

1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY

- Please provide an exclusive circuit for the air conditioner and do not connect other electrical appliances to it.
- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the cautions specified here as they include important items related to safety.
- The indications and meanings are as follows.

WARNING
Could lead to death, serious injury, etc.

CAUTION
Could lead to serious injury in particular environments when operated incorrectly.

WARNING
After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS in a handy place on the customer's site.

WARNING
Do not install the unit by yourself (customer). Improper installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit of special installer.

WARNING
Install the unit securely in a place which can bear the weight of the unit. When installed in an insufficient strong place, the unit could fall causing injury.

WARNING
Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal block connecting sections so the stress of the wires is not applied to the sections. Incomplete connecting and fixing could cause fire.

WARNING
Do not use intermediate connection of the power cord or the extension cord and do not connect many devices to one AC outlet. It could cause a fire or an electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.

WARNING
Check that the refrigerant gas do not leak after installation has completed. If refrigerant gas leaks indoors, and comes into contact with the fire of a fan heater, space heater, stove, etc., harmful substances will be generated.

WARNING
Perform the installation securely referring to the installation manual. Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.

WARNING
Perform electrical work according to the installation manual and be sure to use an exclusive circuit. If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.

WARNING
Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely. If the electrical cover in the indoor unit and/or the service panel in the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.

WARNING
Be sure to use the part provided or specified parts for the installation work. The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.

WARNING
Be sure to cut off the main power in case of setting up the indoor electronic control P.C. board or wiring works. It could cause an electric shock.

WARNING
The appliance shall be installed in accordance with national wiring regulations.

WARNING
When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R410A) enters the refrigerant circuit. Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.

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3. INSTALLATION DIAGRAM & ACCESSORIES

FLARED CONNECTIONS

- This unit has flared connections on both indoor and outdoor sides.
- Remove the outdoor unit's valve cover, then connect the pipe.
- Refrigerant pipes are used to connect the indoor and outdoor units.
- Be careful not to crush or bend the pipe in pipe bending.

Limits	
Pipe length	20 m max.
Height difference	12 m max.
No. of bends	10 max.

- Refrigerant adjustment ... If pipe length exceeds 7 m, additional refrigerant (R410A) charge is required. (The outdoor unit is charged with refrigerant for pipe length up to 7 m.)

Pipe length	Additional charge is required. (Refer to the table below.)
Up to 7 m	No additional charge is required.
Exceeding 7 m	Additional charge is required.

Refrigerant to be added	30 g/m × (refrigerant piping length (m) - 6)
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ACCESSORIES

- Check the following parts before installation.

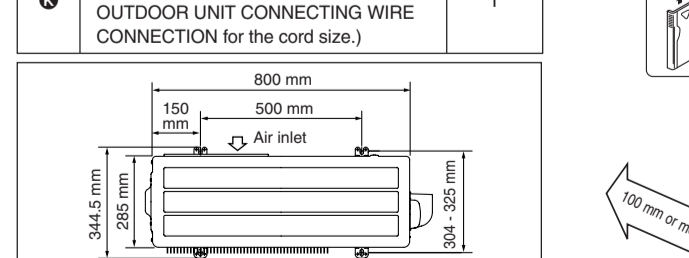
Indoor units	
Installation plate	1
Installation plate fixing screw 4 × 25 mm	1
Remote controller holder	1
Fixing screw for Ø 3.5 × 16 mm (Black)	2
Battery (AAA) for remote controller	2
Wireless remote controller	1
Felt tape (Used for left or left-rear piping)	1

<Outdoor units>	
Drain socket (For VA type only)	1
QUICK CLEAN KIT	1

PART TO BE PROVIDED AT YOUR SITE

Optional extension pipe	
Indoor/outdoor unit connecting wire (4-core 1.0 mm ²)	1
Extension pipe	1
Wall hole sleeve	1
Wall hole cover	1
Pipe fixing band (The quantity depends on the pipe length)	2 to 5
Fixing screw for Ø 4 × 20 mm (The quantity depends on the pipe length)	2 to 5
Piping tape	1
Putty	1
Drain hose (or soft PVC hose, 15 mm inner dia. or hard PVC pipe VP16)	1 or 2
Refrigeration oil	1

Power supply cord (See the table in 5-1 POWER SUPPLY CORD AND INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION for the cord size.)



Basically open 100 mm or more without any obstruction from front and on both sides of the unit.

Open two sides of left, right, or rear side.

Units should be installed by licensed contractor according to local code requirement.

Note: When operating the air conditioner in low outside temperature, be sure to follow the instructions described below.

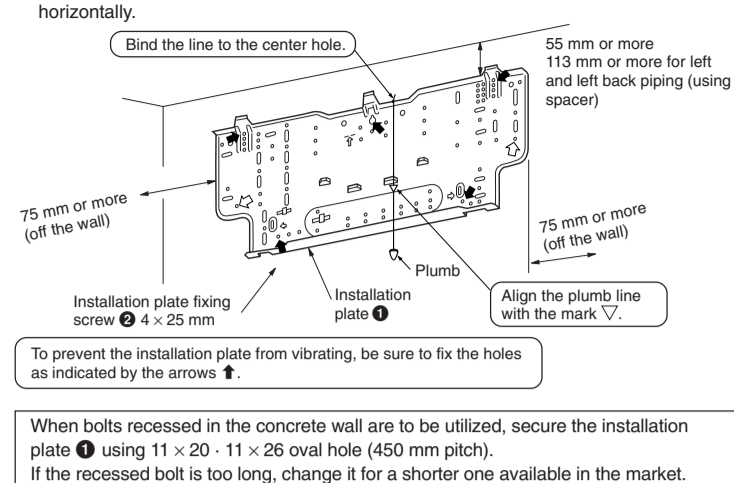
Never install the outdoor unit in a place where its air inlet/outlet side may be exposed directly to wind.

To prevent exposure to wind, install the outdoor unit with its air inlet side facing the wall.

To prevent exposure to wind, it is recommended to install a baffle board on the air outlet side of the outdoor unit.

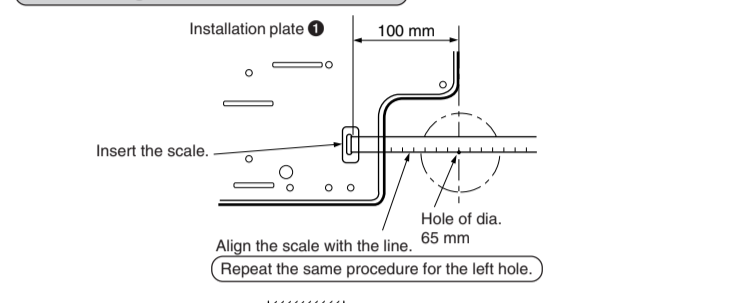
4. INDOOR UNIT INSTALLATION

4-1 FIXING OF INSTALLATION PLATE



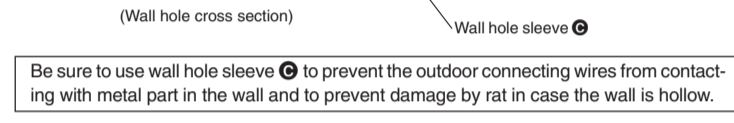
When bolts remaining in the concrete wall are to be utilized, secure the installation plate using 11 × 20 × 11 × 26 oval hole (450 mm pitch). If the recessed bolt is too long, change it for a shorter one available in the market.

4-2 WALL HOLE DRILLING



Be sure to use wall hole sleeve to prevent the outdoor connecting wires from contacting with metal part in the wall and to prevent damage by rat as the case is wall is hollow.

Wall hole sealing and fixing pipe to wall



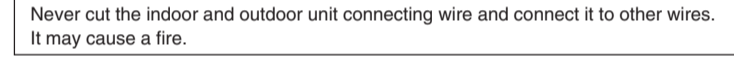
Be sure to use wall hole sleeve to prevent the outdoor connecting wires from contacting with metal part in the wall and to prevent damage by rat as the case is wall is hollow.

4-3 INDOOR/OUTDOOR UNIT CONNECTING WIRE SPECIFICATIONS

Indoor/outdoor unit connecting wire Specification	Cable 4-core 1.0 mm ² , in conformity with Design 245 IEC 57.
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Never cut the indoor and outdoor unit connecting wire and connect it to other wires. It may cause a fire.

Do not bundle the spare wire, but put it as shown below.



If the indoor unit is installed more than 50 cm away from the side walls, cabinets or other nearby objects, set the slide switch to the "center" position.

6. INDOOR/OUTDOOR UNIT CONNECTION FINISHING AND TEST RUN

INSTALLATION INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

This room air conditioner adopts an HFC refrigerant (R410A) which will never destroy the ozone layer.

Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.

- As R410A has a working pressure approx. 1.6 times as high as that of R22, some special tools and piping parts / materials are required. (Refer to the table below.)
- Take sufficient care not to allow water and other contaminants to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminants than R22.
- For refrigerant piping, use clean, pressure-proof parts / materials specifically designed for R410A.
- Compositon change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

6-1 Tools dedicated for the air conditioner with R410A refrigerant

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.

The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. (Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.)

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measuring range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	14 to 316
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work (to be used with R22 flare tool).
Vacuum pump adaptor	New	Provided to prevent the back flow of oil. This adaptor enables you to use existing vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization.

No: Not substitutable for R410A Yes: Substitutable for R410A

6-2 FLARING WORK

- Main cause of gas leakage is defect in flaring work. Carry out correct flaring work in the following procedure.

1. Pipe cutting

- Cut the copper pipe correctly with pipe cutter.



2. Burrs removal

- Completely remove all burrs from the cut cross section of pipe.
- Put the end of the copper pipe to downward direction as you remove burrs in order to avoid let burrs drop in the piping.

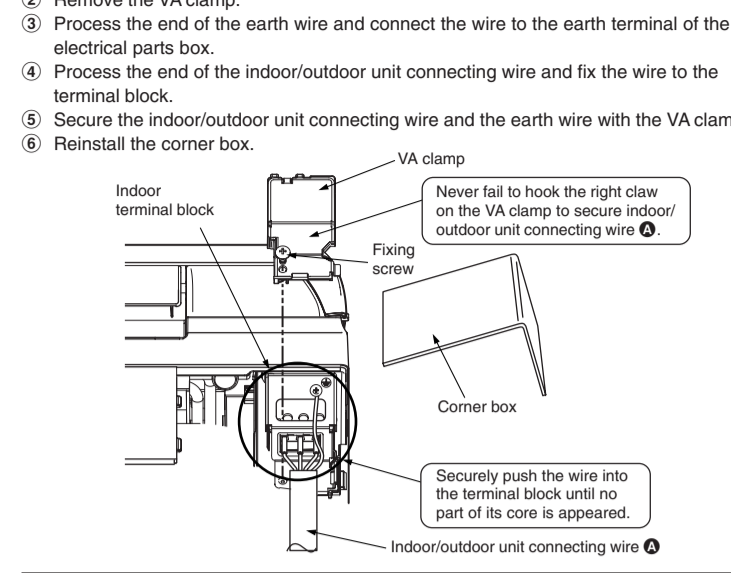


INSULATION AND TAPING

- Cover piping joints with pipe cover.
- For outdoor unit side, surely insulate every piping including valves.
- Using piping tape, apply taping starting from the entry of outdoor unit.
- Stop the end of piping tape with tape (with adhesive agent attached).
- When piping have to be arranged through above ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation for prevention of condensation.

4-4 INDOOR AND OUTDOOR CONNECTING WIRE CONNECTION

- You can connect indoor/outdoor lead wire without removing the front panel.
- Remove the corner box.
- Remove the VA clamp.
- Process the end of the earth wire and connect the wire to the earth terminal of the electrical part box.
- Process the end of the indoor/outdoor unit connecting wire and fix the wire to the terminal block.
- Secure the indoor/outdoor unit connecting wire and the earth wire with the VA clamp.
- Reinstall the corner box.



Loosen terminal screw.

- Use the indoor/outdoor unit connecting wire that meets the Standards to connect the indoor and outdoor units and fix the wire to the terminal block securely so that no external force is conveyed to the connecting section of the terminal block. Incomplete connection or fixing of the wire could result in a fire.
- Attach the VA clamp securely. If it is attached incorrectly, it could result in a fire or an electric shock due to dust, water, etc.

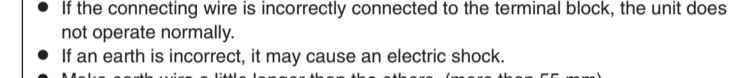
Loosen terminal screw.

Be careful not to make mis-wiring. Firmly tighten the terminal screw to prevent them from loosening. After tightening, pull the wires lightly to confirm that they do not move. If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally. If an earth is incorrect, it may cause an electric shock. Make earth wire a little longer than the others. (more than 55 mm)

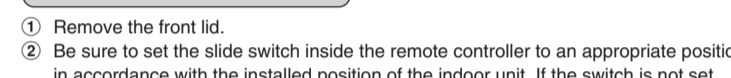
4-5 HOW TO SWITCH OVER -REMOTE CONTROLLER-

The details of SLIDE SWITCH

- Remove the front lid.
- Be sure to set the slide switch inside the remote controller to an appropriate position in accordance with the installed position of the indoor unit. If the switch is not set correctly, the air conditioner may not function properly.

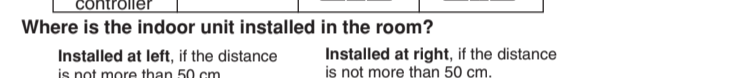


Where is the indoor unit installed in the room?



Installed at left, if the distance is not more than 50 cm.

Installed at right, if the distance is not more than 50 cm.



Is the indoor unit installed at left, left or center?

If the indoor unit is installed more than 50 cm away from the side walls, cabinets or other nearby objects, set the slide switch to the "center" position.

Be careful not to make mis-wiring. Firmly tighten the terminal screw to prevent them from loosening. After tightening, pull the wires lightly to confirm that they do not move. If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally. If an earth is incorrect, it may cause an electric shock. Make earth wire a little longer than the others. (more than 55 mm)

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6-3 PIPE CONNECTION

- Main cause of gas leakage is defect in flaring work. Carry out correct flaring work in the following procedure.

1. Flaring work

- Carry out flaring work using flaring tool as shown below.



Smooth all around. Inside is shining without any scratches.

Even length all around.

Remove the gauge manifold valve quickly from the service port of the stop valve.

2. Check

- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and do flaring work again.



Remove the gauge manifold valve quickly from the service port of the stop valve.

After refrigerant pipes are connected and evacuated, fully open all stop valves on both sides of gas pipe and liquid pipe. Operating without fully opening lowers the performance and this causes trouble.

Pipe length up to 7 m. No gas charge is needed.

Pipe length exceeding 7 m. Charge the prescribed amount of gas. (refer to 3)

Tighten the cap to the service port to obtain the initial status.

Retighten the cap.

Leak test

Tightening torque

Cap for service port	13.7 to 17.7	140 to 180
Cap for stop valve	19.6 to 29.4	200 to 300

6-5 TEST RUN

- Before performing the test run, check for any wrong wiring.
- Wrong wiring prevents normal operation or results in blown fuse disabling operation.
- The test run can be started by pressing EMERGENCY OPERATION switch. When the EMERGENCY OPERATION switch is once pressed, the unit will start the test run (continuous operation) for 30 minutes.
- A thermostat does not work during this time. After 30 minutes the unit will start the EMERGENCY OPERATION at a fixed temperature setting of 24 °C in COOL MODE.
- Perform test run in the following procedure.

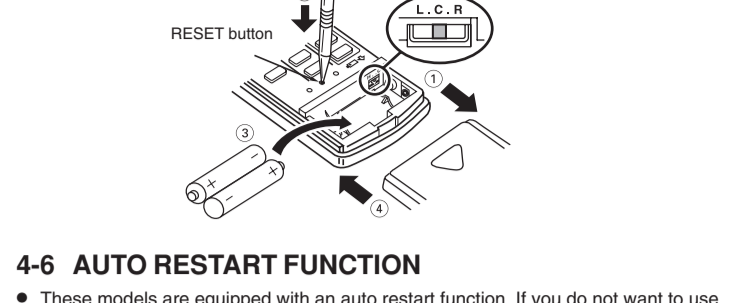
Note: Insert the power supply plug into the power outlet and/or turn on the breaker. Check that all LED lamps are lit.

If they are blinking, the horizontal valve is not installed correctly. In this case, disconnect the power supply plug and/or turn off the breaker, and then reinstall the horizontal valve. (See the OPERATING INSTRUCTIONS.)



FOR LEFT OR LEFT-REAR PIPING

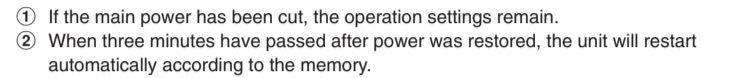
- Pipe arrangement
- Put the refrigerant piping and the drain hose together, then apply felt tape to them.



Be careful drain hose is not heated. Cut off in case of left piping. Use a bridge support at the end of felt tape. Firmly apply felt tape from the end. (Felt tape overlap width should be 1/2 the tape width.)

REATTACHING DRAIN HOSE

Be sure to reattach the drain hose and the drain cap in case of left or left-rear piping. Otherwise, it could cause drops of water to drip down from the drain hose.



Operation

- If the main power has been cut, the operation settings remain.
- When three minutes have passed after power was restored, the unit will restart automatically according to the memory.

Notes:

- The operation settings are memorized when 10 seconds have passed after the remote controller was operated.
- If the main power is turned off or a power failure occurs while AUTO START/STOP timer is active, the timer setting is cancelled. As these models are equipped with an auto restart function, the air conditioner starts operating with timer cancelled at the same time that power is restored.
- If the unit has been off with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is off.
- To prevent breaker of due to the rush of starting current, systematize other home appliances not to turn on at the same time.

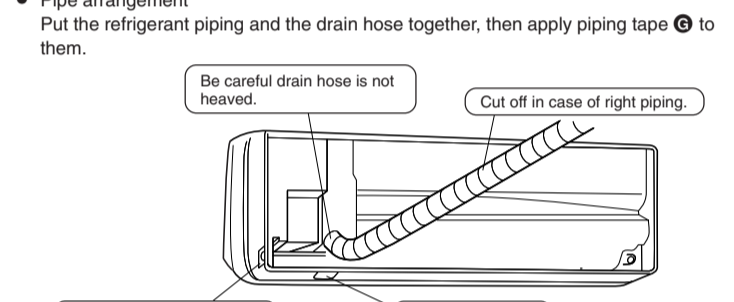
4-7 PIPE FORMING

- Place the drain hose below the refrigerant piping.
- Make sure that the drain hose is not heated or snaked.
- Do not pull the hose to follow the tape.
- When the drain hose passes the room, be sure to wrap insulation material (obtainable at a store) around the pipe and the drain hose, then put the pipe in the back space of the indoor unit.



FOR REAR, RIGHT OR DOWNWARD PIPING

- Pipe arrangement
- Put the refrigerant piping and the drain hose together, then apply piping tape to them.



Firmly apply piping tape. Cut off in case of downward piping.

- Insert the piping and the drain hose into the wall hole sleeve, and hook the upper part of the indoor unit on the installation plate.
- Check if the indoor unit is hooked securely on the installation plate by moving the unit to left and right.
- Thrust the lower part of the indoor unit into the installation plate.

Be careful drain hose is not heated. Cut off in case of right piping. Firmly apply piping tape from the end. (Felt tape overlap width should be 1/2 the tape width.)

6-4 PURGING PROCEDURES LEAK TEST

PURGING PROCEDURES

Connect the refrigerant pipes (both liquid pipe and the gas pipe) between the indoor and the outdoor unit.

Remove the service port cap of the stop valve on the side of the outdoor unit gas pipe. (The stop valve will not work in its initial state fresh out of the factory (totally closed with cap on).)

Connect the gauge manifold valve and the vacuum pump to the service port of the stop valve on the gas pipe side of the outdoor unit.

Run the vacuum pump. (Vacuumize for more than 15 minutes.)

Check the vacuum with the gauge manifold valve, then close the gauge manifold valve, and stop the vacuum pump.

Leave as it is for one or two minutes. Make sure the pointer gauge manifold valve remains in the same position. Confirm that the pressure gauge shows -0.101 Mpa (Gauge) (-760 mmHg).



* 4 to 5 turns

Remove the gauge manifold valve quickly from the service port of the stop valve.

After refrigerant pipes are connected and evacuated, fully open all stop valves on both sides of gas pipe and liquid pipe. Operating without fully opening lowers the performance and this causes trouble.

Pipe length up to 7 m. No gas charge is needed.

Pipe length exceeding 7 m. Charge the prescribed amount of gas. (refer to 3)

Tighten the cap to the service port to obtain the initial status.

Retighten the cap.

Leak test

Tightening torque

Cap for service port	13.7 to 17.7	140 to 180
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