from loosening.



During the installation, please cover the unit with the plastic cloth to keep it clean.

4. Refrigerant Piping

⚠ DANGER

Use the R410A refrigerant. During leakage check and test, do not mix oxygen, acetylene and other flammable or reactive gases. These gases are quite dangerous, and may possibly cause explosion. Use compressed air, nitrogen or the refrigerant is to perform these experiments.

4.1 The Pipe Material

- (1) Prepare the copper pipe at the spot.
- (2) Choose dustless, non-humid, and clean copper pipe. Before installing the pipe, use nitrogen or dry air to blow away the tube dust and impurity.
- (3) Choose the copper pipe according to Fig. 4.2.

4.2 Piping Connection

- (1) The connection positions of the pipe are shown in Fig. 4.1 and Fig. 4.2.

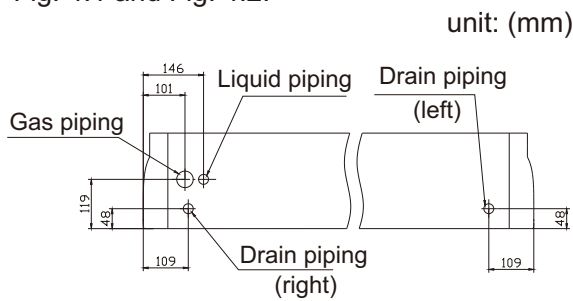
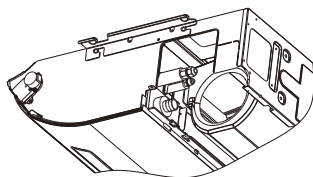


Fig. 4.1 The connection positions of the tube

Capacity (HP)	Gas pipe	Liquid pipe	Drain pipe
2.0	φ 12.7	φ 6.35	De25
3.0	φ 15.88	φ 9.52	De25
4.0~6.5	φ 19.05	φ 9.52	De25

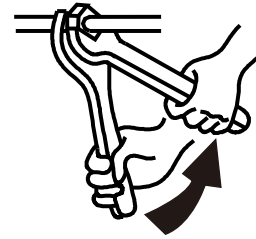
Fig. 4.2 The pipe diameter

The pipe can be connected from three different directions. (rear, right, top). If the pipe is routed from the back side, remove the brackets for easier piping work. After piping, reinstall the removed bracket.



If the pipe is routed from the back side. Cut the removed top cover, and install on the rear panel instead of rear cover.

- (2) As shown in Fig. 4.3, fix the nuts with 2 spanners.



Pipe size	Torque (N.m)
φ 6.35mm	20
φ 9.52mm	40
φ 12.7mm	60
φ 15.88mm	80
φ 19.05mm	100

Fig. 4.3 Torque specifications for Nuts

- (3) After completing refrigerant pipe connection, keep it warm with the insulation material.

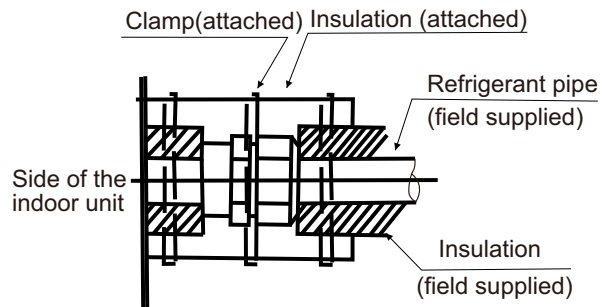
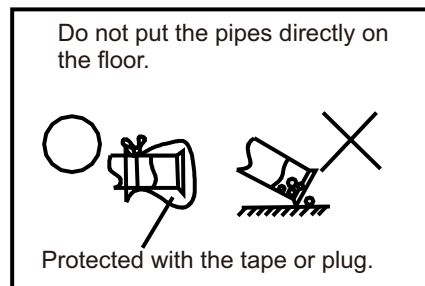


Fig. 4.4 Piping insulation procedure

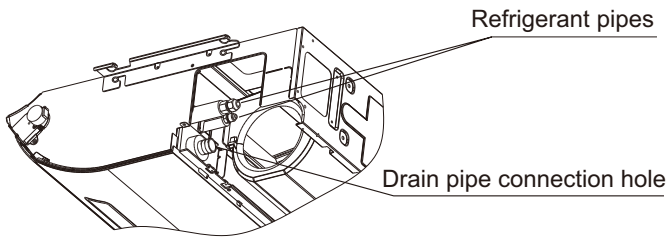
⚠ CAUTION

- The pipe should pass through the hole with a seal.
- Do not place the pipes on the floor directly.

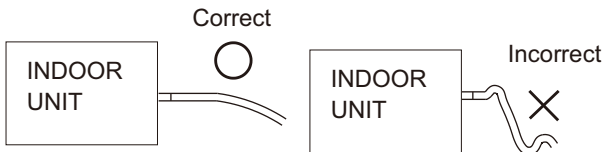


5. Drain Piping

- Install the drain piping



- Make sure the drain works properly.
- The diameter of drain pipe connection hole should be same as that of the drain pipe.
- Keep the drain pipe short and sloping downwards at a gradient of at least 1/100 to prevent air bubbles.



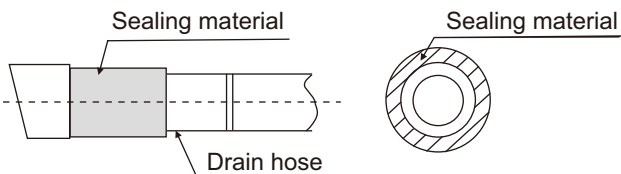
CAUTION

Water accumulation in the drain piping causes drain clog.

To keep the drain pipe from sagging, fix space hanging wires at an interval of 1 to 1.5m.

- Use the drain hose and the clamp. Insert the drain hose fully into the drain socket and firmly tighten the drain hose and insulation material with the clamp.
- The below areas should be insulated to prevent condensation causing water leakage.
- Drain piping passing indoors
- Drain sockets.

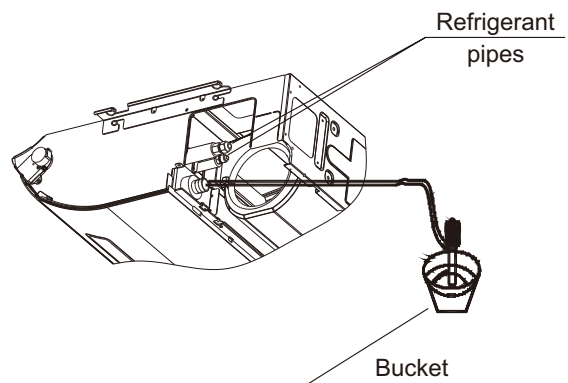
Referring the figure below, insulate the drain socket and drain hose using the large sealing pad (provided as an accessory).



CAUTION

Drain piping connections

- Do not connect the drain directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.
- Do not twist or bend the drain hose, so that excessive force is not applied to it. This type of treatment may cause leaking.
- After piping work is finished, check drainage flows smoothly.
- Gradually insert approximately 1000 cc of water into the drain pan to check drainage in the manner described below.
- Gradually pour approximately 1000 cc of water from the outlet hole into the drain pan to check drainage.
- Check the drainage.



6. Electrical Wiring



- When clamping the wiring, to prevent external pressure being exerted on the wiring connections, use the clamping material and fix firmly as shown in the Fig.6.1.
- When performing the wiring work, ensure that the wiring is proper and does not cause the control box lid to open up, if so close the cover firmly. When attaching the control lid, make sure that the wires are not affected.
- Outside the unit, keep the weak wiring (remote controller and transmission wiring) and strong wiring (earth and power supply wiring) at least 50 mm away so that they do not pass through the same place together. Proximity may cause electrical interference malfunction and breakage.

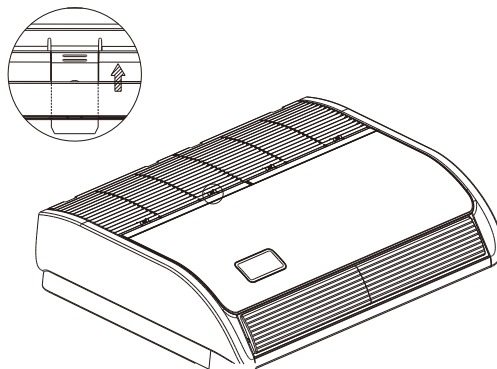


- If the fuses burn, please call the service dealer. Please do not replace by yourself, as it may lead to electric shock and other injuries.
- (1) Remove the screws on the control box.
 - (2) Connect the power cord and earth wire to the main terminal.
 - (3) Connect the remote control wire to the subsidiary terminal box according to electric wiring diagram.
 - (4) Connect the power supply of the indoor and outdoor units to the main terminal.
 - (5) Tie the wire in the control box with the clamp tightly.
 - (6) After completing the wiring, seal the wiring hole with the sealing material (with the lid) to prevent the condensed water and insects entering the wiring space.

7. Attaching the Air Return Grille

- The air return grille must be attached when electric cabling work is completed.
- (1) Fix the air return grille onto the indoor unit with screws supplied as accessories (4 pieces).
 - (2) Close the air return grille.

This completes the unit installation work.



8. The Installation of the Outdoor Unit

8.1 Installation Sites

Avoid

- Direct sunlight
- Thick Oil fog
- Container With Flammable materials
- Heat Source/ventilation fan in proximity
- Aisle Or sideway
- Wet Or Uneven place

You should

- Place it in cool temperature.
- Place it in an area with good ventilation.
- Have required space for air inlet, outlet and maintenance. (Fig 8.1)
- Make a strong base (10X40cm² board made of concrete or similar). The appliance should be placed at least 10 cm above the ground level to avoid being wet or corroded. Otherwise, it may cause damage to the appliance or reduce its life time. (Fig 8.2)
- Fix the base with hook bolts or similar accessories to reduce vibration and noise.

If the total pipe length is between 5m and 50m (Max. length), an additional refrigerant must be added. It is not necessary to add compressor oil. (Fig 8.3)

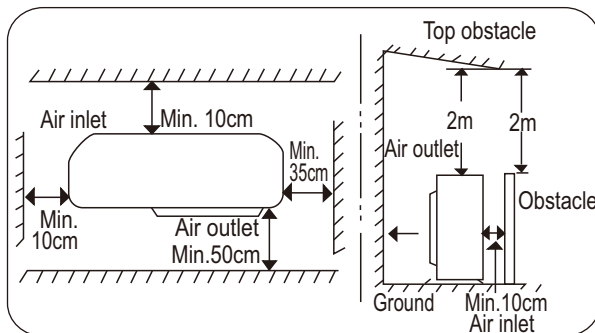


Fig. 8.1

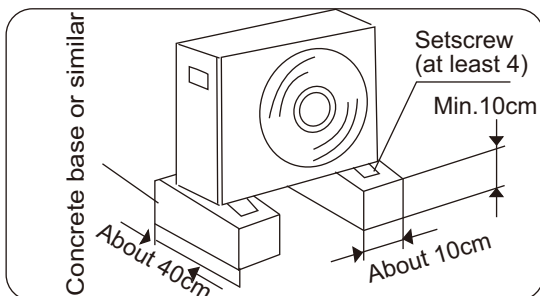


Fig.8.2

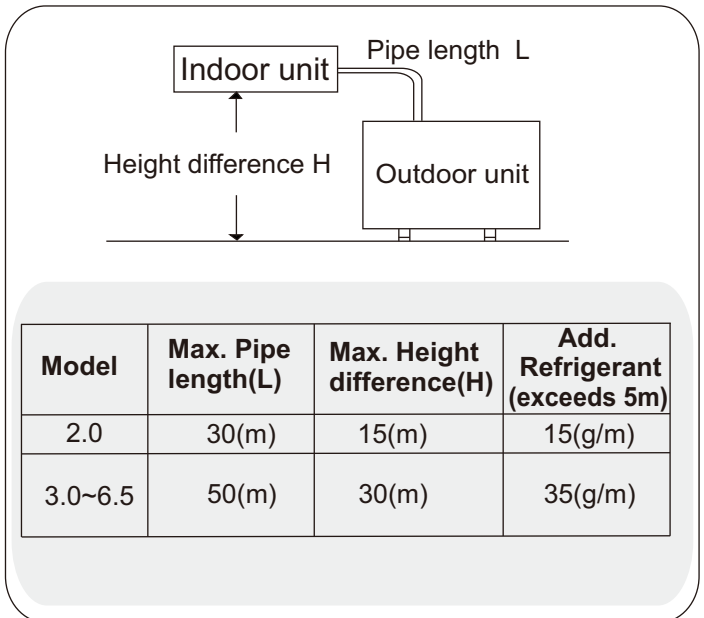


Fig.8.3

8.2 Installation of the Outdoor Unit

Firstly select the installation site and fix the outdoor unit. If it needs to be fixed onto the wall, make sure that the wall and the supporting rack is strong enough to hold the weight of the appliance.

Wiring instruction for outdoor unit

- Release the screws of the electric cover, remove the electric cover remove the valve cover if present.
- Connect the indoor unit wiring to the outdoor unit panel according to the electric wiring diagrams.
- Be sure to make each wire allowing 10cm longer than the required length for wiring.
- Ground the unit following local and national electrical regulations.
- Check the wiring with the wiring diagrams and make sure it is well connected. Fix the wiring with clips and reinstall the electric cover.
- Fix the unit with wire ropes to prevent overturning if a seasonal strong wind (storm, etc.) blows against the unit.

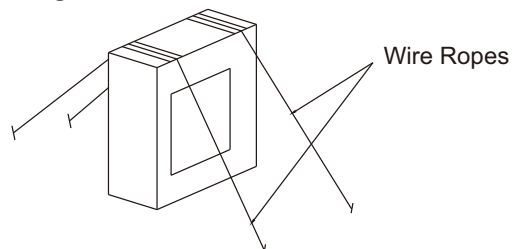


Fig.8.4

9. Refrigerant Piping

9.1 Flaring with Pipe Expander

Note: A good flare will have the following characteristics:

- Inside surface is glossy and smooth.
- Edge is smooth.
- Tapered sides are of uniform length.

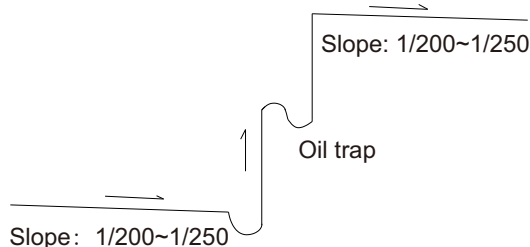
- Remove the burrs at the end of the copper pipe with a pipe reamer or file. When reaming, hold the pipe bend downwards and be sure that no copper scraps fall into the pipe. This process is important and should be done carefully to make a good flare. (Fig 9.1, 9.2)
- Remove the flare nut from the unit and be sure to mount it on the copper pipe.
- Make a flare at the end of copper pipe with a flaring tool. (Fig 9.3)

9.2 Connecting Piping between Indoor and Outdoor Units

- Be sure to apply a sealing cap or water-proof tape to prevent dust or water entering into the pipes before they are used.
- Be sure to apply refrigerant lubricant on the surfaces of the flare and union before connecting them together to reduce gas leaks. (Fig 9.4)
- For proper connection, align the union pipe and flare pipe straight with each other, then tighten the flare nut lightly to obtain a smooth match. (Fig 9.5)
- Tighten the screw with torque wrench to prevent leak of refrigerant. Carefully perform leakage testing before running the appliance.

Oil trap

When the indoor unit is lower than outdoor unit and height is larger than 5m, install an oil trap every 5m(height difference) on suction piping.



- To avoid storing too much oil in the oil trap, the oil trap should be as short as possible.
- The horizontal piping should be slope down along the refrigerant flow direction, to bring the oil back to compressor, the slope is about 1/200 to 1/250.
- In order to ensure cooling/heating performance better, the refrigerant piping should be as short and straight as possible.

9.3 Heat Insulation of the Refrigerant Pipe

To avoid loss of heat and to prevent the ground being wet by condensed water, all refrigerant pipes must be insulated with suitable insulating materials with minimum thickness is 6mm. (See Fig 9.6)

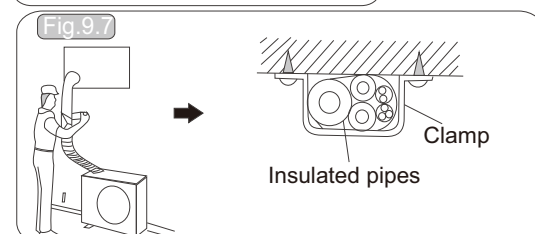
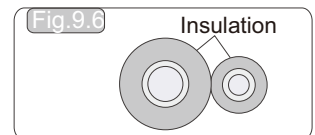
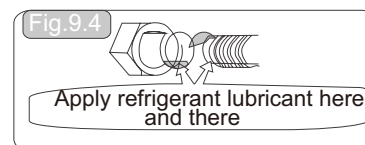
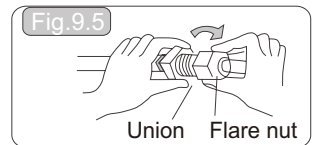
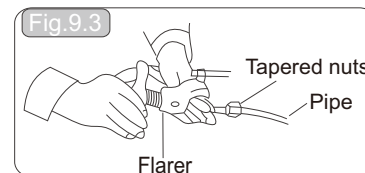
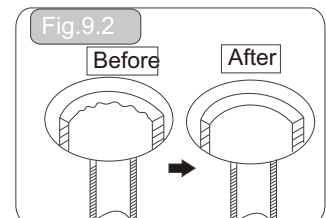
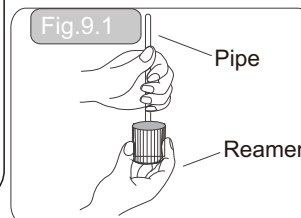
9.4 Sealing the Pipes

Note: Do not bind the armoring tape too tightly because this will decrease the heat insulation effect. Also ensure that the condensed drain hose splits away from bundle and drips smoothly from the unit and the piping.

- The two refrigerant pipes (and electrical wire if local codes permit) should be sealed together with white armoring tape. The drain hose may also be included and sealed together as a bundle with the tubing. Wrap the tape from the bottom of the outdoor unit to the top of the piping where it enters the wall. As you wrap the piping, overlap half of each previous tape. (See Fig 9.7)
- Clamp the piping bundle to the wall, using one clamp approx. every 120cm.

9.5 Finishing the Installation

After completion of wrapping and insulation, seal the hole on the wall with suitable seal against wind and rain.



10. Vacuuming and Test Run

Air and moisture remaining in the refrigerant system have undesirable effects.

Therefore, they must be removed completely with the following steps.

10.1 Vacuuming with a Vacuum Pump (See Fig 10.1, Fig 10.2)

- (1) Check that each pipe (both narrow and wide pipes between the indoor and outdoor units) have been properly connected and all wiring for the test run has been completed. Note that both narrow and wide pipe valves on the outdoor unit are kept closed at this stage.
- (2) Using an adjustable wrench or box wrench, remove the bonnet from the service valve.
- (3) Connect a vacuum pump and service valve together tightly.
- (4) Turn on the vacuum pump with the pressure is lower than 15Pa (or 1.5×10^{-4} bar) for 5 minutes.
- (5) With the vacuum pump still running, disconnect pipe of vacuum pump from the service valve and then stop the vacuum pump.
- (6) Replace the bonnet on the service valve and fasten it securely with an adjustable wrench or box wrench.
- (7) Using an adjustable wrench or box wrench, remove the bonnet of both narrow and wide valve.
- (8) With the hex wrench, turn the wide and narrow pipe valve stem counter clockwise to fully open the valves.
- (9) Replace the bonnets on the wide and narrow valves and fasten it securely with an adjustable wrench or box wrench.

10.2 Leak Test

- Perform leak test on all joints and valves of the indoor unit and outdoor unit with liquid soap. Checking of the orifice cap should not be less than 30 seconds. Clean the liquid soap after the test to avoid change in color due to corrosion.

10.3 Cleaning the Piping

- If the leak test turns out to be all right, preserve the heat joints of the indoor unit.
- Straighten the connecting pipes clean them and fix them to the wall. Seal the space around the hole in the wall through which the pipes come out of the concrete.

10.4 Test Run

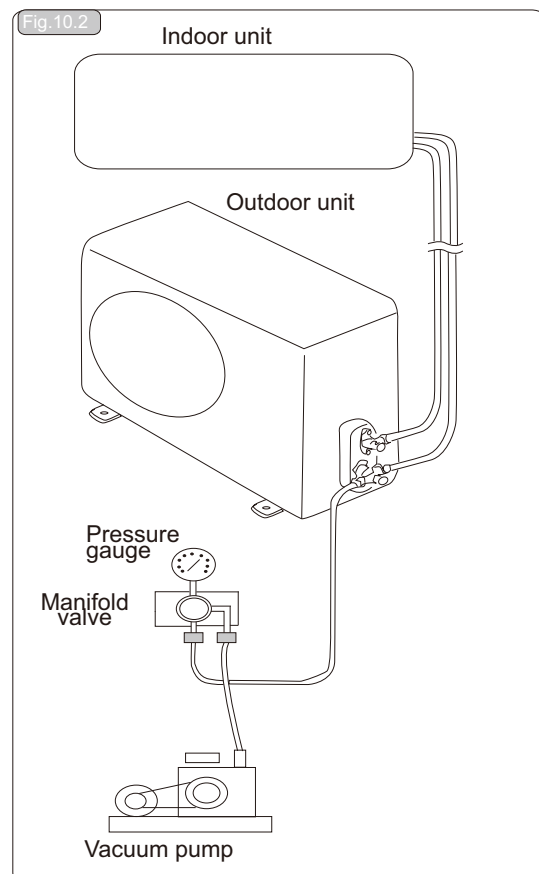
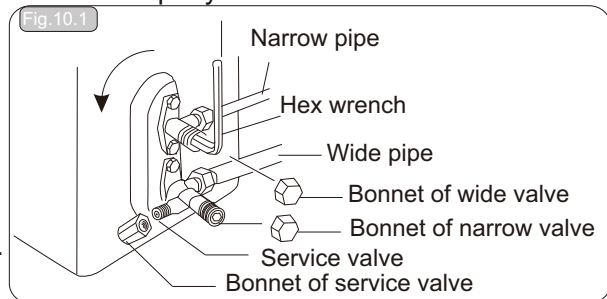
The trial run should be carried out according to the installation and maintenance manual.

⚠ WARNING

- Only after all the check points have been verified the unit can be operated.
- (A) Ensure that the resistance of the terminal to ground is more than $2M\Omega$, otherwise, you cannot operate the unit before the electricity leakage point is found and repaired.
- (B) Ensure that the stop valve is open before operating the unit.

- Make sure the power and unit are proper and then plug in.
- Turn on the appliance and adjust it to cooling, dehumidifying and heating mode according to the room temperature. Check if the appliance can run smoothly/as expected.

Installation of the appliance is generally complete after the above operations are done. If you still have any trouble, please contact local technical service center of our company for further information.



10.5 Electrical Installation



- Use an ELB (Electric Leakage Breaker). If not used, it may cause an electric shock or a fire.
- Do not operate the system until all the check points have been cleared.
 - (A) Ensure that the insulation resistance is more than 2MΩ, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
 - (B) Ensure that the stop valves of the outdoor unit are fully opened and then start the system.

Model Capacity(HP)	Power Supply	ELB		Power Source Cable Size	Transmitting Cable Size
		Nominal Current(A)	Nominal Sensitive Current (mA)	EN 60335-1	EN 60335-1
2.0	220~240~, 50Hz	20	30	3×2.5mm ²	4×1.5mm ²
3.0	220~240~, 50Hz	32	30	3×2.5mm ²	4×1.5mm ²
4.0	220~240~, 50Hz	40	30	3×4.0mm ²	4×1.5mm ²
5.0/6.0/6.5	380~415V 3N~, 50Hz	32	30	5×2.5mm ²	4×1.5mm ²

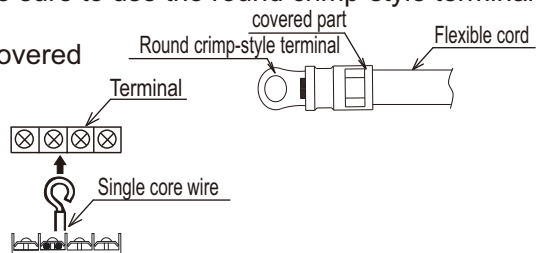
Max. Running Current(A): REFER TO NAMEPLATE

NOTES:

- 1) Follow local codes and regulations when selecting field wires, and all the above are the minimum size.
- 2) The wire sizes marked in the table are selected at the maximum current of the unit according to the European Standards, EN 60335-1. Use the wires which are not lighter than the ordinary polychloroprene sheathed flexible cord (code designation H07RN-F).

When connecting the terminal block using flexible cord, make sure to use the round crimp-style terminal for connecting to the power supply terminal block.

Place the round crimp-style terminals on the wires up to the covered part and secure them in proper place.



When connecting the terminal block using a single core wire, be sure to perform curing.

- 3) When transmitting cable length is more than 15 meters, a larger wire size should be selected.
- 4) Use a shielded cable for the transmitting circuit and connect it to the ground.
- 5) If the power cables are connected in series, add each unit's maximum current and select below wires:

Selection According to EN 60335-1

Current i(A)	Wire Size(mm ²)
i ≤ 6	0.75
6 < i ≤ 10	1
10 < i ≤ 16	1.5
16 < i ≤ 25	2.5
25 < i ≤ 32	4
32 < i ≤ 40	6
40 < i ≤ 63	10
63 < i	*

* If the current exceeds 63A, do not connect cables in series.



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The restriction note: * models so marked are not Eurovent certified.



Correct Disposal of this product

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

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