

**SPLIT SYSTEM****Air Conditioners**

English

Deutsch

Français

Español

Italiano

Ελληνικά

Nederlands

Portugues

Русский

Türkçe

## MODELS

(4-way Blow Ceiling Suspended type)

**FUQ71CVEB****FUQ100CVEB****FUQ125CVEB**

CAREFULLY READ THESE INSTRUCTIONS BEFORE INSTALLATION.  
KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

LESEN SIE DIESE HINWEISE VOR DER INSTALLATION SORGFÄLTIG DURCH.  
BEWAHREN SIE DIESE ANLEITUNG AN EINEM LEICHT ZUGÄNGLICHEN ORT FÜR SPÄ-  
TERES NACHSCHLAGEN AUF.

VEUILLEZ LIRE ATTENTIVEMENT CES INSTRUCTIONS AVANT L'INSTALLATION.  
CONSERVEZ CE MANUEL EN LIEU SÛR POUR POUVOIR VOUS Y REPORTER  
ULTÉRIEUREMENT.

LEA DETENIDAMENTE ESTAS INSTRUCCIONES ANTES DE LA INSTALACIÓN  
CONSERVE ESTE MANUAL PARA POSIBLES CONSULTAS FUTURAS.

PRIMA DELL'INSTALLAZIONE, LEGGERE ATTENTAMENTE LE PRESENTI ISTRUZIONI.  
CONSERVARE IL PRESENTE MANUALE IN UN LUOGO FACILMENTE ACCESSIBILE PER  
RIFERIMENTO FUTURO.

ΔΙΑΒΑΣΤΕ ΠΡΟΣΕΚΤΙΚΑ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ ΠΡΙΝ ΤΗΝ ΕΓΚΑΤΑΣΤΑΣΗ  
ΦΥΛΑΞΤΕ ΑΥΤΟ ΤΟ ΕΓΧΕΙΡΙΔΙΟ ΣΕ ΒΟΛΙΚΟ ΜΕΡΟΣ ΓΙΑ ΜΕΛΛΟΝΤΙΚΗ ΑΝΑΦΟΡΑ.

LEES DEZE INSTRUCTIES ZOGVULDIG DOOR VOORDAT MET DE INSTALLATIE WORDT  
BEGONNEN.

BEWAAR DEZE HANDLEIDING VOOR TOEKOMSTIG GEBRUIK OP EEN GESCHIKTE  
PLAATS ONDER HANDBEREIK.

LEIA ATENTAMENTE ESTAS INSTRUÇÕES ANTES DA INSTALAÇÃO.  
MANTENHA ESTE MANUAL NUM LOCAL DE FÁCIL ACESSO PARA CONSULTA.

ПЕРЕД УСТАНОВКОЙ ВНИМАТЕЛЬНО ПРОЧИТАЙТЕ ДАННЫЕ ИНСТРУКЦИИ.  
ХРАНИТЕ ДАННОЕ РУКОВОДСТВО В ЛЕГКО ДОСТУПНОМ МЕСТЕ ДЛЯ ЕГО  
ПОСЛЕДУЮЩЕГО ИСПОЛЬЗОВАНИЯ.

MONTAJDAN ÖNCE BU YÖNERGELERİ DİKKATLİCE OKUYUN.  
DAHA SONRA BAKMAK ÜZERE BU KILAVUZU SAKLAYIN.

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The original instructions are written in English. All other languages are translations of the original instructions.

### 1. SAFETY PRECAUTIONS

Be sure to follow this “SAFETY PRECAUTIONS”.

This product comes under the term “appliances not accessible to the general public”.

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.  
 Ask the user to keep this manual and the Operation Manual together in a handy place for future reference.

 **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 air conditioner 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 falling 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 falling down and causing injury.  
In addition, it may lead to vibration of indoor units and cause unpleasant chattering noise.
- Carry out the specified installation work in consideration of strong winds, typhoons, or earthquakes.  
Improper installation may result in an accident such as air conditioner falling.
- Make certain that all electrical 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 electrical 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 and a fire.
- Disconnect the power supply before touching the electric components.  
If you touch the live part, you may get an 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 an overheat or a fire.
- When wiring between the indoor and outdoor units, and wiring the power supply, form the wiring orderly so that the control box lid can be securely fastened.  
If the control box lid is not in place, overheat of the terminals, electric shocks or a fire may be caused.
- 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.

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## 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 air conditioner, power supply wiring, remote controller wiring and transmission wiring at least 1 meter away from televisions or radios to prevent image interference or noise.  
(Depending on the radio waves, a distance of 1 meter may not be sufficient to eliminate the noise.)
  - Install the indoor unit as far as possible from fluorescent lamps.  
If a wiringless remote controller kit is installed, the transmission distance may be shorter in a room where an electronic lighting type (inverter or rapid start type) fluorescent lamp is installed.
  - Do not install the air conditioner in places such as the following:
    1. 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.
    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 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.
  - The air conditioner is not intended for use in a potentially explosive atmosphere.
-

## 2. BEFORE INSTALLATION

When unpacking the indoor unit or moving the unit after unpacked, hold the hangers (4 places) and do not apply force to other parts (particularly refrigerant piping, drain piping and resin parts).

- Make sure to check in advance that the refrigerant to be used for installation work is R410A. (The air conditioner will not properly operate if a wrong refrigerant is used.)
- For installation of the outdoor unit, refer to the installation manual attached to the outdoor unit.
- Do not throw away the accessories until the installation work is completed.
- After the indoor unit is carried into the room, to avoid the indoor unit from getting damaged, take measures to protect the indoor unit with packing materials.
  - (1) Determine the route to carry the unit into the room.
  - (2) Do not unpack the unit until it is carried to the installation location.

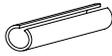
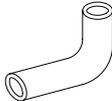
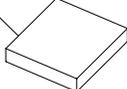
Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the indoor unit.

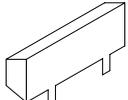
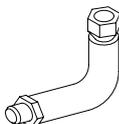
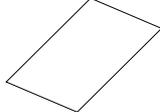
- Have the customer actually operate the indoor unit while looking at the operation manual. Instruct the customer how to operate the unit (particularly cleaning of the air filters, operation procedures, and temperature adjustment).
- For selection of installation location, use the installation pattern paper (used in common with the packing case.) as reference.
- Do not use the air conditioner where in the salty atmosphere such as coastal areas, vehicles, vessels or the voltage fluctuation is frequent such as factories.
- Take off static electricity from the body when opening the control box lid panel and when carrying out wiring. The electric parts may be damaged.

### 2-1 ACCESSORIES

Check if the following accessories are attached to the indoor unit.

Name	(1) Drain hose	(2) Metal clamp	(3) Washer for hanger	(4) Clamp	(5) Washer clamp
Quantity	1 pc.	1 pc.	8 pcs.	10 pcs.	4 sheets
Shape					

Name	Joint insulating material		Sealing material	(10) Elbow	(11) Installation pattern paper
Quantity	2 pcs.	1 pc.	(8): 1 sheet (9): 3 sheets	1 pc.	1 sheet
Shape	(6) For gas piping 	(7) For liquid piping 	(8) Large  (9) Small 		Used in common with packing 

Name	(12) Blocking material	(13) L-bent piping	(14) Screw	(15) Non woven fabric	(Miscellaneous)
Quantity	1 pc.	1 pc.	5 pcs.	1 sheet	
Shape					

- Operation manual
- Installation manual
- Declaration of conformity

## 2-2 OPTIONAL ACCESSORIES

- For this indoor unit, the remote controller is separately required.  
(Note that the remote controller is not required for simultaneous operation slave units.)
- There are 2 kinds of remote controller; wired type and wireless type.  
Install the remote controller to the place where the customer has given consent.  
Refer to the catalog for the applicable model.  
(Refer to the installation manual attached to the remote controller for how to install.)

### **CARRY OUT THE WORK GIVING CAUTION TO THE FOLLOWING ITEMS AND AFTER THE WORK IS COMPLETED CHECK THESE AGAIN.**

#### 1. Items to be checked after the installation work is completed

Items to be checked	In case of defective	Check column
Are the air conditioner rigidly fixed?	Drop · vibration · noise	
Are the installation work of the air conditioner complete?	Does not operate · burnout	
Have you carried out a leakage test with the test pressure specified in the outdoor unit installation manual?	Does not cool / Does not heat	
Is the insulation of refrigerant piping and drain piping completely carried out?	Water leakage	
Does the drain flow out smoothly?	Water leakage	
Is the power supply voltage identical to that stated in the manufacturer's label on the air conditioner?	Does not operate · burnout	
Are you sure that there is no wrong wiring nor piping or no loose wiring?	Does not operate · burnout	
Is earthing completed?	Danger in case of leakage	
Are the sizes of electric wiring according to the specification?	Does not operate · burnout	
Is any of air outlets or inlets of the air conditioner blocked with obstacles? (It may lead to capacity drop due to fan speed drop or malfunction of equipment.)	Does not cool / Does not heat	
Have you recorded the refrigerant piping length and the refrigerant charge added?	Refrigerant charge amount is not clear	

Make sure to recheck the items of "SAFETY PRECAUTIONS".

#### 2. Items to be checked at delivery

Items to be checked	Check column
Have you carried out field setting? (if necessary)	
Are the control box lid, the air filter and the suction grille attached?	
Does the cool air discharge during the cooling operation and the warm air discharge during heating operation?	
Have you explained how to operate the air conditioner showing the operation manual to the customer?	
Have you explained the description of cooling, heating, program dry and automatic (cooling/heating) given in the operation manual to the customer?	
If you set the fan speed at thermostat OFF, did you explain the set fan speed to the customer?	
Is the emergency switch (EMG) turned to ON? The switch is set to normal (NORM) at factory shipment.	
Have you handed the operation manual and the installation manual to the customer?	

## Points of the operation explanation

In addition to the general usage, since the items in the operation manual with the **⚠ WARNING** and **⚠ CAUTION** marks are likely to result in human bodily injuries and property damages, it is necessary not only to explain these items to the customer but also to have the customer read them. It is also necessary to explain the items of “NOT MALFUNCTION OF THE AIR CONDITIONER” to the customer and have the customer read them carefully.

### 3. SELECTION OF INSTALLATION LOCATION

Hold the hangers at 4 places to move the indoor unit when unpacking or after unpacked, and do not apply force to the piping (refrigerant and drain) and resin parts.

(1) Select the installation location that meets the following conditions and get approval of the customer.

- Where the cool and warm air spreads evenly in the room.
- Where there is no obstacles in the air passage.
- Where drainage can be ensured.
- Where the ceiling lower surface is not inclined.
- Where there is sufficient strength to withstand the mass of the indoor unit (if the strength is insufficient, the indoor unit may vibrate and get in contact with the ceiling and generate unpleasant chattering noise).
- Where a space sufficient for installation and service can be ensured. (Refer to Fig. 1 and Fig. 2)
- Where the piping length between the indoor and the outdoor units is ensured within the allowable length. (Refer to the installation manual attached to the outdoor unit.)
- Where there is no risk of flammable gas leak.

[Required installation space[mm]]

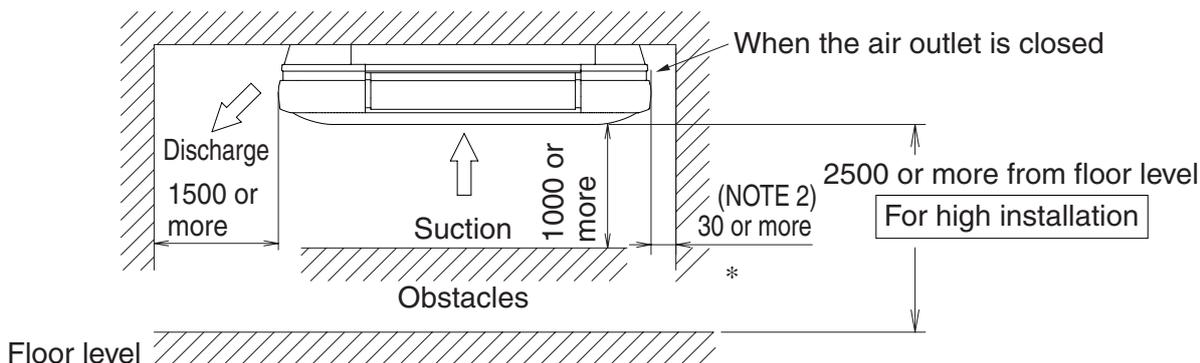


Fig. 1

\*: Sufficient service space is required for removing the corner cover. (NOTE 2)

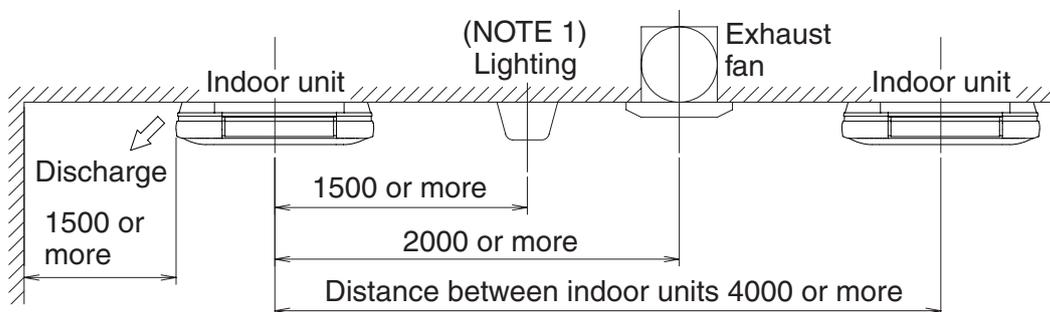


Fig. 2

**CAUTION**

- Install the indoor and outdoor units, power supply wiring, remote controller wiring and transmission wiring at least 1 meter away from televisions or radios to prevent image interference or noise. (Depending on the radio waves, a distance of 1 meter may not be sufficient to eliminate the noise.)
- Install the indoor unit as far as possible from fluorescent lamps. If a wiringless remote controller kit is installed, the transmission distance may be shorter in a room where an electronic lighting type (inverter or rapid start type) fluorescent lamp is installed. (NOTE 1)

**NOTE**

1. Restriction applies to the exposed type lighting but does not apply to the recessed type.
2. When the air outlet is closed, the space shown with “\*” must have a distance of 30mm or more.
3. For setting the airflow direction of horizontal blade, refer to the operation manual attached to the indoor unit and remote controller.

**(2) Ceiling height**

- This indoor unit can be hung from the ceiling of which height is up to 3.5m (models 100-125: up to 4.0m).
- However, if the ceiling height exceeds 2.7m (models 100-125: 3.2m), it is necessary to set on site from the remote controller. Refer to the section “10. FIELD SETTING”.

**(3) Air discharge direction**

Select the air discharge pattern according to the installation location.

In case of 2-way and 3-way, it is required to set on site from the remote controller.

For details, refer to the section “10. FIELD SETTING”.

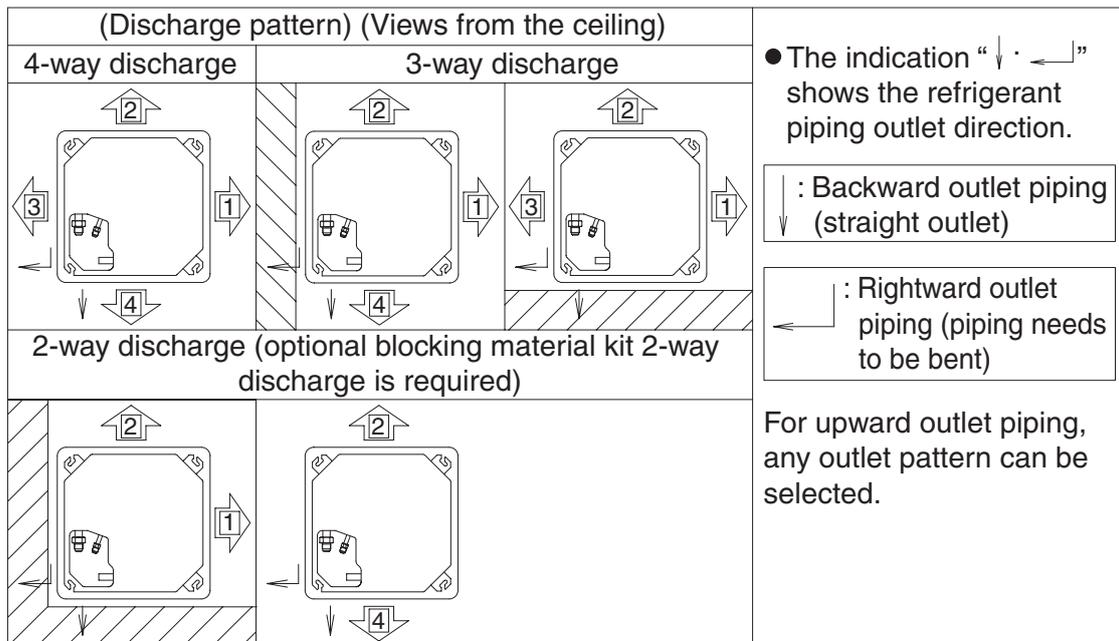
(Caution) Since there are some restriction on the piping connection side, make sure to select the air discharge pattern from the **Fig. 3**.

The names of air outlet are shown in inscription by the number of “□” marks on the underside of the air outlet. (Refer to the **Fig. 4**)

**(4) Use hanging bolts for installation.**

Investigate if the installation place can withstand the mass of the indoor unit and, if necessary, hang the unit with bolts after it is reinforced by beams etc.

(Refer to the installation pattern paper (11) for the mounting pitch.)



**Fig. 3**

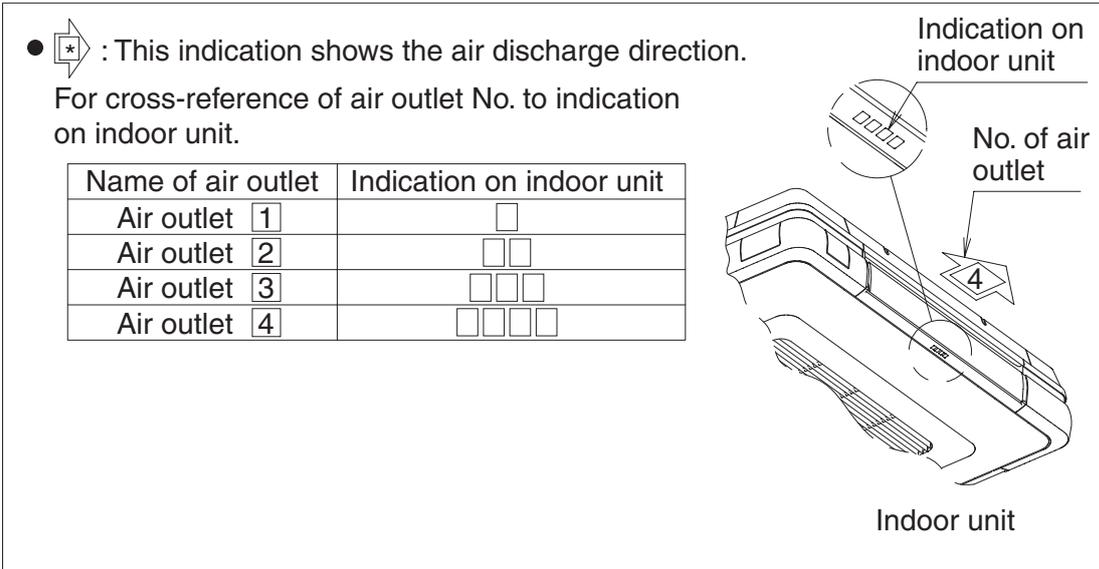


Fig. 4

#### 4. PREPARATION BEFORE INSTALLATION

- (1) Check the locations of indoor unit hanging bolts, piping outlet holes, drain piping outlet hole and electric wirings inlet hole. (The drawing shows the view from the ceiling.)  
 (Refer to Fig. 5 and Fig. 6)

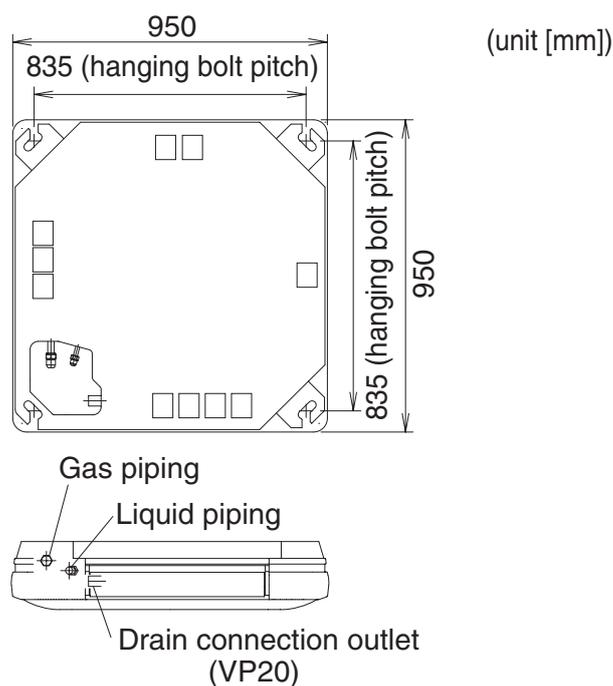


Fig. 5

(unit [mm])

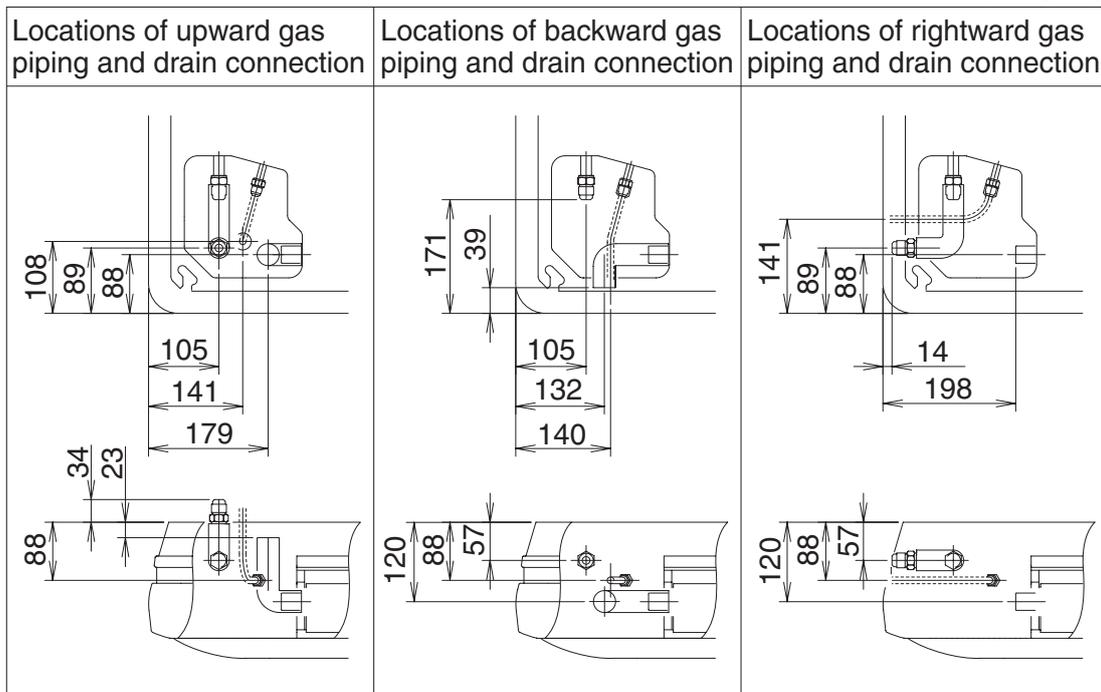


Fig. 6

**(2) Make holes for hanging bolts, piping outlet, drain piping outlet and electric wiring inlet.**

- Use the installation pattern paper (11) which shows the above hole locations.
- Determine the locations of hanging bolts, piping outlet, drain piping outlet and electric wiring inlet. And make the hole.

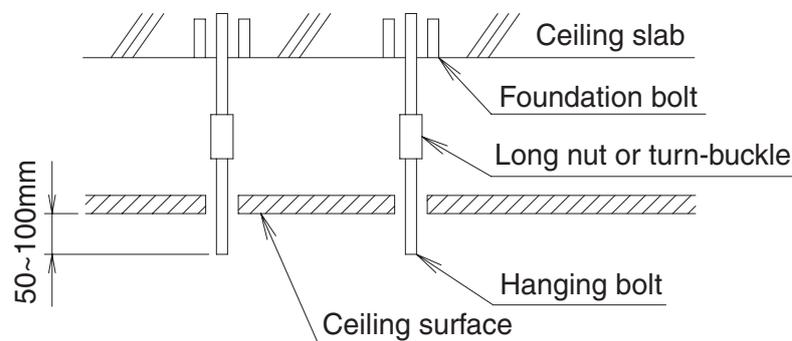


Fig. 7

**NOTE**

The above shown parts are all field supply. (Refer to Fig. 7)

- Use M8 or M10 bolts for hanging the indoor unit.  
Use hole-in-anchors for the existing bolts and embedded inserts or foundation bolts for new bolts, and fix the unit firmly to the building so that it may withstand the mass of the unit.  
In addition, adjust the distance from the ceiling in advance.

**(3) Remove the parts of the indoor unit.**

**Remove the suction grille. (Refer to Fig. 8)**

- Slide the two suction grille fixing knobs toward inner direction (as shown by an arrow) lifting upward. At the same time, have another person lift the tape stuck to the center of air outlet.
- When the suction grille is opened to approximately 45°, the grille can be removed from the unit.

**Remove the 4 corner covers.**

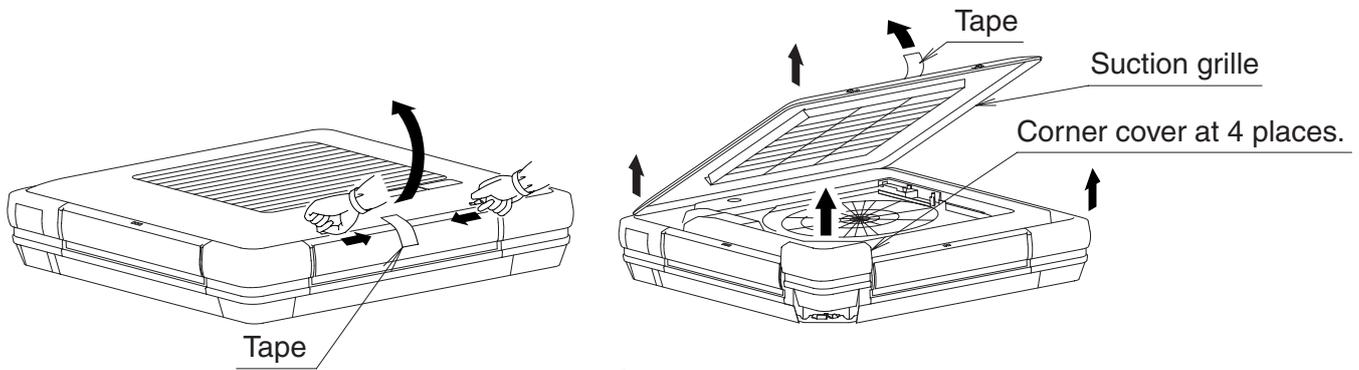


Fig. 8

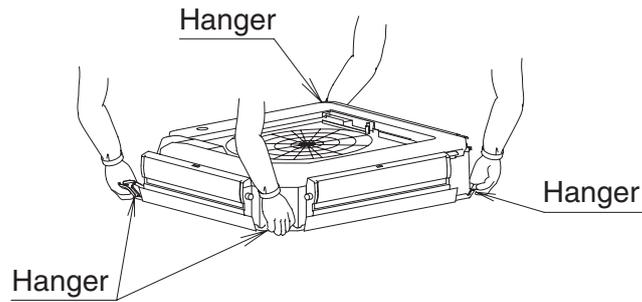


Fig. 9

- When carrying the indoor unit, hold it by the hanging metal fittings. (Refer to Fig. 9)

#### How to block the air outlet for 2-way or 3-way air discharge

- For 2-way air discharge, in addition to the attached blocking material, the optional blocking material kit for 2-way discharge is required.  
The attached blocking material and the optional blocking material for 2-way discharge can be used in common for any air outlet.
- For 2-way air discharge, give caution to the inclination of the indoor unit when installing. For details, follow the instruction mentioned in the section “5. INSTALLATION OF THE INDOOR UNIT”.

#### (1) Remove the horizontal blade of the air outlet to be blocked. (Refer to Fig. 10 and Fig. 11)

1. Without applying force to the bearings, lift the horizontal blade with both hands and remove it from the bearing at the side of the motor not mounted.
2. After turning the horizontal blade backward, remove the claw of the bearing on the motor side. Then, lift the horizontal blade and remove it.

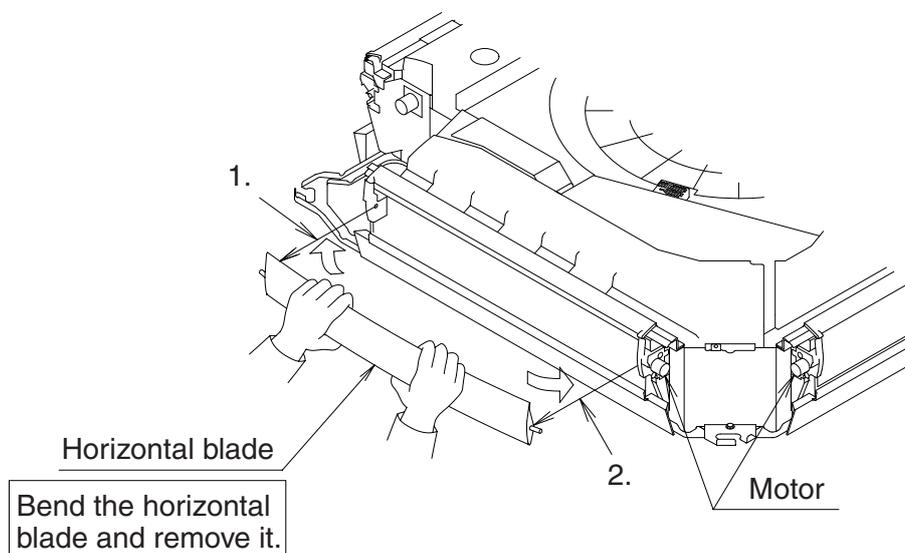


Fig. 10

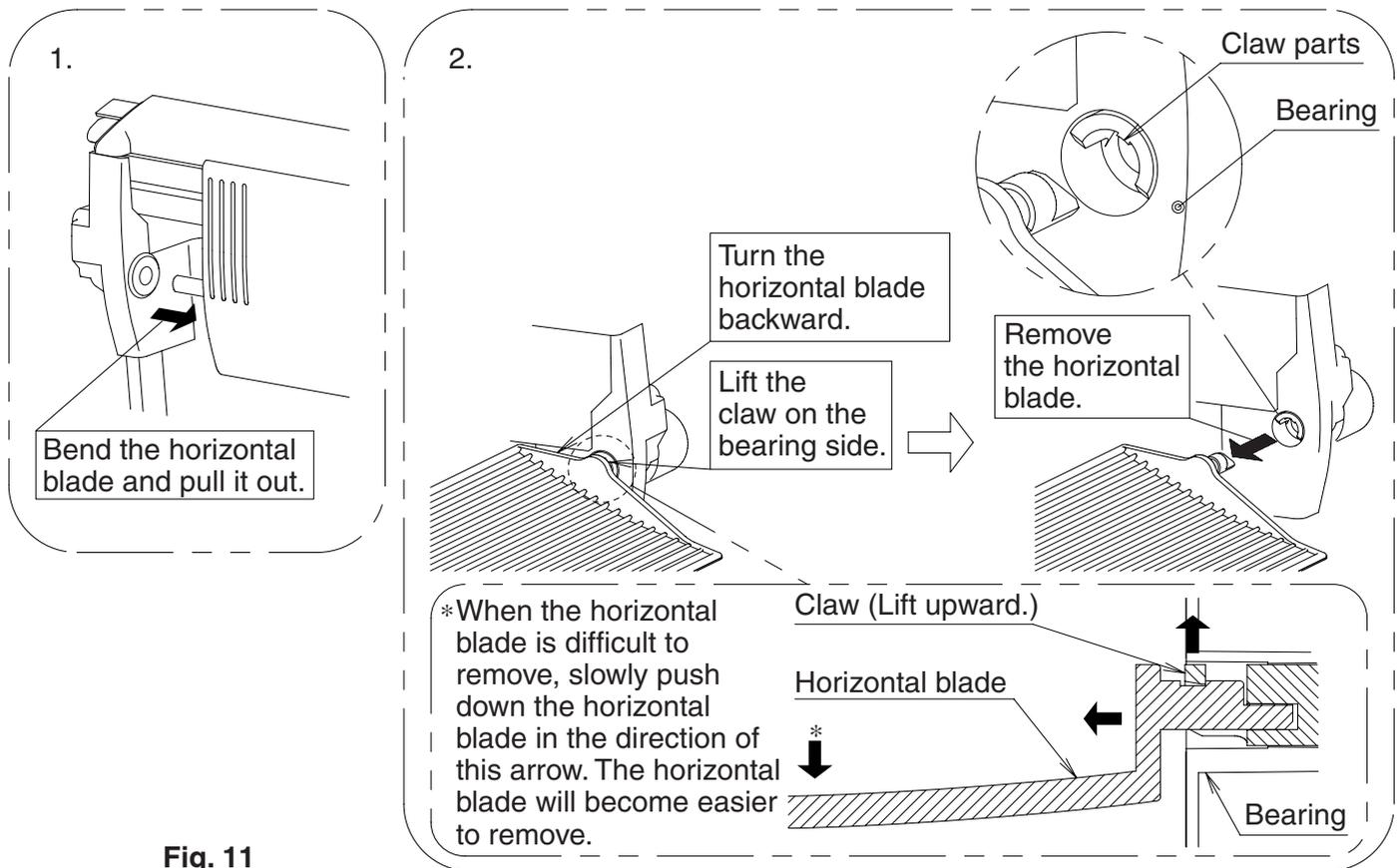


Fig. 11

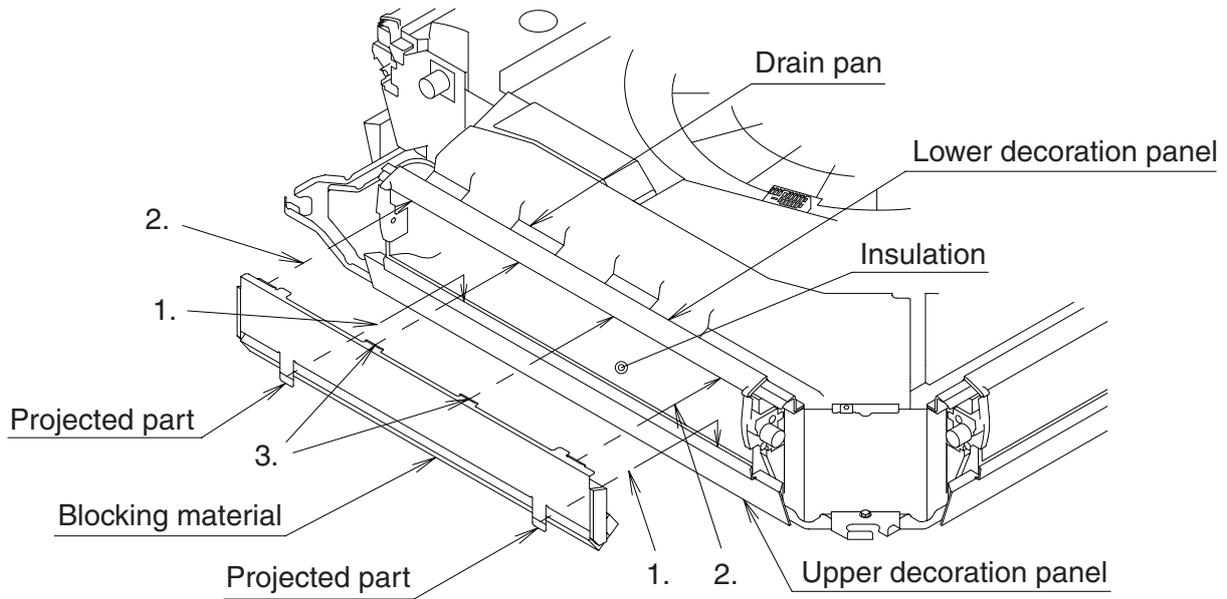
**(2) Fix the blocking material to the air outlet. (Refer to Fig. 12 and Fig. 13)**

1. Insert the projected part (2 places) of the blocking material into the clearance between the upper decoration panel and the insulation.
2. Insert the bent part (2 places) at both ends of the blocking material into the clearance between the lower decoration panel and the drain pan until you hear a clicking sound.  
When doing this work, lift the end of the lower decoration panel slightly and insert the blocking material. If it is difficult to insert it, first loosen the screws on the both sides of the lower decoration panel and then insert it.
3. Insert the bent part (2 places) inside the blocking material into the clearance between the lower decoration panel and the drain pan until you hear a clicking sound, and then fix the blocking material.
4. Check that the sheet metal section of the blocking material is not protruding from the end of the lower decoration panel.

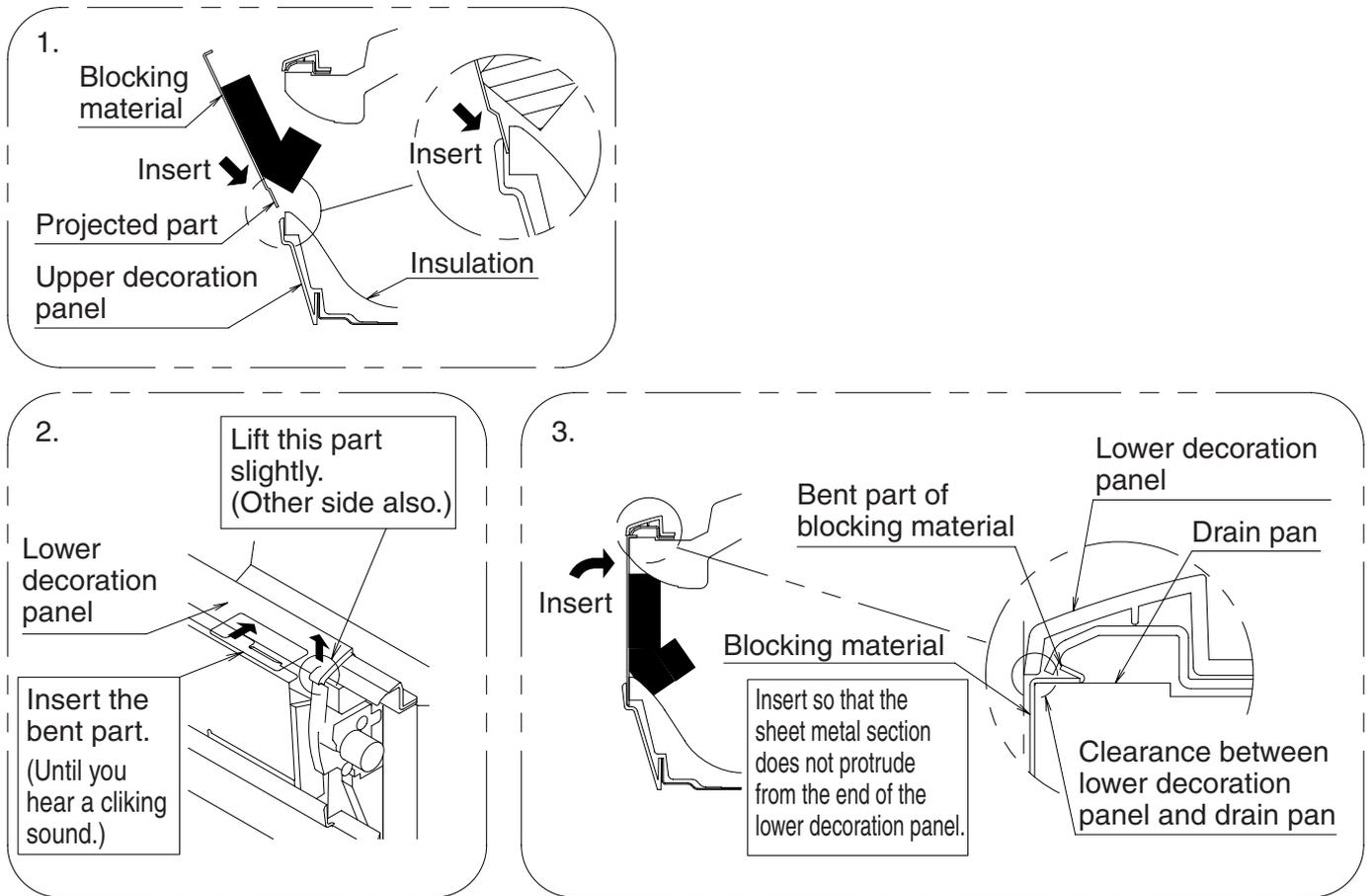


**Fix the blocking material and the indoor unit tight so that no clearance remains.**

If clearance remains, it may cause air leakage and condensation.

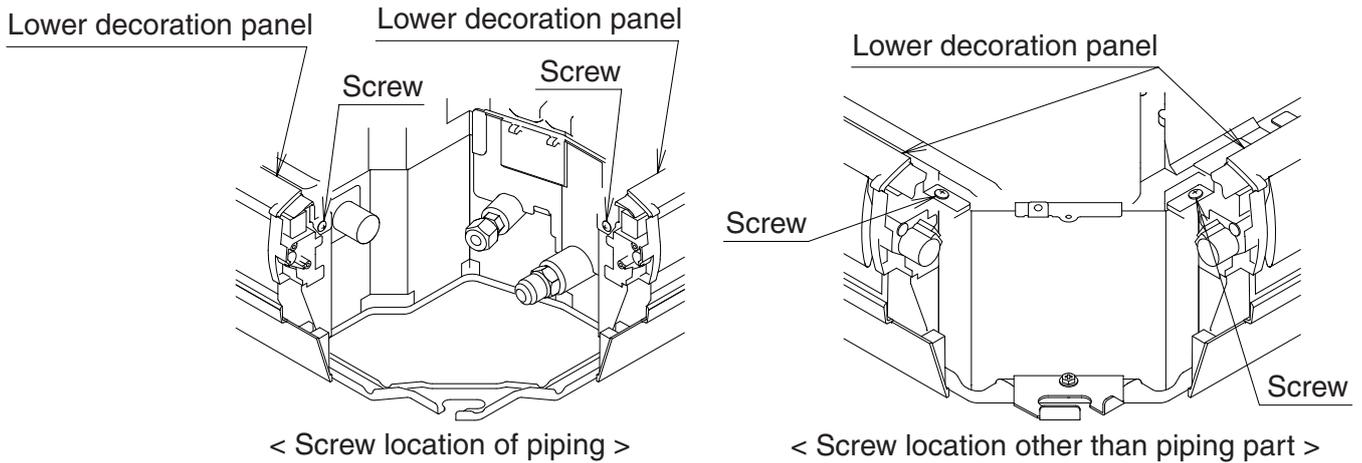


**Fig. 12**



**Fig.13**

\* If the blocking material is difficult to insert, loosen the left and right screws of the lower decoration panel and insert it. Make sure to tighten the loosened screws again after the blocking material is fixed. **(Refer to Fig. 14)**



**Fig.14**

## 5. INSTALLATION OF THE INDOOR UNIT

《It is easy to attach the optional parts before installing the indoor unit. Refer to also the installation manual attached to the optional parts.》

**For installation, use the attached installation parts and specified parts.**

**(1) Attach the upper and lower nuts and the washers for the hanger (3) to the 4 hanging bolts.**

**(Refer to Fig. 15)**

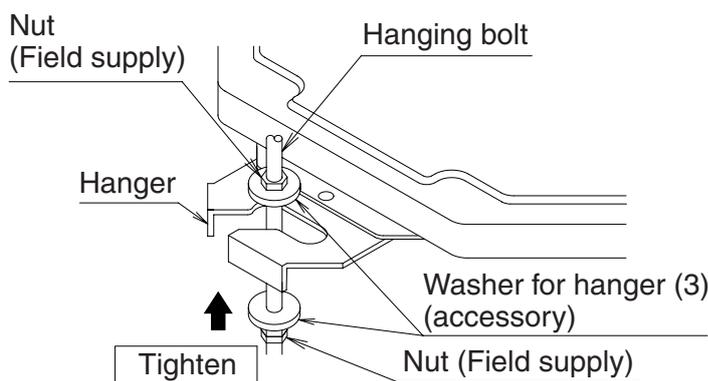
If the attached washer clamp (5) are used, the washer for the hanger (3) can be prevented from falling off.

**(Refer to Fig. 16)**

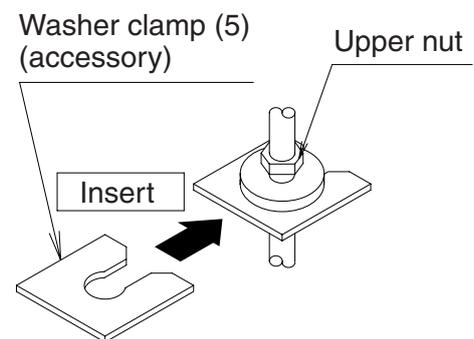
**(2) Installation of indoor unit. (Refer to Fig. 17)**

- Insert the hangers on the air outlet [4] side and hang them tentatively.
- Insert the remaining 2 hanging bolts into the hanger and fix the underside washers for the hanger (3) and the nuts.

**(3) Check the level of the unit from 2 directions (air outlet [1] and [2]). (Refer to Fig. 18)**



**To fix hanger  
Fig.15**



**Washer fixing method  
Fig.16**

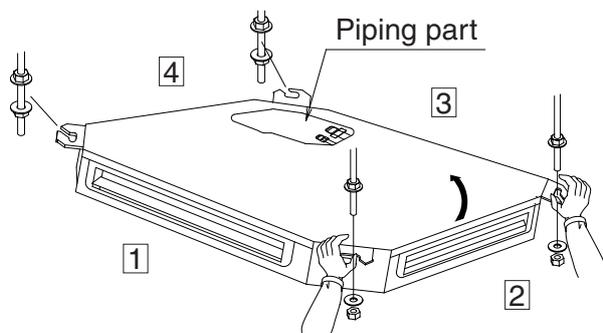
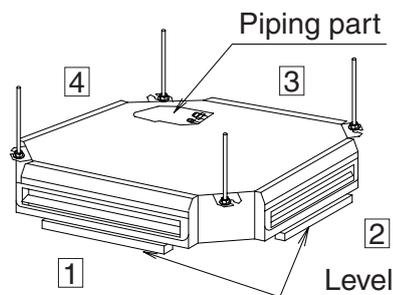


Fig.17



Level must be ensured  
Fig.18

- Install the indoor unit leveled  
If the unit is inclined and the drain piping side gets high, it may cause malfunction of a float switch and results in water leakage.  
However, for 2-way air discharge, install the unit inclined 1° downward to the drain piping.
- Attach nuts on the upper and lower side of hanger  
If there is no upper nut and the lower nut is over-tightened, the hanging plate and the top plate will deform and cause abnormal sound.
- Do not insert materials other than that specified into the clearance between the hanger and the washer for hanger (3).  
Unless the washers are properly attached, the hanging bolts may come off from the hanger.



#### WARNING

**The indoor unit must be securely installed on a place that can withstand the mass.**

If the strength is insufficient, the unit may fall down and cause injuries.

## 6. REFRIGERANT PIPING WORK

- For the outdoor unit refrigerant piping, refer to the installation manual attached to the outdoor unit.
- Carry out insulation of both gas and liquid refrigerant piping securely. If not insulated, it may cause water leakage. For gas piping, use insulation material of which heat resistant temperature is not less than 120°C. For use under high humidity, strengthen the insulation material for refrigerant piping. If not strengthened, the surface of insulation material may sweat.
- Before installation work, make sure that the refrigerant is R410A. (Unless the refrigerant is R410A, the normal operation cannot be expected.)



#### CAUTION

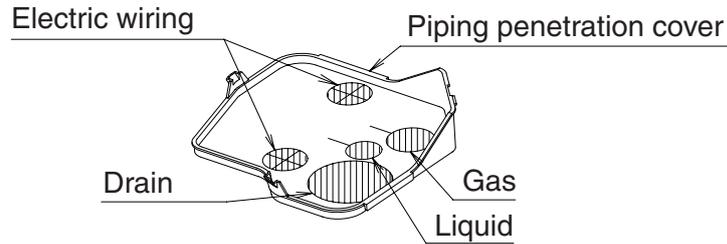
This air conditioner is a dedicated model for new refrigerant R410A. Make sure to meet the requirements shown below and carry out installation work.

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

Do not mix substance other than the specified refrigerant such as air into the refrigeration circuit.  
If the refrigerant leaks during the work, ventilate the room.

**Refrigerant piping can be connected from 3 directions.**

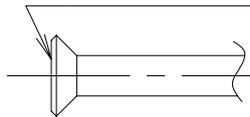
- In case of upward piping, remove the piping penetration cover, make holes for penetrating piping by cutting the cover with a cutter such as scissors.  
After having the piping go through the cover, attach the cover to the indoor unit. **(Refer to Fig. 19)**



**Fig.19**

- The refrigerant is pre-charged in the outdoor unit.
- Use the flare nut attached to the air conditioner.
- When making a flare connection, coat the flared inner surface only with either oil or ester oil. **(Refer to Fig. 20)**  
Then, turn the flare nut 3 to 4 times with your hand and screw in the nut.

Coat the flare inner surface only with ether oil or ester oil.

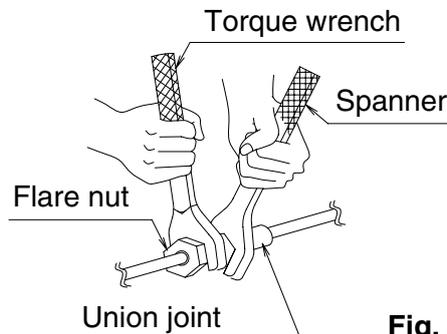


**Fig. 20**

**⚠ CAUTION**

**Do not have oil adhere to the screw fixing part of resin parts.**  
If oil adheres, it may weaken the strength of screwed part.

- When connecting the piping to the air conditioner, make sure to use a spanner and a torque wrench as shown in **Fig. 21**.  
For the dimension of flared part and the tightening torque, refer to the Table 1.



**Fig. 21**

**《Example of unfavorable consequences》**

When tools other than spanners are used, the thread ridge of a flare nut will be damaged and cause gas leakage due to defective tightening.

Table 1

Piping size (mm)	Tightening torque (N·m)	Dimension for processing flare A (mm)	Flare shape
φ 6.4	15.7 ± 1.5	8.9 ± 0.2	
φ 9.5	36.3 ± 3.6	13.0 ± 0.2	
φ 12.7	54.9 ± 5.4	16.4 ± 0.2	
φ 15.9	68.6 ± 6.8	19.5 ± 0.2	

**⚠ CAUTION**

**Do not tighten flare nuts too tight.**

If a flare nut cracks, the refrigerant may leak.

- 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 leak.  
If the nut is not tightened as instructed, it may cause slow refrigerant leak and result in malfunction (such as does not cool or heat).

Table 2

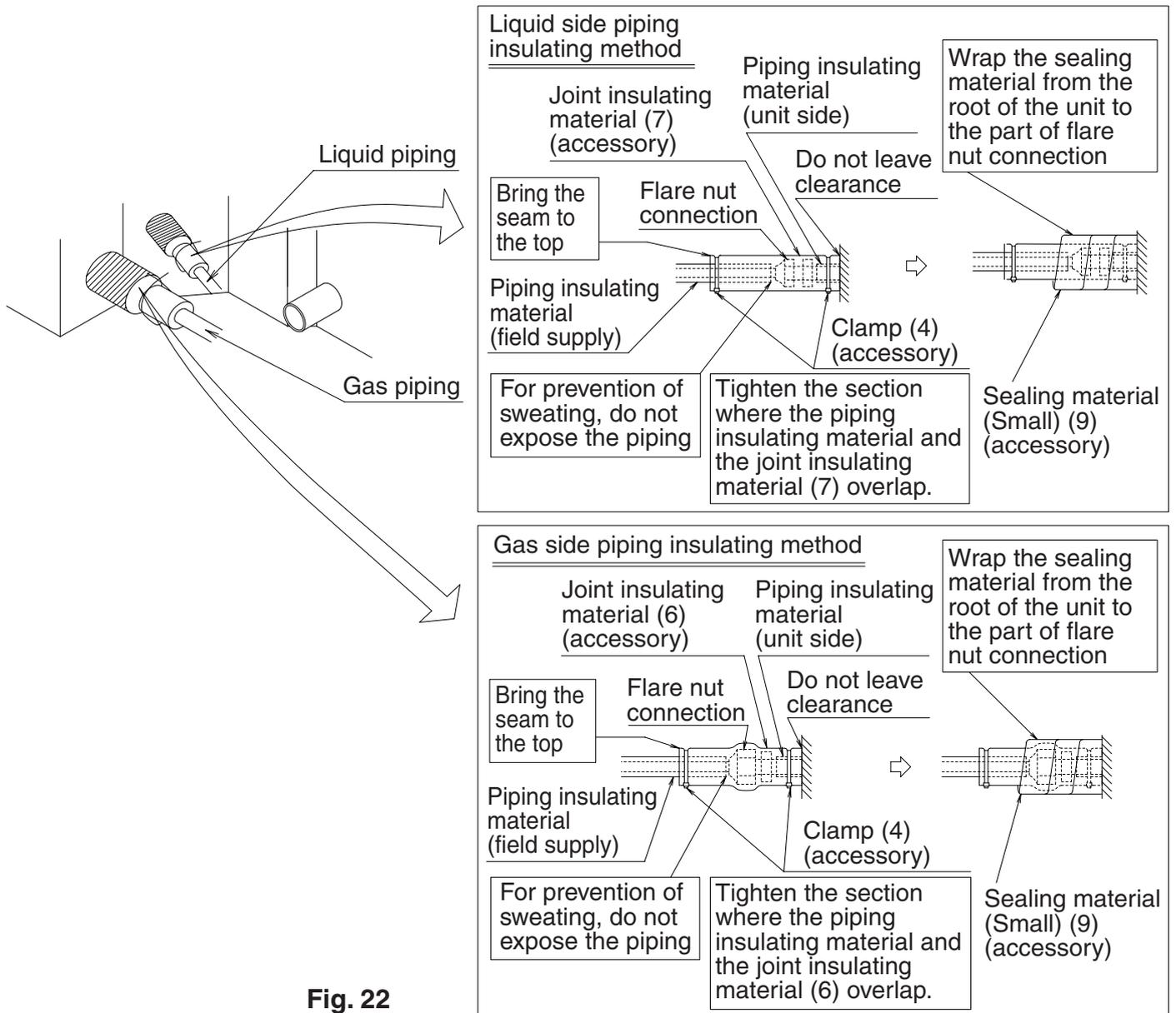
Piping size (mm)	Tightening angle	Recommended arm length of tool used
φ 6.4	60° – 90°	Approximately 150mm
φ 9.5	60° – 90°	Approximately 200mm
φ 12.7	30° – 60°	Approximately 250mm
φ 15.9	30° – 60°	Approximately 300mm

**⚠ CAUTION**

**Insulation of field piping must be carried up to the connection inside the casing.**

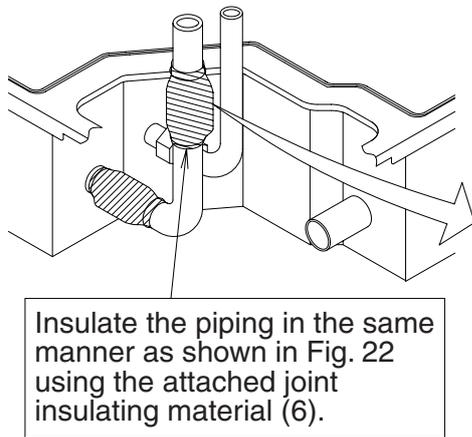
If the piping is exposed to the atmosphere, it may cause sweating, burn due to touching the piping, electric shocks or a fire due to the wiring touching the piping.

- After leak test, insulate both the gas and liquid piping connection with the attached joint insulating material (6) and (7) to prevent the piping from getting exposed. **(Refer to Fig. 22)**  
Then, tighten the both ends of insulating material with the clamp (4).



**Fig. 22**

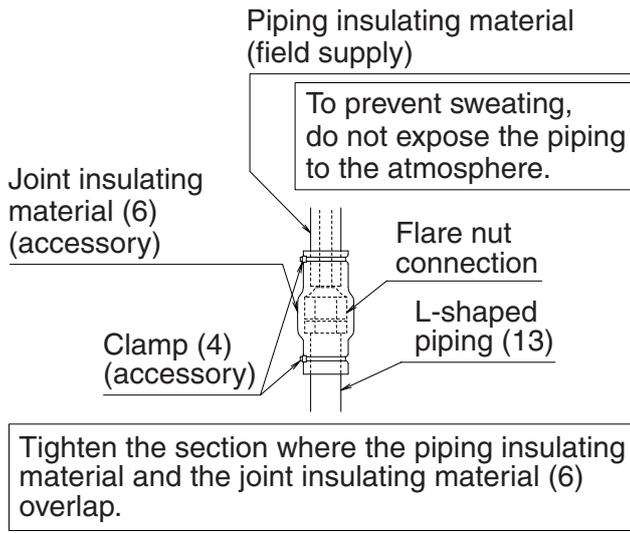
- Wrap the sealing material (Small) (9) around the joint insulating material (6) (7).
- Make sure to bring the seam of joint insulating material (6) and (7) to the top.
- When carrying out upward and rightward piping, use the attached L-shaped piping, and insulate the 2 places of connection. **(Refer to Fig. 23)**  
In addition, bend the liquid side field piping using a bender with radius is 40mm or less.  
If the attached L-shaped piping is not used or the piping is bent with a bender with radius more than 40mm, it may interfere with other piping or drain hose.



**Fig. 23**

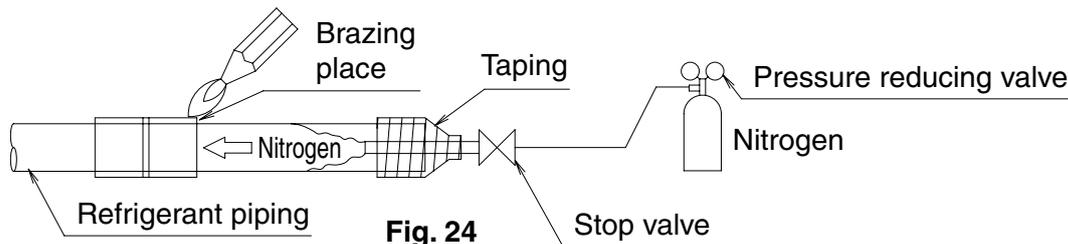
(e.g. Insulate the piping in the same manner for upward and rightward piping.)

**For upward and rightward piping  
L-shaped piping insulating method**



(To prevent small animals and insects getting into the indoor unit, make sure to tightly fit the piping penetrating cover to the casing and seal the clearance between the piping and the hole with putty and insulating material (field supply).)

- Before brazing refrigerant piping, have nitrogen flow through the refrigerant piping and substitute air with nitrogen (NOTE 1). (**Refer to Fig. 24**) Then, carry out brazing (NOTE 2). After all the brazing works are finished, carry out flare connection with the indoor unit. (**Refer to Fig. 21**)



**NOTE**

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.)
3. When carrying out leakage test of refrigerant piping and the indoor unit after the installation of indoor unit is finished, confirm the connecting outdoor unit installation manual for test pressure.  
Refer to also the outdoor unit installation manual or technical document for refrigerant piping.
4. In case of refrigerant shortage due to forgetting additional refrigerant charge etc., it will result in malfunction such as does not cool or does not heat.  
Refer to the outdoor unit installation manual or technical document for refrigerant piping.

**CAUTION**

**Do not use antioxidant when brazing piping.**

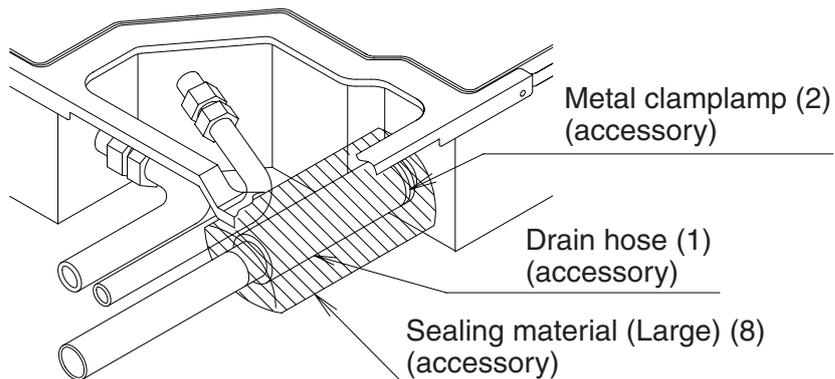
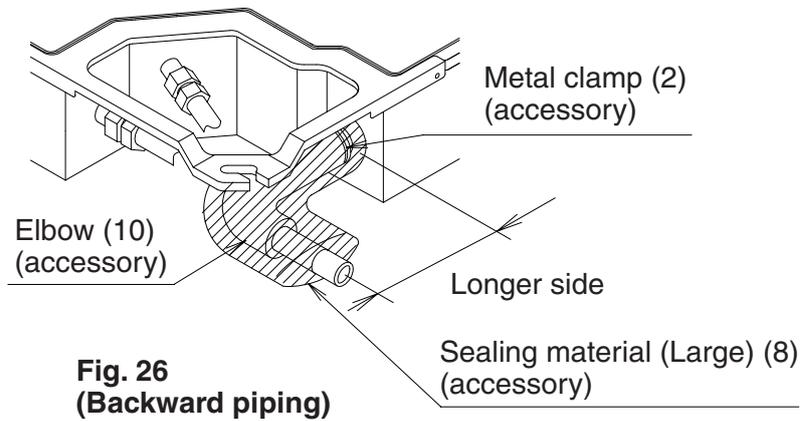
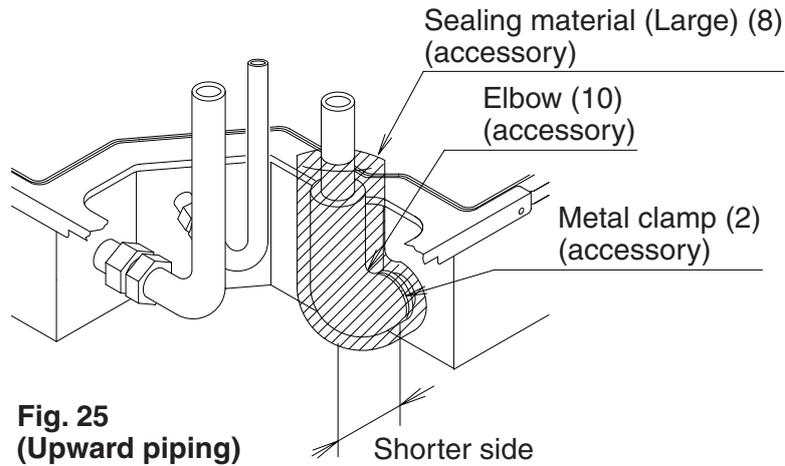
It may result in malfunction of components and clogging of piping due to residue.

## 7. DRAIN PIPING WORK

### (1) Carry out drain piping.

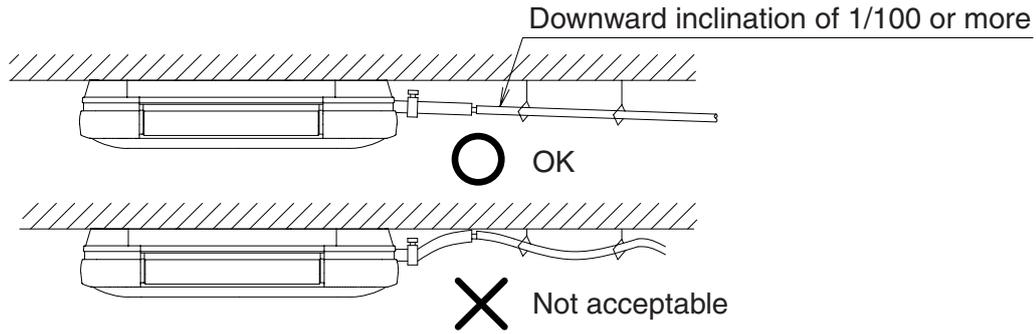
Carry out drain piping so that drainage can be ensured.

- Drain piping can be connected from 3 directions. (Refer to Fig. 25, 26, and 27)



- Select the piping diameter equal to or larger than (except for riser) that of the connection piping (polyvinyl chloride piping, nominal diameter 20mm, outside diameter 26mm).

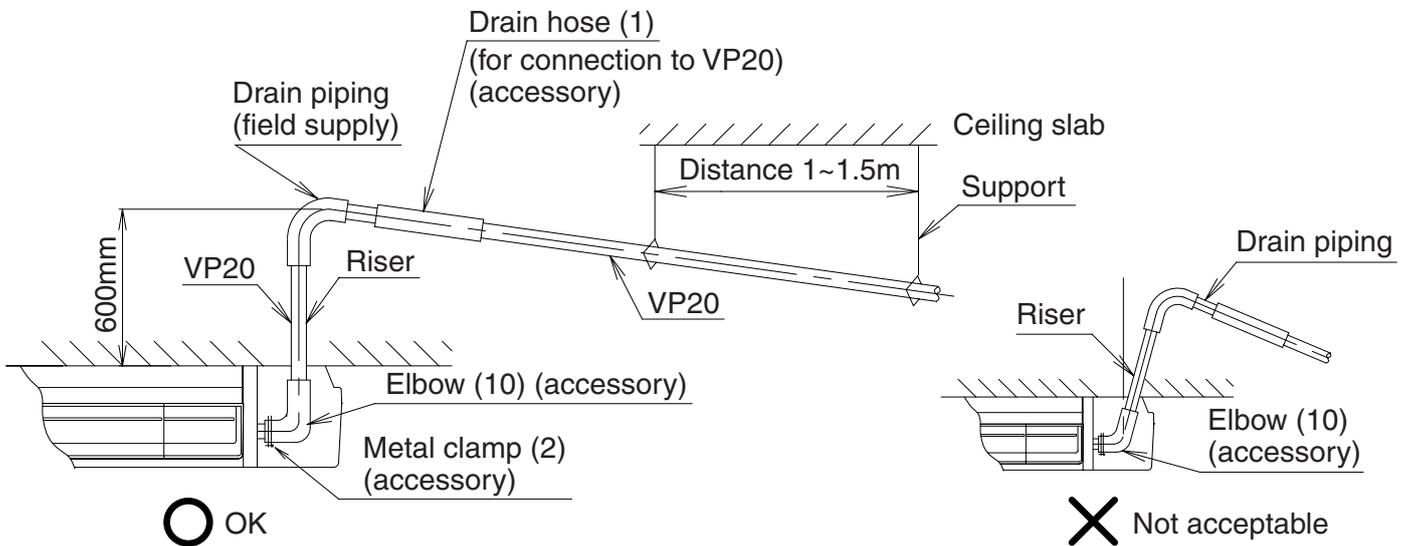
- Install piping as short as possible with downward inclination of 1/100 or more and without where air may stagnate. **(Refer to Fig. 28)**  
(It may cause abnormal sound such as bubbling noise.)



**Fig. 28**

**If drain stagnates in the drain piping, the piping may be clogged.**

- Install supports at a distance of 1 to 1.5m so that the piping may not deflect. **(Refer to Fig. 29)**



**Fig. 29**  
**(Caution for upward drain piping)**

Make sure to use the attached drain hose (1) (for rightward piping), the elbow (10) (for upward and backward piping) and metal clamp (2).

**If an old drain hose or an elbow or a clamp is used, it may cause water leakage.**

- Insulate the piping that goes through indoors.

**CAUTION**

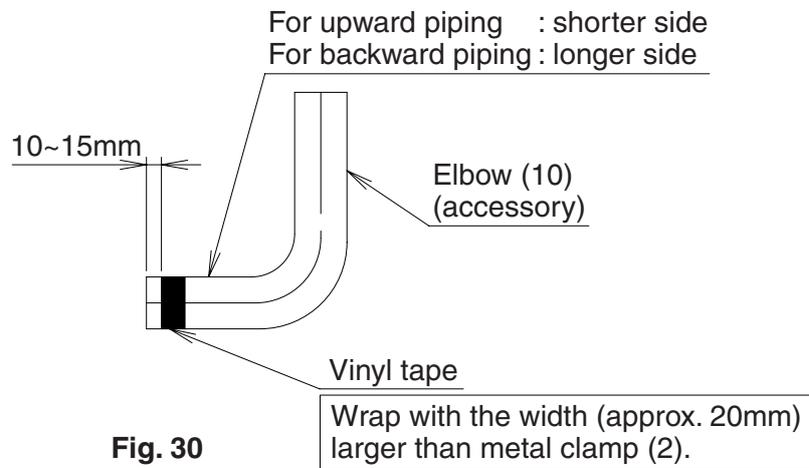
- To avoid the attached drain hose (1) getting excessive force, do not bend nor twist it.  
(It may cause water leakage.)
- Do not connect the drain piping directly to the sewage that gives off ammonia odor.  
The ammonia in the sewage may go through the drain piping and corrode the heat exchanger of the indoor unit.

**< Caution to be taken when carrying out upward drain piping >**

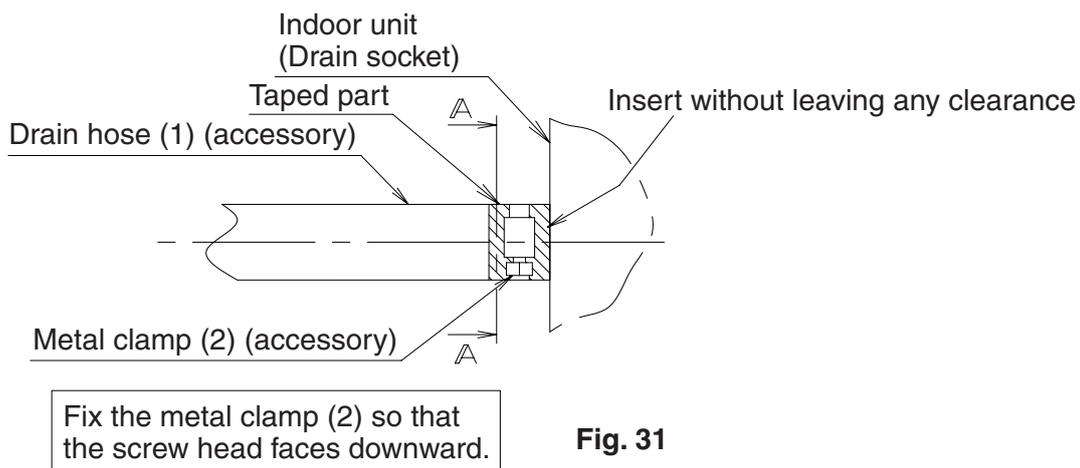
- The maximum height of the drain riser is 600mm.
- Install the drain riser vertically. **(Refer to Fig. 29)**

**If the drain riser is installed inclined, the float switch may malfunction and cause water leakage.**

- Make sure to use the drain hose (1), the elbow (10) and the sealing material (Large) (8) attached to the indoor unit as accessories.
- 1. To prevent the elbow from getting damaged by the metal clamp (2) for upward and backward piping, wrap the vinyl tape around the elbow 2 to 3 times so that the tape covers more than the width of metal clamp (2) leaving 10 - 15 mm from the tip of the elbow (10) without wrapping as shown in **Fig. 30**.

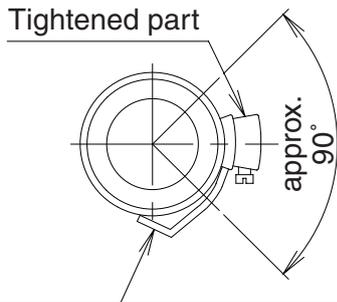


2. Insert the drain hose (1) and the elbow (10) to the root of the drain socket. Tighten the metal clamp (2) within the taped range of hose inserted tip with the torque  $1.35 \pm 0.15 \text{N}\cdot\text{m}$  ( $135 \pm 15 \text{N}\cdot\text{cm}$ ). **(Refer to Fig. 25, 26, 27, and 31)**



- Do not tighten the metal clamp (2) with the torque more than the specified value. The socket, the drain hose (1), the elbow (10) or the metal clamp (2) may be damaged. Fix the metal clamp (2) so that the tightened part may be in the range shown by **Fig. 32**.
- 3. Wrap the vinyl tape around the end of the metal clamp (2) so that the sealing material (Large) (8) to be used at the next process may not be damaged with the clamp end or bend the tip of the metal clamp (2) inward as shown. **(Refer to Fig. 32)**

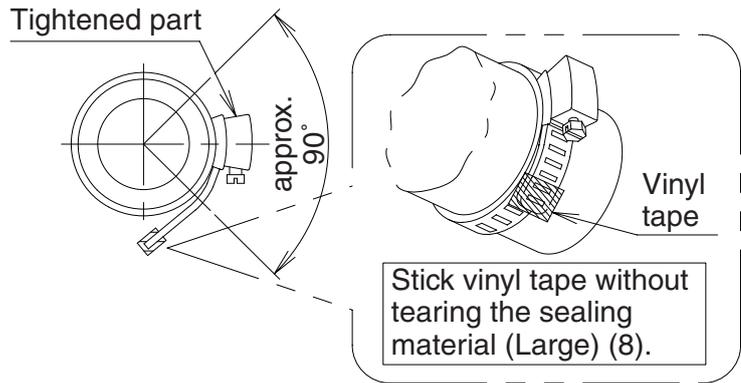
< In case of bending the tip >



Bend the tip without tearing the sealing material (Large) (8).

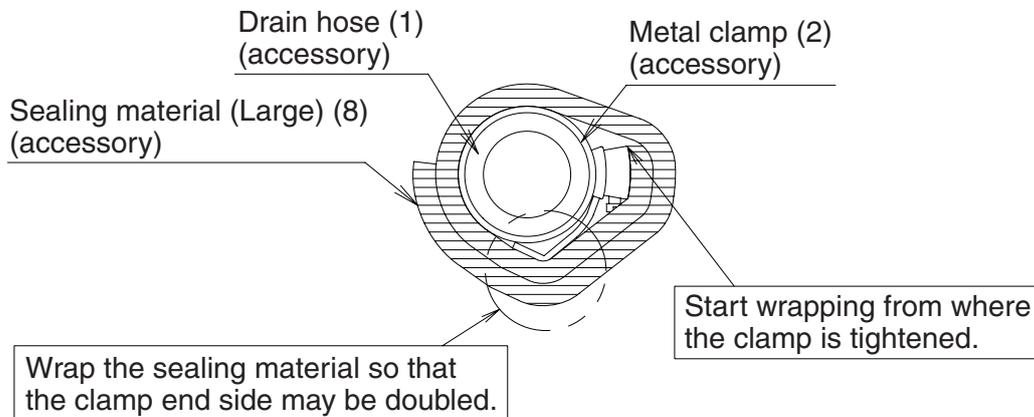
**Fig. 32-1**  
(Section A - A of Fig. 31)

< In case of sticking vinyl tape >



**Fig. 32-2**  
(Section A - A of Fig. 31)

4. Insulate the metal clamp (2), the drain hose (1), the elbow (10) with the attached sealing material (Large) (8). (Refer to Fig. 25, 26, 27, and 33)  
(The metal clamp (2) may sweat and condensation may drip.)



**Fig. 33**

**(2) After piping is finished, check if the drain flows smoothly.**

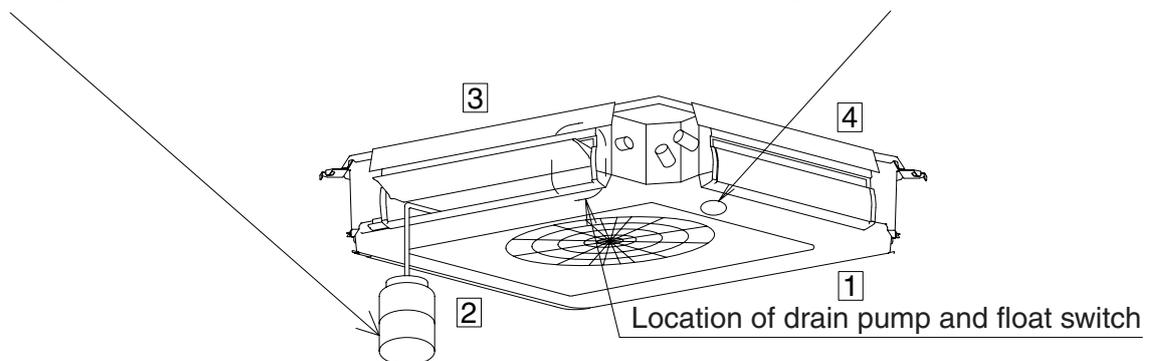
**[When the electric wiring work is finished]**

- Gradually pour 1 liter of water from the air outlet [3] into the drain pan (Fig. 34) giving caution to avoid splashing water on the electric components such as drain pump and confirm drainage by operating the indoor unit under cooling mode according to "11. TEST OPERATION".

If the air outlet [3] is closed, pour water from the air outlet [2].

Plastic container for pouring water  
(Tube length of 100mm is necessary)

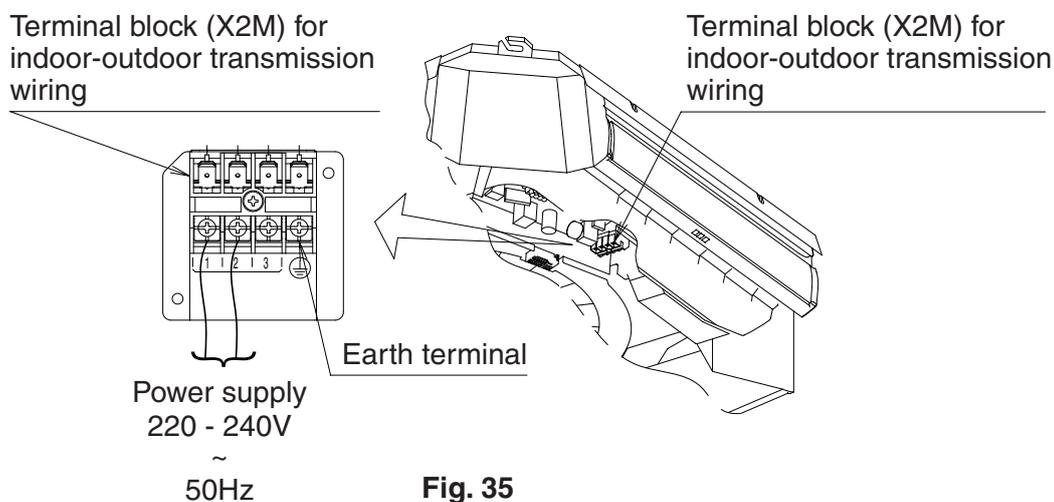
Drain outlet for service (with rubber plug)  
(Use it when draining water in the drain pan)



**(How to pour water)**  
**Fig. 34**

### [When the electric wiring work is not finished]

- The electric wiring works (including earthing) must be carried out by a qualified electrician.
  - If a qualified person is not present, after the electric wiring work is finished, check the drainage according to the method specified in [When the electric wiring work is finished].
1. Open the control box lid and connect the single phase power supply to the terminal (1, 2) on the terminal block (X2M) for indoor-outdoor transmission wiring and the earth wiring to the earth terminal. (Refer to Fig. 35)



2. Make sure the control box lid is closed before turning on the power supply.
3. Gradually pour 1 liter of water from the air outlet [3] into the drain pan (Fig. 34) giving caution to avoid splashing water on the electric components such as drain pump.  
If the air outlet [3] is closed, pour water from the air outlet [2].
4. When the power supply is turned on, the drain pump will operate. Check drainage. (The drain pump will automatically stop after 10 minutes.)
5. Turn off the power supply after checking drainage, and remove the power supply wiring.
6. Attach the control box lid as before.

## 8. ELECTRIC WIRING WORK

### 8-1 GENERAL INSTRUCTIONS

- 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 dedicated circuit. Insufficient capacity of the power supply circuit or improper electrical construction may lead to electric shocks or a fire.
- Make sure to install an earth leakage breaker. Failure to do so may cause electrical shocks and a fire.
- Do not turn on the power supply (branch switch, branch overcurrent breaker) until all the works are finished.
- Multiple number of indoor units are connected to one outdoor unit. Name each indoor unit as A-unit, B-unit ..... and the like. When these indoor units are wired to the outdoor unit and the BS unit, always wiring the indoor unit to the terminal indicated with the same symbol on the terminal block. If the wiring and the piping are connected to the different indoor units and operated, it will result in malfunction.
- 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.
- For electric wiring work, refer to also the "WIRING DIAGRAM" attached to the control box lid.

- Carry out wiring between the outdoor units, indoor units and the remote controllers according to the wiring diagram.
- Carry out installation and wiring of the remote controller according to the “installation manual” attached to the remote controller.
- Do not touch the Printed Circuit Board assembly. It may cause malfunction.

## 8-2 SPECIFICATION FOR FIELD SUPPLIED FUSES AND WIRING

- For the wiring of outdoor units, refer to the installation manual attached to the outdoor units.
- Remote controller and transmission wiring are field supplied. (Refer to Table 3)

Table 3

	Wiring	Size mm <sup>2</sup>	Length
Transmission wiring	H05VV-U4G (NOTE 1)	2.5	–
Remote controller wiring	Sheathed vinyl cord or cable (2 core) (NOTE 2)	0.75 – 1.25	Max. 500m *

\*This will be the total extended length in the system when doing group control.

### NOTE

1. Shows only in case of protected piping. Use H07RN-F in case of no protection.
  2. Vinyl cord with sheath or cable (Insulated thickness : 1mm or more)
- Wiring specifications are shown on the condition that the wiring has a voltage drop of 2%.

## 8-3 WIRING CONNECTION METHOD (Refer to Fig. 36)

- Transmission wiring, earth wiring  
Remove the control box lid, match the symbol to that of the transmission wiring terminal block (X2M) and connect the wiring.  
Connect the earth wiring also to the transmission wiring terminal block (X2M).  
Then, lead the wiring into the indoor unit through the hole bored on the cover for penetrating piping according to the section “6. REFRIGERANT PIPING WORK” and bind the wiring with the clamp (4).
- Remote controller wiring (Note that the remote controller is not required for simultaneous operation slave units.)  
Connect the remote controller wiring to [P1 · P2] of the terminal block (X1M) for remote controller.  
Bind the remote controller wiring with the clamp (4).
- Sticking non woven fabric (15).  
To prevent wiring from floating, stick non woven fabric (15).



### CAUTION

- Never connect the power supply wiring to the terminal block for remote controller/transmission wiring (X1M).  
It may damage the total system.
- Do not connect the remote controller/transmission wiring to the wrong terminal block.

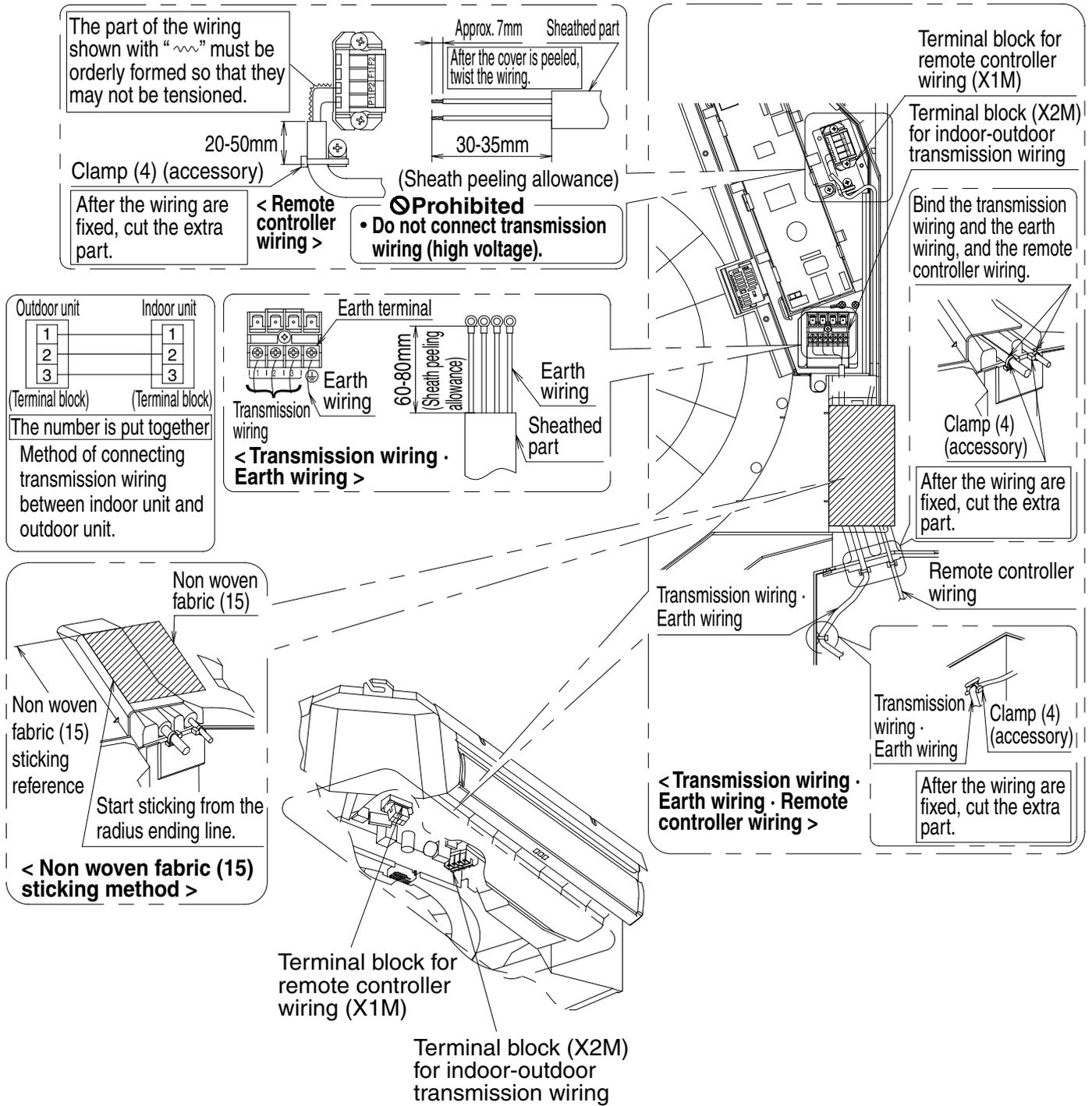
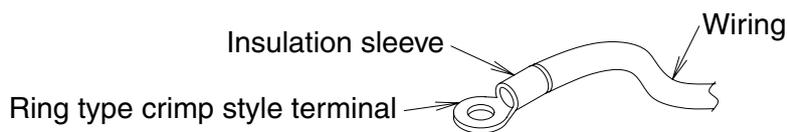


Fig. 36

**⚠ CAUTION FOR WIRING**

- For connection to the terminal block for indoor-outdoor transmission wiring, use ring type crimp style terminals with insulation sleeve or treat the wiring with insulation. **(Refer to Fig. 37)**



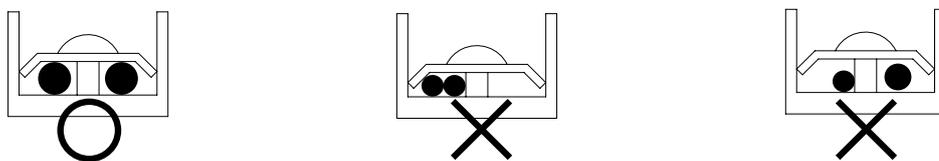
**Fig. 37**

- If the above is not available, make sure to observe the following items. (Abnormal heating may occur if the wiring are not tightened securely.)

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

Connection of 2 wirings on one side is prohibited.

Connection of wiring of different sizes is prohibited.



**Fig. 38**

- Use the required wiring, connect them securely and fix these wiring 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)
Terminal block for remote controller wiring	0.88 ± 0.08
Terminal block for transmission wiring	1.47 ± 0.14
Earth terminal	1.47 ± 0.14

- Do not carry out soldering finish when stranded wiring are used.

**⚠ CAUTION FOR MENDING THE COVER**

- In case the cover for penetrating piping is cut off and used as wiring penetrating hole, after the wiring connection is finished, mend the cover.
- Cut the sealing material (Small) (9) into two pieces and wrap each wiring with each piece. **(Refer to Fig. 39)**
- Seal the clearance around the wiring with putty and insulating material (field supply). (If insects and small animals get into the indoor unit, short circuiting may occur inside the control box.)
- If the low voltage wiring (remote controller wiring) and the high voltage wiring (transmission wiring, earth wiring) are brought into the indoor unit from the same place, they may be affected by electric noise (outside noise) and cause malfunction or failure.

- Keep the distance of 50mm or more between the low voltage wiring (remote controller wiring) and the high voltage wiring (transmission wiring, earth wiring) at anywhere outside the indoor unit. If both the wirings are laid down together, they may be affected by electric noise (outside noise) and cause malfunction or failure.

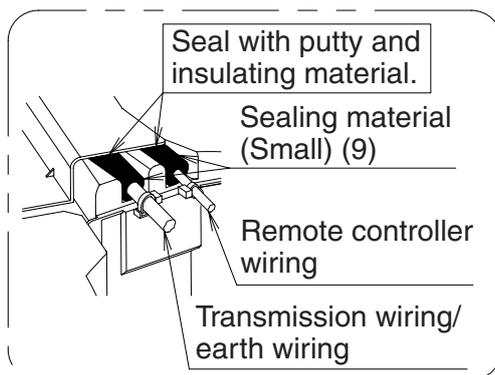


Fig. 39

**WARNING**

When wiring, form the wiring orderly so that the control box lid can be securely fastened. If the control box lid is not in place, the wiring may float up or be sandwiched by the box and the lid and cause electric shocks or a fire.

**8-4 WIRING EXAMPLES**

**CAUTION**

Be sure to install an earth leakage breaker to the outdoor unit. This is to avoid electric shocks or a fire.

For the wiring of outdoor units, refer to the installation manual attached to the outdoor units.

**Confirm the system type.**

- **Pair type:** 1 remote controller controls 1 indoor unit (standard system). (Refer to Fig. 40)
- **Simultaneous operation system:** 1 remote controller controls 2 indoor units (2 indoor units operates equally). (Refer to Fig. 41)

**Pair type**

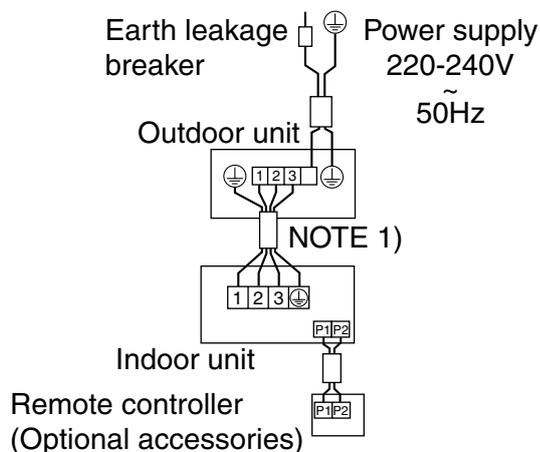


Fig. 40

**Simultaneous operation system**

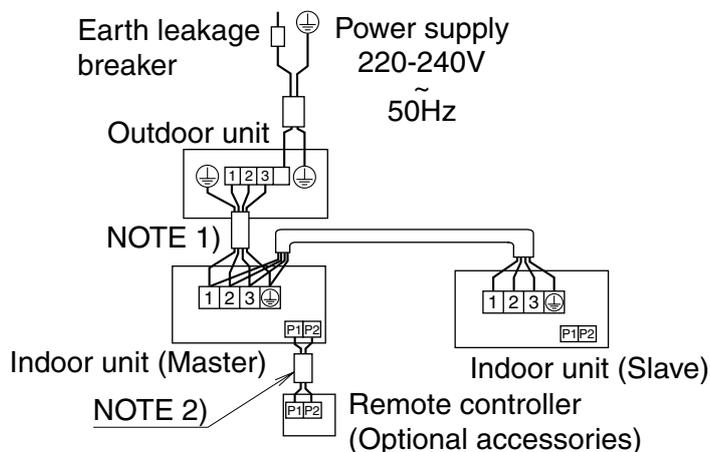
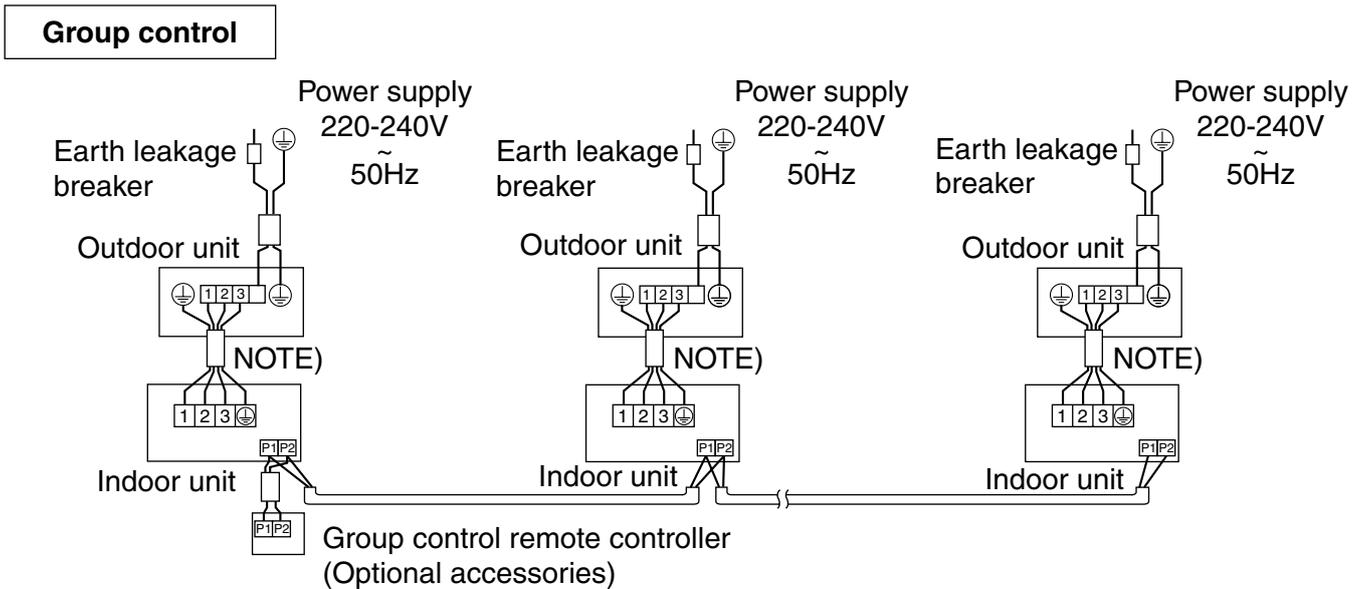


Fig. 41

**NOTE**

1. Terminal numbers of outdoor and indoor units must be matched.
- 2-1. Connect the remote controller only to the master unit.
- 2-2. The remote controller needs to be wired only to the master unit; it does not need to be connected to the slave units through transition wiring. (Do not connect transition wiring to the slave units.)
- 2-3. The indoor temperature sensor is effective only for indoor units to which the remote controller is connected.
- 2-4. The length of wiring between the indoor unit and the outdoor unit varies depending on the connected model, the number of connected units, and the maximum piping length.  
For details, refer to the technical documents.

- **Group control:** 1 remote controller controls up to 16 indoor units (All indoor units operate according to the remote controller). (Refer to Fig. 42)



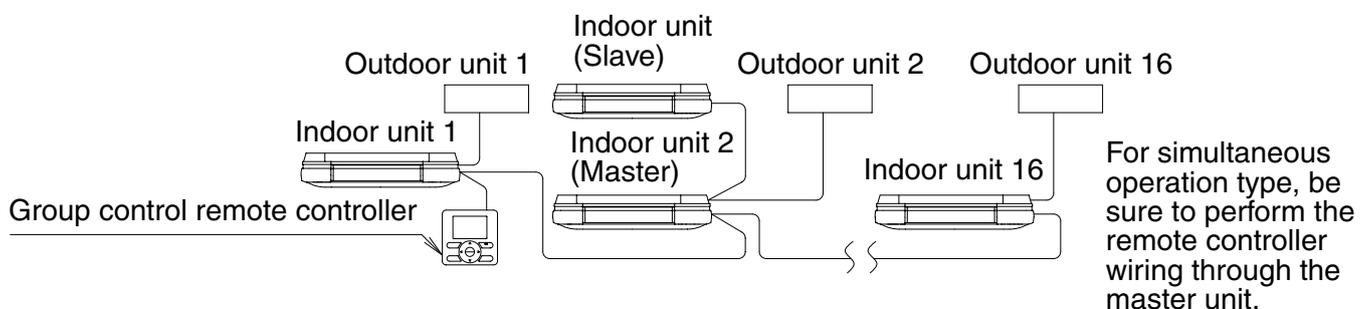
**Fig. 42**

**NOTE**

- Terminal numbers of outdoor and indoor units must be matched.

**When implementing group control**

- When using as a pair unit or as a master unit for simultaneous multiple unit operation, you may carry out simultaneous start/stop (group) control up to 16 units with the remote controller. (Refer to Fig. 43)
- In this case, all the indoor units in the group will operate in accordance with the group control remote controller.
- Select a remote controller which matches as many of the functions in the group as possible.

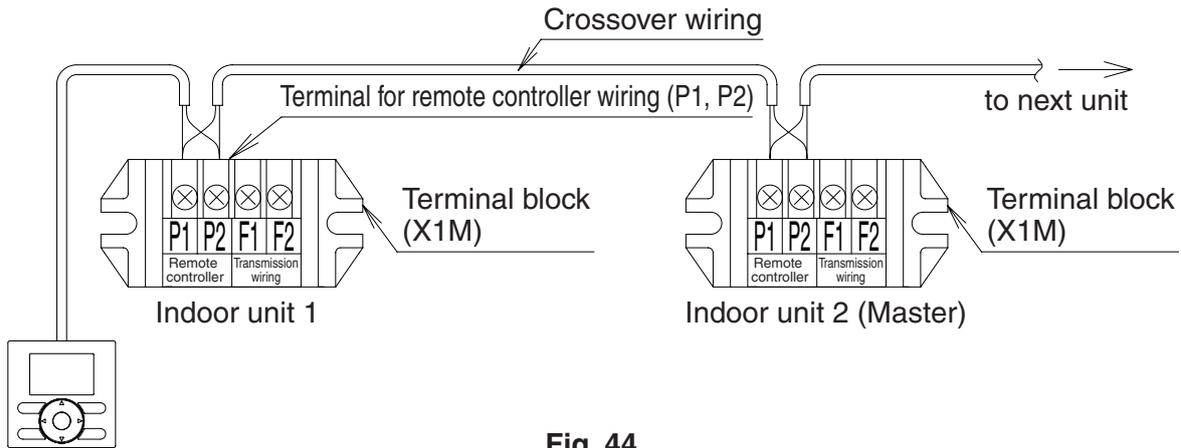


**Fig. 43**

**< Wiring Method >**

(1) Remove the control box lid.

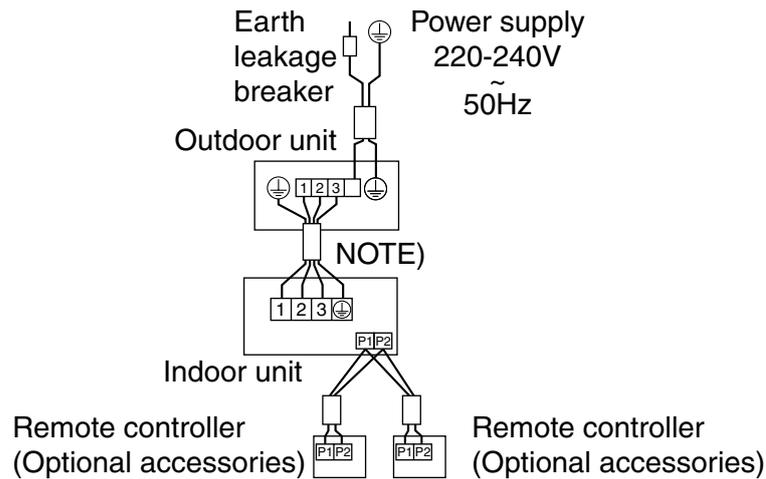
(2) Connect crossover wiring between the terminals (P1, P2) inside the control box for the remote controller. (There is no polarity.) **(Refer to Fig. 42 and Table 3)**



**Fig. 44**

- **Control with 2 remote controllers:** To control 1 indoor unit with 2 remote controllers. **(Refer to Fig. 45)**

**Control with 2 remote controllers**



**Fig. 45**

- For control with 2 remote controllers, set one remote controller as Main and the other remote controller as Sub.

**< Changeover method from Main to Sub and vice versa >**

Refer to the installation manual attached to the remote controller.

**< Wiring Method >**

(1) Remove the control box lid according to the “**8-3 WIRING CONNECTION METHOD**”.

(2) Carry out additional wiring from the remote controller 2 (Sub) to the terminals (P1·P2) for remote controller wiring on the terminal block (X1M) in the control box. (There is no polarity.) **(Refer to Fig. 46)**

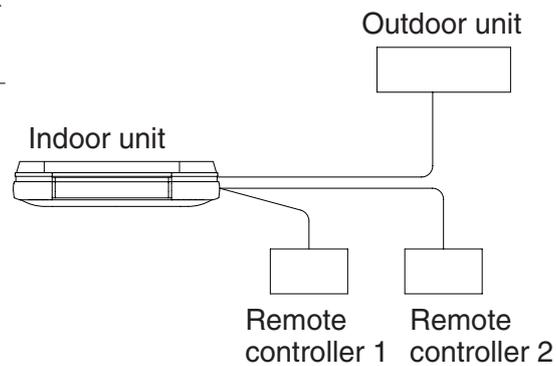
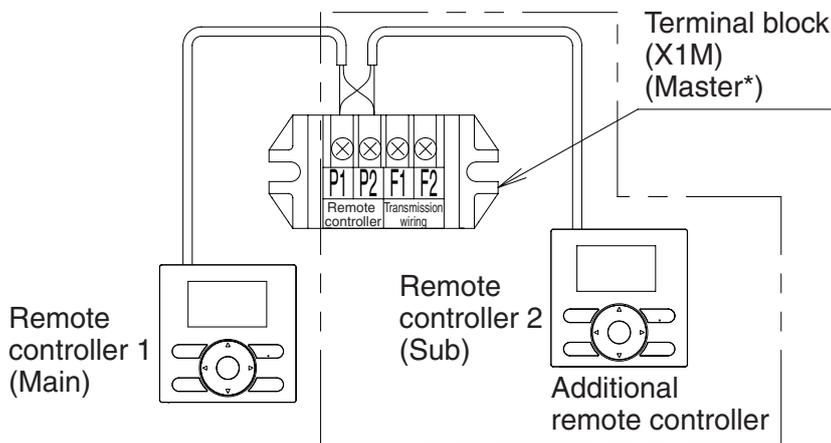


Fig. 46

\* For simultaneous operation system, be sure to connect the remote controller to the master unit.

**NOTE**

- Terminal numbers of outdoor and indoor units must be matched.

**8-5 FOR CENTRALIZED CONTROL**

- By connecting the centralized control equipment, the SkyAir series can be centrally controlled as one group.
- The control wiring is field supply. Prepare it by referring to table shown below.
- For information on how to connect the centralized control equipment, refer to the operation manual and technical guide for the centralized control equipment.
- Connect the centralized equipment to the indoor unit connected to the remote controller.
- Only when the centralized equipment is connected to the group that is controlled with two remote controllers, make the “Master” and “Slave” settings for the remote controllers.

	Wiring	Size mm <sup>2</sup>
Control wiring	Sheathed vinyl cord or cable (2 core) (NOTE)	0.75 - 1.25

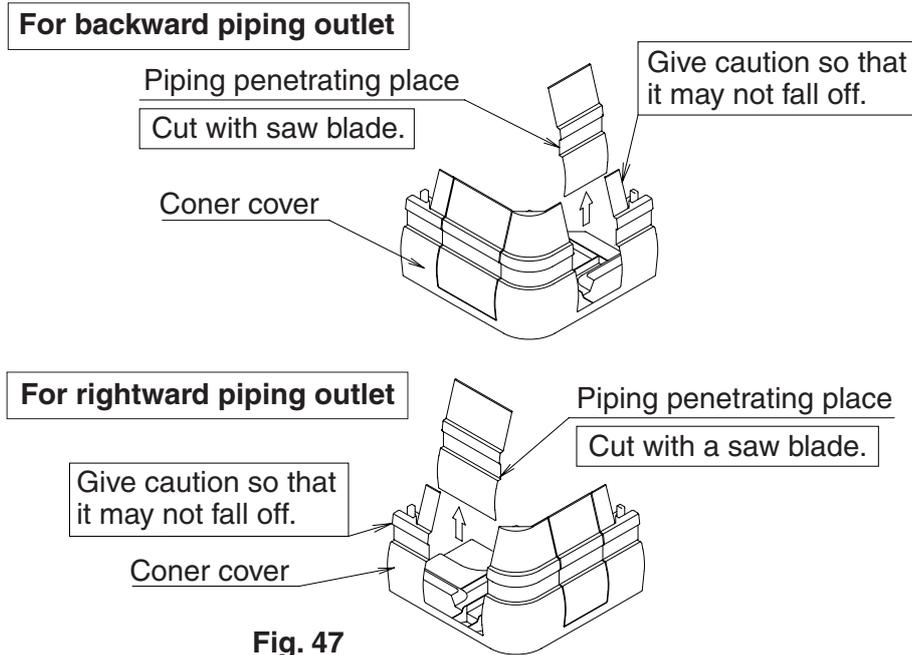
**NOTE**

- Vinyl cord with sheath or cable (Insulated thickness : 1 mm or more)

## 9. MOUNTING CORNER COVER · SUCTION GRILLE

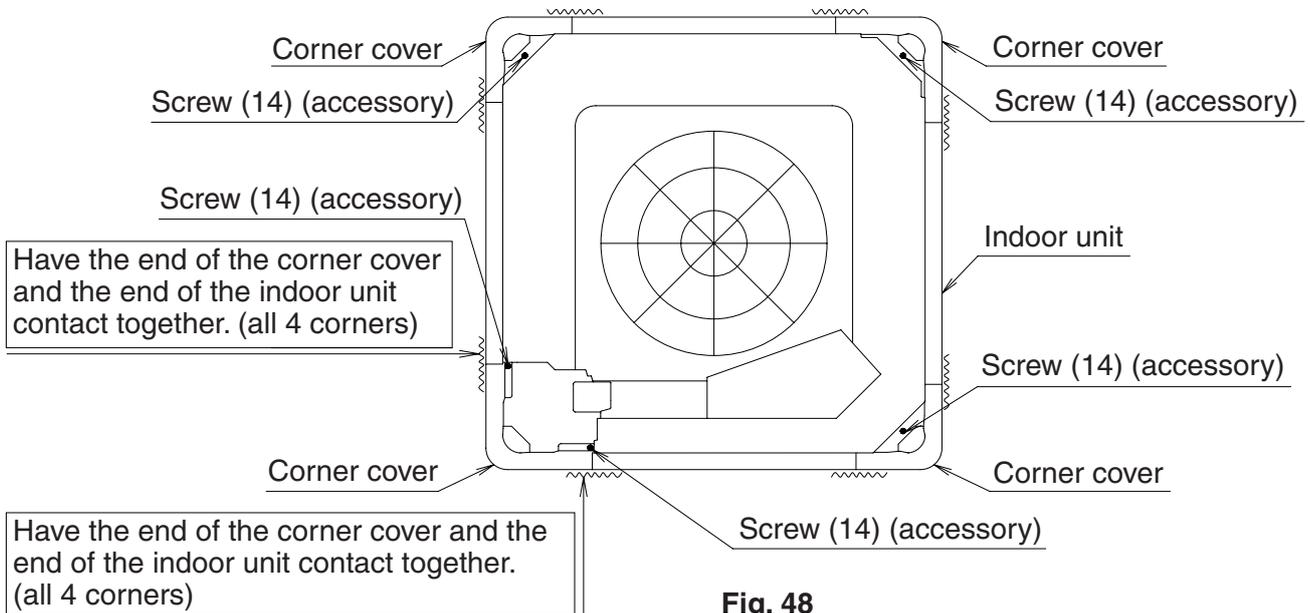
《For test operation without the corner cover, first refer to “11. TEST OPERATION”》

- For backward and rightward piping outlet, cut the corner cover as shown in **Fig. 47** and remove it.  
(When cutting, give caution and mount on the indoor unit so that the parts for the corner cover may not fall off.)



**Fig. 47**

- Attach the corner cover to the indoor unit.  
Then, fix the corner cover with the attached screws (14) while pressing the corner cover so that the end of the corner cover and the end of the indoor unit contact together. (**Refer to Fig. 48**)



**Fig. 48**

- After attaching the suction grille in opposite order mentioned in the clause “4. PREPARATION BEFORE INSTALLATION - (3)” (**Refer to Fig. 49-(1)**), hook the strap (a) for preventing the suction grille from falling (**Refer to Fig. 49-(2)**).

- Hook the strap (b) for preventing the suction grille from falling. (Refer to Fig. 49-(3))

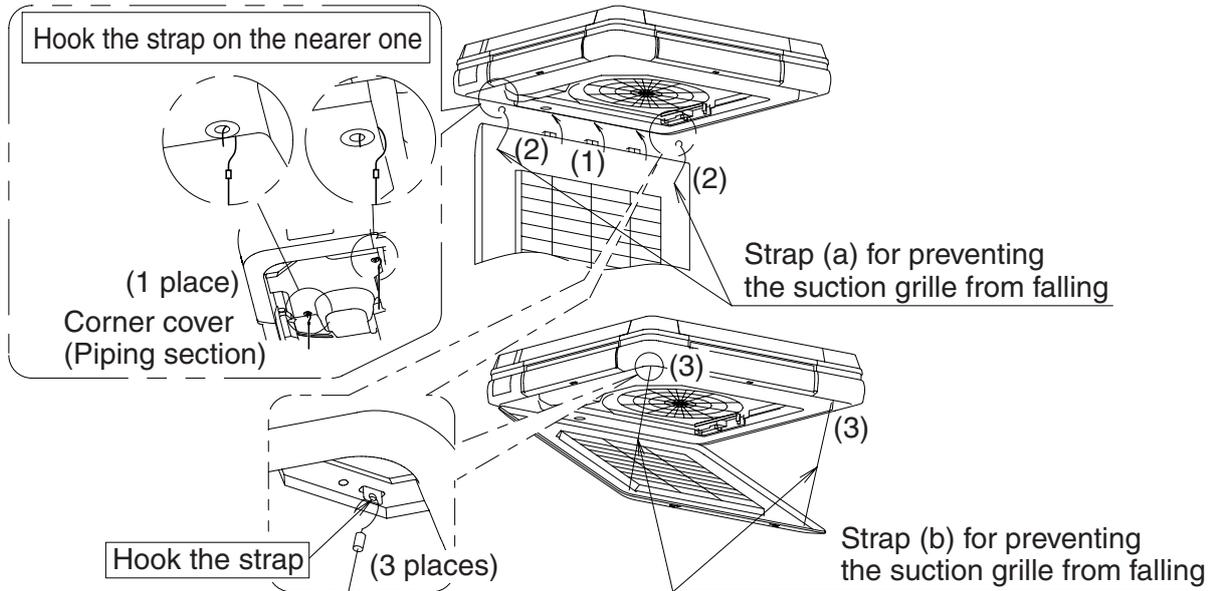


Fig. 49

## 10. FIELD SETTING

### ⚠ CAUTION

Before carrying out field setting, check the items mentioned in the clause 2 “1. Items to be checked after the installation work is completed” on page 4.

- Check if all the installation and piping works for the air conditioners are completed.
- Check if the control box lids of the air conditioner are closed.

《After turn on the power supply, carry out field setting from the remote controller according to the installation state.》

- Carry out setting at 3 places, “Mode No.,” “FIRST CODE No.” and “SECOND CODE No.”. The settings shown by “” in the table indicate those when shipped from the factory.
- The method of setting procedure and operation is shown in the installation manual attached to the remote controller.
 

(Note) Though setting of “Mode No.” is carried out as a group, if you intend to carry out individual setting by each indoor unit or confirmation after setting, carry out setting with the Mode No. shown in the parenthesis ( ).
- Do not carry out setting other than those shown in the table.

### 10-1 SETTING OF CEILING HEIGHT

- Set the SECOND CODE No. according to the ceiling height as shown in the Table 4.

Table 4

Setting	Ceiling height (m)		Mode No.	FIRST CODE No.	SECOND CODE No.
	FUQ71CVEB	FUQ100 · 125CVEB			
Standard	2.7 or less	3.2 or less	13 (23)	0	01
High ceiling 1	2.7 - 3.0	3.2 - 3.6			02
High ceiling 2	3.0 - 3.5	3.6 - 4.0			03

### 10-2 SETTING FILTER SIGN

- A message to inform the air filter cleaning time will be indicated on the remote controller.
- Set the SECOND CODE No. shown in the Table 5 according to the amount of dust or pollution in the room.

- Though the indoor unit is equipped with the long life filter, it is necessary to periodically clean the filter to avoid clogging of the filter. Please also explain the set time to the customer.
- The periodical filter cleaning time can be shortened depending on the environment.

Table 5

Contamination	Filter hours (long life type)	Mode No.	FIRST CODE No.	SECOND CODE No.
Normal	Approx. 2500 hrs	10 (20)	0	01
More contaminated	Approx. 1250 hrs			02
With indication			3	01
No indication*				02

\* Use "No indication" setting when cleaning indication is not necessary such as the case of periodical cleaning being carried out.

### 10-3 SETTING AIR DISCHARGE DIRECTION

- When changing air discharge setting (2-way or 3-way discharge), set the SECOND CODE No. as shown in the Table 6.

Table 6

Setting	Mode No.	FIRST CODE No.	SECOND CODE No.
4-way air discharge	13 (23)	1	01
3-way air discharge			02
2-way air discharge			03

### 10-4 SETTING FAN SPEED DURING THERMOSTAT OFF

- Set the fan speed according to the using environment after consultation with your customer.
- When the fan speed is changed, explain the set fan speed to your customer.

Table 7

Setting	Mode No.	FIRST CODE No.	SECOND CODE No.
Fan stops during thermostat OFF (Cooling · heating)	Normal	11 (21)	01
	Stop		02
Fan speed during cooling thermostat OFF	LL (Extra low)	12 (22)	01
	Setting		02
Fan speed during heating thermostat OFF	LL (Extra low)	12 (22)	01
	Setting		02

### 10-5 SETTING INDOOR UNIT NUMBER OF SIMULTANEOUS OPERATION SYSTEM

- When using in simultaneous operation system mode, change the SECOND CODE No. as shown in Table 8. (SECOND CODE No. is factory set to "01" for pair system.)
- When using in simultaneous operation system mode, refer to "10-6 SIMULTANEOUS OPERATION SYSTEM INDIVIDUAL SETTING" section to set master and slave units separately.

Table 8

Setting	Mode No.	FIRST CODE No.	SECOND CODE No.
Pair system (1 unit)	11 (21)	0	01
Simultaneous operation system (2-unit)			02
Simultaneous operation system (3-unit)			03

## 10-6 SIMULTANEOUS OPERATION SYSTEM INDIVIDUAL SETTING

It is easier if the optional remote controller is used when setting the slave unit.

### < Procedure >

- Perform the following procedure when setting the master and slave unit separately.
- (1) Change the SECOND CODE No. to "02", individual setting, so that the slave unit can be individually set. (SECOND CODE No. is factory set to "01", for unified setting.)

Setting	Mode No.	FIRST CODE No.	SECOND CODE No.
Unified setting	11 (21)	1	01
Individual setting			02

- (2) Perform field setting (Refer to 10-5) for the master unit.
- (3) Turn off the main power supply switch after (2) is finished.
- (4) Detach remote controller from the master unit and connect it to the slave unit.
- (5) Turn on the main power supply switch again, and as in (1), change the SECOND CODE No. to "02", individual setting.
- (6) Perform field setting (Refer to 10-5) for the slave unit.
- (7) Turn off the main power supply switch after (6) is finished.
- (8) If there is more than one slave unit, repeat steps (4) to (7).
- (9) Detach the remote controller from the slave unit after the setting, and reattach to the master unit. This is the end of the setting procedure.

\* You do not need to rewire the remote controller from the master unit if the optional remote controller for slave unit is used. (However, remove the wiring attached to the remote controller terminal block of the master unit.) After the slave unit setting, remove the remote controller wiring, and rewire the remote controller to the master unit. (The indoor unit does not operate properly when two or more remote controllers are attached to the unit in the simultaneous operation system mode.)

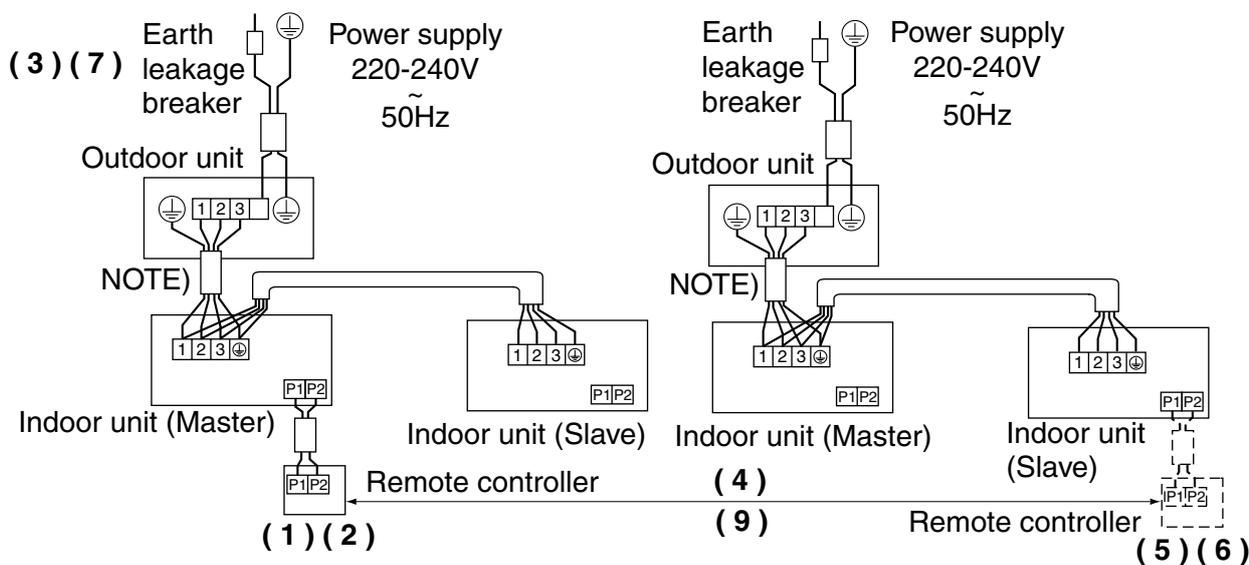


Fig. 50

### NOTE

- Terminal numbers of outdoor and indoor units must be matched.

## 10-7 SETTING WHEN AN OPTIONAL ACCESSORY IS ATTACHED

- For setting when attaching an optional accessory, refer to the installation manual attached to the optional accessory.

## 10-8 WHEN USING WIRELESS REMOTE CONTROLLER

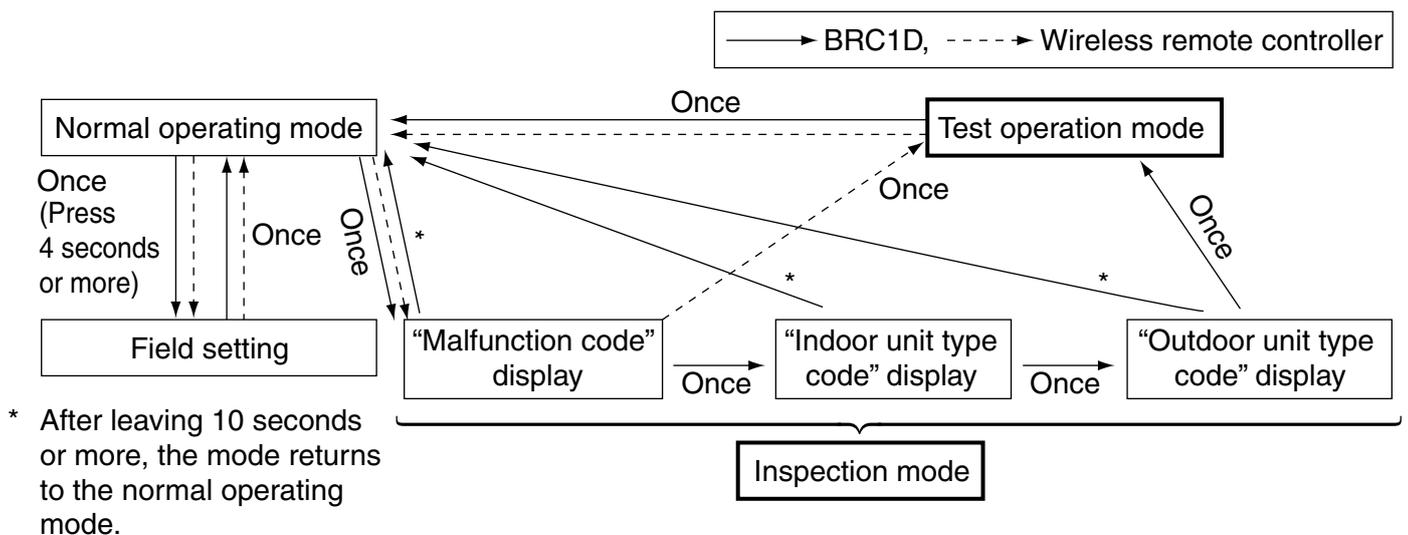
- When using a wireless remote controller, it is necessary to set the wireless remote controller address. Refer to the installation manual attached to the wireless remote controller.

# 11. TEST OPERATION

<Complete all the “1. Items to be checked after the installation work is completed” on page 4. Please also refer to the installation manual attached to the outdoor unit.>

- (1) If the remote controller is BRC1E model, refer to the installation manual attached to the remote controller.
- (2) If the remote controller is other than above, perform the following procedure.
  - Make sure that the installation work for the indoor and outdoor units is all completed.
  - Make sure that the following items are all closed: the control box lid of the indoor unit and the outer board and piping cover of the outdoor unit.
  - After completing the refrigerant piping, drain piping, and electrical wiring, clean the interior of the indoor unit and front panel. Next, perform test operation in accordance with the installation manual attached to the outdoor unit in order to protect the unit. (It is recommended that the test operation is performed in the presence of qualified electrical technician or engineer.)
  - In test operation, make sure that airflow direction and fan speed can be obtained according to the settings.
  - If interior work is still unfinished when test operation finishes, explain to the customer that the air conditioner must not be operated until interior work is completed in order to protect the indoor units. (If the indoor unit is operated under this condition, paint, glue, and other materials used during the interior finishing work will contaminate the indoor unit. This may cause water splashes or leakage.)
  - If malfunction occurs and the air conditioner cannot operate, refer to “11-1 HOW TO DIAGNOSE FOR PROBLEMS”.
  - After completing the test operation, press the INSPECTION/TEST OPERATION button once to put the indoor unit in inspection mode, and make sure the malfunction code is “00” (= normal).  
If the code reads anything other than “00”, refer to “11-1 HOW TO DIAGNOSE FOR PROBLEMS”.
  - Press the INSPECTION/TEST OPERATION button four times to return to normal operation mode.

## [Mode switching]



## 11-1 HOW TO DIAGNOSE FOR PROBLEMS

**With the power on. Troubles can be monitored on the remote controller.**

If the remote controller is BRC1E model, refer to the installation manual attached to the remote controller. For the other remote controllers, perform the fault diagnosis using the following procedure.

### ■ Trouble shooting with the remote controller display.

#### 1. With the wired remote controller. (NOTE 1)

When the operation stops due to trouble, the operation lamp flashes, and the display indicates “” and the malfunction code. Diagnosis can be carried out using the malfunction code list according to the indicated malfunction code.

In addition, when in group control it indicates the unit No., so the malfunction detected unit No. will be clarified. For resetting the malfunction, refer to (NOTE 2).

2. With the wireless remote controller. (Also refer to the operation manual attached to the wireless remote controller)

When the operation stops due to trouble, the display on the indoor unit flashes. In such a case, diagnose the fault contents with the table on the Malfunction code list looking for the Malfunction code which can be found by following procedures. (NOTE 2)

(1) Press the INSPECTION /TEST OPERATION button, “” is displayed and “0” flashes.

(2) Press the PROGRAMMING TIME button and find the unit No. which stopped due to trouble.

Number of beeps 3 short beeps..... Perform all the following operations

1 short beep ..... Perform (3) and (6)

1 long beep..... No trouble

(3) Press the OPERATION MODE SELECTOR button and upper figure of the Malfunction code flashes.

(4) Continue pressing the PROGRAMMING TIME button unit it makes 2 short beeps and find the upper code.

(5) Press the OPERATION MODE SELECTOR button and lower figure of the Malfunction code flashes.

(6) Continue pressing the PROGRAMMING TIME button unit it makes a long beep and find the lower code.

• A long beep indicate the malfunction code.

#### NOTE

1. When the INSPECTION/OPERATION button on the remote controller is pressed, the “” indication starts flashing.

2. When the ON/OFF button is kept pressed for 5 seconds or longer during the inspection mode, the above trouble history indication disappears. In this case, after the malfunction code indication flashes twice, the indication of code becomes “00” (normal) and unit NO. becomes “0”. Then, the display automatically changes from the inspection mode to the normal mode.

## 11-2 MALFUNCTION CODE

- Depending on the type of indoor or outdoor unit, the malfunction code may or may not be displayed.
- For places where the Malfunction code is left blank, the “” indication is not displayed. Though the system continues operating, be sure to inspect the system and make repairs as necessary.

Malfunction code	Descriptions and measures	Remarks
A1	Indoor Printed Circuit Board failure	
A3	Drain level abnormal	
A6	Indoor fan motor overload, over current, lock	
	Indoor Printed Circuit Board connection failure	
A8	Fan motor Printed Circuit Board power supply abnormal	
AF	Humidifier system malfunction	
AJ	Capacity setting failure	Capacity setting adapter or capacity data error, or disconnection of the capacity setting adapter, failure to connect the adapter, or the capacity is not set to the data-retention IC.
C1	Transmission error between indoor Printed Circuit Board (Master) and indoor Printed Circuit Board (Slave)	
C4	Indoor heat exchanger liquid pipe temperature sensor malfunction	Abnormal stop is applied depending on the model or condition.
C5	Indoor heat exchanger condenser / evaporator temperature sensor malfunction	Abnormal stop is applied depending on the model or condition.

<b>C6</b>	Fan motor Printed Circuit Board setting error	
<b>C9</b>	Suction air thermistor malfunction	Abnormal stop is applied depending on the model or condition.
<b>CC</b>	Humidity sensor abnormal	
<b>CJ</b>	Remote controller air thermistor malfunction	Remote controller thermo does not function, but body thermo operation is enabled.
<b>E0</b>	Action of safety device (Outdoor unit)	
<b>E1</b>	Outdoor Printed Circuit Board failure (Outdoor unit)	
<b>E3</b>	High pressure malfunction (Outdoor unit)	
<b>E4</b>	Low pressure malfunction (Outdoor unit)	
<b>E5</b>	Compressor motor lock malfunction (Outdoor unit)	
<b>E6</b>	Compressor motor lock by over current (Outdoor unit)	
<b>E7</b>	Outdoor fan motor lock malfunction (Outdoor unit)	
	Outdoor fan instant overcurrent malfunction (Outdoor unit)	
<b>E9</b>	Electric expansion valve malfunction (Outdoor unit)	
<b>EA</b>	Cooling/heating switch malfunction (Outdoor unit)	
<b>F3</b>	Discharge piping temperature malfunction (Outdoor unit)	
<b>H3</b>	High pressure switch failure (Outdoor unit)	
<b>H4</b>	Low pressure switch failure (Outdoor unit)	
<b>H7</b>	Outdoor fan motor position signal malfunction (Outdoor unit)	
<b>H9</b>	Outdoor air thermistor system malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J1</b>	Pressure sensor system malfunction (batch) (Outdoor unit)	
<b>J2</b>	Current sensor system malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J3</b>	Discharge piping thermistor system malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J5</b>	Suction piping thermistor system malfunction (Outdoor unit)	
<b>J6</b>	Outdoor heat exchanger distributor liquid piping thermistor malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J7</b>	Outdoor heat exchanger condenser / evaporator thermistor malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J8</b>	Liquid piping thermistor system malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
<b>J9</b>	Gas piping thermistor malfunction (cooling) (Outdoor unit)	

JA	Discharge piping pressure sensor system malfunction (Outdoor unit)	
JC	Suction piping pressure sensor system malfunction (Outdoor unit)	
L1	Inverter system malfunction (Outdoor unit)	
L3	Reactor thermistor malfunction (Outdoor unit)	
L4	Overheated heat-radiating fin (Outdoor unit)	Inverter cooling failure.
L5	Instantaneous overcurrent (Outdoor unit)	The compressor engines and turbines may be experiencing a ground fault or short circuit.
L8	Electric thermal (Outdoor unit)	The compressor engines and turbines may be overloaded and disconnected.
L9	Stall prevention (Outdoor unit)	The compressor may be locked.
LC	Transmission malfunction between inverter and outdoor control unit (Outdoor unit)	
<b>P1</b>	Open-phase (Outdoor unit)	
P3	DCL sensor system malfunction (Outdoor unit)	
<b>P4</b>	Heat-radiating fin thermistor malfunction (Outdoor unit)	Abnormal stop is applied depending on the model or condition.
P6	DC output current sensor system malfunction (Outdoor unit)	
PJ	Capacity setting failure (Outdoor unit)	Capacity setting adapter or capacity data error, or disconnection of the capacity setting adapter, failure to connect the adapter, or the capacity is not set to the data-retention IC.
<b>U0</b>	Suction piping temperature abnormal (Outdoor unit)	The refrigerant may be insufficient. Abnormal stop is applied depending on the model or condition.
U1	Reverse phase (Outdoor unit)	Reverse two phase of L1, L2 and L3 leads.
<b>U2</b>	Power voltage malfunction (Outdoor unit)	The inverter open-phase or main circuit condenser may be malfunctioning. Abnormal stop is applied depending on the model or condition.
U4 UF	Transmission error (between indoor and outdoor units)	Wiring error between indoor and outdoor unit. Or Indoor and outdoor Printed Circuit Board failure.
U5	Transmission error (between indoor and remote controller units)	Transmission between indoor unit and remote controller is not performed properly.
U8	Transmission error between main and sub remote controllers (sub remote controller malfunction)	
UA	Field setting error	System setting error of the simultaneous on/off multi-split type.
UE	Transmission error (between indoor unit and centralized remote controller)	
<b>UC</b>	Remote controller address setting error	
<b>UJ</b>	Accessory equipment transmission error	Abnormal stop is applied depending on the model or condition.

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**⚠ CAUTION**

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After test operation is completed, check the items mentioned in the clause 2 “**2. Items to be checked at delivery**” on page 4.

If the interior finish work is not completed when the test operation is finished, for protection of the air conditioner, ask the customer not operate the air conditioner until the interior finish work is completed.

If the air conditioner is operated, the inside of the indoor units may be polluted by substances generated from the coating and adhesives used for the interior finish work and cause water splash and leakage.

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**⚠ To the operator carrying out test operation**

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After test operation is completed, before delivering the air conditioner to the customer, confirm that the control box lid is closed.

In addition, explain the power supply status (power supply ON/OFF) to the customer.

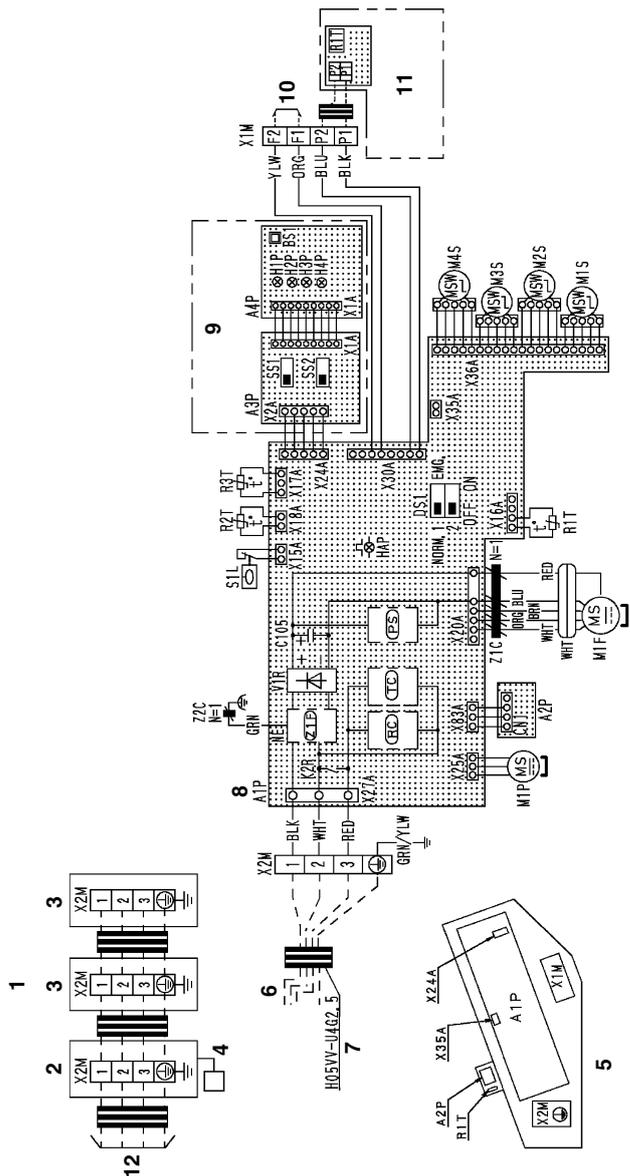
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## 12. WIRING DIAGRAM

(Refer to Fig. 51)

1	IN CASE OF SIMULTANEOUS OPERATION SYSTEM (NOTE 5)	2	INDOOR UNIT (MASTER)
3	INDOOR UNIT (SLAVE)	4	REMOTE CONTROLLER
5	CONTROL BOX	6	TO OUTDOOR UNIT (NOTE 3)
7	(NOTE 8)	8	INDOOR UNIT
9	WIRELESS REMOTE CONTROLLER (RECEIVER/DISPLAY UNIT) (OPTIONAL ACCESSORY)	10	CENTRAL REMOTE CONTROLLER (NOTE 4)
11	WIRED REMOTE CONTROLLER (OPTIONAL ACCESSORY) (NOTE 6)	12	TO OUTDOOR UNIT

# WIRING DIAGRAM



- NOTES**
1. : TERMINAL BLOCK : CONNECTOR
  2. : FIELD WIRING

3. IN CASE OF SIMULTANEOUS OPERATION INDOOR UNIT SYSTEM. SEE THE INDOOR UNIT WIRING ONLY.
4. IN CASE USING CENTRAL REMOTE CONTROLLER, CONNECT IT TO THE UNIT IN ACCORDANCE WITH THE ATTACHED INSTALLATION MANUAL.
5. IN CASE OF SIMULTANEOUS OPERATION SYSTEM, CONNECTION QUANTITY OF THE INDOOR UNITS VARIES ACCORDING TO THE CONNECTION OUTDOOR UNIT, CONFIRM TECHNICAL GUIDE AND CATALOG, ETC. BEFORE CONNECTING.
6. IN CASE OF MAIN/SUB CHANGEOVER. SEE THE INSTALLATION MANUAL ATTACHED TO REMOTE CONTROLLER.
7. SYMBOLS SHOW AS FOLLOWS: BLK:BLACK RED:RED BLU:BLUE WHT:WHITE YLW:YELLOW GRN:GREEN ORG:ORANGE BRN:BROWN.
8. SHOWS ONLY IN CASE OF PROTECTED PIPING. USE H07RN-F IN CASE OF NO PROTECTION.

<b>INDOOR UNIT</b>	SS1	SELECTOR SWITCH (MAIN/SUB)
A1P	PRINTED CIRCUIT BOARD	
A2P	PRINTED CIRCUIT BOARD	
C105	CAPACITOR (M1F)	
DS1	DIP SWITCH ON PCB	
HAP	FLASHING LAMP (SERVICE MONITOR GREEN)	
K2R	MAGNETIC RELAY	
M1F	MOTOR (INDOOR FAN)	
M1P	MOTOR (DRAIN PUMP)	
M3M/S	MOTOR (SWING BLADE)	
M3M/S	MOTOR (SWING BLADE)	
R1T	THERMISTOR (AIR)	
R2T/R3T	THERMISTOR (COIL)	
S1L	FLOAT SWITCH	
V1R	DIODE BRIDGE	
X1M	TERMINAL BLOCK	
X2M	TERMINAL BLOCK	
Z1F	NOISE FILTER	
Z1C	FERRITE CORE	
Z2C	FERRITE CORE	
PS	POWER SUPPLY CIRCUIT	
RC	SIGNAL RECEIVER CIRCUIT	
TC	SIGNAL TRANSMISSION CIRCUIT	
<b>WIRELESS REMOTE CONTROLLER (RECEIVER / DISPLAY UNIT)</b>		
A3P	PRINTED CIRCUIT BOARD	
A4P	PRINTED CIRCUIT BOARD	
BS1	PUSH BUTTON (ON/OFF)	
H1P	PILOT LAMP (ON-RED)	
H2P	PILOT LAMP (TIMER-GREEN)	
H3P	PILOT LAMP (FILTER SIGN-RED)	
H4P	PILOT LAMP (DEFROST-ORANGE)	

Fig. 51

