



**CAUTION**

This air/air heat pump uses refrigerant R410A.

1. Keep any open ends of pipes be sealed with a cap, etc. until connected with the equipment.
2. Exercise great care when performing piping installation so as water, dust, etc. will not enter into the piping and equipment.
3. Pipes connected to the indoor and outdoor units must be used new. (This air/air heat pump using R410A incurs pressure higher compared with R22, it is necessary to choose adequate materials.)
4. Use only R410A refrigerant when charging additional refrigerant to the equipment. Never add lubricating oil to the equipment in any case.
5. In order to prevent any other refrigerant from being charged accidentally, the service port diameter of the 3-way valve has been changed. (1/2" UNF screw)

**ACCESSORIES**

ITEMS	Q'ty	APPLICATION	ITEMS	Q'ty	APPLICATION
1 MOUNTING PLATE	1	To mount the indoor unit on the wall.	6 SPECIAL SCREW	1	To mount the remote control on the wall.
2 WALL PLUG	8	To fix the mounting plate with the long screws.	7 SHORT SCREW	1	To fix the CORD HOLDER.
3 LONG SCREW	7	To fix the mounting plate with the wall plugs.	8 CORD HOLDER	1	To secure the electrical cable.
4 REMOTE CONTROL	1	To control remotely.	9 MANUALS	1	Installation manual
5 DRY BATTERY	2	For the remote control. AAA batteries.	10 SHEET(adhesive type)	1	To firmly secure the electrical cable.

**NOTES ON LOCATIONS**

**Indoor unit**

- a. Keep the air outlet clear of any obstacle so that outgoing air flows smoothly in the entire room.
- b. Make a drain hose hole for easy drainage.
- c. Provide sufficient space on both sides and above the unit.
- d. The air filters should be easily taken in and out.
- e. Keep TV set, radio and the like 1 m or more away from the unit and the remote control.
- f. Keep the air inlet clear of obstacles that could block incoming air.
- g. The remote control may not function properly in a room equipped with an electronic simultaneous-start or rapid-start fluorescent lighting.
- h. Select a location that does not cause loud operation noise and extreme vibrations.

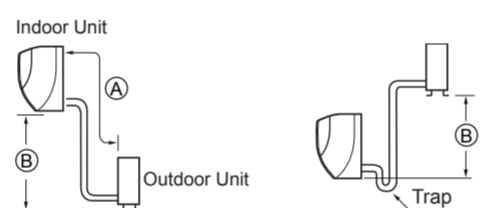
**Outdoor unit**

- a. Place the outdoor unit on a stable base.
- b. Provided sufficient space around the unit. It should also be well ventilated.
- c. The unit should not be exposed to strong wind nor splashed with rain water.
- d. Water drain from the unit should be let out without problem. Lay a drain hose if required. In cold regions, installation of the drain pipe is not advisable as freezing could result.
- e. Keep TV set, radio and the like 1 m or more away from the unit.
- f. Avoid locations exposed to machine oil vapor, salty air (facing the seashore, for example), hot spring vapor sulfur gas, etc. Such location can cause breakdown.
- g. Also, avoid locations exposed to muddy water (along a road, for example) or where the unit can be tampered with.
- h. Select a location where the outgoing air or operating noise cannot annoy others.
- i. Install the unit on a stable base not to allow louder noise.
- j. Keep the air outlet opening free of any obstacle. This could affect the performance of the unit and create loud noises.

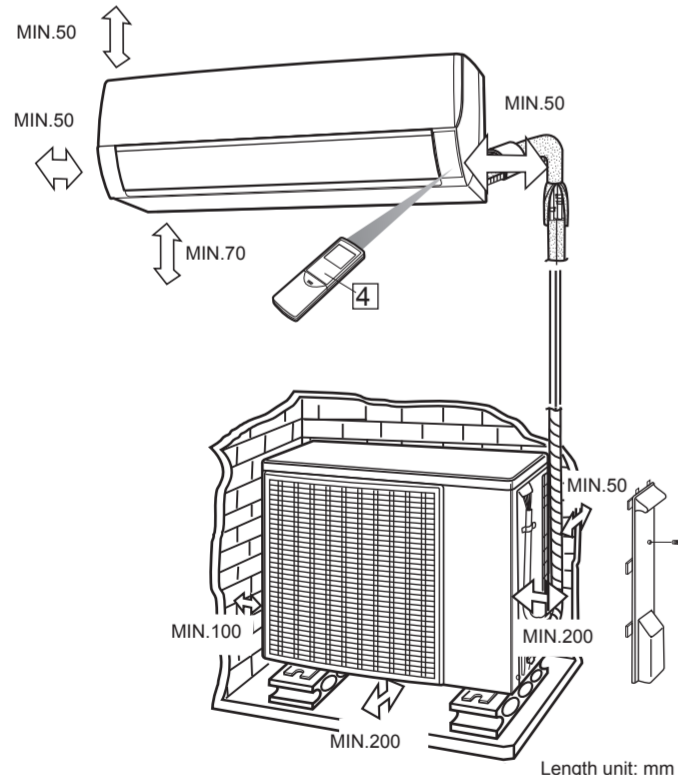
**Piping**

Max. piping length (A) (m)	Max. level difference (B) (m)
15	7

- a. Standard piping length is 5m.
- b. Piping length should be 1m or more in order to decrease vibration propagated from the outdoor unit.
- c. If piping length exceeds 10m, add 20g of refrigerant per 1m.
- d. When the outdoor unit is placed at a higher level than the indoor units, provide a trap near the hose's lead-in port.



**LOCATIONS OF INDOOR AND OUTDOOR UNIT**



Provide as much installation space as possible for efficient air-conditioning.

**NOTES ON DRAIN HOSE**

The drain hose can be connected at either side of the indoor unit.

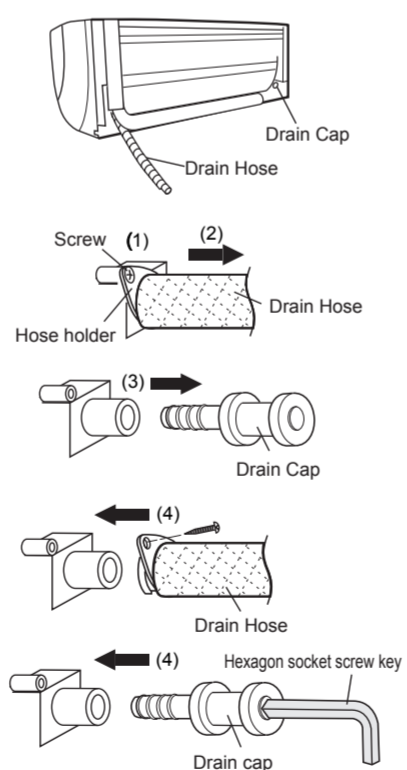
The unit has been shipped with the drain hose connected at left (viewed from the back of the unit) and the drain cap applied at right. Reposition the drain hose and drain cap as required.

- (1) Remove the fixed screw in the hose holder at the end of the drain hose.
- (2) Hold the end of the drain hose, and pull it out.
- (3) Pull out the drain cap.
- (4) Reconnect the drain hose to the right and insert the drain cap to the left.

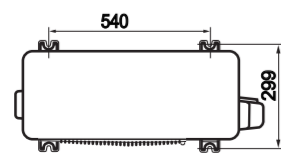
Fully insert the drain hose until it stops and use the screw that was previously removed in STEP (1) to secure the hose holder to the drain pan.

Insert a hexagon socket screw key (4mm diagonal) into the drain cap, and press it fully.

**Caution:** After replacing, make sure that both the drain hose and drain cap are firmly inserted.



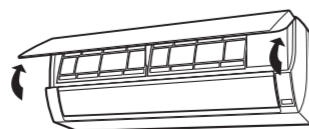
**OUTDOOR UNIT MOUNTING SCREW HOLES**



**OPEN PANEL - OPENING AND CLOSING**

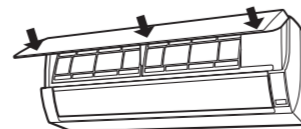
**Opening**

To open, hold the left and right bottom corners of the panel and lift it up.



**Closing**

To close, press-fit the arrow-marked points.

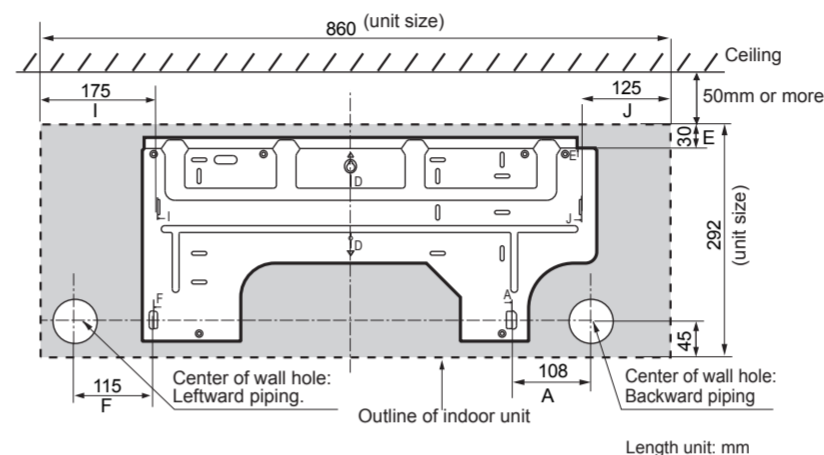


After installation, be sure to explain to the customer enough about the system.

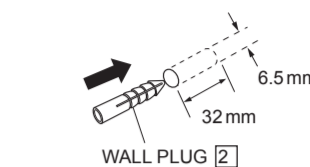
**1 PLACING THE MOUNTING PLATE AND MAKING A TUBE HOLE**

Fix the mounting plate horizontally.

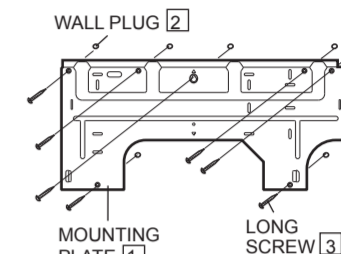
- (1) Referring to the figure below, mark the location for the wall plugs and the tube hole. Recommended fixing holes are marked in circle around the hole.



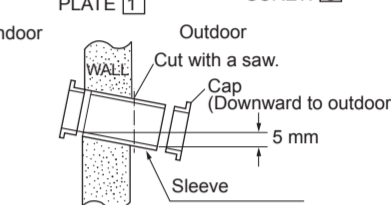
- (2) Drill diameter 6.5mm, depth 32mm holes and fit the wall plug.



- (3) Secure mounting plate and check the stiffness. Fix mounting plate to wall at 7 points.



- (4) Drill a piping hole with 70mm diameter indoor concrete drill or a hole saw with a 5mm down ward slant to the outside.

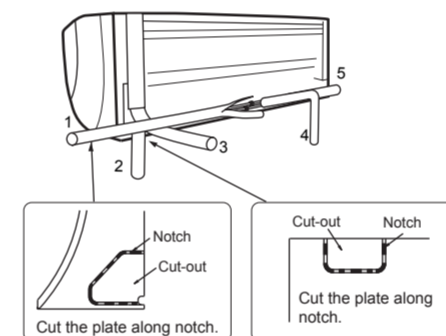


- (5) Set the sleeve and caps.

**2 SETTING UP THE INDOOR UNIT**

**Piping route**

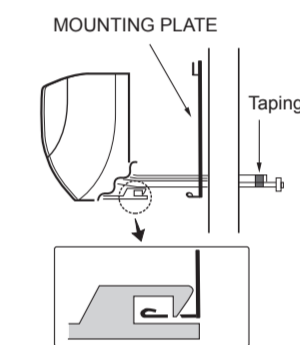
For directions 1, 2, 4 and 5, cut out the specific zone without leaving any sharp edge. (Keep the cut-out plate for possible future use.)



**Mounting the indoor unit**

If the wall is 250 mm or thicker, connect the pipes first.

- (1) For rear exit piping, pass the auxiliary pipe and the drain hose through the piping hole, and hook the unit onto the mounting plate.
- (2) Push the unit and apply the bottom hooking points to the mounting plate's support. (Take this step after cabling between the indoor and outdoor units.)
- (3) Pull the bottom of the unit to check that the unit is fixed in place.

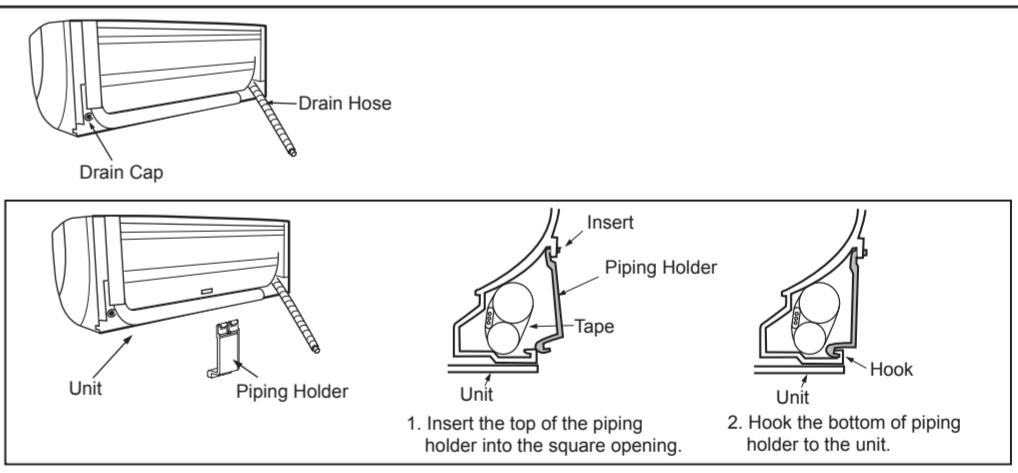


**Detaching the unit from the mounting plate**

Push the "△" marks at the bottom of the indoor unit and pull the bottom of the unit. When the hooks are released from the mounting plate, support the bottom of the unit and lift the unit upwards.

**For left side Piping**

- (1) Reverse the positions of the drain hose and drain cap. Refer to NOTES ON DRAIN HOSE.
- (2) Connect the pipes and coil tape around the pipes and electrical cable.
- (3) Store the pipes within the back cavity of the unit, and secure the pipes by attaching the piping holder. (Refer to steps 1 and 2 as shown on the right.)
- (4) Coil tape around the drain hose together with the pipes and electrical cable.
- (5) Hook the unit onto the mounting plate.



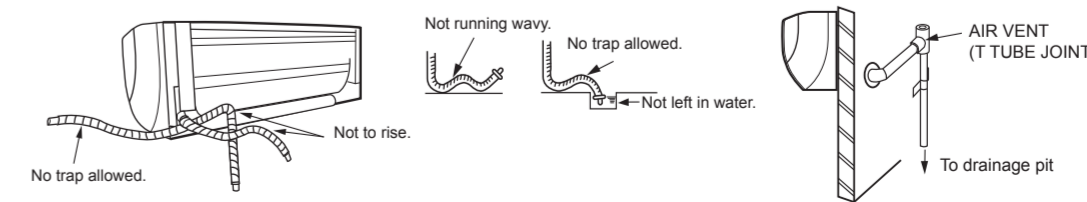
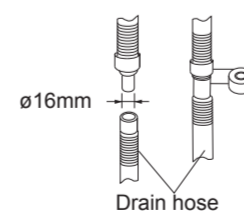
**3 CONNECTING THE DRAIN HOSE**

**Indoor unit**

- (1) Connect a drain hose.
- (2) Tape over the connecting part.

**Notes:**

- Be sure to lay the drain hose downward for smooth drainflow.
- Be careful not to allow the drain hose to rise, form a trap or leave its end in water, as shown below.
- Coil thermal insulation around a drain hose extension, if running in the room.
- It is recommended to add an "intermediate air vent" when the drain hose is extended horizontally, or an "anti-back-flow air vent" when the hose is exposed to high winds on a high-rise building, for example. For this purpose, employ a "T tube joint" (PVC-made, commercially available) halfway in the hose.



## 4 CONNECTING THE REFRIGERANT PIPES

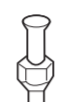
- Use pipes with thickness 0.8mm.
  - Connect the pipes for the indoor unit first and then for the outdoor unit.
  - Bend the pipes carefully as not to damage them.
  - Do not over tighten the tubes; it may be deformed or damaged.
- Use a torque wrench, when possible. See the table below for the flare nut tightening torque.

### Flare nut tightening torque

Pipe size		Torque
Liquid side	1/4"	16±2 N·m (1.6±0.2 kgf·m)
Gas side	3/8"	38±4 N·m (3.8±0.4 kgf·m)

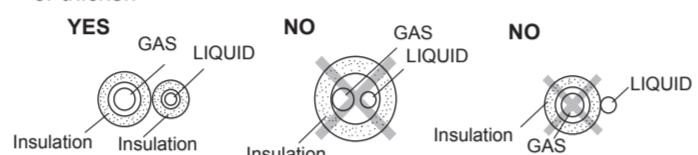
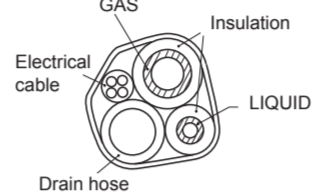
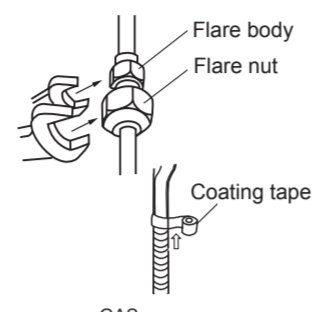
### Flaring the pipe end

- Cutting with a pipe cutter  
Cut at a right angle.
- Deburring  
Allow no cuttings in the pipe.
- Putting in the flare nut
- Flaring  
Flare processing dimensions:(A) differ according to the type of flare tool.  
R410A tool: 0-0.5mm  
Conventional tool: 1.0-1.5mm
- Checking  
To be flared perfectly circular.  
Flare nut not missing.



### Connecting the pipes

- Tighten the flare nuts by hand for the first 3-4 turns.
  - Use two wrenches to tighten up the pipes.
  - Wind coating tape around refrigerant pipes together with drain hose and electrical cable for general.
- Lay the drain hose below the pipes.
  - The thermal insulation should cover both the GAS and LIQUID pipes as shown below. As insulation, use polyethylene foam 6 mm or thicker.

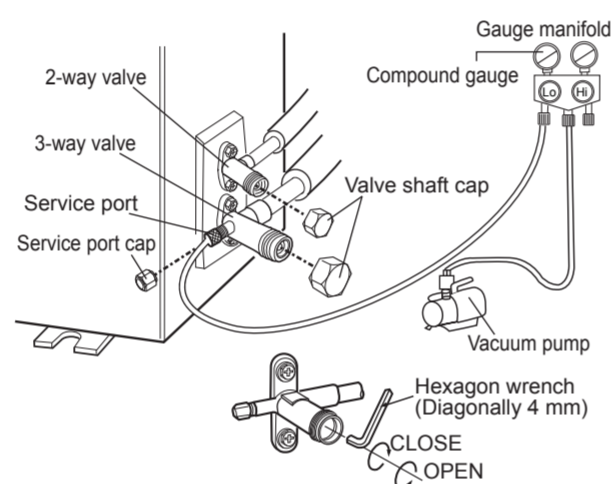


## 5 AIR REMOVAL

Use a vacuum pump, gauge manifold and hoses exclusively for R410A.

- Remove both valve shaft caps of the 2 and 3-way valves.
- Remove the service port cap of the 3-way valve.
- Connect the gauge manifold hose to the service port and the vacuum pump.  
Be sure that the hose end to be connected to the service port has a valve core pusher.
- Open the gauge manifold low-pressure valve(Lo) and operate the vacuum pump for 10-15 minutes.  
Make sure the compound gauge reads -0.1 MPa(-76 cmHg).
- Close the gauge manifold valve.
- Turn off the vacuum pump.  
Leave as it for 1-2 minutes and make sure the needle of the compound gauge does not go back.
- Open the 2-way valve 90° counterclockwise by turning the hexagon wrench. Close it after 5 second, and check for gas leakage.\*
- Disconnect the gauge manifold hose from the service port.
- Fully open the 2-way valve with hexagon wrench.
- Fully open the 3-way valve with hexagon wrench.
- Firmly tighten the service port cap and both valve shaft caps with a torque wrench at the specified tightening torque.

\* Check the pipe connections for gas leak using a leakage detector or soapy water. Regarding leakage detector, use high-sensitivity type designed specially for R410A.



### Valve shaft cap tightening torque

Pipe size		Torque
Liquid side	1/4"	24±3 N·m (2.4±0.3 kgf·m)
Gas side	3/8"	24±3 N·m (2.4±0.3 kgf·m)

### Service port cap tightening torque

Torque
11±1 N·m (1.1±0.1 kgf·m)

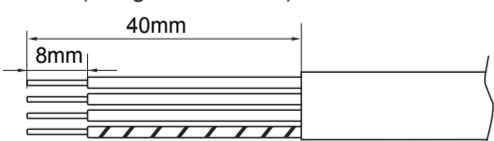
- After 5~10 minutes, fully close the 2-way valve by turning the hexagon socket screw key clockwise.
- After 2~3 minutes, immediately close the 3-way valve fully.
- Stop the test run operation.
- Replace both valve shaft caps tightly.
- Disconnect both refrigerant pipes.

### Note:

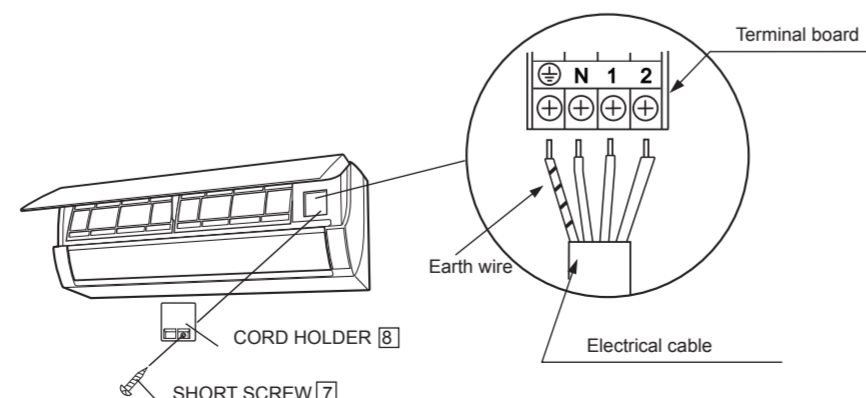
- Do not perform the pump down when at heating mode. The refrigerant will not be collected.

## 6 CONNECTING THE ELECTRICAL CABLE TO THE INDOOR UNIT

- Process the end of the electrical cable for the indoor side.
  - Use a copper cable.(Cross-section area 1.5mm<sup>2</sup> or more)
  - Use a cable which is not lighter than polychloroprene sheathed flexible cord (design 245 IEC 57).



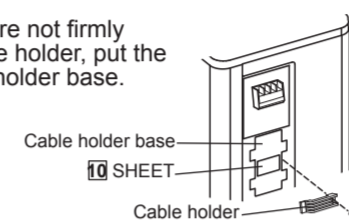
- Open the open panel by about 70°.
- Connect the electrical cable.
  - Be very careful not to confuse the terminal connections. Wrong cabling may damage the internal control circuit.
  - The markings on the indoor unit's terminal board must match with those of the outdoor unit.
- Fix the cable with the accompanying cord holder and the short screw.
- Close the open panel.



## 7 CONNECTING THE ELECTRICAL CABLE TO THE OUTDOOR UNIT

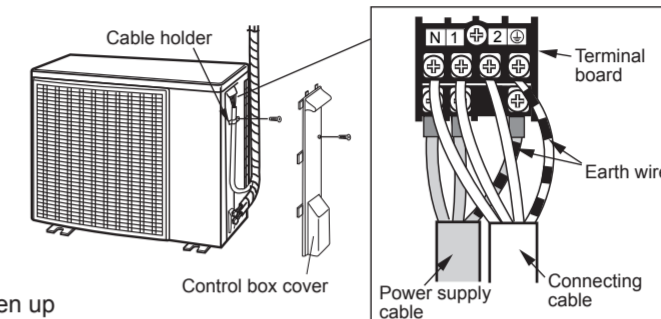
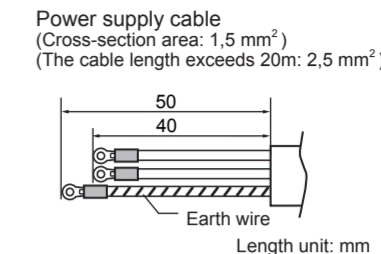
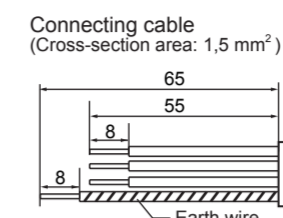
- Process the end of the connecting cable and the power supply cable for the outdoor unit.
  - Use a copper cable.
  - For power supply cable, securely clamp a round terminal to each end of the stripped cable.
  - Use a cable which is not lighter than polychloroprene sheathed flexible cord (code designation 60245 IEC 57).
- Remove the control box cover.
- Remove the cable holder and connect the cables.  
Be sure that the terminal connections are as specified.
- Fix the cable sheaths with the cable holder and the screw.\*
- Double-check that the cables are securely in place.
- Place the control box cover back in the reverse order.

\*If the cable sheaths are not firmly secured with the cable holder, put the SHEET on the cable holder base.



### Caution:

- Be sure to put the cable leads deep into the terminal board and tighten up the screws. Poor contact can cause overheating or fire, or malfunction.



## 8 POWER CABLING

Prepare a dedicated power supply circuit.  
For the connections, see below.

Supply power	220 V - 240 V, single-phase
Circuit breaker	10 A

POWER SUPPLY CABLE	POWER SUPPLY
Blue	⇒ Neutral
Brown	⇒ Live
Green/yellow-striped	⇒ Ground

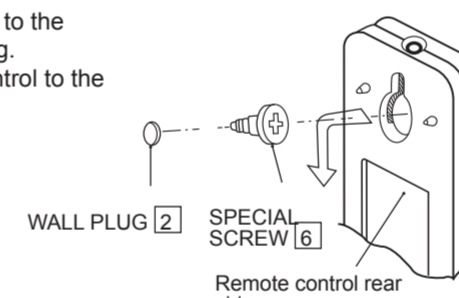
- The appliance shall be installed in accordance with national wiring regulations. Wrong connection can cause overheating or fire.
- Fit a disconnect switch, having a contact separation of at least 3mm in all poles, to the electricity power line.

### Earth leakage breaker

- Provide an earth leakage breaker in order to protect against electric shock in case of leak.
- Use the current-activated, high-sensitivity, high-speed type breaker with a rated sensitivity current of below 30 mA and an operating time of below 0.1 second.

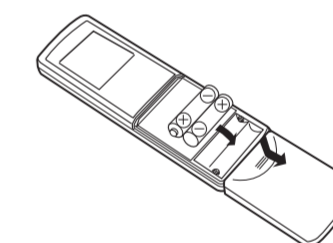
## 9 HANGING THE REMOTE CONTROL

- Fit the special screw to the wall with the wall plug.
- Hang the remote control to the screw head.



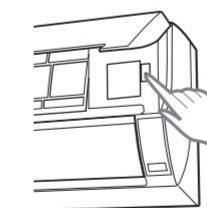
### Loading the batteries

- Slide the cover in the direction of the arrow.
- Open the cover.
  - Insert the batteries.
  - Close the cover.
- If after battery replacement the control fails to function, take out the batteries. Wait for more than 30 seconds and put them in again.



## 10 TEST RUN

- Open the open panel to see the control section.
- Start the operation with the remote control.
- Press the "AUX" button on the unit for 5 seconds or more. A beep sound is heard and the OPERATION lamp starts flashing. Now the system is in the cooling test run mode.
- To put the system in the heating test run mode, start the cooling operation and select the heating mode on the remote control.
- Make sure the system runs well, and press the AUX button again to stop the operation.



## 11 EXPLANATION TO CUSTOMER

- Explain to the customer how to use and maintain the system, referring to the operation manual.
  - Ask the customer to carefully read the operation manual.
  - When the system has been set up, hand the installation manual to the customer.
- IMPORTANT POINTS TO EXPLAIN**
- Whipping sound :
- The system adjusts itself, by expansion or shrinkage, according to great temperature fluctuations.
- Running liquid sound :
- The refrigerant runs in the system, generating such sound. (For details, refer to the accompanying operation manual.)

## DETACHING THE FRONT PANEL

For servicing, for example, detach the front panel in the following steps. Be sure to disconnect the power cord from the wall outlet or turn off the circuit breaker.

- Remove the air filter.
- Unscrew the 2 screws of the front panel.
- Open the vertical adjustment louvre by hand.
- Remove the front panel.
  - Slightly open the lower part of the front panel, and extract the 5 hooks along the upper surface for disassembly.
- To set the panel back into position, press-fit it at the bottom first and then press its top.

