

8. APPLICATION DATA

RFB012A007

(1) Installation of indoor unit

- This installation manual illustrates the method of installing an indoor unit.
- For electrical wiring work, please see instructions set out on the backside.
- For outdoor unit installation and refrigerant piping, please refer to page 25.

- A wired remote control unit is supplied separately as an optional part.
- When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
 - The precautionary items mentioned below are distinguished into two levels, **WARNING** and **CAUTION**.
 - **WARNING** : Wrong installation would cause serious consequences such as injuries or death.
 - **CAUTION** : Wrong installation might cause serious consequences depending on circumstances.
- Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.

- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, gloves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

 Never do it under any circumstances.	  Always do it according to the instruction.
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 WARNING	
	<ul style="list-style-type: none"> • Installation must be carried out by the qualified installer. If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer. • Install the system in full accordance with the installation manual. Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire. • Be sure to use only for household and residence. If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction. • Use the original accessories and the specified components for installation. If parts other than those prescribed by us are used, it may cause water leaks, electric shocks, fire and personal injury. • Install the unit in a location with good support. Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury. • Ventilate the working area well in the event of refrigerant leakage during installation. If the refrigerant comes into contact with naked flames, poisonous gas is produced. • When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149). If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident. • After completed installation, check that no refrigerant leaks from the system. If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced. • Use the prescribed pipes, flare nuts and tools for R410A. Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
	<ul style="list-style-type: none"> • Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur. Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak. • Ensure that no air enters in the refrigerant circuit when the unit is installed and removed. If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury. • Tighten the flare nut by torque wrench with specified method. If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period. • The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit. Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire. • Be sure to shut off the power before starting electrical work. Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment. • Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work. Unconformable cables can cause electric leak, anomalous heat production or fire. • This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm. • When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used. • Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks. Loose connections or cable mountings can cause anomalous heat production or fire. • Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly. Incorrect installation may result in overheating and fire. • Be sure to switch off the power supply in the event of installation, inspection or servicing. If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan. • Be sure to wear protective goggles and gloves while at work. • Earth leakage breaker must be installed. If the earth leakage breaker is not installed, it can cause electric shocks. • Do not processing, splice the power cord, or share a socket with other power plugs. This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc. • Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to treat it. This may cause fire or heating.

 WARNING	
	<ul style="list-style-type: none"> • Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Global Warming Potential (GWP)=1975. • Do not run the unit with removed panels or protections. Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks. • Do not perform any change of protective device itself or its setup condition. The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.
 CAUTION	
	<ul style="list-style-type: none"> • Carry out the electrical work for ground lead with care. Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.
	<ul style="list-style-type: none"> • Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current. Using the incorrect one could cause the system failure and fire. • Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations. The isolator should be locked in OFF state in accordance with EN60204-1. • Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly. Improper installation of indoor unit can cause dropping water into the room and damaging personal property. • Install the drainage pipe to run off drainage securely according to the installation manual. Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property. • Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings. Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance. • Secure a space for installation, inspection and maintenance specified in the manual. Insufficient space can result in accident such as personal injury due to
	<ul style="list-style-type: none"> • Do not install the unit in the locations listed below. <ul style="list-style-type: none"> • Locations where carbon fiber, metal powder or any powder is floating. • Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur. • Vehicles and ships. • Locations where cosmetic or special sprays are often used. • Locations with direct exposure of oil mist and steam such as kitchen and machine plant. • Locations where any machines which generate high frequency harmonics are used. • Locations with salty atmospheres such as coastlines. • Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual). • Locations where the unit is exposed to chimney smoke. • Locations at high altitude (more than 1000m high). • Locations with ammoniac atmospheres. • Locations where heat radiation from other heat source can affect the unit. • Locations without good air circulation. • Locations with any obstacles which can prevent inlet and outlet air of the unit. • Locations where short circuit of air can occur (in case of multiple units installation). • Locations where strong air blows against the air outlet of outdoor unit. • Locations where something located above the unit could fall. • Locations where remarkable decrease in performance, corrosion and damage of components, malfunction and fire. • Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation). <ul style="list-style-type: none"> • Locations with any obstacles which can prevent inlet and outlet air of the unit. • Locations where vibration can be amplified due to insufficient strength of structure. • Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit). • Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m). • Locations where drainage cannot run off safely. • Locations where drainage can affect performance or function and etc. • Do not install the unit near the location where leakage of combustible gases can occur.

BEFORE INSTALLATION

Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit)		
Accessories for indoor unit		
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board ø4 X 25mm)	9
⑤	Wood screws (for remote control switch holder ø3.5 X 16mm)	2
⑥	Battery [R03 (AAA, Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Pipe cover (200mm)	1
⑩	Band	2

Option parts		Q'ty
a	Sealing plate	1
b	Sleeve	1
c	Inclination plate	1
d	Putty	1
e	Drain hose (extension hose)	1
f	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work	
1	Plus headed driver
2	Knife
3	Saw
4	Tape measure
5	Hammer
6	Spanner wrench
7	Torque wrench (14.0 ~ 61.0N·m (1.4 ~ 6.1kgf·m))
8	Hole core drill (65mm in diameter)
9	Wrench key (Hexagon) [4m/m]
10	Flaring tool set (Designed specifically for R410A)
11	Gas leak detector (Designed specifically for R410A)
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
13	Pipe bender

SELECTION OF INSTALLATION LOCATION

(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

- Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
- A solid place where the unit or the wall will not vibrate.
- A place where there will be enough space for servicing. (Where space mentioned below can be secured)
- Where wiring and the piping work will be easy to conduct.
- The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
- A place where it can be easily drained.
- A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
- Places where this unit is not affected by the high frequency equipment or electric equipment.
- Avoid installing this unit in place where there is much oil mist.
- Places where there is no electric equipment or household under the installing unit.
- Install the indoor unit on flat wall.

Wireless remote control

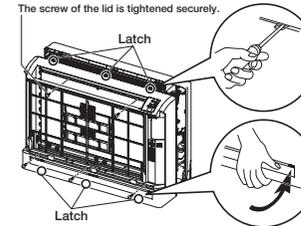
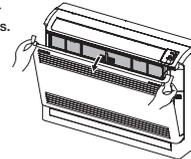
- A place where the air conditioner can be received the signal surely during operating the wireless remote control.
- Places where there is no affected by the TV and radio etc.
- Do not place where exposed to direct sunlight or near heat devices such as a stove.

INSTALLATION OF INDOOR UNIT

Open and detachment of the air inlet panel

- To open, pull the panel at both ends of upper part and release latches, and undo the strings. Then remove the panel.

CAUTION
When removing the air-inlet panel, be careful not to drop it on your feet.

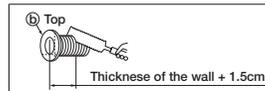
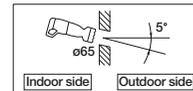


How to remove the front panel

- Remove the air inlet panel.
- Remove the 5 set screws.
- Remove the 3 latches in the upper section. If the latches are difficult to remove, push the latch portion out using a screw driver, for example.
- Move the lower part of the panel forward and remove the 6 latches in the under section.

Drilling of holes and fixture of sleeve (Option parts)

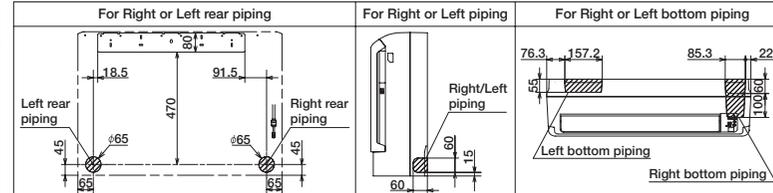
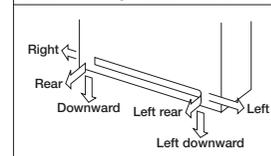
When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.



- Drill a hole with whole core drill.
- In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.

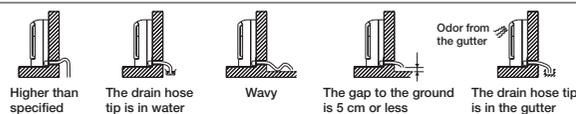
Indoor unit piping direction

Piping is possible in the rear, left, left rear, left downward, right or downward direction.



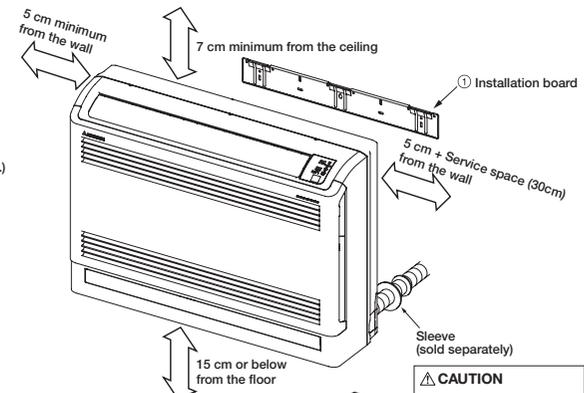
Drainage

- Arrange the drain hose in a downward angle.
- Avoid the following drain piping.



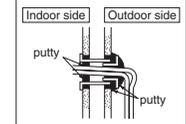
CAUTION Go through all installation steps and check if the drainage is all right. Otherwise water leak may occur.

- Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
- When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.



- Wireless remote control
- Remote control holder
- Wood screws

CAUTION
Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.



Installing the support of piping

In case of piping in the right rear direction

Taping of the exterior



- Tape only the portion that goes through the wall.
- Always tape the wiring with the piping.

Sufficient care must be taken not to damage the panel when connecting pipes.

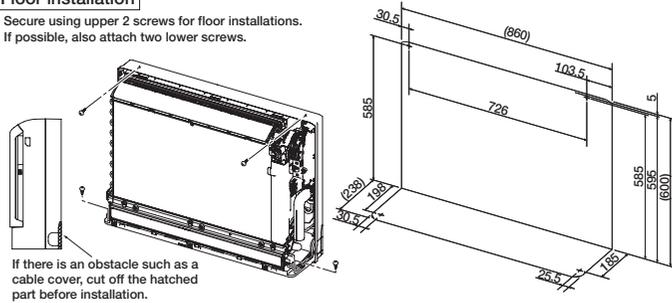
CAUTION
Be careful not to stress the connecting refrigerant pipe. (Do not pull with a force of larger than 5 kgf.) If improperly installed, it may cause abnormal noise and vibration.

Fixing of indoor unit

CAUTION • During the installation, do not lean on the control box or the display, as they may be damaged.
• Install the indoor unit on flat wall. If improperly installed, it may cause abnormal noise and vibration. (Distortion on the wall shall be no larger than 3 mm.)

Floor installation

Secure using upper 2 screws for floor installations. If possible, also attach two lower screws.



If there is an obstacle such as a cable cover, cut off the hatched part before installation.

Wall installation

At first secure the installation board using 5 screws and the indoor unit using 2 screws.

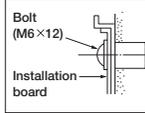
Installation of Installation board

Look for the inside wall structures (Intersediatis support or pillar and finally install the unit after level surface has been checked.)

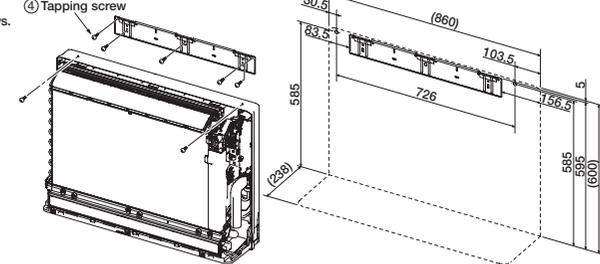
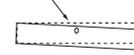


- Adjustment of the installation board in the horizontal direction is to be conducted with five screws in a temporary tightened state.
- Adjust so the board will be level by turning the board with the standard hole as the center.

Fixing on concrete wall
Use of nut anchor



Bolt (M6 x 12)



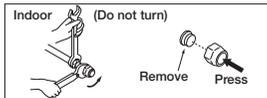
○ When practicing the half-console, make sure to fix the unit securely. Otherwise, it could fall.

CONNECTION OF REFRIGERANT PIPINGS

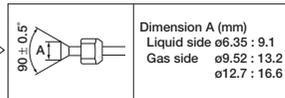
CAUTION Be careful not to stress the connecting refrigerant pipes. (Do not pull with a force of larger than 5 kgf.)

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



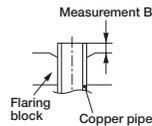
○ Remove the flared nuts. (on both liquid and gas sides)



○ Install the removed flared nuts to the pipes to be connected, then flared the pipes.

CAUTION
Do not apply refrigerating machine oil to the flared surface.

Flaring work

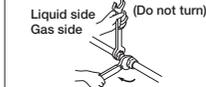


Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use. If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

Connection

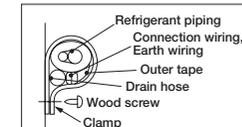
Indoor



- Connect the pipes on both liquid and gas sides.
- Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

CAUTION Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may check depending.

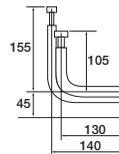
Finishing work and fixing



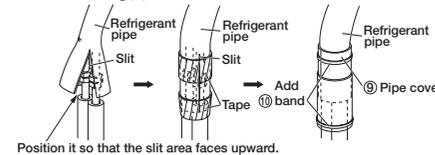
Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take. Also fix the wiring and pipings to the wall with clamps.

Insulation of the connection portion

Pass the refrigerant pipe through the piping hole to indoor side. Arrange the pipes according to the direction of piping.



Cover the coupling with insulator and then cover it with tapes. Use an attached pipe cover for heat insulation.



CAUTION
If heat insulation is insufficient, water leakage may occur. In addition, the room temperature sensor may give a false alert due to heat radiation from the pipes.

• Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached pipe cover placed over the heat insulating material's slit area.

ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

- Remove the fixing screw of clamp.
- Connect the connecting wire securely to the terminal block.
 - Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
 - Take care not to confuse the terminal numbers for indoor and outdoor connections.
- Fix the connecting wire by wiring clamp.
- Pass the connecting wire through the wiring holder.

CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

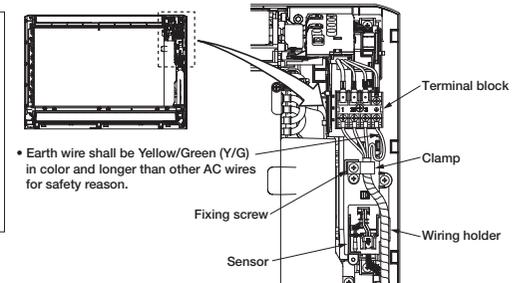
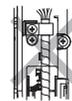
Use cables for interconnection wiring to avoid loosening of the wires. CENELEC code for cables Required field cables.

H05RN4G1.5 (example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4 or 5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm ²)

CAUTION

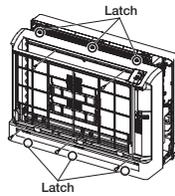
• During installation, do not lean on the control box or the display, as they may be damaged.
• Pass the connecting wire securely through the wiring holder. If it passes on the sensor, it may not detect suction temperature and/or humidity.



• Earth wire shall be Yellow/Green (Y/G) in color and longer than other AC wires for safety reason.

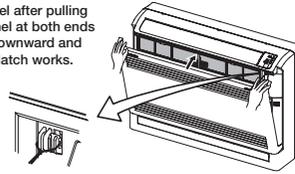
How to fit the front panel

- Fitting
- ① Do remove the air filter.
- ② Cover the body with the front panel.
- ③ Fit the 6 latches in the lower section, then 3 latches in the upper section.
- ④ Tighten the 5 set screws.
- ⑤ Fit the air inlet panel.
- ⑥ Fit the air inlet panel.



Close and attachment of the air inler panel

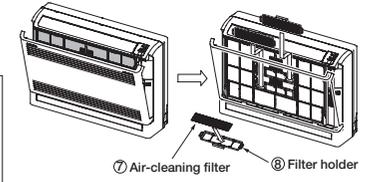
- To close, attach the panel after pulling the strings, hold the panel at both ends of upper part to lower downward and push it slightly until the latch works.



Installing the air-cleaning filters

- 1. Open the air inlet panel and remove the air filters.
- 2. Install the air-cleaning filter in the filter holders, and then install the filter holders in the air conditioner.
 - Each air-cleaning filter can be installed in the upper or lower filter holder.
- 3. Install the air filters and close the inlet panel.

CAUTION
When installing an air-cleaning filter in the indoor unit, be careful not to injure your hand with the heat exchanger.

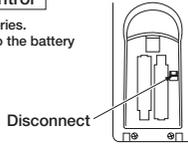


INSTALLING TWO AIR CONDITIONERS IN THE SAME ROOM

When two air conditioners are installed in the same room, use this setting when the two air conditioners are not operated with one wireless remote control. Set the wireless remote control and indoor unit.

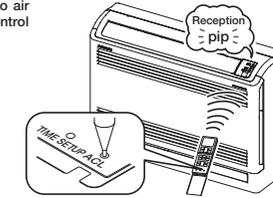
Setting the wireless remote control

- ① Pull out the cover and take out batteries.
- ② Disconnect the switching line next to the battery with wire cutters.
- ③ Insert batteries. Close the cover.



Setting an indoor unit

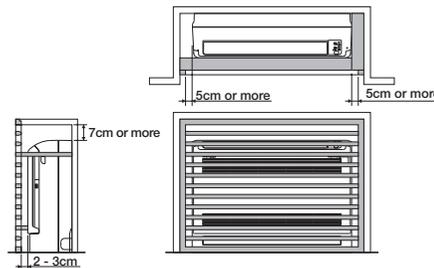
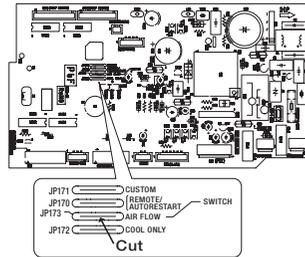
- ① Turn off the power supply, and turn it on after 1 minute.
- ② Point the wireless remote control that was set according to the procedure described on the left side at the indoor unit and send a signal by pressing the ACL switch on the wireless remote control. Since the signal is sent in about 6 seconds after the ACL switch is pressed, point the wireless remote control at the indoor unit for some time.
- ③ Check that the reception buzzer sound "pip" is emitted from the indoor unit. At completion of the setting, the indoor unit emits a buzzer sound "pip". (If no reception tone is emitted, start the setting from the beginning again.)



Concealed installation

- Install the indoor unit according to the following instructions.
- ① Secure the upper, right, and left spaces according to the right figure.
 - ② Do not let the horizontal bar obstruct wind from blowing out upward/downward or reception from the wireless remote control.
 - ③ The lattice size should be 70 % or greater of the open rate.
 - ④ Cut the jumper cable (JP173) on the indoor circuit board to control the blow-out angle.

CAUTION
Incorrect installation may cause problems such as non-cooling, non-warming, and condensation water leaking into the room.



CONCERNING TERMINAL CONNECTION FOR AN INTERFACE

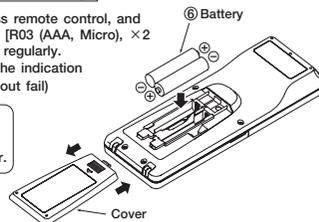
- ① Remove the front panel and lid of control.
- ② There is a terminal (respectively marked with CNS) for the indoor control board. In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional "Interface connection kit SC-BIKN-E" and fasten the connection harness onto the indoor control box with the clamp supplied with the kit. For more details, please refer to the user's manual of your "Interface connection kit SC-BIKN-E".

INSTALLATION OF WIRELESS REMOTE CONTROL

Mounting method of battery

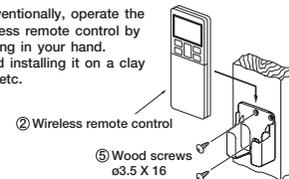
- Uncover the wireless remote control, and mount the batteries [R03 (AAA, Micro), ×2 pieces] in the body regularly. (Fit the poles with the indication marks, ⊕ & ⊖ without fail)

CAUTION
Do not use new and old batteries together.



Fixing to pillar or wall

- Conventionally, operate the wireless remote control by holding in your hand.
- Avoid installing it on a clay wall etc.



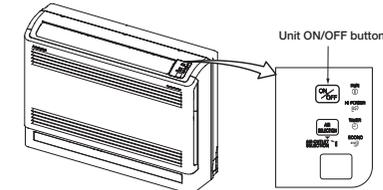
HOW TO RELOCATE OR DISPOSE OF THE UNIT

- In order to protect the environment, be sure to pump down (recovery of refrigerant).
- Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

<How to pump down>

- ① Connect charge hose to service port of outdoor unit.
- ② Liquid side : Close the service valve with hexagon wrench key. Gas side : Fully open the service valve Carry out cooling operation. (If indoor temperature is low, operate forced cooling operation.)
- ③ After low pressure gauge become 0.01MPa, stop cooling operation and close the service valve (gas side).

- Forced cooling operation
Turn on a power supply again after a while after turn off a power supply. Then press continually the ON/OFF button 5 seconds or more.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly. At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation

- The power supply voltage is correct as the rating.
- No gas leaks from the joints of the service valve.
- Power cables and crossover wires are securely fixed to the terminal board.
- The screw of the lid is tightened securely.

- Service valve is fully open.
- The pipe joints for indoor and outdoor pipes have been insulated.

Test run

- Air conditioning operation is normal.
- No abnormal noise.
- Water drains smoothly.
- Protective functions are not working.

- The wireless remote control is normal.

Operation of the unit has been explained to the customer. (Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3 minutes. This is to protect the unit and it is not a malfunction.