

INSTALLATION MANUAL

Air Conditioner

MODELS

Duct Connection type

FDQ16PY1

FDQ20PY1

FDQ16PYL

FDQ20PYL

English

عربي

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

إقرأ هذه التعليمات بتمعن قبل القيام بعملية التركيب.
حفظ هذا الدليل في مكان عند الحاجة للرجوع إليه في المستقبل.

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SAFETY PRECAUTIONS

Please read these "SAFETY PRECAUTIONS" carefully before installing air conditioning unit and be sure to install it correctly. After completing installation, conduct a trial operation to check for faults and explain to the customer how to operate the air conditioner and take care of it with the aid of the operation manual. Ask the customer to store the installation manual along with the operation manual for future reference.

This air conditioner comes under the term "appliances not accessible to the general public".

Meaning of WARNING and CAUTION notices

 **WARNING** Failure to follow these instructions properly may result in personal injury or loss of life.

 **CAUTION** Failure to observe these instructions properly may result in property damage or personal injury, which may be serious depending on the circumstances.

WARNING

- Ask your dealer or qualified personnel to carry out installation work.
Do not attempt to install the air conditioner yourself. Improper installation may result in water leakage, electric shocks or fire.
- Install the air conditioner in accordance with the instructions in this installation manual.
Improper installation may result in water leakage, electric shocks or fire.
- Consult your local dealer regarding what to do in case of refrigerant leakage. When the air conditioner is to be 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 depletion.
- Be sure to use only the specified accessories and parts for installation work.
Failure to use the specified parts may result in the unit falling, water leakage, electric shocks or fire.
- Install the air conditioner on a foundation strong enough to withstand the weight of the unit.
A foundation of insufficient strength may result in the equipment falling and causing injury.
- Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.
Failure to do so during installation work may result in the unit falling and causing accidents.
- Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual.
An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- Make sure that all wiring is secured, the specified wires are used, and that there is no strain on the terminal connections or wires.
Improper connections or securing of wires may result in abnormal heat build-up or fire.
- When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the control box lid can be securely fastened.
Improper positioning of the control box lid may result in electric shocks, fire or the terminals overheating.
- If refrigerant gas leaks during installation, ventilate the area immediately.
Toxic gas may be produced if the refrigerant comes into contact with fire.
- After completing installation, check for refrigerant gas leakage.
Toxic gas may be produced if the refrigerant gas leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.
- Be sure to switch off the unit before touching any electrical parts.
- Do not touch the switch with wet hands.
Touching the switch with wet hands can cause electric shock.
- Be sure to earth the air conditioner.
Do not earth the unit to a utility pipe, lightning conductor or telephone earth lead. Imperfect earthing may result in electric shocks or fire.
A high surge current from lightning or other sources may cause damage to the air conditioner.
- Make sure to charge the specified refrigerant into the refrigerant piping. Do not mix with air or other gases; otherwise it may cause abnormally high pressure or explosion.
- Be sure to install an earth leakage breaker.
Failure to install an earth leakage breaker may result in electric shocks or fire.

CAUTION

- While following the instructions in this installation manual, install drain piping to ensure proper drainage and insulate piping to prevent condensation.
Improper drain piping may result in indoor water leakage and property damage.
- Install the indoor and outdoor units, power cord and connecting wires at least 1 meter away from televisions or radios to prevent picture interference and noise.
(Depending on the incoming signal strength, a distance of 1 meter may not be sufficient to eliminate noise.)
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types).
Install the indoor unit as far away from fluorescent lamps as possible.
- Do not install the air conditioner in the following locations:
 1. Where there is a high concentration of mineral oil spray or vapour (e.g. a kitchen).
Plastic parts will deteriorate, parts may fall off and water leakage could result.
 2. Where corrosive gas, such as sulphurous acid gas, is produced.
Corroding of copper pipes or soldered parts may result in refrigerant leakage.
 3. Near machinery emitting electromagnetic radiation.
Electromagnetic radiation may disturb the operation of the control system and result in a malfunction of the unit.
 4. Where flammable gas may leak, where there is carbon fibre or ignitable dust suspensions in the air, or where volatile flammables such as paint thinner or gasoline are handled.
Operating the unit in such conditions may result in fire.
- Be sure to attach the air filters (field supply) inside the suction passage. Failure to attach them may result in a malfunction of the equipment.
- Do not touch the heat exchanger fins.
Improper handling may result in injury.
- Be very careful about product transportation.
Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
- Safely dispose of the packing materials.
Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.
- Do not turn off the power immediately after stopping operation. Always wait at least 5 minutes before turning off the power. Otherwise, water leakage and trouble may occur.
- Please take necessary measures to prevent this product from electromagnetic interference.
- The air conditioner is not intended for use in a potentially explosive atmosphere.

BEFORE INSTALLATION



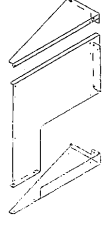
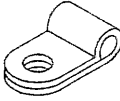

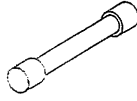


- Be sure to check the type of R410A refrigerant to be used before installing the unit. (Using an incorrect refrigerant will prevent normal operation of the unit.)
- This unit is for indoor use only.
- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon the transportation route.
- Leave the unit inside its packaging while moving, until reaching the installation site. 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 unit.
- This unit is connected to two outdoor units.
- When carrying or opening the package of the indoor unit, hold the suspension supports (×4) of the indoor unit. Do not apply force to the refrigerant piping, drain piping or plastic parts.
- Do not install or operate the unit in rooms mentioned below.
 - **Laden with mineral oil, or filled with oil vapor or spray like in kitchens. (Plastic parts may deteriorate which could eventually cause the unit to fall out of place, or could lead to leaks.)**
 - **Where corrosive gas like sulfurous gas exists. (Copper tubing and brazed spots may corrode which could eventually lead to refrigerant leaks.)**
 - **Where exposed to combustible gases and where volatile flammable gas like thinner or gasoline is used. (Gas in the vicinity of the unit could ignite.)**
 - **Where machines can generate electromagnetic waves. (Control system may malfunction.)**
 - **Where the air contains high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories.**
Also in vehicles or vessels.
- This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.
If installed as a household appliance it could cause electromagnetic interference.

PRECAUTIONS

- Be sure to read this manual before installing the indoor unit.
- Entrust installation to the place of purchase or a qualified serviceman. Improper installation could lead to leaks and, in worse cases, electric shock or fire.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and, in worse cases, electric shock or fire.
- Be sure to mount an air filter (part to be procured in the field) in the suction air passage in order to prevent water leaking, etc.

ACCESSORIES

Check if the following accessories are included with your unit.

| Name | Insulation for fitting | (3)Support plates | (4)Clamp | (5)Wire clamp | (6)Gas pipe | (7)Liquid pipe | (8)Screw | Other |
|----------|---|---|---|---|---|--|---|---|
| Quantity | 1 each | 3 pcs. | 4 pcs. | 15 pcs. | 1 pc. | 1 pc. | 22 pcs. | |
| Shape | (1)  for liquid pipe (2)  for gas pipe |  |  |  |  | (Only FDQ16TYPE)  |  | <ul style="list-style-type: none"> • Operation manual • Installation manual |

OPTIONAL ACCESSORIES

- The remote controller is required for this indoor unit.
- Please use the wired remote controller **BRC1C62** or **BRC1D61**. Refer to attached the "INSTALLATION MANUAL FOR REMOTE CONTROLLER".

Indoor and outdoor unit combinations

- Do not use in any combination other than those shown below. (Refer to Fig. 1)
This unit cannot be connected with other standard indoor units or VRV indoor units.

| Indoor unit | Outdoor unit |
|-------------|-----------------------|
| FDQ16PY1 | RXYQ8P7Y1K (2 units) |
| FDQ20PY1 | RXYQ10P7Y1K (2 units) |
| FDQ16PYL | RXYQ8P7YLK (2 units) |
| FDQ20PYL | RXYQ10P7YLK (2 units) |

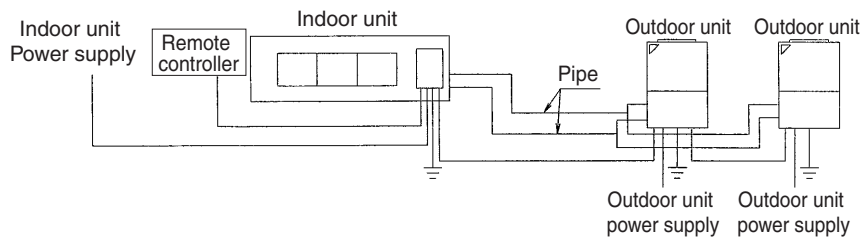


Fig.1

FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED.

1. Items to be checked after completion of work

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

2. Items to be checked at time of delivery

* Also review the "SAFETY PRECAUTIONS"

| Items to be checked | Check |
|---|-------|
| Are the control box lid, air filter, suction grille attached? | |
| Did you explain about operations while showing the instruction manual to your customer? | |
| Did you hand the instruction manual over to your customer? | |

Points for explanation about operations

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

NOTE TO THE INSTALLER

Be sure to instruct the customer how to properly operate the system and give him/her the attached operation manual.

SELECTING INSTALLATION SITE

Condensation may occur if the relative humidity within the ceiling is beyond 80%, or if the unit intakes outside air whose temperature is -5°C or below during heating. Install an emergency drain pan (field supply) under the unit to prevent water leakage.

1 Select an installation site where the following conditions and the customer's requirements are satisfied.

- Where optimum air distribution is available.
- Where nothing blocks air passage.
- Where condensate can be properly drained.
- Where the ceiling is strong enough to bear the indoor unit weight.
- Where the false ceiling is not noticeably on an incline.
- Where sufficient clearance for maintenance and service can be ensured. (Refer to Fig. 2)
- Where there is no risk of flammable gas leakage.
- The belt needs regular maintenance.
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual for the outdoor unit.)
- The unit is not for use where silent operation is required.
Install the unit in a place such as an equipment room where noise is not a problem.
- Install the inspection opening at the side of the control box for the convenience of maintenance and inspection.
- Place the unit so that the outlet vent does not blow air directly on occupants of the room.
- Do not install the air inlet of the air conditioner at places such as factories and kitchens, where oil or dust may be taken in.
- Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances.
(Noise may be generated depending on the conditions under which the electric wave is generated, even at the distance of 1 meter.)

2 Use suspension bolts for installation. Check whether the ceiling is strong enough to support the weight of the unit or not. If there is a risk of falling, reinforce the ceiling before installing the unit.

3 When exposing the body of this unit, install the unit where the bottom is more than 2.5 m high out of the customer's reach.

4 The air filter (field supply) must be installed within the duct. (Refer to Fig. 3) A return air filter must be installed during the operation of the air conditioner.

- Please choose an appropriate air filter according to the actual conditions of the intake air; otherwise it may lead to dirtiness, low performance or water leakage of the heat exchanger.

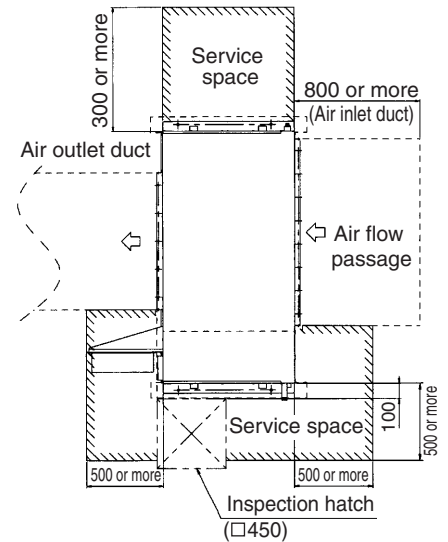


Fig. 2 [Unit:mm]

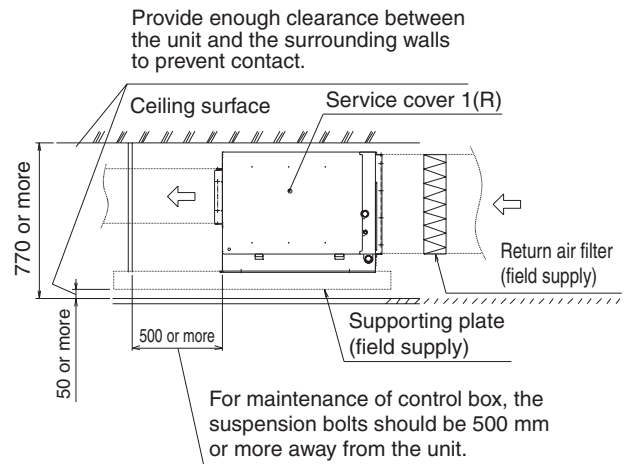
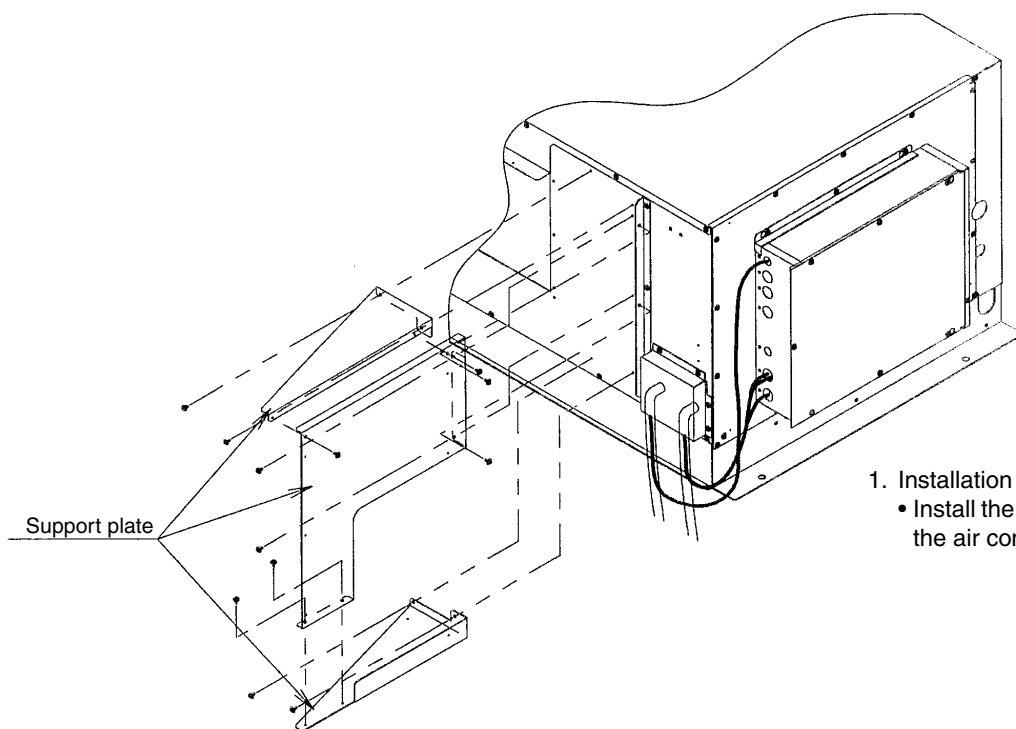
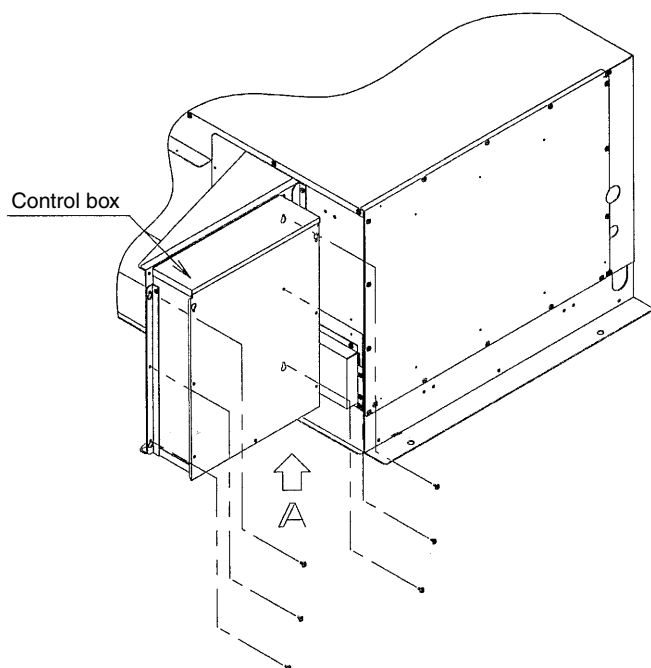


Fig. 3 [Unit:mm]

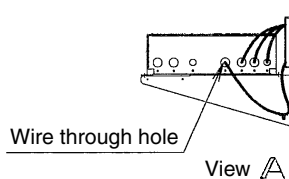
PREPARATION BEFORE INSTALLATION



1. Installation of support plate of the control box
 - Install the support plate of the control box to the air conditioner.



2. Moving the control box
 - Remove the control box from the air conditioner and install it to the support plate.
 - After removing the control box, please retighten the screws to their original positions.
 - When moving the control box, do not apply force to the wiring.
 - Tie down any remaining strong current (motor wiring) to the support plate with wire clamps.
 - Fix any remaining weak current (thermistor wire, signal wire of motor valve and floating switch) with wire clamps.



3. Relation of positions between the ceiling opening and the suspension bolt of the indoor unit. (Refer to Fig.4)

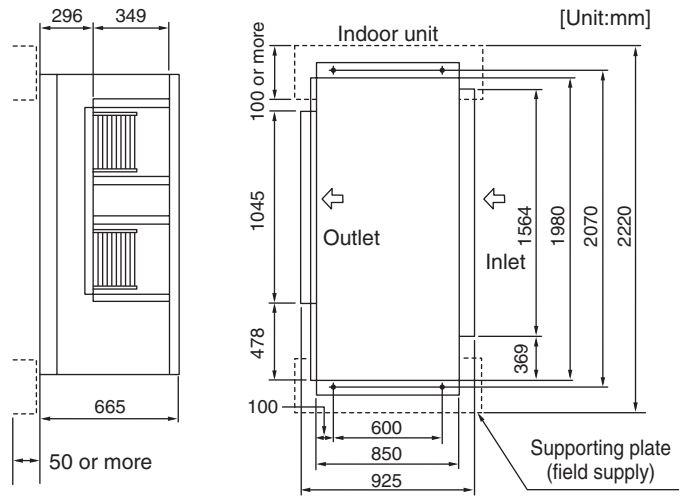


Fig.4

4. Install the suspension bolts. (Refer to Fig.5)
 (Use M12 size bolt for the suspension bolt) Use anchors for existing ceilings, and a sunken insert, sunken anchor or other field supplied parts for new ceilings to reinforce the ceiling to bear the weight of the indoor unit.
5. When adjusting air flow volume and external static pressure, please change the motor pulley and V-belt.

<Installation example>

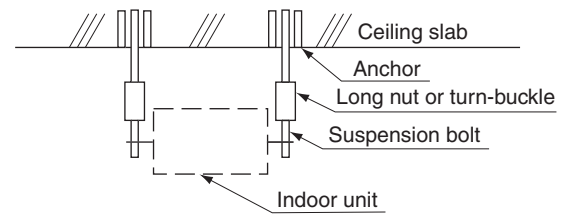


Fig.5

NOTE) All the above parts are field supply.

REPLACING FAN MOTOR PULLEY AND V-BELT

1. Open the service cover 1 on the side of piping.
(Refer to Fig. 3)
2. Loosen the adjustment nuts (b-1, 2, 3) of the adjustment bolts (a) and the motor suspension bolts (d) on both sides of the motor stand (c).
3. Move the motor stand (c) towards the fan pulley (e) and remove the V-belt (f).
4. Disconnect the wiring of motor (j) from the fan-motor (m) terminal block.
5. Remove the motor suspension bolts (d) and nuts (b-3) on both sides of the motor stand (c).
6. Remove the motor stand (c) along with the fan-motor (m) from the frame (k).
7. Remove the old motor pulley (g).
8. Insert the new motor pulley (g') in the fan motor (m) shaft. <At this time, temporarily fasten the hex screws (h). >
9. Install the motor stand (c) along with the fan-motor (m) on the frame (k).
10. Temporarily fasten the motor suspension bolts (d) on both sides of the motor stand (c).
11. Connect the wiring of motor (j) to the fan-motor (m) terminal block.
12. Install the new V-belt (f').
13. Fasten the adjustment nuts (b-1, 2, 3). Move the motor stand (c) so as to tighten the V-belt (f').
14. Adjust the levelness of the fan pulley (e) and motor pulley (g') and the slackness of the V-belt (f'). <Refer to Fig. 6>
15. Fasten the hex screws (h), the adjustment nuts (b-1, 2, 3), and the motor suspension bolts (d), and secure the pulley (g') and motor stand (c).
16. Install the service cover 1.

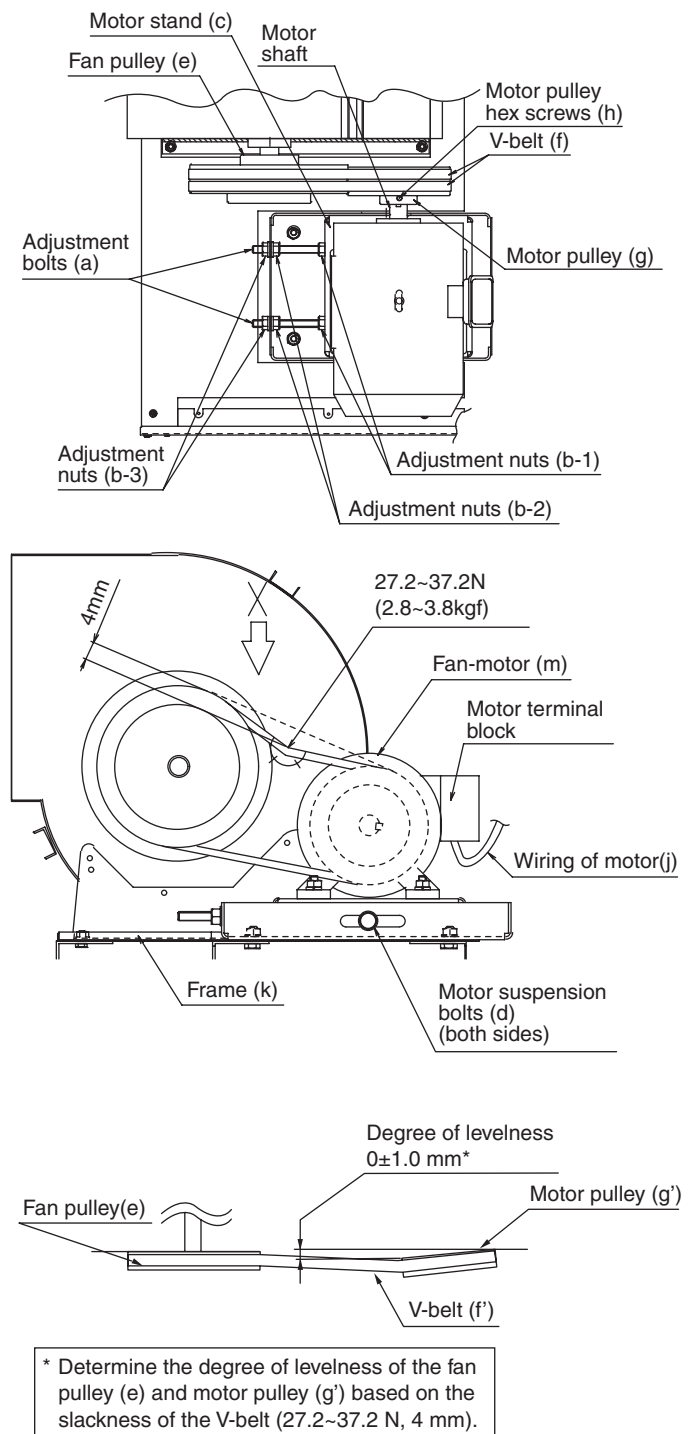


Fig.6

⚠ CAUTION

After completion of wiring, shut off all the power supply and turn off the breaker in the control box before replacing or adjusting the fan belt.

INSTALLATION OF THE INDOOR UNIT

1 Install the indoor unit temporarily.

- Secure the unit and supporting plate (field supply) at four places with M12 screws. (Refer to Fig.7)
- Fit the supporting plate into the suspension bolt. (Refer to Fig.8) Use washers to secure and tighten both the upper and lower nuts to the suspension bolt.

2 Adjust the unit to the preset height.

3 Make sure that the unit is level.

- Adjust the unit using a level gauge. If it is installed unevenly, water may leak from the unit.
- When making adjustments, test all four corners of the unit with the level gauge or use a vinyl tube filled with water.

4 Secure and tighten the upper nuts.

5 Be sure to completely insulate the duct to be connected (field supply) and the connecting joint on the main unit body.

Fig.7

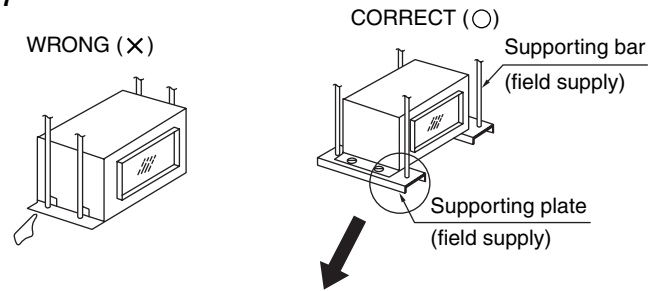


Fig.8

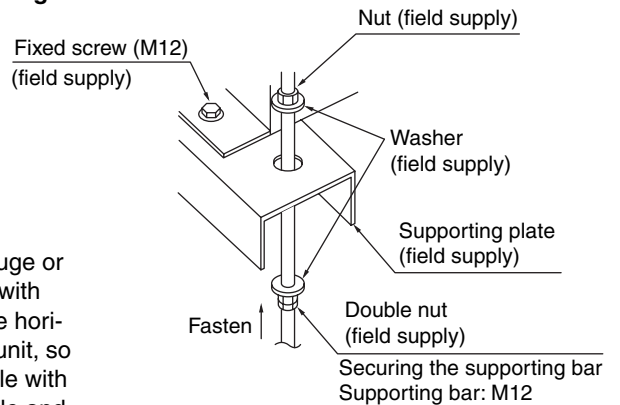
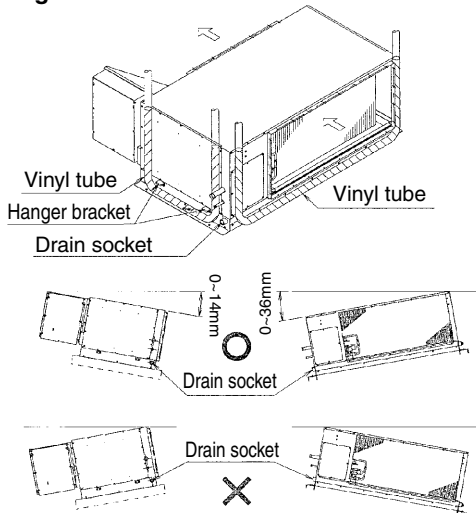
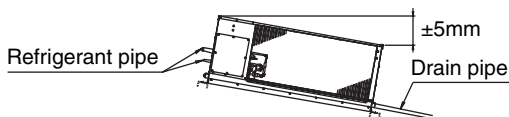


Fig.9



When the drainage pipe is connected to the opposite side of the refrigerant pipe



- Please use a level gauge or a soft vinyl tube filled with water to determine the horizontal position of the unit, so that its inclination angle with the water drainage hole and the air intake side does not exceed 1° .
- Place the drainage hole and the air intake side at a higher position in order to avoid water leakage.
- The difference of height between end faces of the product shall be adjusted as follows. (Refer to Fig.9)

REFRIGERANT PIPING WORK

< Refer to the attached installation manual for the outdoor unit for its refrigerant piping.>

<Provide heat insulation work completely on both sides of the gas piping and the liquid piping. Otherwise it may result in water leakage. (Please use insulation materials which can bear high temperatures of 120°C or above.) The heat insulation layer of the refrigerant piping has to be thickened (with the thickness above 20 mm) if the temperature exceeds 30°C and the humidity is above 80% RH at the refrigerant piping; otherwise condensation may occur on the surface of the insulation materials.>

<Before refrigerant piping work, check which type of refrigerant is used. The machine may not work properly if incorrect refrigerant is used.>

CAUTION

- Use a pipe cutter and flare tool suitable for the type of refrigerant.
 - Apply refrigerant oil or either oil around the flare portions before connecting.
 - To prevent dust, moisture or other foreign matter from infiltrating the tube, pinch or enclose the ends of the tube.
 - Do not allow anything other than the designated refrigerant to get mixed into the refrigerant circuit, such as air, etc. If any refrigerant gas leaks, ventilate the room thoroughly right away.
 - The outdoor unit is already charged with refrigerant.
 - Use a common wrench and a torque wrench when installing/removing the piping of the machine, as illustrated herein.
 - Please ensure good ventilation at the installation site since leakage from the refrigerant pipelines may occur during installation. Check the size of the refrigerant piping with the chart below.
 - Fill the indoor unit with refrigerant.
- See the installation manual that came with the outdoor unit for details on the refrigerant piping.

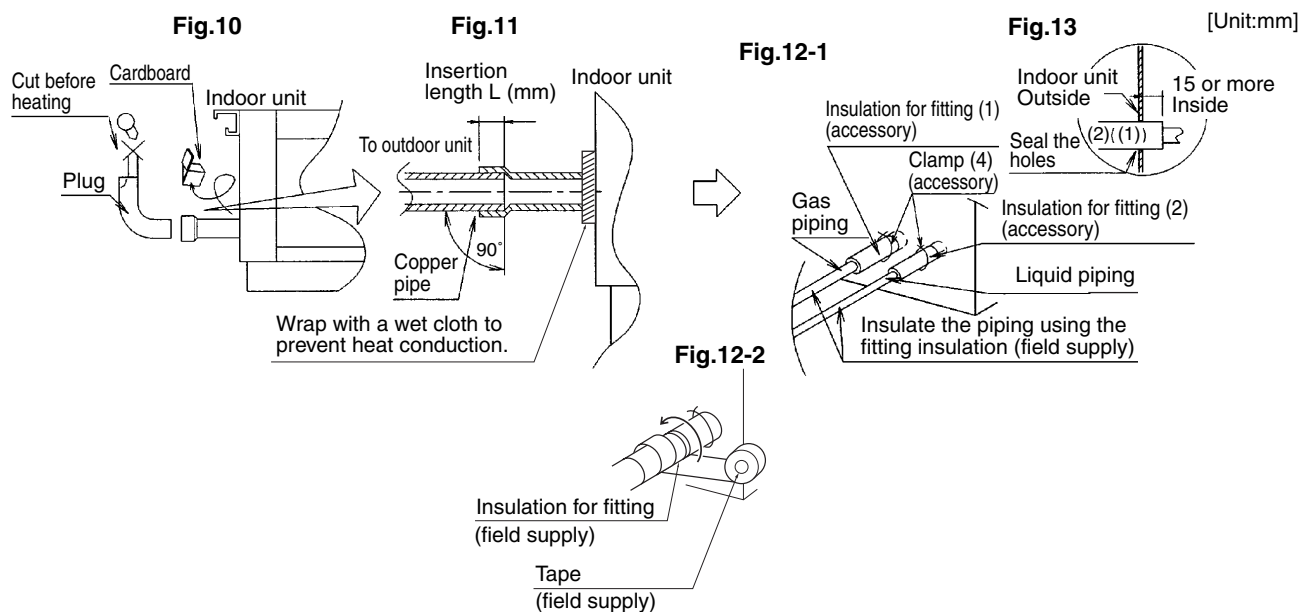
| Model | Refrigerant piping size | |
|-------|-------------------------|-------------|
| | Gas pipe | Liquid pipe |
| FDQ16 | φ28.6 L=12 | φ12.7 L=8 |
| FDQ20 | φ28.6 L=12 | φ15.9 L=8 |

(L=Insertion length, refer to Fig. 11)

WARNING

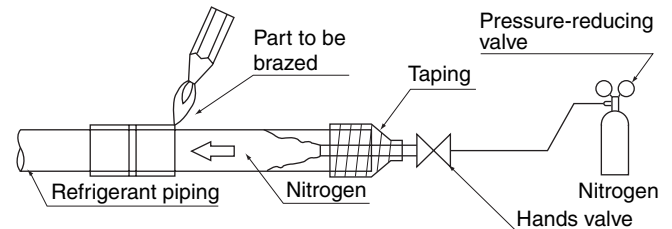
- Do not heat the plugs before cutting off their ends in order to release pressure, otherwise the plugs may burst.
- Be careful not to burn the body of air conditioner when brazing the pipe.
- Wrap the piping with a wet cloth to prevent heat conduction during brazing.

- Remove the cardboard. Before heating the pipe, cut the end of the plug in order to remove it. (Refer to Fig.10)
 - After brazing these pipes as shown in Fig.11, use the fitting insulation to secure the pipe inside of the unit. (Refer to Figs.12-1 and 13)
 - Install the clamps as close to the body as possible to absorb leaking condensation. After clamping, wrap the clamp with insulation (field supply). This is to prevent condensation from forming on the clamp section.
 - Wrap the fitting insulation's joints with tape (field supply), making sure that there is no gap between the fitting insulation. (Refer to Fig.12-2)
 - Prevent any gas mixture other than the specified refrigerant from entering into the refrigerating cycle.
 - Please ensure good ventilation at the installation site if leakage of refrigerant gas occurs during installation.
 - Insulate the connecting pipelines completely because the temperature at the gas piping may reach up to 120°C during the heating process.
- Use fitting insulation which can endure the highest temperature.



⚠ CAUTION

- The connecting piping must be insulated all the way to the piping connection parts within the unit. If the piping is exposed, it may cause condensation and scald when touched.
- Flux should not be used when brazing the connecting parts of the refrigerant piping. Please use phosphor copper brazing filler metal (BCuP-2) which requires no flux.
(If chlorine-containing flux is used, piping will be corroded. If fluorine-containing flux is used, the refrigerant oil will deteriorate and even further affect the refrigerant piping system.)
- Before brazing the refrigerant piping purchased locally, fill in nitrogen into the piping in order to exhaust the air from there. If no nitrogen is filled in at brazing, a large quantity of oxide films will occur within the piping and cause failure of the machine.
- Before brazing the refrigerant piping, firstly carry out nitrogen substitution or fill the refrigerant piping with nitrogen gas, and finally connect the indoor unit with a flare opening.
- When filling nitrogen into the piping during brazing, pressure should be set to below 0.02 MPa (0.2 kg/cm²) with a pressure-reducing valve.

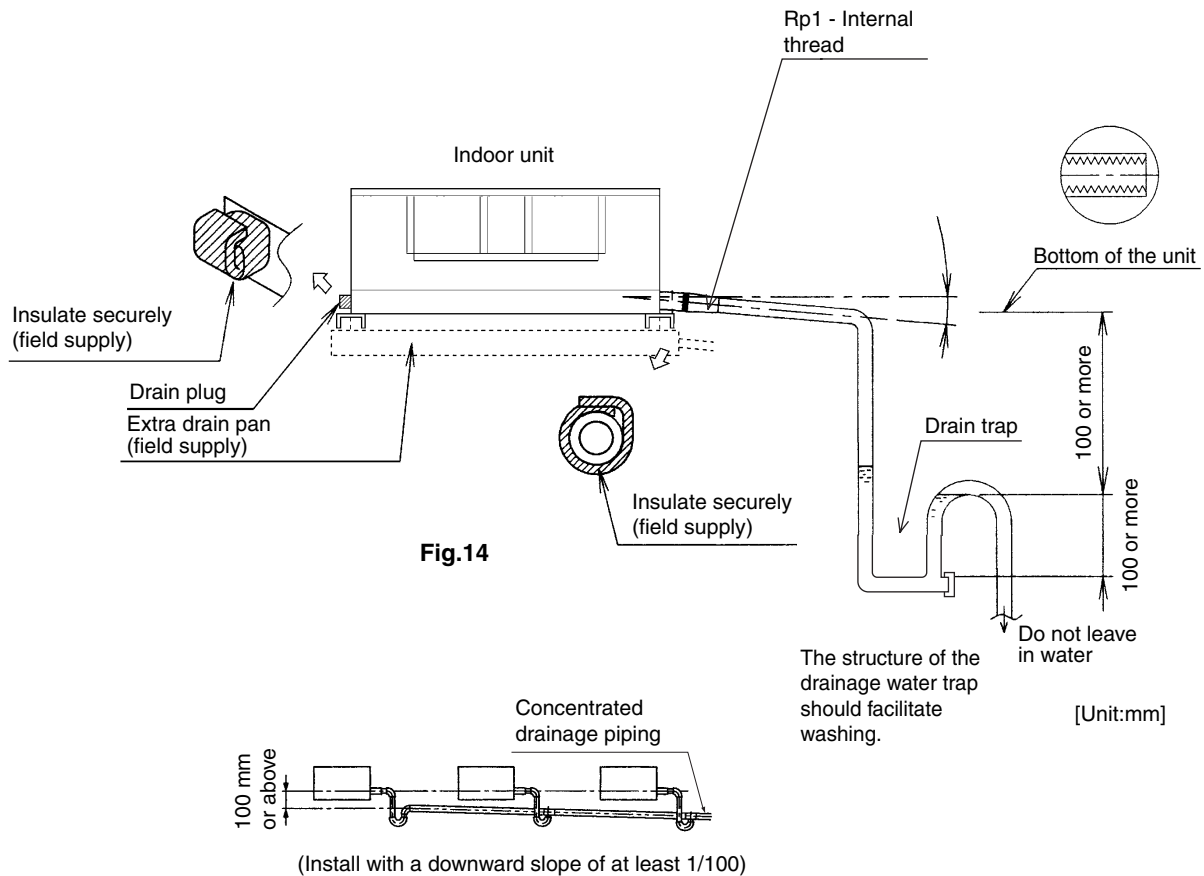


DRAIN PIPING WORK

⚠ WARNING

The drain pipe must be installed as shown in the diagram below to avoid damage caused by leaks and condensation.

- Assemble the unit as shown in Fig.14.
- The drain pipe outlet can be installed on either the left or right side. The drain plug can be removed and placed on either the left or right side as well.
- For best results, try to keep the piping as short as possible. Slant the piping at an angle to improve flow. (Refer to Fig.14)
- Ensure heat insulation of the drain pipe.
- It is necessary to install a drain trap in the drain outlet to relieve negative pressure that exists within the unit compared to the outside atmospheric pressure when the unit is operating. If a drain trap is not provided, splashes or odor may be produced.
- Keep the drainage pipes as straight as possible for easy cleaning and to prevent the accumulation of dirt and debris.
- After closing the drain pipe on the opposite side of the unit, completely wrap the drain pipes with insulation. (Refer to Fig.14)
- Drain piping connections
Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.
- Follow the illustrations below if concentrated drainage pipelines are installed.
(Please choose drainage pipelines with a diameter suitable for the operational volume of the equipment for the connection.)
- Pour water in the drain pan to test for smooth drainage.
- Open the service cover, add approximately 1 liter of water gradually and check drainage flow.
- In humid environments, use an extra drain pan (field supply) to cover the entire area of the indoor unit.



AFTER COMPLETION OF ELECTRIC WIRING

Inspect the drainage conditions during cooling operation. Refer to the section of “TEST OPERATION” for details.

INSTALLING THE DUCT

- Connect the duct as indicated below.
- <Air inlet side>
- Connect the duct to the inlet flange.
- <Air outlet side>
- Connect the duct to the outlet flange.
 - Wrap the outlet flange and the duct connection with aluminum tape or something similar to prevent air leakage.
 - Connect the outlet flange and the unit using the screws.

NOTE

- Air filter is not a standard accessory, but please mount it at the air inlet side of the duct system.
- Insulate the duct to prevent condensation. (Material: glass wool or polyethylene foam, 25 mm thick)
- When soldering ducts, etc., wrap the product to prevent spattering.

ELECTRIC WIRING WORK

- All locally supplied parts and materials and electric works must conform to local codes.
- Use copper wire only.
- For electric wiring work, refer also to “WIRING DIAGRAM” attached to the unit body.
- For remote controller wiring details, refer to the installation manual attached to the remote controller.
- All wiring must be performed by an authorized electrician.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- The resistance of the grounding must not exceed 100Ω.
- Ground the air conditioner.
 - Do not connect the ground wire to gas or water pipes, lightning conductor or telephone ground wire. Incomplete grounding may cause electric shocks.
 - Gas pipe - Ignition or explosion may occur if the gas leaks.
 - Water pipe - Hard vinyl tubes are not effective grounds.
 - Lightning conductor or telephone ground wire - Electric potential may rise abnormally if struck by a lightning bolt.
- If the fan rotates in reverse, adjust the phase sequence of the electric wires.

- Refer to table below for specifications of field wire.

| Model | Power supply | | | Wire type of wiring between the units. (NOTE 1) | Remote controller wire Transmission wire | |
|-------|--------------|-----------|--|---|---|--------------------------|
| | Field fuse | Wire type | Size | | Wire type | Size |
| FDQ16 | 15A | H05VV-U4G | Wiring size must comply with the applicable local and national code. | H05VV-U3 2.5 | Vinyl cord with sheath or cable (2 wires)(NOTE 2) | 0.75-1.25mm ² |
| FDQ20 | 30A | H05VV-U4G | | H05VV-U3 2.5 | | |

NOTE 

1. The H05VV above is equivalent to the YZW-type common rubber sheath soft wires as specified in GB5013.
2. Shield wire materials may be used for transmission wiring, but they should comply with the standards. (Refer to Note 6 of “Precautions When Doing Wiring Work”)
3. Select the electrical wire for power supply wire in accordance with the standards of the given nation and region.
4. Allowable length of transmission wire between indoor/outdoor units and between the indoor unit and the remote controller is as follows.
 - (1) Outdoor unit - Indoor unit: Max. 1000 m
 - (2) Indoor unit - Remote controller: Max. 500 m
5. Insulated thickness; 1mm or more.

• **Remote controller cords.**

Connect the cords to the remote controller terminal board (X3M P1, P2), no polarity, inside the control box. In doing this, fully secure the cords using clamps.

• **All wires should go through the bushes at the bottom of the control box.**

• **Ground wire from the unit to the control box.**

Connect the grounding terminal of the unit with that of the control box. Secure the wires completely with clamps during connection. (NOTE) This unit is not equipped with the function of constant temperatures by means of the remote controller.

<**PRECAUTIONS**>

- Do not contact wires with gas or liquid piping. Be sure to insulate piping completely. (Refer to Fig.12-2)
- Check that the wires are not trapped in the control box lid or service cover.
- Do not clamp remote controller cords together with wires connecting the units together. Doing so may cause malfunction.
- Do not connect electric wires of different specifications to the same supply terminal. (Loosing of the connecting terminal may cause over-heating.)
- Weak current wires (for remote controllers and transmission) and strong current wires (ground and power cords) outside the air conditioner should not be mixed and should be separated by at least 50 mm. Otherwise electrical interference (external noise) could cause malfunction or failure.
- In wiring, make certain that prescribed wires are used, carry out complete connections, and fix the wires so that outside forces are not applied to the terminals.

 **CAUTION**

- Paste washer or putty on the wire through hole in order to prevent water or insects from entering the control box. Otherwise it may cause short circuits within the control box.

<**Methods of wiring units and cords**> (Refer to Fig.15)

- **All wires must be wired through bushes at the bottom of control box.**

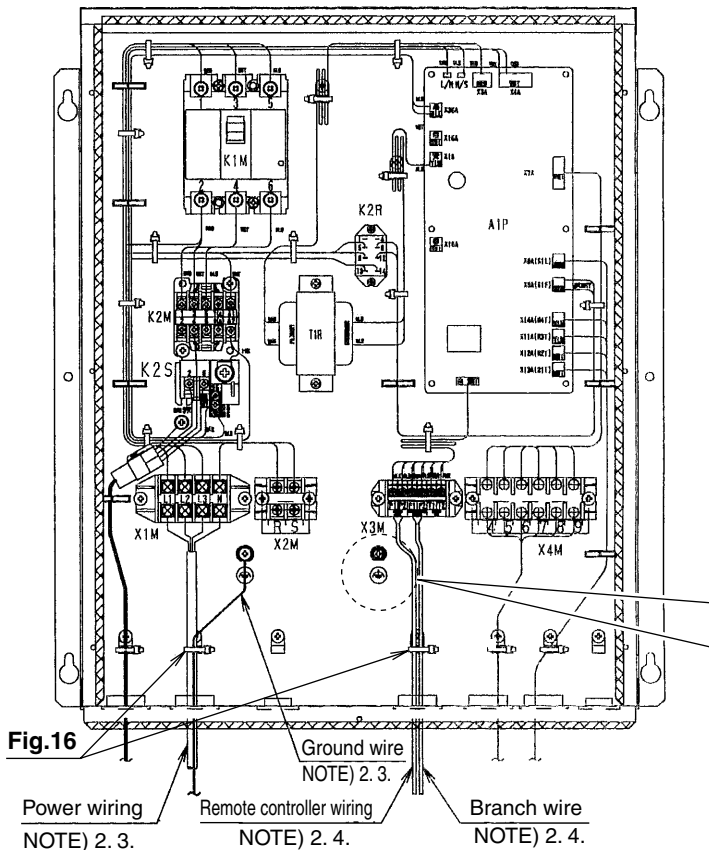


Fig.16

Power wiring
NOTE) 2.3.

Remote controller wiring
NOTE) 2.4.

Branch wire
NOTE) 2.4.

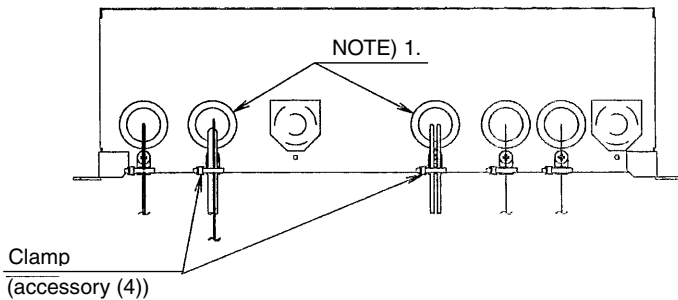
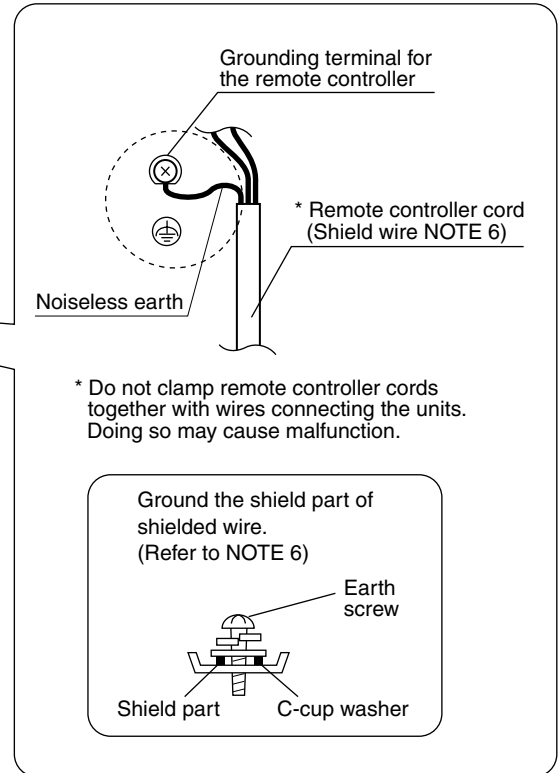


Fig.15



<Precautions When Doing Wiring Work>

NOTE)

1. All wiring going into the control box should be passed through a plastic push.
2. Please fix the clamps at the internal and external sides (two at each side) of the control box.
3. Fix the power wires and the ground wires as illustrated.
4. Fix the branch wires and the remote controller wires as illustrated.
5. The specification for the fuses on the indoor unit PCB: 250V 5A (F1U)
6. If using shield wire for transmission wiring, ground the shield of the shield wire to "⊕", at the grounding screw of the remote controller cord grounding terminal inside the control box.

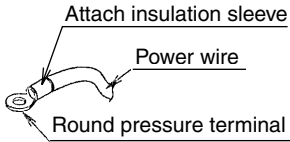
⚠ WARNING

If the fuses burn up, please call the service agency to replace them.
Please don't replace them by yourself, or else it may result in accident, such as electric shocks.

<<Precautions When Doing Wiring Work>>

NOTE)

- Use round pressure terminals provided with insulation sleeves for connections to the power terminal block.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening may damage terminal screws.
- See the table below for tightening torque for the terminal screws.



| | Tightening torque (N·m) |
|--|-------------------------|
| Remote controller and branch wiring terminal block | 0.79~0.97 |
| Power wiring terminal block | 2.39~2.92 |
| Ground terminal | 3.20~3.91 |

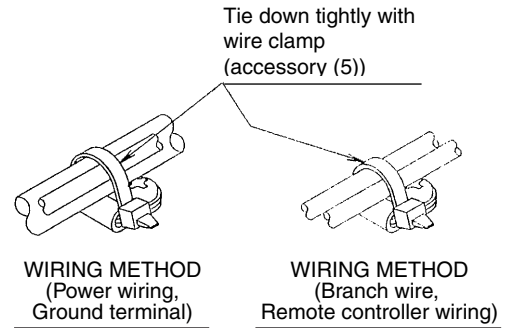
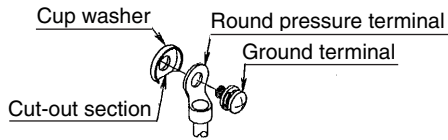


Fig.16

<<Precautions when connecting the ground terminal>>

- When connecting the ground wire, place the round terminal through the cut-out section of the cup washer. (Otherwise it may result in bad contact or poor results.)



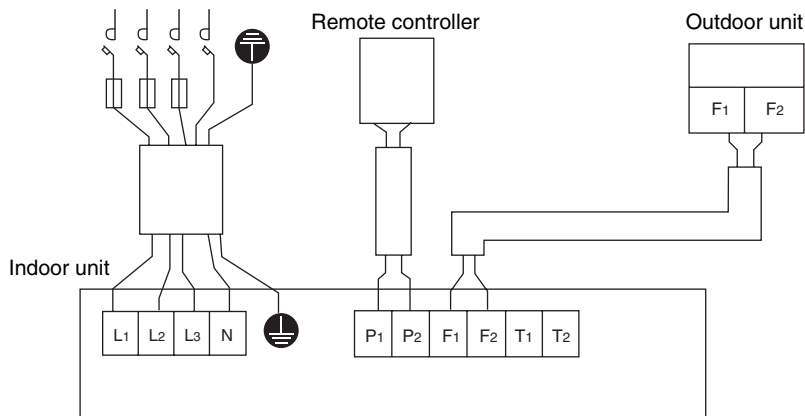
WIRING EXAMPLE

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

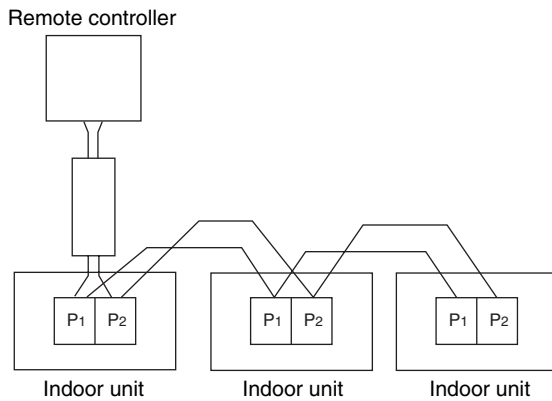
Confirm the system type.

- Standard system: 1 remote controller controls 1 indoor unit.
- Group control can control up to 16 indoor units at the same time.

Standard system



Group control



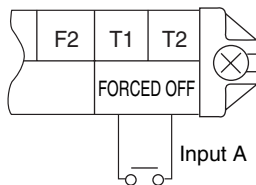
NOTE)

- The drawing only indicates the wiring of the control panel.

COMPUTERISED CONTROL (FORCED OFF AND ON/OFF OPERATION)

(1) Wire specifications and how to perform wiring

- Connect input from outside to terminals T1 and T2 of the terminal block for remote controller.



| | |
|--------------------|--|
| Wire specification | Sheathed vinyl cord or cable (2 wire) |
| Gauge | 0.75-1.25mm ² |
| Length | Max. 100 m |
| External terminal | Contact that can ensure the minimum applicable load of 15V DC, 1 mA. |

(2) Actuation

- The following table explains FORCED OFF and ON/OFF OPERATIONS in response to Input A.

| FORCED OFF | ON/OFF OPERATION |
|--|--------------------------------|
| Input ON stops operation (impossible by remote controllers.) | Input OFF → ON turns ON unit. |
| Input OFF enables control by remote controller. | Input ON → OFF turns OFF unit. |

(3) How to select FORCED OFF and ON/OFF OPERATION

- See FIELD SETTING.

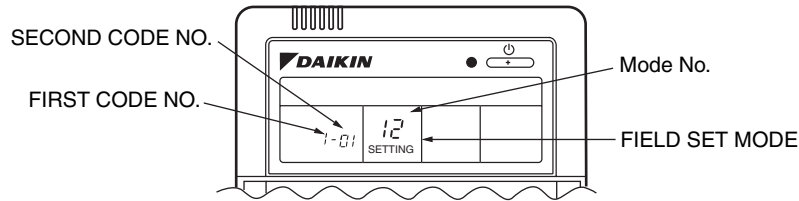
FIELD SETTING

<Field setting must be made from the remote controller in accordance with the installation condition.>

(1) Make sure the control box lids are closed on the indoor and outdoor units.

(2) Field setting must be made from the remote controller in accordance with the installation condition.

- Setting can be made by changing the “Mode No.,” “FIRST CODE NO.,” and “SECOND CODE NO.”.
- Set the remote controller to the field set mode. For details, refer to the “HOW TO SET IN THE FIELD”, in the remote controller manual. Lastly, make sure the customer keeps the “FIELD SETTING” manual, along with the operation manual, in a safe place.



- Turn the remote controller to the field setting mode. For details, please refer to the section of “HOW TO CONDUCT FIELD SETTING” in the remote controller manual.

How to select FORCED OFF and ON/OFF OPERATION

- When in the field set mode, select mode No. 12, then set the first code (switch) No. to “1”. Then set second code (position) No. to “01” for FORCED OFF and “02” for ON/OFF OPERATION. (FORCED OFF at factory set)

Setting air filter sign

- Remote controllers are equipped with liquid crystal display air filter signs to display the time to clean air filters.
- Change the SECOND CODE NO. according to table below depending on the amount of dirt or dust in the room. (SECOND CODE NO. is factory set to “01” for filter contamination-light)

| Setting | Display of the air filter cleaning signal | Mode No. | FIRST CODE NO. | SECOND CODE NO. |
|---------------------------------|---|----------|----------------|-----------------|
| Air filter contamination -light | Approx. 2500 hrs | 10 (20) | 0 | 01 |
| Air filter contamination -heavy | Approx. 1250 hrs | | | 02 |

TEST OPERATION

1. Make sure that the control box lids are closed on the indoor and outdoor units.
2. Refer to the installation manual of the outdoor unit.
 - The operation lamp of the remote controller will flash when a malfunction occurs. Check the malfunction code on the liquid crystal display to identify the point of trouble. An explanation or malfunction codes and the corresponding trouble is provided in “CAUTION FOR SERVICING” of the outdoor unit. If any of the items in Table are displayed, there may be a problem with the wiring or power, so check the wiring again.
 - If there haven't any air volume from the air diffuser, please check the wiring again.

| Remote control display | Contents |
|----------------------------------|--|
| “ ” is lit up | • There is a short circuit at the FORCED OFF terminals (T1, T2) |
| “U3” is lit up | • Test operation is not completed. |
| “U4” is lit up “UH” is lit up | • The power on the outdoor unit is off. • The outdoor unit has not been wired for power supply. • Incorrect wiring for the transmission wire and / or FORCED OFF wire. • The transmission wire is cut. |
| No display | • The power on the indoor unit is off. • The indoor unit has not been wired for power supply. • Incorrect wiring for the remote controller wire, the transmission wire and / or the FORCED OFF wire. • The remote controller wire is cut. |
| “R5” is lit up | • The air volumes pull too much. |
| “E4” is lit up | • Test operation is under the control of test operation. |

When the test operation is over, please make sure the control box lids inspection hatch and casing have been installed.

