

# INSTALLATION MANUAL

*Split Universal Type*

Thank you very much for purchasing our air conditioner,  
Before using your air conditioner , please read this manual carefully and keep it for future reference.

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# 1. PRECAUTIONS

- **Be sure to be in conformity with the local, national and international laws and regulations.**
- **Read "PRECAUTIONS" carefully before installation.**
- **The following precautions include important safety items. Observe them and never forget.**
- **Keep this manual with the owner's manual in a handy place for future reference.**

The safety precautions listed here are divided into two categories.



## WARNING

Failure to observe a warning may result in death.



## CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained. Also, inform customers that they should store this installation manual along with the owner's manual for future reference.



## WARNING

**Be sure only trained and qualified service personnel to install, repair or service the equipment.**

Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.

**Install according to this installation instructions strictly.** If installation is defective, it will cause water leakage, electrical shock and fire.

**Use the attached accessories parts and specified parts for installation.**

otherwise, it will cause the set to fall, water leakage, electrical shock and fire.

**Install at a strong and firm location which is able to withstand the set's weight.**

If the strength is not enough or installation is not properly done, the set will drop to cause injury.

**The appliance shall not be installed in the laundry.**

**Before obtaining access to terminals, all supply circuits must be disconnected.**

**The appliance must be positioned so that the plug is accessible.**

**The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.**

**For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used.**

If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock or fire.

**Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal.**

If connection or fixing is not perfect, it will cause heat-up or fire at the connection.

**Wiring routing must be properly arranged so that control board cover is fixed properly.**

If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.

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

**An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.**

**When carrying out piping connection, take care not to let air substances go into refrigeration cycle.**

Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.

**Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.**

Otherwise, it will cause fire or electrical shock.

**Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.**

Improper installation work may result in the equipment falling and causing accidents.

**If the refrigerant leaks during installation, ventilate the area immediately.**

Toxic gas may be produced if the refrigerant comes into the place contacting with fire.

**The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.**

**After completing the installation work, check that the refrigerant does not leak.**

Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.



## CAUTION

### **Ground the air conditioner.**

Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Incomplete grounding may result in electric shocks.

### **Be sure to install an earth leakage breaker.**

Failure to install an earth leakage breaker may result in electric shocks.

**The appliance is not intended for use by young children or infirm persons without supervision.**

### **Don't install the air conditioner in the following locations:**

- There is petrolatum existing.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- The Volt vibrates violently (in the factories).
- In buses or cabinets.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic wave existing.
- There are inflammable materials or gas.
- There is acid or alkaline liquid evaporating.
- Other special conditions.

## 2. INSTALLATION INFORMATION

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- **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.**
  - **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.**
  - **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.**
- 

### INSTALLATION ORDER

- Select the location;
- Install the outdoor unit;
- Install the connecting pipe ;
- Wiring;

### 3. OUTDOOR UNIT INSTALLATION

#### 3.1 Installation Place

■ The outdoor unit should be installed in the location that meets the following requirements:

- 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.
- It is easy to install the connecting pipes or cables.
- Determine the air outlet direction where the discharged air is not blocked.
- There is no danger of fire due to leakage of inflammable gas.
- The piping length between the outdoor unit and the indoor unit may not exceed the allowable piping length.
- In the case that the installation place is exposed to strong wind such as a seaside, make sure the fan operating properly by putting the unit lengthwise along the wall or using a dust or shield. (Refer to Fig.6-1)
- 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.
- Select the position where it will not be subject to snow drifts, accumulation of leaves or other seasonal debris. If unavoidable, please cover it with a shelter.
- Locate the outdoor unit as close to the indoor unit as possible.
- 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 (M,N,P) (Refer to Fig.6-5)

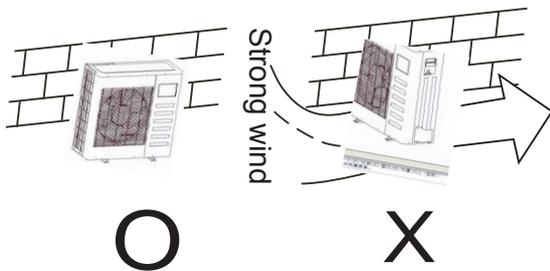


Fig.3-1



#### NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased (depend on model). The actual shape shall prevail.

#### 1. Split type outdoor unit

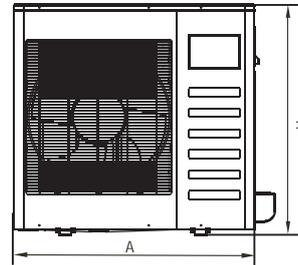


Fig.3-2

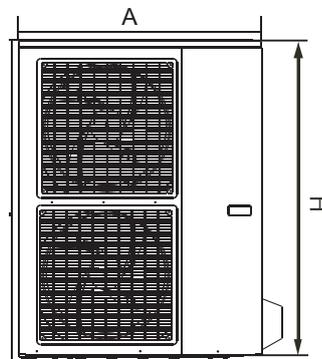


Fig.3-3

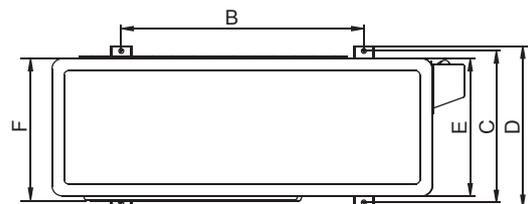


Fig.3-4

Table 3-1

MODEL	mm							
	A	B	C	D	E	F	H	
18	842	560	335	360	312	73	695	Fig.6-2
24	895	590	333	355	302	80	862	Fig.6-2
30	990	624	366	396	340	85	966	Fig.6-2
36	900	590	378	400	330	86	1167	Fig.6-2

## 3.2 Space of installation and maintenance

### 1. Split type outdoor unit

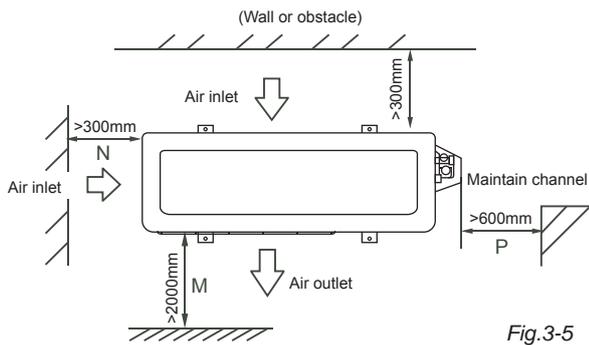


Fig.3-5

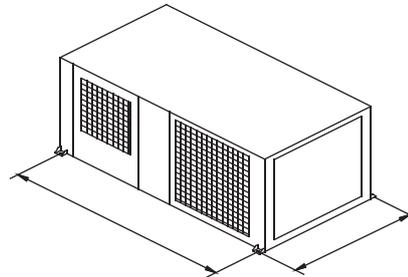
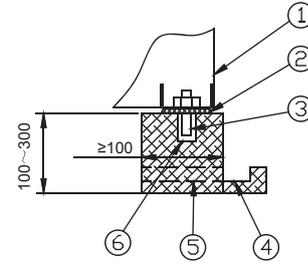


Fig.3-7

## 3.3 Moving and installation

- Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the inlet 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.
- Make concrete foundation according to the specifications of the outdoor units. (Refer to Fig.6-12)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind. (Refer to Fig.6-12)

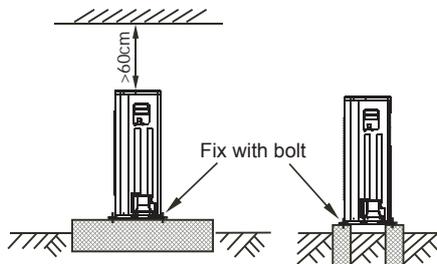


Fig.3-6

### ■ Concrete Foundation

- 1 Foundation could be on flat and is recommended be 100-300mm higher than ground level.
- 2 Install a drainage around foundation for smooth drain
- 3 When installing the outdoor unit fix the unit by anchor bolts of M10.
- 4 When installing the unit on a roof or a veranda, drain water sometimes turns to ice on a cold morning. Therefore, avoid draining in an area that people often use because it is slippery.

Table 3-2

No	Description
1	Outdoor Unit
2	Vibration-proof rubber
3	Anchor Bolt M10
4	Drainage (Wide 100×Depth 150)
5	Drainage
6	Mortar Hole (Φ100×Depth 150)

Table 3-3

MODEL Unit	B	C
18~24	1120	720
30~36	1328	740
48	1338	820

mm

### ■ Suspended unit

1. Suspend the unit as the drawing indicates.
2. Ensure that ceiling can resist the Outdoor unit weight indicated in specification label plate.

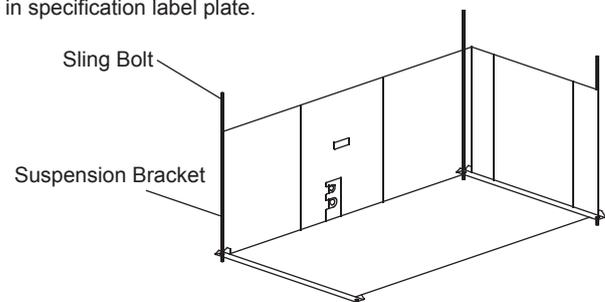


Fig.3-8

## 4. INSTALL THE CONNECTING PIPE

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:

Table 4-1

The type of models	Model	The length of refrigerant pipe	The max height drop
50Hz T1 condition/R22 Split type air conditioner	12K	15	8
	18K-24K	30	10
	30K-42K	50	20
	48K-60K	50	25
50Hz Vertical discharge air conditioner /60Hz T1 condition/R22 Split type air conditioner and Vertical discharge air conditioner	12K	15	8
	18K-24K	30	10
	30K-60K	30	20
R410A inverter Split type air conditioner and and Centrifugal fan outdoor unit	12K	10	5
	18K-24K	25	12
	30K	25	15
	36K	30	20
R410A Split type air conditioner and and Centrifugal fan outdoor unit	12K	15	8
	18K-30K	25	15
	36K	30	20
	48K-60K	50	25
50Hz/60Hz T3 condition (outdoor unit down)	18K-24K	25	10
	30K	30	15
	36K	30	20
	42K-60K	50	25
50Hz/60Hz T3 condition (outdoor unit up)	18K-24K	25	15
	30K	30	20
	36K	30	25
	42K	50	30
the unit with quick joint	48K-60K	50	35
	12K-18K	5	5



### CAUTION

All field piping must be provided by a licensed refrigeration technician and must comply with the relevant local and national codes.

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.

Execute heat insulation work completely on both sides of the gas piping and the liquid piping. Otherwise, this can sometimes result in water leakage.

## 4.1 The Procedure of Connecting Pipes

- 1 Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.
- 2 Bind the connecting pipe and the cables together tightly with binding tapes.  
Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do on damage to the tubing.
- 3 Connect the pipes. Refer to "How to Connect the pipes" for details.
- 4 Expel the air with a vacuum pump. Refer to "How to expel the air with a vacuum pump" for details.
- 5 open the stop valves of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.
- 6 Check the leakage. Check all the joints with the leak detector or soap water.
- 7 Cover the joints of the connecting pipe with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.



### CAUTION

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.

## How to connect the pipes

### 1 Flaring

- Cut a pipe with a pipe cutter. (refer to Fig.8-1)

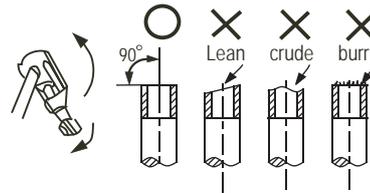


Fig.4-1

- Insert a flare nut into a pipe and flare the pipe.
- Refer to Table 8-2 for the dimension of flare nut spaces.

Table 4-2

Pipe gauge	Tightening torque	Flare dimension A		Flare shape
		min (mm)	max	
Ø6.4	14.2~17.2 N·m (144~176 kgf·cm)	8.3	8.3	
Ø9.5	32.7~39.9 N·m (333~407 kgf·cm)	12.0	12.4	
Ø12.7	49.5~60.3 N·m (504~616 kgf·cm)	15.4	15.8	
Ø15.9	61.8~75.4 N·m (630~770 kgf·cm)	18.6	19.0	
Ø19.1	97.2~118.6 N·m (990~1210 kgf·cm)	22.9	23.3	

## 2 Connect the indoor unit at first, then the outdoor unit.

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

Bend the pipe with thumb



min-radius 100mm

Fig.4-2

- 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.
- When connecting the flare nut, coat the flare both inside and outside with either oil or ester oil and initially tighten by hand 3 or 4 turns before tightening firmly.

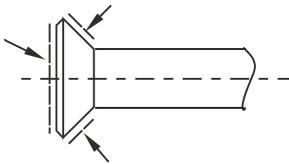


Fig.4-3

- Be sure to use both a spanner and torque wrench together when connecting or disconnecting pipes to /from the unit. (Fig.8-4)

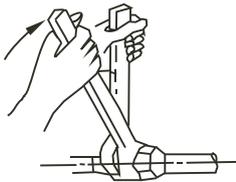


Fig.4-4



### CAUTION

Too large torque will harm the bellmouthing and too small will cause leakage. Please determine the torque according to Table 4-2.

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

## ■ How to expel the air with a vacuum pump

### • Stop valve operation introduction

#### 1. Opening stop valve

- Remove the cap and turn the valve counterclock-wise with the hexagon wrench.
- Turn it until the shaft stops. Do not apply excessive force to the stop valve. Doing so may break the valve body, as the valve is not a backseat type. Always use the special tool.
- Make sure to tighten the cap securely.

#### 2. Closing stop valve

- Remove the cap and turn the valve clockwise with the hexagon wrench.
- Securely tighten the valve until the shaft contacts the main body seal.

Make sure to tighten the cap securely.

For the tightening torque, refer to the table below.

Table 4-3

Tightening torque N.M (Turn clockwise to close)				
Stop Valve size	Shaft (valve body)		Cap (Valve lid)	Maintenance nut
Ø6.4	5.4~6.6	Hexagonal wrench 4 mm	13.5~16.5	11.5~13.9
Ø9.5			18~22	
Ø12.7	8.1~9.9	Hexagonal wrench 6 mm	23~27	
Ø15.9	13.5~16.5		36~44	
Ø22.2	27~33	Hexagonal wrench 10 mm		
Ø25.4				



### CAUTION

Always use a charge hose for service port connection.

After tightening the cap, check that no refrigerant leaks are present.

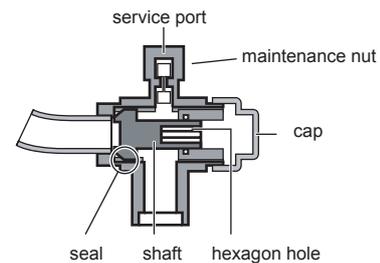


Fig.4-5

#### • Using the vacuum pump

- Loosen and remove the maintenance nuts of stop valves A and B, and connect the charge hose of the manifold valve to the service port of stop valve A. (Be sure that stop valves A and B are both closed)
- Connect the joint of the charge hose with the vacuum pump.
- Open the Lo-lever of the manifold valve completely.
- Turn on the vacuum pump. At the beginning of pumping, loosen the maintenance nut of stop valve 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 maintenance nut.
- When the pumping has finished, close the Lo-lever of the manifold valve completely and turn off the vacuum pump. Make pumping for 15 minutes or more and check that the compound meter indicates  $-76\text{cmHg}(-1 \times 10^5\text{Pa})$
- Loosen and remove the cap of stop valves A and B to open stop valve A and B completely, then fasten the cap.
- Disassemble the charge hose from the service port of stop valve A, and fasten the nut.

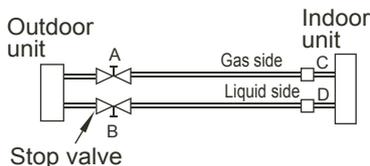


Fig.4-6

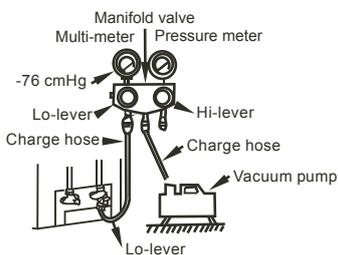


Fig.4-7

## 4.2. Refrigerant pipe installation

### Allowed Length and Drop of Pipes

Requirements are different when installing the outdoor unit, please refer to outdoor unit installation manual for detailed information.

### Material and Size of the Pipes

Three length(3m,5m,10m)of pipes are available to purchase.



## CAUTION

- Ventilate the air if there was any refrigerant leakage during the installation. Leaked refrigerant will generate poisonous gas if meeting fire.
- Make sure there is no refrigerant leakage after the installation. Leaked refrigerant will generate poisonous gas if meeting fire.

## 4.3 Additional Refrigerant Charge

The outdoor unit is factory charged with refrigerant. Some systems require additional charging of refrigerant depending on pipe lengths. The additional refrigerant to be charged can be calculated from the following formule:

$$R = T \times (L-5)m$$

R(g): Additional refrigerant to be charged  
 L(m): The length of the liquid pipe  
 T(g): The quantity of the charged refrigerant per meter

Table 4-4

MODEL	18	24	30	36	48	60
T (g)	11	30	30	30	30	30



## CAUTION

Refrigerant cannot be charged until field wiring has been completed.

Refrigerant may only be charged after performing the leak test and the vacuum pumping.

When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.

Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.

Refrigerant containers shall be opened slowly.

Always use protective gloves and protect your eyes when charging refrigerant.

## 5. CONNECTIVE DIAGRAM

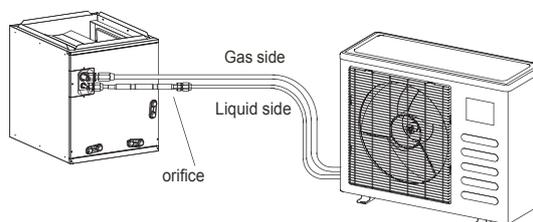


Fig. 5-1

## 6. WIRING

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

The air conditioner should use separate power supply with rated voltage.

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.

The wiring work should be done by qualified persons according to circuit drawing.

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.

Be sure to locate the power wiring and the signal wiring well to avoid cross-disturbance.

Do not turn on the power until you have checked carefully after wiring.

The power cord type designation is H07RN-F.



## 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 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.

## 6.1 Connect the cable

- Disassemble the bolts from the cover.(If there isn't a cover on the outdoor unit, disassemble the bolts from the maintenance board, and pull it in the direction of the arrow to remove the protection board.)  
(Refer to Fig.6-1)
- Connect the connective cables to the terminals as identified with their respective mached numbers on the terminal block of indoor and outdoor units.
- Re-install the cover or the protection board.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

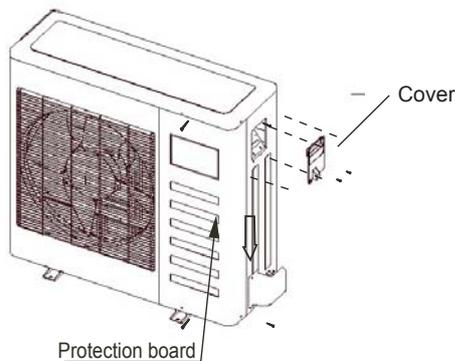


Fig.6-1



## NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

## 6.2 The Specification of Power

(Refer to Table6-1)

## 6. Outdoor unit

1. Remove the electric parts cover from the outdoor unit.
2. Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of indoor and outdoor units. (Connective cable sheath length to be removed and insert into the terminal block.)
3. To prevent the ingress off water, from a loop of the connective cable as illustrated in the installation diagram of indoor and outdoor units.
4. Insulate unused cords (conductors) with PVC-tape. Process them so they do not touch any electrical or metal parts.

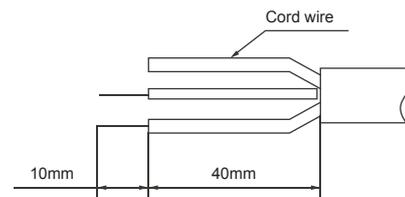


Fig.6-2



## CAUTION

Wrong wiring connections may cause some electrical parts to malfunction.

Table 6-1

MODEL		18	24	30	36
POWER (outdoor)	PHASE	1Phase	1Phase	1Phase	1Phase
	VOLT	208/230V	208/230V	208/230V	208/230V
CIRCUIT BREAKER/FUSE(A)		15	20	25	35

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



























