



# **CASSETTE-TYPE AIR CONDITIONER**

# **INSTALLATION MANUAL**

*For correct installation, read this manual before starting installation.  
This manual may be subject to change without notice for purpose of improvement..*

# CONTENTS

1. PRECAUTIONS.....	1
2. INSTALLATION INFORMATION.....	2
3. ATTACHED FITTINGS.....	3
4. INSTALLATION PLACE.....	4
5. INDOOR UNIT INSTALLATION.....	5
6. OUTDOOR UNIT INSTALLATION.....	9
7. INSTALL THE CONNECTING PIPE.....	11
8. CONNECT THE DRAIN PIPE.....	15
9. INSTALLATION OF FLANGE AND DUCT.....	18
10. WIRING.....	20
11. TEST OPERATION.....	26

# PRECAUTIONS

## SAFETY CONSIDERATIONS

Installation and servicing of air conditioning equipment can be hazardous due to system pressure and electric components. Only trained and qualified service personnel should install, repair or service air conditioning equipment.

All other operations should be performed by trained service personnel. When working on air conditioning equipment, observe precautions in the literature, tags and labels attached to the unit and other safety precautions that may apply. Follow all safety codes. Wear glasses and work gloves. Use quenching cloth for brazing and unbrazing operations. There are fire extinguishers available for all brazing operations.

## WARNING

This manual describes the installation of specified indoor and outdoor units. Do not install them connected with any other indoor or outdoor unit. Mismatching of units and incompatibility between control devices in the two units could lead to damage of both units.

## WARNING

Before performing service or maintenance operations on system, turn off main power switch of the unit. Electrical shock could cause personal injury.

This unit shall be installed in accordance with national wiring regulations.

## WARNING

If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.

The means for disconnection from the supply having a contact separation of at least 3 mm in all poles.

## CAUTION

1. Wire the outdoor unit, then wire the indoor unit. You are not allowed to connect the air conditioner with the power source until wiring and piping the air conditioner is done.
2. For installation of the indoor unit, outdoor unit, and connection piping in between, follow the instructions given in this manual as strictly as possible.
3. Installation in the following places may cause trouble. If it is unavoidable using in such places, please consult with the dealer.
  - (1) A place full of machine oil.
  - (2) A saline place such as coast.
  - (3) Hot-spring resort.
  - (4) A place full of sulfide gas.
  - (5) A place where there are high frequency machines such as wireless installation, welding machine, medical facilities.
  - (6) A place of special environmental conditions.
4. Don't install this unit in the laundry.

## NOTE

Remark per EMC Directive 2004/108/EC

For to prevent flicker impressions during the start of the compressor (technical process) ,following installation conditions do apply.

1. The power connection for the air conditioner has to be done at the main power distribution. The distribution has to be of a low impedance, normally the required impedance reaches at a 32 A fusing point.
2. No other equipment has to be connected with this power line.
3. For detailed installation acceptance please refer to your contract with the power supplier, if restrictions do apply for products like washing machines, air conditioners or electrical ovens.
4. For power details of the air conditioner refer to the rating plate of the product.
5. For any question contact your local dealer.

## INSTALLATION INFORMATION

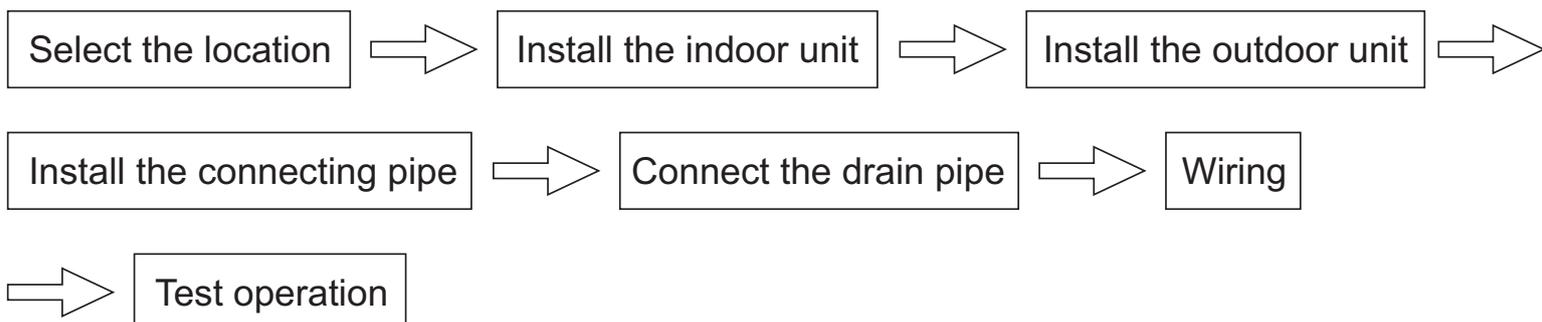
- To install properly, please read this "installation manual" at first.
- The air conditioner must be installed by qualified persons.
- When installing the indoor unit or its tubing, please follow this manual as strictly as possible.
- When all the installation work is finished, please turn on the power only after a thorough check.
- Regret for no further announcement if there is any change of this manual caused by product improvement.

## CAUTIONS FOR THE REMOTE CONTROLLER OPERATION

- Please do not throw the remote controller or beat it.
- Please use the remote controller within the allowed distance, and keep the transmitter toward the receiver of the indoor unit.
- Please keep the remote controller more than 1m away from TV or stereo set.
- Never put the remote controller at the place with humid or direct sunlight, or near heaters.
- Please insert the batteries properly.

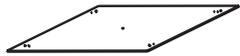
## INSTALLATION ORDER

1. Select the location;
2. Install the indoor unit;
3. Install the outdoor unit;
4. Install the connecting pipe;
5. Connect the drain pipe;
6. Wiring;
7. Test operation.



# ATTACHED FITTINGS

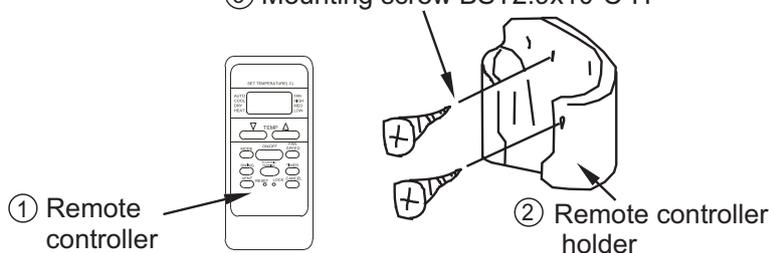
Please check whether the following fittings are of full scope. If there are some attached fittings free from use, please restore them carefully.

	Name	Quantity	Outline
<b>Installation Fittings</b>	3. Installation paper board	1	
<b>Tubing &amp; Fittings</b>	7. Soundproof / insulation sheath	2	
	5. Connecting pipe group	1	
<b>Drainpipe Fittings</b>	8. Out-let pipe sheath	1	
	9. Out-let pipe clasp	1	
	6. Binding tape	6	
	11. Drain joint	1	
	12. Seal ring	1	
<b>Remote controller &amp; Its Frame</b>	15. Remote controller	1	
	16. Remote controller holder	1	
	17. Mounting screw(ST2.9*10-C-H)	2	
	18. Alkaline dry batteries(AM4)	2	
<b>Others</b>	19. Owner's manual	1	
	20. Installation manual	1	
<b>Installation accessory (The product you have might not be provided the following accessory)</b>	2. Installation hook	4	
	1. Expansible hook	4	

## Cautions on remote controller installation

- Never throw or beat the controller.
- Before installation, operate the remote controller to determine its location in a reception range.
- Keep the remote controller at least 1m apart from the nearest TV set or stereo equipment.
- (It is necessary to prevent image disturbances or noise interferences.)
- Do not install the remote controller in a place exposed to direct sunlight or close to a heating source, such as a stove. Note that the positive and negative poles are in right positions when loading batteries.

③ Mounting screw BST2.9x10-C-H



# INSTALLATION PLACE

## CAUTIONS

Location in the following places may cause malfunction of the machine.(If unavoidable, please consult your local dealer)

- a. There is petrolatum existing.
- b. There is salty air surrounding (near the coast).
- c. There is caustic gas (the sulfide, for example)
- d. The Volt vibrates violently (in the factories).  
existing in the air (near a hot spring).
- e. In buses or cabinets.
- f. In kitchen where it is full of oil gas.
- g. There is strong electromagnetic wave existing.
- h. There are inflammable materials or gas.
- i. There is acid or alkaline liquid evaporating.
- j. The appliance shall not be installed in the laundry.
- k. Other special conditions.

## NOTICES BEFORE INSTALLATION

1. Select the correct carry-in path.
2. Move this unit as originally packaged as possible.
3. If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards to electrical appliances.
4. It is better to place the outdoor unit above the indoor one, provided that the height difference between them over than 10m.

### 1. The indoor unit

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The air outlet and the air inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The appliance must be installed 2,3m above floor.
- The connecting pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters.

### 2. The outdoor unit

- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and can not be reached by strong wind.
- It must be a dry and well ventilating place.
- The support is flat and horizontal and can stand the weight of the outdoor unit. And will no additional noise or vibration.
- Your neighborhood will not feel uncomfortable with the noise or expelled air.
- There is no leakage of combustible air.
- It is easy to install the connecting pipe or cables.
- Determine the air outlet direction where the discharged air is not blocked.
- A place free of a leakage of combustible gases. In the case that the installation place is exposed to a strong wind such as a seaside or high position,secure the normal fan operation by putting the unit lengthwise along the wall or using a duct or shield plates.
- If possible, do not install the unit where it is exposed to direct sunlight.
- If necessary, install a blind that does not interfere with the air flow.
- During the heating mode, the water drained off the outdoor unit ,The condensate should be well drained away by the drain hole to an appropriate place, so as not to interfere other people or public.
- Select the position where it will not be subject to snow drifts, accumulation of leaves or other seasonal debris. It is important that the air flow for the outdoor unit is not impeded as this will result in reduction in heating or cooling performance.

# INDOOR UNIT INSTALLATION

## 1. Install the main body

### CAUTIONS

Before the indoor unit installation be sure to take down the buffer pads between the fan and the air inducing coil, that are just used for indoor unit protection during transport. Otherwise, the fan and the motor will be damaged once the indoor unit works.

#### A. The existing ceiling (to be horizontal)

- Please cut a quadrangular hole of  $880 \times 880$ mm in the ceiling according to the shape of the installation paper board. (Refer to Chart3, 4)
  - The center of the hole should be at the same position of that of the air conditioner body.
  - Determine the lengths and outlets of the connecting pipe, drainpipe and cables.
  - To balance the ceiling and to avoid vibration, please enforce the ceiling when necessary.
- Please select the position of installation hooks according to the hook holes on the installation board.
  - Drill four holes of  $\phi 12$ mm, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).
  - Face the concave side of the installation hooks toward the expansible hooks. Determine the length of the installation hooks from the height of ceiling, then cut off the unnecessary part.
  - If the ceiling is extremely high, please determine the length of the installation hook according to facts.

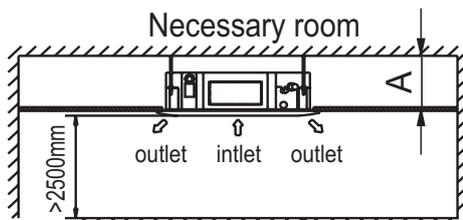


Chart 1  
Note: 18000-24000Btu/h Series A  $\geq 260$ mm  
36000-60000Btu/h Series A  $\geq 330$ mm

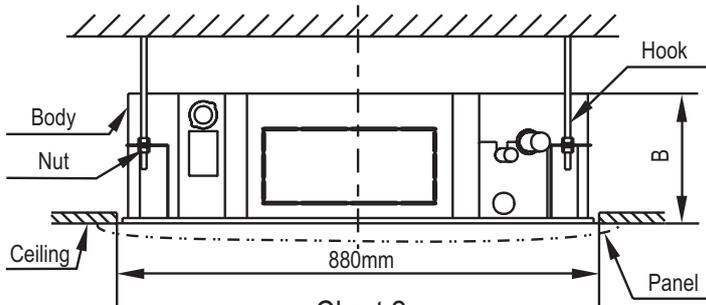


Chart 2  
Note: 18000-24000Btu/h Series B = 230mm  
36000-60000Btu/h Series B = 300mm

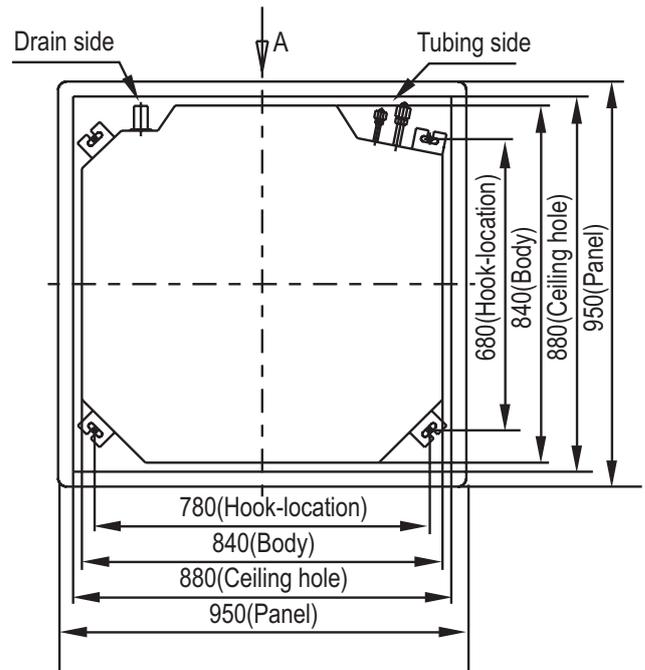


Chart 4 (Unit: mm)

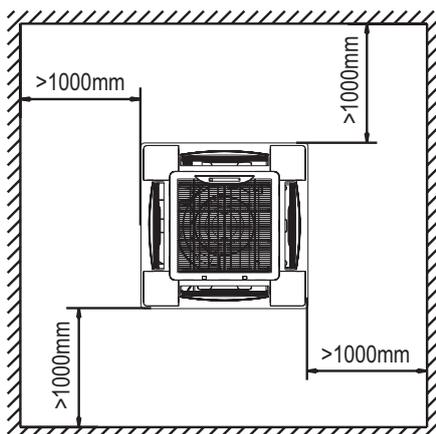


Chart 3

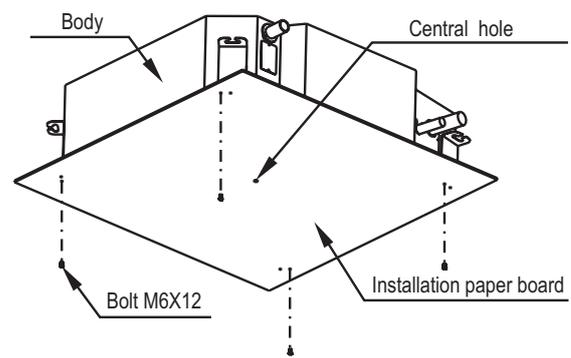


Chart 5

The length could be calculated from Chart5

Length=H-181+L (in general, L=100mm and is half of the whole length of the installation hook)

c. Please adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body.

- If the drainpipe is awry, leakage will be caused by the malfunction of the water-level switch.
- Adjust the position to ensure the gaps between the body and the four sides of ceiling are even. The body's lower part should sink into the ceiling for 10~12 mm (Refer to chart 6).
- Locate the air conditioner firmly by wrenching the nuts after having adjusted the body's position well.

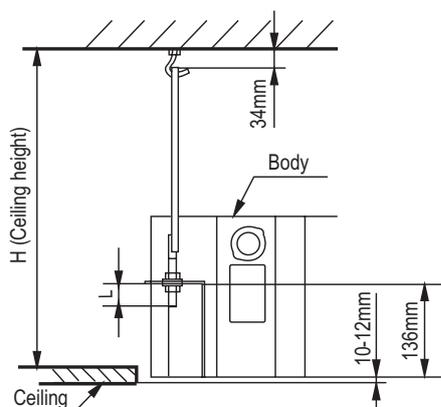


Chart 6

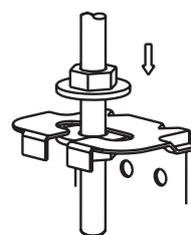


Chart 7

## B. New built houses and ceilings

- In the case of new built house, the hook can be embedded in advance (refer to the A.B mentioned above). But it should be strong enough to bear the indoor unit and will not become loose because of concrete shrinking.
- After installing the body, please fasten the installation paper board onto the air conditioner with bolts(M6×12) to determine in advance the sizes and positions of the hole opening on ceiling.
  - Please first guarantee the flatness and horizontal of ceiling when installing it.
  - Refer to the A.a mentioned above for others.
- Refer to the A.c mentioned above for installation.
- Remove the installation paper board.

## CAUTIONS

After completion of installing the body, the four bolts(M6×12) must be fastened to the air conditioner to ensure the body is grounded well.

## 2. Install The Panel

### CAUTIONS

- Never put the panel face down on floor or against the wall, or on bulgy objects.
- Never crash or strike it.

#### (1) Remove the inlet grid.

- Press the couple of grill's buttons simultaneously, and then lift the grill up. (Refer to chart 8)
- Draw the grid up to an angle of about 45°, and remove it. (Refer to chart 9)

#### (2) Remove the installation covers at the four corners.

Wrench off the bolts, loose the rope of the installation covers, and remove them. (Refer to chart 10)

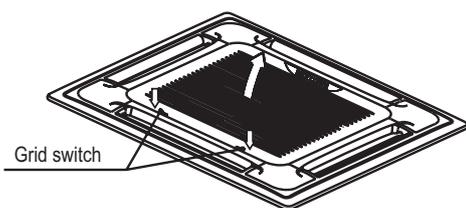


Chart 8

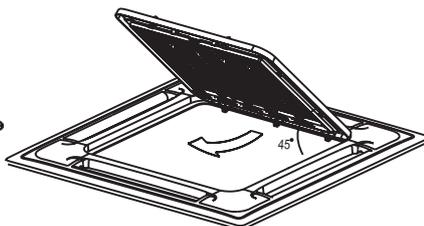


Chart 9

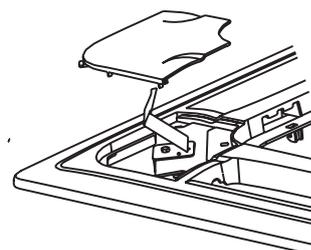


Chart 10

#### (3) Install the panel

- Conjoint the part which Mark PIPING SIDE and DRAIN SIDE with the piping interface and drainage interface from the main body . ( Refer to chart 11)

- b. Fix hooks of the panel to swing motor and its opposite sides to the hooks of corresponding water receiver. ( Refer to chart 11①) Then hang the other two panel hooks onto corresponding hangers of the body. ( Refer to chart 11②)

**CAUTIONS** The salience to plastic cover plate of sway motor must be embedded in the concave of seal plate.

**CAUTIONS** Do not coil the wiring of the swing motor into the seal sponge.

- c. In-build the conducting wire from sway motor to in-building groove of panel.
- d. Adjust the four panel hook screws to keep the panel horizontal, and screw them up to the ceiling evenly. ( Refer to chart 11③)
- e. Regulate the panel in the direction of the arrow in Chart11④ slightly to fit the panel's center to the center of the ceiling's opening. Guarantee that hooks of four corners are fixed well.
- f. Keep fastening the screws under the panel hooks, until the thickness of the sponge between the body and the panel's outlet has been reduced to about 4~6mm. The edge of the panel should
- contact with the ceiling well. (Refer to chart 12)
  - Malfunction described in Chart13 can be caused by inappropriate tightness the screw. If the gap between the panel and ceiling still exists after fastening the screws, the height of the indoor unit should be modified again. ( Refer to chart 14-left)
  - indoor unit should be modified again. ( Refer to chart 14-right)
- You can modify the height of the indoor unit through the openings on the panel's four corners, if the lift of the indoor unit and the drainpipe is not influenced (refer to chart 14-right).
- (4) Hang the air-in grid to the panel, then connect the lead terminator of the swing motor and that of the control box with corresponding terminators on the body respectively.
- (5) Relocate the air-in grid in the procedure of reversed order.
- (6) Relocate the installation cover.
- a. Fasten the rope of installation cover on the bolt of the installation cover. (Refer to chart 15-left)
- b. Press the installation cover into the panel slightly. (Refer to chart 15-right)

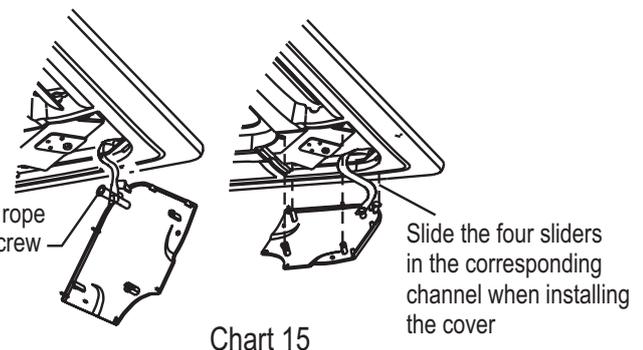
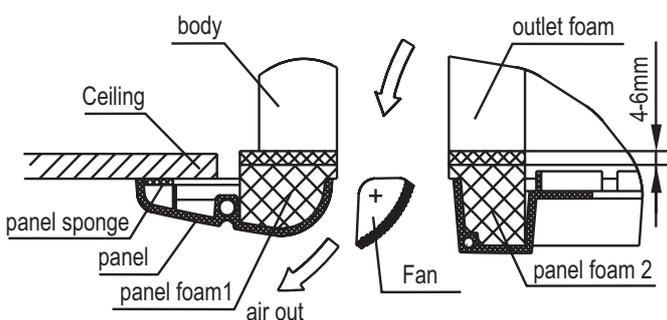
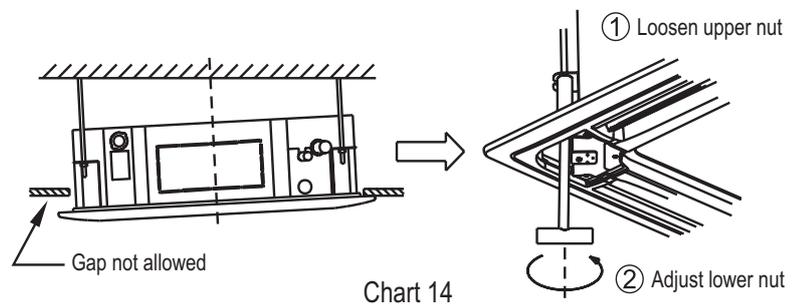
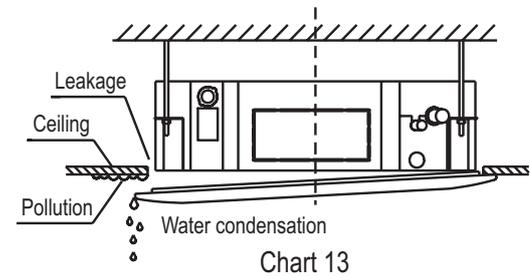
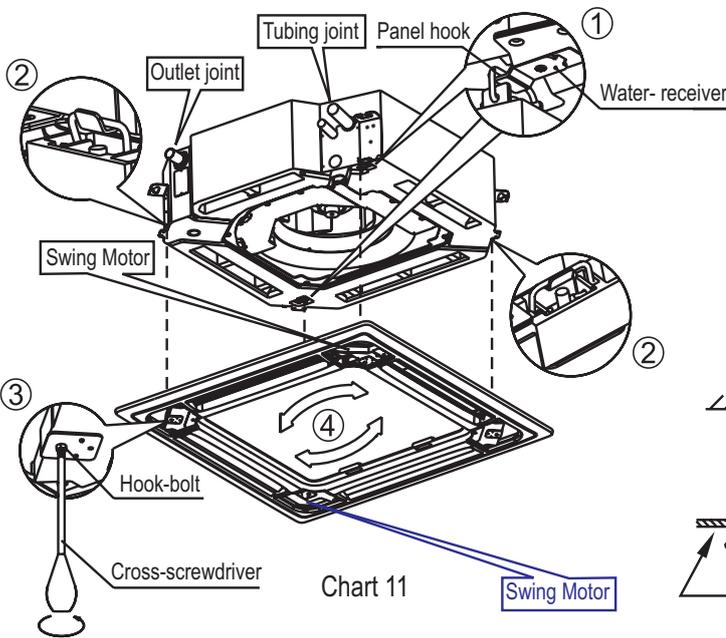
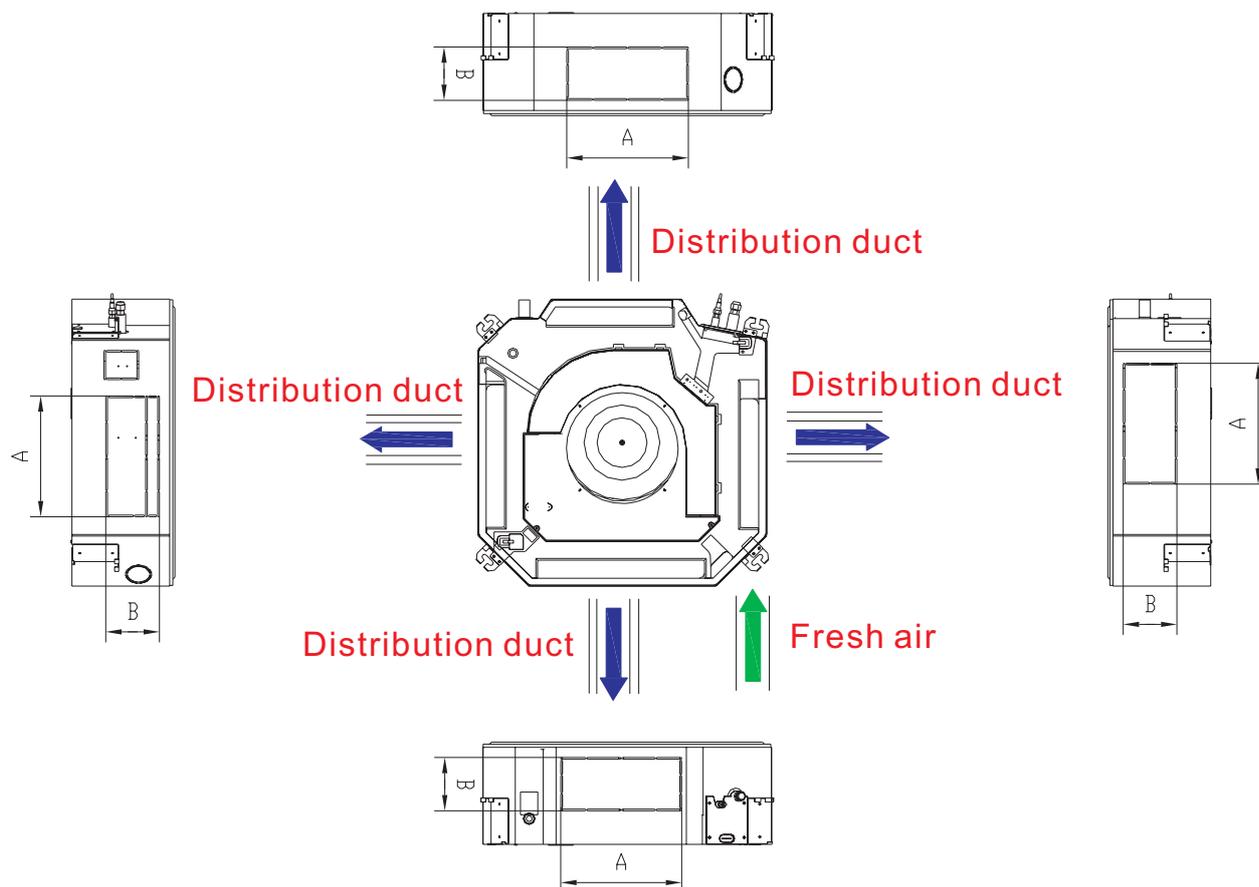


Chart 12

Chart 15

### 3. Install the distribution duct

Conditioned air can be distributed by means of a distribution duct.



Note: 18000-24000Btu/h  
36000-60000Btu/h

Series A=350mm; Series B=85mm  
Series A=350mm; Series B=155mm

Chart 16

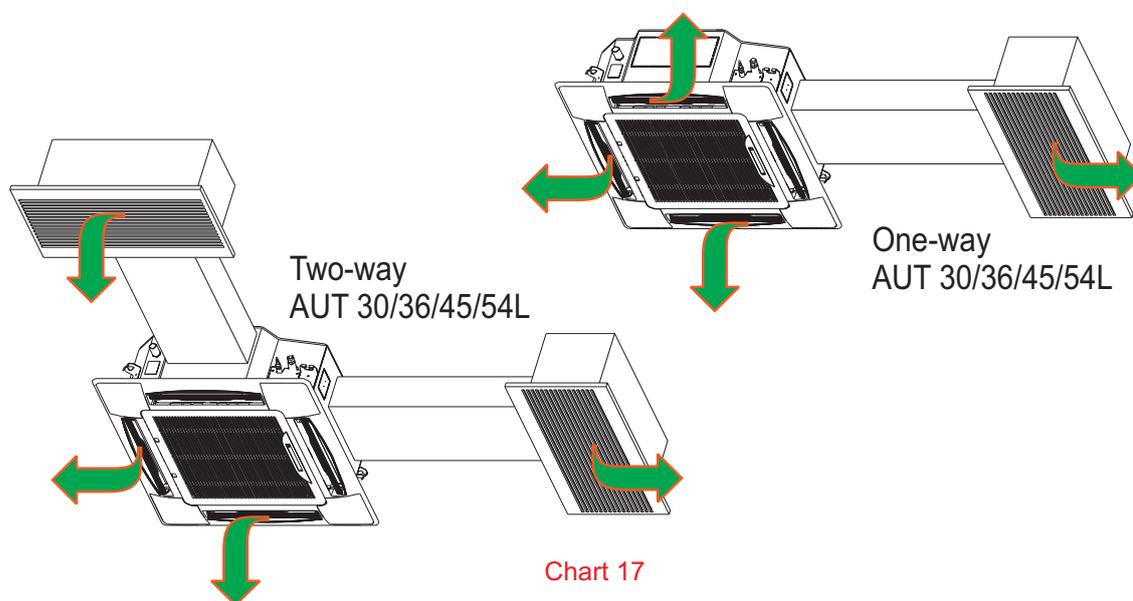


Chart 17

#### In case of one duct connection

- The air volume in duct is around 300-360m<sup>3</sup>/h for 18000Btu/h to 24000Btu/h unit
- The air volume in duct is around 400-640m<sup>3</sup>/h for 36000Btu/h to 60000Btu/h unit
- The max. length of duct is 2m
- The original air outlet with the same direction of duct should be sealed

#### In case of two duct connection

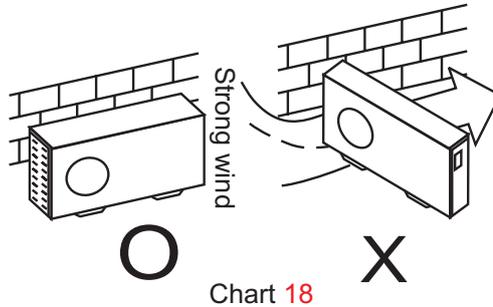
- The air volume in one duct is around 200-260m<sup>3</sup>/h for 18000Btu/h to 24000Btu/h unit
- The air volume in one duct is around 300-500m<sup>3</sup>/h for 36000Btu/h to 60000Btu/h unit
- The max. length of duct is 1.5m for one duct
- The original air outlet with the same direction of duct should be sealed

# OUTDOOR UNIT INSTALLATION

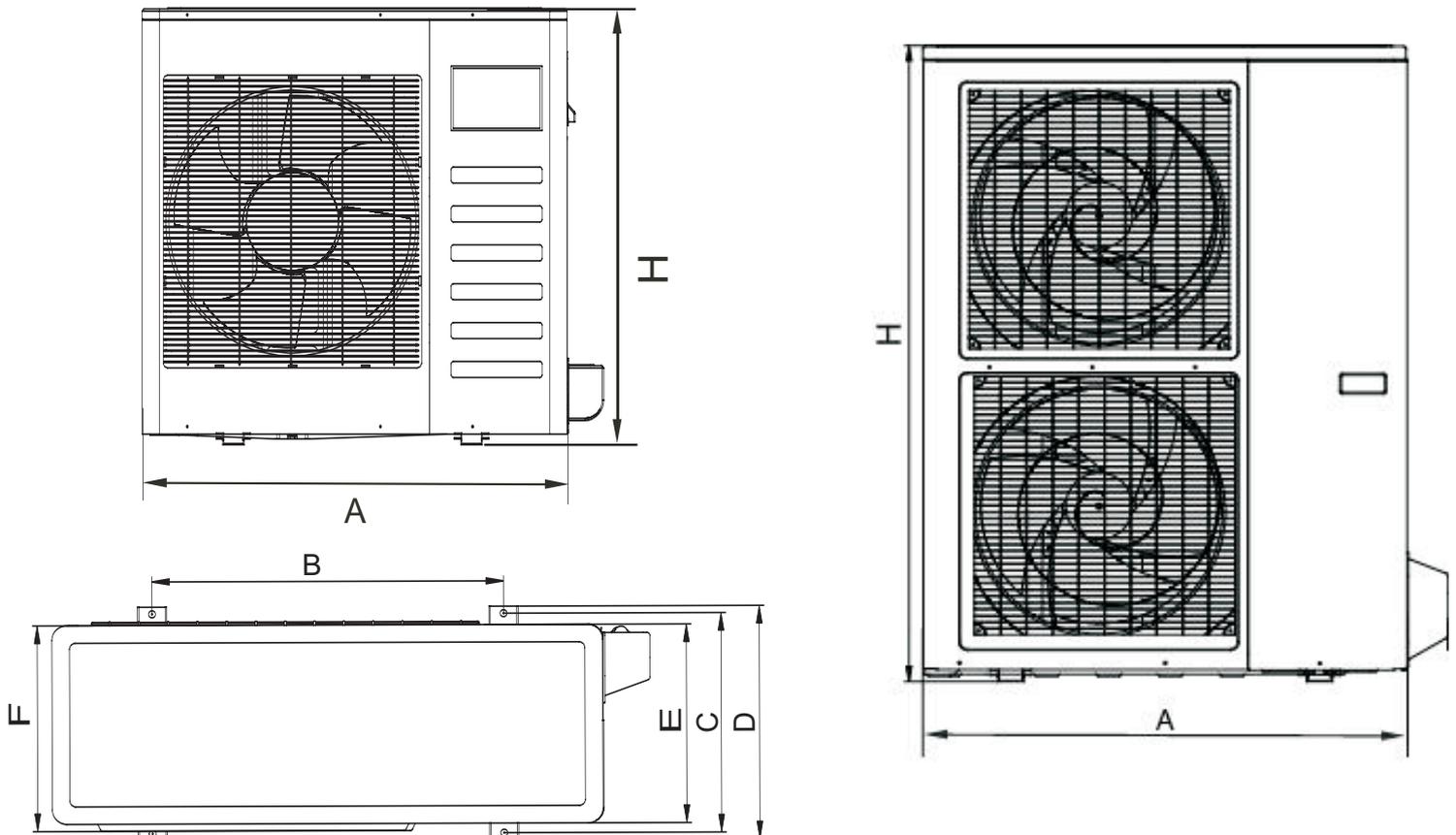
## ◆ Side air outlet outdoor unit

### CAUTIONS

- Keep this unit away from direct radiation of the sun or other heaters.
- If unavoidable, please cover it with a shelter.
- In places near coast or with a high attitude where the wind is violent, please install the outdoor unit against the wall to ensure normal performance. Use a baffle when necessary.
- In the case of extremely strong wind, please prevent the air from flowing backwards into the outdoor unit. ( Refer to chart 18)
- Locate the outdoor unit as close to the indoor unit as possible.
- The minimum distance between the outdoor unit and obstacles described in the installation chart does not mean that the same is applicable to the situation of an airtight. Leave open two of three directions A,B,C..



### SIZE OF OUTDOOR UNIT



**Table 1**

mm

MODEL	A	B	C	D	E	F	H
18000	824	530	290	315	270	282	593
24000	842	560	335	360	312	324	695
36000	895	590	333	355	302	313	862
48000	990	624	366	396	340	354	966
60000	900	590	378	400	330	356	1167

## NECESSARY ROOM FOR INSTALLATION AND MAINTENANCE

(Refer to chart 20)

If possible, please remove the obstacles nearby to prevent the performance from being impeded by too little of air circulation.

The minimum distance between the outdoor unit and obstacles described in the installation chart does not mean that the same is applicable to the situation of an airtight room. Leave open two of the three directions (A,B,C)

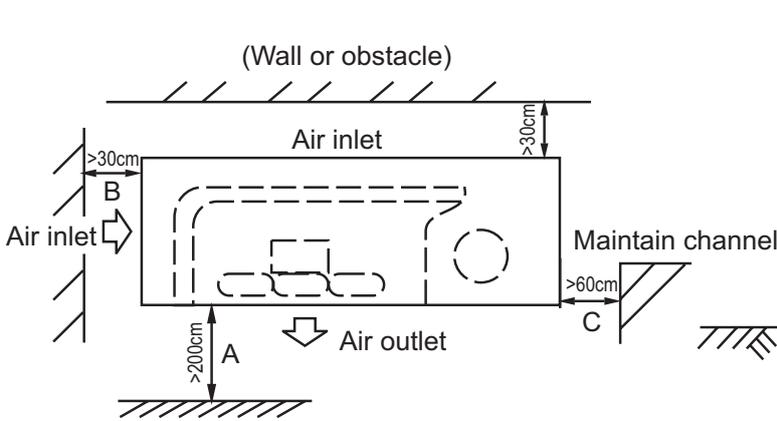


Chart 20

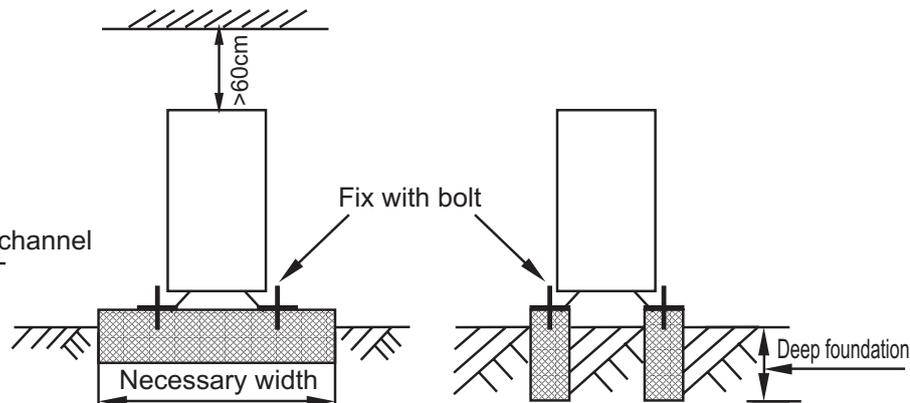


Chart 21

## MOVING AND INSTALLING

- Since the gravity center of this unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the air-in of the outdoor unit to prevent it from deforming.  
Do not touch the fan with hands or other objects.
- Do not lean it more than 45°, and do not lay it sidelong.
- Please fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.
- Make concrete foundation of the size of 590\*328.(Refer to chart 21)

# INSTALL THE CONNECTING PIPE

## CAUTIONS

Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:

The max height drop.....10m  
(If the height drop is more than 10m, you had better put the outdoor unit over above the indoor unit.)  
The length of refrigerant pipe..18000, 24000 series less than 20m; 30000~48000 series less than 30m  
The number of bends.....less than 15

## CAUTIONS

- Do not let air, dust, or other impurities fall in the pipe system during the time of installation.
- The connecting pipe should not be installed until the indoor and outdoor units have been fixed already.
- Keep the connecting pipe dry, and do not let moisture in during installation.

## The Procedure of Connecting Pipes

1. Measure the necessary length of the connecting pipe, and make it by the following way.

(Refer to "Connect The Pipes" for details)

1) Connect the indoor unit at first, then the outdoor unit.

- Bend the tubing in proper way. Do not harm to them.

## CAUTION

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds with hands before fasten the flare nuts.(Refer to chart 22)
- Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

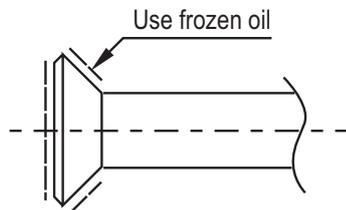


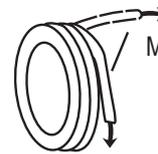
Chart 22

Bend the pipe with thumb



min-radius 100mm

Chart 23



Make the end straight

Chart 24

2) The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

3) Expel the air (refer to the "Expel The Air") after connecting the refrigerant pipe with the indoor unit. Then fasten the nuts at the repair-points.

## Notices For Bendable Pipe

- The bending angle should not exceed 90°.
- Bending position is preferably in the middle of the bendable pipe. The larger the bending radius the better it is.
- Do not bend the pipe more than three times.

## Bend the connecting pipe of small wall thickness ( $\Phi$ 9.53mm)

- Cut out a desired concave at the bending part of the insulating pipe.
- Then expose the pipe (cover it with tapes after bending).
- To prevent collapsing or deforming, please bend the pipe at its biggest radius.
- Use bender to get a small radius pipes.

## Use the market brass pipe

- Be sure to use the same insulating materials when you buy the brass pipe (more than 9mm thick).

### 2. Locate The Pipes

- Drill a hole in the wall (suitable just for the size of the wall conduit, 18000, 24000 series diameter is  $\Phi 90\text{mm}$ , and 30000~48000 series diameter is  $\Phi 105$  in general), then set on the fittings such as the wall conduit and its cover.
- Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.
- Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

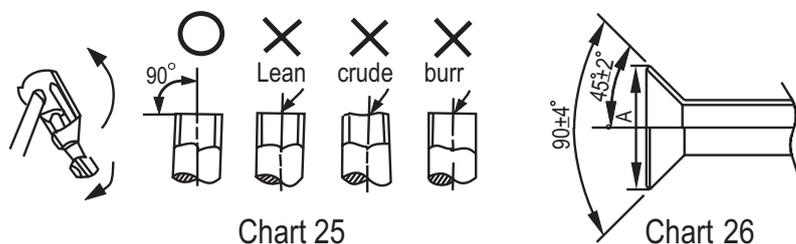
### 3. Connect the pipes.

4. Then, open the stem of stop valves of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

5. Be sure of no leakage by checking it with leak detector or soap water.

6. Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

## Flaring



1. Cut a pipe with a pipe cutter.
2. Insert a flare nut into a pipe and flare the pipe.

Outside-diameter (mm)	A(mm)	
	Max	Min
6.4	8.7	8.3
9.5	12.4	12.0
12.7	15.8	15.4
15.9	19.0	18.6
19.1	23.3	22.9

## Fasten the nuts

- Put the connecting tubing at the proper position, wrench the nuts with hands, then fasten it with a wrench. (Refer to Chart27)

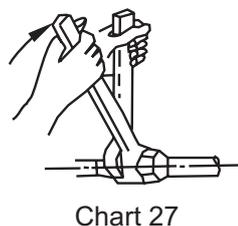


Chart 27

## CAUTIONS

Too large torque will harm the bellmouthing and too small will cause leakage. Please determine the torque according to Table 2.

Table 2 (kg)

Tubing Size	Torque
$\phi 6.4$	1420~1720 N·cm (144~176kgf·cm)
$\phi 9.5$	3270~3990 N·cm (333~407kgf·cm)
$\phi 12.7$	4950~6030 N·cm (504~616kgf·cm)
$\phi 15.9$	6180~7540 N·cm (630~770kgf·cm)
$\phi 19.1$	9720~11860 N·cm (990~1210kgf·cm)

## Necessary Refrigerant Stow Capacity

- Please record and reserve well the refrigerant stow capacity of your air conditioner for later maintenance.
- For R22 series:

LENGTH(L)	Capacity	18000Btu/h	24000Btu/h	30000-48000Btu/h
Less than 5m (one-way)		_____	_____	_____
Added Refrigerant When Over 5m(one-way)		15g × (L)m	30g × (L)m	60g × (L)m

Table 3

- For R410A series:

LENGTH(L)	Capacity	
	24000Btu/h	30000-48000Btu/h
Less than 5m (one-way)	_____	_____
Added Refrigerant When Over 5m(one-way)	30g × (L-5)m	60g × (L-5)m

Table 4

## Expel the air with a vacuum pump

( Refer to Chart 28)

(please refer to its manual for the way of using manifold value)

1. Loosen and remove the maintenance nuts of stop values A and B, and connect the charge hose of the manifold value with the maintenance terminator of stop value A. (Be sure that stop values A and B are both closed)
2. Connect the joint of the charge hose with the vacuum pump.
3. Open the Lo-lever of the manifold value completely.
4. Turn on the vacuum pump. At the beginning of pumping, loosen the maintenance terminator nut of stop value B a little to check whether the air comes in (the sound of the pump changes, and the indicator of compound meter turns below zero). Then fasten the nut.
5. When the pumping has finished, close the Lo-lever of the manifold value completely and turn off the vacuum pump.
  - When you have pumped for over 15 minutes, please confirm that the indicator of multi-meter is on  $1.0 \times 10^{-5} \text{Pa}(-76 \text{cmHg})$ .
6. Loosen and remove the quadrangle cover of stop values A and B to open stop value A and B completely, then fasten them.
7. Disassemble the charge hose from the repair-mouth of stop value A, and fasten the nut.

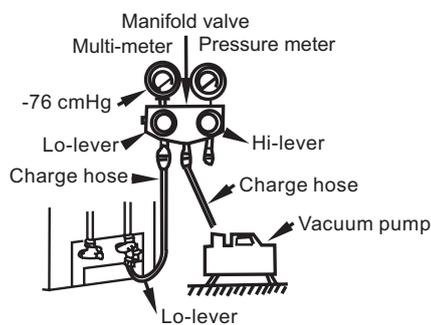


Chart 28

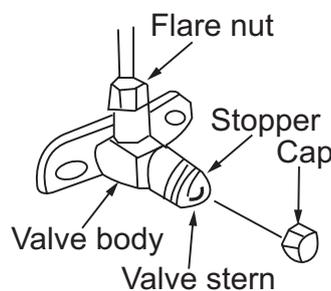


Chart 29

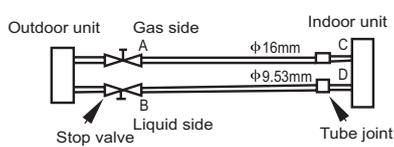
## CAUTIONS

All the stop values should be opened before test operation. Each air conditioner has two stop values of different sizes on the side of the outdoor unit which operate as Lo-stop value and Hi-stop value, respectively. (Refer to Chart 29)

## Expel the air with the refrigerant in the outdoor unit

(Refer to Chart 30 and 31)

1. Screw up the pipe nuts at A, B, C and D completely.
2. Loosen and remove the square-head cover of valves A and B, rotate the square-head spool of valve B counterclockwise for 45 degrees and stay for about 10 seconds, and then close the spool of valve B tightly.
3. Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, open the maintenance orifice nut of valve A. After all air is expelled, tighten the maintenance orifice nut of valve A.
4. Open the spools of valves A and B completely.
5. Tighten the square-head cover of valves A and B completely.



(Take 24000 series for example)  
Chart 30

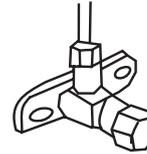


Chart 31 (Take 24000 series for example)

## Expel the air with the refrigerant tank

(Refer to Chart 30 and 31)

1. Screw up the pipe nuts at A, B, C and D completely.
2. Loosen and remove the square-head cover and the maintenance orifice nut of valves A and B.
3. Connect the filler hose of the refrigerant tank with the maintenance orifice of valve A.
4. Loosen the valve of the refrigerant tank, continue filling refrigerant for 6 seconds to expel the air, and tighten the nut of valve B quickly.
5. Loosen the valve of the refrigerant tank again, and fill the refrigerant for 6 seconds. Detect leak for all adapters at A, B, C and D. After making sure that no leak exists, screw off the filler hose. After all the filled refrigerant is expelled, screw up the maintenance orifice nut of valve A quickly.
6. Open the square-head spools of valves A and B completely.
7. Tighten the square-head cover of valves A and B.

## Operate the stop valves

- Open the valve rod until it reaches the limiter. Do not open it any further
- Fasten the stop valve with wrench or such tools.
- The torque is shown in The Chart of Tightening Torque (Table 2).

## CHECK THE LEAKAGE

Check all the joints with the leak detector or soap water. (refer to Chart 32)

NOTE: in the chart

- A.....Lo-stop value
- B.....Hi-stop value
- C,D.....Joints of the connecting pipe to the indoor unit.

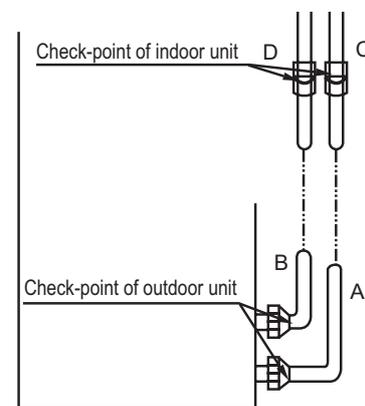


Chart 32

## INSULATION

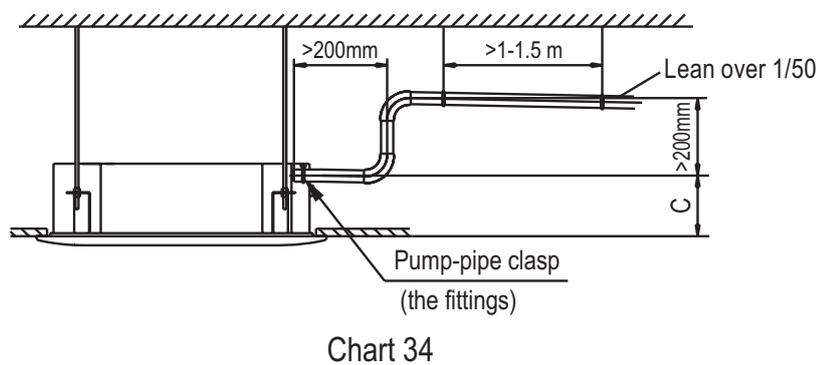
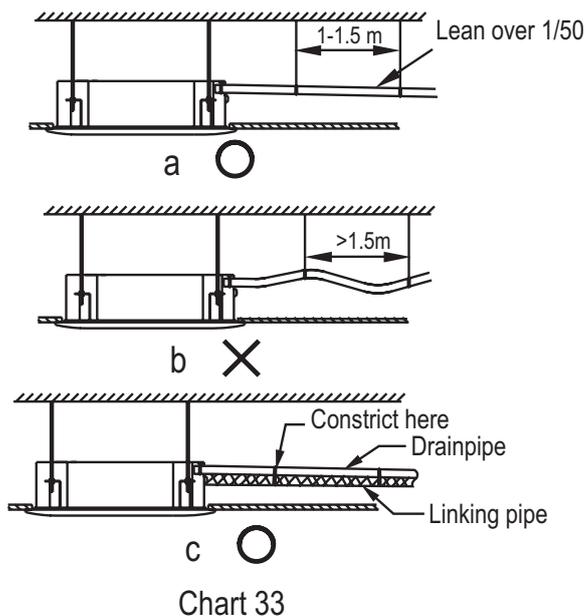
- Be sure to with insulating materials cover all the exposed parts of the flare pipe joints and refrigerant pipe on the liquid-side and the gas-side. Ensure that there is no gap between them.
- Incomplete insulation may cause water condensation.

# CONNECT THE DRAIN PIPE

## 1. Install the drainpipe of the indoor unit

- You can use a polyethylene tube as the drainpipe (out-dia.37-39mm, in-dia.32mm). It could be bought at local market or from your dealer.
- Set the mouth of the drainpipe onto the root of the body's pump-pipe, and clip the drainpipe and the out-let pipe sheath (fittings) together firmly with the out-let pipe clasp (fitting).  
**CAUTIONS:** Use your strength carefully to prevent the pump-pipe from breaking.
- The body's pump pipe and the drainpipe (especially the indoor part) should be covered evenly with the out-let pipe sheath (fittings) and be bound tightly with the constrictor to prevent condensation caused by entered air.
- To prevent water from flowing backwards into the air conditioner while the air conditioner stops, please lean the drainpipe down toward outdoor (outlet-side) at a degree of over 1/ 50. And please avoid any bulge or water deposit.( Refer to Chart 33.a)
- Do not drag the drainpipe violently when connecting to prevent the body from being pulled. Meanwhile, one support-point should be set every 1~1.5m to prevent the drainpipe from yielding (Refer to Chart 33.b). Or you can tie the drainpipe with the connecting pipe to fix it.(Refer to Chart 33.c)
- In the case of prolonged drainpipe, you had better tighten its indoor part with a protection tube to prevent it from loosing.
- If the outlet of the drainpipe is higher than the body's pump joint, the pipe should be arranged as vertically as possible. And the lift distance must be less than 200mm, otherwise the water will overflow when the air conditioner stops.( Refer to Chart 34)
- Please use water outlet connecting subassemblies in the wiring box when bend pipes according to practical circumstance.
- The end of the drainpipe should be over 50mm higher than the ground or the bottom of the drainage chute, and do not immerse it in water. If you discharge the water directly into sewage, be sure to make a U-form aquaseal by bending the pipe up to prevent the smelly gas entering the house through the drain pipe.

**CAUTIONS** All connecting joints of drain system must be sealed to avoid leakage.



## 2. Drainage test

- Before the test, ensure that the drain pipes are smooth, and check whether the drainpipe is unhindered
- New built house should have this test done before paving the ceiling.
  - 1) Remove the test cover, and stow water of about 2000ml to the water receiver through the stow tube. ( Refer to Chart 35)

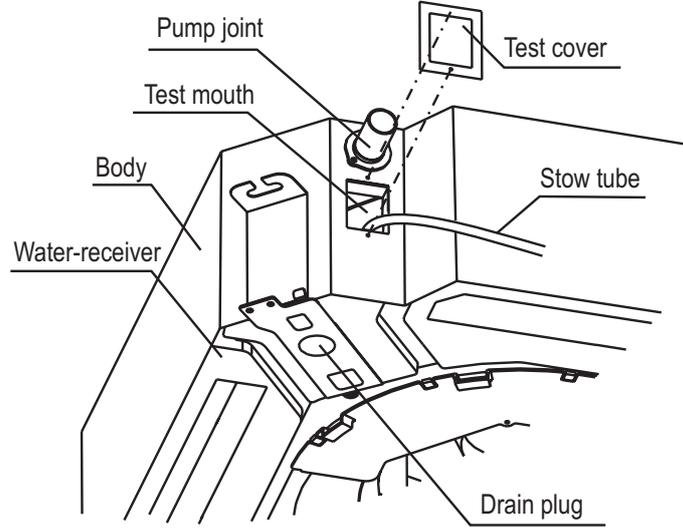


Chart 35

- 2) Turn on the power, and operate the air conditioner under the "COOLING" mode. Listen to the sound of the drain pump. Check whether the water is discharged well (a lag of 1min is allowed before discharging, according to the length of the drain pipe), and check whether water leaks from the joints
- 3) Warning alarm rings because of high water level by water charge, check the drain pump whether discharge water at once or not. The machine would stop in the case of the level does not fall below to warning line after 3 minutes, you should cut-off the main power at first anyway, the unit could not be started until all water drain off.
- 4) Shut-down the power supply; drain off water, and place the water gauge cover to original place.

## CAUTIONS

If there is any malfunction, please resolve it immediately.

- 5) Stop the air conditioner, turn off the power, and reset the test cover to its original position. The drain plug is used to empty the water-receiver for maintenance of the air conditioner. Please stuff it in position at all times during operation to avoid leakage.

### 3. Drain Elbow Installation(For Side air outlet outdoor unit,heating an cooling)

Fit the seal into the drain elbow, then insert the drain elbow into the base pan hole of outdoor, rotate 90° to securely assemble them. Connect the drain elbow with an extension drain hose (Locally purchased), in case of the condensate draining off the outdoor unit during the heating mode. (Refer to Chart36)

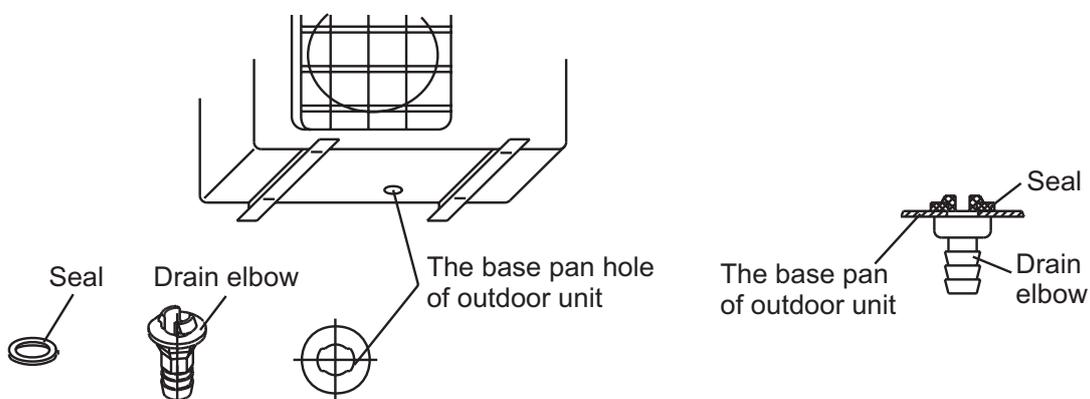


Chart 36

### 3. Install outdoor unit drain pipe(For Centrifugal Fan Outdoor Unit)

- Outdoor unit is equipped with a drain piping. Its position is shown figure below

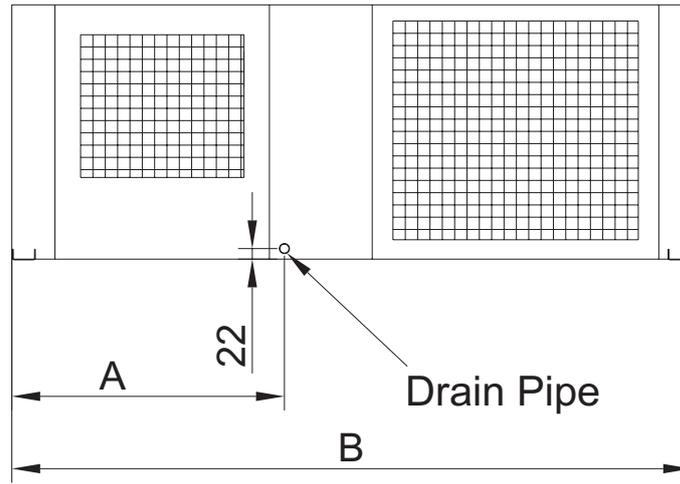


Chart 37

MODEL	A	B
24000	490	1174
30000 36000	534	1381
48000 60000	590	1394

- Prepare a polyviny chloride with 21mm inner diameter
- Fasten the tube to the drain hose with an adhesive and the field-supplied clamp. The drain piping must be performed with a DOWN-SLOPE pitch of 1/25 to 1/100
- Connect a siphon, as shown in figure below

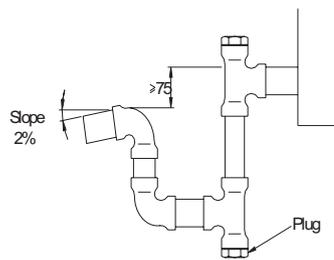
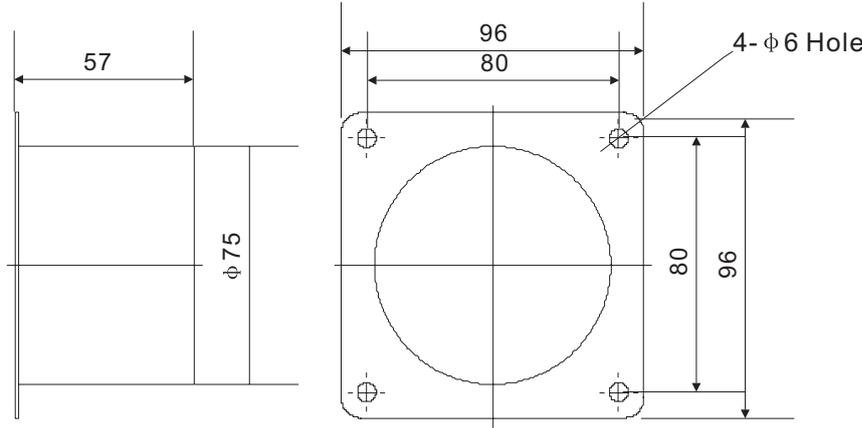


Chart 38

# INSTALLATION OF FLANGE AND DUCT

Fresh air is intaken by indoor fan motors or ductable fan motor devices on field. The positions of fresh air intake can be changed according to the installation of ductable fan motor.



## Note:

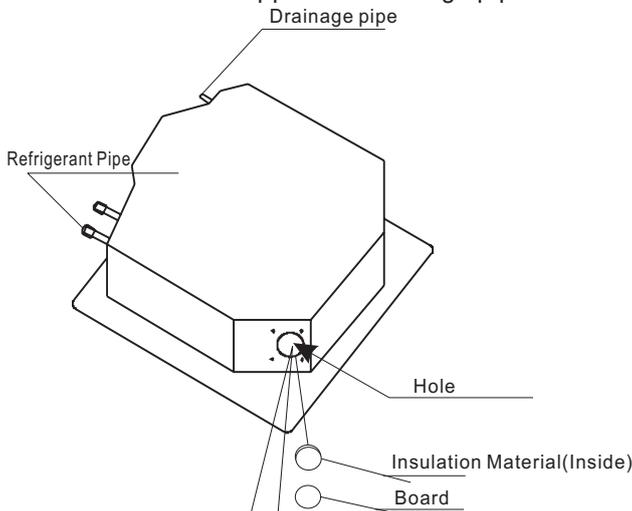
1. The device can be installed in ceiling cassette type indoor units (several-direction flow).
2. When installing the device, duct is needed on field and the rated diameter is 75mm.
3. The max. length of fresh air duct is 3m.

When metal duct pass through wooden wall, electric insulation must be add between duct and wall.  
 The duct must be pulled out downside to prevent rain and water entering.  
 Net cover must be set at places where duct explodes to outdoor air to prevent birds and animals entering.

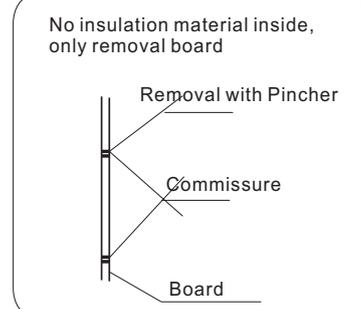
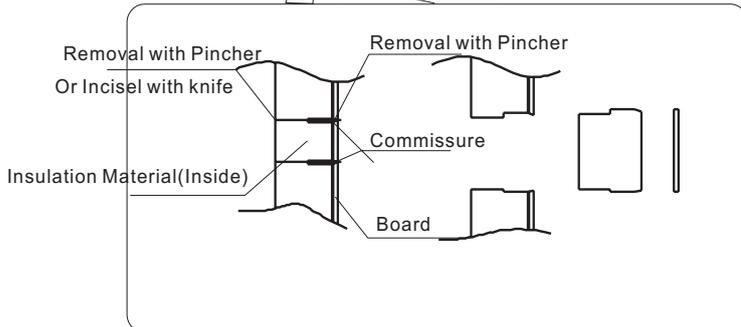
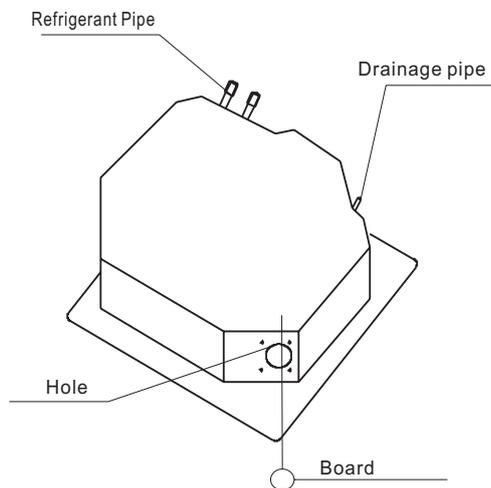
For different type of indoor units, the installation methods are different and the position of holes are different.

1. Removal the hole on the board.

**Installation Type 1**  
The hole is oppose to drainage pipe

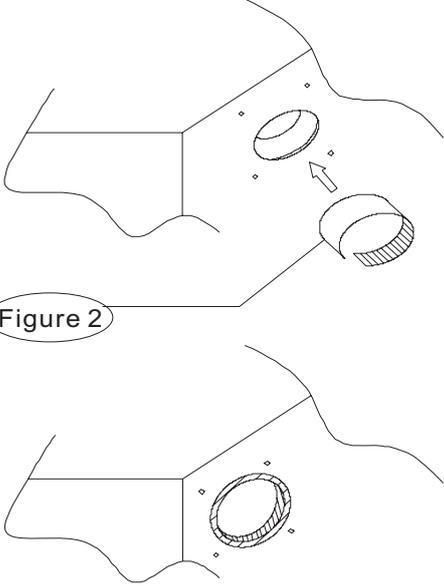


**Installation Type 2**  
The hole is oppose to refrigerant pipe



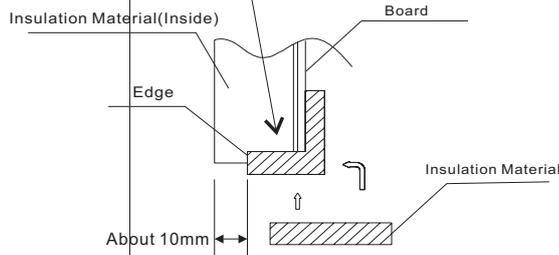
Stick insulation material 4 at indoor hole

Figure 2



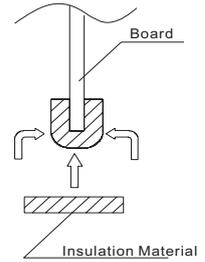
Installation Type 1

Put the insulation material 4 on the interface of the hole as shown in Figure 4, then stick on the inside and surface of the board. The interface of the hole can not have gap.



Installation Type 2

Stick insulation material at the opening part of the board



Ensure the interface of insulation material 4 closely contacts with the inside insulation material and the board.

Use screw 2 (M4X12, 4 Pieces) to install flange at the hole, and then stick insulation material 3.

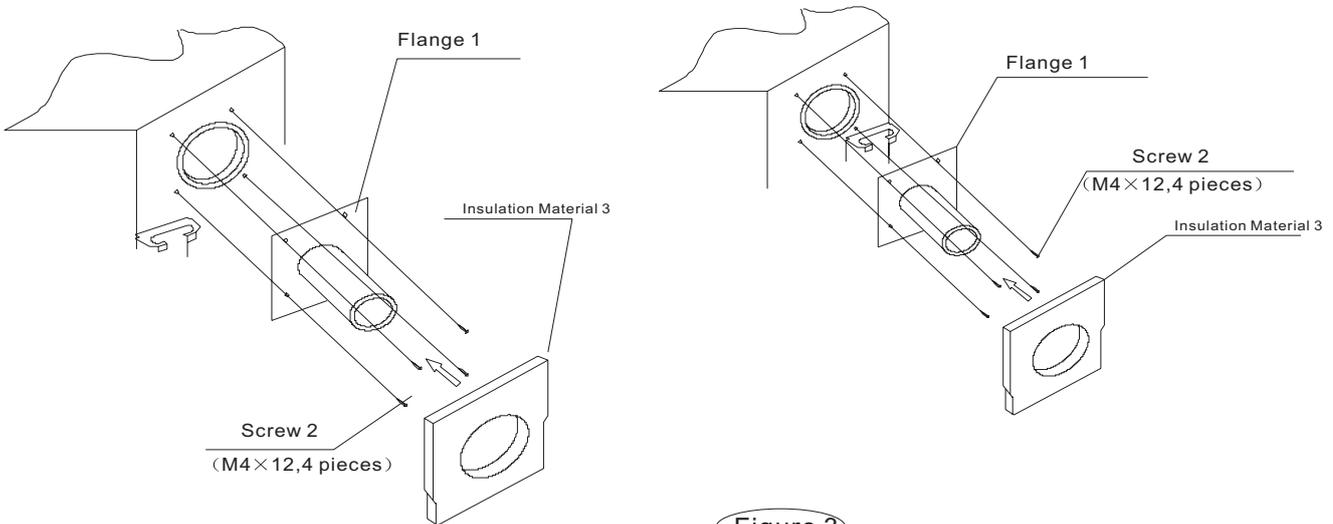
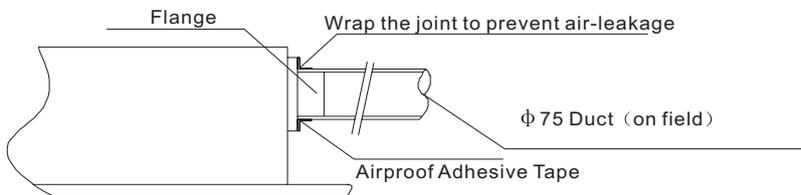


Figure 3

Install Duct (the rated diameter:  $\phi 75$ )

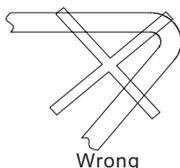
1. Connect the duct to the flange. (the flange is assembled with the interface of duct.)
2. After connection, use the ethylene tape (provided on field) to wrap the joint to prevent air-leakage.



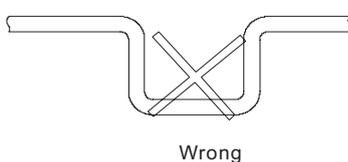
Note:

1. All ducts must be completely heat-insulated.
2. The following phenomenon are not allowed when installing duct:

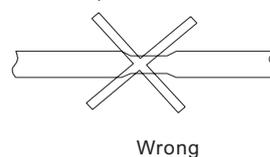
A) Bend too much



B) Too many bender



C) diameter reduce



# WIRING

## CAUTION

1. The air conditioner should use separate power supply with rated voltage.
2. The external power supply to the air conditioner should have ground wiring, which is linked to the ground wiring of the indoor and outdoor unit.
3. The wiring work should be done by qualified persons according to circuit drawing.
4. A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National wiring regulation.
5. Be sure to locate the power wiring and the signal wiring well to avoid cross-disturbance and their contact with connecting pipe or stop valve body.
6. The wiring attached to this air conditioner is 6m long. Be sure to prolong it with wiring of the same type and proper length if necessary. Generally, do not twist two wiring together unless the joint is soldered well and covered with insulator tape.
7. Do not turn on the power until you have checked carefully after wiring.
8. An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.
9. The power cord type designation is H07RN-F.

### ■ The Specification of Power (For Side Air Outlet Outdoor Unit)

TYPE(Btu/h)		18000Btu/h (For R22, Heating&Cooling)	24000Btu/h (For R22, Heating&Cooling)	36000Btu/h (For R22, Heating&Cooling)
INDOOR POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		15/10	15/10	15/10
INDOOR UNIT POWER WIRING(mm <sup>2</sup> )		3x <b>2.5</b>	3x2.5	3x2.5
OUTDOOR POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		30/25	30/25	35/30
INDOOR/OUTDOOR CONNECTING WIRING (mm <sup>2</sup> )	GROUND WIRING	<b>2.5</b>	2.5	2.5
	OUTDOOR UNIT POWER WIRING	3x <b>2.5</b>	3x3.3	3x3.3
	STRONG ELECTRIC SIGNAL	—	—	—
	WEAK ELECTRIC SIGNAL	4x1.0	4x1.0	4x1.0

TYPE(Btu/h)		18000Btu/h (For R22, Cooling)	24000Btu/h (For R22, Cooling)	36000Btu/h (For R22, Cooling)
INDOOR POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		15/10	15/10	15/10
INDOOR UNIT POWER WIRING(mm <sup>2</sup> )		3x <b>2.5</b>	3x2.5	3x2.5
OUTDOOR POWER	PHASE	1-PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		30/25	30/25	35/30
INDOOR/OUTDOOR CONNECTING WIRING  (mm <sup>2</sup> )	GROUND WIRING	<b>2.5</b>	2.5	2.5
	OUTDOOR UNIT POWER WIRING	3x <b>2.5</b>	3x3.3	3x3.3
	STRONG ELECTRIC SIGNAL	—————	—————	—————
	WEAK ELECTRIC SIGNAL	2x1.0	2x1.0	2x1.0

TYPE(Btu/h)		48000Btu/h (For R22, Cooling&Heat)	48000Btu/h (For R22, Cooling)
INDOOR POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		15/10	15/10
INDOOR UNIT POWER WIRING(mm <sup>2</sup> )		3x2.0	3x2.0
OUTDOOR POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		50/45	50/45
INDOOR/OUTDOOR CONNECTING WIRING  (mm <sup>2</sup> )	GROUND WIRING	<b>6.0</b>	6.0
	OUTDOOR UNIT POWER WIRING	3x6.0	3x6.0
	STRONG ELECTRIC SIGNAL	—————	—————
	WEAK ELECTRIC SIGNAL	4x1.0	2x1.0

TYPE(Btu/h)		60K For R22   Cooling	60K For R22   Cooling&Heating
IDU POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE		15/10	15/10
INDOOR UNIT POWER WIRING (mm <sup>2</sup> )		3x1.5	3x1.5
ODU POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		50/45	50/45
OUTDOOR UNIT POWER WIRING (mm <sup>2</sup> )		3x6.0	3x6.0
IDU/ODU CONNECTING WIRING	STRONG ELECTRIC SIGNAL	—————	—————
	WEAK ELECTRIC SIGNAL	2x1.0	4x1.0

TYPE(Btu/h)		36K/48K/60K For R22   Cooling	36K/48K/60K For R22   Cooling&Heating
IDU POWER	PHASE	1-PHASE	1-PHASE
	FREQUENCY AND VOLT	220V~ 60Hz/220-230V~60Hz	220V~ 60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		15/10	15/10
INDOOR UNIT POWER WIRING (mm <sup>2</sup> )		3x1.5	3x1.5
ODU POWER	PHASE	3-PHASE	3-PHASE
	FREQUENCY AND VOLT	208-220V~ 60Hz/220~60Hz/220-230V~60Hz	208-220V~ 60Hz/220~60Hz/220-230V~60Hz
CIRCUIT BREAKER/FUSE (A)		45/40	45/40
OUTDOOR UNIT POWER WIRING (mm <sup>2</sup> )		5x4.0	5x4.0
IDU/ODU CONNECTING WIRING	STRONG ELECTRIC SIGNAL	—————	—————
	WEAK ELECTRIC SIGNAL	2x1.0	4x1.0

### Caution:

A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

## 2. Remove the protection board.

Disassemble the bolts from the maintenance board, and pull it in the direction of the arrow to remove the protection board.

**Notice:** Do not scratch the surface during operation.

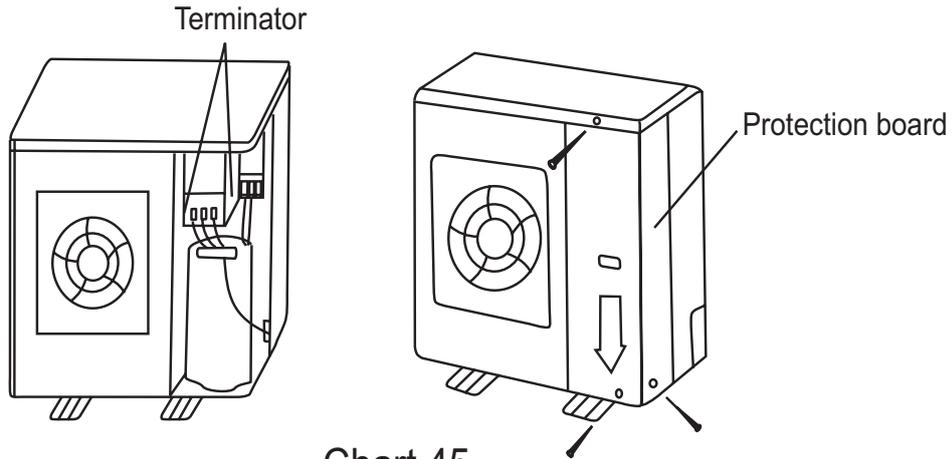


Chart 45

**ATTENTION:** Chart 45 is based on the standard model, which may look a little different from your own outdoor unit.

## ■ Wiring chart (For Side Air Outlet Outdoor Unit)

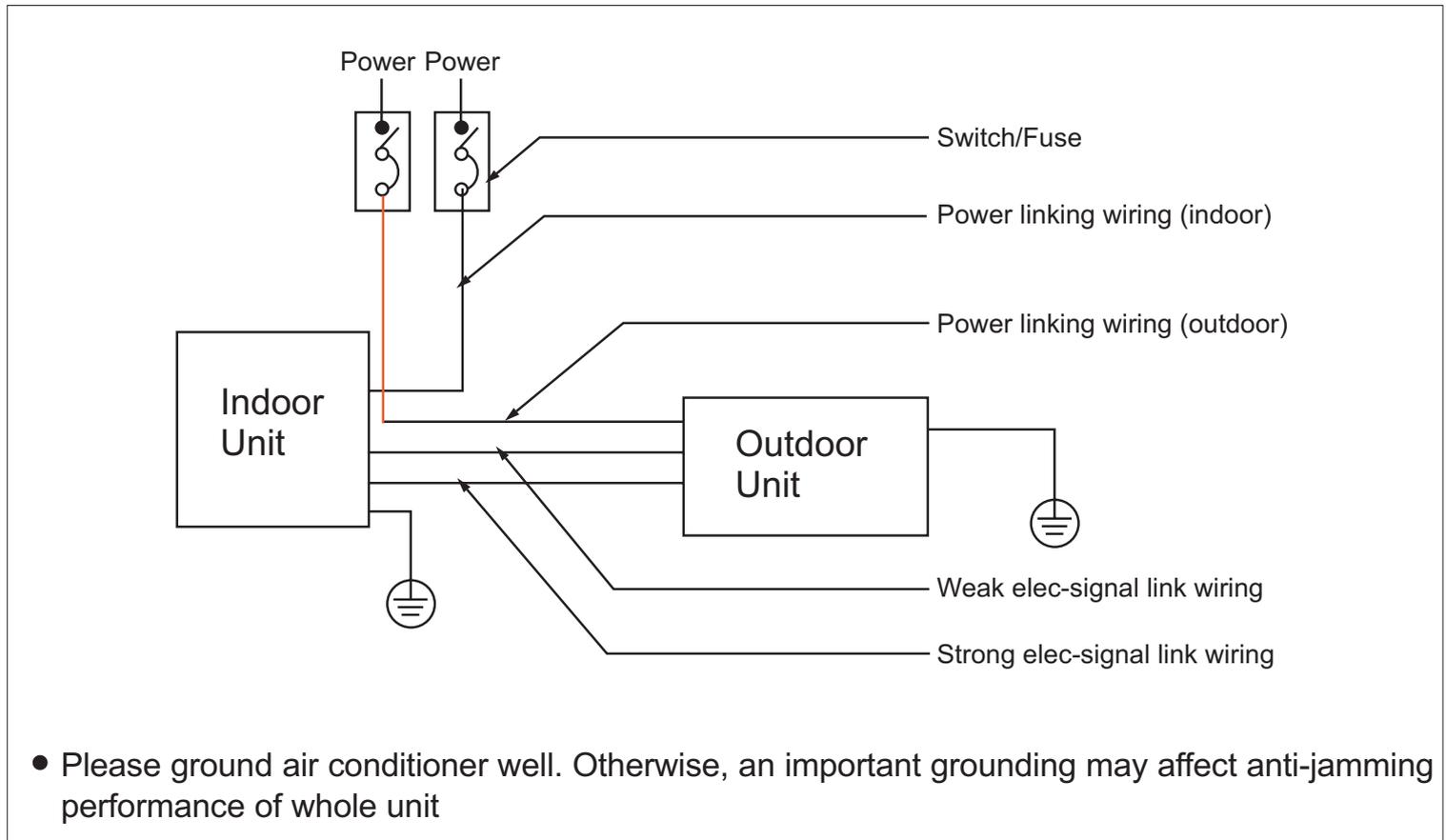
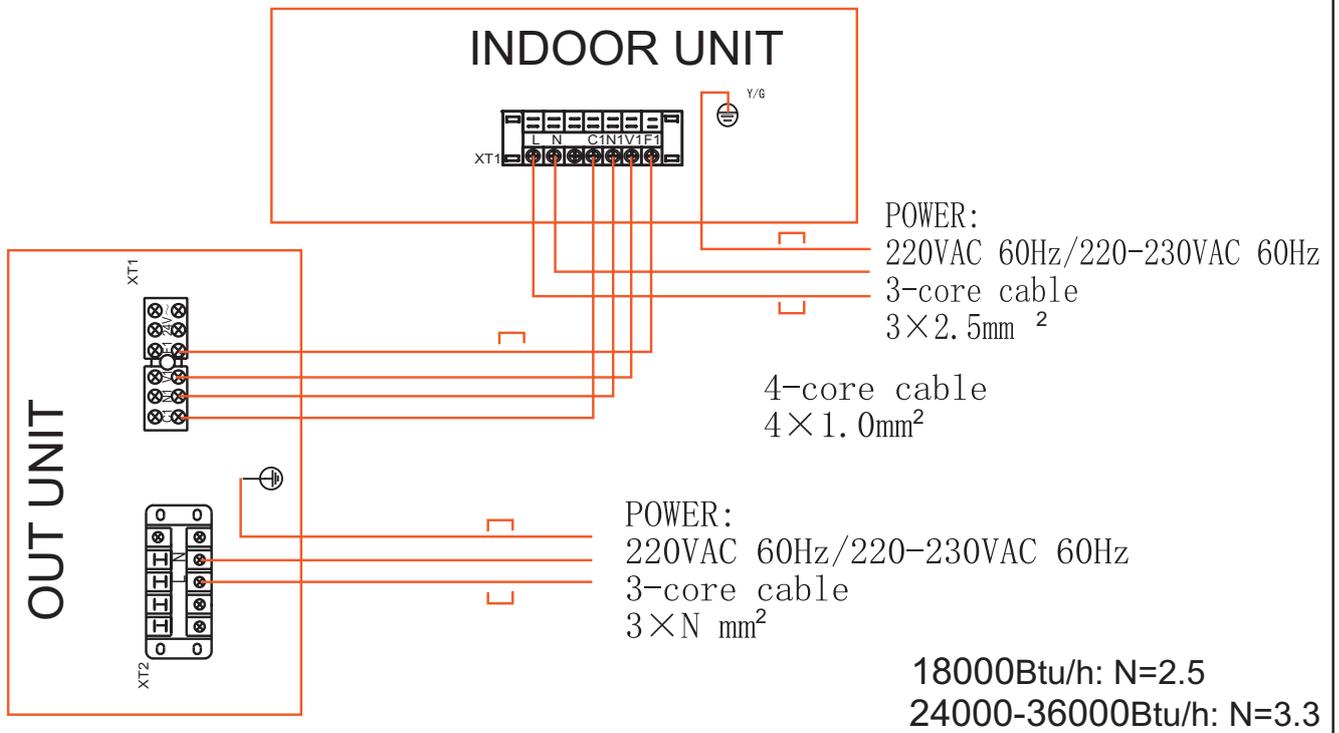


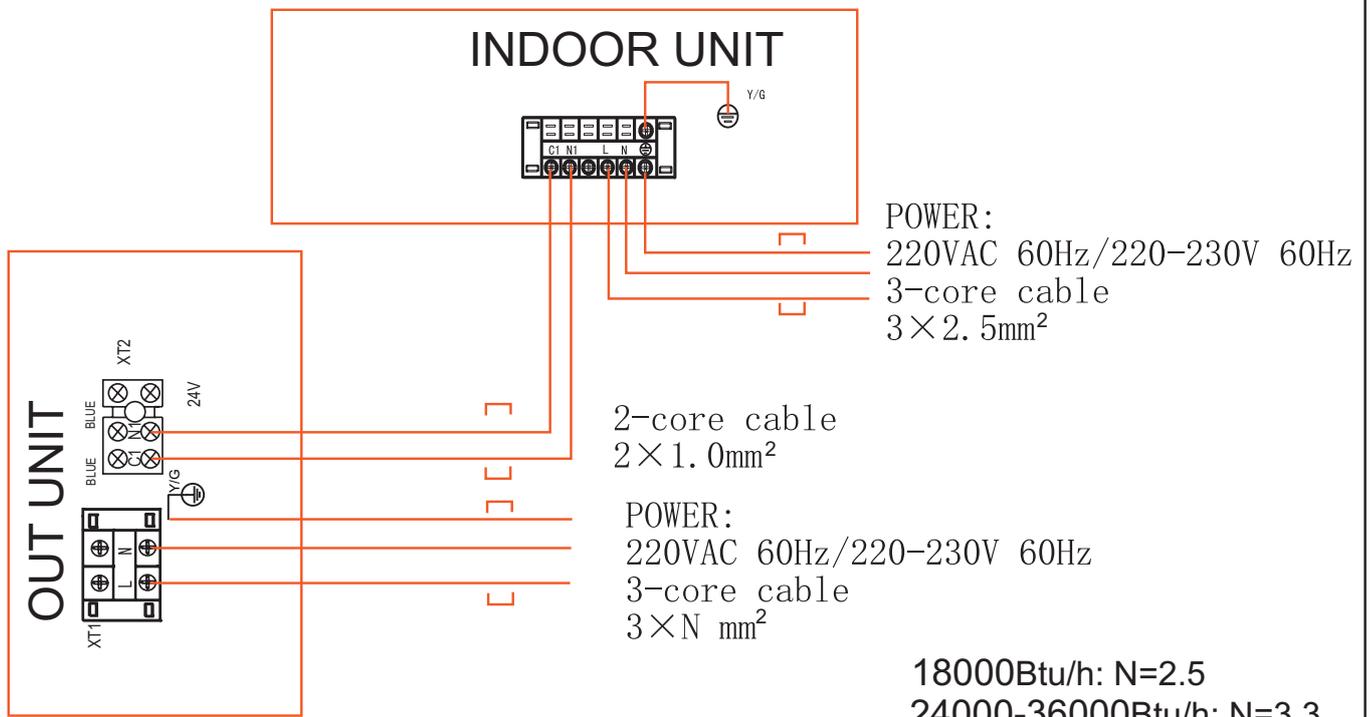
Chart 46

**CAUTION:** The wiring chart of both cooling only type and cooling & heating type in R22, and R410A series are shown as follows. When wiring, please choose the corresponding chart, or it may cause damage.



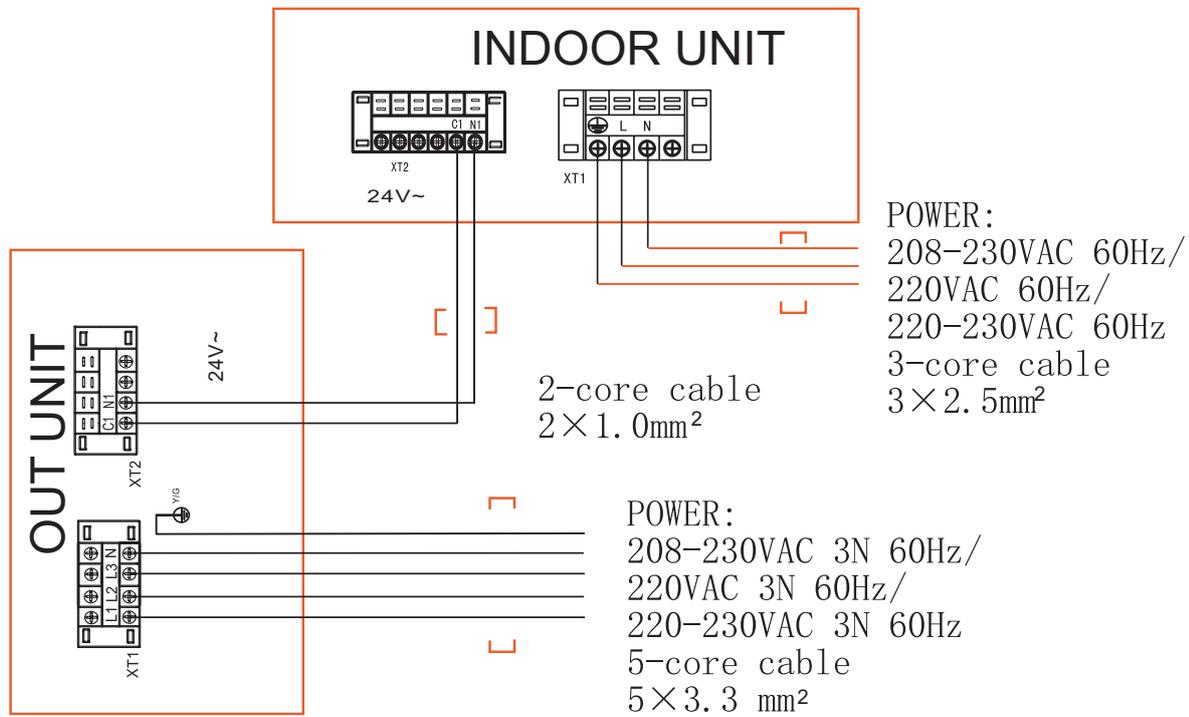
18000-36000Btu/h (1 PHASE, 60Hz) **Air Condition Link-Circuit**  
(For R22, Heating&Cooling )

Chart 47



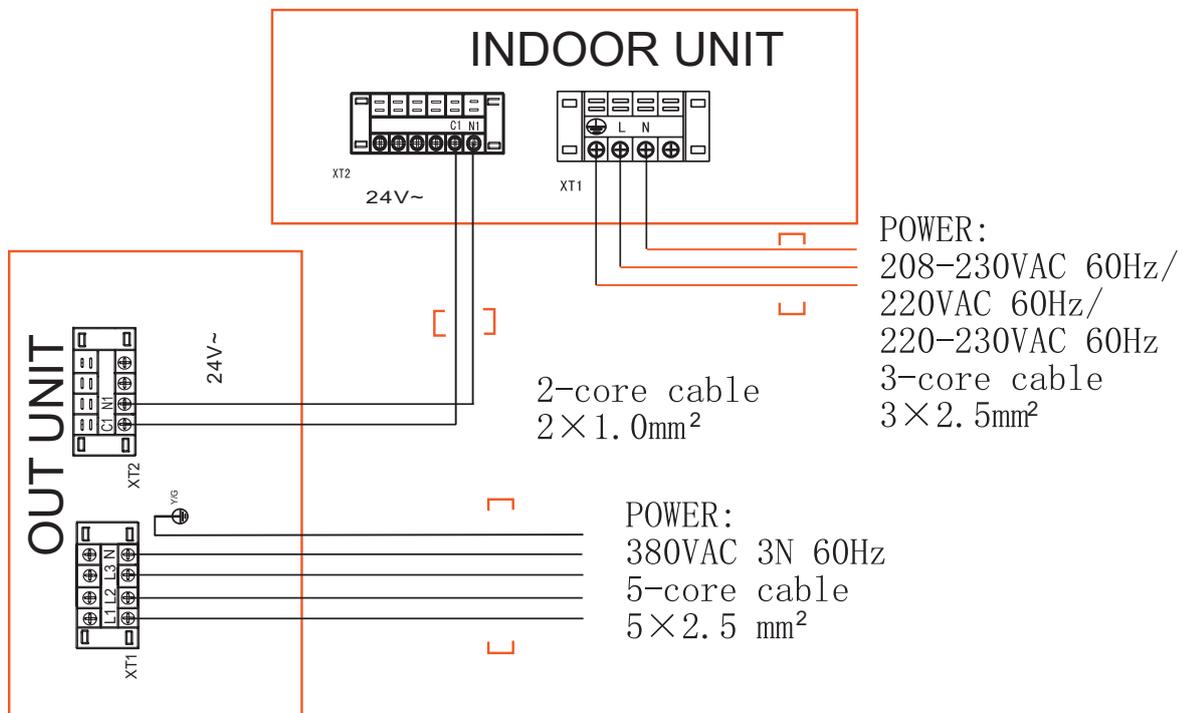
18000-36000Btu/h (1 PHASE, 60Hz) **Air Condition Link-Circuit**  
(For R22 , Cooling )

Chart 48



**48000Btu/h(3 PHASE, 60Hz) Air Condition Link-Circuit**  
(For R22, Cooling )

Chart 49



**48000Btu/h(3 PHASE, 60Hz) Air Condition Link-Circuit**  
(For R22, Cooling )

Chart 50

# TEST OPERATION

1. The test operation must be carried out after the entire installation has been completed.
2. Please confirm the following points before the test operation:
  - The indoor unit and outdoor unit are installed properly.
  - Tubing and wiring are correctly completed.
  - The refrigerant pipe system is leakage-checked.
  - The drainage is unimpeded.
  - The heating insulation works well.
  - The ground wiring is connected correctly.
  - The length of the tubing and the added stow capacity of the refrigerant have been recorded.
  - The power voltage fits the rated voltage of the air conditioner.
  - There is no obstacle at the outlet and inlet of the outdoor and indoor units.
  - The gas-side and liquid-side stop valves are both opened.
  - The air conditioner is pre-heated by turning on the power.
3. According to the user's requirement, install the remote controller frame where the remote controller's signal can reach the indoor unit smoothly.
4. Test operation
  - Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points per the "Owner's Manual". If there is any malfunction, please resolve it as per chapter "Troubles And Cause" in the "Owner's Manual".
    - 1) The indoor unit
      - a. Whether the switch on the remote controller works well.
      - b. Whether the buttons on the remote controller works well.
      - c. Whether the air flow louver moves normally.
      - d. Whether the room temperature is adjusted well.
      - e. Whether the indicator lights normally.
      - f. Whether the temporary buttons works well.
      - g. Whether the drainage is normal.
      - h. Whether there is vibration or abnormal noise during operation.
      - l. Whether the air conditioner heats well in the case of the HEATING/COOLING type.
    - 2) The outdoor unit
      - a. Whether there is vibration or abnormal noise during operation.
      - b. Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
      - c. Whether any of the refrigerant is leaked.

## CAUTION

A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it is restarted immediately after shut off.

# QSQ4I-006AEN

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

202000192203  
2010.12.07