

VRV SYSTEM Inverter Air Conditioners

MODELS:- Ceiling-mounted duct type low static pressure unit

- | | | | | |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| FXDQ20PDV36 | FXDQ25PDV36 | FXDQ32PDV36 | FXDQ40NDV36 | FXDQ50NDV36 |
| FXDQ63NDV36 | FXDQ25PEV36 | FXDQ32PEV36 | FXDQ40NEV36 | FXDQ50NEV36 |
| FXDQ63NEV36 | FXDRQ20PDV36 | FXDRQ25PDV36 | FXDRQ32PDV36 | FXDRQ40NDV36 |
| FXDRQ50NDV36 | FXDRQ63NDV36 | | | |

Installation manual :- Pg.No. 1-12
Operation manual :- Pg.No. 13-16

1. SAFETY PRECAUTIONS

Please read these "SAFETY PRECAUTIONS" carefully before installing air conditioning equipment and be sure to install it correctly.

After completing the installation, conduct a trial operation for check the 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 for 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."

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

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

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! WARNING

- Ask your dealer or qualified person to do installation work.
- Do not attempt to install the air conditioner by yourself. Improper installation may result in water leakage, electric shocks or fire.
- Install the air conditioner as per the instructions in this installation manual.
- Consult your local dealer to 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 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 unit falling, water leakage, electric shocks
- Install the air conditioner on a foundation strong enough to withstand the weight of the unit.
- Insufficient strength of foundation may lead to equipment falling and cause injury.
- Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.

- Make sure the separate power supply circuit is provided for this unit and that all electrical work is carried by qualified person according to local laws and regulations and this installation manual.
- An insufficient power supply capacity and improper electrical construction may lead to electric shocks or fire.
- Make sure that all the wiring is secured, the specified wires are used, and that there is no strain on the terminal connections of 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 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 fingers. Touching the switch with wet fingers can cause electric shocks.
- Be sure to earth the air conditioner.
- Do not earth to the unit to an utility pipe, lighting conductor or telephone earth lead. Imperfect earthing may cause electric shocks or fire.
- A high surge current from lightning or other sources may cause damage to the air conditioner.
- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electrical shocks or fire.

! CAUTION

- While following the 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 electronics 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:
 - Where there is a high concentrations of mineral oil spray or vapour (e.g. a kitchen). Plastic parts will deteriorate, parts may fall off and water leakage could result.
 - Where corrosive gas, such as sulphuric gas is produced. Corroding of copper pipes or solders may result in refrigerant leakage.
 - Near machinery emitting electromagnetic radiation. Electromagnetic radiation may disturb the operation of the control system and result in a malfunction of the unit.
 - 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.
- The air conditioner is not may intended for use in potentially explosive atmosphere.
- 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 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 bag 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 immediate after the operation. always wait at least 5 minute before turning off the power. Otherwise, water leakage and trouble may occur.
- In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Follow national standard for installation work.

2. BEFORE INSTALLATION

The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!

- Decide upon a line of transport.
- Leave the unit inside the packaging while moving, until reaching the installation site. where the 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.

When moving a unit at or after opening, hold the unit by hanger brackets. Do not apply force to the refrigerant piping, drain piping or flange parts.

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.)

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







2-1 PRECAUTIONS

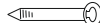

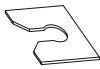

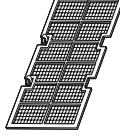
Be sure to instruct customers how to properly operate the unit (operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the operation manual.

Do not install in locations where the air conditioners high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories, or in vehicles or vessels.

2-2 ACCESSORIES

Check the following accessories are included with your unit.

Name	Metal clamp (1)	Drain hose (2)	Insulation for fitting	Sealing pad
Quantity	1 pc.	1 pc.	1 each	1 each
Shape			for liquid pipe (3)  for gas pipe (4) 	Large (5)  mid. (6) 

Name	Clamp	Washer fixing plate (9)	Sealing material (10)	Air filter (11)
Quantity	1 set	4 pcs.	2 pcs.	1 pc.
Shape	 Large (7) 8 pcs.  small (8) 4 pcs.			

- Installation manual & Operation manual (this manual)

2-3 OPTIONAL ACCESSORIES

This indoor unit requires one of the operation remote controls listed below.

Table 1

Remote controller	
Wired type	BRC1C61
Wireless type (Heat pump/Cooling)	BRC4C65/BRC4C66/ BRC4M61-6

NOTE

- If you wish to use a remote controller that is not listed in Table 1, select a suitable remote controller after consulting catalogs and technical materials.

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

a. Items to be checked after completion of work



Items to be checked	If not properly done, what is like to occur?	Check
Are the unit and outdoor unit fixed firmly	This unit may drop, vibrate or make noise.	
Was the installation of outdoor unit completed	The unit may malfunction or the component burn out.	
Is the gas leak test finished?	No cooling or heating	
Is the unit fully insulated?(Refrigerant, piping, drain piping and duct.)	Condensate water may drip	
Does drainage flow smoothly?	Condensate water may drop.	
Does the power supply voltage conform to the indication on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct and according to specifications?	The unit may malfunction or the components burn out.	
Is the air conditioner properly grounded?	Dangerous in case of current leakage.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	No cooling or heating.	
Did you see the external static pressure	No cooling or heating.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	
Did you check that no wiring connection screws were loose?	Electric shock or fire	

Also review the "SAFETY PRECAUTIONS."

b. Items to be checked at the time of delivery

Items to be checked	check
Are you sure the control box lid, air filter, air inlet grille, and air outlet grille are mounted.	
Did you explain about operation while showing the operation manual to your customer?	
Did you deliver the operation manual along with the installation manual to the customer?	
Did you explain the customer the handling & cleaning methods of the field supplies (e.g., air filter, air inlet grilles, and air outlet grille)?	
Did you deliver instruction manual, if any for the field supplies to the customer	

c. Points for explanations about operations

The items with  WARNING and  CAUTION marks in the operation 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 operation manual.

3. SELECTING INSTALLATION SITE

- Hold the hanging brackets in the case of moving the indoor and outdoor units at the time of and after opening the packages. Do not impose undue force on other parts, such as the refrigerant piping, drain piping, or flanges, in the particular.
- Add heat insulation material to the indoor unit if the temperature above the ceiling is likely to exceed 30°C and a relative humidity of 80%.
- Make sure that the insulation material is made of glass wool or polyethylene foam, has a minimum thickness of 10mm, and can be accommodated in the opening on the ceiling.

Select an installations site where the following conditions are fulfilled and that meets with your customer's approval.

- A place where cool (warm) air is delivered to the entire room
- Where optimum air distribution can be assured.
- Where nothing block air passage.
- Where condensate can be properly drained.
- Where the ceiling is enough strong to bear the unit weight.
- Where the false ceiling is not noticeably on an incline.
- Where there is no risk of flammable gas leakage.
- Where sufficient space available for future maintenance and service.(Refer to Fig. 1)
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the Installation manual for outdoor unit.)
- Select the *H1 & *H2 dimensions such that a downward slope of at least 1/100 is ensured as indicated in "7. DRAIN PIPING WORK".

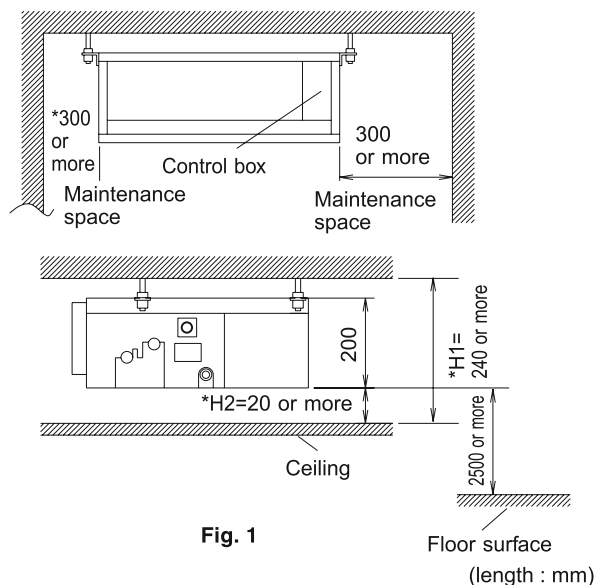


Fig. 1

- *H1 dimension means the minimum height of the unit.
- The maintenance space marked with "*" is required when the installation box for adapter PC board (KRP1BA101) sold separately is used.

PRECAUTIONS

- Install the indoor and outdoor units, power supply wiring and connecting wires at least 1 m away from televisions or radios in order to prevent image interference or noise. (Depending on radio wave a distance of 1 m is not sufficient enough to eliminate the noise.)

- If installing the wireless kit in a room with electronics fluorescent lighting (inverter or rapid start type), the remote controller's transmission distance may be shortened. Indoor units should be installed as far away from fluorescent lighting as possible.

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

(Installation pitch is marked on the carton box for installation. Refer to it to check for points requiring reinforcing.)

4. PREPARING BEFORE INSTALLATION

(1) Confirm the positional relationship between the unit and suspension bolt. (Refer to fig. 2)

- Install the inspection opening on the control box side where maintenance and inspection of the control box and drain pump are easy. Install the inspection opening also in the lower part of the unit.

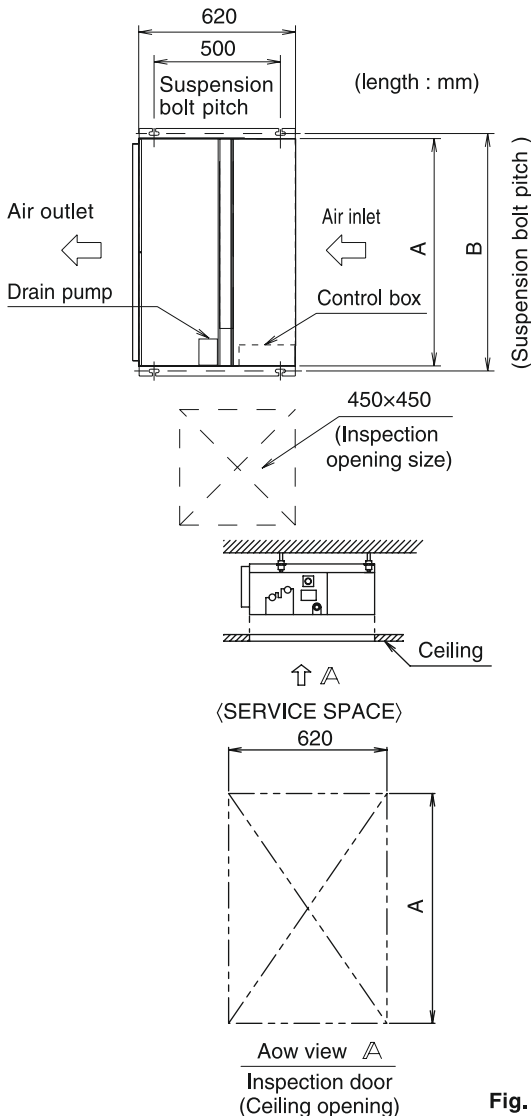


Fig. 2
Length: mm

Model	A	B
20.25.32 type	700	740
40.50 type	900	940
63 type	1100	1140

(2) Make sure the range of the unit's external static pressure is not exceeded. (See the technical documentation for the range of the external static pressure setting.)

(3) Open the installation hole. (Preset ceilings)

- Once the installation hole is opened in the ceiling where the unit is to be installed, pass refrigerant piping, drain piping, transmission wiring, and remote controller wiring (It is not necessary if using a wireless remote controller) to the unit's piping and wiring holes.

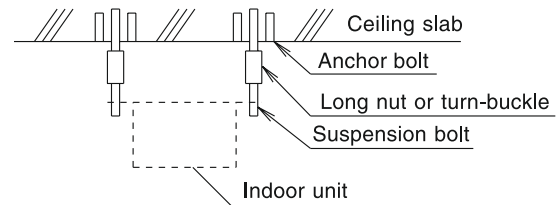
See "6. REFRIGERANT PIPING WORK", "7. DRAIN PIPING WORK", and "10. WIRING EXAMPLE".

- After opening the ceiling hole, make sure ceiling is level if needed. It might be necessary to reinforce the ceiling frame to prevent shaking. Consult an architect or carpenter for details.

(4) Install the suspension bolts.

(Use W3/8 to M10 suspension bolts.)

Use a hole-in-anchor for existing ceilings, and a sunken insert, sunken anchor or other part to be procured in the field to reinforce the ceiling to bearing the weight of the unit for new ceiling. (Refer to Fig. 3)



Note: All the above parts are field supplied.

Fig. 3

(5) For bottom intake, replace the chamber lid and protection net in the procedure listed in fig. 4.

- Remove the protection net. (6 locations)....PDV36 type only. Remove the chamber lid.(7 locations)
- Reattached the removed chamber lid in the orientation shown in fig.4. (7 locations).Reattached the removed protection net in the orientation shown in fig.4. (6 locations).....PDV36 type only.
- Attach the air filter (accessory) in the manner shown in the diagram. The four holes which cannot be covered by the air filter should be covered with commercially available tape.

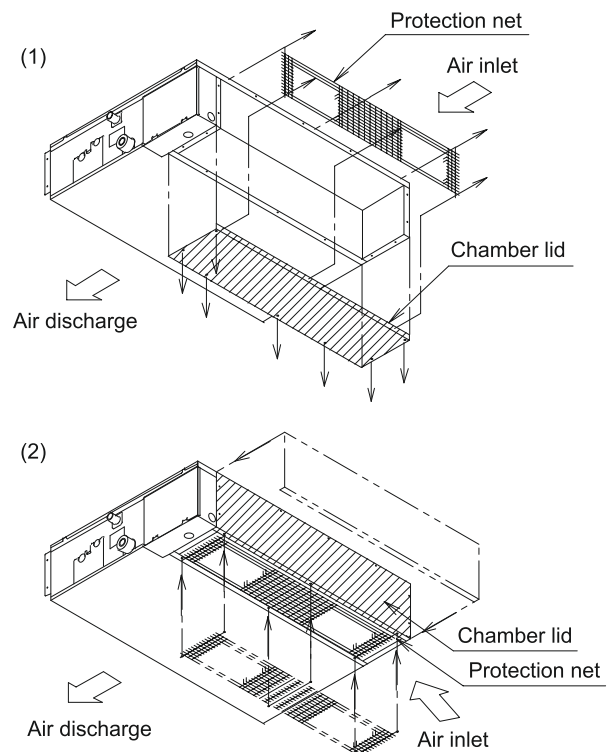
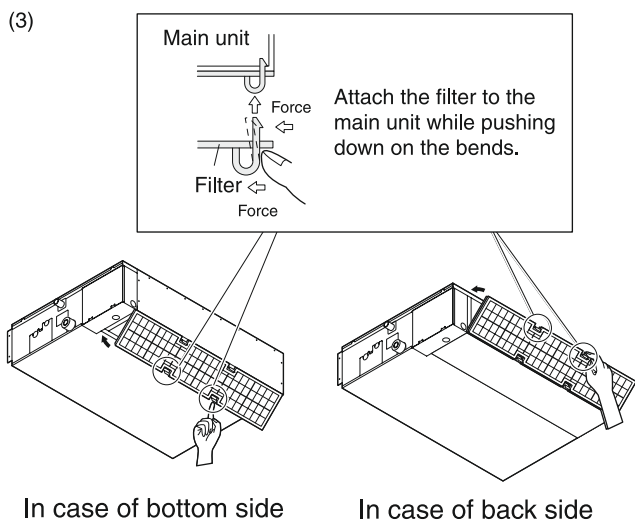


Fig. 4



5. INDOOR UNIT INSTALLATION

«As for the parts to be used for installation work, be sure to use the provided accessories and specified parts designated by our company.»

(1) Install the indoor unit temporarily.

Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket. (Refer to Fig. 5)

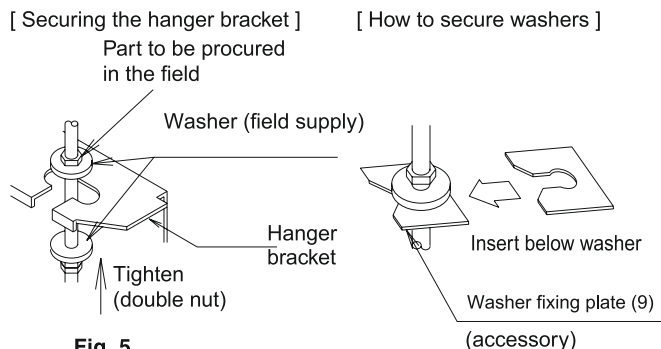


Fig. 5

PRECAUTIONS

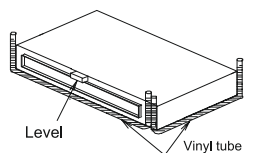
Since the unit uses a plastic drain pan, prevent welding spatter and other foreign substances from the air outlet during installation.

(2) Adjust the height of the unit.

(3) Check the unit is horizontally level.

CAUTION

Make sure the unit is installed level using a level or a plastic tube filled with water. In using a plastic tube instead of a level, adjust the top surface of the unit to the surface of the water at both ends of the plastic tube and adjust the unit horizontally. (One thing to watch out for in particular is if the unit is installed so that the slope is not in the direction of the drain piping, this might cause leaking.)



(4) Tighten the upper nut.

6. REFRIGERANT PIPING WORK

- For refrigerant piping of outdoor units, see the installation manual attached to the outdoor unit.
- Execute heat insulation work completely on both sides of the gas piping and the liquid piping. Otherwise, a water leakage can result sometimes. Use insulation that can withstand temperatures of at least 120°C. Reinforce the insulation on the refrigerant piping according to the installation environment. If the temperature above the ceiling might reach 30°C or the humidity RH80%. Condensation may form on the surface of the insulation.

CAUTION

Follow the points at below.

- Use a pipe cutter and flare suitable for the type of refrigerant.
- Apply ester oil or ether oil to the flare section when using a flare connection.
- Only use the flare nuts included with the unit. Using different flare nuts may cause the refrigerant to leak.
- To prevent dust, moisture or other foreign matter from infiltrating the piping, either pinch the end of cover it with tape.
- Do not allow anything other than designated refrigerant to get mixed into the refrigerant circuit, such as air etc. If any refrigerant gas leaks while working on the unit, ventilate the room thoroughly right away.

(1) Connect the piping

- The outdoor unit is charged with refrigerant.
- Be sure to use both a spanner and torque wrench together, as shown in the drawing, when connecting or disconnecting pipes to /from the unit. (Refer to fig.6)

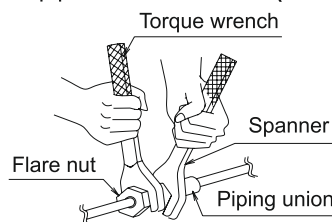


Fig. 6

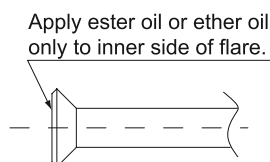


Fig. 7

- Refer to table 1 for the dimensions of flare nut spaces.
- Apply ether oil or ester oil only to inner side of the flare and screw in the flare nut three to four turns first by hand at the time of connecting the flare nut. (Refer to Fig. 7)
- Refer to Table 1 for tightening torque.

Table 1

Pipe size	Tightening torque	Flare dimension A (mm)	Flare shape
φ 6.4 (1/4")	14.2 – 17.2 N·m (144 – 176 kgf·cm)	8.7 – 9.1	
φ 9.5 (3/8")	32.7 – 39.9 N·m (333 – 407 kgf·cm)	12.8 – 13.2	
φ 12.7 (1/2")	49.5 – 60.3 N·m (504 – 616 kgf·cm)	16.2 – 16.6	
φ 15.9 (5/8")	61.8 – 75.4 N·m (630 – 770 kgf·cm)	19.3 – 19.7	

CAUTION

Over tightening may damage the flare and cause leaks. Be careful for oil not to adhere to any portions other than a flare part. If oil adhere to resin parts etc., there is a possibility of damaging by deterioration.

Refer to Table 2 if no torque wrench is available. using a wrench to tighten flare nuts causes the tightening torque to suddenly grow much tighter after a certain point. From there, tighten the nut further by the appropriate angle listed in Table 2.

(2) After the work is finish sure to check that there is no gas leak.

(3) After checking the gas leaks be sure to insulate the pipe connections referring to Fig. 8.

- Insulate using the insulation for fitting (3) (4) included with the liquid and gas pipes. Besides, make sure the insulation for fitting (3) (4) on the liquid and gas piping has its seams facing up.
(Tighten both edges with clamp (7).)
- For the gas piping, wrap the mid. sealing pad (6) over the

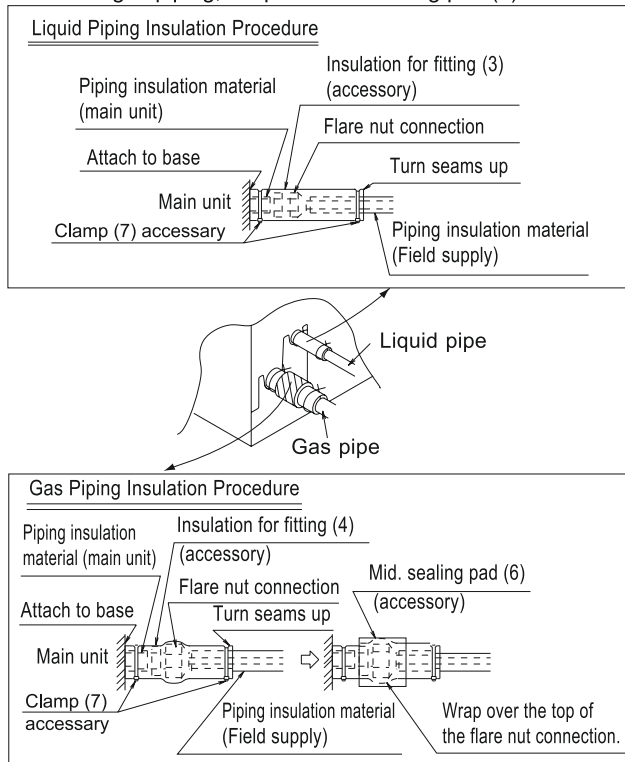


Fig. 8

CAUTION

Be sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

- When brazing the refrigerant piping, perform nitrogen replacement first, or perform the brazing (CAUTION 2) while feeding nitrogen into the refrigerant piping (CAUTION 1), and finally connect the indoor unit using the flare connections. (Refer to Fig. 9)

CAUTION

1. When brazing a pipe while feeding nitrogen inside the pipe, make sure to set the nitrogen pressure to 0.02 MPa (0.2kg/cm) using the pressure reducing valve. This pressure is such that breeze is blown to your cheek.)
2. Do not use a flux when brazing the refrigerant pipe joints. Use phosphor copper brazer (BCuP-2: JIS Z 3264/B- Cu93P-710/795: ISO 3677) which does not require flux. (Using a flux containing chlorine may cause the piping to corrode. Using a welding flux containing fluorine may cause the refrigerant lubricant to deteriorate, and affect adversely the refrigerant piping system.)

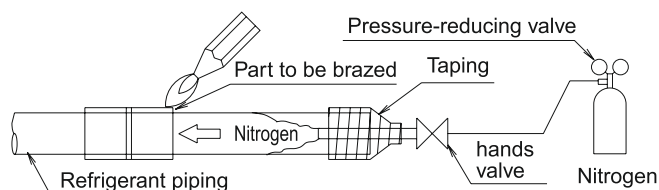


Fig. 9

Not recommendable but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below:

Table 2

Pipe size	Further tightening angle	Recommended arm length of tool
φ 6.4 (1/4")	60 to 90 degrees	Approx. 150mm
φ 9.5 (3/8")	60 to 90 degrees	Approx. 200mm
φ 12.7 (1/2")	30 to 60 degrees	Approx. 250mm
φ 15.9 (5/8")	30 to 60 degrees	Approx. 300mm

7. DRAIN PIPING WORK

- The connection opening on the drain piping may vary depending on the model, so check the model name and use the right method for that model.
- Make sure all water is out before making the duct connection.

(1) Install the drain piping

- Make sure the drain works properly.
- The diameter of the drain piping should be greater than or equal to the diameter of the connecting pipe (vinyl tube; pipe size: 20 mm; outer dimension: 26 mm).(not including the riser)
- Keep the drain piping short and sloping downwards at a gradient of at least 1/100 to prevent air pockets from forming.(Refer Fig. 10)

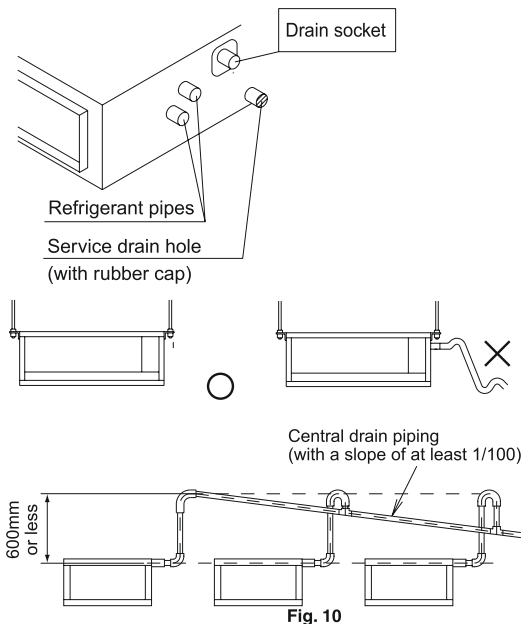


Fig. 10

CAUTION

Water accumulating in the drain piping can cause the drain to clog.

- To keep the drain piping from sagging, space hanging bracket every 1 to 1.5 m.
- Use the drain hose (2) and the metal clamp (1). Insert the drain hose (2) fully into the drain socket and firmly tighten the metal clamp (1) with the upper part of the tape on the hose end. Tighten the metal clamp (1) until the screw head is less than 4 mm from the hose. (Refer to Fig. 11, 12)

- The two areas below should be insulated because condensation may form there causing water to leak.
 - Drain piping passing indoors
 - Drain socket
- Referring the figure below, insulate the metal clamp (1) and drain hose (2) using the included large sealing pad (5). **(Refer to Fig. 12)**

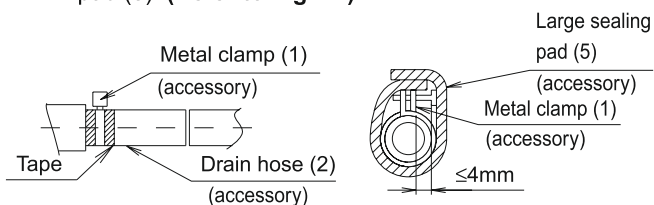


Fig. 11

Fig. 12

< PRECAUTIONS FOR DRAIN RAISING PIPE >

- Make sure the drain raising pipe height is no higher than 600mm.
- Place the drain raising pipe vertically and make sure it is no further than 300mm from the unit. **(Refer to Fig. 13)**

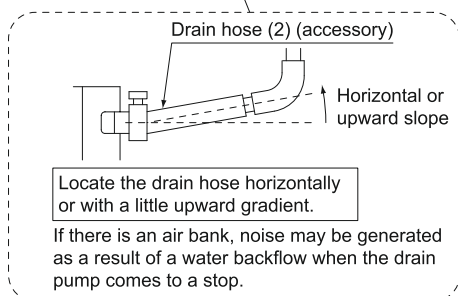
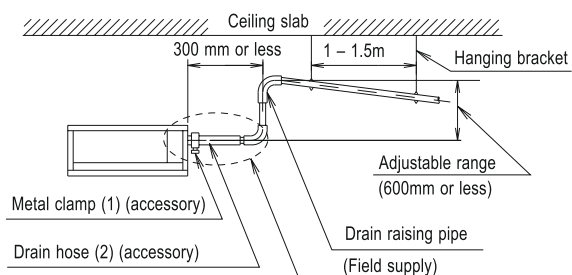


Fig. 13

< PRECAUTIONS >

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 piping and corrode the heat exchanger.
- Do not twist or bend the drain hose (2), so that excessive force is not applied to it. (This type of treatment may cause leaking.)
- If you are using central drain piping, follow the procedure outlined in the figure 10.
- select central drain piping of proper size according to the capacity of the connected unit.

(2) After piping work is finished, check drainage flows smoothly, with manner described below.

CAUTION

- The electric wiring work shall be performed by qualified electricians.
- If workers not having the electrician qualification have performed the electric wiring work, the steps 3 to 7 shall be performed after the TEST RUN.

- Remove the control box lid .connect the remote controller and power supply (single phase, 50 Hz 220-240 V or single phase) respectively to the terminal block and securely connect the earth also (as shown in the figure below).

CAUTION

Securely clamp the cables with the clamps (7)(8) offered as accessories as shown in Fig. 14 so that tension will not be applied on the cable connection areas.

- Confirm that the control box lid is closed before turning on the power.
- Remove the inspection lid.
- Gradually pour approximately 1L of water from the inspection window into the drain pan to check drainage

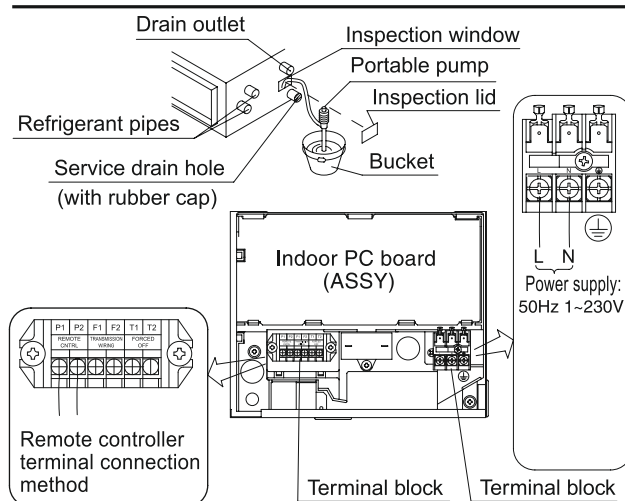
CAUTION

Be sure to prevent an external force from being exerted on the float switch. (This may cause breakage.)

- attach the inspection lid.
- Perform the following operation using the remote controller, and check drainage.
 - Select the inspection/test operation button "TEST" using the remote controller. The unit will engage the test operation. Press the operation selector button " " and select FAN OPERATION " ".
 - Press the ON/OFF button " ". (The indoor fan and drain pump will operate.)

CAUTION

The fan will turn also at the same time. Take due care. Do not touch the drain pump to prevent electric shock.



- Make sure to use the remote controller in finishing the operation.

8. INSTALLING THE DUCT

Connect the duct supplied in the field.

Air inlet side

- Attach the duct and intake-side flange (field supply).
- Connect the flange to the main unit with screws (Field supply).

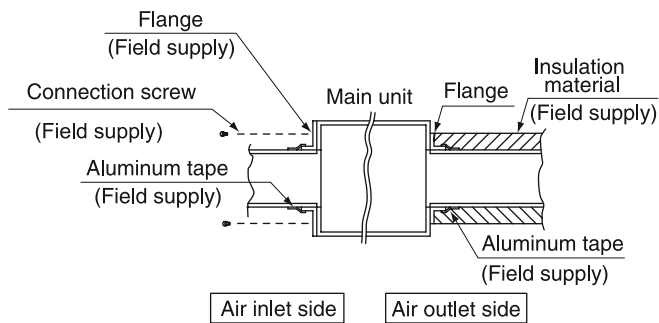
Class	20 · 25 · 32	40 · 50	63
Number of positions	16	22	26

- Wrap the intake side flange and duct connection area with aluminum tape or something similar to prevent air escaping.

CAUTION

When attaching a duct to the intake side, be sure to attach an air filter inside the air passage on the intake side. (Use an air filter whose dust collecting efficiency is at least 50% in a gravimetric technique.)

The included filter is not used when the intake duct is attached.



Air outlet side

- Connect the duct according to the air inside of the outlet side flange.
- Wrap the outlet side flange and the duct connection area with aluminum tape or something similar to prevent air escaping.

CAUTION

- Be sure to insulate the duct to prevent condensation from forming. (Material: glass wool or polyethylene foam, 25 mm thick)
- Use electric insulation between the duct and the wall when using metal ducts to pass metal laths of the net or fence shape or metal plating into wooden buildings.
- Be sure to explain about the way of maintaining and cleaning local procurements (air filter, grille (both air outlet and suction grille), etc.) to your customer.

9. ELECTRIC WIRING WORK

9-1 GENERAL INSTRUCTIONS

- Shut off the power before doing any work.
- All field supplied parts and materials, electric works must conform to local codes.
- Use copper wire only.
- See also the "Wiring Diagram plate" attached to the control box lid when laying electrical wiring.
- For details on hooking up the remote controller, refer to the "REMOTE CONTROLLER INSTALLATION MANUAL".
- All wiring must be performed by an authorized electrician.
- This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B . . . , and be sure the terminal board wiring to the outdoor unit and BS unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- Refer to the installation manual attached to the outdoor unit for the size of power supply wiring connected to the outdoor unit, the capacity of the circuit breaker and switch, and wiring instructions.
- Be sure to ground the air conditioner.
- Do not the earth wire should come in contact with gas pipes, water pipes, lightning rods, or telephone earth wires.
- Gas pipes: gas leaks can cause explosions and fire.

- Water pipes: they cannot be grounded if hard vinyl pipes are used.
- Telephone earth wire and lightning rods: the ground potential when struck by lightning gets extremely high.
- To avoid short circuiting the power supply wire, be sure to use insulated terminals.
- Do not turn on the power supply (circuit breaker or earth leakage breaker) until all other work is done.

9-2 SPECIFICATIONS FOR FIELD SUPPLIED FUSES AND WIRE

Power Related

Model	Power supply wiring (including earth wire)			
	Number of units	Field fuses	Wire	Size
20 · 25 · 32 type	1	16A	H05VV-U3G (NOTE 1)	Size must comply with local codes.
40 · 50 type				
63 type				

Model	Transmission wiring Remote controller wiring	
	Wire	Size (mm ²)
20 · 25 · 32 type	Sheathed vinyl cord or cable (2 wires) (NOTE 2)	0.75 - 1.25
40 · 50 type		
63 type		

NOTES

1. Shows only in case of protected pipes. Use H07RN-F in case of no protection.
 2. Insulated thickness : 1mm or more.
 3. If the wiring is in a place where people, it can be easily touched by people, install an earth leakage breaker to prevent electric shock.
 4. When using an earth leakage breaker, make sure to select one useful also to protection against overcurrent and short circuit.
When using an earth leakage breaker only for earth device, make sure to use a wiring interrupter together.
- The length of the transmission wiring and remote controller wiring are as follows.

Length of the transmission wiring and remote controller wiring

Outdoor unit – Indoor unit	Max. 1000m (Total wiring length: 2000m)
Indoor unit – Remote controller	Max. 500m

9-3 ELECTRIC CHARACTERISTICS

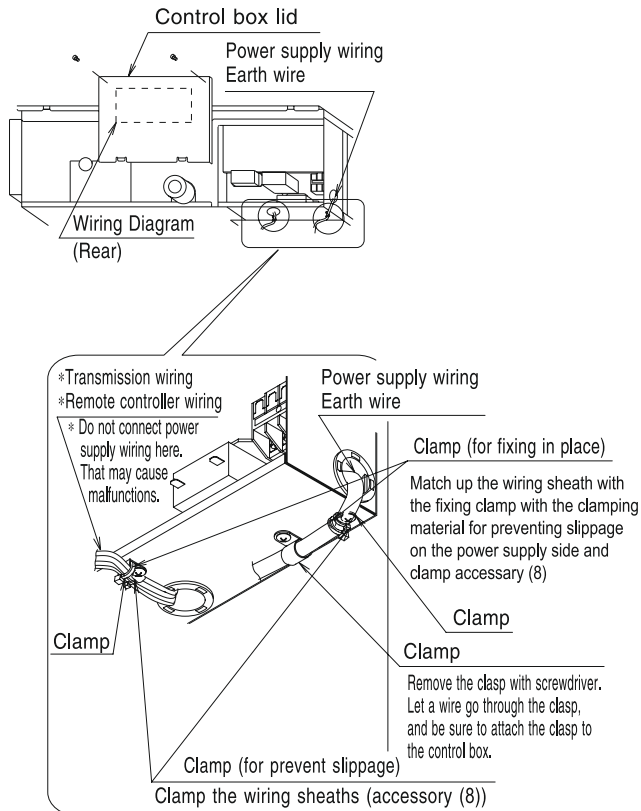
Model	Units			Power supply		Fan motor	
	Hz	Volts	Voltage range	MCA	MFA	KW	FLA
20 · 25 · 32 PDV36 , PEV36	50	230	Min. 198 Max. 264	0.8	16	0.055	0.6
40 NDV36,NEV36				1.0		0.055	0.8
50 NDV36,NEV36				1.0		0.085	0.8
63 NDV36,NEV36				1.1		0.085	0.9

MCA: Minimum Circuit Amps (A) MFA:Max. Fuse Amps (A)
KW: Fan motor output (kW) FLA:Full Load Amps (A)

10. WIRING EXAMPLE

10-1 HOW TO CONNECT WIRINGS

- Wire only after removing the control box lid as shown in Fig. 14.



- ⚠ • Make sure to let a wire go through a wire penetration area.
- After wiring, seal the wire and wire penetration area to prevent moisture and small creatures from the outside.
- Wrap the strong and weak electric lines with the sealing material (10) as shown in the figure below. (Otherwise, moisture or small creatures such as insects from the outside may cause short-circuit inside the control box.) Attach securely so that there are no gaps.

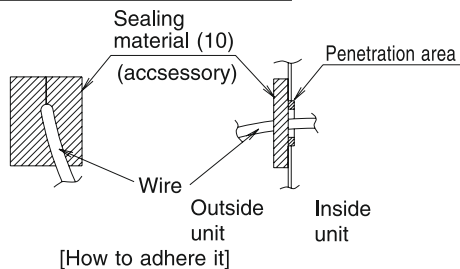


Fig. 14

CAUTION

- When clamping the wiring, use the included clamp material (7) and (8) as shown in the Fig.14 to prevent outside pressure being exerted on the wiring connections and clamp firmly.
- Be sure to attach power supply wiring and earth wire to the control box with the clamp.
- When doing the wiring, make sure the wiring is neat and does not cause the control box lid to stick up, then close the cover firmly. When attaching the control box lid, make sure you do not pinch any wires.
- Outside the air conditioners, separate the weak wiring (remote controller and transmission wiring) and strong wiring (earth wire and power supply wiring) at least 50 mm so that they do not pass through the same place together. Proximity may cause electrical interference, malfunctions, and breakage.

CAUTION

- Do not, under any circumstances, connect the power supply wiring to the remote controller or transmission wiring terminal block. Doing so can destroy the entire system.

[Connecting electrical wiring, remote controller wiring, and transmission wiring] (Refer to Fig. 15)

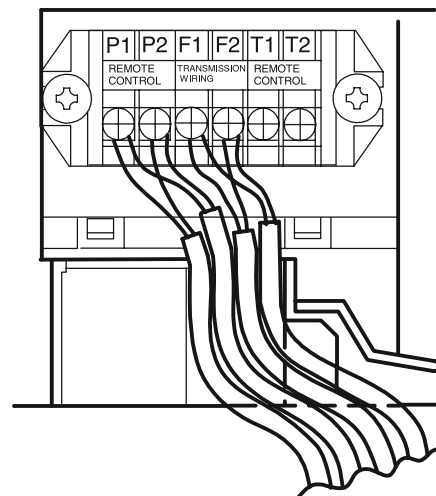
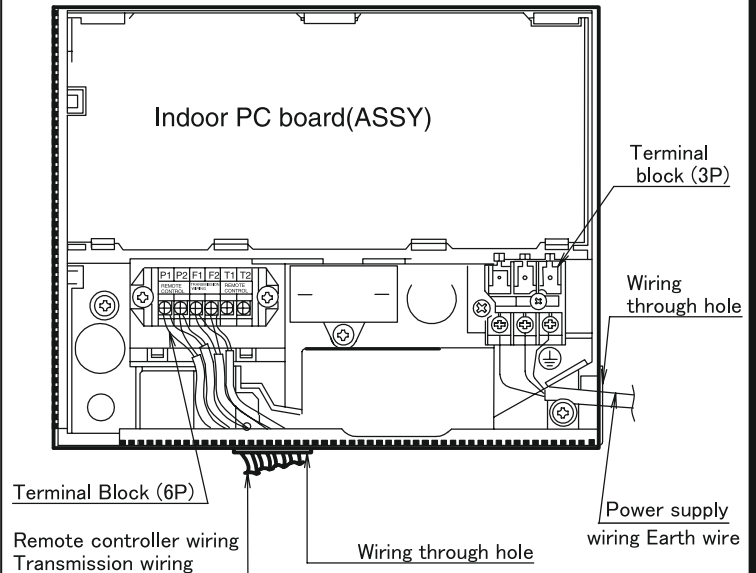
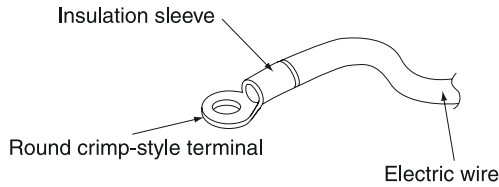


Fig. 15

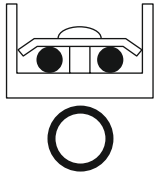
- **Power supply and Earth wiring**
Remove the control box lid.
Next, pull the wires into the unit through the wiring through hole and connect to the terminal block (3P).
Be sure to put the part of the sheathed vinyl into the control box.
- **Remote controller and transmission wiring**
Pull the wires into the unit through the wiring through hole and connect to the terminal block (6P).
Be sure to put the part of the sheathed vinyl into the control box.

⚠ Precautions when laying power supply wiring

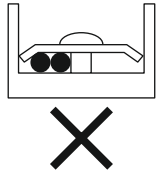
- Wiring of different thicknesses cannot be connected to the power supply wiring terminal block. (Slack in the power supply wiring may cause abnormal heat.)
- Use sleeve insulated round crimp style terminals for connections to the power supply wiring terminal block. When none are available, connect wires of the same diameter to both sides, as shown in the figure.



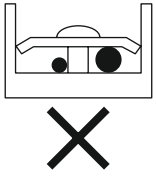
Connect wires of the same gauge to both sides.



Do not connect wires of the same gauge to one side.



Do not connect wires of different gauges.



Follow the instructions are below if the wiring may get very hot due to slack in the power supply wiring.

- For wiring, use the designated power supply wiring and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.
- Refer to the table below for the tightening torque of the terminal screws.

Terminal block	Tightening torque (N·m)
Remote controller / transmission wiring terminal block (6P)	0.79 – 0.97
Power supply wiring terminal block (3P)	1.18 – 1.44

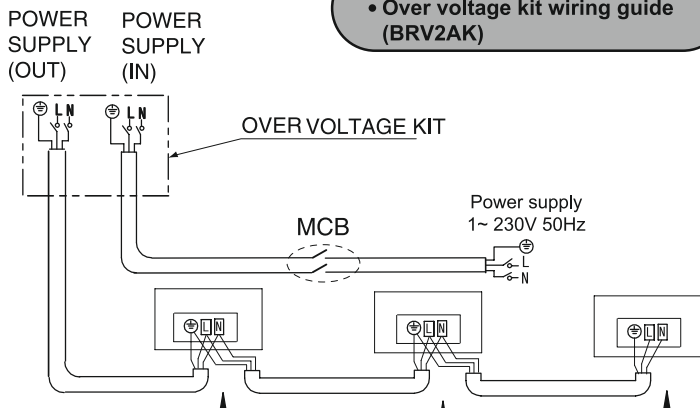
10-2 WIRING EXAMPLE

WARNING

Install an earth leakage breaker. The installation of an earth leakage breaker is imperative for the prevention of electric shocks and fire accidents.

• OVER VOLTAGE KIT WIRING:-

RECOMMENDATION TO USE
• Over voltage kit wiring guide (BRV2AK)



MAX CURRENT LIMIT

MODEL NO	BRV2AK
MAX Amps	35 Amps

FUNCTION:- IT IS USED TO PROTECT FROM OVER VOLTAGE AND UNDER VOLTAGE CONDITION.

For Detailed Installation:- See BRV2AK installation Manual

No. 1 system
When using 1 remote controller for 1 indoor unit

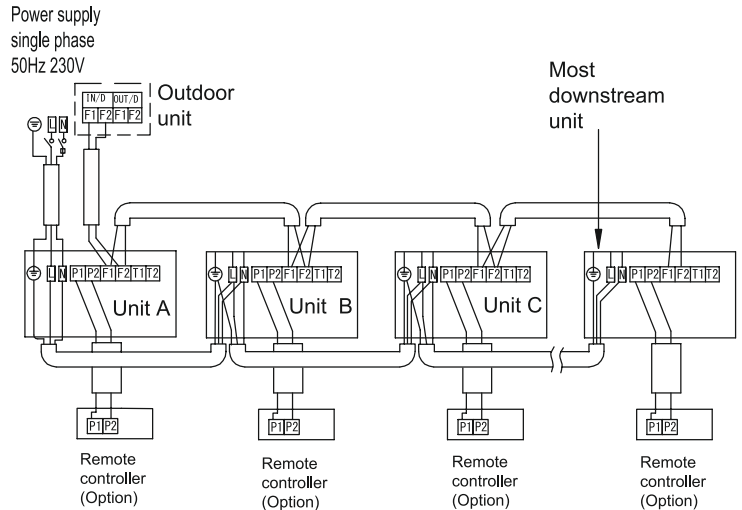


Fig. 16

No. 2 system
For group control or use with 2 remote controllers

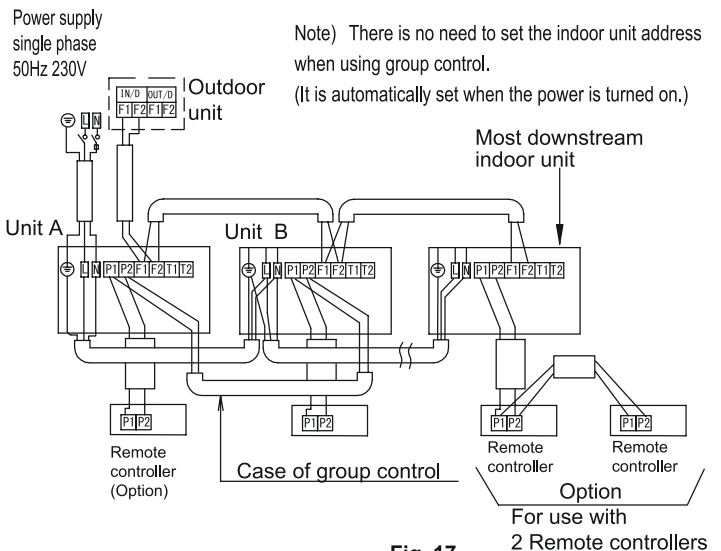


Fig. 17

No. 3 system
When including BS unit

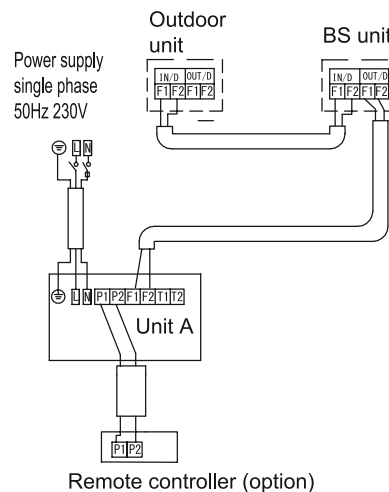


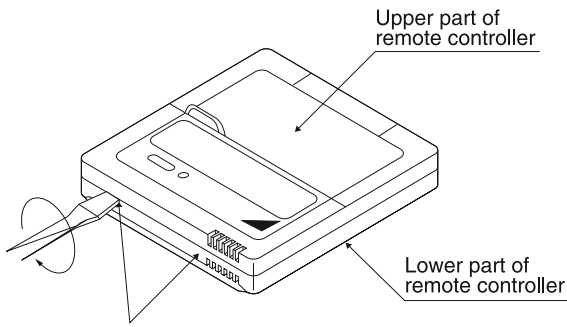
Fig. 18

10-2 CONTROL BY 2 REMOTE CONTROLLERS
(Controlling 1 unit by 2 remote controllers)

- When using 2 remote controllers, one must be set to “MAIN” and the other to “SUB”.

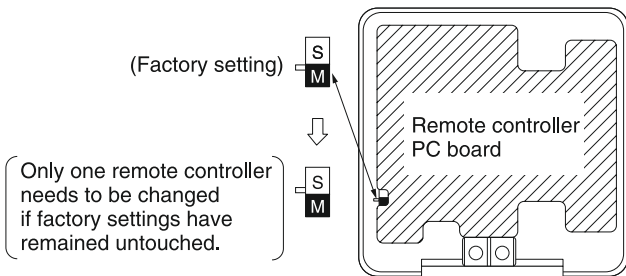
MAIN/SUB CHANGEOVER

- (1) Insert a \ominus screwdriver into the recess between the upper and lower part of remote controller and, working from the 2 positions, pry off the upper part (2 locations). The remote controller PC board is attached to the upper part of remote controller.



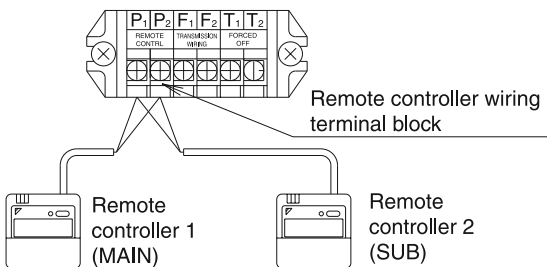
Insert the screwdriver here and gently work off the upper part of remote controller.

- (2) Turn the MAIN/SUB changeover switch on one of the two remote controller PC boards to “S”. (Leave the switch of the other remote controller set to “M”.)



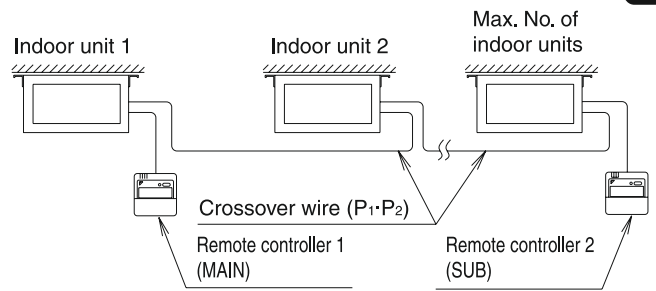
Wiring Method (See “9. ELECTRIC WIRING WORK”)

- (3) Remove the control box lid.
- (4) Add remote controller 2 (SUB) to the terminal block for remote controller (P₁, P₂) in the control box. (There is no polarity.)



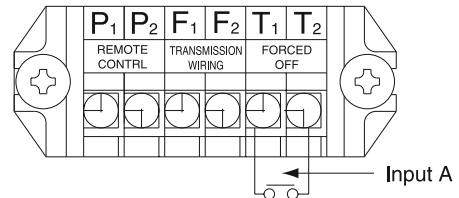
[PRECAUTIONS]

- Crossover wiring is needed when using group control and 2 remote controllers at the same time.
- Connect the indoor unit at the end of the crossover wire (P₁, P₂) to remote controller 2 (SUB).



10-3 REMOTE CONTROL (FORCED OFF AND ON /OFF OPERATION)

- Connect input lines from the outside to the terminals T₁ and T₂ on the terminal block (6P) for remote controller to achieve remote control.
- See the “11. FIELD SETTING AND TEST RUN” for details on operation.



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

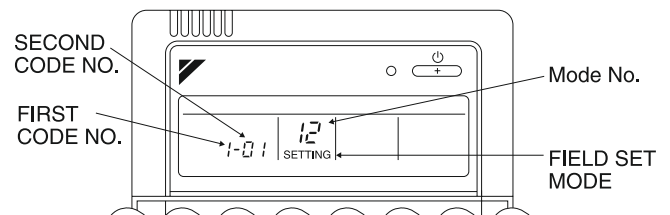
10-4 CENTRALIZED CONTROL

- For centralized control, it is necessary to designate the group No. For details, refer to the manual of each optional controllers for centralized control.

11. FIELD SETTING AND TEST RUN

(Field settings may have to be performed using the remote controller, depending on the type of installation.)

- (1) Make sure the control box lids are closed on the indoor and outdoor units.
- (2) Depending on the type of installation, make the field settings from the remote controller after the power is turned on, following the “Field Settings” manual which came with the remote controller.
 - The settings can select “Mode No.”, “FIRST CODE NO.” and “SECOND CODE NO.”.
 - The “Field Settings” included with the remote controller lists the order of the settings and method of operation.



- Lastly, make sure the customer keeps the “Field Settings” manual, along with the operating manual, in a safe place.

11-1 SETTING THE STATIC PRESSURE SELECTION

- Select the SECOND CODE NO. for the resistance of the connected duct.
(The SECOND CODE NO. is set to "01" when shipped.)
- See the technical documentation for details.

External static pressure	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Standard (10Pa)	13(23)	5	01
High static pressure setting (30Pa)			02

11-2 REMOTE CONTROL SETTING

- Forced off and ON/OFF operation should be selected by selecting the SECOND CODE NO. as shown in the table below.
(The SECOND CODE NO. is set to "01" when shipped.)

External ON/OFF input	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Forced off	12(22)	1	01
ON/OFF operation			02

- Input A of forced off and ON/OFF operation work as shown in the table below.

Forced off	ON/OFF operation
Input A "on" to force a stop (remote controller reception prohibited)	Unit operated by changing input A from "off" to "on"
Input A "off" to allow remote controller	Unit stopped by changing input A from "on" to "off"

11-3 SETTING THE FILTER SIGN DISPLAY INTERVAL

- Explain the following to the customer if the filter dirt settings have been changed.
- The filter sign display time is set to 2500 hours (equivalent to 1 year's use) when shipped.
- The settings can be changed to not display.
- When installing the unit in a place with much dusts, set the filter sign display time to shorter intervals (1,250 hours).
- Explain it to the customer that the filter needs to be cleaned regularly to prevent clogging and also the time that is set.

Mode No.	FIRST CODE NO.		SECOND CODE NO.	
			01	02
10 (20)	0	Filter dirt	low	high
	1 (low/high)	Displayed time (units: hours)	2500/ 1250	10000/ 5000
	3	Filter sign display	ON	OFF

11-4 SETTING FOR SEPARATELY SOLD ACCESSORIES

See the instruction manuals included with separately sold accessories for the necessary settings.

< When using a wireless remote controller >

A wireless remote controller address needs to be set when using a wireless remote controller. See the installation manual included with the wireless remote controller for details on how to make the settings.

11-5 SWITCHING TIME OF THE DRY OPERATION AT VRT smart control SETTING.

- If you change the operation mode to "Dry" when VRTsmart control is in effect, the operation mode is change to "Cooling" after certain period of time.
If you want to continue dry operation longer, please change the setting position as mentioned in the table below.
(Setting position of factory setting is "0".)

※ If you keep dry operation longer, energy saving performance decrease.

Dry operation	Mode number	Setting switch number	Setting position number
30 min	10	10	01
60 min			02
90 min			03
Continuous (Not return to Cooling)			04

※ At the time of Group control setting, Dry operation time for the indoor units in the same group shall be the same setting value.






NOTE

For VRTsmart control function it is necessary to connect with an outdoor unit with a compatible function.

(3) Perform a test run according to the outdoor unit's installation manual.

- 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 of malfunction codes and the corresponding trouble is provided in "CAUTION FOR SERVICING" of the outdoor unit.

If the display shows any of the following, there is a possibility that the wiring was done incorrectly or that the power is not on, so check again.

Remote control display	Content
"  " display	• There is a short circuit at the FORCED OFF terminals (T ₁ , T ₂).
"  " display	• The test-run has not been performed.
"  " "  " display	• The power on the outdoor unit is off. • The outdoor unit has not been wired for power supply. • Wiring is incorrect for the transmission wiring and / or FORCED OFF wiring. • The transmission wiring is cut.
"  " display	• Reversed transmission wiring
No display	• The power on the indoor unit is off. • The indoor unit has not been wired for power supply. • Wiring is incorrect for the remote controller wiring, the transmission wiring and / or the FORCED OFF wiring. • The remote controller wiring is cut.

CAUTION

Always stop the test run using the remote controller to stop operation.

(4) After finishing the test run, make sure to check drainage in the drain pump according to "7. DRAIN PIPING WORK".

OPERATION MANUAL 3P445070-7H

VRV SYSTEM Inverter Air Conditioners

MODELS:- Ceiling-mounted duct type low static pressure unit

- | | | | | |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| FXDQ20PDV36 | FXDQ25PDV36 | FXDQ32PDV36 | FXDQ40NDV36 | FXDQ50NDV36 |
| FXDQ63NDV36 | FXDQ25PEV36 | FXDQ32PEV36 | FXDQ40NEV36 | FXDQ50NEV36 |
| FXDQ63NEV36 | FXDRQ20PDV36 | FXDRQ25PDV36 | FXDRQ32PDV36 | FXDRQ40NDV36 |
| FXDRQ50NDV36 | FXDRQ63NDV36 | | | |

Carefully read this operation manual before using the air conditioner.
 This operation manual is prepared for only the indoor unit. To understand the whole set fully, read this manual together with the operation manual for the outdoor unit. The next items are described in the operation manual for the outdoor unit.

- Part names and functions of remote controller
- Operation procedure
- Troubleshooting

For the warranty card, receive it from your dealer and store it with this operation manual.

PARTS NAME AND FUNCTIONS

In case of suction from bottom side

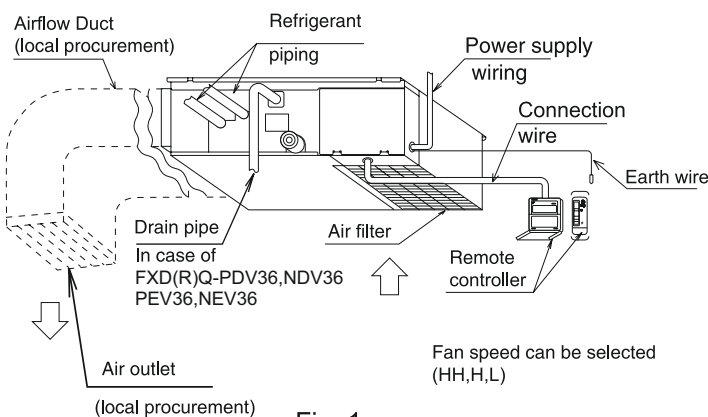


Fig. 1

In case of suction from back side

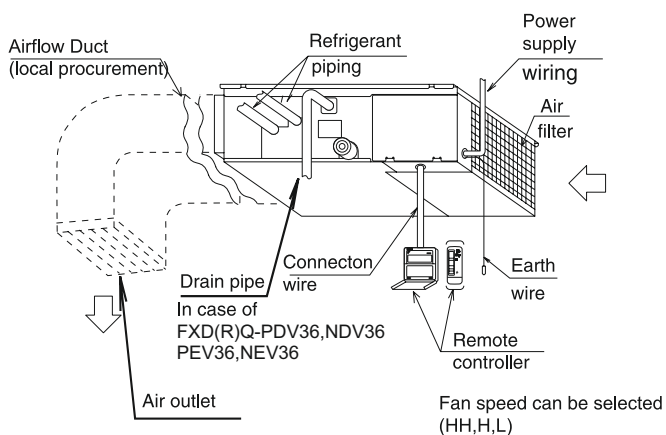


Fig. 2

IMPORTANT INFORMATION REGARDING REFRIGERANT USED

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol.

Refrigerant type: R410A

GWP⁽¹⁾ value: 1975

⁽¹⁾GWP = global warming potential

Periodical inspections for refrigerant leaks may be required depending on European or local legislation. Please contact your local dealer for more information.

SAFETY PRECAUTIONS

To gain full advantage of the air conditioner's functions and to avoid malfunction due to mishandling, we recommend that you read this instruction manual carefully before use.

- This air conditioner is classified under "appliances not accessible to the general public."
- **The precautions described herein are classified as WARNING and CAUTION. They both contain important information regarding safety. Be sure to observe all precautions without fail.**

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

- **Consult your local dealer about installation work.** Doing the work yourself may result in water leakage, electric shocks or fire hazards.
- **Consult your local dealer regarding modification, repair and maintenance of the air conditioner.** Improper workmanship may result in water leakage, electric shocks or fire hazards.

Beware of fire in case of refrigerant leakage. If the air conditioner is not operating correctly, i.e. not generating cool or warm air, refrigerant leakage could be the cause. Consult your dealer for assistance.

The refrigerant within the air conditioner is safe and normally does not leak.

However, in the event of a leakage, contact with a naked burner, heater or cooker may result in generation of noxious gas.

Do not longer use the air conditioner until a qualified service person confirms that the leakage has been repaired.

- **Consult your local dealer regarding relocation and reinstallation of the air conditioner.** Improper installation work may result in leakage, electric shocks or fire hazards.

CAUTION

- **Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit.** Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.
- **Do not allow a child to mount on the outdoor unit or avoid placing any object on it.** Falling or tumbling may result in injury.
- **The appliance is not intended for use by unattended young children or infirm persons.** Impairment of bodily functions and harm to health may result.
- **Children should be supervised to ensure that they do not play with the unit or its remote controller.** Accidental operation by a child may result in impairment of bodily functions and harm health.
- **Do not let children play on or around the outdoor unit.** If they touch the unit carelessly, injury may be caused.

MAINTENANCE

WARNING

- **Only a qualified person is allowed to perform maintenance without daily maintenance.**
- **Before touching any of connection wirings, be sure to turn off all power supply switches.**
- **Do not use flammable materials (e.g., hair spray or insecticide) near the product.**
Do not clean the product with organic solvents such as paint thinner.
The use of organic solvents may cause crack damage to the product, electric shocks, or fire.
- **Contact professional personnel about attachment of accessories and be sure to use only accessories specified by the manufacturer.**
If a defect results from your own workmanship, it may result in water leaks, electric shock or fire.
- **Consult your dealer regarding cleaning the inside of the air conditioner.**
Improper cleaning may cause breakage of plastic parts, water leakage and other damage as well as electric shocks.

CAUTION

- **Before cleaning, be sure to stop unit operation, turn the breaker off or remove the power cord. Otherwise, an electric shock and injury may result.**
- **Do not wash the air conditioner with water, as this may result in electric shocks or fire.**
- **Watch your steps at the time of air filter cleaning or inspection.**
High place work is required, to which utmost attention must be paid.
If the scaffold is unstable, you may fall or topple down, thus causing injury.

⟨Maintenance and inspection⟩

Clean the drain pan periodically. The drain pipes clogged with dust will cause water leakage.

For cleaning, consult with your Daikin dealer. (Before each season when cooling or heating is required, clean the air conditioner.)

If the area around the indoor unit is very dusty, use a dust-proof cover (local procurement).

⟨Cleaning the inside of the indoor unit⟩



It is necessary to clean the inside of the indoor unit periodically.

Since the cleaning requires special technologies, request a Daikin dealer to clean them.

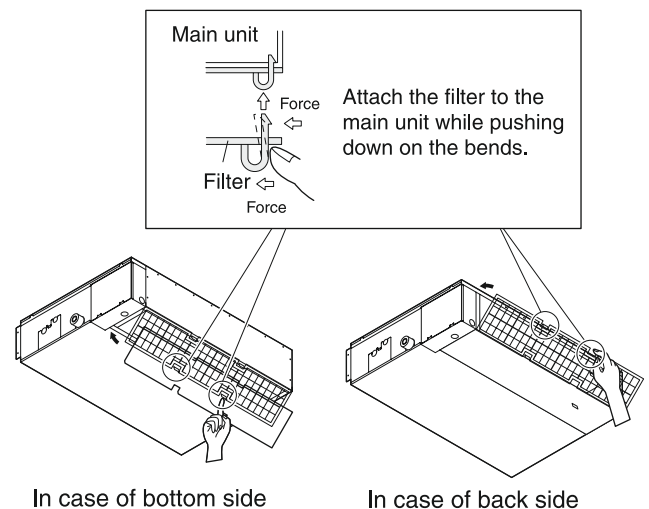
Daily maintenance:

⟨Cleaning the air filter⟩

Explanation

- Removing the air filter except when cleaning the air conditioner may result in accidents.
- When the  mark is displayed on the remote controller, please clean the filter.
- When the operating time exceeds the designated time, this mark will be displayed.
- If using the air conditioner under very dusty environment, increase the frequency of air filter cleaning.
- When you want to change the setting time until the  mark is displayed, consult with your dealer.
(The default factory setting is 2500 hours.)
- There are the following time, display pattern.
1250, 2500, 5000, 10000

1. Remove the air filter



2. Clean it.

CAUTION

- Do not wash the air conditioner with hot water of more than 50°C. Doing so may result in discoloration or deformation.
- Never dry the filter by direct firing. Doing so may result in burning.
- For cleaning local procurements, consult with your dealer.

(1) Use a vacuum cleaner (A) or wash the air filter (B) to remove dust and trash.

(A) Remove dust and trash using a vacuum cleaner.



(B) Wash it with water. when the air filter is very dirty, use a soft brush and neutral detergent.

↓ Dewater and dry in the shade.



3. Attach the air filter.

4. Push the “filter sign reset” button on the remote controller.

The display “” vanishes.

(Cleaning the air outlet and exterior)

CAUTION

- Do not use gasoline, benzene, thinner, polishing powder or liquid insecticide.
- Do not use hot water of 50°C or higher, as doing so may result in discoloration or deformation.

(1) Clean with dry soft cloth.

(When it is difficult to remove stains, use water or neutral detergent.)

If the following phenomenon occurs, contact your dealer.

WARNING

- **When the air conditioner is malfunctioning (giving off a burning odour, etc.) turn off power to the unit and contact your local dealer.** Continued operation under such circumstances may result in a failure, electric shocks or fire hazards.
- **Contact your dealer.**

Phenomenon

- If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates; **Take the following actions before contact.** Do not turn on the main power switch.

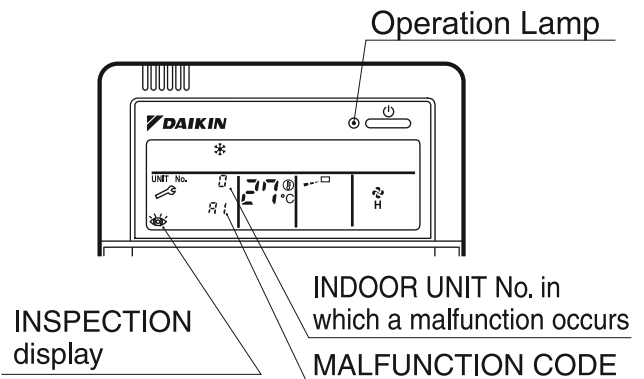
- If the ON/OFF switch does not properly work; **Take the following actions before contact.** Turn off the main power switch.

Phenomenon

- Water leaks out from the air conditioner. **Take the following actions before contact.** Stop the operation.

Phenomenon

- The “OPERATION lamp”, “INSPECTION display” or “UNIT No.” is winking and lit, and “MALFUNCTION CODE” is displayed.



Take the following actions before contact. Inform the dealer of the details being displayed on the remote controller.

Product type and running noise

Model No.		FXD(R)Q20	FXD(R)Q25	FXD(R)Q32	FXD(R)Q40	FXD(R)Q50	FXD(R)Q63
		PDV36	PDV36	PDV36	NDV36	NDV36	NDV36
Type	Function	Heat pump type					
	Combination system	Separate type					
	Condenser cooling method	Air cooling type					
	Air blowing method	Direct air-blowing type					
	Rated cooling capacity (W)	2200	2800	3600	4500	5600	7100
	Rated heating capacity (W)	2500	3200	4000	5000	6300	8000
Operating sound dB (A) (conversion values under noise-less room)		33	33	33	34	35	36

Explanation

- The actual value during operation is higher than the indicated value under the influence of environmental noise and echo.
- The above data is subject to change by means of technological innovation.
- The operating sound is based on the rear side suction inlet, and the external static pressure 10Pa. Operating sound for under suction inlet: [operating sound for rear side suction inlet] + 5dB. However, when installation to which the external static pressure becomes low is carried out 5dB or more may go up.



WARNING

- **Consult your local dealer regarding modification, repair and maintenance of the air conditioner.** Improper workmanship may result in water leakage, electric shocks or fire hazards.
- **Consult your local dealer regarding relocation and reinstallation of the air conditioner.** Improper installation work may result in leak-age, electric shocks or fire hazards.
- **Beware of fire in case of refrigerant leakage.** If the air conditioner is not operating correctly, i.e. not generating cool or warm air, refrigerant leakage could be the cause. Consult your dealer for assistance.
The refrigerant within the air conditioner is safe and normally does not leak.
However, in the event of a leakage, contact with a naked burner, heater or cooker may result in generation of noxious gas.
Do not longer use the air conditioner until a qualified service person confirms that the leak-age has been repaired.
- When asking your dealer to repair, inform related staff of the details as follows:
 - Product No. of air conditioner: Refer to the warranty card.
 - Shipping date and installation date:
 - Refer to the warranty card.
 - Malfunction: Inform the staff of the defective details.(Malfunction code being displayed on the remote controller.)
 - Name,Address,Telephone Number
- **Repair where the warranty term is expired** Contact your dealer. If necessary to repair, pay service is available.

- **Minimum storage period of important parts**
Even after a certain type of air conditioner is discontinued, we at Daikin have the related important parts in stock for 9 years at least. The important parts indicate parts essential to operate the air conditioner.
- **Maintenance and inspection**
Since dust collects after using the unit for several years, the performance will be deteriorated to some extent. It is recommended to request the technical staff to perform maintenance (pay service). For further details, consult with your dealer.

Warranty period:

- This product includes a warranty card.
The warranty card is given to a customer after dealer staff fills out necessary items in the card. The customer should check the entered items and store it carefully.
Warranty period: Within one year after installation. For further details, refer to the warranty card.
- **Where to call**
For aftersales service, etc., consult with your dealer.
- **When disposing the air conditioner, removing/installing and maintaining it, collect the refrigerant.**
- If it is necessary to repair the air conditioner within the warranty period, contact your dealer and show your warranty card. If the warranty card is not shown, pay-service repair may be performed even though the warranty period is not expired.

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