DAIKIN

INSTALLATION MANUAL

VRV SYSTEM Air Conditioners

MODELS

Ceiling Mounted Cassette type (Round Flow with Sensing)

FXFQ25SVM	**FXFQ63SVM**
FXFQ32SVM	**FXFQ80SVM**
FXFQ40SVM	**FXFQ100SVM**
FXFQ50SVM	**FXFQ125SVM**

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

3P335596-2E

CONTENTS

1. SAFETY PRECAUTIONS

Be sure to follow this “SAFETY PRECAUTIONS”.
This product comes under the term “appliances not accessible to the general public”.

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

- 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 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 wirings and ensuring that external forces do not act on the terminal connections or wirings.
  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 wirings 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.

⚠ 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 wireless 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

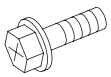
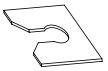
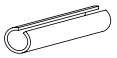
When unpacking the indoor unit or moving the unit after unpacked, hold the hangers (4 places) and do not apply force to other parts (particularly refrigerant piping, drain piping and resin parts).

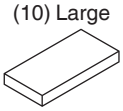
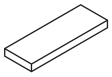
- Make sure to check in advance that the refrigerant to be used for installation work is R410A.
  (The air conditioner will not properly operate if a wrong refrigerant is used.)
- For installation of the outdoor unit, refer to the installation manual attached to the outdoor unit.
- Do not throw away 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 air conditioner while looking at the operation manual.
  Instruct the customer how to operate the air conditioner (particularly cleaning of the air filters, operation procedures, and temperature adjustment).
- For selection of installation location, use the installation pattern paper 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 carrying out wiring and the control box lid is removed.
  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
Quantity	1 pc.	1 pc.	8 pcs.	7 pcs.
Shape				

Name	(5) Installation pattern paper	(6) Screw (M4)	(7) Washer clamp	Joint insulating material
Quantity	1 sheet	4 pcs.	4 pcs.	1 each
Shape				 (8) For gas piping  (9) For liquid piping

Name	Sealing material		
Quantity	1 each	1 sheet	1 pc.
Shape	(10) Large  (12) Medium-2   (11) Medium-1	 (13) Small	 (14)

Name	(15) Installation guide	(Miscellaneous) • Operation manual • Installation manual
Quantity	1 sheet	
Shape		

- Screws for fixing the panel are attached to the decoration panel.

2-2 OPTIONAL ACCESSORIES

- This indoor unit separately requires a decoration panel and a remote controller.
- Confirm if a decoration panel shown in the Table 1 is prepared and meets your model.
  (Refer to the installation manual attached to the decoration panel for how to install.)

Table 1

Unit model	Optional decoration panel
FXFQ25 · 32 · 40 · 50 · 63 · 80 · 100 · 125SVM	BYCQ125B-W1
	Color : Fresh white

- 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 indoor and outdoor units rigidly fixed?	Drop · vibration · noise	
Are the installation works of the outdoor and indoor units completed?	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 or 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 indoor and outdoor units 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 the heating operation? Does the indoor unit makes unpleasant sound of air discharge?	
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.	
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.

3. SELECTION OF INSTALLATION LOCATION

Hold the hangers at 4 locations to move the indoor unit when unpacking or after unpacked, and do not apply force to the piping (refrigerant and drain) and resin parts.
If the temperature and humidity in the ceiling is likely to exceed 30°C, RH80%, use the optional kit for coping with high temperature and humidity, or additionally stick the insulation to the indoor unit.
Use the insulation such as glass wool or polyethylene that has thickness of 10 mm or more. However, keep the insulated outside dimension smaller than the ceiling opening so that the unit may go through the opening at installation.

The direction of air discharge for this product can be selected. Sealing material of air discharge outlet is available option for 4-way with sealed corners, and 3-way.

(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 remarkably 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)**
- 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)

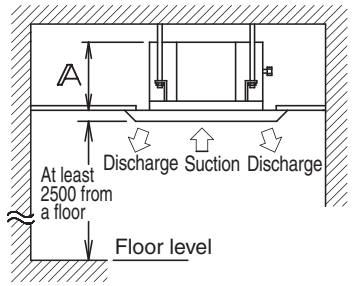


Fig. 1

MODEL NAME (FXFQ~SVM)	A [mm]
25 · 32 · 40 · 50 · 63 · 80	256
100 · 125	298

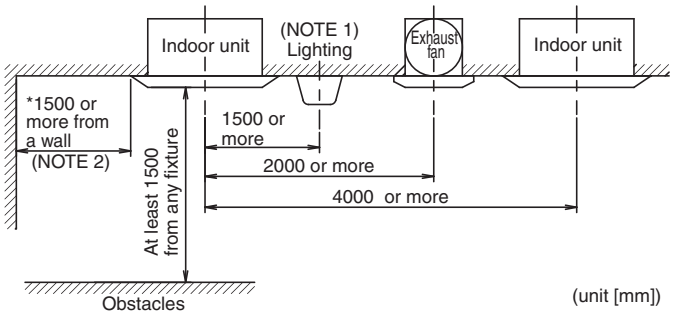


Fig. 2

⚠ CAUTION

- Any vents, light fixtures, or other appliances which may disturb the airflow might cause ceiling to become dirty if located too nearby, so follow **Fig. 2** when installing.
  Note)
  1. This restriction applies to the exposed type lighting, but does not apply to the recessed type (which does not protrude below the ceiling line).
  2. The clearance from the wall (indicated with *) must be 500 mm or more if the air outlet is closed or the horizontal blade is set to Airflow block and, if the corners (left and right corners of the target air outlet) are also closed, 200 mm or more.
     For how to set the airflow direction (including Airflow block) with the horizontal blade, refer to "Individual Airflow Direction" in the operation manual attached to the remote controller.
- 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 wireless 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.
- Localized temperature difference from the room temperature, if too large, can affect how the infrared floor sensor judges.
  (This may occur, for example, in an area where floor heating/high-temperature heat generating equipment is installed.)
- Each sensor has been set so that the center of the sensing area is located in the center of the product 800 mm above the floor (in case of the infrared presence sensor) or 0 mm above the floor (in case of the infrared floor sensor) when the ceiling height is approximately 2.7 m.

(2) Ceiling height

- This indoor unit can be installed in a space of which ceiling height is up to 3.5 m (Type 100 · 125: 4.2 m)
- However, if the ceiling height exceeds 2.7 m (Type 100 · 125: 3.2 m), it is necessary to set from the remote controller on site. Refer to the section "**10. FIELD SETTING AND TEST OPERATION**".

(3) Direction of the air discharge

- Select the number of directions of the optimum air discharge for the shape or the position of the room.
- The number of directions of the air discharge can be changed by installing a sealing material.
- When installing a sealing material, the field setting from the remote controller is required. For details, refer the operation manual attached to the sealing materials.
  (It is set to the setting position number "01" (Standard · All round outlet) when shipped from the factory.)
- To use the optional sealing material kit to change the setting of air discharge direction (4-way blow type (with corners sealed)/3-way blow type), refer to the installation manual attached to it.

[Direction of air discharge]

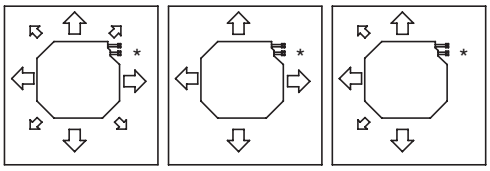


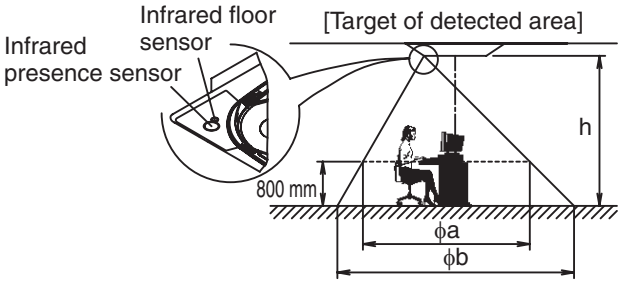
Fig. 3

(4) Use hanging bolts for installation.

Investigate if the installation place can withstand the mass of the indoor unit and, if necessary, hang the indoor unit with bolts after it is reinforced by beams etc.
(Refer to the installation pattern paper (5) for the mounting pitch.)

(5) Infrared presence/floor sensor's sensing area

The sensing area is as shown in the figure below.



Indoor unit installation height h [m]	2.7	3.5	4.0
Infrared presence sensor φa [m]	Approx. 8.5	Approx. 11.5	Approx. 13.5
Infrared floor sensor φb [m]	Approx. 11	Approx. 14	Approx. 16

4. PREPARATION BEFORE INSTALLATION

(1) Check the relation of location between the ceiling opening and the indoor unit hanging bolts.

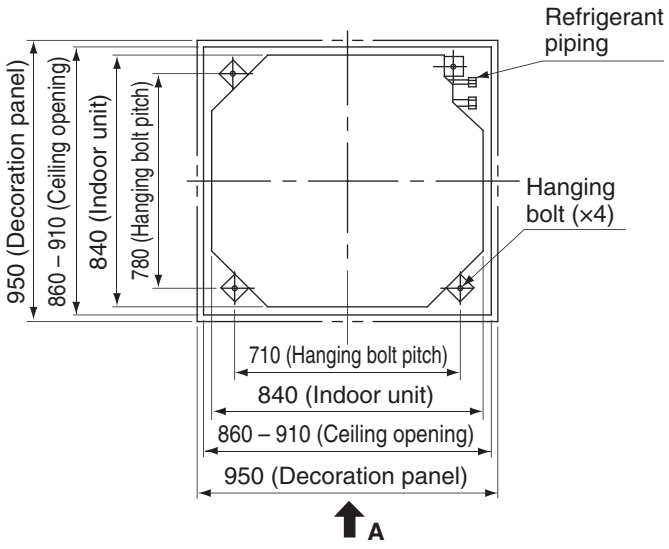


Fig. 4

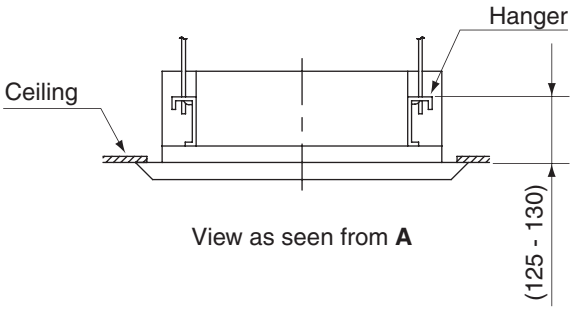


Fig. 5

⚠ CAUTION

Reduce the distance between the unit and ceiling to 35 mm or below in order to maintain an overlapping panel margin of 20 mm for the opening on the ceiling. If the distance exceeds 35 mm, attach a ceiling material to the part marked ▤ or replace the ceiling. **(Refer to Fig. 6)**

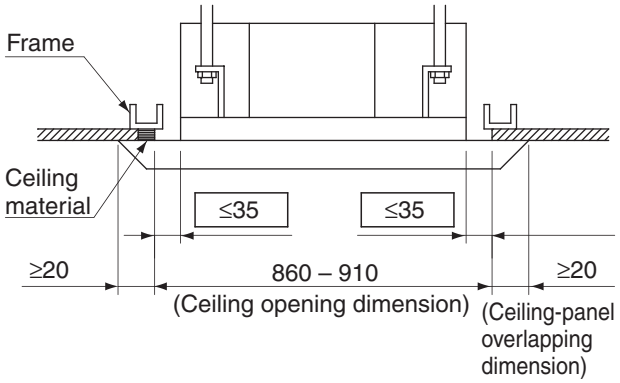


Fig. 6

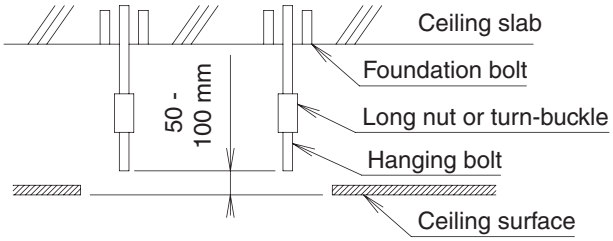
(2) Make the ceiling opening required for installation. (in case of existing ceiling)

- Use the installation pattern paper (5) matched to the ceiling opening dimension.
- Make the ceiling opening required for installation at the installation location and carry out refrigerant/drain piping, power supply wiring, remote controller wiring (not needed in case of wireless remote controller) and wiring between the indoor and outdoor units. (Refer to each section "**6. REFRIGERANT PIPING WORK, 7. DRAIN PIPING WORK** and **8. ELECTRIC WIRING WORK**")
- After making the opening, sometimes it is necessary to reinforce the ceiling framework to keep the level of the ceiling and prevent vibration of the ceiling. For details, consult with the builder and interior designer.

(3) Install the hanging bolts.

- 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 indoor unit firmly to the building so that it may withstand the mass of the unit. In addition, adjust clearance (50 - 100 mm) from the ceiling in advance.

<Installation examples>



Note) The above shown parts are all field supply.

5. INSTALLATION OF INDOOR UNIT

<<It is easy to attach the optional parts (except for decoration panel) 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.

[Install the indoor unit in the order of steps (1), (2), (3), (4), (5), and (6) in case of a newly built ceiling, or in the order of steps (1), (3), (4), and (5) in case of an existing ceiling.]

(1) Install the indoor unit temporarily.

- Fix the hanger to the hanging bolt. Make sure to securely fix the hanger with the nut and the washer for hanger (3) from the upper and lower side. **(Refer to Fig. 7)** If the washer clamp (7) is used, the upper side washer for hanger (3) may be protected from falling off. **(Refer to Fig. 8)**

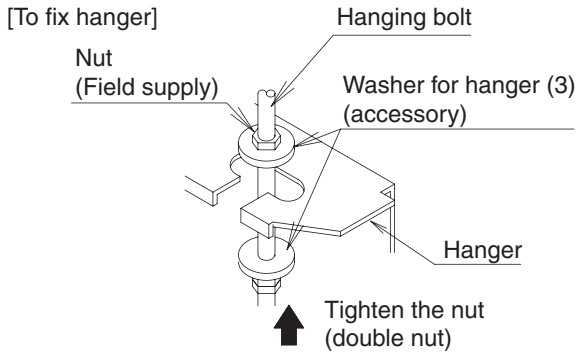


Fig. 7

[Washer clamp (7) fixing method]

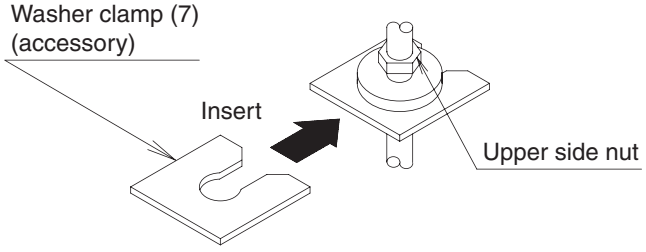
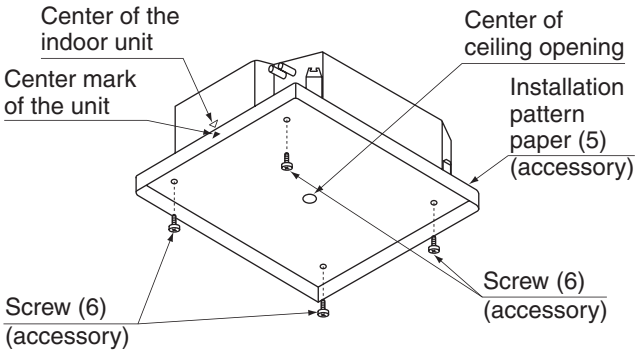


Fig. 8

(2)

- The installation pattern paper (5) is matched to the ceiling opening dimension.
  For the height of ceiling lower surface from the floor level, confirm with the builder of ceiling.
- The center of the ceiling opening is shown in the installation pattern paper (5).
  The center of the indoor unit is indicated as triangle marks on the sides and bottom of the unit and those on the installation pattern paper (5).
- Put the installation pattern paper (5) to the indoor unit with four screws (6).
  At this time, put the installation pattern paper (5) to the indoor unit with the triangle marks on the indoor unit and those on the installation pattern paper (5) aligned.

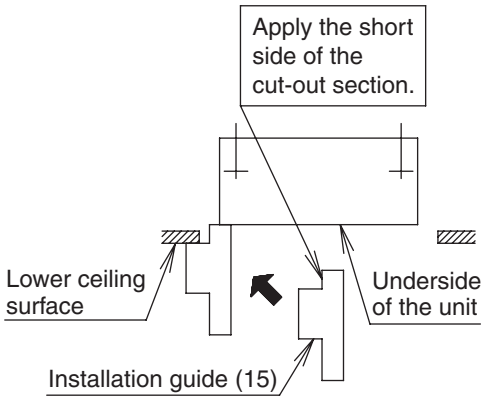


[Installation of the installation pattern paper]

< Installation work after the ceiling work is finished >

(3) Adjust so that the unit will be properly positioned.
(Refer to **"4. PREPARATION BEFORE INSTALLATION – (1)"**)

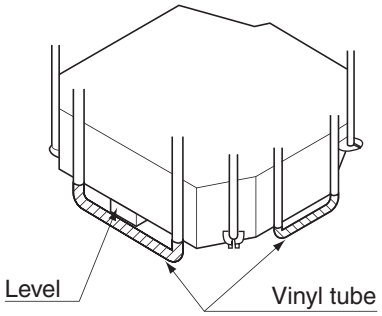
- Using the Installation guide (15) allows you to check the positions from the underside of the unit to the lower ceiling surface.



(4) Check the level of the unit. **(Refer to Fig. 9)**

(5) Remove the washer clamp (7) used for preventing the washer for hanger (3) from dropping and tighten the upper side nut.

(6) Remove the installation pattern paper (5).



[Maintaining horizontality]

Fig. 9

⚠ CAUTION

- **Install the indoor unit leveled.**
  If the indoor unit is inclined and the drain piping side gets high, it may cause malfunction of a float switch and results in water leakage.
- **Attach nuts on the upper and lower side of hanger.**
  If there is no upper nut and the lower nut is over-tightened, the hanger 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 indoor 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 ether 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 pipings.**

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.

- The refrigerant is pre-charged in the outdoor unit.
- When connecting the pipings to the air conditioner, make sure to use a spanner and a torque wrench as shown in **Fig. 10**.
- For the dimension of flared part and the tightening torque, refer to the Table 2.
- When making a flare connection, coat the flared inner surface only with ether oil or ester oil.
  (Refer to Fig. 11)
  Then, turn the flare nut 3 to 4 times with your hand and screw in the nut.

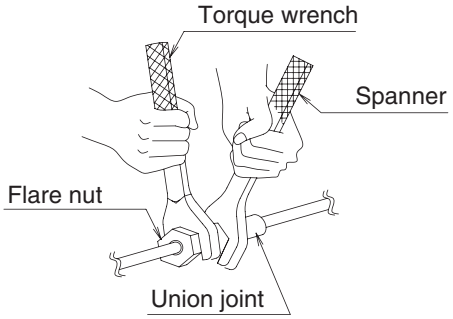


Fig. 10

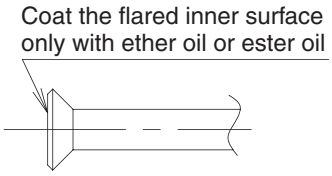
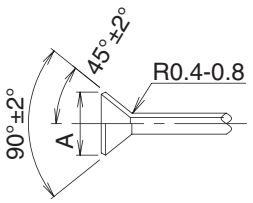


Fig. 11

Table 2

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 have oil adhere to the screw fixing part of resin parts.
If oil adheres, it may weaken the strength of screwed part.

Do not tighten flare nuts too tight.
If a flare nut cracks, the refrigerant may leak.

- If there is no torque wrench, use Table 3 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 3.
  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 3

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

⚠ CAUTION

Insulation of field piping must be carried out 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, referring to **Fig. 12**, insulate both the gas and liquid piping connection with the attached joint insulating material (8) and (9) to prevent the pipings from getting exposed.
  Then, tighten the both ends of insulating material with the clamp (4).
- Wrap the sealing material (Medium-1, 2) (11) (12) around the joint insulating material (8) and (9) (flare nut section), both the gas and liquid piping.
- Make sure to bring the seam of joint insulating material (8) and (9) to the top.

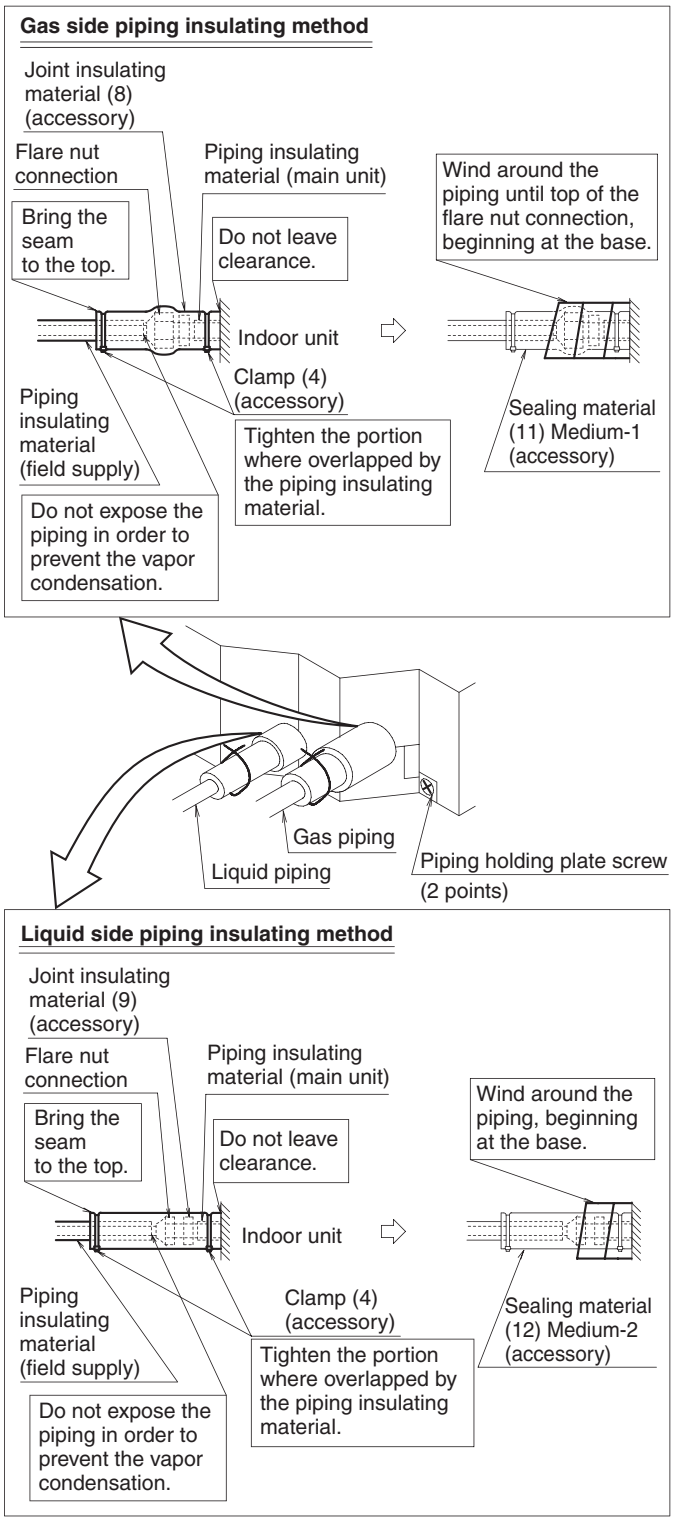


Fig. 12

- Before brazing refrigerant piping, have nitrogen flow through the refrigerant piping and substitute air with nitrogen (NOTE 1) **(Refer to Fig. 13)**. Then, carry out brazing (NOTE 2).
  After all the brazing works are finished, carry out flare connection with the indoor unit. **(Refer to Fig. 12)**

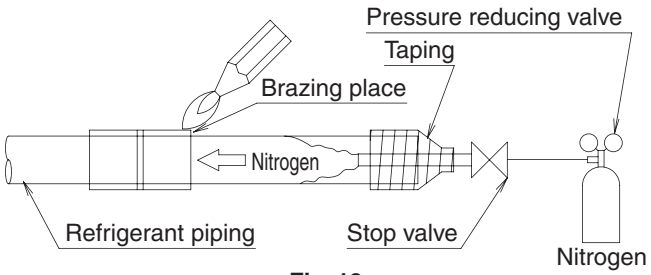


Fig. 13

NOTE

1. The proper pressure for having nitrogen flow through the piping is approximately 0.02 MPa, 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.

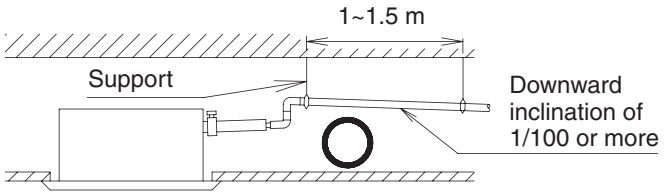
⚠ CAUTION

Do not use antioxidant when brazing piping.
It may result in malfunction of components and clogging of piping due to residue.

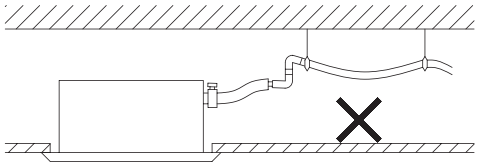
7. DRAIN PIPING WORK

(1) Carry out drain piping.
Carry out drain piping so that drainage can ensured.

- Select the piping diameter equal to or larger than (except for riser) that of the connection piping (polyvinyl chloride piping, nominal diameter 25 mm, outside diameter 32 mm).
- Install the drain piping as short as possible with downward inclination of 1/100 or more and without where air may stagnate. **(Refer to Fig. 14)** (It may cause abnormal sound such as bubbling noise.)



Good



Wrong

Fig. 14

⚠ CAUTION

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

- If sufficient downward inclination cannot be ensured, carry out upward drain piping.
- Install supports at a distance of 1 to 1.5 m so that the piping may not deflect. **(Refer to Fig. 14)**
- Make sure to use the attached drain hose (1) and the metal clamp (2).
  Insert the drain hose (1) into the drain socket up to the point where the socket diameter becomes larger.
  Put the metal clamp (2) to the taped hose end and tighten the metal clamp (2) with torque 1.35±0.15 N·m (135±15 N·cm).

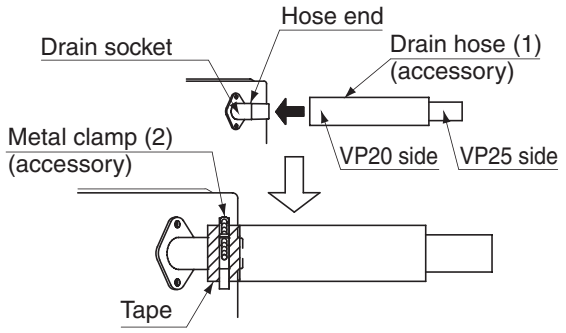


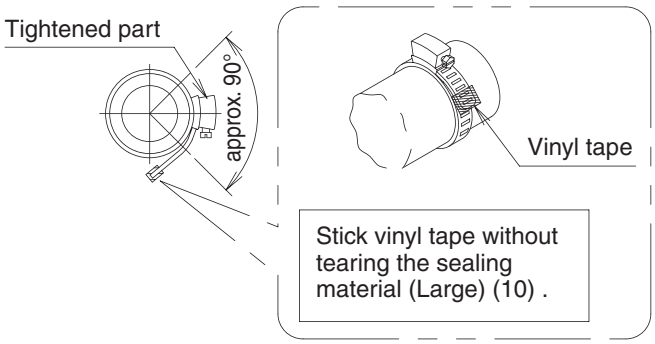
Fig. 15

⚠ CAUTION

- Do not tighten the metal clamp (2) with the torque more than the specified value.
  The drain hose (1), the socket or the metal clamp (2) may be damaged.

- Wrap the vinyl tape around the end of the metal clamp (2) so that the sealing material (Large) (10) 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. 16)**

<In case of sticking vinyl tape>



<In case of bending the tip>

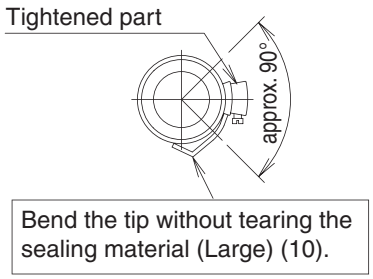


Fig. 16

< Caution to be taken when carrying out upward drain piping (Refer to Fig. 17) >

- The maximum height of the drain riser is 675 mm. Since the drain pump mounted on this indoor unit is a high head type, from the characteristic point of view, the higher the drain riser the lower the draining noise. Therefore, the drain riser of 300 mm or higher is recommended.
- For upward drain piping, keep the horizontal piping distance of 300 mm or less between the drain socket root to the drain riser.

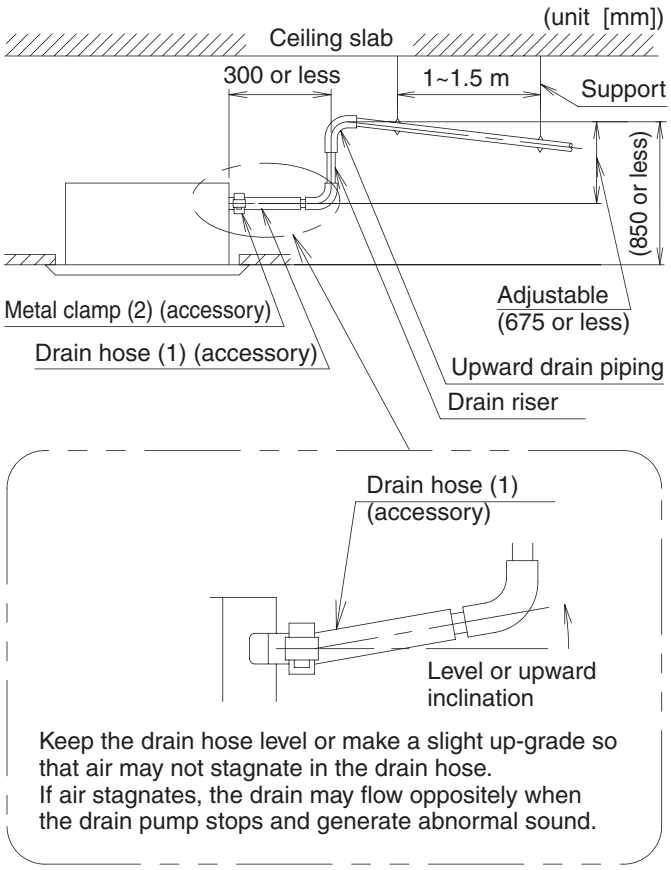


Fig. 17

⚠ CAUTION

- To avoid the attached drain hose (1) getting excessive force, do not bend nor twist it.
  It may cause water leakage.
- In case of centralized drain piping, carry out piping work according to the procedure shown in the following **Fig. 18**.

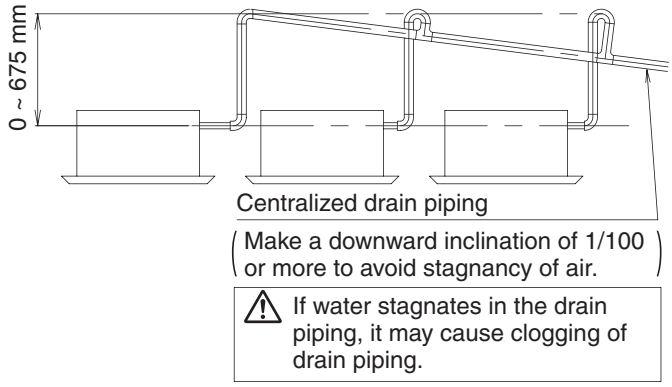


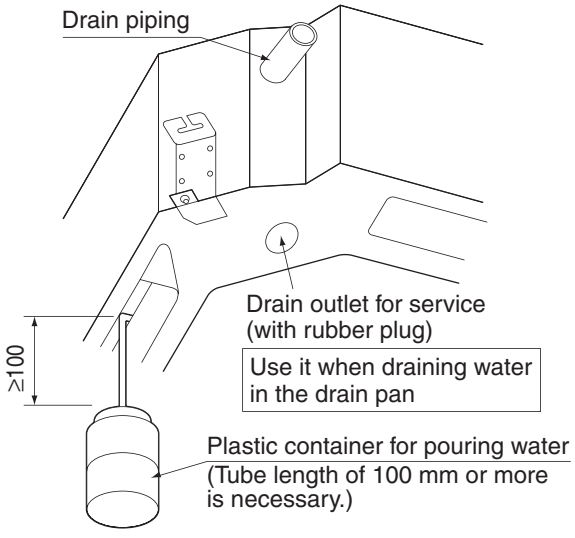
Fig. 18

- As for the size of centralized drain piping, select the size that meet the capacity of indoor units to be connected. (Refer to the technical document)
- At replacement with new indoor unit, use the attached new drain hose (1) and the metal clamp (2).
  If an old drain hose or a metal clamp is used, it may cause water leakage.

(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 on the left side of the drain socket into the drain pan 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 **"10. FIELD SETTING AND TEST OPERATION"**. **(Refer to Fig. 19)**



[Method of adding water]

Fig. 19

- After checking the drainage of water, refer to **Fig. 20** and attach the sealing material (14) to perform the thermal insulation of the drain socket.

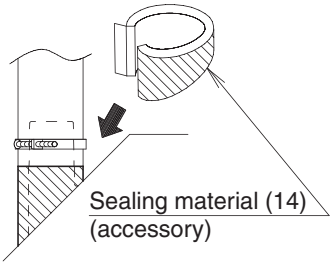


Fig. 20

[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 220 - 240 V power supply to the terminal (L, N) on the terminal block (X2M).
Connect the earth wiring to the earth terminal. **(Refer to Fig. 21)**

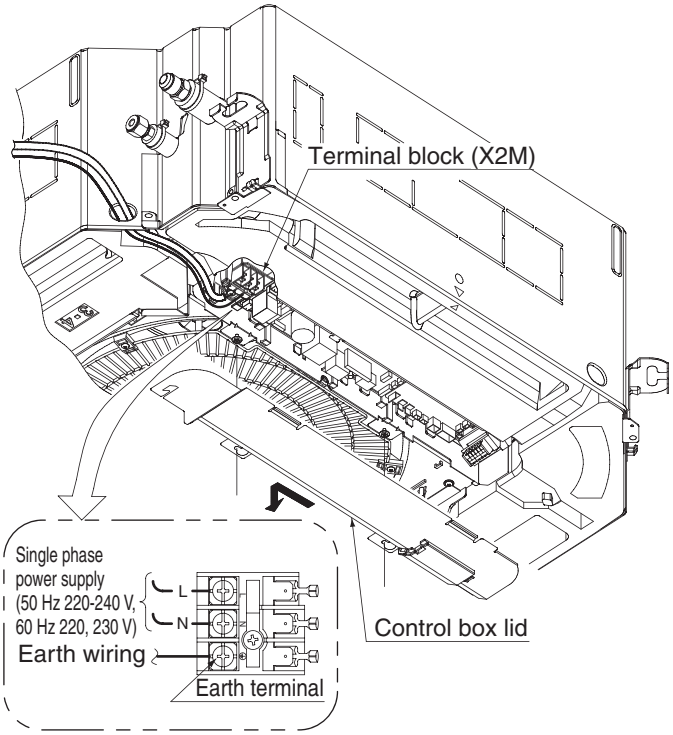


Fig. 21

2. Make sure the control box lid is closed before turning on the power supply.
- Throughout the whole process, carry out the work giving caution to the wiring around the control box so that the connectors may not come off.

3. Gradually pour 1 liter of water from the air outlet on the left side of the drain socket into the drain pan giving caution to avoid splashing water on the electric components such as drain pump. **(Refer to Fig. 19)**

4. When the power supply is turned on, the drain pump will operate. Drainage can be checked at the transparent part of the drain socket.
(The drain pump will automatically stop after 10 minutes.)
After checking the drainage of water, refer to **Fig. 20** and attach the sealing material (14) to perform the thermal insulation of the drain socket.

- 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.
- Do not apply external force to the float switch. (It may result in malfunction)

5. Turn off the power supply after checking drainage, and remove the power supply wiring.

6. Attach the control box lid as before.
- Do not touch the electronic parts other than the terminal block (X2M).

(3) Sweating may occur and result in water leakage. Therefore, make sure to insulate the following 2 locations (drain piping and drain sockets that laid indoors).
After drainage is checked, put the attached sealing material (14) referring to **Fig. 20**, and insulate the drain hose (1) and the metal clamp (2) with the attached sealing material (Large) (10) referring to **Fig. 22**.

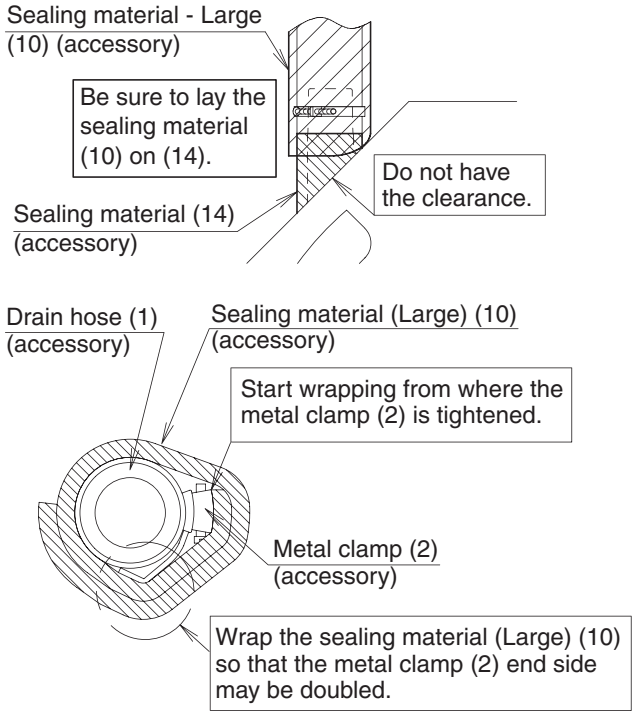


Fig. 22

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 circuit 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 pipings, 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 ELECTRICAL CHARACTERISTICS

Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MFA	kW	FLA
FXFQ25SVM	50	220-240	Max. 264 Min. 198	0.3	15	0.048	0.2
FXFQ32SVM				0.3	15	0.048	0.2
FXFQ40SVM				0.4	15	0.048	0.3
FXFQ50SVM				0.6	15	0.048	0.5
FXFQ63SVM				0.8	15	0.048	0.6
FXFQ80SVM				0.8	15	0.048	0.6
FXFQ100SVM				1.4	15	0.106	1.1
FXFQ125SVM				1.6	15	0.106	1.3
FXFQ25SVM	60	220, 230	Max. 253 Min. 198	0.3	15	0.048	0.2
FXFQ32SVM				0.3	15	0.048	0.2
FXFQ40SVM				0.4	15	0.048	0.3
FXFQ50SVM				0.6	15	0.048	0.5
FXFQ63SVM				0.8	15	0.048	0.6
FXFQ80SVM				0.8	15	0.048	0.6
FXFQ100SVM				1.4	15	0.106	1.1
FXFQ125SVM				1.6	15	0.106	1.3

MCA: Min. Circuit Amps (A) MFA: Max. Fuse Amps (A)
kW: Fan Motor Rated Output (kW) FLA: Full Load Amps (A)

8-3 SPECIFICATION FOR FIELD SUPPLY FUSES AND WIRING

Model	Power supply wiring			Remote controller wiring Transmission wiring	
	Field fuses	Wiring	Size	Wiring	Size
FXFQ25SVM	15A	H05VV-U3G NOTE 1)	Wiring size and length must comply with local codes.	Vinyl cord with sheath or cable (2 core) NOTE 2)	0.75-1.25 mm^2
FXFQ32SVM					
FXFQ40SVM					
FXFQ50SVM					
FXFQ63SVM					
FXFQ80SVM					
FXFQ100SVM					
FXFQ125SVM					

The lengths of remote controller wiring and transmission wirings are as follows:

(1) Remote controller wiring (indoor unit - remote controller) ... Max. 500 m
(2) Transmission wirings..... Total wiring length 2000 m
- Outdoor unit - Indoor unit.....Max. 1000 m
- Outdoor unit - BS unit .....Max. 1000 m
- BS unit - Indoor unit .....Max. 1000 m
- Indoor unit - Indoor unit .....Max. 1000 m

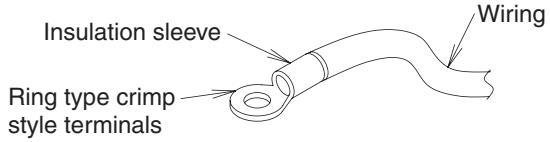
NOTE

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 : 1 mm or more)

8-4 WIRING CONNECTION METHOD

⚠ CAUTION FOR WIRING

- The indoor units in the same system can be connected to the power supply from one branch switch. However, selection of branch switch, branch over current circuit breaker and wiring size must be according to applicable legislation.
- For connection to the terminal block, use a ring type crimp style terminals with insulation sleeve or insulate the wirings properly.



- Connect the terminal as shown in Fig. 23.
- Do not carry out soldering finish when stranded wires are used. (Otherwise, the loosening of wires may result in abnormal heat radiation.)

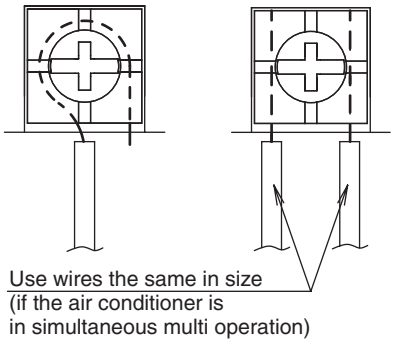


Fig. 23

(Abnormal heating may occur if the wirings are not tightened securely.)

- Use the required wirings, connect them securely and fix these wirings securely 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 and transmission wirings	0.88 ± 0.08
Terminal for power supply	1.47 ± 0.14
Earth terminal	1.47 ± 0.14

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

⚠ WARNING

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

< Power supply wiring · earth wiring · remote controller wiring · transmission wiring connecting method >

- Power supply wiring, earth wiring
  Pull the wiring through the wiring penetrating hole (high voltage). After connecting the power supply wiring to [L · N] on the power supply terminal block (X2M) and the earth wiring to the earth terminal, clamp them near the terminal block using the attached clamp (4). **(Refer to page 13)**
- Remote controller wiring, transmission wiring
  Pull the wiring through the wiring penetrating hole (low voltage). After connecting the remote controller wiring to [P1 · P2] and the transmission wiring to [F1 · F2] on the terminal block (X1M), clamp them near the terminal block using the attached clamp (4). **(Refer to page 13)**
- After connecting the wiring, make sure to stick the sealing material (Small) (13) to the wiring penetrating hole. **(Refer to Fig. 25)**
  (It is to prevent water from entering into the indoor unit.)

⚠ CAUTION

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

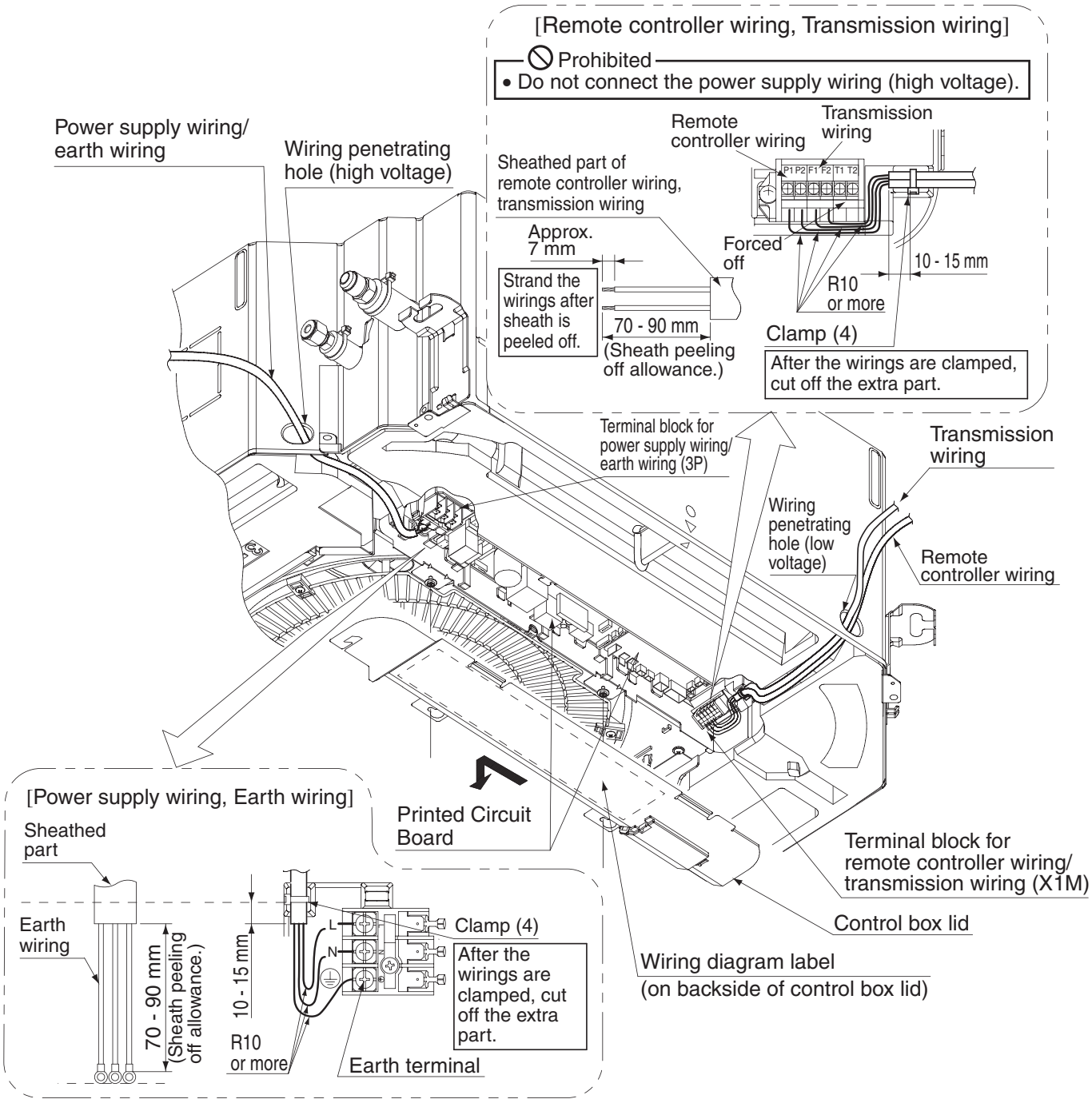

[Remote controller wiring, Transmission wiring]
Prohibited
• Do not connect the power supply wiring (high voltage).
Power supply wiring/ earth wiring
Wiring penetrating hole (high voltage)
Remote controller wiring
Transmission wiring
P1 P2 F1 F2 T1 T2
Sheathed part of remote controller wiring, transmission wiring
Approx. 7 mm
Strand the wirings after sheath is peeled off.
70 - 90 mm (Sheath peeling off allowance.)
Forced off
10 - 15 mm
R10 or more
Clamp (4)
After the wirings are clamped, cut off the extra part.
Terminal block for power supply wiring/ earth wiring (3P)
Transmission wiring
Wiring penetrating hole (low voltage)
Remote controller wiring
[Power supply wiring, Earth wiring]
Sheathed part
Earth wiring
70 - 90 mm (Sheath peeling off allowance.)
10 - 15 mm
R10 or more
L
N
Clamp (4)
After the wirings are clamped, cut off the extra part.
Earth terminal
Printed Circuit Board
Terminal block for remote controller wiring/ transmission wiring (X1M)
Control box lid
Wiring diagram label
(on backside of control box lid)

Fig. 24

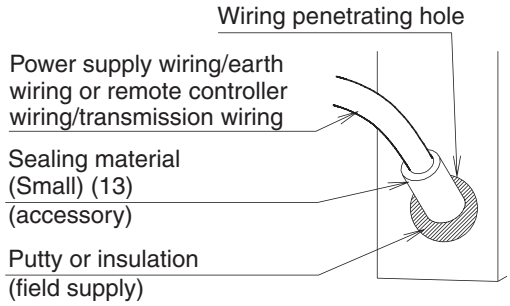


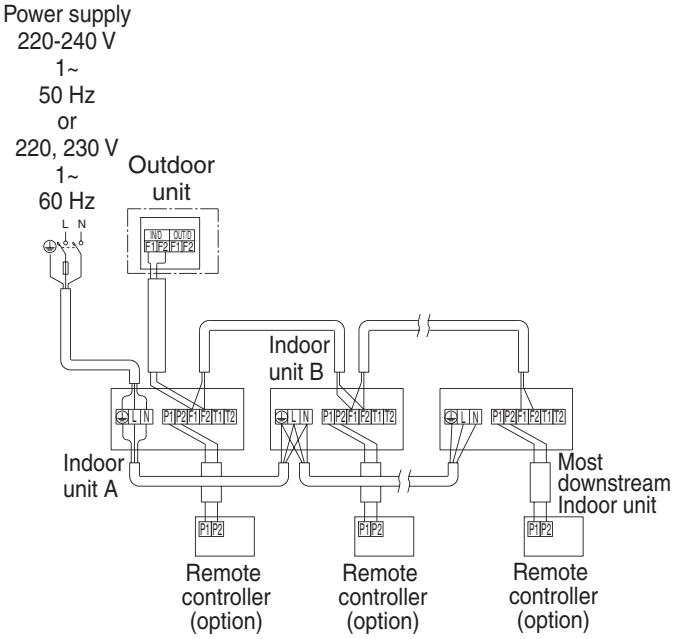
Fig. 25

<<Mending method of wiring penetrating hole>>

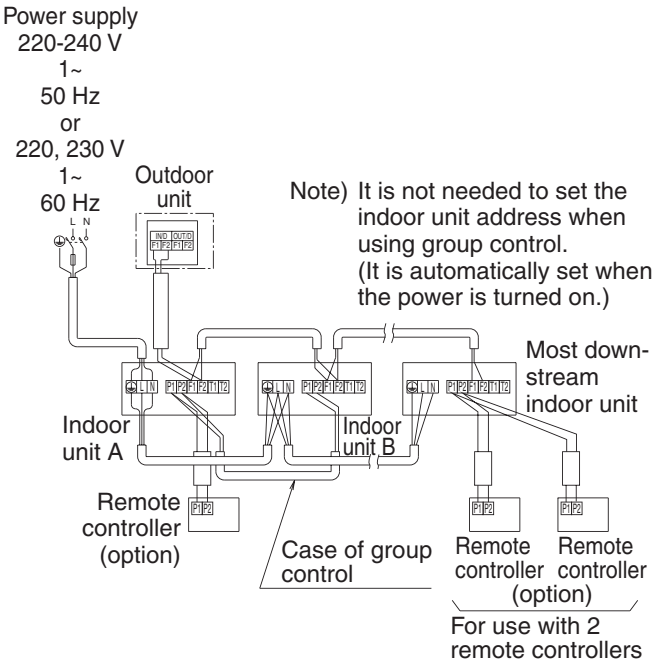
- After wiring connection is finished, to prevent the penetration of water, small animals and insects into the indoor unit from the outside, mend the respective covers for wiring penetrating hole for the power supply wiring/earth wiring and the remote controller wiring/transmission wiring.
- Cut the sealing material (Small) (13) into two pieces and wrap each wiring with each piece.
- Seal the clearance around the wirings 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.)
- Keep the distance of 50 mm or more between the low voltage wiring (remote controller wiring, transmission wiring) and the high voltage wiring (power supply 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.

8-5 EXAMPLE OF WIRING

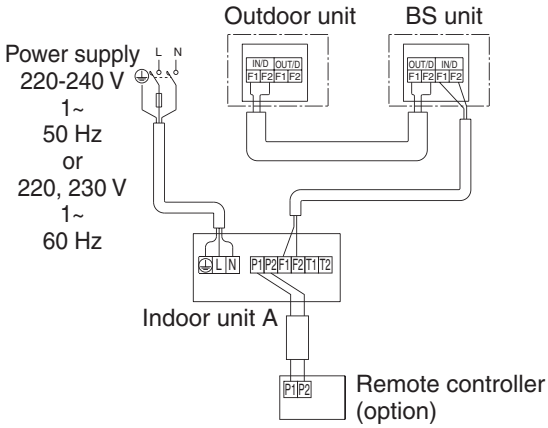
< No. 1 system: When 1 remote controller is used for 1 indoor unit. >



< No. 2 system: When carrying out group control or 2 remote controller control. >



< No. 3 system: When BS unit is used >



NOTE

1. Remote controller wiring and transmission wiring have no polarity.

⚠ WARNING

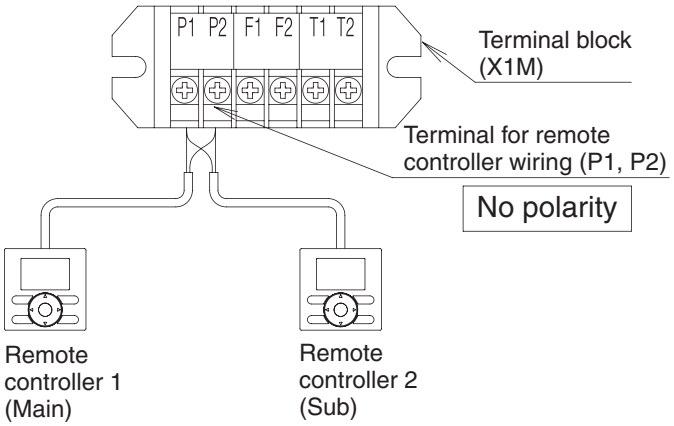
Be sure to install an earth leakage breaker.
Failure to do so may cause electric shocks and a fire.

8-6 FOR CONTROL WITH 2 REMOTE CONTROLLERS (TO CONTROL 1 INDOOR UNIT WITH 2 REMOTE CONTROLLERS)

- 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.
  (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.



< Caution >

- When using the group control and the 2 remote controllers control at the same time, connect the remote controller 2 (Sub) to the indoor unit at the end of the crossover wiring (the largest No.). **(Refer to Fig. 26)**

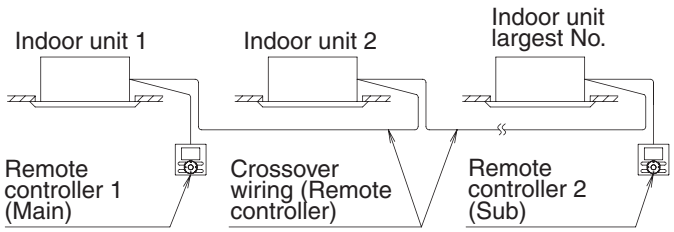


Fig. 26

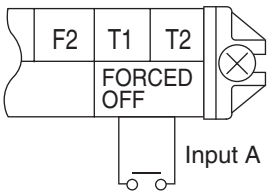
8-7 FOR CENTRALIZED CONTROL

- When centralized equipment (such as centralized controller) is used for control, it is required to set the group No. on the remote controller.
  For details, refer to the manuals attached to the centralized equipment.
- Connect the centralized equipment to the indoor unit connected to the remote controller.

8-8 FOR REMOTE CONTROL (FORCE OFF OR ON / OFF OPERATION)

(1) Wiring method and specification

- Remote control is available by connecting the external input to the terminal T1 and T2 on the terminal block for remote controller and transmission wiring (X1M).



Wiring specification	Sheathed vinyl cord or 2 core cable
Wiring size	0.75-1.25 mm^2
Wiring length	Max. 100 m
External contact spec	Contact that can make and break the min. load of DC 15 V · 1 mA

(2) Actuation

- Input A of FORCED OFF and ON/OFF OPERATION will be as the table shown below.

	Input A = ON	Input A = OFF
In case of FORCED OFF	Remote controller prohibited	Remote controller permitted
In case of ON/OFF OPERATION	Operation	Stop

(3) How to choose FORCED OFF or ON/OFF OPERATION

- For choosing FORCED OFF or ON/OFF OPERATION, setting by remote controller is required.
  (Refer to "**10. FIELD SETTING AND TEST OPERATION**")

9. MOUNTING DECORATION PANEL

<<If test operation is required before mounting the decoration panel, "10. FIELD SETTING AND TEST OPERATION" can be carried out before "9. MOUNTING DECORATION PANEL".>>

⚠ CAUTION

In case of a wireless remote controller, unless the decoration panel is mounted, field setting and test operation cannot be carried out.

Refer to the installation manual attached to the decoration panel.

- After the decoration panel is mounted, check if no clearance exists between the panel and the unit.
- If test operation is carried out before mounting the decoration panel, check the swing blade action after the panel is mounted.

10. FIELD SETTING AND TEST OPERATION

<<Refer to also the installation manual attached to the outdoor unit.>>

⚠ 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 3.

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

< FIELD SETTING >

<<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 ( ).
- In case of remote control, for changeover of input to FORCED OFF or to ON/OFF OPERATION.
  [1] Enter into the field setting mode with the remote controller.
  [2] Select Mode No. "12".
  [3] Set the FIRST CODE No. to "1".
  [4-1] For FORCE OFF, set the SECOND CODE No. to "01".
  [4-2] For ON/OFF OPERATION, set the SECOND CODE No. to "02".
  (It is set to FORCE OFF when shipped from the factory.)
- Ask your customer to keep the manual attached to the remote controller together with the operation manual.
- Do not carry out settings other than those shown in the table.

10-1 SETTING 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.
	FXFQ25 - 80SVM	FXFQ100, 125SVM			
Standard	2.7 or less	3.2 or less	13 (23)	0	01
				5	01
High ceiling 1	2.7 - 3.0	3.2 – 3.6	13 (23)	0	02
				5	03
High ceiling 2	3.0 - 3.5	3.6 – 4.2	13 (23)	0	03
				5	03

10-2 SETTING AIR DISCHARGE DIRECTION

- Refer to the installation manual attached to the sealing material of air discharge outlet sold separately and engineering data book, for ceiling height settings for four-direction (part of corner closed off) and three-direction. (The SECOND CODE No. is factory set to "01" (all round outlet) before shipping.)

10-3 SETTING WHEN AN OPTIONAL ACCESSORY IS ATTACHED

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

10-4 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.

10-5 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 5

Setting		Mode No.	FIRST CODE No.	SECOND CODE No.
Fan speed during cooling thermostat OFF	LL (Extra low)	12 (22)	6	01
	Setting			02
Fan speed during heating thermostat OFF	LL (Extra low)	12 (22)	3	01
	Setting			02

10-6 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 6 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 6

Contamination	Hours until indication	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.

<TEST OPERATION >

- After cleaning the indoor unit inside, carry out test operation according to installation manual attached to the outdoor unit.
- When the remote controller operation lamp flashes, it shows that something is abnormal.
  Check the malfunction codes on the remote controller.
  The relation between the malfunction codes and malfunction details is described in the operation manual attached to the outdoor unit.
  Particularly, if the indication is one of those shown in the Table 7, it may be an error in the electrical wiring or the power supply is disconnected. Therefore, recheck wiring.

Table 7

Remote controller indication	Details
Though the centralized control is not carried out, the lamp "[ ]" turns on.	• The terminals (T1 · T2) for FORCED OFF on the indoor unit transmission terminal block is short circuited.
"U4" turns on "UH" turns on	• The power supply to the outdoor unit is not made. • The power supply work to the outdoor unit is not carried out. • The transmission wiring and the remote controller wiring and FORCED OFF wiring are connected wrongly. • The transmission wiring is disconnected.
No indication	• The power supply to the indoor unit is not made. • The power supply work to the indoor unit is not carried out. • The remote controller wiring and the transmission wiring and FORCED OFF wiring are connected wrongly. • The remote controller wiring is disconnected.

- At test operation, if the decoration panel is mounted, check the actuation of the swing blade.

⚠ CAUTION

After test operation is completed, check the items mentioned in the clause 2 "**2. Items to be checked at delivery**" on page 3.
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.

⚠ To the operator carrying out test operation

After test operation is completed, before delivering the air conditioner to the customer, confirm that the control box lid, the air filter and suction grille are attached.
In addition, explain the power supply status (power supply ON/OFF) to the customer.