

A I R C O N D I T I O N I N G S Y S T E M S

Models: V3MFI-24 / V3MFO-24

Floor Standing Unit



Installation Manual

English



Thank you for choosing INVENTOR air conditioning system. For correct use of this unit, please read this manual carefully and keep it for future reference.



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Read This Manual

Inside you will find many helpful hints on how to install and test the air conditioner properly.
All the illustrations and specifications in the manual are subject to change without prior notice for product improvement. The actual shape should prevail.



CAUTION

- Contact an authorised service technician for repair or maintenance of this unit.
- Contact an authorised installer for installation of this unit.
- The air conditioner is not intended for use by young children or infirmed persons without supervision.
- Young children should be supervised to ensure that they do not play with the air conditioner.
- If the power cord is to be replaced, replacement work shall be performed by authorised personnel only.
- Installation work must be performed in accordance with the national wiring Standards by authorised personnel only.

SAFETY PRECAUTIONS

- Read the follow SAFETY PRECAUTIONS carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating and main circuit for the model to be installed.
- Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

 WARNING	This symbol indicates the possibility of death or serious injury.
 CAUTION	This symbol indicates the possibility of injury or damage to property.

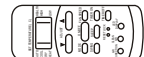
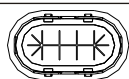
The items to be followed are classified by the symbols:

	Symbol will background white denotes item that is PROHIBITED from doing.
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 WARNING	
1) Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock, or fire.	
2) Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock, or fire.	
3) Use the attached accessories parts and specified parts for installation. otherwise, it will cause the set to fall, water leakage, electrical shock, or fire.	
4) 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 and cause injury.	
5) 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 found in electrical work, it will cause fire or electrical shock.	
6) 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.	
7) 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.	
8) When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9) 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.	
 CAUTION	
1) This equipment must be earthed and installed with earth leakage current breaker. It may cause electrical shock if grounding is not perfect.	
2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.	
3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.	
4) The appliance shall be installed in accordance with national wiring regulations.	
5) Do not operate your air conditioner in a wet room such as a bathroom or laundry room.	
6) An all-pole disconnection device which has at least 3mm clearances in all poles , and have a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.	

ITEMS PACKED WITH THE UNIT

Before installing, please check the available accessories according to the list given below.
Please carefully keep the temporarily useless parts.

NO.	Part Name		Quantity	Illustrations
1	Safety Lock		1	
2	Self-tapping Screw 3.9×25		2	
3	Flat Washers		2	
4	Bushing-Sleeve Cover		1	
5	Sound/Heat Insulation Sleeves		2	
6	Seal ring		1	
7	Drain joint		1	
8	Band	on some models	2	
9	Drain Hose		1	
10	Remote Battery		2	
11	Remote Control		1	
12	Connection Cables	on some models	1	
13	Putty		1	
14	Ratproof board		1	
15	Installation manual		1	
16	User's manual		1	
17	Remote controller manual		1	
18	Remote controller holder	Optional parts	1	
19	Self-tapping Screw B ST2.9×10		2	
20	Self-tapping Screw ST3.9×12		1	

Refrigerant Pipe (optional)				
NO.	Name	capacity(Btu/h)	≤18000	21000~36000
21	Liquid Side Size		Diam.: 6.35mm	Diam.: 9.52mm
22	Gas Side Size		Diam.: 12.7mm	Diam.: 15.8mm
				36000~55000
				Diam.: 12.7mm
				Diam.: 19.0mm

- If there is any difference between the above table and the Packing List, the Packing List shall prevail.

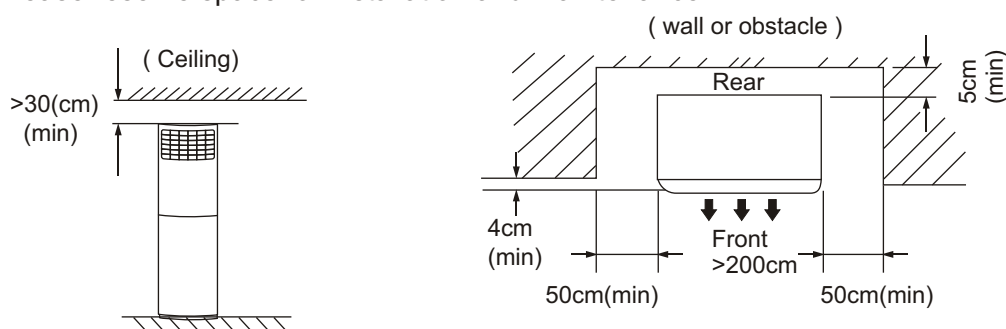
SELECTING INSTALLATION PLACE

1-1 Indoor Unit

- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- Do not install the unit near the door way.
- There should not be any direct sunlight. Otherwise, the sun will fade the plastic cabinet and affect its appearance. If unavoidable, sunlight prevention should be taken into consideration.

(1) ☐ Please stand the unit in hard and flat ground;

☐ Please reserve space for installation and maintenance.



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.

(2) Please check the elevation difference between the indoor unit and the outdoor unit, the length of the refrigerant pipe, and the curved places (bend) of the pipe are no more than the following numbers:

Elevation difference: no more than 10 M (if the elevation difference between indoor and outdoor unit is more than 10 meters, it is recommended that the outdoor unit be located lower than the indoor unit.)

Pipe length: no more than 20 M

Bends: no more than 5 places

1-2 Outdoor Unit

The outdoor unit should be put in a position that guarantees the minimum space for sufficient air circulation and to allow maintenance work and the connections of electrical and refrigerant circuit lines. It may be installed on a floor or flat roof or wall-mounted, provided its weight is properly supported and there is no transmission of vibration to the adjacent rooms.

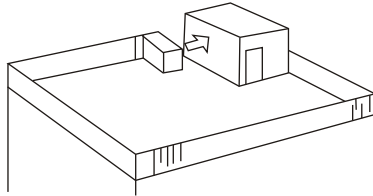
(1) Before installing the outdoor unit, you should:

- ☐ If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- ☐ Select a place that is easy to connect indoor unit's pipe and electric wires.
- ☐ Avoid a place where combustible gas may leak or stay.
- ☐ Keep it in mind that water may drain out of the outdoor unit while in "Heat" mode.
- ☐ Ensure the space around the back and sides and the front of the unit.
- ☐ Take the air conditioner weight into account and select a place where noise and vibration are minimum.

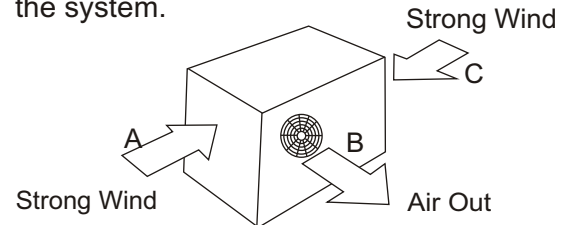
- (2) If the outdoor unit is to be installed on a roof or where no constructions are around, you should avoid hard wind blows directly to the air outlet, because it may cause trouble for air-flow shortage.

For example:

Let the air outlet face a wall (if there is one) with a distance about 300 centimeters between them.



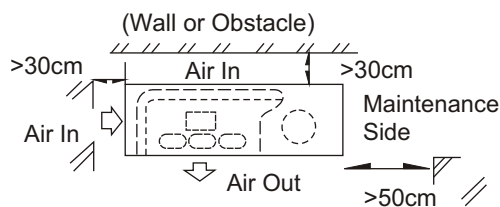
Try to make the air outlet vertical to wind direction if it is known in the season you use the system.



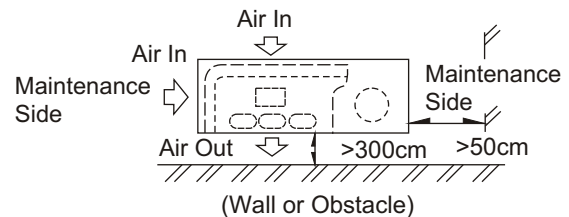
In directions (A), (B), (C), leave open two of the three directions.

- (3) □ Reserve enough space for installation, maintenance and unit-functioning.
□ Remove as many obstacles as possible nearby.

When the air-in surface is facing a wall



When the air-out surface is facing a wall



Caution

- Installation in the following places may cause trouble. If it is unavoidable to use 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 facility.
- (6) A place of special environmental conditions.

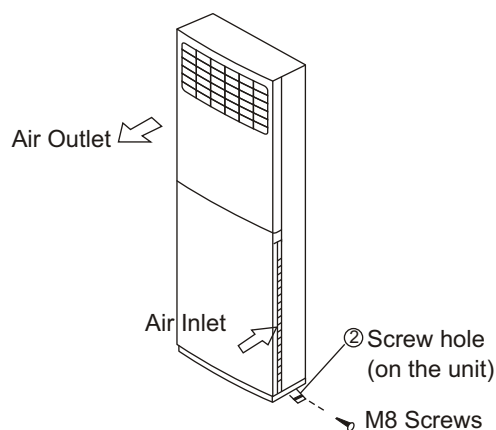
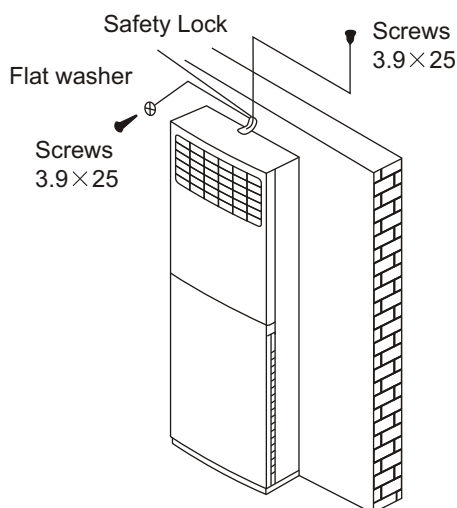
INSTALLATION INSTRUCTIONS

1 Indoor Unit

(1) Anti-falling

To prevent the indoor unit from falling, you must:

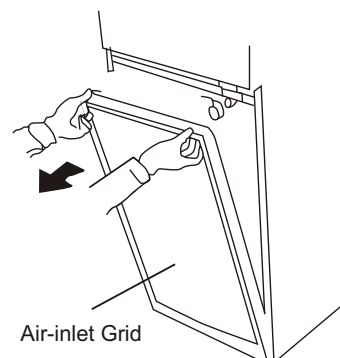
- Pay full attention to the unit because its long outer shape makes it easy to fall;
- Firmly fix the unit to the wall(using 2 3.9*25 screws) or in the ground(by using 2 M8 screws fix the chassis on the ground) to avoid accidental falling.



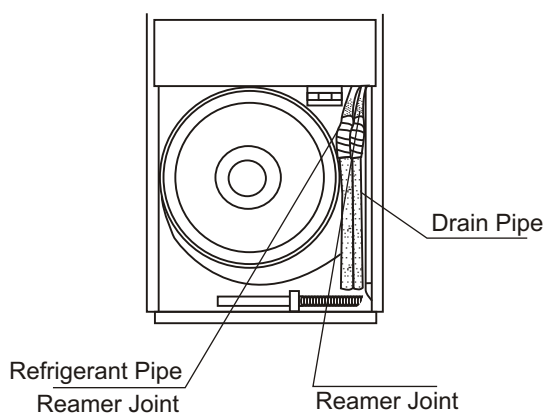
(2) Dismounting the air-inlet grid

Please take off the air-inlet grid before connecting the pipes/wires.

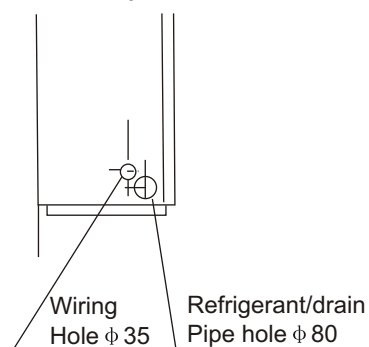
The grid is hitched by a loop inside. To dismount the air-inlet grid, hold both sides of the grid and pull it up, let it slant downwards until the loop become straight. Then removing the screws fastened the loop with the grid, and the grid goes free.



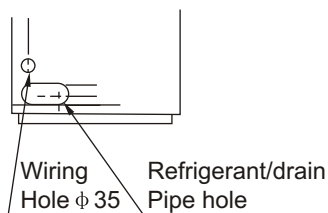
- (3) □ Take the Pipe Clip off before connecting the pipes and wiring; fit it when these finished.
 □ Use accessories 4 and 8 to connect the pipes/wires on both sides and back side.



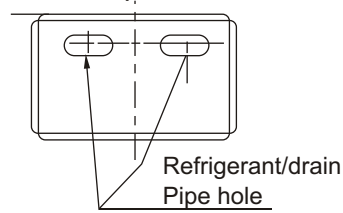
Pipe/wire-hole positions on both sides



Pipe/wire-hole position on back side

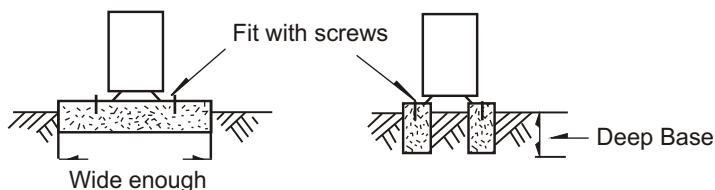


Pipe/wire-hole position on the bottom

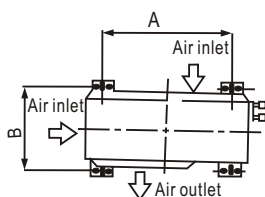


2 Outdoor Unit

- ❑ Ship the air conditioner to the installation place originally packed;
- ❑ Be careful while hanging the unit because the center of gravity of the unit is not centralized;
- ❑ Do not make the angle of inclination more than 45 degrees while shipping;(Avoid horizontal storage)
- ❑ Be sure the electric insulation work is well done if installed on metal ceiling / wall.



- ❑ Fix the unit feet with bolts (M10/M8). Be sure the unit is fixed strongly enough to against blast or earthquake.
- ❑ Make a concrete basement to the unit by the above references.



Outdoor unit dimension mm(WxHxD)	Mounting dimensions	
	A(mm)	B(mm)
810x558x310	549	325
845x700x320	560	335
900x860x315	590	333
990x965x345	624	366
900x1170x350	590	378
938x1369x392	634	404

REFRIGERANT PIPE CONNECTION

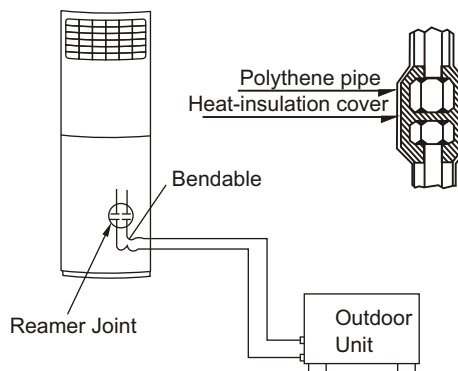
The refrigerant pipe and the drain pipe should be heat-insulated to avoid condensing and water-dropping.

A reamer joint is adopted to connect the indoor unit with the outdoor unit.

The refrigerant pipe is used to connect indoor and outdoor units, showed as below.

NOTE

- ❑ The bendable pipe must not be curved for more than 3 times.
- ❑ Cover all exposed reamer joint pipes and refrigerant pipes with heat-insulation material.

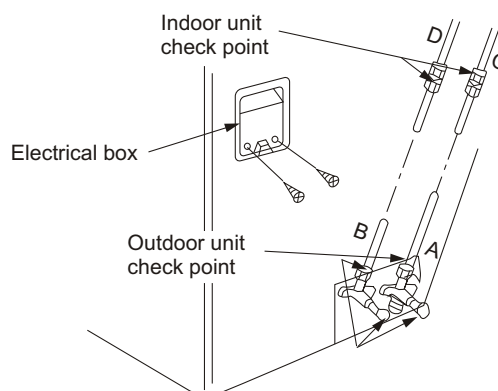


1. Connecting Of Refrigerant Pipe

- (1) Only the correctly installing of indoor and outdoor unit done, can the refrigerant pipe be connected.
- (2) The cut-off valves are completely closed before ex-work. Before connecting the refrigerant pipe, be careful to check whether the valves are completely close.
- (3) The connecting procedure of refrigerant pipe: first, unscrew the two valves on the outdoor unit and the pipe-jointing nut on the indoor unit(please keep them care fully).
Please connect the refrigerant pipe according to the manual, the pipe-jointing nut should be screw tightly and no leakage. Note: you need two wrenches to make balance.
- (4) When the connecting of refrigerant pipe is finished, before power on the system, you should vacuum the indoor unit through the maintenance port on the cut-off valves, or open the high-pressure valve, and exhaust the air through the maintenance port on the low-pressure valve(closed). It will take about ten seconds. Then screw tightly the maintenance port.
(When supplement the refrigerant, fill through the maintenance port of the low-pressure valves on the outdoor unit).
- (5) Open all the valves completely before power on the system, or it will be sick for low efficiency.
- (6) Gas leak check. Make sure no gas from connections with leak detector or soap water.

Caution

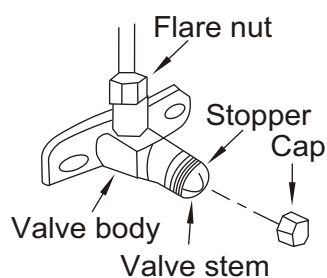
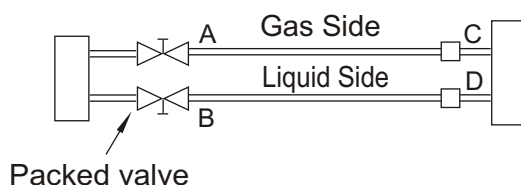
A: Lo packed valve B: Hi packed valve
C and D are ends of indoor unit connection.



Caution in Handling the Packed Valve

- ☐ Open the valve stem until it hits against the stopper. Do not try to open it further.
- ☐ Securely tighten the valve stem cap with a spanner or the link.

Outdoor unit Refrigerant Indoor unit



● Notes for the bendable pipe

- ☐ The bendable pipe should be used on the indoor side;
- ☐ Bend angel may not exceed 90 degrees;
- ☐ The bend location should be made on the center of the pipe if possible, as for bend radius, the bigger the better;
- ☐ The bendable pipe may not be bent for more than 3 times.

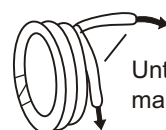
● Bend the thin pipe

- ☐ While bending, expose the pipe by cutting the concave gap on the bending heat-insulation pipe(roll it with soft band after bent).
- ☐ To avoid pipe deformation, the radius is the bigger the better.
- ☐ Use a pipe-bending device to make the compact bending pipe.

Use thumb to curve the pipe



Min. Radius 100 mm



Untie the pipe,
make is straight

2. Using bronze pipe selling in market

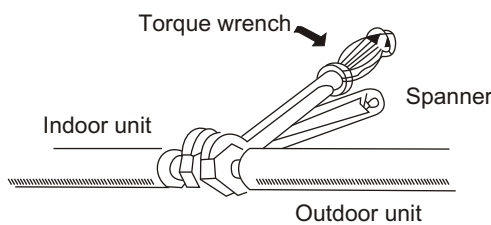
Completely shut the cut-off valves of the outdoor unit (as ex-work status). After the refrigerant pipe has been connected with both the indoor and outdoor unit, let the air exhaust out from the maintenance gap on the low-pressure cut-off valves of the outdoor unit. Screw the nuts tightly on the maintenance gap after the air has been drained.

3. To make the refrigerant pipe unblocked completely

you should keep the cut-off valves of the outdoor unit completely open after you have finished the above steps (step1 or step 2)

NOTE

- ☐ Before screwing the reamer nut, smear the pipe and the connecting surface with refrigerant oil;
- ☐ Check and make sure there is no leakage by soap-water or leakage-checker after connecting;
- ☐ Be sure the connecting joint on the indoor side is insulated.
- ☐ Use two wrenches to connecting the pipes.



4. Filling Refrigerant

The correct refrigerant quantity filled in the 5-meter-long pipe of the outdoor unit is marked on the Product Data Plate. If you have to use longer pipe for every meter plus pipe, the refrigerant should be added according to the following calculation.

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged		
Less than 5m	Use vacuum pump.			
More than 5m	Use vacuum pump.	Liquid side: ϕ 6.35 R22: (Pipe length-5)x15g/m R410A: (Pipe length-5)x15g/m	Liquid side: ϕ 9.52 R22: (Pipe length-5)x30g/m R410A: (Pipe length-5)x30g/m	Liquid side: ϕ 12.7 R22: (Pipe length-5)x60g/m R410A: (Pipe length-5)x60g/m

NOTE

If you are using a pipe purchased in the market, please make sure the heat-insulation material is the same as what we supply. (at least 12mm in thickness)

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

Pipe length

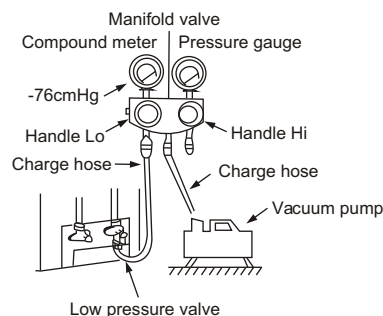
Model	Capacity (Btu/h)	Max. Length of refrigerant pipe (m)	Max. drop height (m)
R410A inverter split air conditioner	<15000	25	10
	≥15000~<24000	30	20
	≥24000~<36000	50	25
	≥36000~<60000	65	30

5. Air Purging

When Using the Vacuum Pump

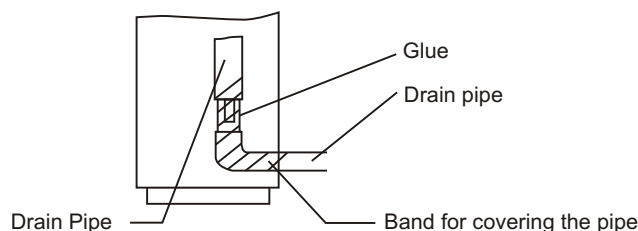
(For method of using a manifold valve, refer to its operation manual.)

1. Completely tighten the flare nuts, A, B, C, D, connect the manifold valve charge hose to a charge port of the low-pressure valve on the gas pipe side.
2. Connect the charge hose connection to the vacuum pump.
3. Fully open the handle Lo of the manifold valve.
4. Operate the vacuum pump to evacuate. After starting evacuation, slightly loose the flare nut of the Lo valve on the gas pipe side and check that the air is entering. (Operation noise of the vacuum pump changes and a compound meter indicates 0 instead of minus)
5. After the evacuation is complete, fully close the handle Lo of the manifold valve and stop the operation of the vacuum pump.
Make evacuation for 15 minutes or more and check that the compound meter indicates -76cmHg ($-1 \times 10^5 \text{Pa}$).
6. Turn the stem of the packed valve B about 45° counterclockwise for 6~7 seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure.
7. Remove the charge hose from the Low pressure charge hose.
8. Fully open the packed valve stems B and A.
9. Securely tighten the cap of the packed valve.



DRAIN PIPE CONNECTION

Drain Pipe of The Indoor Unit

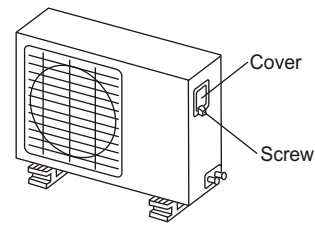


- ☐ Make sure the drain pipe is connected to the outdoor side downward;
- ☐ The hard polyvinyl chloride(PVC)plastic pipe (external diameter 26 mm) sold in the market is suitable for the attached soft drain pipe;
- ☐ Please connect the Soft Drain Pipe with the Drain Pipe, then fix it with band;
- ☐ if you have to connect the Drain Pipe indoors, to avoid condensing caused by air intake, you must cover the pipe with heat-insulation material (polyethylene with Specific Gravity of 0.03, at least 9 mm in thickness), and use Glue Band to fix it.
- ☐ After the Drain Pipe has been connected, please check if the water drains out of the pipe efficiently and has no leakage.
- Refrigerant Pipe and Drain Pipe should be heat-insulated to avoid condensing and water -dropping later on.

CONNECTING THE ELECTRIC SYSTEM

1. WIRE CONNECTING

1. Remove the control board cover from the unit by loosening the screw.
2. Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of indoor and outdoor units.
3. Secure the cable onto the control board with the cord clamp.
4. Refix the control cover to the original position with the screw.
5. Wiring connection must be done strictly according to the "Wiring Diagram" located on the side panel of air conditioner.
6. Follow the instructions of wiring connection in this manual, never attempt to modify the wiring by yourself.



CAUTION

Wrong wiring connections may cause some electrical parts to malfunction.
The air conditioner must be grounded well.

2. Wire-connecting Brief Diagram(for details refer to Wire-connecting Diagram)

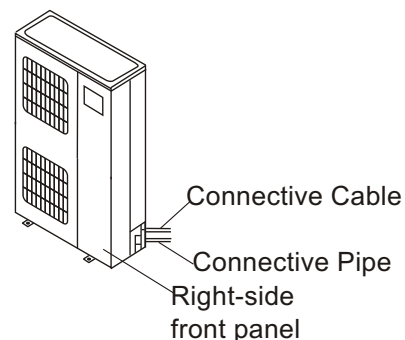
Note: The power supply of the air conditioner is different according to the models. Please refer to the WIRING DIAGRAM pasted on the indoor and outdoor units before wire connection.

Note: The power supply of the unit is subject to the wiring diagram above.

Note: Some models is equipped with a cord having a plug, So a wall outlet shall be properly installed.

1. Wire connecting

1. Remove the right-side front panel from the 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.
3. Secure the cable onto the control board with the cord clamp.
4. Reinstall the right-side front panel to its original position after finishing the wire connection.
5. Wiring connection must be done strictly according to the "Wiring Diagram" located on the side panel of air conditioner .
6. Follow the instructions of wiring connection in this manual, never attempt to modify the wiring by yourself.



Model B

CAUTION

Wrong wiring connections may cause some electrical parts to malfunction. The air conditioner must be grounded well.

● Connect the cable between the outdoor unit

1. Remove the front air-inlet grille from the indoor unit by loosening the screws.
2. Connect the cable to the indoor unit by connecting the wires to the terminals on the control board individually according to the outdoor unit connection.
3. Ensure the colour of wires of outdoor unit and the terminal Nos. Are the same to the indoors respectively.
4. Secure the cable onto the control board with the holder.

Model	Power supply	Input Rated Amp (Switch/Fuse)	Power Cord Size
<30000Btu/h	220-240V~ 50Hz or 208-230V~60Hz	32/25A	$\geq 2.5\text{mm}^2$
30000~48000Btu/h		63/50A	$\geq 4\text{mm}^2$
>48000Btu/h		63/50A	$\geq 6\text{mm}^2$
30000~48000Btu/h	380-420V~ 50Hz or 380-420V~60Hz	16/16A	$\geq 1.5\text{mm}^2$
>48000Btu/h		32/25A	$\geq 2.5\text{mm}^2$

NOTE: The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch.

NOTE:

1. Please pay attention to the surroundings (environmental temperature, direct sunlight, rain etc.)
2. We consider the minimal size of the metal core as the wire size. So it is recommended you adopt a thicker one as the power conducting wire so as to avoid power decrease;
3. Connect the grounded wire to both indoor and outdoor units;
4. This table is just an on-site wire-connecting example. For details, please refer to relative National criteria.

5-3. Electrical safety check

Perform the electric safe check after completing installation:

1. Insulated resistance

The insulated resistance must be more than $2M\ \Omega$.

2. Grounding work

After finishing grounding work, measure the grounding resistance by visual detection and grounding resistance tester. Make sure the grounding resistance is less than $4\ \Omega$.

3. Electrical leakage check (performing during test running)

During test operation after finishing installation, the serviceman can use the electroprobe and multimeter to perform the electrical leakage check. Turn off the unit immediately if leakage happens. Check and find out the solution ways till the unit operate properly.

TEST RUNNING

Perform test running operation after finishing gas leak and electrical safety check. The test operation time should last more than 30 minutes.

1. Turn on the unit.
2. Press the TEST RUNNING button on control panel, the unit will begin TEST RUNNING operation.
3. Check if all the functions works well while in testing operation. Especially check whether the water drainage of indoor unit is smoothly or not.
4. Press the TEST RUNNING button again till the operation indicator turns dark after finishing the test operation and the unit stops operation.

NOTE

1. Please pay attention to the surroundings (environmental temperature, direct sunlight, rain etc.)
2. We consider the minimal size of the metal core as the wire size. So it is recommended you adopt a thicker one as the power conducting wire so as to avoid power decrease;
3. Connect the grounded wire to both indoor and outdoor units;
4. This table is just an on-site wire-connecting example. For details, please refer to relative National criteria.

The length of the power wire and connecting-wire which connects the indoor unit to the outdoor unit. (The figure given below shows a suitable length)

