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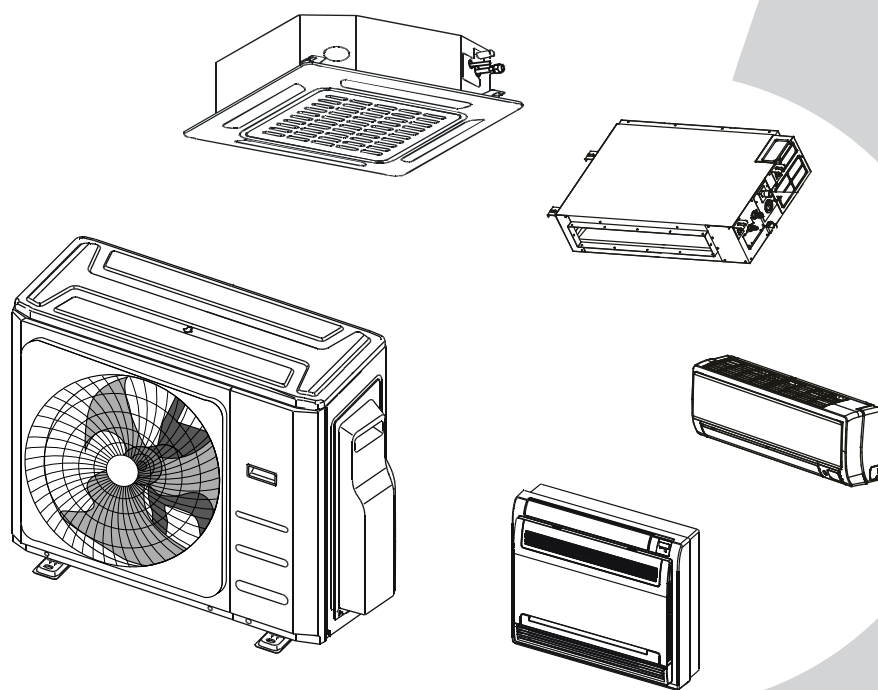
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INVERTER ONE-TWO/ONE-THREE/ONE-FOUR/ONE-FIVE  
SPLIT-TYPE AIR CONDITIONER

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# Owner's Manual & Installation Manual



**IMPORTANT NOTE:**

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

Please check the applicable models, technical data, F-GAS(if any) and manufacturer information from the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit.  
(European Union products only)

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# Safety Precautions

## Read Safety Precautions Before Operation and Installation

**Incorrect installation due to ignoring instructions can cause serious damage or injury.**

The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



### WARNING

This symbol indicates the possibility of personnel injury or loss of life.



### CAUTION

This symbol indicates the possibility of property damage or serious consequences.



### WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



### WARNINGS FOR PRODUCT USE

- If an abnormal situation arises (like a burning smell), immediately turn off the unit and disconnect the power. Call your dealer for instructions to avoid electric shock, fire or injury.
- **Do not** insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- **Do not** use flammable sprays such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.
- **Do not** operate the air conditioner in places near or around combustible gases. Emitted gas may collect around the unit and cause explosion.
- **Do not** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- **Do not** expose your body directly to cool air for a prolonged period of time.
- **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.
- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.

### CLEANING AND MAINTENANCE WARNINGS

- Turn off the device and disconnect the power before cleaning. Failure to do so can cause electrical shock.
- **Do not** clean the air conditioner with excessive amounts of water.

## CLEANING AND MAINTENANCE WARNINGS

- **Do not** clean the air conditioner with combustible cleaning agents. Combustible cleaning agents can cause fire or deformation.

### CAUTION

- Turn off the air conditioner and disconnect the power if you are not going to use it for a long time.
- Turn off and unplug the unit during storms.
- Make sure that water condensation can drain unhindered from the unit.
- **Do not** operate the air conditioner with wet hands. This may cause electric shock.
- **Do not** use device for any other purpose than its intended use.
- **Do not** climb onto or place objects on top of the outdoor unit.
- **Do not** allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.

### ELECTRICAL WARNINGS

- Only use the specified power cord. If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- **Do not** pull power cord to unplug unit. Hold the plug firmly and pull it from the outlet. Pulling directly on the cord can damage it, which can lead to fire or electric shock.
- **Do not** modify the length of the power supply cord or use an extension cord to power the unit.
- **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- If connecting power to fixed wiring, 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.

## TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board ,such as :

T20A/250VAC(for <24000Btu/h unit), T30A/250VAC(for >24000Btu/h unit)

**NOTE:** For the units with R32 or R290 refrigerant , only the blast-proof ceramic fuse can be used.

### WARNINGS FOR PRODUCT INSTALLATION

1. Installation must be performed by an authorized dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.

**WARNINGS FOR PRODUCT INSTALLATION**

2. Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.  
(In North America, installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.)
3. Contact an authorized service technician for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
4. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
5. Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
6. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
7. For units that have an auxiliary electric heater, **do not** install the unit within 1 meter (3 feet) of any combustible materials.
8. **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
9. Do not turn on the power until all work has been completed.
10. When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
11. How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections .

**Note about Fluorinated Gasses(Not applicable to the unit using R290 Refrigerant)**

1. This air-conditioning unit contains fluorinated greenhouse gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself or the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit. (European Union products only).
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation and recycling must be performed by a certified technician.
4. For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO<sub>2</sub> equivalent or more, but of less than 50 tonnes of CO<sub>2</sub> equivalent, If the system has a leak-detection system installed, it must be checked for leaks at least every 24 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

**WARNING for Using R32 Refrigerant**

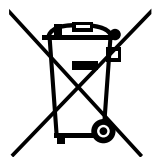
- When flammable refrigerant are employed, appliance shall be stored in a well -ventilated area where the room size corresponds to the room area as specific for operation.  
For R32 frigerant models:  
Appliance shall be installed, operated and stored in a room with a floor area larger than X m<sup>2</sup> .  
Appliance shall not be installed in an unvertilated space, if that space is smaller than X m<sup>2</sup> .  
(Please see the following form).

Amount of refrigerant to be charged (kg)	Installation height (m)	Minimum room area (m <sup>2</sup> )	Amount of refrigerant to be charged (kg)	Installation height (m)	Minimum room area (m <sup>2</sup> )
1.0	0.6 /1.8 /2.2	9 /1 /1	1.95	0.6 /1.8 /2.2	33 /4 /2.5
1.05	0.6 /1.8 /2.2	9.5 /1.5 /1	2.0	0.6 /1.8 /2.2	34.5 /4 /3
1.1	0.6 /1.8 /2.2	10.5 /1.5 /1	2.05	0.6 /1.8 /2.2	36 /4 /3
1.15	0.6 /1.8 /2.2	11.5 /1.5 /1	2.1	0.6 /1.8 /2.2	38 /4.5 /3
1.2	0.6 /1.8 /2.2	12.5 /1.5 /1	2.15	0.6 /1.8 /2.2	40 /4.5 /3
1.25	0.6 /1.8 /2.2	13.5 /1.5 /1	2.2	0.6 /1.8 /2.2	41.5 /5 /3.5
1.3	0.6 /1.8 /2.2	14.5 /2 /1.5	2.25	0.6 /1.8 /2.2	43.5 /5 /3.5
1.35	0.6 /1.8 /2.2	16 /2 /1.5	2.3	0.6 /1.8 /2.2	45.5 /5 /3.5
1.4	0.6 /1.8 /2.2	17 /2 /1.5	2.35	0.6 /1.8 /2.2	47.5 /5.5 /4
1.45	0.6 /1.8 /2.2	18 /2 /1.5	2.4	0.6 /1.8 /2.2	49.5 /5.5 /4
1.5	0.6 /1.8 /2.2	19.5 /2.5 /1.5	2.45	0.6 /1.8 /2.2	51.5 /6 /4
1.55	0.6 /1.8 /2.2	21 /2.5 /2	2.5	0.6 /1.8 /2.2	54 /6 /4
1.6	0.6 /1.8 /2.2	22 /2.5 /2	2.55	0.6 /1.8 /2.2	56 /6.5 /4.5
1.65	0.6 /1.8 /2.2	23.5 /3 /2	2.6	0.6 /1.8 /2.2	58 /6.5 /4.5
1.7	0.6 /1.8 /2.2	25 /3 /2	2.65	0.6 /1.8 /2.2	60.5 /7 /4.5
1.75	0.6 /1.8 /2.2	26.5 /3 /2	2.7	0.6 /1.8 /2.2	63 /7 /5
1.8	0.6 /1.8 /2.2	28 /3.5 /2.5	2.75	0.6 /1.8 /2.2	65 /7.5 /5
1.85	0.6 /1.8 /2.2	29.5 /3.5 /2.5	2.8	0.6 /1.8 /2.2	67.5 /7.5 /5
1.9	0.6 /1.8 /2.2	31 /3.5 /2.5	2.85	0.6 /1.8 /2.2	70 /8 /5.5

- Reusable mechanical connectors and flared joints are not allowed indoors. (EN Standard Requirements).
- Mechanical connectors used indoors shall have a rate of not more than 3g/year at 25% of the maximum allowable pressure. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (UL Standard Requirements)
- When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (IEC Standard Requirements)
- Mechanical connectors used indoors shall comply with ISO 14903.

## European Disposal Guidelines

This marking shown on the product or its literature, indicates that waste electrical and electrical equipment should not be mixed with general household waste.



### Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

This appliance contains refrigerant and other potentially hazardous materials. When disposing of this appliance, the law requires special collection and treatment. **Do not** dispose of this product as household waste or unsorted municipal waste.

When disposing of this appliance, you have the following options:

- Dispose of the appliance at designated municipal electronic waste collection facility.
- When buying a new appliance, the retailer will take back the old appliance free of charge.
- The manufacturer will take back the old appliance free of charge.
- Sell the appliance to certified scrap metal dealers.

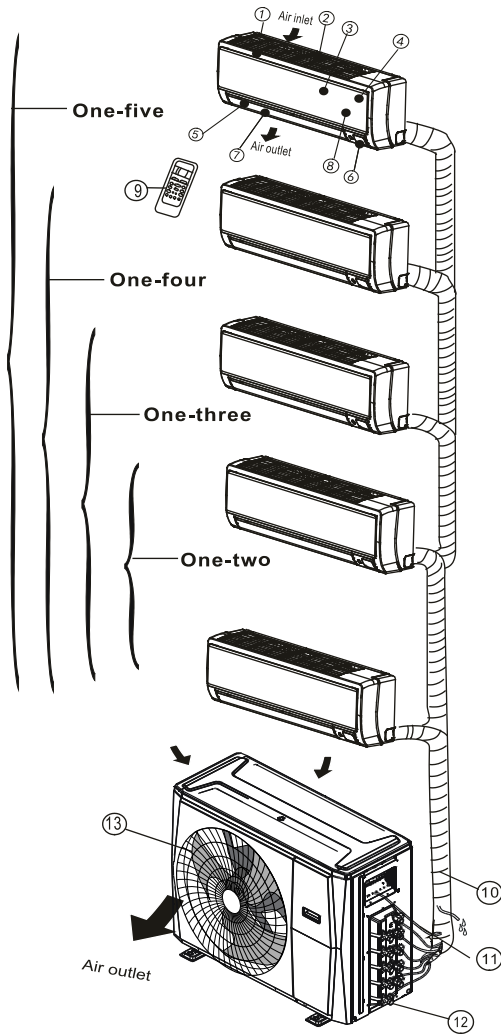
#### Special notice

Disposing of this appliance in the forest or other natural surroundings endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.

# Unit Parts And Major Functions

## Unit Parts

(A) Wall-mounted type



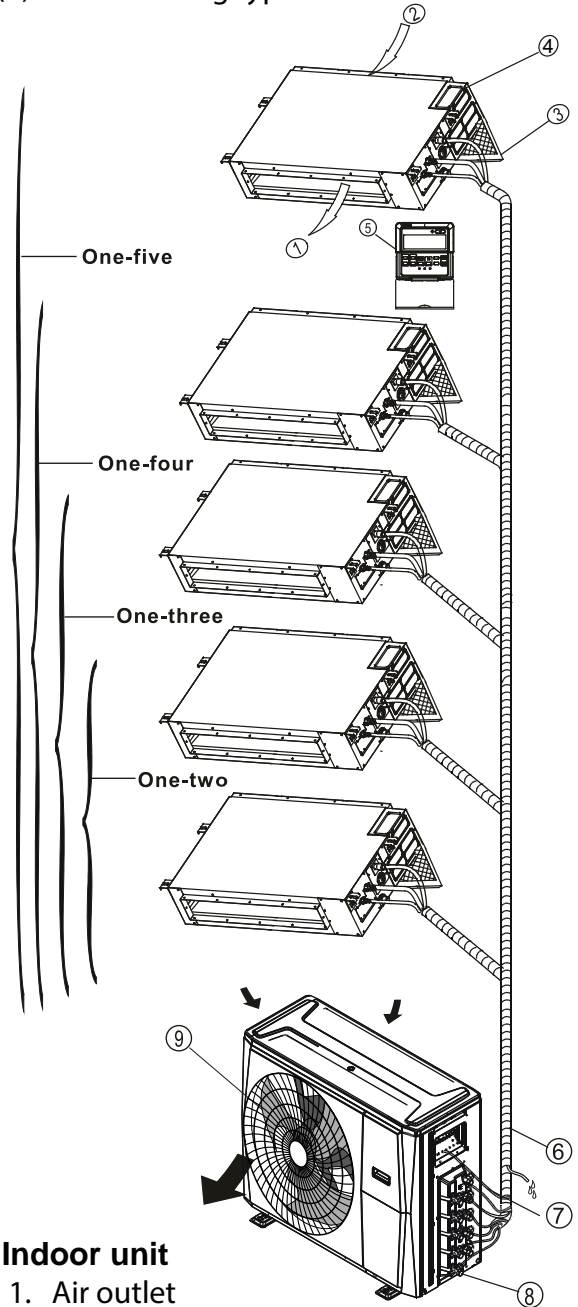
### Indoor unit

1. Panel frame
2. Rear air intake grille
3. Front panel
4. Air purifying filter & Air filter(behind)
5. Horizontal louver
6. LCD display window
7. Vertical louver
8. Manual control button(behind)
9. Remote controller holder

### Outdoor unit

10. Drain hose, refrigerant connecting pipe
11. Connective cable
12. Stop valve
13. Fan hood

(B) Duct / Ceiling type



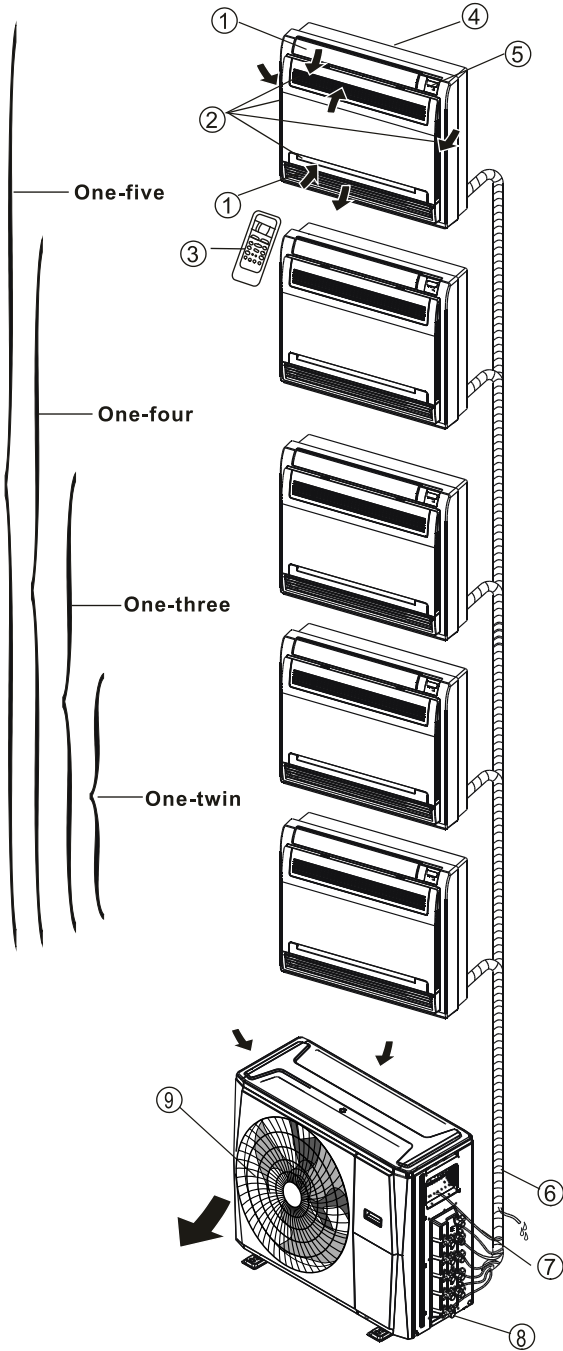
### Indoor unit

1. Air outlet
2. Air inlet
3. Air filter
4. Electric control cabinet
5. Wire controller

### Outdoor unit

6. Drain hose, refrigerant connecting pipe
7. Connective cable
8. Stop valve
9. Fan hood

(C) Floor and standing type(console)



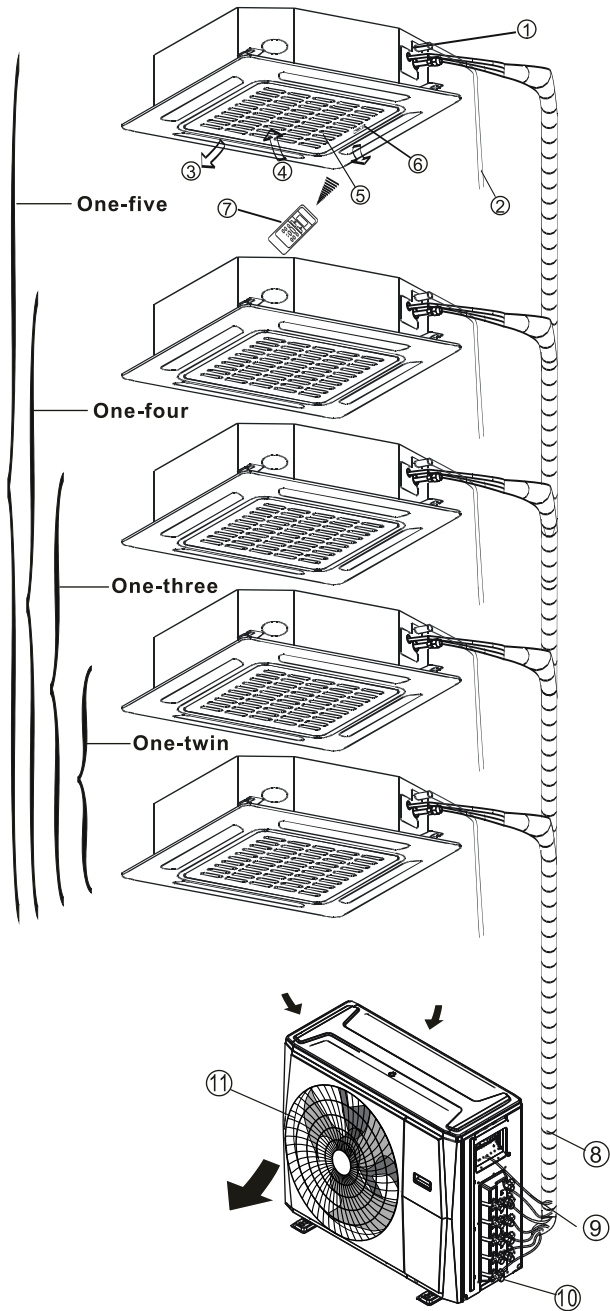
**Indoor unit**

1. Air flow louver (at air outlet)
2. Air inlet (containing air filter)
3. Remote controller
4. Installation part
5. Display panel

**Outdoor unit**

6. Drain hose, refrigerant connecting pipe
7. Connective cable
8. Stop valve
9. Fan hood

(D) Compact four-way cassette type



**Indoor unit**

1. Drain pump(drain water from indoor unit)
2. Drain hose
3. Air outlet
4. Air inlet
5. Air-in grill
6. Display panel
7. Remote controller

**Outdoor unit**

8. refrigerant connecting pipe
9. Connective cable
10. Stop valve
11. Fan hood

**NOTE:** For multi-split type air conditioners, one outdoor unit can be matched to different types of indoor units. All of the pictures in this manual are for demonstration purposes only. Your air conditioner may be slightly different, if similar in shape. The following pages introduce several kinds of indoor units that can be matched with the outdoor units.

## Operating Conditions

### Operating temperature

When your air conditioner is used outside of the following temperature ranges, certain safety protection features may activate and cause the unit to disable.

	COOL mode	HEAT mode	DRY mode
Room Temperature	17°C - 32°C (62°F - 90°F)	0°C - 30°C (32°F - 86°F)	10°C - 32°C (50°F - 90°F)
Outdoor Temperature	0°C - 50°C (32°F - 122°F)	-15°C - 24°C (5°F - 75°F)	0°C - 50°C (32°F - 122°F)
	-15°C - 50°C (5°F - 122°F) (For models with low temp. cooling systems.)		
	0°C - 52°C (32°F - 126°F) (For special tropical models)		0°C - 52°C (32°F - 126°F) (For special tropical models)

#### FOR OUTDOOR UNITS WITH AUXILIARY ELECTRIC HEATER

When outside temperature is below 0°C (32°F), we strongly recommend keeping the unit plugged in at all time to ensure smooth ongoing performance.

**NOTE:** Room relative humidity less than 80%. If the air conditioner operates in excess of this figure, the surface of the air conditioner may attract condensation. Please sets the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

#### To further optimize the performance of your unit, do the following:

- Keep doors and windows closed.
- Limit energy usage by using TIMER ON and TIMER OFF functions.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

## Features

### Protection of the air conditioner

#### Compressor protection

- The compressor cannot restart for 3 minutes after it stops.

#### Anti-cold air (Cooling and heating models only)

- The unit is designed not to blow cold air on HEAT mode, when the indoor heat exchanger is in one of the following three situations and the set temperature has not been reached.
  - A) When heating has just started.
  - B) During defrosting.
  - C) Low temperature heating.

- The indoor or outdoor fan stop running when defrosting (Cooling and heating models only).

#### Defrosting (Cooling and heating models only)

- Frost may be generated on the outdoor unit during a heat cycle when outdoor temperature is low and humidity is high resulting in lower heating efficiency in the air conditioner.
- Under these conditions, the air conditioner will stop heating operations and start defrosting automatically.
- The time to defrost may vary from 4 to 10 minutes, depending the outdoor temperature and the amount of frost buildup on the outdoor unit.

#### Auto-Restart (some models)

In case of power failure, the system will immediately stop. When power returns, the Operation light on the indoor unit will flash. To restart the unit, press the **ON/OFF** button on the remote control. If the system has an auto restart function, the unit will restart using the same settings.

### White mist emerging from the indoor unit

- A white mist may be generated due to a large temperature difference between air inlet and air outlet on COOL mode in places with high relative humidity.
- A white mist may be generated due to moisture created in the defrosting process when the air conditioner restarts in HEAT mode operation after defrosting.

### Noise coming from the air conditioner

- You may hear a low hissing sound when the compressor is running or has just stopped running. This sound is the sound of the refrigerant flowing or coming to a stop.
- You may also hear a low "squeaking" sound when the compressor is running or has just stopped running. This is caused by tempera heat expansion and cold contraction of the plastic parts in the unit when the temperature is changing.
- A noise may be heard due to the louver restoring itself to its original position when power is first turned on.

### Dust blowing out from the indoor unit.

This is happens when the air conditioner has not been used for a long time or during its first use.

### Smell emitting from the indoor unit.

This is caused by the indoor unit giving off smells permeated from building materials, furniture, or smoke.

### The air conditioner turns to FAN ONLY mode from COOL or HEAT (for cooling and heating models only) mode.

When the indoor temperature reaches the set temperature setting, the compressor will stop automatically, and the air conditioner turns to FAN only mode. The compressor will start again when the indoor temperature rises on COOL mode or falls on HEAT mode to the set point.

Droplets of water may form on the surface of the indoor unit when cooling occurs in relatively high humidity (defined as higher than 80%). Adjust the horizontal louver to the maximum air outlet position and select HIGH fan speed.

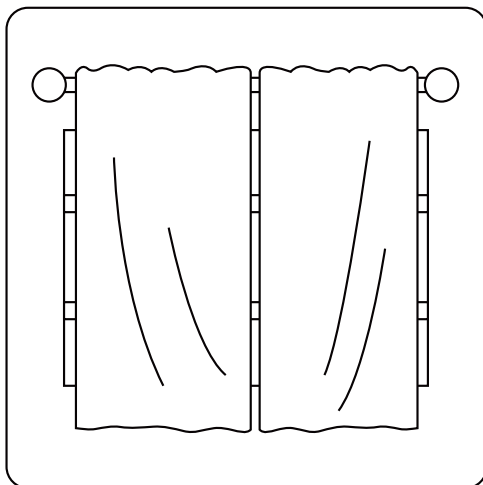
### Heating mode (For cooling and heating models only)

The air conditioner draws in heat from the outdoor unit and releases it via the indoor unit during heating. When the outdoor temperature falls, heat drawn in by the air conditioner decreases accordingly. At the same time, heat loading of the air conditioner increases due to larger difference between indoor and outdoor temperature. If a comfortable temperature cannot be achieved with the air conditioner alone, it is recommended that you use a supplementary heating device.

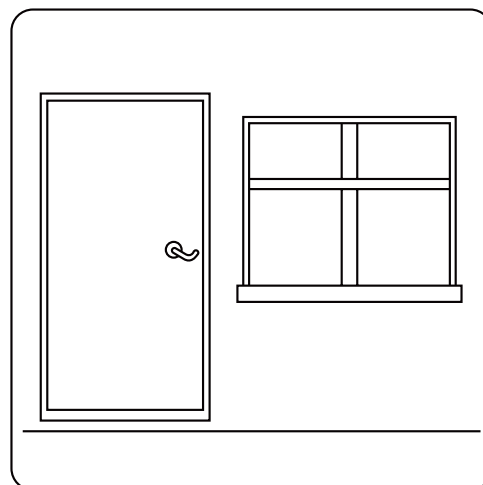
Lightning or a car wireless telephone operating nearby may cause the unit to malfunction. Disconnect the unit from its power source and then re-connect the unit with the power source again. Push the ON/OFF button on the remote controller to restart operations.

### Energy Saving Tips

- **DO NOT** set the unit to excessive temperature levels.
- While cooling, close the curtains to avoid direct sunlight.
- Doors and windows should be kept closed to keep cool or warm air in the room.
- **DO NOT** place objects near the air inlet and outlet of the unit. This will reduce the efficiency of the unit.
- Set a timer and use the built-in SLEEP/ECONOMY mode if applicable.
- If you don't plan to use the unit for a long time, remove the batteries from the remote control.
- Clean the air filter every two weeks. A dirty filter can reduce cooling or heating efficiency.
- Adjust louvers properly and avoid direct airflow.



**Closing curtains during heating also helps keep the heat in**



**Doors and windows should be kept closed**

# Manual Operations And Maintenance

## Operation mode selection

While two or more indoor units are simultaneously operating, make sure the modes do not conflict with each other. The heat mode claims precedence over all other modes. If the unit initially started to operate in HEAT mode, the other units can operate in HEAT mode only. For example: If the unit initially started to operate under COOL (or FAN) mode, the other units can operate under any mode except HEAT. If one of the units selects HEAT mode, the other operating units will stop operation and display "--" (for units with display window only) or the auto and operation indication light will flash rapidly, the defrost indication light will turn off, and the timer indication light will remain on (for units without a display window). Alternatively, the defrost and alarm indication light (if applicable) will light up, or the operation indication light will flash rapidly, and the timer indication light will turn off (for the floor and standing type).

## Maintenance

If you plan to leave the unit idle for a long time, perform the following tasks:

1. Clean the indoor unit and air filter.
2. Select FAN ONLY mode and let the indoor fan run for a time to dry the inside of the unit.
3. Disconnect the power supply and remove the battery from the remote control.
4. Check components of the outdoor unit periodically. Contact a local dealer or a customer service centre if the unit requires servicing.

**NOTE:** Before you clean the air conditioner, be sure to switch off the unit and disconnect the power supply plug.

## Optimal operation

To achieve optimal performance, please note the following:

- Adjust the direction of the air flow so that it is not blowing directly on people.
- Adjust the temperature to achieve the highest possible level of comfort. Do not adjust the unit to excessive temperature levels.
- Close doors and windows in COOL mode or HEAT mode.
- Use the TIMER ON button on the remote controller to select a time you want to start your air conditioner.
- Do not place any object near the air inlet or air outlet, as the efficiency of the air conditioner may be reduced and the air conditioner may stop running.
- Clean the air filter periodically, otherwise cooling or heating performance may be reduced.
- Do not operate unit with horizontal louvre in closed position.

## Suggestion:

**For units that feature an electric heater, when the outside ambient temperature is below 0°C (32°F), it is strongly recommended that you keep the machine plugged in so as to guarantee smooth operation.**

## When the air conditioner is to be used again:

- Use a dry cloth to wipe off the dust accumulated on the rear air intake grille in order to avoid the dust being dispersed from the indoor unit.
- Check that the wiring is not broken off or disconnected.
- Check that the air filter is installed.
- Check if the air outlet or inlet is blocked after the air conditioner has not been used for a long time.

# Troubleshooting



## SAFETY PRECAUTIONS

If any of the following conditions occurs, turn off your unit immediately!

- The power cord is damaged or abnormally warm
- You smell a burning odor
- The unit emits loud or abnormal sounds
- A power fuse blows or the circuit breaker frequently trips
- Water or other objects fall into or out of the unit

**DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY!**

## Common Issues

The following problems are not a malfunction and in most situations will not require repairs.

Problem	Possible Causes
Unit does not turn on when pressing ON/OFF button	The unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
	Cooling and Heating Models: If the Operation light and PRE-DEF (Pre-heating/Defrost) indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated in order to defrost the unit.
	In Cooling-only Models: If the "Fan Only" indicator is lit up, the outdoor temperature is too cold and the unit's anti-freeze protection is activated in order to defrost the unit.
The unit changes from COOL mode to FAN mode	The unit changes its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will resume operating when the temperature fluctuates again.
The indoor unit emits white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.

Problem	Possible Causes
The indoor unit makes noises	A squeaking sound is heard when the system is OFF or in COOL mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion and contraction of the unit's plastic parts.
Both the indoor unit and outdoor unit make noises	A low hissing sound may occur during operation. This is normal and is caused by refrigerant gas flowing through both the indoor and outdoor units.
	A low hissing sound may be heard when the system starts, has just stopped running or is defrosting. This noise is normal and is caused by the refrigerant gas stopping or changing direction.
The outdoor unit makes noises	The unit will make different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.





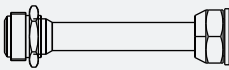

## Troubleshooting Tips

When troubles occur, please check the following points before contacting a repair company.

Problem	Possible Causes	Solution
The unit is not working	Power failure	Wait for the power to be restored
	The power switch is off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace the remote control batteries
	The unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
Poor cooling performance	Temperature setting may be higher than the ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
The unit starts and stops frequently	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant
	There is air, incompressible gas or foreign material in the refrigeration system.	Evacuate and recharge the system with refrigerant
	System circuit is blocked	Determine which circuit is blocked and replace the malfunctioning piece of equipment
	The compressor is broken	Replace the compressor
	The voltage is too high or too low	Install a manostat to regulate the voltage
Poor heating performance	The outdoor temperature is lower than 7°C (44.5°F)	Check for leaks and recharge the system with refrigerant
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant

# Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. The items are not included with the air conditioner must be purchased separately.

Name of Accessories	Q'ty(pc)	Shape	Name of Accessories	Q'ty(pc)	Shape
Manual	2-4		Drain joint (some models)	1	
Installation plate (some models)	1		Seal ring (some models)	1	
Plastic expansion sheath (some models)	5-8 (depending on models)		Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.) (some models)	Varies by model	
Self-Tapping Screw A (some models)	5-8 (depending on models)				
Transfer connector (packed with the indoor or outdoor unit, depending on models) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit .	Optional part (one piece/ one indoor unit) Optional part (1-5 pieces for outdoor unit, depending on models)		Cord protection rubber ring (If the cord clamp cannot fasten on a small cord, use the cord protection rubber ring [supplied with accessories] to wrap around the cord. Then fix it in place with the cord clamp.) (some models)	1	

Accessories

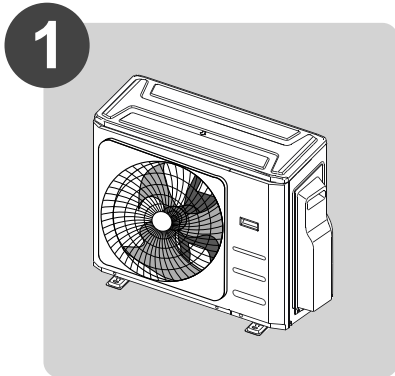
## Optional accessories

- There are two types of remote controls: wired and wireless. Select a remote controller based on customer preferences and requirements and install in an appropriate place. Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

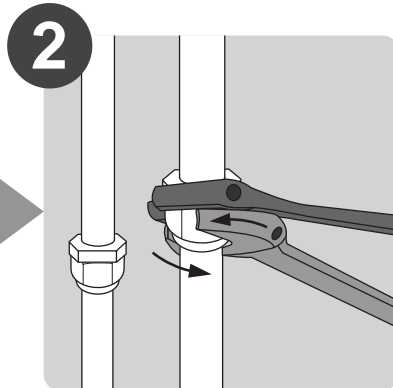
Name	Shape	Quantity(PC)
Connecting pipe assembly	Liquid side	Φ 6.35 (1/4in)
		Φ 9.52 (3/8in)
	Gas side	Φ 9.52 (3/8in)
		Φ 12.7 (1/2in)
		Φ 16 (5/8in)
		Parts you must purchase separately. Consult the dealer about the proper pipe size of the unit you purchased.

# Installation Summary

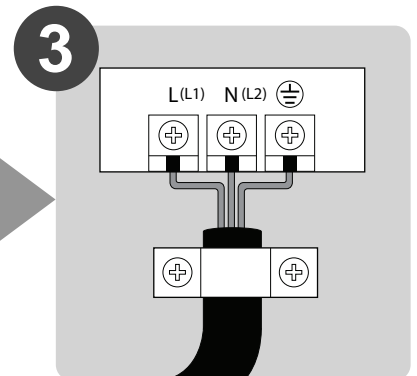
## INSTALLATION ORDER



**1**  
Install the outdoor unit



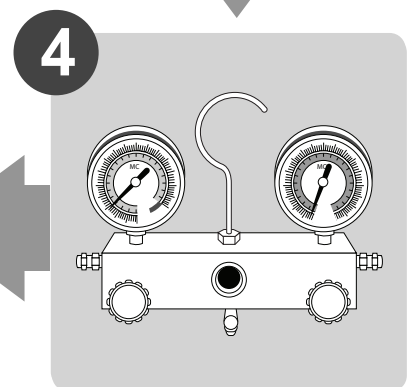
**2**  
Connect the refrigerant pipes



**3**  
Connect the wires



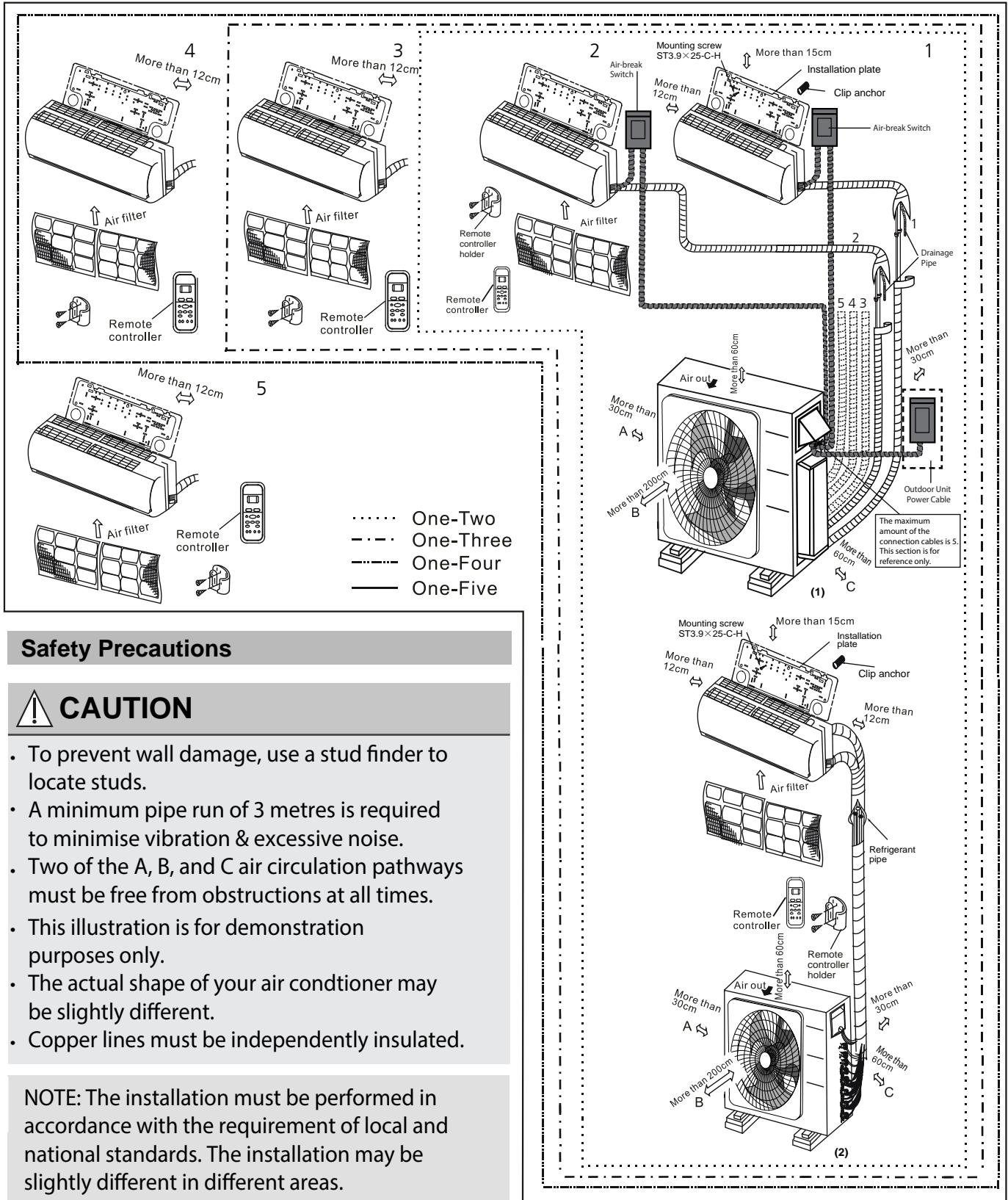
**5**  
Perform a test run



**4**  
Evacuate the refrigeration system

# Installation Diagram

## Installation Diagram



Installation Diagram

### Safety Precautions

#### ⚠ CAUTION

- To prevent wall damage, use a stud finder to locate studs.
- A minimum pipe run of 3 metres is required to minimise vibration & excessive noise.
- Two of the A, B, and C air circulation pathways must be free from obstructions at all times.
- This illustration is for demonstration purposes only.
- The actual shape of your air conditioner may be slightly different.
- Copper lines must be independently insulated.

**NOTE:** The installation must be performed in accordance with the requirement of local and national standards. The installation may be slightly different in different areas.

# Specifications

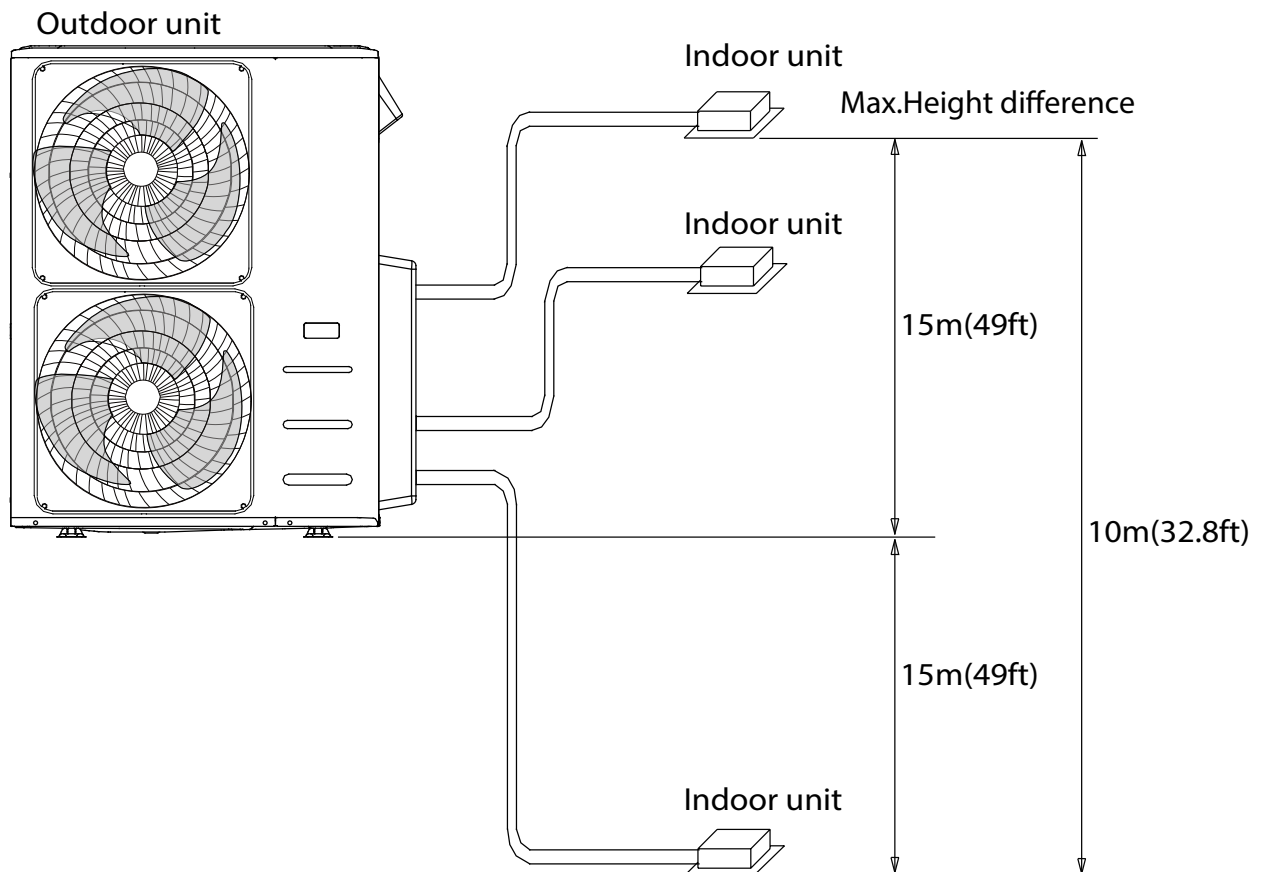
Number of units that can be used together	Connected units	1-5 units
Compressor stop/start frequency	Stop time	3 min or more
Power source voltage	voltage fluctuation	within $\pm 10\%$ of rated voltage
	voltage drop during start	within $\pm 15\%$ of rated voltage
	interval unbalance	within $\pm 3\%$ of rated voltage

Unit: m/ft.

	1 drive 2	1 drive 3	1 drive 4	1 drive 5
Max. length for all rooms	40/131	60/197	80/262	80/262
Max. length for one indoor unit	25/82	30/98	35/115	35/115
Max. height different between indoor and outdoor unit	15/49	15/49	15/49	15/49
Max. height different between indoor units	10/33	10/33	10/33	10/33

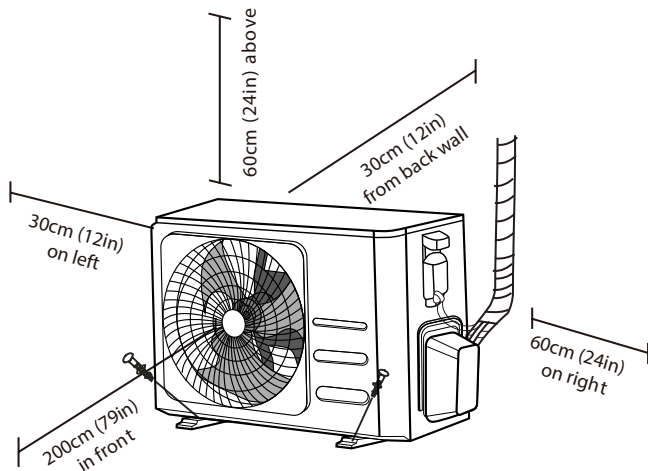
**NOTE:** For the units adopt quick connectors, no more than two pipes can be connected, and the Max. length for each pipe is 7.5 meters.

When installing multiple indoor units with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram:



# Outdoor Unit Installation

Install the unit by following local codes and regulations, there may be differ slightly between different regions.



## Installation Instructions – Outdoor unit

### Step 1: Select installation location

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

### Proper installation locations meet the following standards:

- ☑ Meets all spatial requirements shown in Installation Space Requirements above.
- ☑ Good air circulation and ventilation
- ☑ Firm and solid—the location can support the unit and will not vibrate
- ☑ Noise from the unit will not disturb others
- ☑ Protected from prolonged periods of direct sunlight or rain
- ☑ Where snowfall is anticipated, take appropriate measures to prevent ice buildup and coil damage.

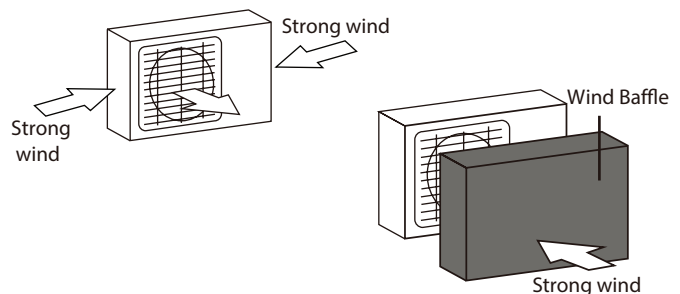
### **DO NOT** install unit in the following locations:

- ⊘ Near an obstacle that will block air inlets and outlets
- ⊘ Near a public street, crowded areas, or where noise from the unit will disturb others
- ⊘ Near animals or plants that will be harmed by hot air discharge
- ⊘ Near any source of combustible gas
- ⊘ In a location that is exposed to large amounts of dust
- ⊘ In a location exposed to a excessive amounts of salty air

## SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

### If the unit is exposed to heavy wind:

Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See Figures below.



### If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

### If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.

## Step 2: Install drain joint (Heat pump unit only)

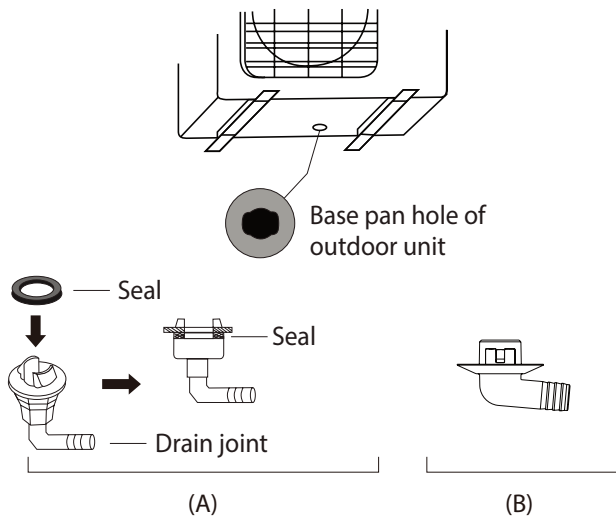
Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

**If the drain joint comes with a rubber seal** (see **Fig. A**), do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

**If the drain joint doesn't come with a rubber seal** (see **Fig. B**), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



### ! IN COLD CLIMATES

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

## Step 3: Anchor outdoor unit

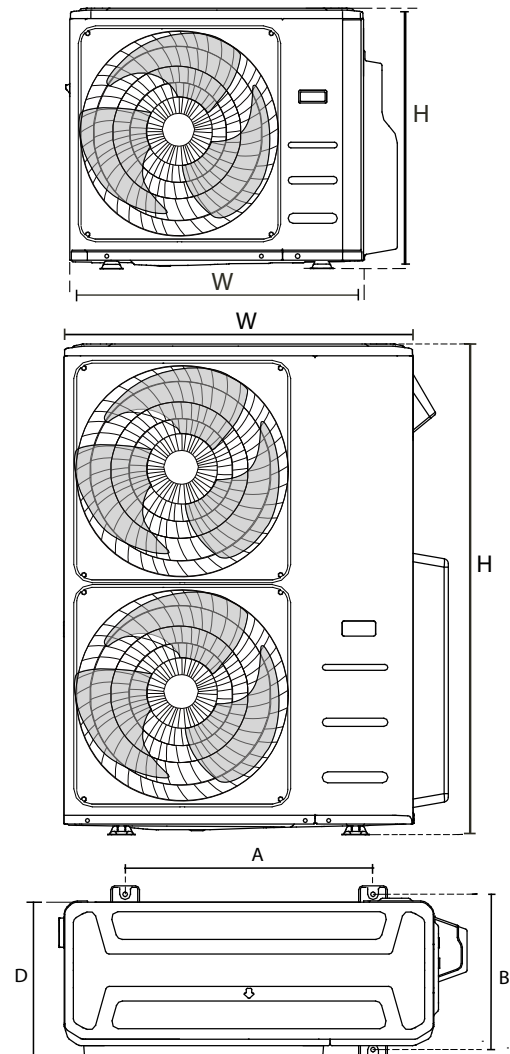
The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolt(M10). Prepare the installation base of the unit according to the dimensions below.

### UNIT MOUNTING DIMENSIONS

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.

#### Outdoor Unit Types and Specifications

##### Split Type Outdoor Unit



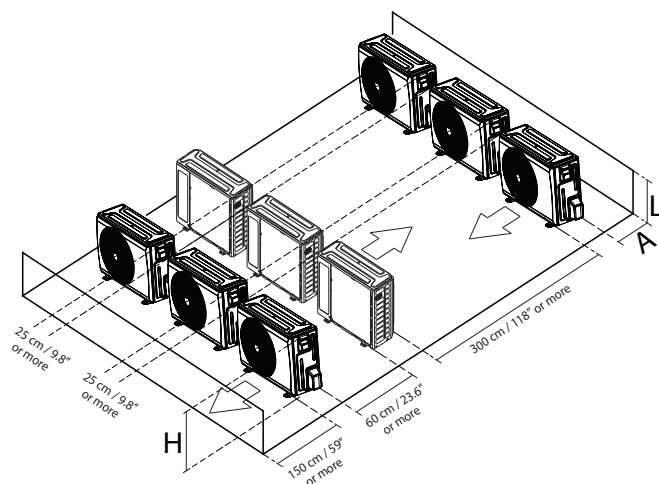
(unit: mm/inch)

Outdoor Unit Dimensions W x H x D	Mounting Dimensions	
	Distance A	Distance B
760x590x285 (29.9x23.2x11.2)	530 (20.85)	290 (11.4)
810x558x310 (31.9x22x12.2)	549 (21.6)	325 (12.8)
845x700x320 (33.27x27.5x12.6)	560 (22)	335 (13.2)
900x860x315 (35.4x33.85x12.4)	590 (23.2)	333 (13.1)
945x810x395 (37.2x31.9x15.55)	640 (25.2)	405 (15.95)
990x965x345 (38.98x38x13.58)	624 (24.58)	366 (14.4)
938x1369x392 (36.93x53.9x15.43)	634 (24.96)	404 (15.9)
900x1170x350 (35.4x46x13.8)	590 (23.2)	378 (14.88)
800x554x333 (31.5x21.8x13.1)	514 (20.24)	340 (13.39)
845x702x363 (33.27x27.6x14.3)	540 (21.26)	350 (13.8)
946x810x420 (37.2x31.9x16.53)	673 (26.5)	403 (15.87)
946x810x410 (37.2x31.9x16.14)	673 (26.5)	403 (15.87)
952x1333x410 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)
952x1333x415 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)
890x673x342 (35.0"x 26.5"x 13.5")	663 (26.1")	354 (13.9")

### Rows of series installation

The relations between H, A and L are as follows.

	L	A
L ≤ H	L ≤ 1/2H	25 cm / 9.8" or more
	1/2H < L ≤ H	30 cm / 11.8" or more
L > H	Can not be installed	



### Notes On Drilling Hole In Wall

You must drill a hole in the wall for the refrigerant piping, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65-mm (2.5") core drill, drill a hole in the wall.

**NOTE:** When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

3. Place the protective wall cuff in the hole. This protects the edges of the hole and helps seal it when you finish the installation process.

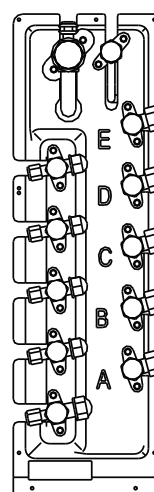
### When Select a 24K Indoor Unit

The 24K indoor unit can only be connected with an A system. If there are two 24K indoor units, they can be connected with A and B systems.

### Connective pipe size of an A and B system

(unit: inch)

Indoor Unit capacity (Btu/h)	Liquid	Gas
7K/9K/12K	1/4	3/8
12K/18K	1/4	1/2
24K	3/8	5/8



Outdoor Unit Installation

# Refrigerant Piping Connection

**NOTE:** For quick-connect models, please refer to the internal machine manual for the installation method of the connecting pipe. The external machine manual does not repeat the instructions.

When connecting refrigerant piping, **do not** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This can cause explosion and injury.

## Connection Instructions – Refrigerant Piping

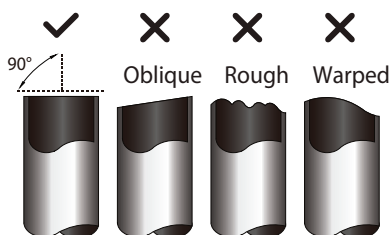
### ⚠ CAUTION

- The branching pipe must be installed horizontally. An angle of more than 10° may cause malfunction.
- **DO NOT** install the connecting pipe until both indoor and outdoor units have been installed.
- Insulate both the gas and liquid piping to prevent water leakage.

### Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.



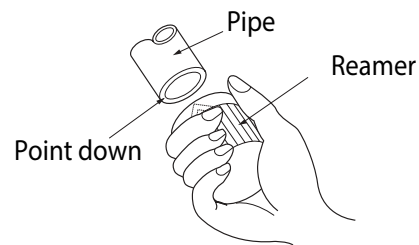
### ⊘ DO NOT DEFORM PIPE WHILE CUTTING

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

### Step 2: Remove burrs.

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

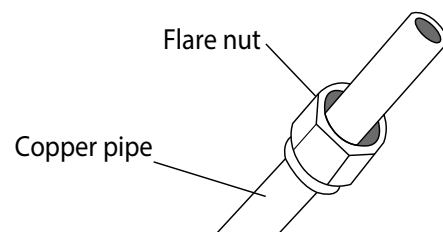
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



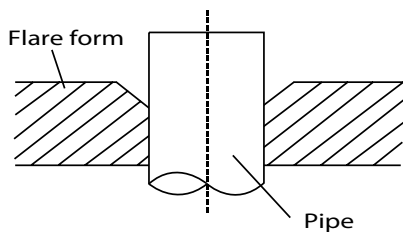
### Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.



- Remove PVC tape from ends of pipe when ready to perform flaring work.
- Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.



- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions.

### PIPING EXTENSION BEYOND FLARE FORM

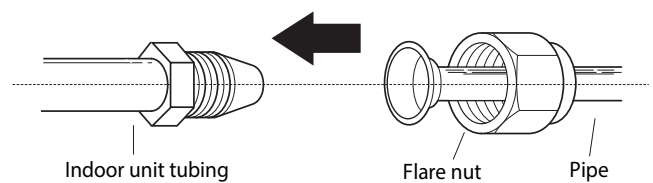
Pipe gauge	Tightening torque (Unit: mm/Inch)	Flare dimension (A) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 6.4	18-20 N.m (183-204 kgf.cm)	8.4/0.33	8.7/0.34	
Ø 9.5	25-26 N.m (255-265 kgf.cm)	13.2/0.52	13.5/0.53	
Ø 12.7	35-36 N.m (357-367 kgf.cm)	16.2/0.64	16.5/0.65	
Ø 15.9	45-47 N.m (459-480 kgf.cm)	19.2/0.76	19.7/0.78	
Ø 19.1	65-67 N.m (663-683 kgf.cm)	23.2/0.91	23.7/0.93	
Ø 22	75-85 N.m (765-867 kgf.cm)	26.4/1.04	26.9/1.06	

- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

### Step 4: Connect pipes

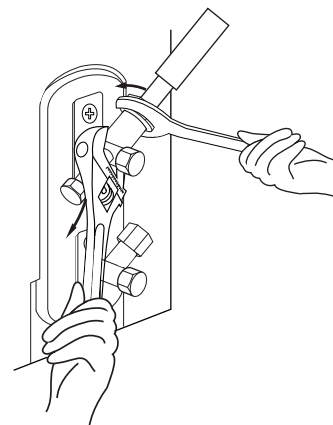
Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low-pressure pipe, then the high-pressure pipe.

- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect.



- Tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the nut on the unit tubing.
- While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values in above table.

**NOTE:** Use both a spanner and a torque wrench when connecting or disconnecting pipes to/from the unit.



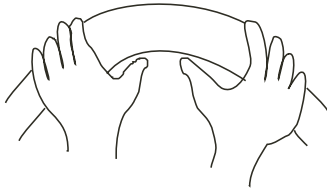
### CAUTION

- Ensure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Make sure the pipe is properly connected. Over tightening may damage the bell mouth and under tightening may lead to leakage.

### NOTE ON MINIMUM BEND RADIUS

Carefully bend the tubing in the middle according to the diagram below. **DO NOT** bend the tubing more than 90° or more than 3 times.

Bend the pipe with thumb



min-radius 10cm (3.9")

6. After connecting the copper pipes to the indoor unit, wrap the power cable, signal cable and the piping together with binding tape.

**NOTE: DO NOT** intertwine signal cable with other wires. While bundling these items together, do not intertwine or cross the signal cable with any other wiring.

7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

### ! CAUTION

Check to make sure there is no refrigerant leak after completing the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

# Wiring

## **! BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS**

1. All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, a surgeprotector and main power switch should be installed.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
11. If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible materials.
12. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.

13. Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion and interference.
14. The unit must be connected to the main outlet. Normally, the power supply must have a impedance of 32 ohms.
15. No other equipment should be connected to the same power circuit.
16. Connect the outdoor wires before connecting the indoor wires.

## **! WARNING**

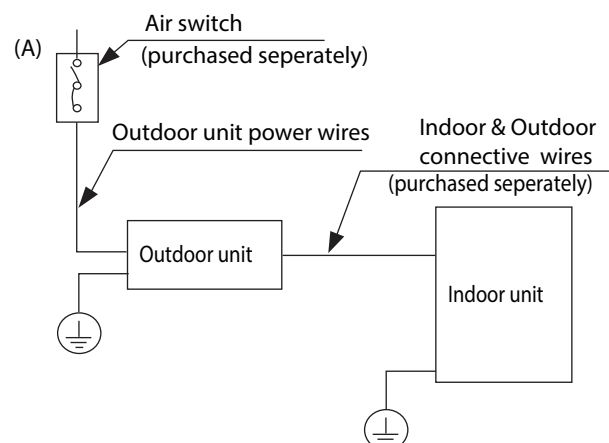
**BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**

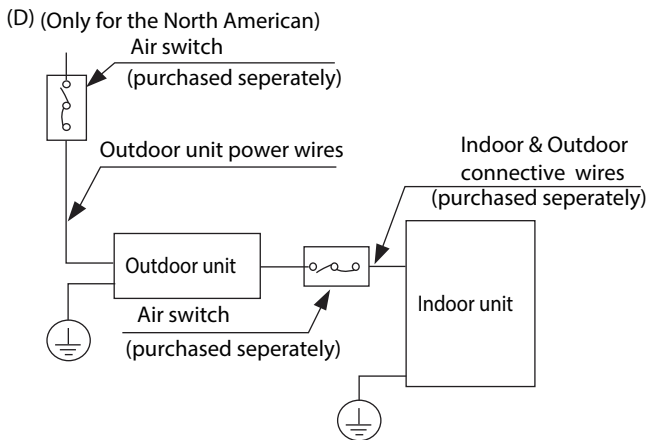
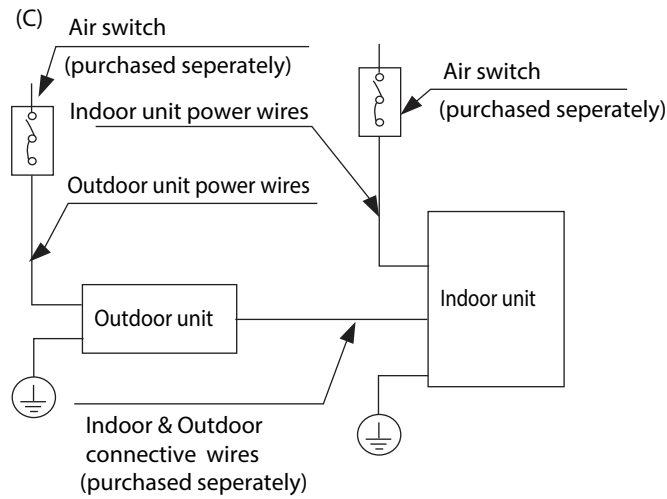
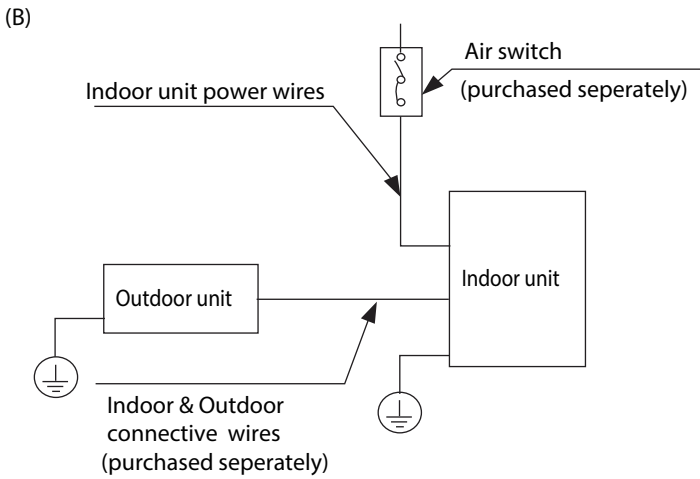
## **NOTE ON AIR SWITCH**

When the maximum current of the air conditioner is more than 16A, an air switch or leakage protection switch with protective device shall be used (purchased seperately) .

When the maximum current of the air conditioner is less than 16A, the power cord of air conditioner shall be equipped with plug (purchased seperately).

The North American market is wired according to NEC and CEC requirements.





**NOTE:** The cognographs are for explanation purpose only. Your machine may be slightly different. The actual shape shall prevail.

## Outdoor Unit Wiring

### **WARNING**

Before performing any electrical or wiring work, turn off the main power to the system.

1. Prepare the cable for connection
  - a. You must first choose the right cable size. Be sure to use H07RN-F cables.

**NOTE:** In North America, choose the cable type according to the local electrical codes and regulations.

### Minimum Cross-Sectional Area of Power and Signal Cables (For reference)

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm <sup>2</sup> )
> 3 and ≤ 6	0.75
> 6 and ≤ 10	1
> 10 and ≤ 16	1.5
> 16 and ≤ 25	2.5
> 25 and ≤ 32	4
> 32 and ≤ 40	6

### CHOOSE THE RIGHT CABLE SIZE

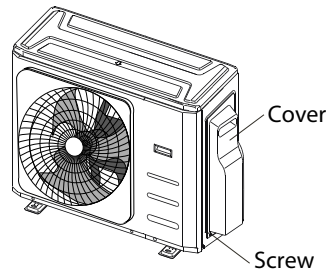
The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

**NOTE:** In North America, please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

- b. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 15cm (5.9") of wire.
- c. Strip the insulation from the ends.
- d. Using a wire crimper, crimp u-lugs on the ends.

**NOTE:** When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.

- Remove the electric cover of the outdoor unit. If there is no cover on the outdoor unit, take off the bolts from the maintenance board and remove the protection board.



- Connect the u-lugs to the terminals Match the wire colors/labels with the labels on the terminal block, and firmly screw the u-lug of each wire to its corresponding terminal.
- Clamp down the cable with designated cable clamp.
- Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
- Reinstall the cover of the electric control box.

### Harmonic declaration

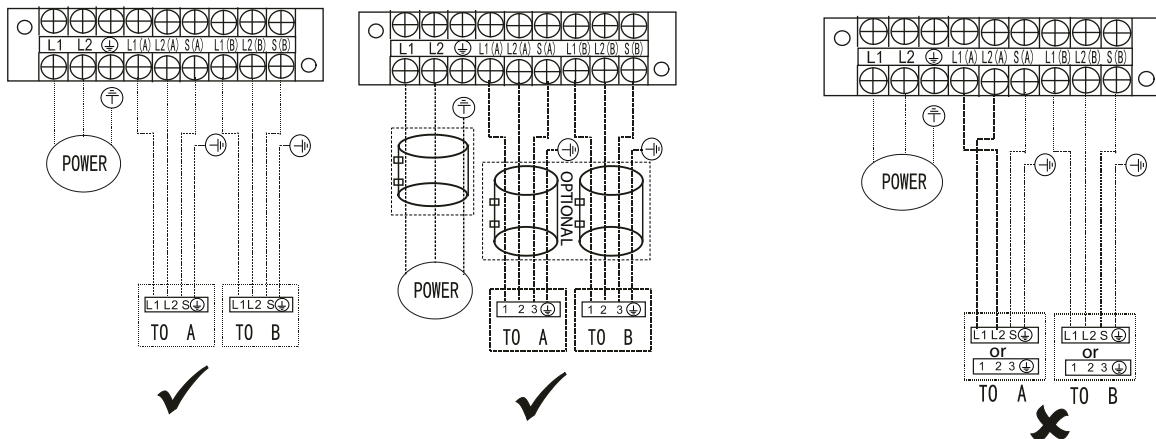
"The equipment M4OB-36HFN8-Q complies with IEC 61000-3-12 provided that the shortcircuit power  $S_{sc}$  is greater than or equal to 4787737.5 at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power  $S_{sc}$  greater than or equal to 4787737.5."

"The equipment M5OD-42HFN8-Q complies with IEC 61000-3-12 provided that the shortcircuit power  $S_{sc}$  is greater than or equal to 3190042.5 at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power  $S_{sc}$  greater than or equal to 3190042.5."

### Wiring Figure

#### ⚠ CAUTION

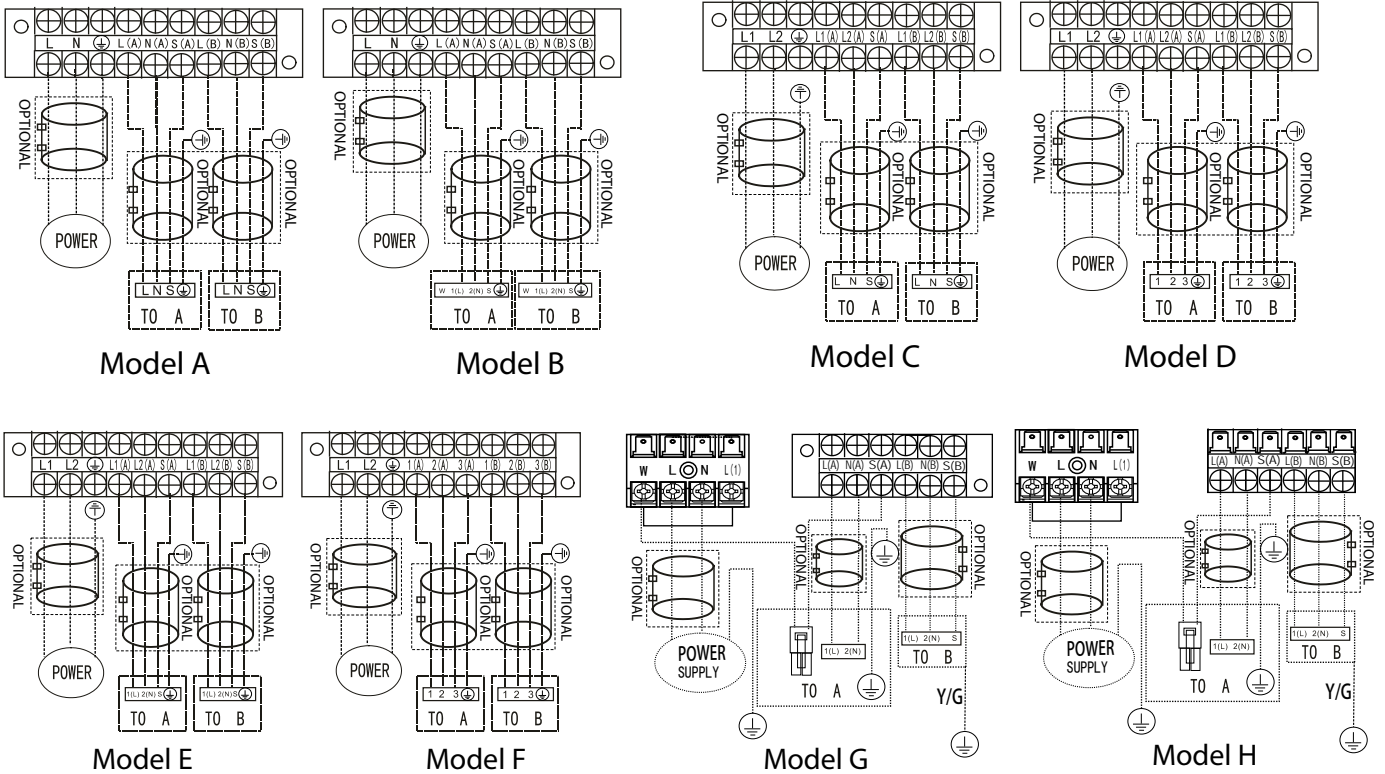
Connect the connective cables to the terminals, as identified, with their matching numbers on the terminal block of the indoor and outdoor units. For example, Terminal L1(A) of the outdoor unit must connect with terminal L1/1 on the indoor unit. The outdoor unit can match different types of indoor unit, the numbers on the terminal block of the indoor unit may be slightly different. Please pay special attention while connecting the wire.



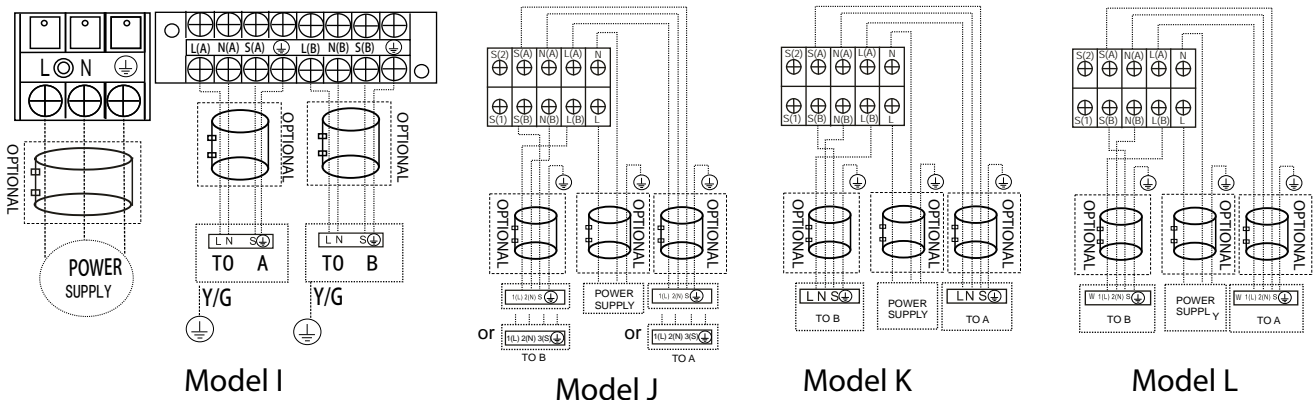
**NOTE:** For quick-connector models, please refer to <<Owner's Manual & Installation Manual >> packed with the indoor unit.

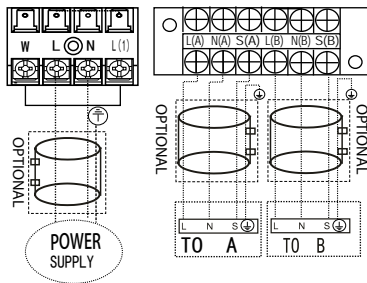
**NOTE:** Refer to the following figures if end-users wish to perform their own wiring.  
Run the main power cord through the lower line-outlet of the cord clamp.  
---- This symbol indicates field wiring.

**One-two models:**

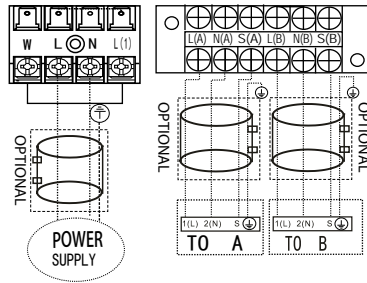


**NOTE:** Use the magnetic ring ( not supplied, optional part) to hitch the connective cable of indoor and outdoor units after installation. One magnetic ring is used for one cable.

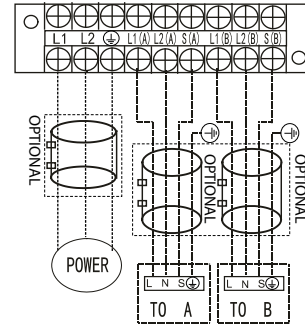




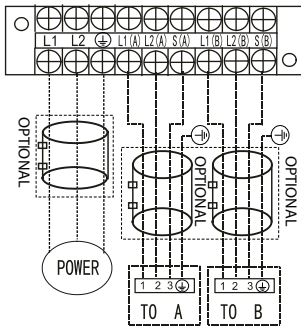
Model M



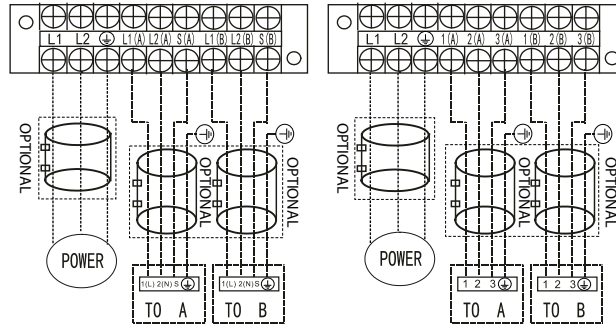
Model N



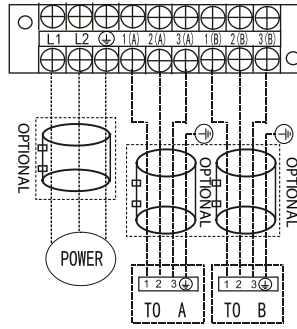
Model O



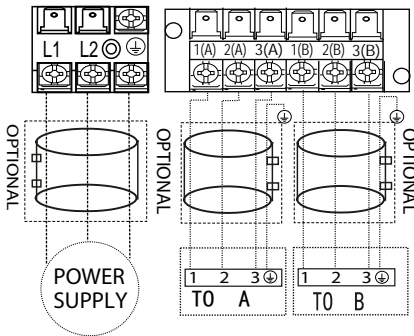
Model P



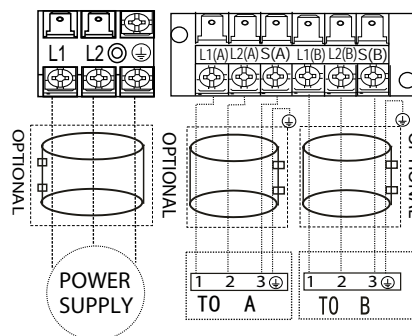
Model Q



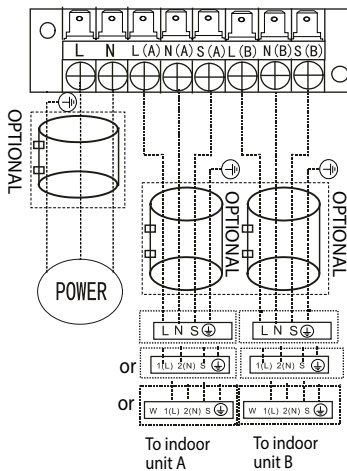
Model R



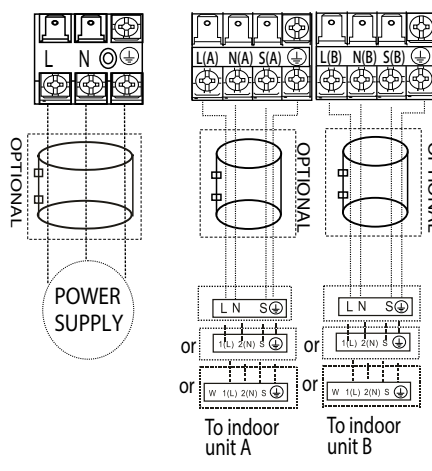
Model S



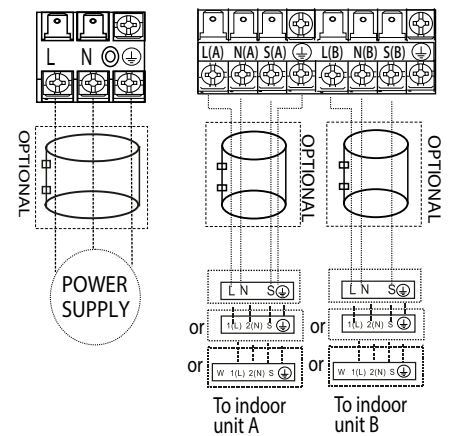
Model T



Model U

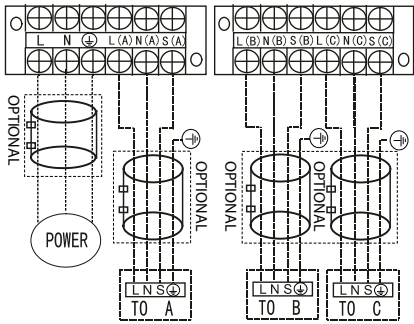


Model V

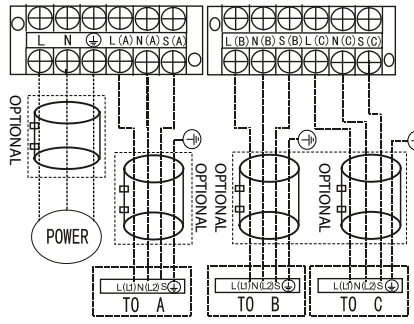


Model W

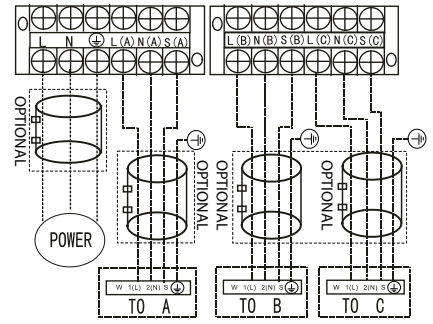
# One-three models:



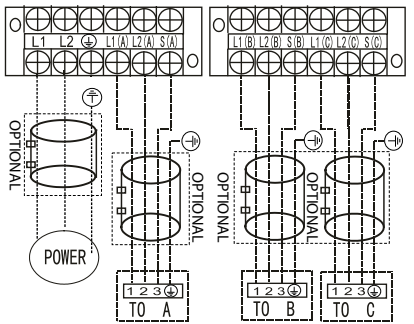
Model A



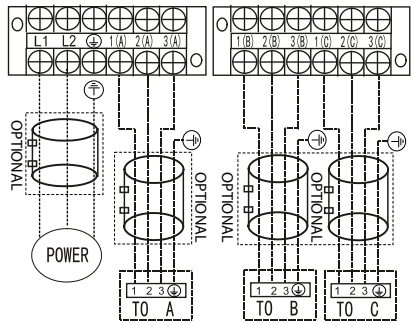
Model B



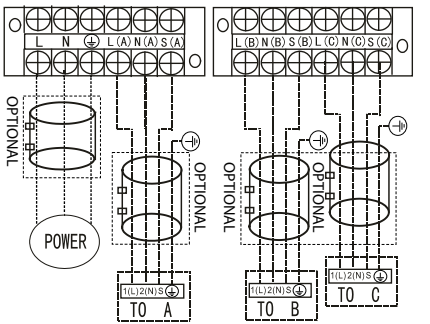
Model C



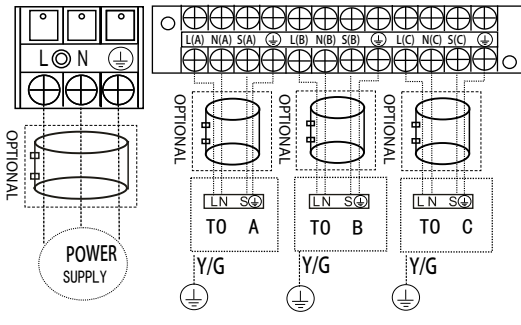
Model D



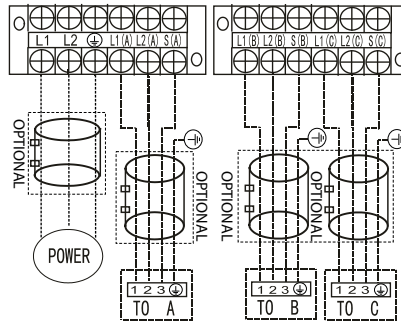
Model E



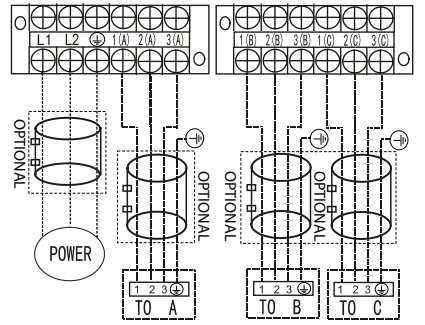
Model F



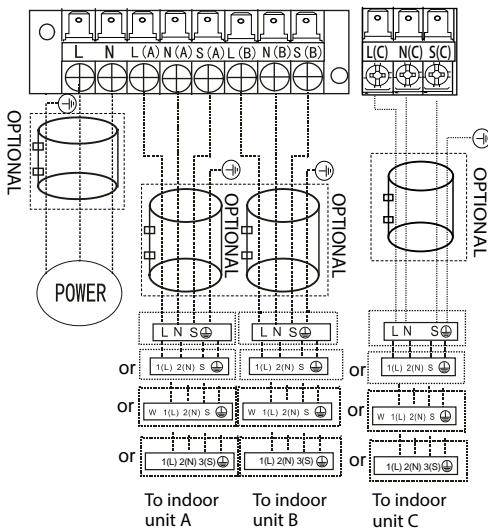
Model G



Model H

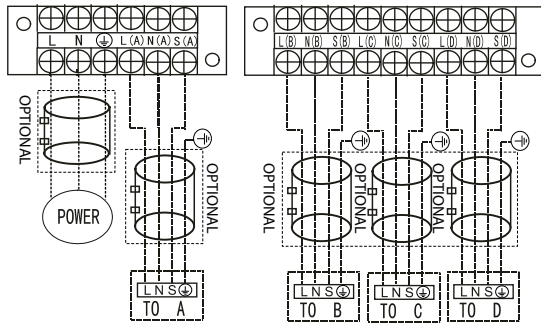


Model I

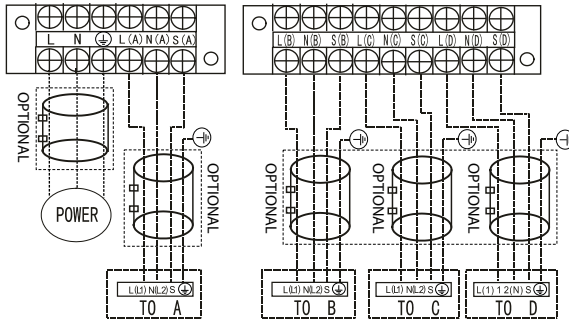


Model J

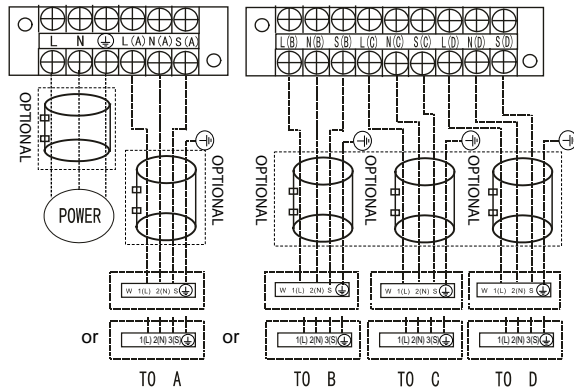
# One-four models:



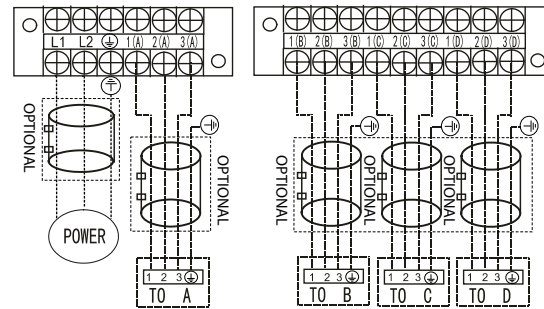
Model A



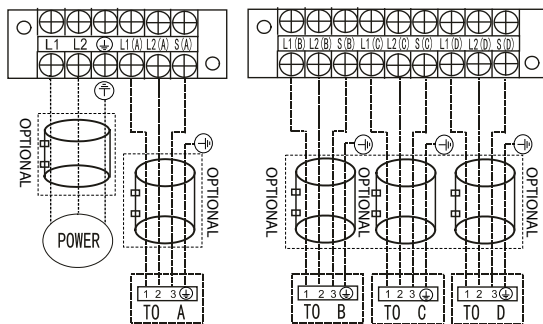
Model B



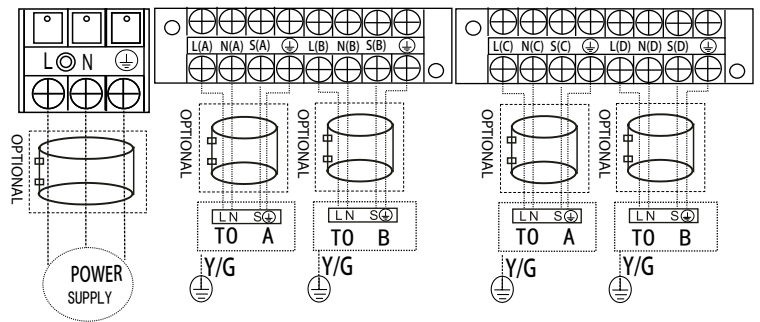
Model C



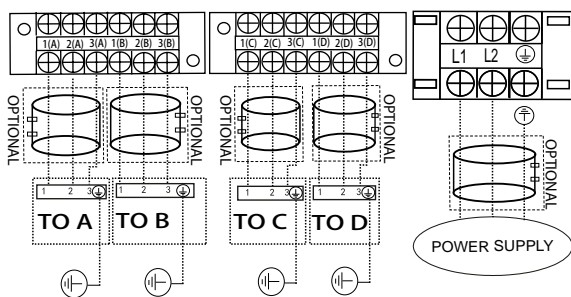
Model D



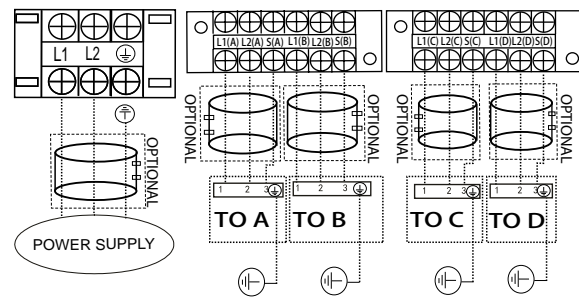
Model E



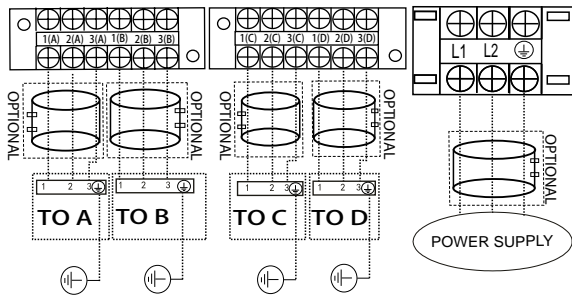
Model F



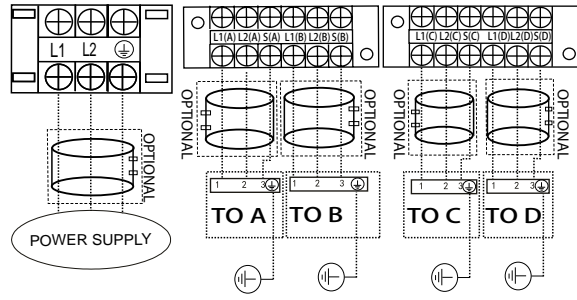
Model G



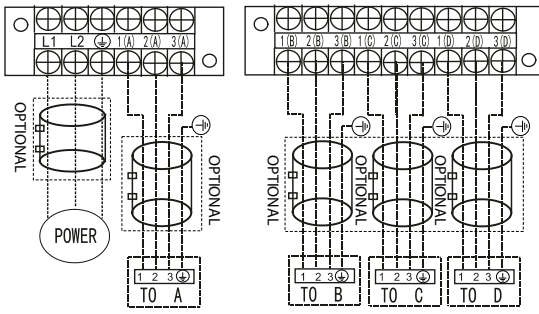
Model H



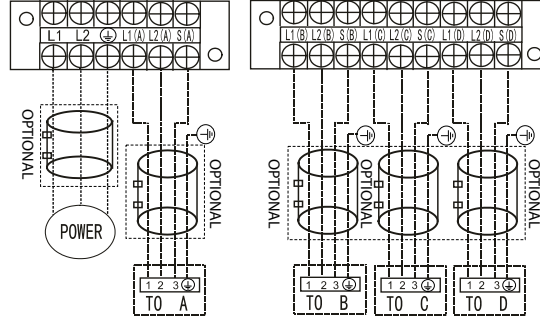
Model I



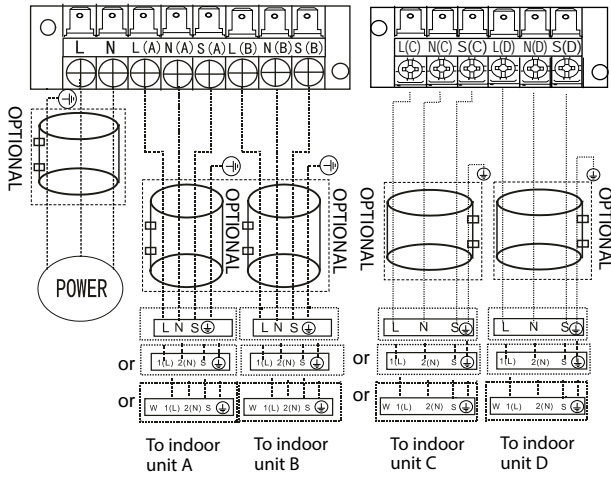
Model J



Mode K

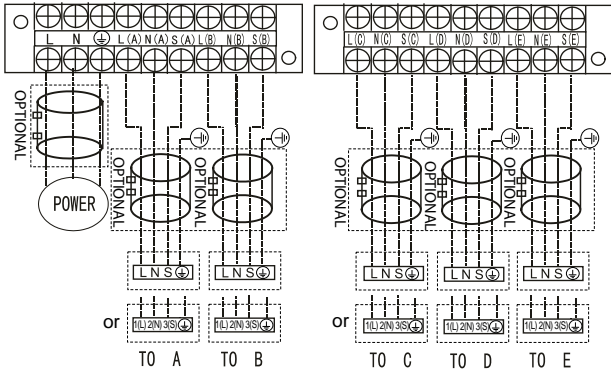


Model L

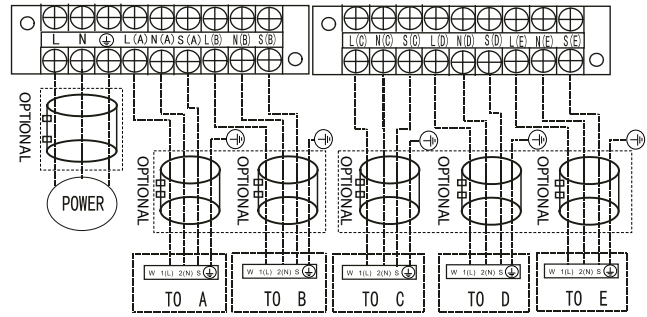


Model M

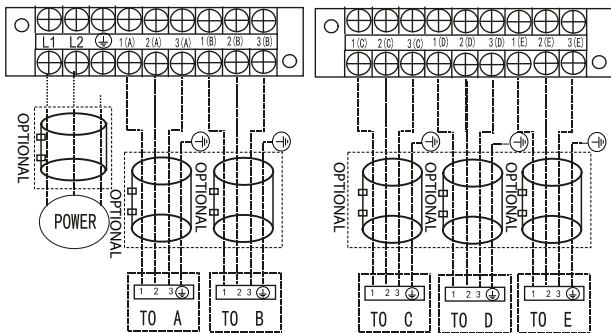
# One-five models:



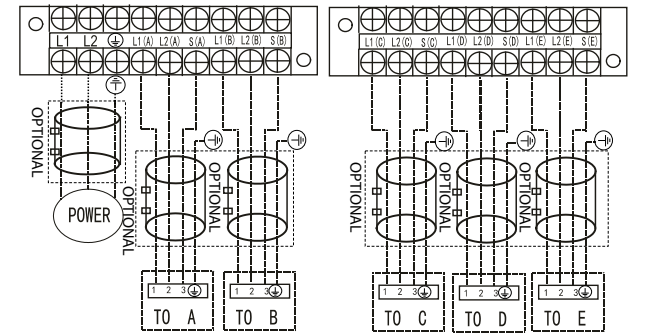
Model A



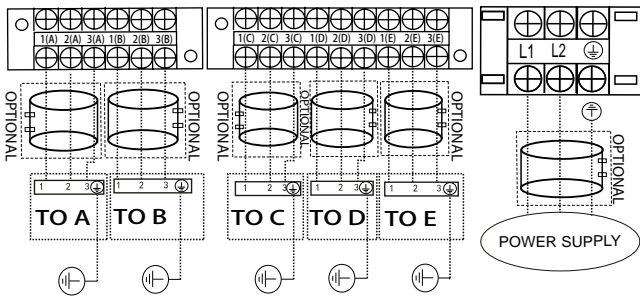
Model B



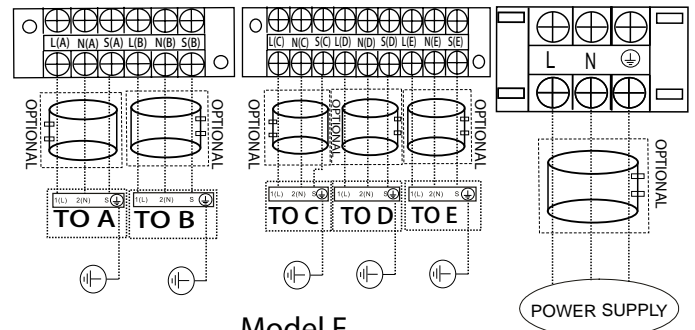
Model C



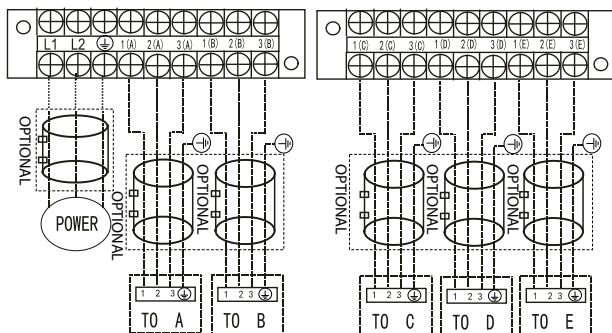
Model D



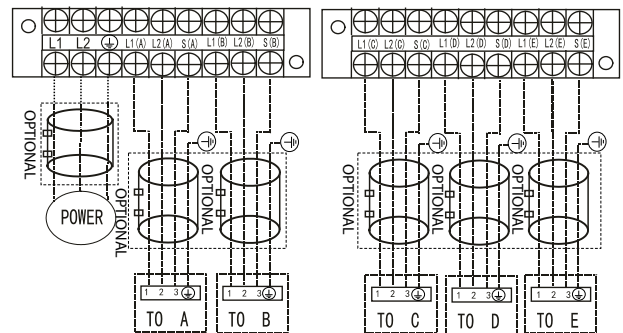
Model E



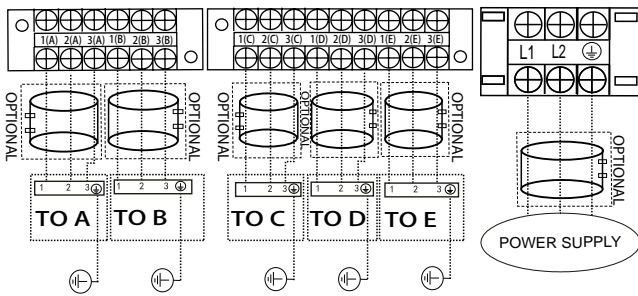
Model F



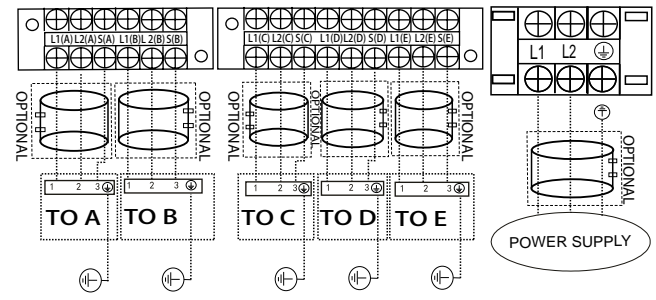
Model G



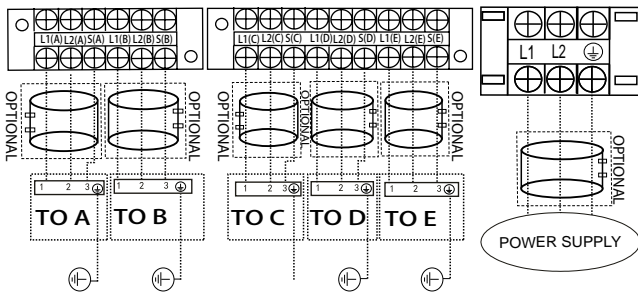
Model H



Model I



Model J



Model K

## ⚠ CAUTION

After confirmation of the above conditions, follow these guidelines when performing wiring:

- Always have an individual power circuit specifically for the air conditioner. Always follow the circuit diagram posted on the inside of the control cover.
- Screws fastening the wiring in the casing of electrical fittings may come loose during transportation. Because loose screws may cause wire burn-out, check that the screws are tightly fastened.
- Check the specifications for the power source.
- Confirm that electrical capacity is sufficient.
- Confirm that starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- Confirm that the cable thickness is as specified in the power source specifications.
- Always install an earth leakage circuit breaker in wet or moist areas.
- The following can be caused by a drop in voltage: vibration of a magnetic switch, damaging the contact point, broken fuses, and disturbance of normal functioning.
- Disconnection from a power supply must be incorporated into the fixed wiring. It must have an air gap contact separation of at least 3mm in each active (phase) conductors.
- Before accessing terminals, all supply circuits must be disconnected.

### NOTE:

To satisfy the EMC compulsory regulations, which is required by the international standard CISPR 14-1:2005/A2:2011 in specific countries or districts, please make sure you apply the correct magnetic rings on your equipment according to the wiring diagram that adhere to the your equipment.

Please contact your distributor or installer to get further information and purchase magnetic rings (The supplier of magnetic ring is TDK (model ZCAT3035-1330) or similar).

# Air Evacuation

## Preparations and Precautions

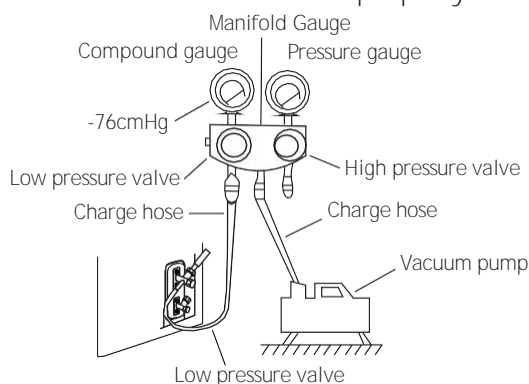
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

### BEFORE PERFORMING EVACUATION

- ☑ Check to make sure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected

### Evacuation Instructions

Before using a manifold gauge and a vacuum pump, read their operation manuals to make sure you know how to use them properly.



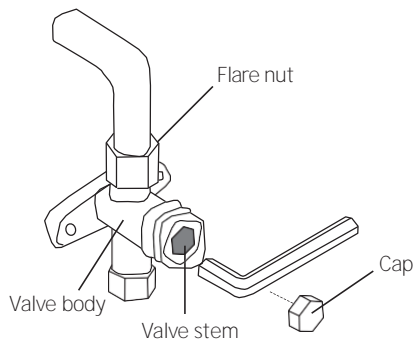
1. Open both King Valves fully until you hit the stopper. Do not force.
2. Connect low pressure manifold gauge hose to mini-split adapter; connect mini-split adapter to low pressure lineset valve A
3. Connect the manifold **gauge's** charge hose from the to the vacuum pump.
4. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.

3. Pressure test Connect nitrogen tank regulator to charging hose on manifold gauges. Pressurize lineset to 200 psi of dry nitrogen.
4. Check for leaks Spray soap bubbles on fittings at outdoor and indoor units to check for bubbles/ leaks. If leaks are present, retorque flare nut. If leak is still present, release nitrogen, inspect and re-work flare. Repeat. Once there are no leaks, proceed to step 6.
5. Discharge nitrogen pressure from lineset A and disconnect nitrogen tank.
6. Turn on the vacuum pump to evacuate the system.
7. Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76cmHG (-1x10<sup>5</sup>Pa).
8. **At this step It is recommended to use a micron gauge and Vacuum the lineset to below 500 microns.**
9. Close the manifold **gauge's** Low Pressure valve and turn off the vacuum pump.
10. Wait for 15 minutes, then check that there has been no change in system pressure.

**NOTE:** If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve). If there is a change in system pressure, there may be a gas leak.

11. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench 1/4 counterclockwise. Listen for gas to exit the system, then close the valve after 5 seconds.

# Air Evacuation



12. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. It should read slightly higher than the atmospheric pressure.
13. Remove the charge hose from the service port.
14. Using hexagonal wrench, fully open both the high pressure and low pressure valves.

## OPEN VALVE STEMS GENTLY

When opening valve stems, turn the hexagonal wrench until it hits against the stopper. **DO NOT** try to force the valve to open further.

15. Tighten valve caps by hand, then tighten it using the proper tool.
16. If the outdoor unit uses all vacuum valves, and the vacuum position is at the main valve, the system is not connected with the indoor unit. The valve must be tightened with a screw nut. Check for gas leaks before operation to prevent leakage.  
Release refrigerant (See Fig. 9.3) Release refrigerant into the lineset by opening the larger (gas side, or suction) lineset valve fully. Then open the smaller (liquid side) lineset valve fully. NOTE: do not force valves open past the point it stops turning under normal hand pressure.

17. Repeat for each zone Disconnect your gauges and attach to lineset valve B. Repeat steps 2 - 10 for each remaining zone in sequence.
18. Test Run Once you complete the vacuum test on the last zone, leave the gauges in place. Follow the remaining steps to test run the system, and add refrigerant if needed.
19. Record Pressure. Start the unit in cooling mode. Run for 10 minutes and monitor operating pressure reading. Power down the unit and wait 5 minutes. Remove the low-pressure gauge and attach the high-pressure gauge to the service port. Change to Heat mode and restart. Run for 10 minutes and monitor the operating pressure. Normal pressure will vary based on outside temperature and cooling vs. heating mode. Enter both results in the adjacent chart. Completing this step on first startup will provide information in case troubleshooting is required.
20. Add refrigerant (if needed) Depending on lineset length and the configuration of your system, you may need to add refrigerant.

Note: The system must be running in cooling mode as you add refrigerant.

## Note On Adding Refrigerant

### CAUTION

- Refrigerant charging must be performed after wiring, vacuuming, and the leak testing.
- **DO NOT** exceed the maximum allowable quantity of refrigerant or overcharge the system. Doing so can damage the unit or impact its functioning.
- Charging with unsuitable substances may cause explosions or accidents. Ensure that the appropriate refrigerant is used.
- Refrigerant containers must be opened slowly. Always use protective gear when charging the system.
- **DO NOT** mix refrigerants types.
- For the R290 or R32 refrigerant model, make sure the conditions within the area have been made safe by control of flammable material when the refrigerant added into air conditioner.

N=2(one-twin models), N=3(one-three models), N=4(one-four models), N=5(one-five models). Depending on the length of connective piping or the pressure of the evacuated system, you made need to add refrigerant. Refer to table below for refrigerant amounts to be added:

### ADDITIONAL REFRIGERANT PER PIPE LENGTH

Connective Pipe Length(m)	Air Purging Method	Additional Refrigerant	
Pre-charge pipe length (ft/m) (pre-charge pipe length xN )	Vacuum Pump	N/A	
More than (pre-charge pipe lengthxN) ft/m	Vacuum Pump	Liquid Side: Ø 6.35 (Ø 1/4") R32 (Total pipe length - pre-charge pipe lengthxN) x12g/m (Total pipe length - pre-charge pipe lengthxN) x0.13oZ/ft	Liquid Side: Ø 9.52 (Ø 3/8") R32 (Total pipe length - pre-charge pipe lengthxN) x24g/m (Total pipe length - pre-charge pipe lengthxN) x0.26oZ/ft
		Liquid Side: Ø 6.35 (Ø 1/4") R410A (Total pipe length - pre-charge pipe lengthxN) x15g/m (Total pipe length - pre-charge pipe lengthxN) x0.16oZ/ft	Liquid Side: Ø 9.52 (Ø 3/8") R410A (Total pipe length - pre-charge pipe lengthxN) x30g/m (Total pipe length - pre-charge pipe lengthxN) x0.32oZ/ft

**NOTE:** The standard pipe length is 7.5m.

Only for Australia models :

- **DO NOT** mix refrigerants types.

N=2(one-twin models),N=3(one-three models),N=4(one-four models),N=5(one-five models).

Some systems require additional charging depending on pipe lengths. The standard pipe length is 10m. The additional refrigerant to be charged can be calculated using the following formula:

### ADDITIONAL REFRIGERANT PER PIPE LENGTH

Connective Pipe Length(m)	Air Purging Method	Additional Refrigerant(R410A)	
Less than Standard pipe length x N	Vacuum Pump	N/A	
More than Standard pipe length x N	Vacuum Pump	Liquid Side: Ø 6.35 (Ø 1/4") (Total pipe length - pre-charge pipe lengthxN) x15g/m	Liquid Side: Ø 9.52 (Ø 3/8") (Total pipe length - pre-charge pipe lengthxN) x30g/m

Make sure to remove the additional refrigerant charge according to the rated volume (5m refrigerant piping) when doing market or government verification test.

## Safety And Leakage Check

### Electrical safety check

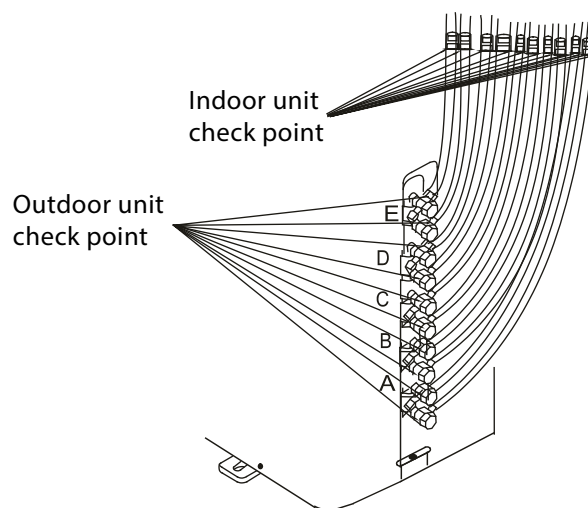
Perform the electrical safety check after completing installation. Cover the following areas:

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 using the grounding resistance tester. Make sure the grounding resistance is less than  $4\Omega$ .
3. Electrical leakage check (performing during test while unit is on)  
During a test operation after completed installation, the use the electroprobe and multimeter to perform an electrical leakage check. Turn off the unit immediately if leakage happens. Try and evaluate different solutions until the unit operates properly.

### Gas leak check

1. Soap water method:  
Apply a soap-water solution or a liquid neutral detergent on the indoor unit connection or outdoor unit connections with a soft brush to check for leakage of the connecting points of the piping. If bubbles emerge, the pipes are experiencing leakage.
2. Leak detector  
Use the leak detector to check for leakage.

**NOTE:** The illustration is for example purposes only. The actual order of A, B, C, D, and E on the machine may be slightly different from the unit you purchased but the general shape will remain the same.



A, B,C,D are points for one-four type.  
A, B,C,D, and E are points for the one-five type.

# Test Run

## Before Test Run

A test run must be performed after the entire system has been completely installed. Confirm the following points before performing the test:

- a) The indoor and outdoor units are properly installed.
- b) Piping and wiring are properly connected.
- c) No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- d) The refrigeration system does not leak.
- e) Drainage system is unimpeded and draining to a safe location.
- f) The heating insulation is properly installed.
- g) The grounding wires are properly connected.
- h) Length of the piping and additional refrigerant stow capacity have been recorded.
- i) The power voltage is the correct voltage for the air conditioner.

- f. Check to see that the drainage system is unimpeded and draining smoothly.
  - g. Ensure there is no vibration or abnormal noise during operation.
5. For the Outdoor Unit
- a. Check to see if the refrigeration system is leaking.
  - b. Make sure there is no vibration or abnormal noise during operation.
  - c. Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.

**NOTE:** If the unit malfunctions or does not operate according to your expectations, please refer to the Troubleshooting section of the Owner's Manual before calling customer service.

## CAUTION

Failure to perform the test run may result in unit damage, property damage or personal injury.

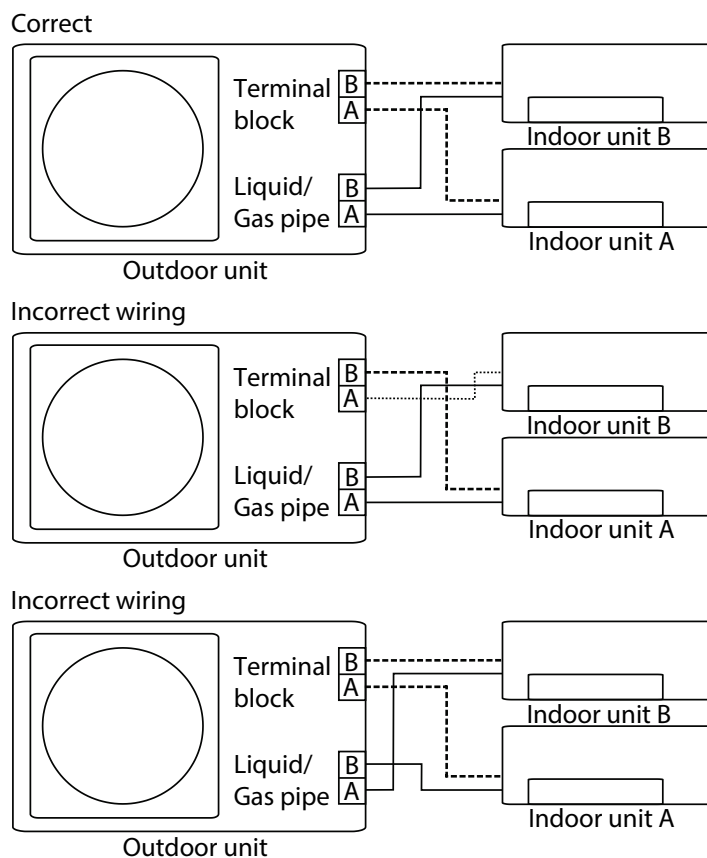
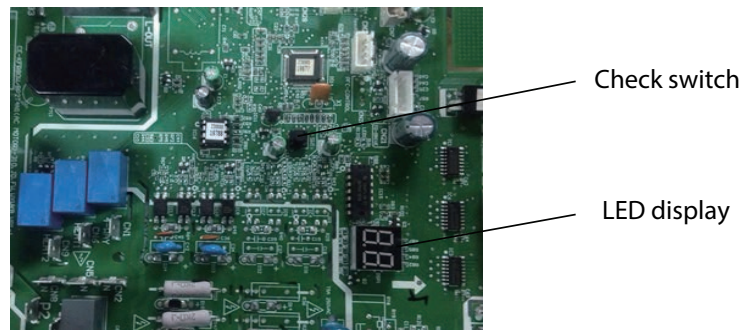
## Test Run Instructions

1. Open both the liquid and gas stop valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode.
4. For the Indoor Unit
  - a. Ensure the remote control and its buttons work properly.
  - b. Ensure the louvers move properly and can be changed using the remote control.
  - c. Double check to see if the room temperature is being registered correctly.
  - d. Ensure the indicators on the remote control and the display panel on the indoor unit work properly.
  - e. Ensure the manual buttons on the indoor unit works properly.

# Function of Automatic Wiring/Piping Correction

## Automatic Wiring/Piping Correction Function

More recent models now feature automatic correction of wiring/piping errors. Press the "check switch" on the outdoor unit PCB board for 5 seconds until the LED displays "CE", indicating that this function is working. Approximately 5-10 minutes after the switch is pressed, the "CE" disappears, meaning that the wiring/piping error is corrected and all wiring/piping is properly connected.



## How To Activate This Function

1. Check that outside temperature is above 5 °C.  
(This function does not work when outside temperature is not above 5 °C)
2. Check that the stop valves of the liquid pipe and gas pipe are open.
3. Turn on the breaker and wait at least 2 minutes.
4. Press the check switch on the outdoor PCB board unit LED display "CE".

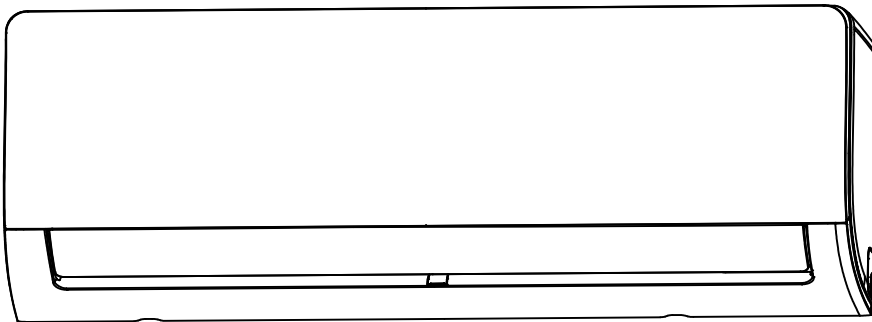


**The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.**

**QS003UI-YTD  
16122300000557  
20210915**

## **SPLIT-TYPE ROOM AIR CONDITIONER**

# **Owner's Manual & Installation Manual**



### **IMPORTANT NOTE:**

Read this manual and SAFETY MANUAL(if any) carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

Please check the applicable models, technical data, F-GAS(if any) and manufacturer information from the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit (European Union products only) or in the packaging of the indoor unit (model dependent)

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# Safety Precautions

## Read Safety Precautions Before Operation and Installation

**Incorrect installation due to ignoring instructions can cause serious damage or injury.** The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



### WARNING

This symbol indicates the possibility of personnel injury or loss of life.



### CAUTION

This symbol indicates the possibility of property damage or serious consequences.



### WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision (European Union countries).

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.



### WARNINGS FOR PRODUCT USE

- If an abnormal situation arises (like a burning smell), immediately turn off the unit and disconnect the power. Call your dealer for instructions to avoid electric shock, fire or injury.
- **Do not** insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- **Do not** use flammable sprays such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.
- **Do not** operate the air conditioner in places near or around combustible gases. Emitted gas may collect around the unit and cause explosion.
- **Do not** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- **Do not** expose your body directly to cool air for a prolonged period of time.
- **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.
- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.

### CLEANING AND MAINTENANCE WARNINGS

- Turn off the device and disconnect the power before cleaning. Failure to do so can cause electrical shock.
- **Do not** clean the air conditioner with excessive amounts of water.
- **Do not** clean the air conditioner with combustible cleaning agents. Combustible cleaning agents can cause fire or deformation.

 **CAUTION**

- Turn off the air conditioner and disconnect the power if you are not going to use it for a long time.
- Turn off and unplug the unit during storms.
- Make sure that water condensation can drain unhindered from the unit.
- **Do not** operate the air conditioner with wet hands. This may cause electric shock.
- **Do not** use device for any other purpose than its intended use.
- **Do not** climb onto or place objects on top of the outdoor unit.
- **Do not** allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.

 **ELECTRICAL WARNINGS**

- Only use the specified power cord. If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- **Do not** pull power cord to unplug unit. Hold the plug firmly and pull it from the outlet. Pulling directly on the cord can damage it, which can lead to fire or electric shock.
- **Do not** modify the length of the power supply cord or use an extension cord to power the unit.
- **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- If connecting power to fixed wiring, 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.

**TAKE NOTE OF FUSE SPECIFICATIONS**


The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board ,such as : T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC,etc.  
**NOTE:** For the units using R32 or R290 refrigerant , only the blast-proof ceramic fuse can be used.

**UV-C lamp(Applicable to the unit contains an UV-C lamp only)**

This appliance contains a UV-C lamp. Read the maintenance instructions before opening the appliance.

1. Do not operate UV-C lamps outside of the appliance.
2. Appliances that are obviously damaged must not be operated.
3. Unintended use of the appliance or damage to the housing may result in the escape of dangerous UV-C radiation. UV-C radiation may, even in small doses, cause harm to the eyes and skin.

4. Before opening doors and access panels bearing the ULTRAVIOLET RADIATION hazard symbol for the conducting USER MAINTENANCE, it is recommended to disconnect the power.
5. The UV-C lamp can not be cleaned, repaired and replaced.
6. UV-C BARRIERS bearing the ULTRAVIOLET RADIATION hazard symbol should not be removed.

 **WARNING** This appliance contains an UV emitter. Do not stare at the light source.

## WARNINGS FOR PRODUCT INSTALLATION

1. Installation must be performed by an authorized dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
2. Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.  
(In North America, installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.)
3. Contact an authorized service technician for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
4. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
5. Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
6. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
7. For units that have an auxiliary electric heater, **do not** install the unit within 1 meter (3 feet) of any combustible materials.
8. **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
9. Do not turn on the power until all work has been completed.
10. When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
11. How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections.

## **Note about Fluorinated Gasses(Not applicable to the unit using R290 Refrigerant)**

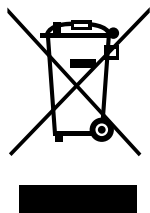
1. This air-conditioning unit contains fluorinated greenhouse gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself or the "Owner's Manual - Product Fiche" in the packaging of the outdoor unit. (European Union products only).
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation and recycling must be performed by a certified technician.
4. For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO<sub>2</sub> equivalent or more, but of less than 50 tonnes of CO<sub>2</sub> equivalent, If the system has a leak-detection system installed, it must be checked for leaks at least every 24 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

## **WARNING for Using R32/R290 Refrigerant**

- When flammable refrigerant are employed, appliance shall be stored in a well -ventilated area where the room size corresponds to the room area as specific for operation.  
For R32 frigerant models:  
Appliance shall be installed, operated and stored in a room with a floor area larger than 4m<sup>2</sup>.  
For R290 refrigerant models, appliance shall be installed, operated and stored in a room with a floor area larger than:  
≤9000Btu/h units: 13m<sup>2</sup>  
>9000Btu/h and ≤12000Btu/h units: 17m<sup>2</sup>  
>12000Btu/h and ≤18000Btu/h units: 26m<sup>2</sup>  
>18000Btu/h and ≤24000Btu/h units: 35m<sup>2</sup>
- Reusable mechanical connectors and flared joints are not allowed indoors. (**EN** Standard Requirements).
- Mechanical connectors used indoors shall have a rate of not more than 3g/year at 25% of the maximum allowable pressure. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (**UL** Standard Requirements)
- When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (**IEC** Standard Requirements)
- Mechanical connectors used indoors shall comply with ISO 14903.

## European Disposal Guidelines

*This marking shown on the product or its literature, indicates that waste electrical and eletrical equipment should not be mixed with general household waste.*



### Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

This appliance contains refrigerant and other potentially hazardous materials. When disposing of this appliance, the law requires special collection and treatment. **Do not** dispose of this product as household waste or unsorted municipal waste.

When disposing of this appliance, you have the following options:

- Dispose of the appliance at designated municipal electronic waste collection facility.
- When buying a new appliance, the retailer will take back the old appliance free of charge.
- The manufacturer will take back the old appliance free of charge.
- Sell the appliance to certified scrap metal dealers.

### Special notice

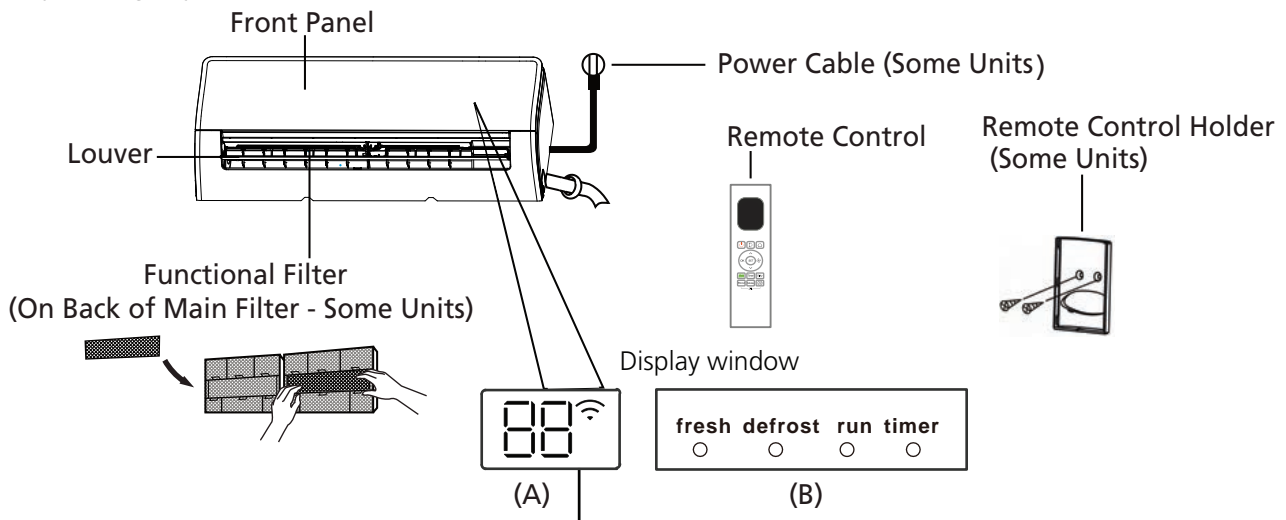
Disposing of this appliance in the forest or other natural surroundings endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.

# Unit Specifications and Features

## Indoor unit display

**NOTE:** Different models have different front panels and display windows. Not all the display codes describing below are available for the air conditioner you purchased. Please check the indoor display window of the unit you purchased.

Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.



"fresh " when Fresh and UV-C lamp(if any)feature is activated(some units)

"defrost" when defrost feature is activated.

"run " when the unit is on.

"timer " when TIMER is set.

"📶 " when Wireless Control feature is activated(some units)

"88" Displays temperature, operation feature and error codes:

"01" for 3 seconds when:

- TIMER ON is set (if the unit is OFF, "01" remains on when TIMER ON is set )
- FRESH, UV-C lamp, SWING, TURBO, ECO,or SILENCE feature is turned on

"0F" for 3 seconds when:

- TIMER OFF is set
- FRESH, UV-C lamp, SWING, TURBO, ECO,or SILENCE feature is turned off

"dF" when defrosting

"FP" when 8°C heating feature is turned on(some units)

"CL" when Active Clean feature is turned on(For Inverter split type)  
when unit is self-cleaning(For Fixed-speed type)

### Display Code Meanings

## Operating temperature

When your air conditioner is used outside of the following temperature ranges, certain safety protection features may activate and cause the unit to disable.

### Inverter Split Type

	COOL mode	HEAT mode	DRY mode
Room Temperature	16°C - 32°C (60°F - 90°F)	0°C - 30°C (32°F - 86°F)	10°C - 32°C (50°F - 90°F)
Outdoor Temperature	0°C - 50°C (32°F - 122°F)	-15°C - 24°C (5°F - 75°F)	0°C - 50°C (32°F - 122°F)
	-15°C - 50°C (5°F - 122°F) (For models with low temp. cooling systems.)		
	0°C - 52°C (32°F - 126°F) (For special tropical models)	0°C - 52°C (32°F - 126°F) (For special tropical models)	

#### FOR OUTDOOR UNITS WITH AUXILIARY ELECTRIC HEATER

When outside temperature is below 0°C (32°F), we strongly recommend keeping the unit plugged in at all time to ensure smooth ongoing performance.

### Fixed-speed Type

	COOL mode	HEAT mode	DRY mode
Room Temperature	16°C-32°C (60°F-90°F)	0°C-30°C (32°F-86°F)	10°C-32°C (50°F-90°F)
Outdoor Temperature	18°C-43°C (64°F-109°F)	-7°C-24°C (19°F-75°F)	11°C-43°C (52°F-109°F)
	-7°C-43°C (19°F-109°F) (For models with low-temp cooling systems)		18°C-43°C (64°F-109°F)
	18°C-52°C (64°F-126°F) (For special tropical models)		18°C-52°C (64°F-126°F) (For special tropical models)

**NOTE:** Room relative humidity less than 80%. If the air conditioner operates in excess of this figure, the surface of the air conditioner may attract condensation. Please sets the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

#### To further optimize the performance of your unit, do the following:

- Keep doors and windows closed.
- Limit energy usage by using TIMER ON and TIMER OFF functions.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

A guide on using the infrared remote is not included in this literature package. Not all the functions are available for the air conditioner, please check the indoor display and remote control of the unit you purchased.

## Other Features

- **Auto-Restart(some units)**  
If the unit loses power, it will automatically restart with the prior settings once power has been restored.
- **Anti-mildew (some units)**  
When turning off the unit from COOL, AUTO (COOL), or DRY modes, the air conditioner will continue operate at very low power to dry up condensed water and prevent mildew growth.
- **Wireless Control (some units)**  
Wireless control allows you to control your air conditioner using your mobile phone and a wireless connection.  
For the USB device access, replacement, maintenance operations must be carried out by professional staff.
- **Louver Angle Memory(some units)**  
When turning on your unit, the louver will automatically resume its former angle.
- **Active Clean function(some units)**
  - The Active Clean Technology washes away dust when it adheres to the heat exchanger by automatically freezing and then rapidly thawing the frost. A "pi-pi" sound will be heard.  
The Active clean operation is used to produce more condensed water to improve the cleaning effect, and the cold air will blow out. After cleaning, the internal wind wheel then keeps operating with hot air to blow-dry the evaporator, thus keeping the inside clean.
  - When this function is turned on, the indoor unit display window appears "CL", after 20 to 130 minutes, the unit will turn off automatically and cancel Active Clean function.
  - For some units, the system will start high-temperature cleaning process, and the temperature of air outlet is very high. Please keep away from it. And this would lead to the rising of the room temperature.

- **Breeze Away (some units)**

This feature avoids direct air flow blowing on the body and make you feel indulging in silky coolness.

- **Refrigerant Leakage Detection (some units)**

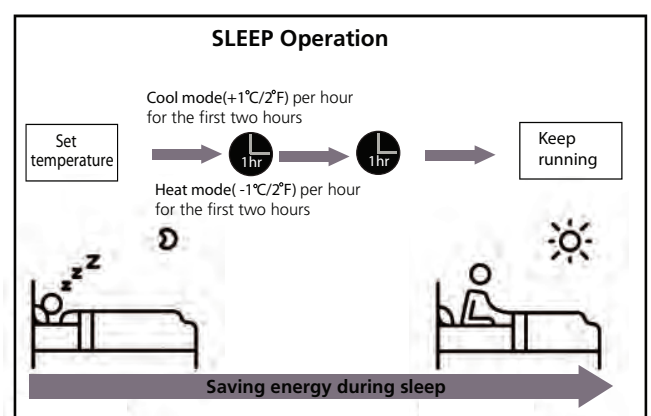
The indoor unit will automatically display "ELOC" or flash LEDS (model dependent) when it detects refrigerant leakage.

- **Sleep Operation**

The SLEEP function is used to decrease energy use while you sleep (and don't need the same temperature settings to stay comfortable). This function can only be activated via remote control. And the Sleep function is not available in FAN or DRY mode.

Press the **SLEEP** button when you are ready to go to sleep. When in COOL mode, the unit will increase the temperature by 1°C (2°F) after 1 hour, and will increase an additional 1°C (2°F) after another hour. When in HEAT mode, the unit will decrease the temperature by 1°C (2°F) after 1 hour, and will decrease an additional 1°C (2°F) after another hour.

The sleep feature will stop after 8 hours and the system will keep running with final situation.



### NOTE:

For multi-split air conditioners, the following functions are not available:  
Active clean function, Silence feature, Breeze away function, Refrigerant leakage detection function and Eco feature.

## • Setting Angle of Air Flow

### Setting vertical angle of air flow

While the unit is on, use the **SWING/DIRECT** button on remote control to set the direction (vertical angle) of airflow. Please refer to the Remote Control Manual for details.

#### NOTE ON LOUVER ANGLES

When using COOL or DRY mode, do not set louver at too vertical an angle for long periods of time. This can cause water to condense on the louver blade, which will drop on your floor or furnishings.

When using COOL or HEAT mode, setting the louver at too small an angle can reduce the performance of the unit due to restricted air flow.

**NOTE:** According to the relative standards requirement, please sets the vertical air flow louver to its maximum angle under heating capacity test.

### Setting horizontal angle of air flow

The horizontal angle of the airflow must be set manually. Grip the deflector rod (See **Fig.B**) and manually adjust it to your preferred direction.

**For some units,** the horizontal angle of the airflow can be set by remote control. please refer to the Remote Control Manual.

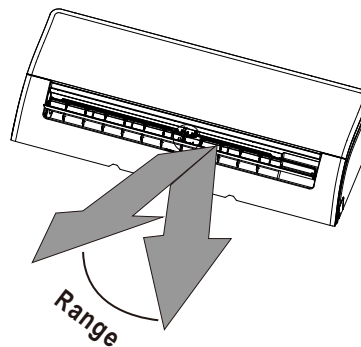
### Manual Operation(without remote)

#### ⚠ CAUTION

The manual button is intended for testing purposes and emergency operation only. Please do not use this function unless the remote control is lost and it is absolutely necessary. To restore regular operation, use the remote control to activate the unit. Unit must be turned off before manual operation.

To operate your unit manually:

1. Open the front panel of the indoor unit.
2. Locate the **MANUAL CONTROL button** on the right-hand side of the unit.
3. Press the **MANUAL CONTROL button** one time to activate FORCED AUTO mode.
4. Press the **MANUAL CONTROL button** again to activate FORCED COOLING mode.
5. Press the **MANUAL CONTROL button** a third time to turn the unit off.
6. Close the front panel.



**NOTE:** Do not move louver by hand. This will cause the louver to become out of sync. If this occurs, turn off the unit and unplug it for a few seconds, then restart the unit. This will reset the louver.

Fig. A

#### ⚠ CAUTION

Do not put your fingers in or near the blower and suction side of the unit. The high-speed fan inside the unit may cause injury.

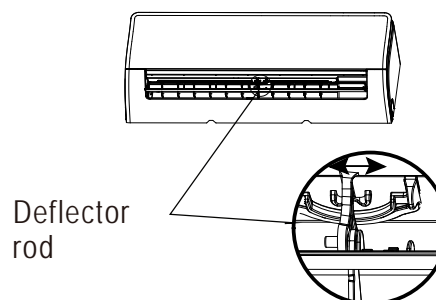
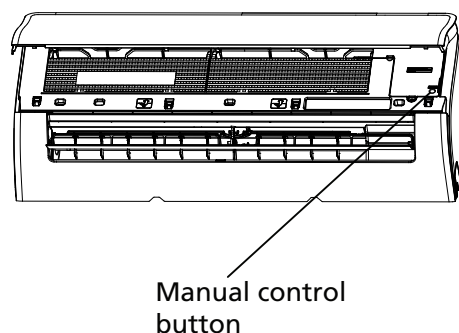


Fig. B



# Care and Maintenance

## Cleaning Your Indoor Unit

### BEFORE CLEANING OR MAINTENANCE

**ALWAYS TURN OFF YOUR AIR CONDITIONER SYSTEM AND DISCONNECT ITS POWER SUPPLY BEFORE CLEANING OR MAINTENANCE.**

### CAUTION

Only use a soft, dry cloth to wipe the unit clean. If the unit is especially dirty, you can use a cloth soaked in warm water to wipe it clean.

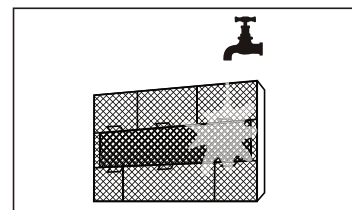
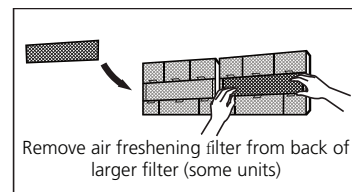
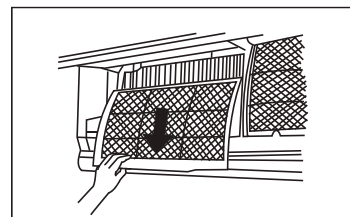
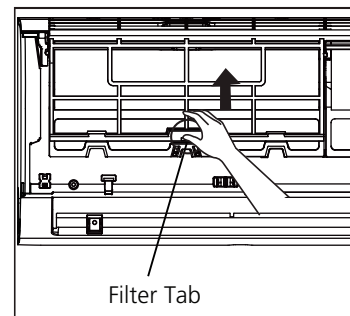
- **Do not** use chemicals or chemically treated cloths to clean the unit
- **Do not** use benzene, paint thinner, polishing powder or other solvents to clean the unit. They can cause the plastic surface to crack or deform.
- **Do not** use water hotter than 40°C (104°F) to clean the front panel. This can cause the panel to deform or become discolored.

## Cleaning Your Air Filter

A clogged air conditioner can reduce the cooling efficiency of your unit, and can also be bad for your health. Make sure to clean the filter once every two weeks.

1. Lift the front panel of the indoor unit.
2. First press the tab on the end of filter to loosen the buckle, lift it up, then pull it towards yourself.
3. Now pull the filter out.
4. If your filter has a small air freshening filter, unclip it from the larger filter. Clean this air freshening filter with a hand-held vacuum.
5. Clean the large air filter with warm, soapy water. Be sure to use a mild detergent.

6. Rinse the filter with fresh water, then shake off excess water.
7. Dry it in a cool, dry place, and refrain from exposing it to direct sunlight.
8. When dry, re-clip the air freshening filter to the larger filter, then slide it back into the indoor unit.
9. Close the front panel of the indoor unit.



### CAUTION

Do not touch air freshening (Plasma) filter for at least 10 minutes after turning off the unit.

**CAUTION**

- Before changing the filter or cleaning, turn off the unit and disconnect its power supply.
- When removing filter, do not touch metal parts in the unit. The sharp metal edges can cut you.
- Do not use water to clean the inside of the indoor unit. This can destroy insulation and cause electrical shock.
- Do not expose filter to direct sunlight when drying. This can shrink the filter.

**Air Filter Reminders (Optional)**

**Air Filter Cleaning Reminder**

After 240 hours of use, the display window on the indoor unit will flash "CL." This is a reminder to clean your filter. After 15 seconds, the unit will revert to its previous display.

To reset the reminder, press the **LED** button on your remote control 4 times, or press the **MANUAL CONTROL** button 3 times. If you don't reset the reminder, the "CL" indicator will flash again when you restart the unit.

**Air Filter Replacement Reminder**

After 2,880 hours of use, the display window on the indoor unit will flash "nF." This is a reminder to replace your filter. After 15 seconds, the unit will revert to its previous display.

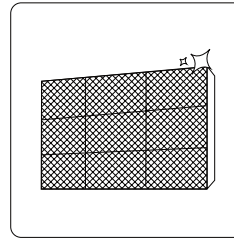
To reset the reminder, press the **LED** button on your remote control 4 times, or press the **MANUAL CONTROL** button 3 times. If you don't reset the reminder, the "nF" indicator will flash again when you restart the unit.

**CAUTION**

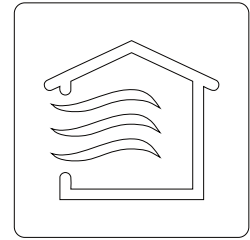
- Any maintenance and cleaning of outdoor unit should be performed by an authorized dealer or a licensed service provider.
- Any unit repairs should be performed by an authorized dealer or a licensed service provider.

**Maintenance – Long Periods of Non-Use**

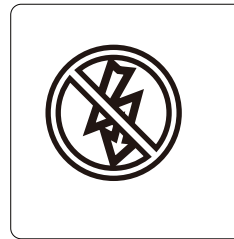
If you plan not to use your air conditioner for an extended period of time, do the following:



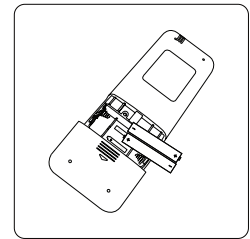
Clean all filters



Turn on FAN function until unit dries out completely



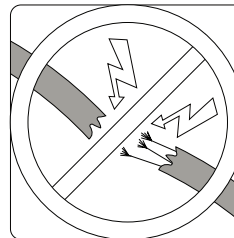
Turn off the unit and disconnect the power



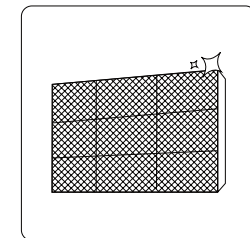
Remove batteries from remote control

**Maintenance – Pre-Season Inspection**

After long periods of non-use, or before periods of frequent use, do the following:



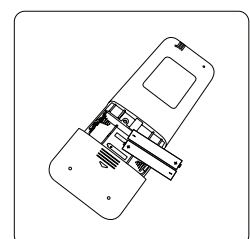
Check for damaged wires



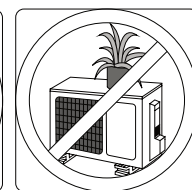
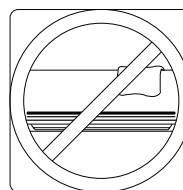
Clean all filters



Check for leaks



Replace batteries



Make sure nothing is blocking all air inlets and outlets

# Troubleshooting

## SAFETY PRECAUTIONS

If ANY of the following conditions occurs, turn off your unit immediately!

- The power cord is damaged or abnormally warm
- You smell a burning odor
- The unit emits loud or abnormal sounds
- A power fuse blows or the circuit breaker frequently trips
- Water or other objects fall into or out of the unit

**DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY!**

## Common Issues

The following problems are not a malfunction and in most situations will not require repairs.

Issue	Possible Causes
<b>Unit does not turn on when pressing ON/OFF button</b>	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
<b>The unit changes from COOL/HEAT mode to FAN mode</b>	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
<b>The indoor unit emits white mist</b>	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
<b>Both the indoor and outdoor units emit white mist</b>	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
<b>The indoor unit makes noises</b>	A rushing air sound may occur when the louver resets its position.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion and contraction of the unit's plastic parts.
<b>Both the indoor unit and outdoor unit make noises</b>	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.

Issue	Possible Causes
<b>The outdoor unit makes noises</b>	The unit will make different sounds based on its current operating mode.
<b>Dust is emitted from either the indoor or outdoor unit</b>	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
<b>The unit emits a bad odor</b>	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
<b>The fan of the outdoor unit does not operate</b>	During operation, the fan speed is controlled to optimize product operation.
<b>Operation is erratic, unpredictable, or unit is unresponsive</b>	Interference from cell phone towers and remote boosters may cause the unit to malfunction. In this case, try the following: <ul style="list-style-type: none"> <li>• Disconnect the power, then reconnect.</li> <li>• Press ON/OFF button on remote control to restart operation.</li> </ul>

**NOTE:** If problem persists, contact a local dealer or your nearest customer service center. Provide them with a detailed description of the unit malfunction as well as your model number.

## Troubleshooting

When troubles occur, please check the following points before contacting a repair company.







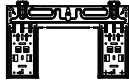

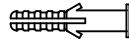


Problem	Possible Causes	Solution
<b>Poor Cooling Performance</b>	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
SILENCE function is activated (optional function)	SILENCE function can lower product performance by reducing operating frequency. Turn off SILENCE function.	

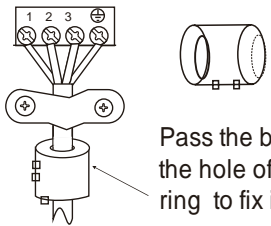
Problem	Possible Causes	Solution
<b>The unit is not working</b>	Power failure	Wait for the power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace batteries
	The Unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
	Timer is activated	Turn timer off
<b>The unit starts and stops frequently</b>	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant.
	Incompressible gas or moisture has entered the system.	Evacuate and recharge the system with refrigerant
	The compressor is broken	Replace the compressor
	The voltage is too high or too low	Install a manostat to regulate the voltage
<b>Poor heating performance</b>	The outdoor temperature is extremely low	Use auxiliary heating device
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
<b>Indicator lamps continue flashing</b>	The unit may stop operation or continue to run safely. If the indicator lamps continue to flash or error codes appear, wait for about 10 minutes. The problem may resolve itself. If not, disconnect the power, then connect it again. Turn the unit on. If the problem persists, disconnect the power and contact your nearest customer service center.	
<b>Error code appears and begins with the letters as the following in the window display of indoor unit:</b>	<ul style="list-style-type: none"> <li>• E(x), P(x), F(x)</li> <li>• EH(xx), EL(xx), EC(xx)</li> <li>• PH(xx), PL(xx), PC(xx)</li> </ul>	

**NOTE:** If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact an authorized service center.

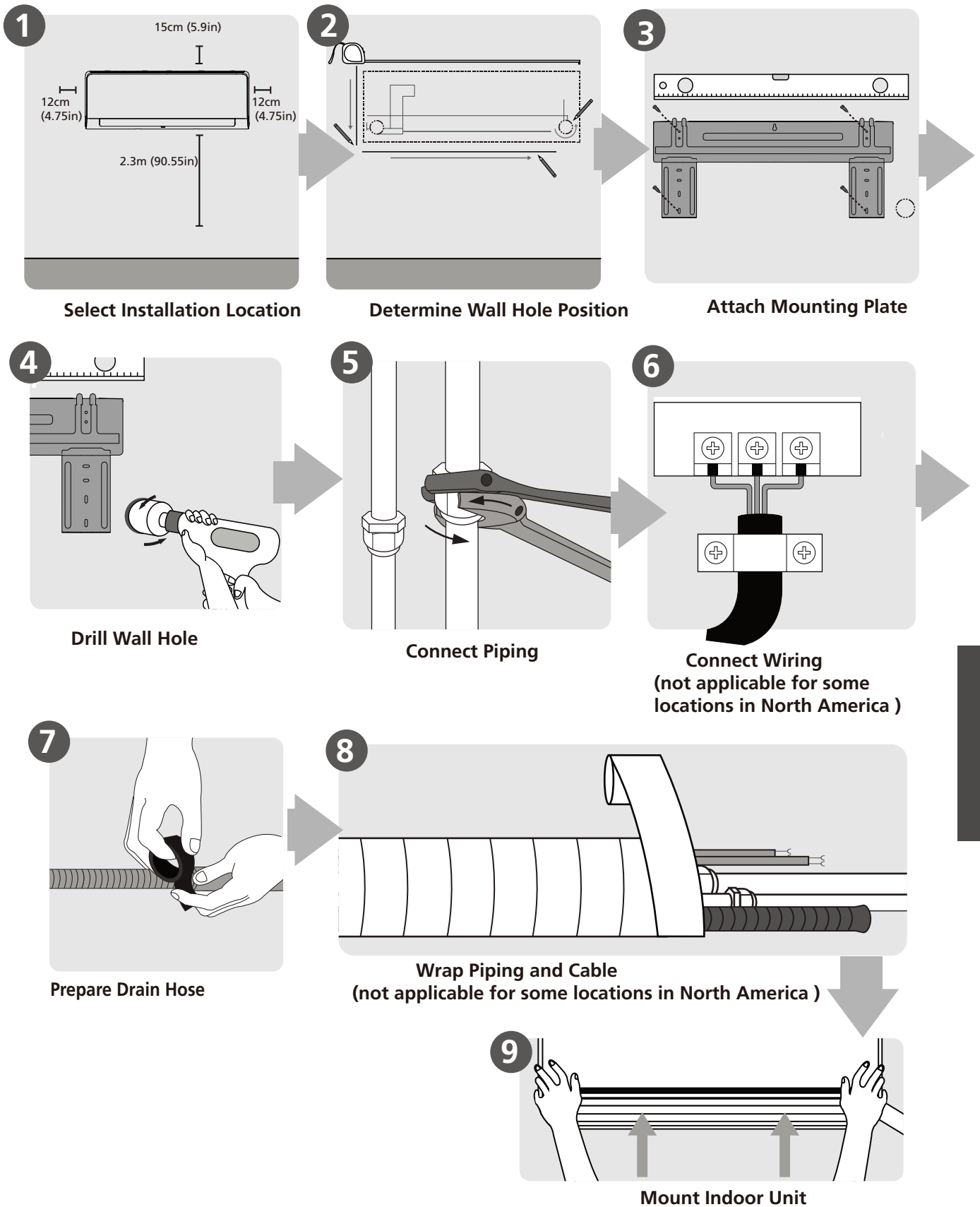
# Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. The items are not included with the air conditioner must be purchased separately.

Name of Accessories	Q'ty(pc)	Shape	Name of Accessories	Q'ty(pc)	Shape
Manual	2~3		Remote controller	1	
Drain joint (for cooling & heating models)	1		Battery	2	
Seal (for cooling & heating models)	1		Remote controller holder(optional)	1	
Mounting plate	1		Fixing screw for remote controller holder(optional)	2	
Anchor	5~8 (depending on models)		Small Filter (Need to be installed on the back of main air filter by the authorized technician while installing the machine)	1~2 (depending on models)	
Mounting plate fixing screw	5~8 (depending on models)				

Name	Shape	Quantity(PC)
Connecting pipe assembly	Liquid side	Φ 6.35 (1/4in)
		Φ 9.52 (3/8in)
	Gas side	Φ 9.52 (3/8in)
		Φ 12.7 (1/2in)
		Φ 16 (5/8in)
		Φ 19 (3/4in)
		Parts you must purchase separately. Consult the dealer about the proper pipe size of the unit you purchased.
Magnetic ring and belt (if supplied ,please refer to the wiring diagram to install it on the connective cable. )	 <p>Pass the belt through the hole of the Magnetic ring to fix it on the cable</p>	Varies by model

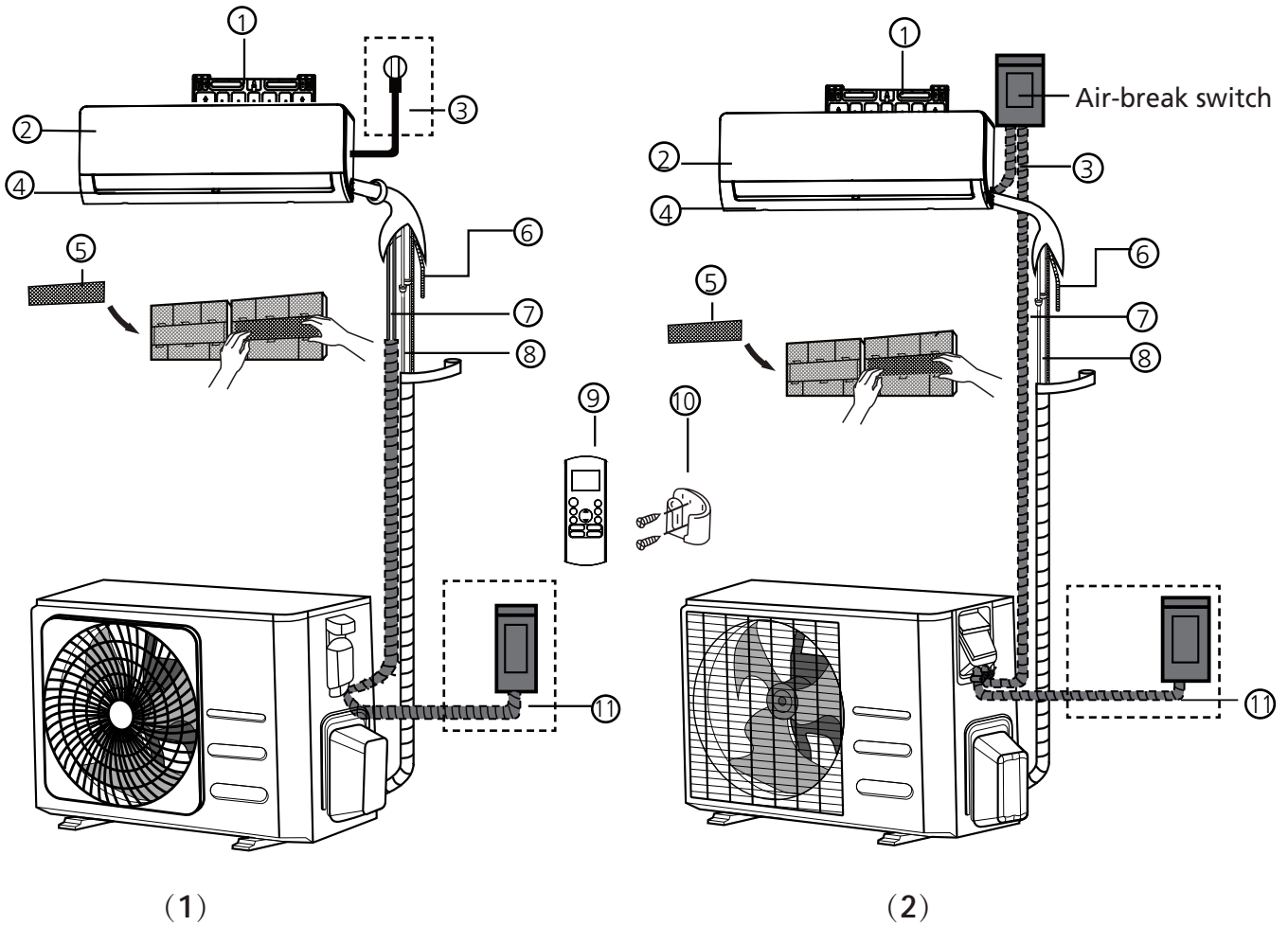
# Installation Summary - Indoor Unit



Installation Summary  
-Indoor Unit

# Unit Parts

**NOTE:** The installation must be performed in accordance with the requirement of local and national standards. The installation may be slightly different in different areas.



- |                            |   |   |
|----------------------------|---|---|
| ① Wall Mounting Plate      | ⑤ Functional Filter (On Back of Main Filter - Some Units) | ⑨ Remote Controller                     |
| ② Front Panel              | ⑥ Drainage Pipe   | ⑩ Remote controller Holder (Some Units) |
| ③ Power Cable (Some Units) | ⑦ Signal Cable  | ⑪ Outdoor Unit Power Cable (Some Units) |
| ④ Louver                   | ⑧ Refrigerant Piping                                      |   |

## NOTE ON ILLUSTRATIONS

Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.

# Indoor Unit Installation

## Installation Instructions – Indoor unit

### PRIOR TO INSTALLATION

Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.

#### Step 1: Select installation location

Before installing the indoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

#### Proper installation locations meet the following standards:

- ☑ Good air circulation
- ☑ Convenient drainage
- ☑ Noise from the unit will not disturb other people
- ☑ Firm and solid—the location will not vibrate
- ☑ Strong enough to support the weight of the unit
- ☑ A location at least one meter from all other electrical devices (e.g., TV, radio, computer)

#### **DO NOT** install unit in the following locations:

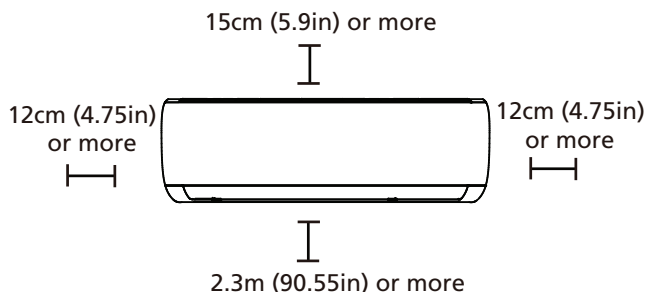
- ⊘ Near any source of heat, steam, or combustible gas
- ⊘ Near flammable items such as curtains or clothing
- ⊘ Near any obstacle that might block air circulation
- ⊘ Near the doorway
- ⊘ In a location subject to direct sunlight

### NOTE ABOUT WALL HOLE:

If there is no fixed refrigerant piping:

While choosing a location, be aware that you should leave ample room for a wall hole (see **Drill wall hole for connective piping** step) for the signal cable and refrigerant piping that connect the indoor and outdoor units. The default position for all piping is the right side of the indoor unit (while facing the unit). However, the unit can accommodate piping to both the left and right.

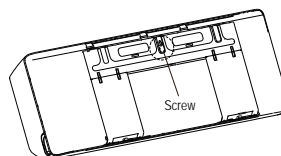
#### Refer to the following diagram to ensure proper distance from walls and ceiling:



#### Step 2: Attach mounting plate to wall

The mounting plate is the device on which you will mount the indoor unit.

- Remove the screw that attaches the mounting plate to the back of the indoor unit.



- Secure the mounting plate to the wall with the screws provided. Make sure that mounting plate is flat against the wall.

### NOTE FOR CONCRETE OR BRICK WALLS:

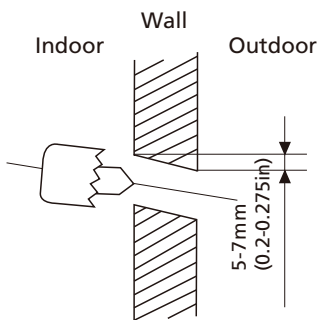
If the wall is made of brick, concrete, or similar material, drill 5mm-diameter (0.2in-diameter) holes in the wall and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

### Step 3: Drill wall hole for connective piping

1. Determine the location of the wall hole based on the position of the mounting plate. Refer to **Mounting Plate Dimensions**.
2. Using a 65mm (2.5in) or 90mm(3.54in) (depending on models )core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 5mm to 7mm (0.2-0.275in). This will ensure proper water drainage.
3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

#### ! CAUTION

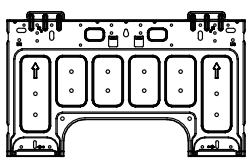
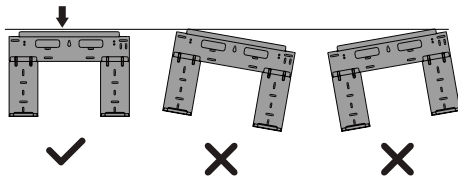
When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.



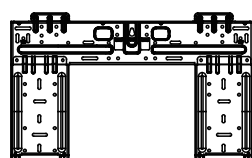
### MOUNTING PLATE DIMENSIONS

Different models have different mounting plates. For the different customization requirements, the shape of the mounting plate and the dimensions of the indoor unit may be slightly different. See Type A and Type B for example:

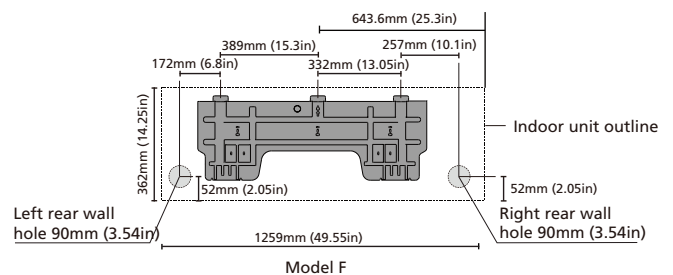
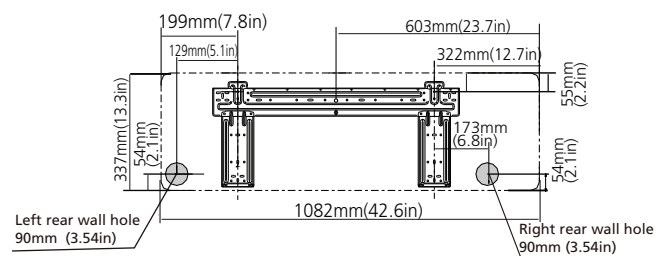
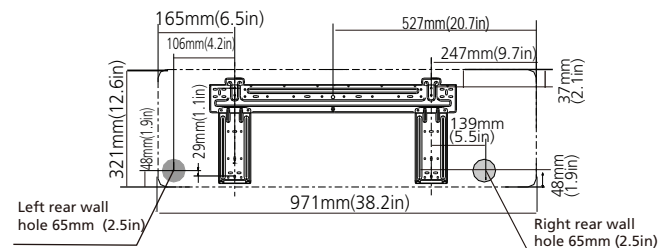
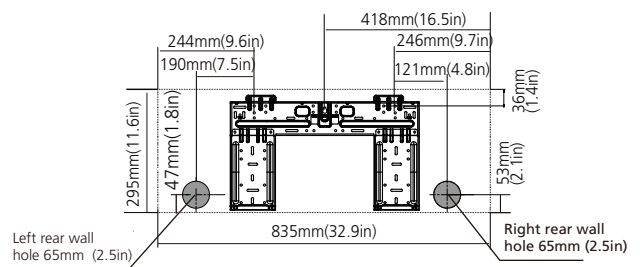
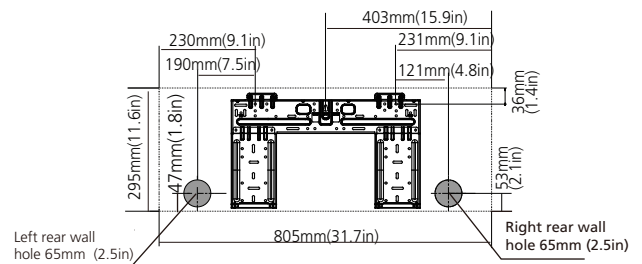
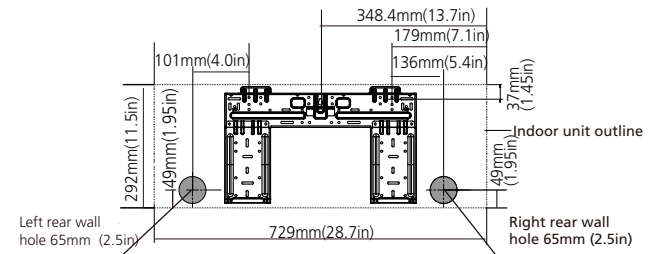
Correct orientation of Mounting Plate



Type A



Type B

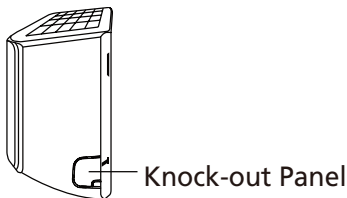


**NOTE:** When the gas side connective pipe is  $\Phi$  16mm(5/8in) or more, the wall hole should be 90mm(3.54in).

#### Step 4: Prepare refrigerant piping

The refrigerant piping is inside an insulating sleeve attached to the back of the unit. You must prepare the piping before passing it through the hole in the wall.

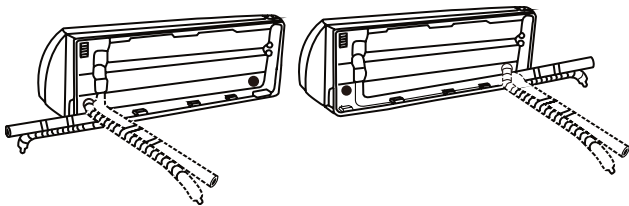
1. Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit.
2. If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit. This will create a slot through which your piping can exit the unit. Use needle nose pliers if the plastic panel is too difficult to remove by hand.



3. If existing connective piping is already embedded in the wall, proceed directly to the **Connect Drain Hose** step. If there is no embedded piping, connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the **Refrigerant Piping Connection** section of this manual for detailed instructions.

#### NOTE ON PIPING ANGLE

Refrigerant piping can exit the indoor unit from four different angles: Left-hand side, Right-hand side, Left rear, Right rear.



#### CAUTION

Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

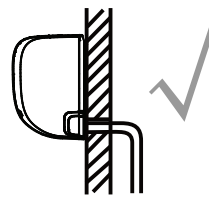
#### Step 5: Connect drain hose

By default, the drain hose is attached to the left-hand side of unit (when you're facing the back of the unit). However, it can also be attached to the right-hand side. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit. Attach drain hose extension (purchased separately) to the end of drain hose.

- Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.
- For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
- Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

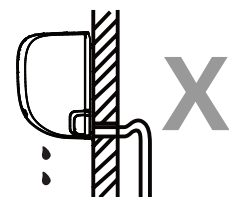
#### NOTE ON DRAIN HOSE PLACEMENT

Make sure to arrange the drain hose according to the following figures.



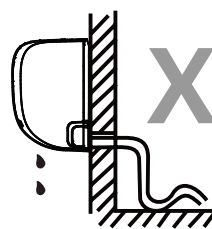
CORRECT

Make sure there are no kinks or dent in drain hose to ensure proper drainage.



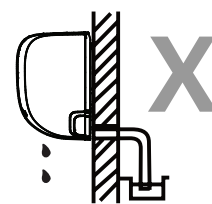
NOT CORRECT

Kinks in the drain hose will create water traps.



NOT CORRECT

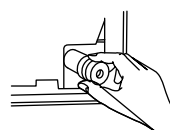
Kinks in the drain hose will create water traps.



NOT CORRECT

Do not place the end of the drain hose in water or in containers that collect water. This will prevent proper drainage.

#### PLUG THE UNUSED DRAIN HOLE



To prevent unwanted leaks you must plug the unused drain hole with the rubber plug provided.

## BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS

1. All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, a surge protector and main power switch should be installed.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
11. If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible materials.
12. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.

## WARNING

**BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**

### Step 6: Connect signal and power cables

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

#### Cable Types

- **Indoor Power Cable** (if applicable): H05VV-F or H05V2V2-F
- **Outdoor Power Cable:** H07RN-F or H05RN-F
- **Signal Cable:** H07RN-F

**NOTE:** In North America, choose the cable type according to the local electrical codes and regulations.

#### Minimum Cross-Sectional Area of Power and Signal Cables (For reference) (Not applicable for North America)

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm <sup>2</sup> )
> 3 and ≤ 6	0.75
> 6 and ≤ 10	1
> 10 and ≤ 16	1.5
> 16 and ≤ 25	2.5
> 25 and ≤ 32	4
> 32 and ≤ 40	6

#### CHOOSE THE RIGHT CABLE SIZE

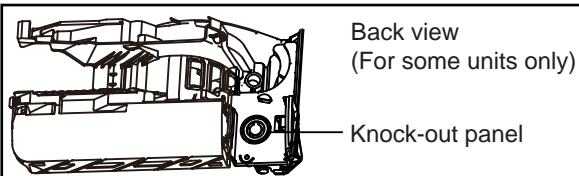
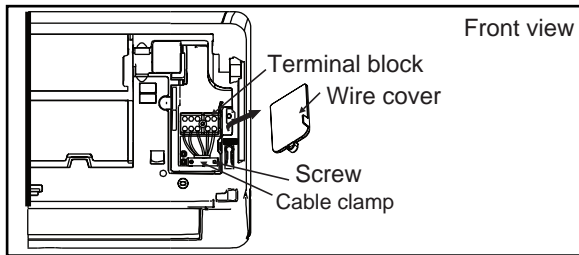
The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit.

**NOTE:** In North America, please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

## WARNING

**ALL WIRING MUST BE PERFORMED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED ON THE BACK OF THE INDOOR UNIT'S FRONT PANEL .**

1. Open front panel of the indoor unit.
2. Using a screwdriver, open the wire box cover on the right side of the unit. This will reveal the terminal block.



**NOTE:**

- For the units with conduit tube to connect the cable, remove the big plastic knock-out panel to create a slot through which the conduit tube can be installed.
- For the units with five-core cable, remove the middle small plastic knock-out panel to create a slot through which the cable can exit.
- Use needle nose pliers if the plastic panel is too difficult to remove by hand.

3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
5. Feed the signal wire through this slot, from the back of the unit to the front.
6. Facing the front of the unit, connect the wire according to the indoor unit's wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.

**CAUTION**

**DO NOT MIX UP LIVE AND NULL WIRES**

This is dangerous, and can cause the air conditioning unit to malfunction.

7. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
8. Replace the wire cover on the front of the unit, and the plastic panel on the back.

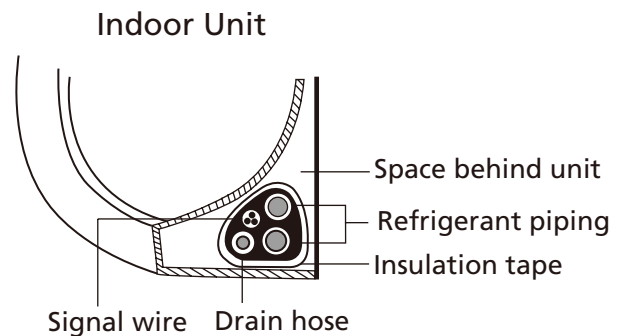
**NOTE ABOUT WIRING**

**THE WIRING CONNECTION PROCESS MAY DIFFER SLIGHTLY BETWEEN UNITS AND REGIONS.**

**Step 7: Wrapping and cables**

Before passing the piping, drain hose, and the signal cable through the wall hole, you must bundle them together to save space, protect them, and insulate them (Not applicable in North America).

1. Bundle the drain hose, refrigerant pipes, and signal cable as shown below:



**DRAIN HOSE MUST BE ON BOTTOM**

Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

**DO NOT INTERTWINE SIGNAL CABLE WITH OTHER WIRES**

While bundling these items together, do not intertwine or cross the signal cable with any other wiring.

2. Using adhesive vinyl tape, attach the drain hose to the underside of the refrigerant pipes.
3. Using insulation tape, wrap the signal wire, refrigerant pipes, and drain hose tightly together. Double-check that all items are bundled.

**DO NOT WRAP ENDS OF PIPING**

When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to test for leaks at the end of the installation process (refer to **Electrical Checks and Leak Checks** section of this manual).

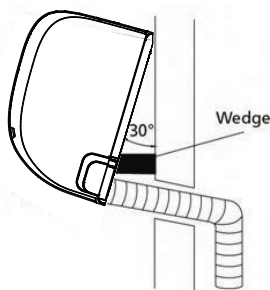
## Step 8: Mount indoor unit

If you installed **new connective piping to the outdoor unit**, do the following:

1. If you have already passed the refrigerant piping through the hole in the wall, proceed to Step 4.
  2. Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.
  3. Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.
  4. Hook the top of the indoor unit on the upper hook of the mounting plate.
  5. Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.
  6. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
  7. Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.
3. Connect drain hose and refrigerant piping (refer to **Refrigerant Piping Connection** section of this manual for instructions).
  4. Keep pipe connection point exposed to perform the leak test (refer to **Electrical Checks and Leak Checks** section of this manual).
  5. After the leak test, wrap the connection point with insulation tape.
  6. Remove the bracket or wedge that is propping up the unit.
  7. Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

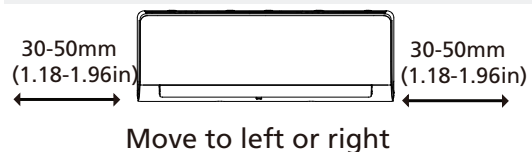
If refrigerant piping is already embedded in the wall, do the following:

1. Hook the top of the indoor unit on the upper hook of the mounting plate.
2. Use a bracket or wedge to prop up the unit, giving you enough room to connect the refrigerant piping, signal cable, and drain hose.



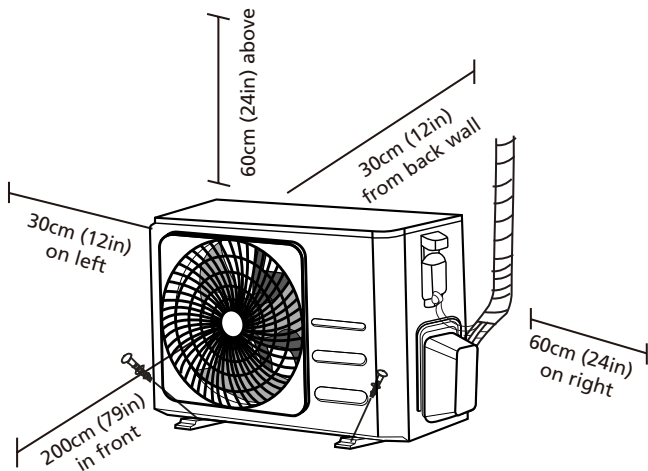
### UNIT IS ADJUSTABLE

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit. If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 30-50mm (1.18-1.96in), depending on the model.



# Outdoor Unit Installation

Install the unit by following local codes and regulations, there may be differ slightly between different regions.



## Installation Instructions – Outdoor unit

### Step 1: Select installation location

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

#### Proper installation locations meet the following standards:

- Meets all spatial requirements shown in Installation Space Requirements above.
- Good air circulation and ventilation
- Firm and solid—the location can support the unit and will not vibrate
- Noise from the unit will not disturb others
- Protected from prolonged periods of direct sunlight or rain
- Where snowfall is anticipated, take appropriate measures to prevent ice buildup and coil damage.

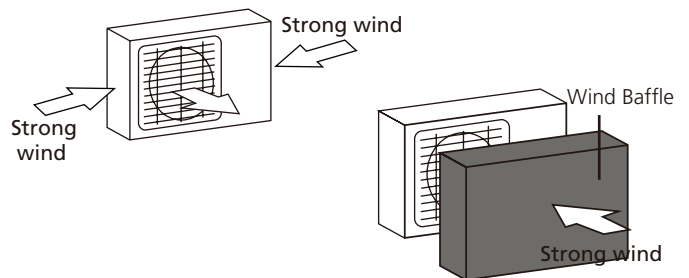
### **DO NOT** install unit in the following locations:

- ⊘ Near an obstacle that will block air inlets and outlets
- ⊘ Near a public street, crowded areas, or where noise from the unit will disturb others
- ⊘ Near animals or plants that will be harmed by hot air discharge
- ⊘ Near any source of combustible gas
- ⊘ In a location that is exposed to large amounts of dust
- ⊘ In a location exposed to a excessive amounts of salty air

### SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

#### If the unit is exposed to heavy wind:

Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See Figures below.



#### If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

#### If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.

## Step 2: Install drain joint(Heat pump unit only)

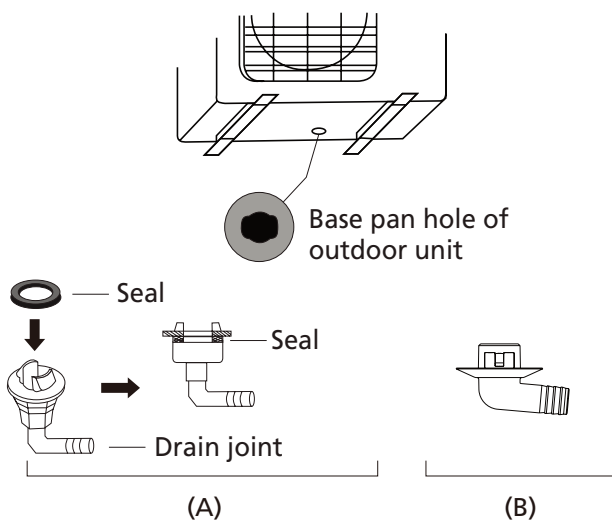
Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

**If the drain joint comes with a rubber seal** (see Fig. A), do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

**If the drain joint doesn't come with a rubber seal** (see Fig. B), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



## ! IN COLD CLIMATES

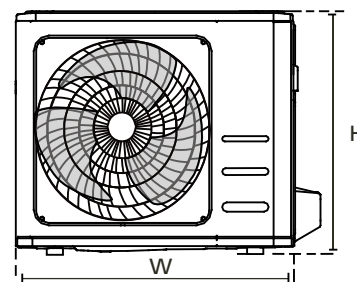
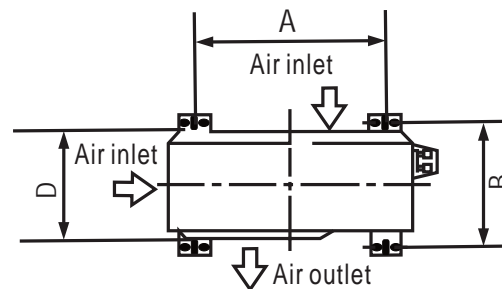
In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

## Step 3: Anchor outdoor unit

The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolt(M10). Prepare the installation base of the unit according to the dimensions below.

### UNIT MOUNTING DIMENSIONS

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.



Outdoor Unit Dimensions (mm) W x H x D	Mounting Dimensions	
	Distance A (mm)	Distance B (mm)
681x434x285 (26.8"x17.1"x11.2")	460 (18.1")	292 (11.5")
700x550x270 (27.5"x21.6"x10.6")	450 (17.7")	260 (10.2")
700x550x275 (27.5"x21.6"x10.8")	450 (17.7")	260 (10.2")
720x495x270 (28.3"x19.5"x10.6")	452 (17.8")	255 (10.0")
728x555x300 (28.7"x21.8"x11.8")	452 (17.8")	302(11.9")
765x555x303 (30.1"x21.8"x11.9")	452 (17.8")	286(11.3")
770x555x300 (30.3"x21.8"x11.8")	487 (19.2")	298 (11.7")
805x554x330 (31.7"x21.8"x12.9")	511 (20.1")	317 (12.5")
800x554x333 (31.5"x21.8"x13.1")	514 (20.2")	340 (13.4")
845x702x363 (33.3"x27.6"x14.3")	540 (21.3")	350 (13.8")
890x673x342 (35.0"x26.5"x13.5")	663 (26.1")	354 (13.9")
946x810x420 (37.2"x31.9"x16.5")	673 (26.5")	403 (15.9")
946x810x410 (37.2"x31.9"x16.1")	673 (26.5")	403 (15.9")

**If you will install the unit on the ground or on a concrete mounting platform, do the following:**

1. Mark the positions for four expansion bolts based on dimensions chart.
2. Pre-drill holes for expansion bolts.
3. Place a nut on the end of each expansion bolt.
4. Hammer expansion bolts into the pre-drilled holes.
5. Remove the nuts from expansion bolts, and place outdoor unit on bolts.
6. Put washer on each expansion bolt, then replace the nuts.
7. Using a wrench, tighten each nut until snug.

 **WARNING**

**WHEN DRILLING INTO CONCRETE, EYE PROTECTION IS RECOMMENDED AT ALL TIMES.**

**If you will install the unit on a wall-mounted bracket, do the following:**

 **CAUTION**

Make sure that the wall is made of solid brick, concrete, or of similarly strong material. **The wall must be able to support at least four times the weight of the unit.**

1. Mark the position of bracket holes based on dimensions chart.
2. Pre-drill the holes for the expansion bolts.
3. Place a washer and nut on the end of each expansion bolt.
4. Thread expansion bolts through holes in mounting brackets, put mounting brackets in position, and hammer expansion bolts into the wall.
5. Check that the mounting brackets are level.
6. Carefully lift unit and place its mounting feet on brackets.
7. Bolt the unit firmly to the brackets.
8. If allowed, install the unit with rubber gaskets to reduce vibrations and noise.

#### Step 4: Connect signal and power cables

The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the wiring cover.

#### WARNING

**BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**

1. Prepare the cable for connection:

#### USE THE RIGHT CABLE

Please choose the right cable refer to "Cable types" in page 22.

#### CHOOSE THE RIGHT CABLE SIZE

The size of the power supply cable, signal cable, fuse, and switch needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side panel of the unit.

**NOTE:** In North America, please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

- Using wire strippers, strip the rubber jacket from both ends of cable to reveal about 40mm (1.57in) of the wires inside.
- Strip the insulation from the ends of the wires.
- Using a wire crimper, crimp u-lugs on the ends of the wires.

#### PAY ATTENTION TO LIVE WIRE

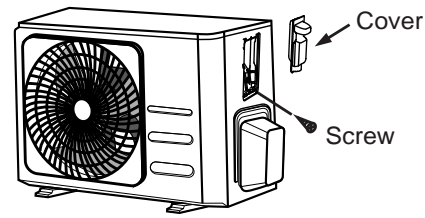
While crimping wires, make sure you clearly distinguish the Live ("L") Wire from other wires.

#### WARNING

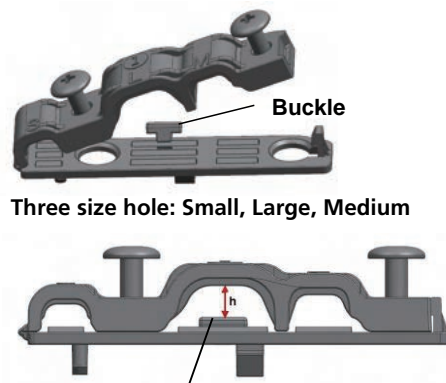
**ALL WIRING WORK MUST BE PERFORMED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED INSIDE OF WIRE COVER OF THE OUTDOOR UNIT .**

- Unscrew the electrical wiring cover and remove it.
- Unscrew the cable clamp below the terminal block and place it to the side.
- Connect the wire according to the wiring diagram, and firmly screw the u-lug of each wire to its corresponding terminal.
- After checking to make sure every connection is secure, loop the wires around to prevent rain water from flowing into the terminal.
- Using the cable clamp, fasten the cable to the unit. Screw the cable clamp down tightly.

- Insulate unused wires with PVC electrical tape. Arrange them so that they do not touch any electrical or metal parts.
- Replace the wire cover on the side of the unit, and screw it in place.



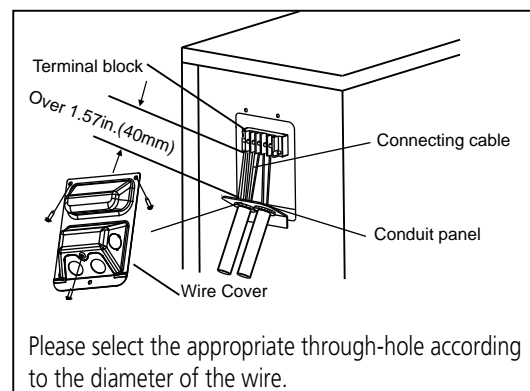
**NOTE:** If the cable clamp looks like the following, please select the appropriate through-hole according to the diameter of the wire.



When the cable is not fasten enough, use the buckle to prop it up, so it can be clamped tightly.

#### In North America

- Remove the wire cover from the unit by loosening the 3 screws.
- Dismount caps on the conduit panel.
- Temporarily mount the conduit tubes(not included) on the conduit panel.
- Properly connect both the power supply and low voltage lines to the corresponding terminals on the terminal block.
- Ground the unit in accordance with local codes.
- Be sure to size each wire allowing several inches longer than the required length for wiring.
- Use lock nuts to secure the conduit tubes.



# Refrigerant Piping Connection

When connecting refrigerant piping, **do not** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This can cause explosion and injury.

## Note on Pipe Length

The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 5 meters (16.5ft)( In North America, the standard pipe length is 7.5m (25')). A minimum pipe run of 3 metres is required to minimise vibration & excessive noise. In special tropical area, for the R290 refrigerant models, no refrigerant can be added and the maximum length of refrigerant pipe should not exceed 10 meters(32.8ft).

Refer to the table below for specifications on the maximum length and drop height of piping.

**Maximum Length and Drop Height of Refrigerant Piping per Unit Model**

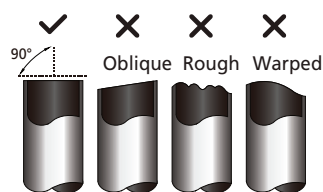
Model	Capacity (BTU/h)	Max. Length (m)	Max. Drop Height (m)
R410A,R32 Inverter Split Air Conditioner	< 15,000	25 (82ft)	10 (33ft)
	≥ 15,000 and < 24,000	30 (98.5ft)	20 (66ft)
	≥ 24,000 and < 36,000	50 (164ft)	25 (82ft)
R22 Fixed-speed Split Air Conditioner	< 18,000	10 (33ft)	5 (16ft)
	≥ 18,000 and < 21,000	15 (49ft)	8(26ft)
	≥ 21,000 and < 35,000	20 (66ft)	10(33ft)
R410A, R32 Fixed-speed Split Air Conditioner	< 18,000	20 (66ft)	8(26ft)
	≥ 18,000 and < 36,000	25 (82ft)	10(33ft)

## Connection Instructions – Refrigerant Piping

### Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.



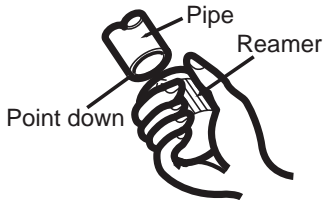
### **DO NOT DEFORM PIPE WHILE CUTTING**

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

## Step 2: Remove burrs

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

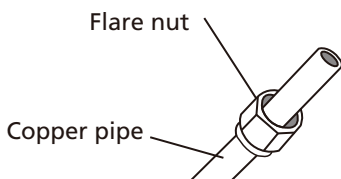
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



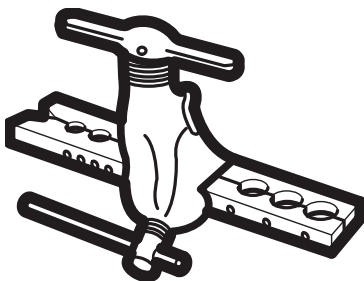
## Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.

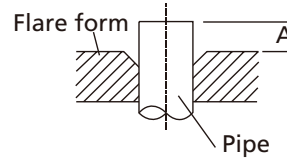


4. Remove PVC tape from ends of pipe when ready to perform flaring work.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the table below.



## PIPING EXTENSION BEYOND FLARE FORM

Outer Diameter of Pipe (mm)	A (mm)	
	Min.	Max.
Ø 6.35 (Ø 0.25")	0.7 (0.0275")	1.3 (0.05")
Ø 9.52 (Ø 0.375")	1.0 (0.04")	1.6 (0.063")
Ø 12.7 (Ø 0.5")	1.0 (0.04")	1.8 (0.07")
Ø 16 (Ø 0.63")	2.0 (0.078")	2.2 (0.086")
Ø 19 (Ø 0.75")	2.0 (0.078")	2.4 (0.094")



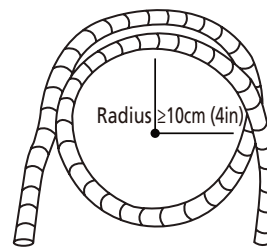
6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared.
8. Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

## Step 4: Connect pipes

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure pipe, then the high-pressure pipe.

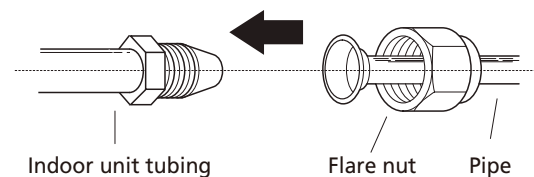
### MINIMUM BEND RADIUS

When bending connective refrigerant piping, the minimum bending radius is 10cm.

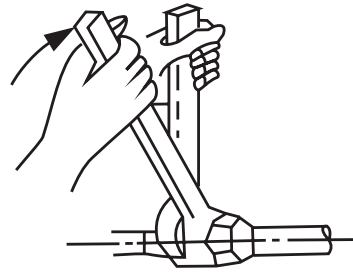


## Instructions for Connecting Piping to Indoor Unit

1. Align the center of the two pipes that you will connect.



- Tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the nut on the unit tubing.
- While firmly gripping the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the **Torque Requirements** table below. Loosen the flaring nut slightly, then tighten again.



### TORQUE REQUIREMENTS

Outer Diameter of Pipe (mm)	Tightening Torque (N•m)	Flare dimension(B) (mm)	Flare shape
Ø 6.35 (Ø 0.25")	18~20(180~200kgf.cm)	8.4~8.7 (0.33~0.34")	
Ø 9.52 (Ø 0.375")	32~39(320~390kgf.cm)	13.2~13.5 (0.52~0.53")	
Ø 12.7 (Ø 0.5")	49~59(490~590kgf.cm)	16.2~16.5 (0.64~0.65")	
Ø 16 (Ø 0.63")	57~71(570~710kgf.cm)	19.2~19.7 (0.76~0.78")	
Ø 19 (Ø 0.75")	67~101(670~1010kgf.cm)	23.2~23.7 (0.91~0.93")	

### **⊘ DO NOT USE EXCESSIVE TORQUE**

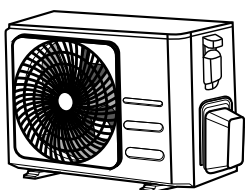
Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table above.

### Instructions for Connecting Piping to Outdoor Unit

- Unscrew the cover from the packed valve on the side of the outdoor unit.
- Remove protective caps from ends of valves.
- Align flared pipe end with each valve, and tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the body of the valve. Do not grip the nut that seals the service valve.
- Loosen the flaring nut slightly, then tighten again.
- Repeat Steps 3 to 6 for the remaining pipe.

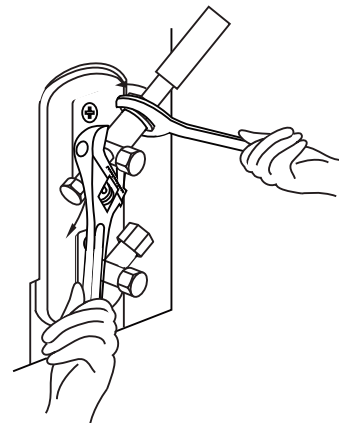
### **! USE SPANNER TO GRIP MAIN BODY OF VALVE**

Torque from tightening the flare nut can snap off other parts of valve.



Valve cover

- While firmly gripping the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values.



# Air Evacuation

## Preparations and Precautions

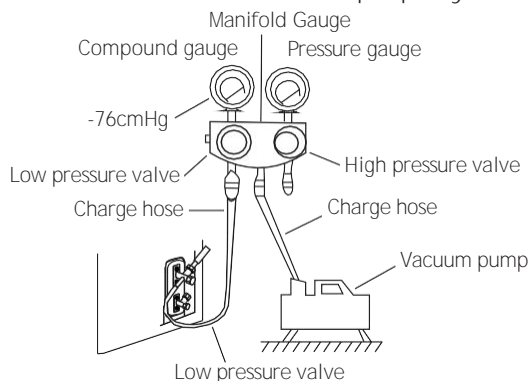
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

### BEFORE PERFORMING EVACUATION

- ☑ Check to make sure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected

### Evacuation Instructions

Before using a manifold gauge and a vacuum pump, read their operation manuals to make sure you know how to use them properly.



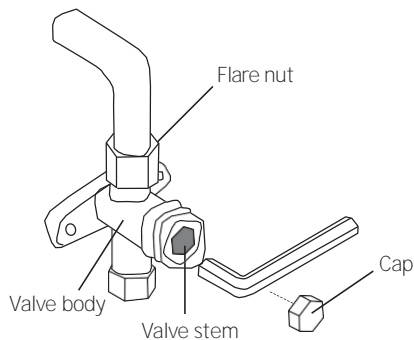
1. Open both King Valves fully until you hit the stopper. Do not force.
2. Connect low pressure manifold gauge hose to mini-split adapter; connect mini-split adapter to low pressure lineset valve A
3. Connect the manifold **gauge's** charge hose from the to the vacuum pump.
4. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.

3. Pressure test Connect nitrogen tank regulator to charging hose on manifold gauges. Pressurize lineset to 200 psi of dry nitrogen.
4. Check for leaks Spray soap bubbles on fittings at outdoor and indoor units to check for bubbles/ leaks. If leaks are present, retorque flare nut. If leak is still present, release nitrogen, inspect and re-work flare. Repeat. Once there are no leaks, proceed to step 6.
5. Discharge nitrogen pressure from lineset A and disconnect nitrogen tank.
6. Turn on the vacuum pump to evacuate the system.
7. Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76cmHG (-1x10<sup>5</sup>Pa).
8. **At this step It is recommended to use a micron gauge and Vacuum the lineset to below 500 microns.**
9. Close the manifold **gauge's** Low Pressure valve and turn off the vacuum pump.
10. Wait for 15 minutes, then check that there has been no change in system pressure.

**NOTE:** If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve). If there is a change in system pressure, there may be a gas leak.

11. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench 1/4 counterclockwise. Listen for gas to exit the system, then close the valve after 5 seconds.

# Air Evacuation



12. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. It should read slightly higher than the atmospheric pressure.
13. Remove the charge hose from the service port.
14. Using hexagonal wrench, fully open both the high pressure and low pressure valves.

## OPEN VALVE STEMS GENTLY

When opening valve stems, turn the hexagonal wrench until it hits against the stopper. **DO NOT** try to force the valve to open further.

15. Tighten valve caps by hand, then tighten it using the proper tool.
16. If the outdoor unit uses all vacuum valves, and the vacuum position is at the main valve, the system is not connected with the indoor unit. The valve must be tightened with a screw nut. Check for gas leaks before operation to prevent leakage.  
Release refrigerant (See Fig. 9.3) Release refrigerant into the lineset by opening the larger (gas side, or suction) lineset valve fully. Then open the smaller (liquid side) lineset valve fully. NOTE: do not force valves open past the point it stops turning under normal hand pressure.

17. Repeat for each zone Disconnect your gauges and attach to lineset valve B. Repeat steps 2 - 10 for each remaining zone in sequence.
18. Test Run Once you complete the vacuum test on the last zone, leave the gauges in place. Follow the remaining steps to test run the system, and add refrigerant if needed.
19. Record Pressure. Start the unit in cooling mode. Run for 10 minutes and monitor operating pressure reading. Power down the unit and wait 5 minutes. Remove the low-pressure gauge and attach the high-pressure gauge to the service port. Change to Heat mode and restart. Run for 10 minutes and monitor the operating pressure. Normal pressure will vary based on outside temperature and cooling vs. heating mode. Enter both results in the adjacent chart. Completing this step on first startup will provide information in case troubleshooting is required.
20. Add refrigerant (if needed) Depending on lineset length and the configuration of your system, you may need to add refrigerant.

Note: The system must be running in cooling mode as you add refrigerant.

## Note on Adding Refrigerant

Some systems require additional charging depending on pipe lengths. The standard pipe length varies according to local regulations. For example, in North America, the standard pipe length is 7.5m (25'). In other areas, the standard pipe length is 5m (16'). The refrigerant should be charged from the service port on the outdoor unit's low pressure valve. The additional refrigerant to be charged can be calculated using the following formula:

### ADDITIONAL REFRIGERANT PER PIPE LENGTH

Connective Pipe Length (m)	Air Purging Method	Additional Refrigerant	
≤ Standard pipe length	Vacuum Pump	N/A	
> Standard pipe length	Vacuum Pump	Liquid Side: Ø 6.35 (ø 0.25")	Liquid Side: Ø 9.52 (ø 0.375")
		<b>R32:</b> (Pipe length – standard length) x 12g/m (Pipe length – standard length) x 0.13oz/ft <b>R290:</b> (Pipe length – standard length) x 10g/m (Pipe length – standard length) x 0.10oz/ft <b>R410A:</b> (Pipe length – standard length) x 15g/m (Pipe length – standard length) x 0.16oz/ft <b>R22:</b> (Pipe length – standard length) x 20g/m (Pipe length – standard length) x 0.21oz/ft	<b>R32:</b> (Pipe length – standard length) x 24g/m (Pipe length – standard length) x 0.26oz/ft <b>R290:</b> (Pipe length – standard length) x 18g/m (Pipe length – standard length) x 0.19oz/ft <b>R410A:</b> (Pipe length – standard length) x 30g/m (Pipe length – standard length) x 0.32oz/ft <b>R22:</b> (Pipe length – standard length) x 40g/m (Pipe length – standard length) x 0.42oz/ft

For R290 refrigerant unit, the total amount of refrigerant to be charged is no more than: 387g(≤9000Btu/h), 447g(>9000Btu/h and ≤12000Btu/h), 547g(>12000Btu/h and ≤18000Btu/h), 632g(>18000Btu/h and ≤24000Btu/h).

 **CAUTION** DO NOT mix refrigerant types.

# Electrical and Gas Leak Checks

## Before Test Run

Only perform test run after you have completed the following steps:

- **Electrical Safety Checks** – Confirm that the unit's electrical system is safe and operating properly
- **Gas Leak Checks** – Check all flare nut connections and confirm that the system is not leaking
- Confirm that gas and liquid (high and low pressure) valves are fully open

## Electrical Safety Checks

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to the Installation Manual.

### BEFORE TEST RUN

#### Check Grounding Work

Measure grounding resistance by visual detection and with grounding resistance tester. Grounding resistance must be less than  $0.1\Omega$ .

**Note:** This may not be required for some locations in North America.

### DURING TEST RUN

#### Check for Electrical Leakage

During the **Test Run**, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

**Note:** This may not be required for some locations in North America.



## WARNING – RISK OF ELECTRIC SHOCK

**ALL WIRING MUST COMPLY WITH LOCAL AND NATIONAL ELECTRICAL CODES, AND MUST BE INSTALLED BY A LICENSED ELECTRICIAN.**

## Gas Leak Checks

There are two different methods to check for gas leaks.

### Soap and Water Method

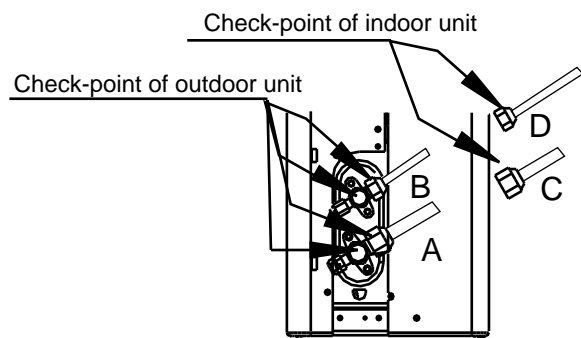
Using a soft brush, apply soapy water or liquid detergent to all pipe connection points on the indoor unit and outdoor unit. The presence of bubbles indicates a leak.

### Leak Detector Method

If using leak detector, refer to the device's operation manual for proper usage instructions.

### AFTER PERFORMING GAS LEAK CHECKS

After confirming that the all pipe connection points **DO NOT** leak, replace the valve cover on the outside unit.



- A: Low pressure stop valve
- B: High pressure stop valve
- C & D: Indoor unit flare nuts

# Test Run

## Test Run Instructions

You should perform the **Test Run** for at least 30 minutes.

1. Connect power to the unit.
2. Press the **ON/OFF** button on the remote controller to turn it on.
3. Press the **MODE** button to scroll through the following functions, one at a time:
  - COOL – Select lowest possible temperature
  - HEAT – Select highest possible temperature
4. Let each function run for 5 minutes, and perform the following checks:

List of Checks to Perform	PASS/FAIL	
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak	Outdoor (2):	Indoor (2):
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvers rotate properly		
Indoor unit responds to remote controller		

## DOUBLE-CHECK PIPE CONNECTIONS

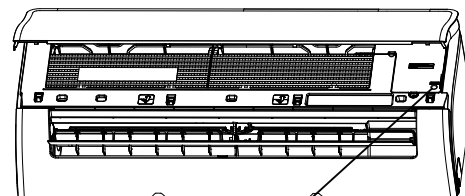
During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during your initial leak check. Take time during the Test Run to double-check that all refrigerant pipe connection points do not have leaks. Refer to **Gas Leak Check** section for instructions.

5. After the Test Run is successfully completed, and you confirm that all checks points in List of Checks to Perform have PASSED, do the following:
  - a. Using remote control, return unit to normal operating temperature.
  - b. Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

## IF AMBIENT TEMPERATURE IS BELOW 16°C (60°F)

You can't use the remote controller to turn on the COOL function when the ambient temperature is below 16°C. In this instance, you can use the **MANUAL CONTROL** button to test the COOL function.

1. Lift the front panel of the indoor unit, and raise it until it clicks in place.
2. The **MANUAL CONTROL** button is located on the right-hand side of the unit. Press it 2 times to select the COOL function.
3. Perform Test Run as normal.



Manual control button

# Packing and unpacking the unit

## Instructions for packing and unpacking the unit:

### Unpacking:

#### Indoor unit:

1. Cut the sealing tape on the carton with a knife, one cut on the left, one cut in the middle and one cut on the right.
2. Use the vice to take out the sealing nails on the top of the carton.
3. Open the carton.
4. Take out the middle support plate if it is included.
5. Take out the accessory package, and take out the connecting wire if it is included.
6. Lift the machine out of the carton and lay it flat.
7. Remove the left and right package foam or the upper and lower packaging foam, untie the packaging bag.

#### Outdoor Unit

1. Cut the packing belt.
2. Take the unit out of the carton.
3. Remove the foam from the unit.
4. Remove the packaging bag from the unit.

### Packing:

#### Indoor unit:

1. Put the indoor unit into the packing bag.
2. Attach the left and right package foam or the upper and lower packaging foam to the unit.
3. Put the unit into the carton, then put accessory package in.
4. Close the carton and seal it with the tape.
5. Using the packing belt if necessary.

#### Outdoor unit:

1. Put the outdoor unit into the packing bag.
2. Put the bottom foam into the box.
3. Put the unit into the carton, then put the upper packaging foam on the unit.
4. Close the carton and seal it with the tape.
5. Using the packing belt if necessary.

**NOTE:** Please keep all packaging items if you may need in the future.







**The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.**

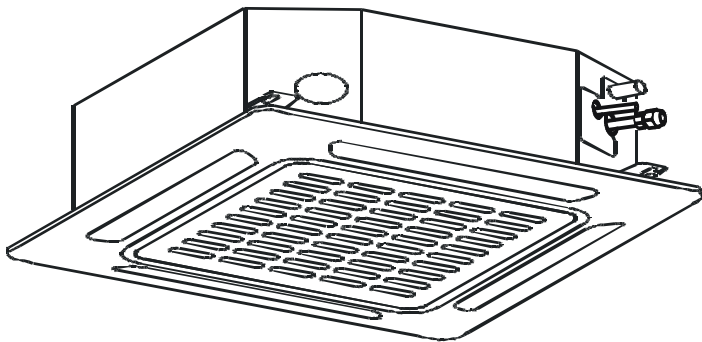
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# Ceiling Cassette Indoor Air Handler Installation Manual

**Models:  
BM12MCC  
BM18MCC**



## **IMPORTANT NOTE:**

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

This manual only describes the outdoor unit of user's. When using the indoor unit, refer to the user's manual of indoor unit.





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# Safety Precautions

# 1

## Read Before Using

Incorrect usage may cause serious damage or injury.

The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



This symbol indicates that ignoring instructions may cause death or serious injury.



This symbol indicates that ignoring instructions may cause moderate injury to your person, or damage to your unit or other property.



This symbol indicates that you must never perform the action indicated.

## **WARNING**

- Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.
- Be sure only trained and qualified service personnel install, repair or service the equipment.
- Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, personal injury, loss of life, 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.
- When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage. Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the unit to fall, leak water, cause electrical shock, or produce fire.
- Install at a strong and firm location which is able to withstand the unit's weight. If the strength is not enough or installation is not properly done, the set will drop causing injury.
- The appliance must be installed 8' above floor.
- The appliance shall not be installed in the laundry room.
- Before obtaining access to terminals, all supply circuits must be disconnected.
- Read this manual thoroughly before starting up the units.
- For electrical work, follow all local and national wiring codes and these installation instructions. An independent circuit and electrical disconnect 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 can cause malfunction or fire at the connection.



## WARNING

- Wiring routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it can 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 electrical disconnect switch having a contact separation of at least 0.12in in all poles should be connected in fixed wiring.
- When carrying out piping connection, take care to not let air substances go into refrigeration cycle. Otherwise, it can cause lower capacity, abnormally high pressure in the refrigeration cycle, explosion and injury.
- Do not share the single circuit with other electrical appliances. Otherwise, it can cause poor performance, fire or electrical shock.
- If the refrigerant leaks during installation, ventilate the area immediately. Toxic gas may be produced if the refrigerant comes in contact 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.
- After completing the installation, make sure that the unit operates properly during the start-up operation.



## CAUTION

- Ground the air conditioner.
- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks.
- Connect the outdoor unit wires, then connect the indoor unit wires.
- ⊗ **DO NOT** connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Inappropriate grounding may result in electric shocks.
- ⊗ **DO NOT** connect the air conditioner with the power supply until the wiring and piping is done.
- ⊗ **DO NOT** operate your air conditioner in a wet room such as a bathroom or laundry room.
- ⊗ **DO NOT** install the air conditioner in the following circumstance:
  - There are combustible gases present.
  - There is salty air surrounding (near the coast).
  - There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
  - There is excessive vibration, as in a shop or factory.
  - In small, hot industrial space such as a server room or commercial kitchen.
  - In kitchen where it is full of oil gas.
  - There is strong electromagnetic waves existing.
  - There are inflammable materials or gas.
  - There is acid or alkaline liquid evaporating.
  - Other special conditions.

# Installation Summary

# 2

## 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.
- 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






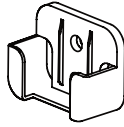
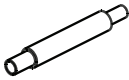
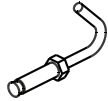



1. Indoor unit installation
2. Outdoor unit installation
3. Install the refrigerant pipe
4. Connect the drain pipe
5. Electric wiring work
6. Installation of the decoration panel
7. Test operation


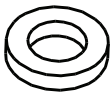
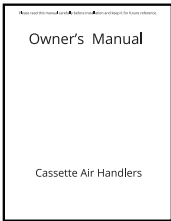

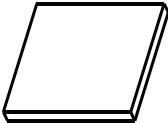
✓	Check off when completed
<input type="checkbox"/>	Is the indoor unit fixed firmly? The unit may drop, vibrate or make noise.
<input type="checkbox"/>	Is the gas leak test finished? It may result in insufficient cooling or heating.
<input type="checkbox"/>	Is the unit fully insulated? Condensate water may drip.
<input type="checkbox"/>	Does drainage flow smoothly? Condensate water may drip.
<input type="checkbox"/>	Does the power supply voltage correspond to that shown on the name plate? The unit may malfunction or components may burn out.
<input type="checkbox"/>	Are wiring and piping correct? The unit may malfunction or components may burn out.
<input type="checkbox"/>	Is the unit safely grounded? Dangerous at electric leakage.
<input type="checkbox"/>	Is the wiring size in accordance with specifications? The unit may malfunction or components may burn out.
<input type="checkbox"/>	Is anything blocking the air outlet or inlet of either the indoor or outdoor units? It may result in insufficient cooling or heating.
<input type="checkbox"/>	Are refrigerant piping length and additional refrigerant charge noted down? The refrigerant charge in the system might not be clear.

# Accessories

# 3

The air conditioning system includes the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock, fire, or equipment failure.

Name	Shape	Quantity	
<b>Remote control</b>		1	
<b>Batteries</b>		2	
<b>Tapping screws (M3X10mm) (on some models)</b>		2	
<b>Metal champ (on some models)</b>		1	
<b>Fixing screw for remote control holder ST2.9 x 10</b>		2	Optional Parts
<b>Remote control holder</b>		1	
<b>Drain hose (on some models)</b>		1	
<b>Expansile hooks (on some models)</b>		4	
<b>Installation hooks (on some models)</b>		4	
<b>Throttle (on some models)</b>		1	
<b>Anti-shock rubber (on some models)</b>		1	

Name	Shape	Quantity
<b>Drain plug (only heat pump models) (with the outdoor unit)</b>		1
<b>Seal ring (only heat pump models) (with the outdoor unit)</b>		1
<b>Owner's Manual</b>		1
<b>Installation Manual</b>		1
<b>Paper pattern for installation (on some models)</b>		1

**This indoor unit requires installation of an optional decoration panel.**

**NOTE:** All the pictures in this manual are for explanation purpose only. There may be slightly different from the air conditioner you purchased ( depend on model ). The actual shape may vary.

# Indoor Unit Installation

# 4

## Selecting Installation Site

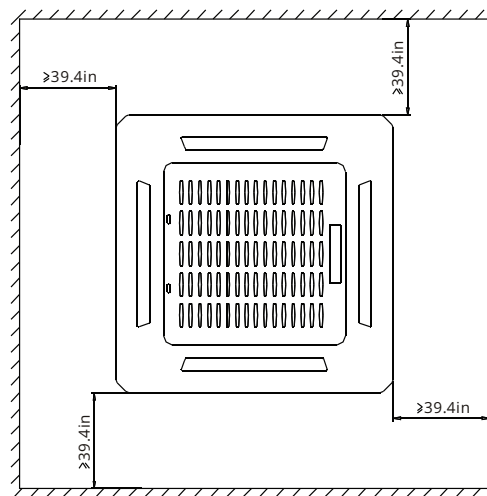
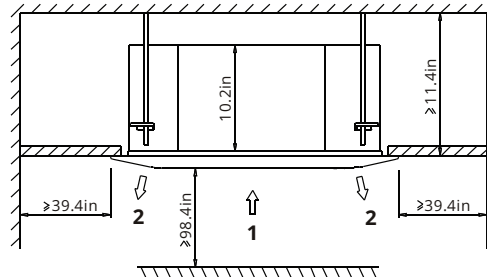
When the conditions in the ceiling are exceeding 86°F and a relative humidity of 80%, or when fresh air is inducted into the ceiling, an additional insulation is required (minimum 0.4in / thickness, polyethylene foam).

### 1. Select an installation site where the following conditions are fulfilled and that meets your customer's approval.

- Where optimum air distribution can be ensured.
- Where nothing blocks air passage.
- Where condensate water can be properly drained.
- Where the ceiling is level, not noticeably on an incline.
- Where sufficient clearance for maintenance and service can be ensured.
- Where there is no risk of flammable gas leaking.
- The equipment is not intended for use in a potentially explosive atmosphere.
- Where piping between indoor and outdoor units does not exceed the allowable limit. (Refer to the installation manual of the outdoor unit.)
- Keep indoor unit, outdoor unit, inter unit wiring and remote control wiring at least 3 feet away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if proper distance is kept.)
- When installing the wireless remote control kit, the distance between wireless remote control and indoor unit might be shorter if there are fluorescent lights that are electrically started in the room. The indoor unit must be installed as far away as possible from fluorescent lights.

### 2. Ceiling height

Install this unit where the height of bottom panel is more than 8' so that the user cannot easily touch.



- 1 Air inlet
- 2 Air outlet

Fig 4.1

### 3. Use Threaded Rod for Installation

Use threaded rod for installation. Check whether the ceiling is strong enough to support the weight of the indoor unit. If there is a risk, reinforce the ceiling before installing the unit. Space required for installation. See Fig. 4.4 on the next page for details.

### ! WARNING

Do not install the unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.

If the basis underneath the unit is not strong enough to support the weight of the unit, the unit could be fall out of place and cause serious injury.

## Preparations before installation

### 1. Relation of ceiling opening to unit and suspension bolt position.

1. Installation hook pitch dimensions
2. Indoor unit dimensions
3. Decoration panel dimensions
4. Refrigerant piping
5. Installation hook
6. Ceiling opening dimensions
7. Hanger bracket
8. False ceiling

Adjust the position to ensure the gaps between the indoor unit and the four sides of false ceiling are even. The indoor unit's lower part should sink into the false ceiling for 0.9in. See **Fig. 4.3**.

### 2. Create the ceiling opening needed for indoor installation where applicable. (For existing ceilings.)

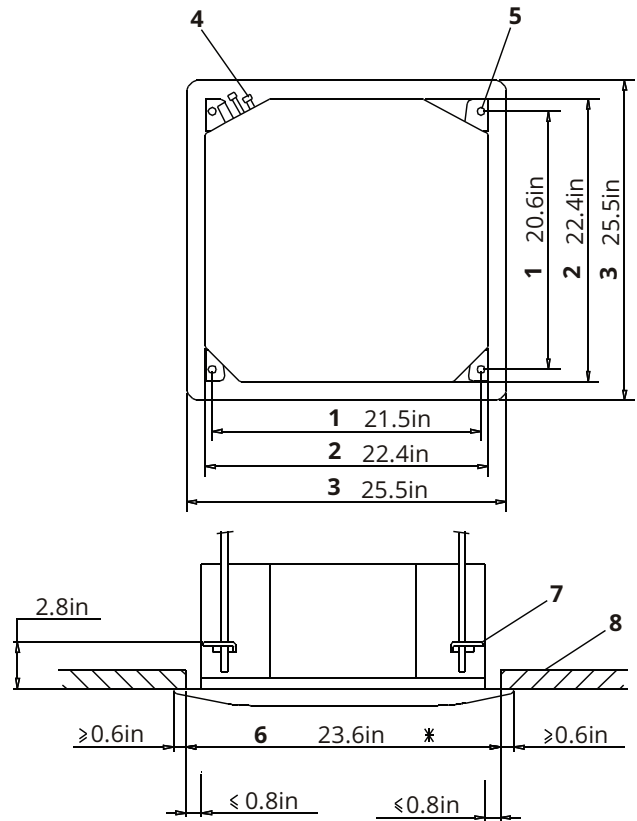
- Create the ceiling opening required for installation. From the side of the opening to the casing outlet, implement the refrigerant and drain piping and wiring for remote control (unnecessary for wireless type). Refer to each piping or wiring section.
- After making an opening in the ceiling, it may be necessary to reinforce ceiling beams to keep the ceiling level and to prevent it from vibrating. Consult the builder for details.

### 3. Install the threaded rod. (Use either a M8 or M10 size rod.)

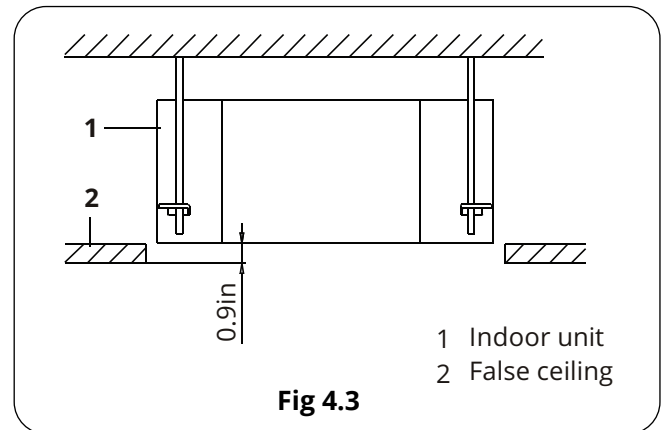
- Use expansible hooks, sunken anchors or other field supplied parts to reinforce the ceiling in order to bear the weight of the unit.
- Adjust clearance from the ceiling before proceeding further. See **Fig. 4.4** for Installation example.

**NOTE:** The opening in the ceiling should not be larger than the decorative grill, otherwise additional ceiling patching will be required.

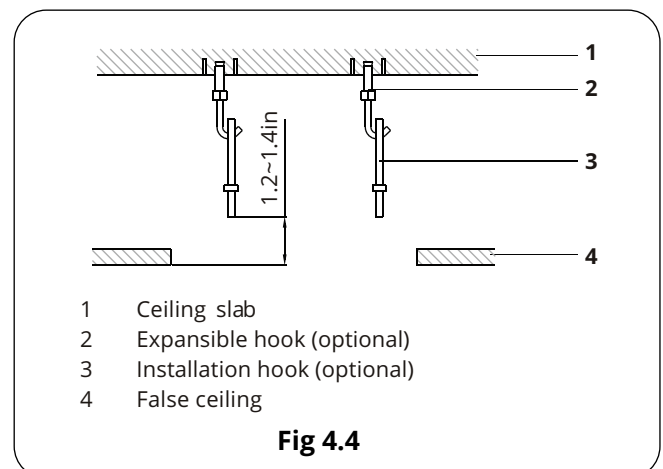
For other installation other than standard installation, contact your dealer for details.



**Fig 4.2**



**Fig 4.3**



**Fig 4.4**

## Install the indoor unit

When installing optional accessories, read also the installation manual of the optional accessories. Depending on the field conditions, it may be easier to install optional accessories before the indoor unit is installed (except for the decoration panel). However, for existing ceiling, install fresh air inlet component kit and branch duct before installing the unit.

### 1. Install the indoor unit.

1. Attach the hanger bracket to the threaded rod. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.
2. Securing the hanger bracket see figure below.

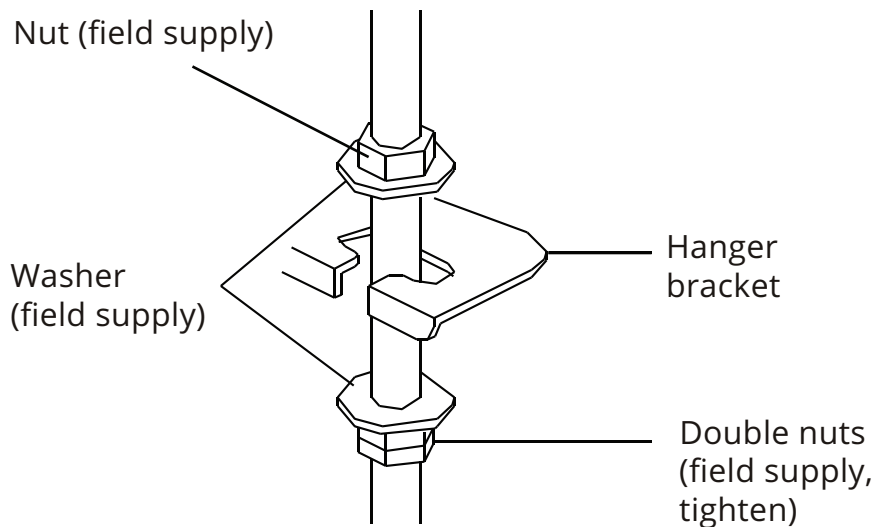


Fig 4.5

### 2. Adjust the unit to the right position for installation.

(Refer to the chapter "Preparations before installation").

### 3. Check if the unit is horizontally leveled.

- Do not install the unit tilted. The indoor unit is equipped with a built-in drain pump and float switch. (If the unit is tilted against the direction of the condensate flow (the drain piping side is raised), the float switch may malfunction and cause water to drip.)
- Check to ensure the unit is level at all four corners.

# Refrigerant Piping Installation

# 5

## ! WARNING

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

## ! CAUTION

- ⊘ **DO NOT** mix anything other than the specified refrigerant, such as air, etc., inside the refrigerant circuit.
- Execute heat insulation work completely on both sides of the gas piping and liquid piping. Otherwise, this can sometimes result in water leakage. (When using a heat pump, the temperature of the gas piping can reach up to approximately 248° F. Use insulation which is sufficiently resistant.)
- Also, in cases where the temperature and humidity of the refrigerant piping sections might exceed 86° F or Rh80%, reinforce the refrigerant insulation (3/4" or thicker). Condensation may form on the surface of the insulating material.
- Before rigging tubes, check which type of refrigerant is used.
- Use a pipe cutter and flare suitable for used refrigerant.
- Only use annealed material for flare connections.
- If the refrigerant gas leaks during the work, ventilate the area. A toxic gas is emitted by the refrigerant gas being exposed to a fire.
- Make sure there is no refrigerant gas leak. A toxic gas may be released by the refrigerant gas leaking indoor and being exposed to flames from an area heater, cooking stove, etc.
- Refer to the **Fig 5.1** for the dimensions of flare nuts spaces and the appropriate tightening torque. (Over-tightening may damage the flare and cause leaks.)
- Check whether the height drop between the indoor unit and outdoor unit, and the length of refrigerant pipe meet the following requirements in **Fig 5.2**:

Refrigerant Piping Installation

Pipe gauge	Flaring torque	Flare dimension (A) (Unit: Inch)		Flare shape
		Min.	Max.	
1/4"	14 ft/ lbs	0.33	0.34	
3/8"	18 ft/ lbs	0.52	0.53	
1/2"	26 ft/ lbs	0.64	0.65	
5/8"	34 ft/ lbs	0.76	0.78	

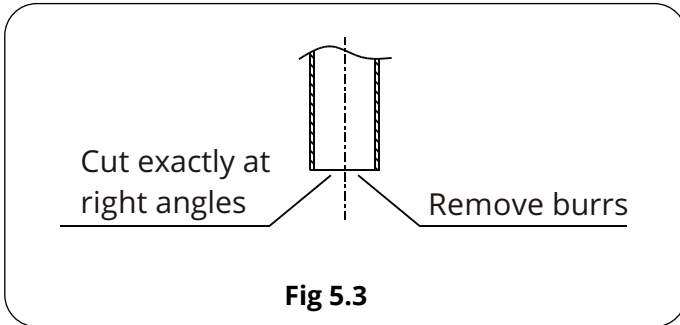
**Fig 5.1**

The type of models	Capacity (Btu/h)	Max.allowable piping length	Max.allowable piping height
R410A inverter	12K	82ft	32.8ft
Split type air conditioner	18K	98.4ft	65.6ft

**Fig 5.2**

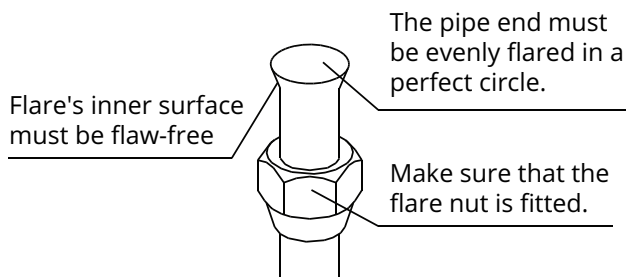
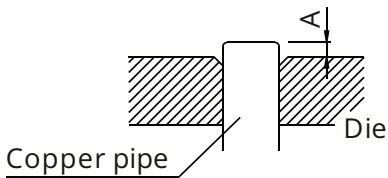
## 5.1 Flaring the pipe end

1. Cut the pipe end with a pipe cutter.
2. Remove burrs with the cut surface facing downward so that the chips do not enter the pipe. See **Fig 5.3**.
3. Put the flare nut on the pipe.
4. Flare the pipe. Set exactly at the position shown in **Fig 5.5**.
5. Check that the flaring is properly made.



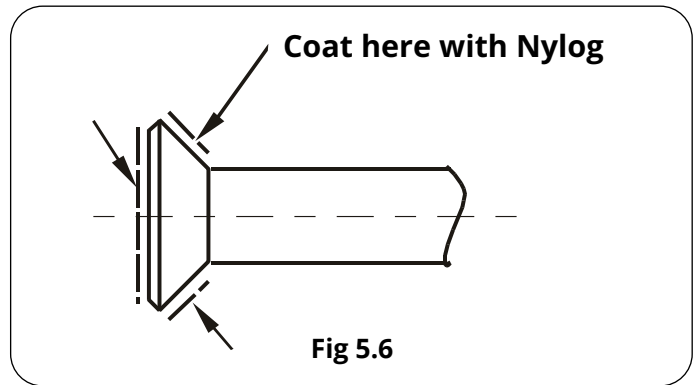
Outer diam.	A	
	Max.	Min
1/4 in	1.3	0.7
3/8in	1.6	1.0
1/2in	1.8	1.0
5/8in	2.2	2.0

Set exactly at the position shown below

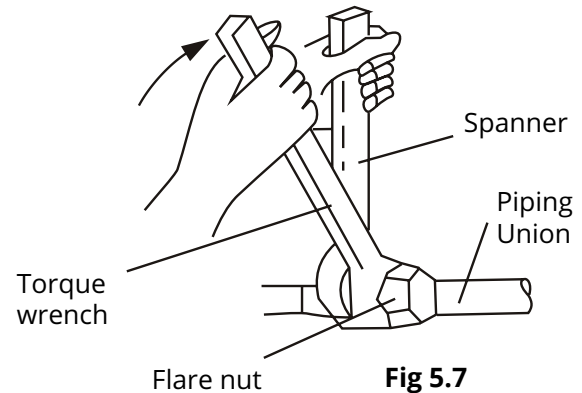


## 5.2 Refrigerant Piping

1. Use Nylog or similar approved refrigerant sealant.



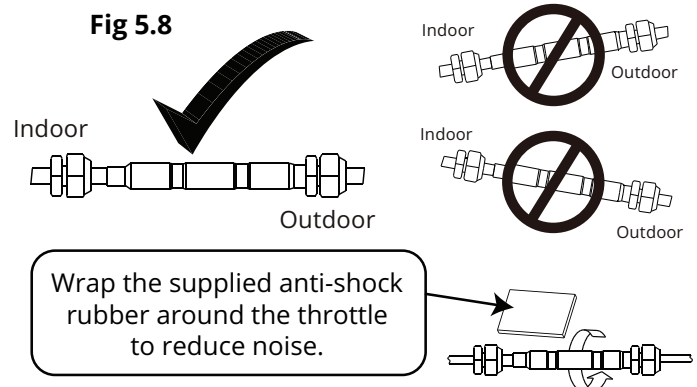
2. Align the centers of both flares and tighten the flare nuts 3 or 4 turns by hand. Then tighten them fully with the torque wrenches.



## 4.3 Install refrigerant pipe adapter. (if needed)

### ! CAUTION

Mount the refrigerant adapter as horizontally as possible. See **Fig. 5.8**.



# Connecting The Drain Pipe

# 6

## 6.1 Installation of drain piping

Install the drain piping as shown in figure below and take measures against condensation. Use PVC pipe, use of plastic, flexible piping is discouraged.

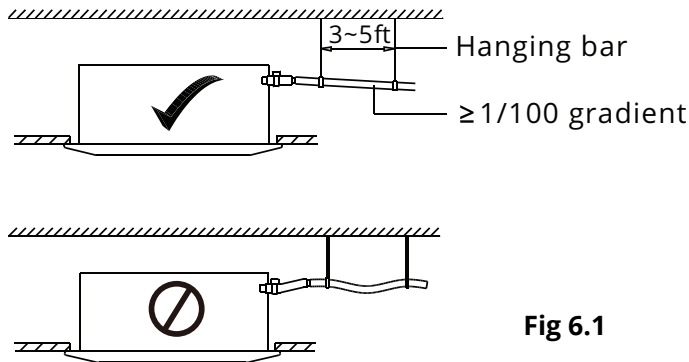
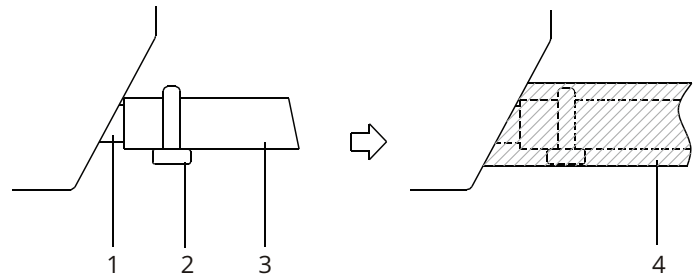


Fig 6.1

## 6.2 Install the drain pipes

- Keep piping as short as possible and slope it downwards at a gradient of at least 1/100 so that air may not remain trapped inside the pipe.
- Keep pipe size equal to or greater than that of the discharge pipe of the unit.
- Push the drain hose as far as possible over the drain socket, and tighten the metal clamp securely.
- Insulate the drain hose inside the building.
- If the drain hose cannot be sufficiently set on a slope, fit the hose with drain lift piping (field supply).
- Make sure that heat insulation work is executed on the Indoor drain pipe and the drain socket to prevent condensation.



- 1 - Drain socket (attached to the unit)
- 2 - Metal clamp
- 3 - Drain hose
- 4 - Insulation (field supply)

## 6.3 How to perform piping

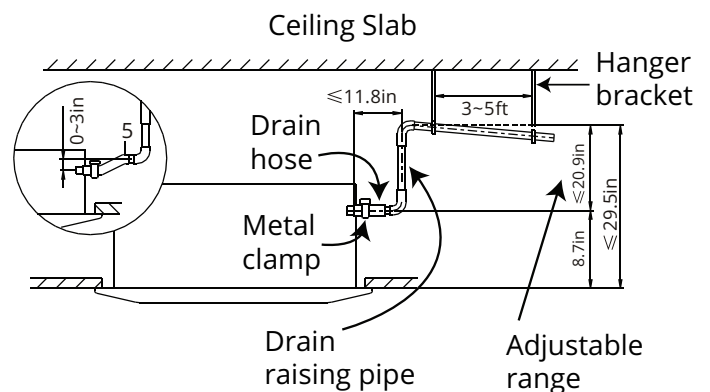


Fig 6.3

- Connect the drain hose to drain lift pipes, and insulate them.
- Connect the drain hose to the drain outlet on the indoor unit, and tighten it with the clamp.

## ! CAUTION

- Install the drain lift pipes no higher than 21".
- Install the drain lift pipes at a right angle to the indoor unit and no more than 12" from the unit.
- To prevent air bubbles, install the drain hose level.
- The incline of drain hose should be no more than 3" so that the drain socket does not have to withstand additional force.
- To ensure a downward slope of 1:100, support the drain line every 3'.
- When unifying multiple drain pipes, install the pipes as shown in figure below. Select converging drain pipes whose gauge is suitable for the operating capacity of the unit.
- Do not connect the drain piping directly to sewage pipes that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain pipes and corrode the heat exchanger.

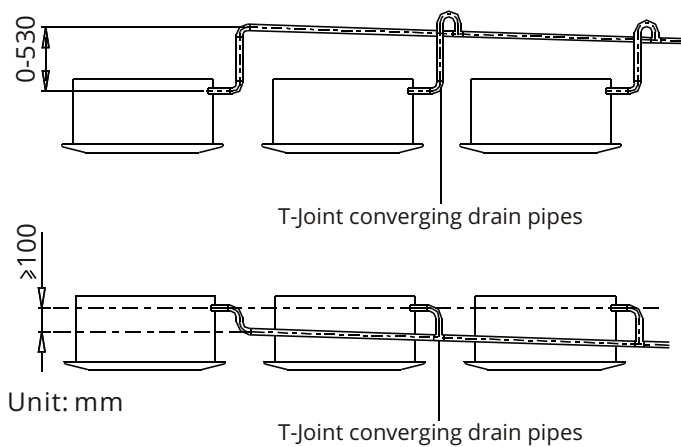


Fig 6.4

### 6.4 Test the drain piping

After the piping work is finished, check if drainage flows smoothly.

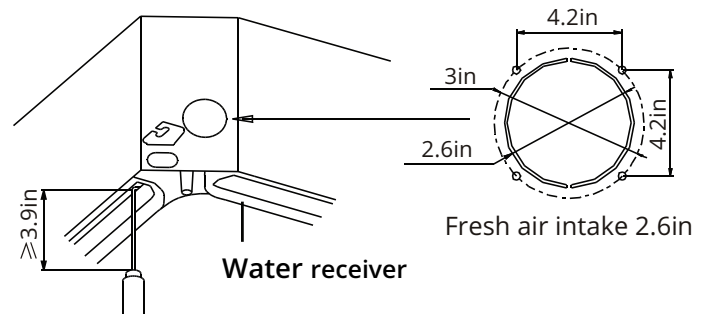


Fig 6.5

When electric wiring work is finished, check drainage flow during **COOL** running, explained in "Test operation".

## ! CAUTION

- All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.
  - Use copper wire only.
  - Follow the 'Wiring diagram' attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
  - A circuit breaker capable of shutting down power supply to the entire system must be installed.
  - Note that the operation will restart automatically if the main power supply is turned off and then turned back on again.
  - Be sure to ground the air conditioner.
- ⊘ DO NOT** connect the ground wire to gas pipes, water pipes, lightning rods, or telephone ground wires.
- Gas pipes: might cause explosions or fire if gas leaks.
  - Water pipes: no grounding effect if hard vinyl piping is used.
  - Telephone ground wires or lightning rods: might cause abnormally high electric potential in the ground during lightning storms.

## How to connect wiring

- Remove the control box lid of the indoor unit.
- Remove the cover of the outdoor unit.
- Follow the "Wiring diagram label" attached to the indoor unit's control box lid to wire the outdoor unit, indoor unit and the remote control. Securely fix the wires with a field supplied clamp.
- Attach the cover of the outdoor unit.

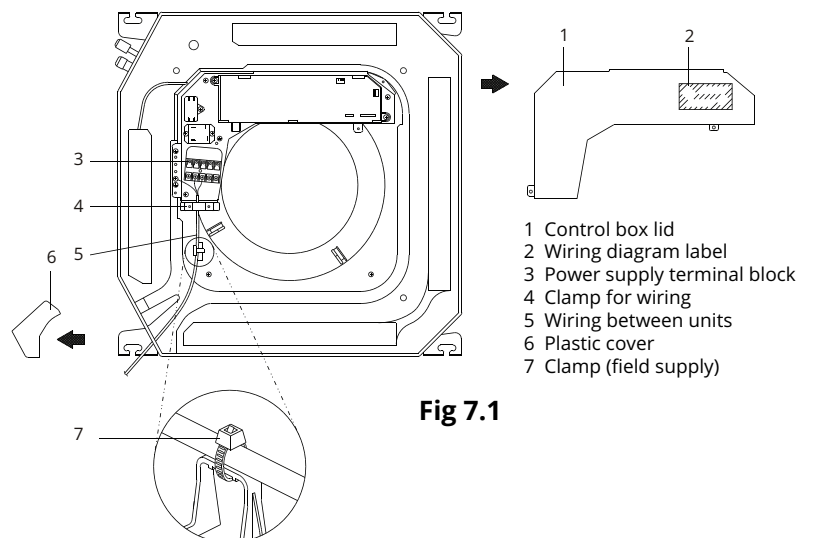


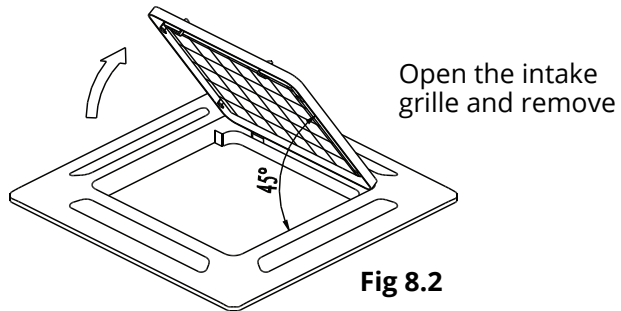
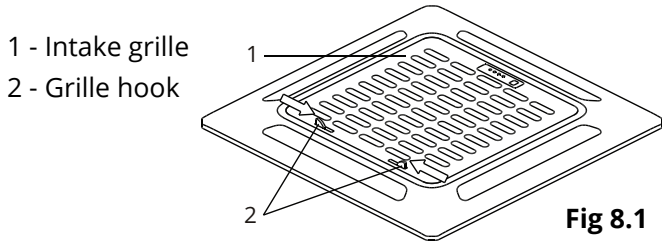
Fig 7.1

Power			
Model	Phase	Frequency and volt	Circuit breaker/ Fuse(A)
12K~18K	1Phase	208-240V	20/16

# Decorative Panel Installation

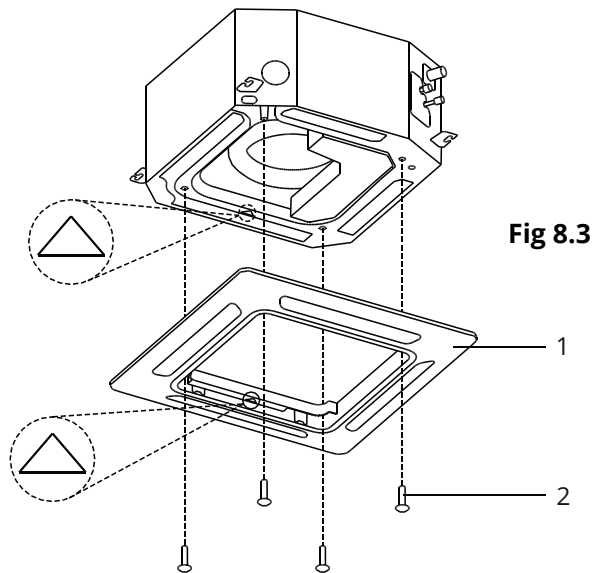
## Detach the intake grille

Slide the 2 grille hooks toward the middle of the decoration panel.



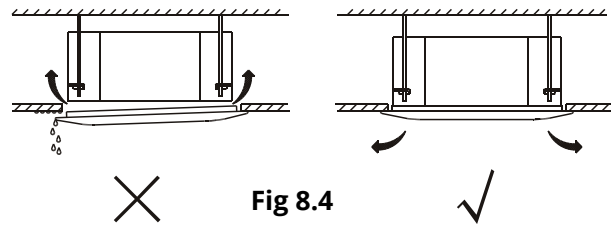
## Install the decoration panel

- Align the indicate "△" on the decoration panel to the indicate "△" on the unit .
- Attach the decoration panel to the unit with the supplied screws as shown in figure below.



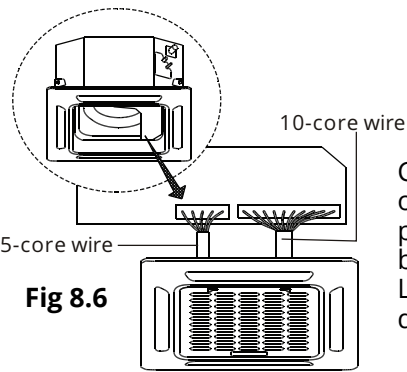
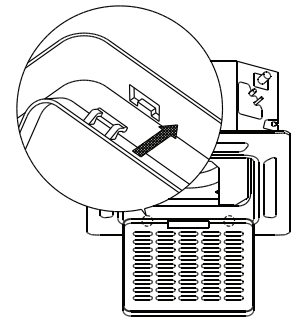
- 1 - Decoration panel
- 2 - Screws (M5) (supplied with the panel)

After installing the decoration panel, ensure that there is no space between the unit body and decoration panel. Otherwise air may leak through the gap and cause dewdrop. See figure below.



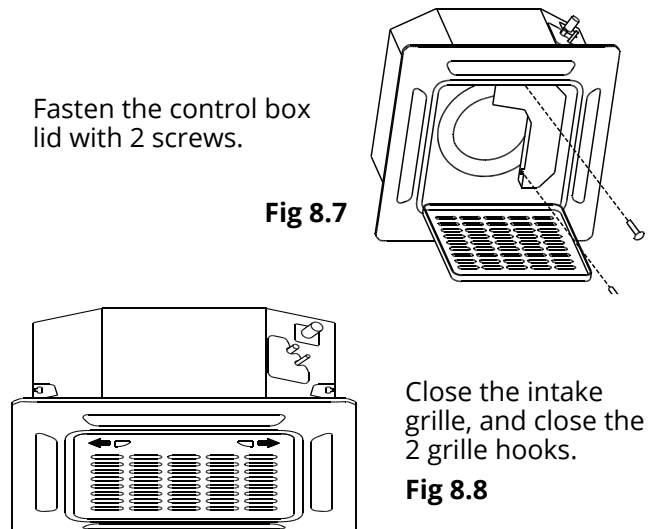
## Mount the intake grille

Ensure that the grille is properly seated in the groove of the panel.



Connect the 2 wires of the decoration panel to the main board of the unit. Leave third wire plug detached.

Fasten the control box lid with 2 screws.



Close the intake grille, and close the 2 grille hooks.

## **Install Outdoor Unit** (see separate manual)

When you have finished installing all indoor air handlers, proceed to installation of the outdoor unit. Complete installation instructions and startup procedures are given in the outdoor unit installation manual. Copies are always available at **AlpineHomeAir.com** by searching your unit's model number and scrolling to Documents.

**The design and specifications are subject to change without  
prior notice for product improvement.**



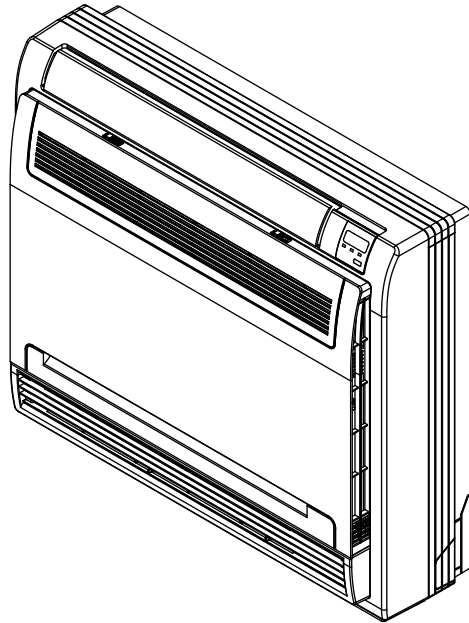
**AlpineHomeAir.com**



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# Installation Manual

## Low-wall air handler



### IMPORTANT NOTE:

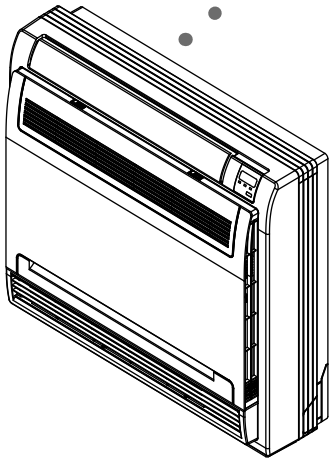
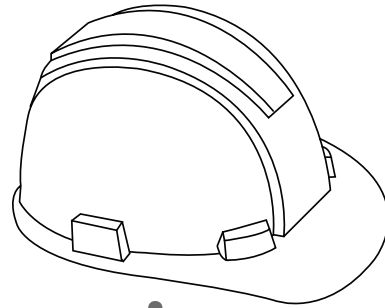
Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.



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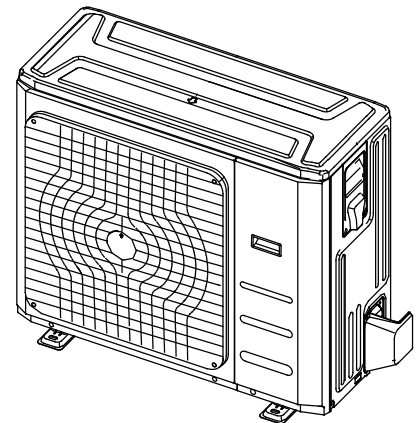
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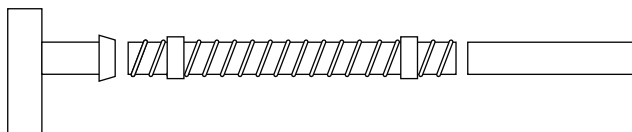


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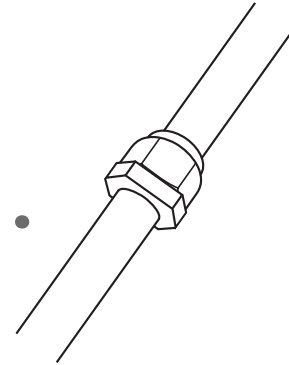
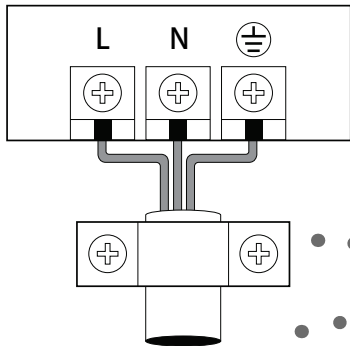
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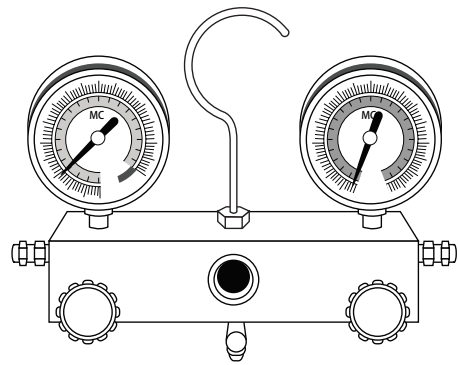
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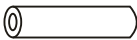



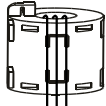
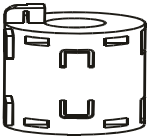


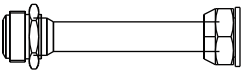
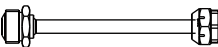
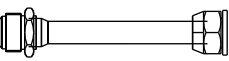
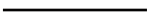


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# Accessories

# 1

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

	NAME	SHAPE	QUANTITY
Refrigeration Fittings	Soundproof / insulation sheath (some models)		2
Installation Fittings	Hook		2
Drainpipe Fittings (for cooling & heating)	Drain joint (some models)		1
	Seal ring (some models)		1
EMC Magnetic Ring (some models)	Magnetic ring (wrap the electric wires S1 & S2 ( P & Q & E ) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring (Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		1
Others	Owner's manual		1
	Installation manual		1
	Transfer connector( $\Phi 12.7$ - $\Phi 15.9$ )/ ( $\Phi 0.5$ in- $\Phi 0.63$ in) (Packed with the indoor unit ) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit .		1 (on some models)
	Transfer connector( $\Phi 6.35$ - $\Phi 9.52$ )/ ( $\Phi 0.25$ in- $\Phi 0.375$ in) (Packed with the indoor unit) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit .		1 (on some models)
	Transfer connector( $\Phi 9.52$ - $\Phi 12.7$ )/ ( $\Phi 0.375$ in- $\Phi 0.5$ in) (Packed with the indoor unit, used for multi-type models only ) NOTE: Pipe size may differ from appliance to appliance. To meet different pipe size requirements, sometimes the pipe connections need a transfer connector installed on the outdoor unit .		1 (on some models)
	Red short connected wire (Applied to the W/L pin of outdoor unit terminal block be short-circuited.)		1 (on some models)

## Optional accessories

- There are two types of remote controls: wired and wireless.  
Select a remote controller based on customer preferences and requirements and install in an appropriate place.  
Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

## Read Safety Precautions Before Installation

Incorrect installation due to ignoring instructions can cause serious damage or injury. The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



**WARNING**

Failure to observe a warning may result in death. The appliance must be installed in accordance with national regulations.



**CAUTION**

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

### **WARNING**

- **Carefully read the Safety Precautions before installation.**
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- **Only trained and certified technicians should install, repair and service this air conditioning unit.**  
Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment and personal property.
- **Strictly follow the installation instructions set forth in this manual.**  
Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment.
- Before you install the unit, consider strong winds, typhoons and earthquakes that might affect your unit and locate it accordingly. Failure to do so could cause the equipment to fail.
- After installation, ensure there are no refrigerant leaks and that the unit is operating properly. Refrigerant is both toxic and flammable and poses a serious health and safety risk.

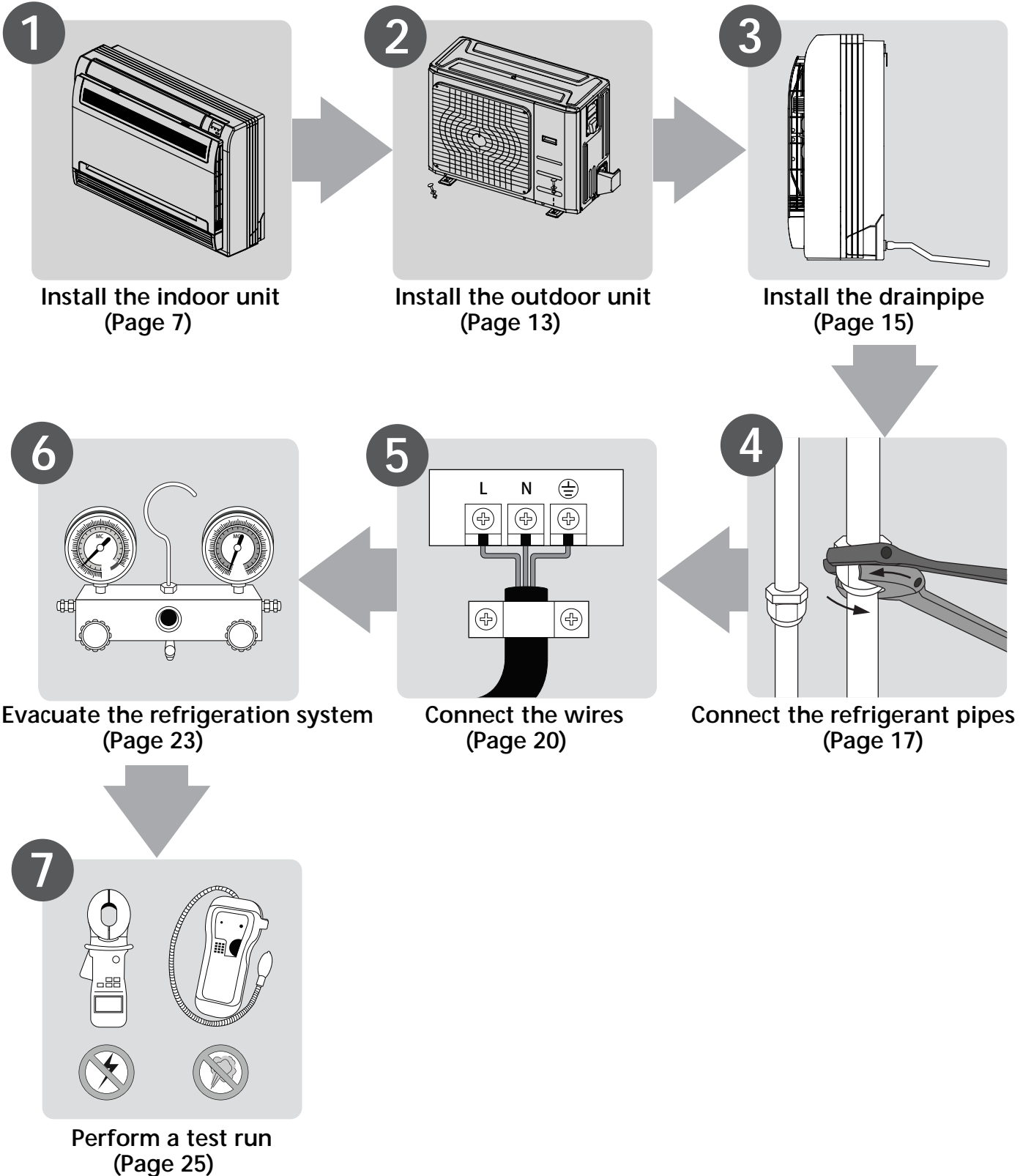
### **Note about Fluorinated Gasses**

1. This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation and recycling must be performed by a certified technician.
4. If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

# Installation Overview

3

## INSTALLATION ORDER



## Indoor Unit Parts

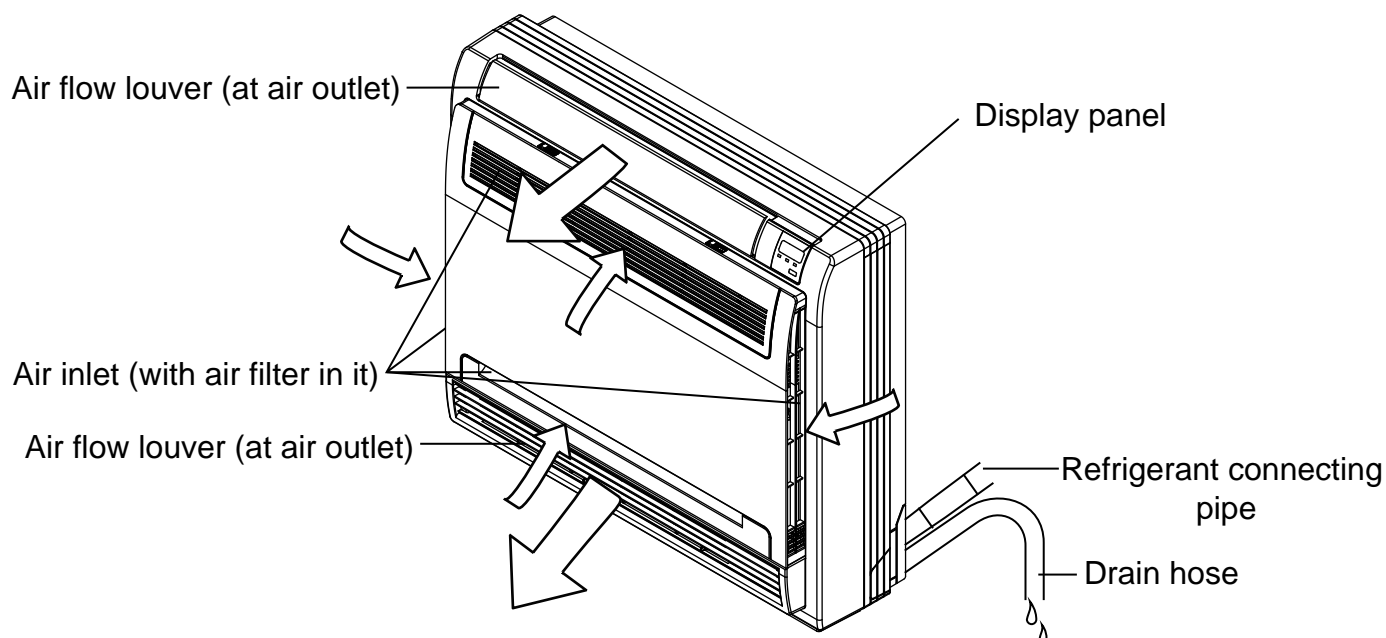


Fig. 4.1

## Safety Precautions

### WARNING

- Securely install the indoor unit on a structure that can sustain its weight. If the structure is too weak, the unit may fall and cause personal injury, unit and property damage, or death.
- **DO NOT** install the indoor unit in a bathroom or laundry room as excessive moisture can short the unit and corrode the wiring.

### CAUTION

- Install the indoor and outdoor units, cables and wires at least 1m (3.2') from televisions or radios to prevent static or image distortion. Depending on the appliances, a 1m (3.2') distance may not be sufficient.
- If the indoor unit is installed on metal, it must be electrically grounded.

## Indoor Unit Installation Instructions

**NOTE:** Panel installation should be performed after piping and wiring have been completed.

### Step 1: Select installation location

The indoor unit should be installed in a location that meets the following requirements:

- ☑ Enough room for installation and maintenance.
- ☑ Enough room for the connecting pipe and drainpipe.
- ☑ The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- ☑ The air inlet and outlet are not impeded.
- ☑ The airflow can fill the entire room.
- ☑ There is no direct radiation from heaters.

## ! CAUTION

**DO NOT** install the unit in the following locations:

- ⊘ Areas with oil drilling or fracking
- ⊘ Coastal areas with high salt content in the air
- ⊘ Areas with caustic gases in the air, such as near hot springs
- ⊘ Areas with power fluctuations, such as factories
- ⊘ Enclosed spaces, such as cabinets
- ⊘ Areas with strong electromagnetic waves
- ⊘ Areas that store flammable materials or gas
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms

## RECOMMENDED DISTANCES BETWEEN THE INDOOR UNIT

The distance between the mounted indoor unit should meet the specifications illustrated in the following diagram. (See Fig. 4.2)

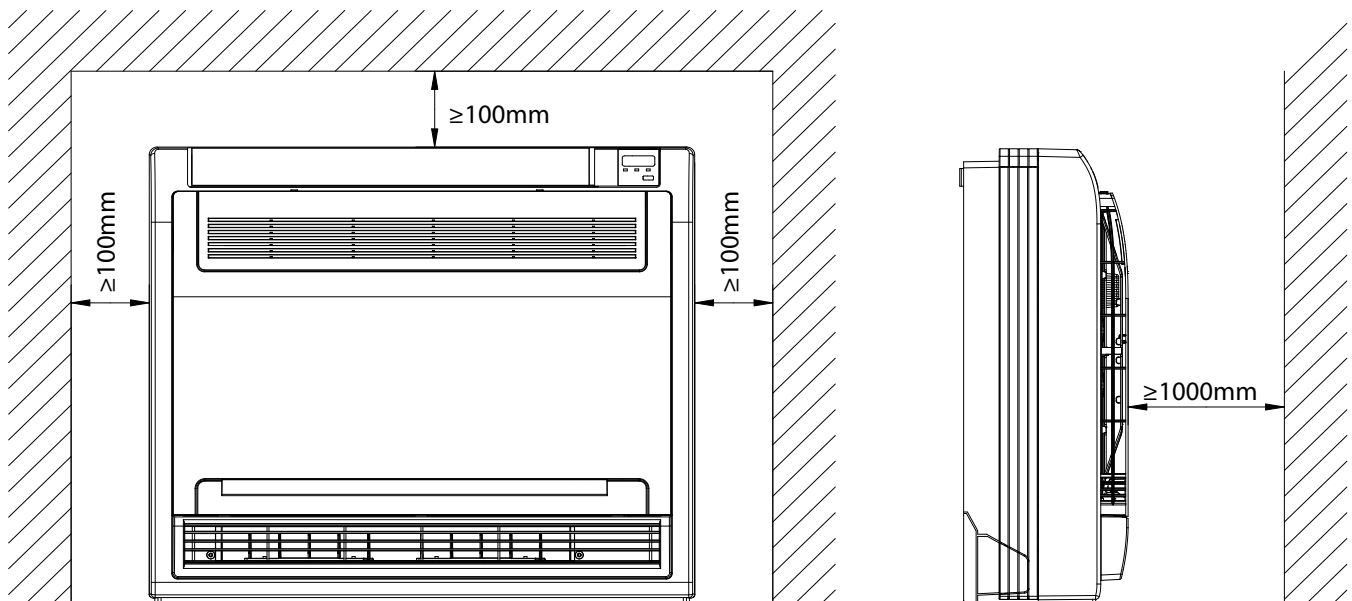
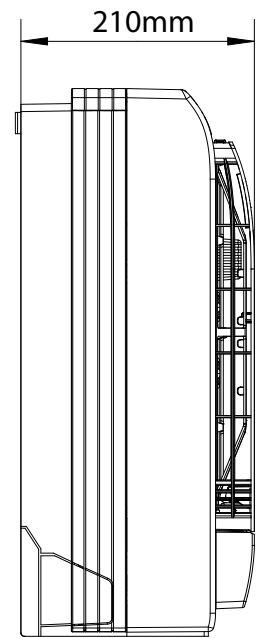
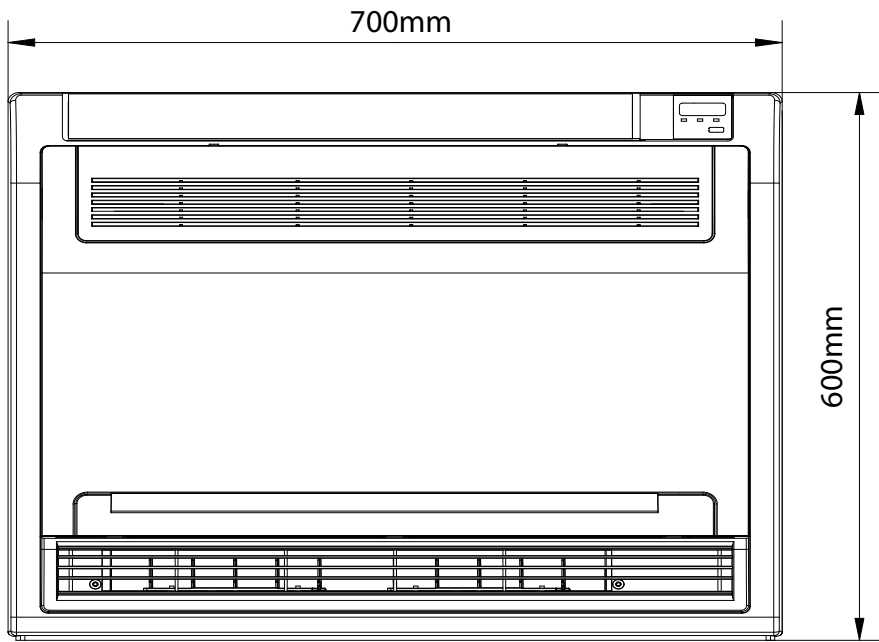


Fig. 4.2



Indoor Unit  
Installation

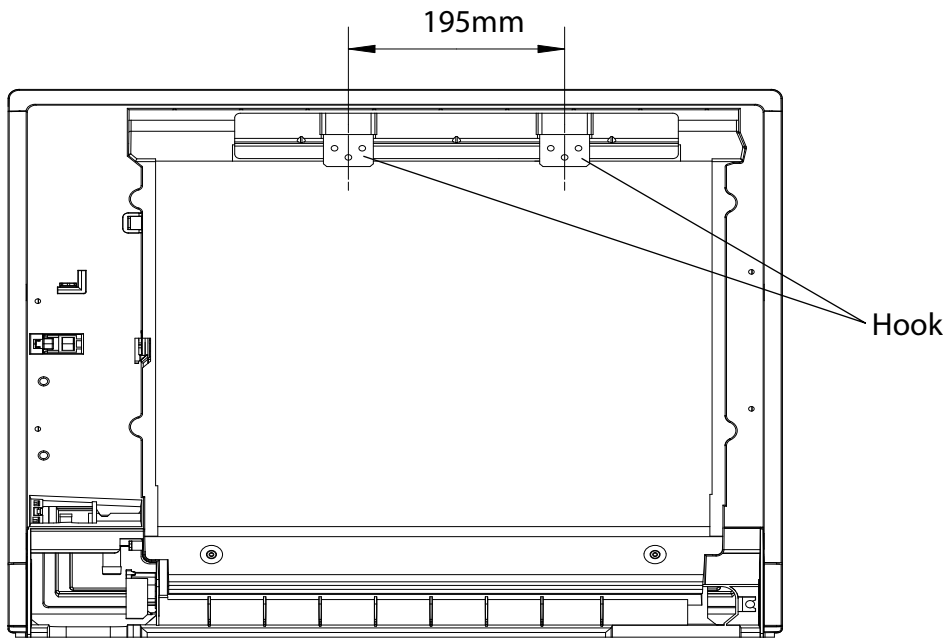


Fig. 4.3

## Step 2: Installing the main body

- Affix the hook with a tapping screw onto the wall.

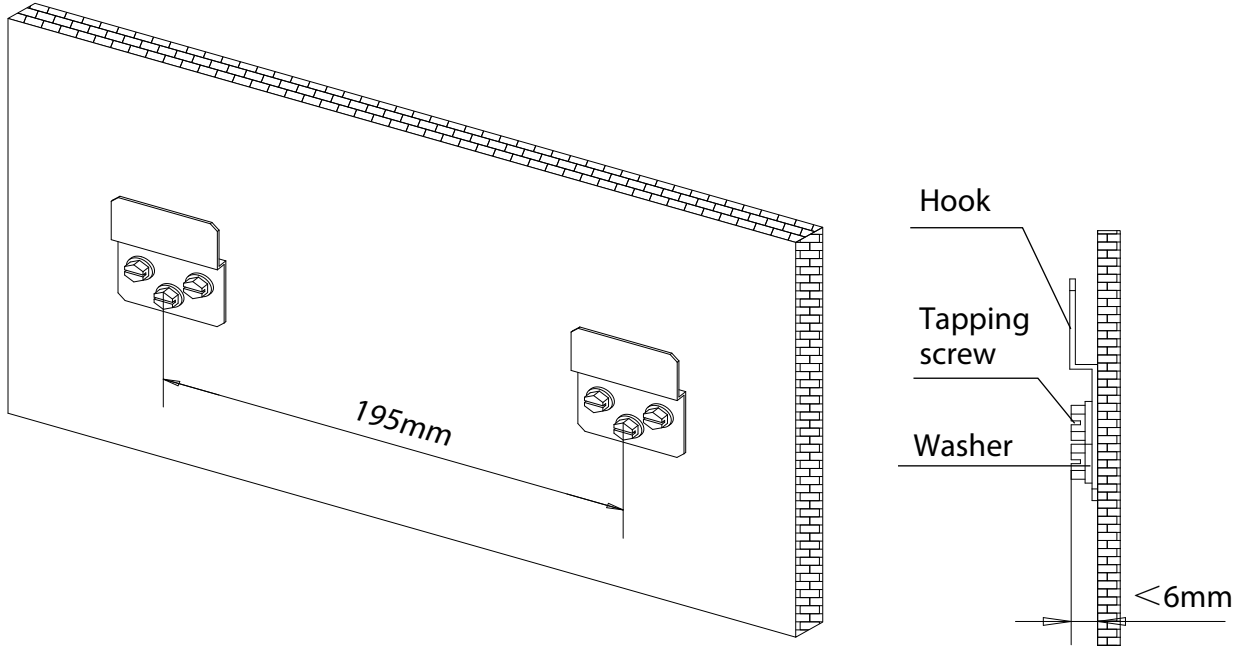


Fig. 4.4

- Hang the indoor unit on the hook.  
(The bottom of body can touch the floor or remain suspended, but the body must be installed vertically.)

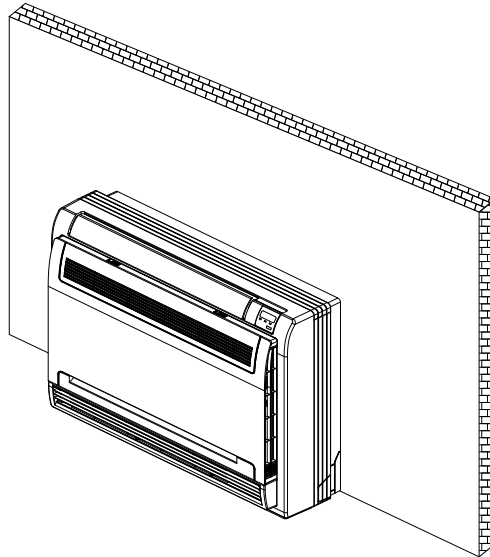


Fig. 4.5

### Step 3: Taking the indoor unit apart to connect the pipes

#### 1. Open the front panel

Slide the two stoppers on the left and right sides inward until they click.

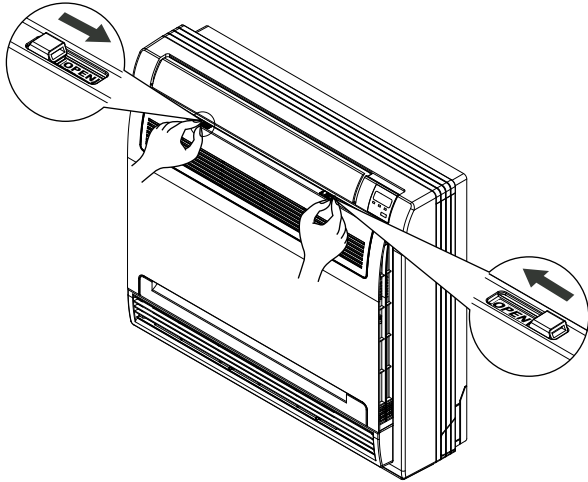


Fig. 4.6

#### 3. Remove the face plate.

Remove the four screws. (See Fig.4.7)  
Open the bottom of the face plate at a 30-degree angle. Lift the top of the face plate. (See Fig.4.8)

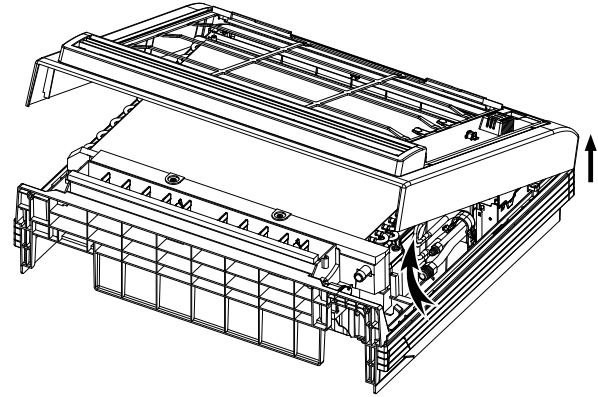


Fig. 4.8

#### 3. Remove the front panel.

Remove the string.  
Allow the front panel to fall forward and remove it.

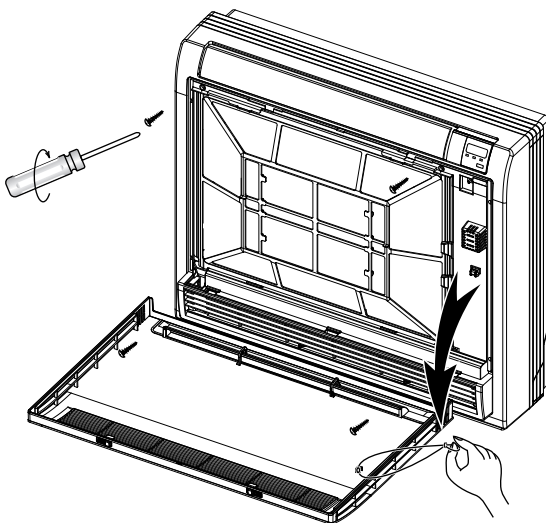


Fig. 4.7

### Step 4: Network address set (some models)

(Only unit of 18000Btu/h has the function that Network address set.)

Every air-conditioner in network has only one network address to distinguish each other. Address code of air-conditioner in LAN is set by code switches S1 & S2 on the Main Control Board of the indoor unit, and the set range is 0-63.

Table 4.1

S1	Toggle switch set		Network address code
	S2		
		~	00~15
		~	16~31
		~	32~47
		~	48-63

# Outdoor Unit Installation

# 5

## Outdoor Unit Installation Instructions

Outdoor Unit  
Installation

### Step 1: Select installation location.

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

- ☑ Place the outdoor unit as close to the indoor unit as possible.
- ☑ Ensure that there is enough room for installation and maintenance.
- ☑ The air inlet and outlet must not be obstructed or exposed to strong wind.
- ☑ Ensure the location of the unit will not be subject to snowdrifts, accumulation of leaves or other seasonal debris. If possible, provide an awning for the unit. Ensure the awning does not obstruct airflow.
- ☑ The installation area must be dry and well ventilated.
- ☑ There must be enough room to install the connecting pipes and cables and to access them for maintenance.

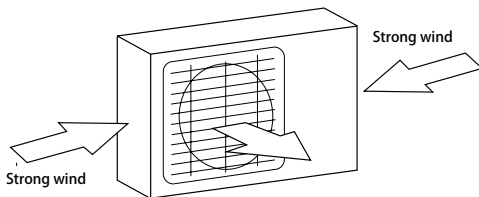


Fig. 5.1

- ☑ The area must be free of combustible gases and chemicals.
- ☑ The pipe length between the outdoor and indoor unit may not exceed the maximum allowable pipe length.
- ☑ If possible, **DO NOT** install the unit where it is exposed to direct sunlight.
- ☑ If possible, make sure the unit is located far away from your neighbors' property so that the noise from the unit will not disturb them.
- ☑ If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning. (See Fig. 5.1 & 5.2)
- ☑ Install the indoor and outdoor units, cables and wires at least 1 meter from televisions or radios to prevent static or image distortion. Depending on the radio waves, a 1 meter distance may not be enough to eliminate all interference.

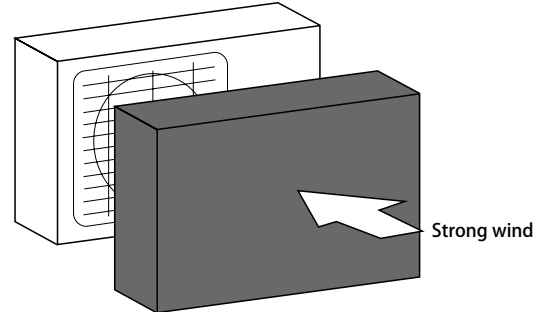


Fig. 5.2

### Step 2: Install outdoor unit.

Fix the outdoor unit with anchor bolts (M10)

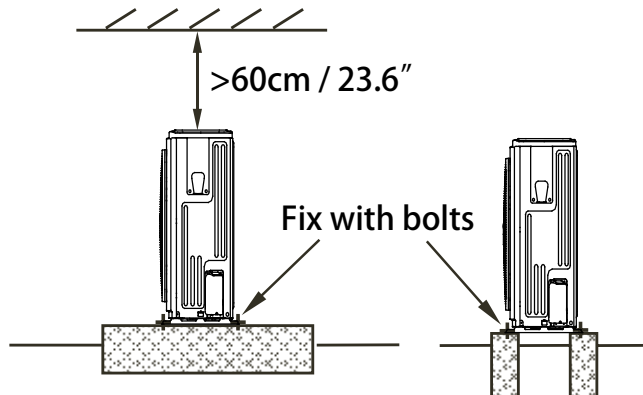


Fig. 5.3

### ! CAUTION

- Be sure to remove any obstacles that may block air circulation.
- Make sure you refer to Length Specifications to ensure there is enough room for installation and maintenance.

## Outdoor Unit Types and Specifications

### Split Type Outdoor Unit

(Refer to Fig 5.4, 5.5, 5.6, 5.7 and Table 5.1)

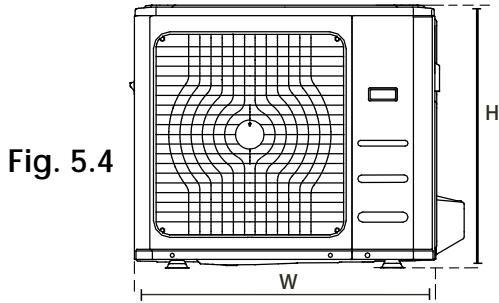


Fig. 5.4

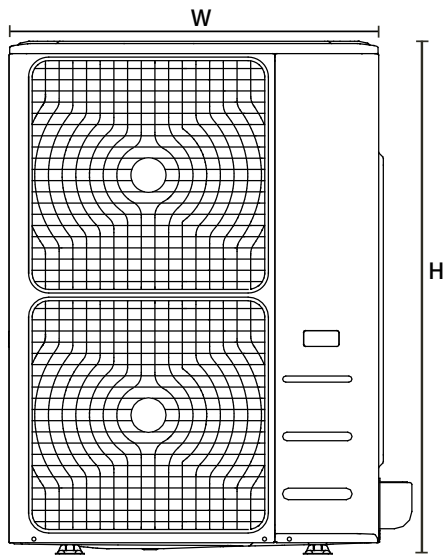


Fig. 5.5

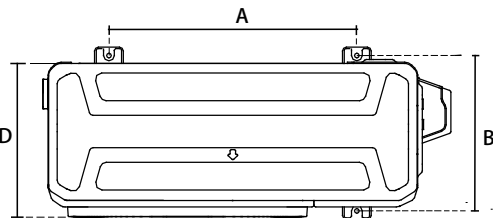


Fig. 5.6

Table 5.1: Length Specifications of Split Type Outdoor Unit (unit: mm/inch)

Outdoor Unit Dimensions W x H x D	Mounting Dimensions	
	Distance A	Distance B
760x590x285 (29.9x23.2x11.2)	530 (20.85)	290 (11.4)
780x540x250 (30.7x21.25x9.85)	549 (21.6)	276 (10.85)
810x558x310 (31.9x22x12.2)	549 (21.6)	325 (12.8)
845x700x320 (33.27x27.5x12.6)	560 (22)	335 (13.2)
770x555x300 (30.3x21.85x11.8)	487 (19.2)	298 (11.7)
800x554x333 (31.5x21.8x13.1)	514 (20.24)	340 (13.39)
845x702x363 (33.27x27.6x14.3)	540 (21.26)	350 (13.8)

**NOTE:** The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P) (See Fig. 5.7)

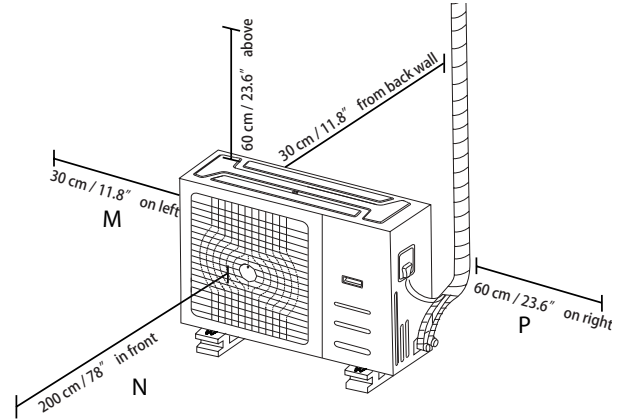


Fig. 5.7

Outdoor Unit Installation

### Rows of series installation

Table 5.2 The relations between H, A and L are as follows.

	L	A
L ≤ H	L ≤ 1/2H	25 cm / 9.8" or more
	1/2H < L ≤ H	30 cm / 11.8" or more
L > H	Can not be installed	

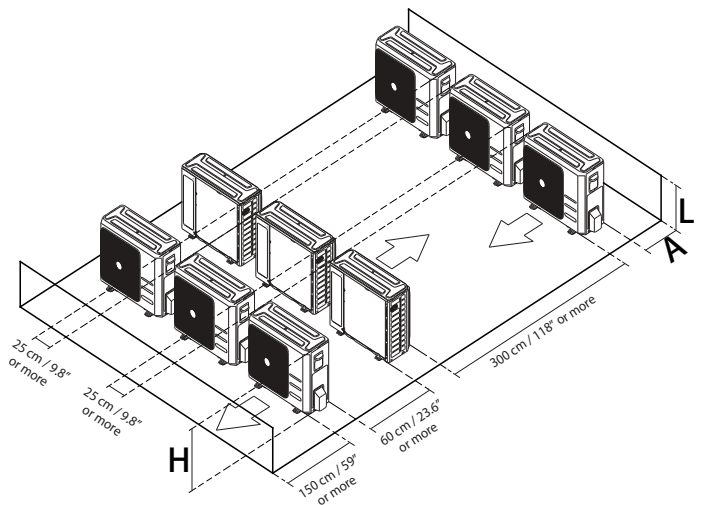


Fig. 5.8

## Drain Joint Installation

If the drain joint comes with a rubber seal (see Fig. 5.9 - A ), do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

If the drain joint doesn't come with a rubber seal (see Fig. 5.9 - B ), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

**NOTE:** Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

## Notes On Drilling Hole In Wall

You must drill a hole in the wall for the refrigerant piping, and the signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65-mm (2.5") core drill, drill a hole in the wall.

**NOTE:** When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

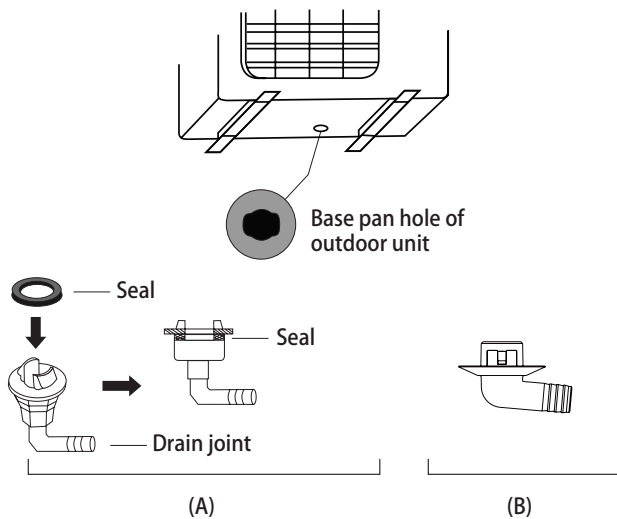


Fig. 5.9

# Drainpipe Installation

# 6

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.

## CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage.
- **DO NOT** pull the drainpipe forcefully. This could disconnect it.

## NOTE ON PURCHASING PIPES

Installation requires a polyethylene tube (exterior diameter = 3.7-3.9cm, interior diameter = 3.2cm), which can be obtained at your local hardware store or dealer.

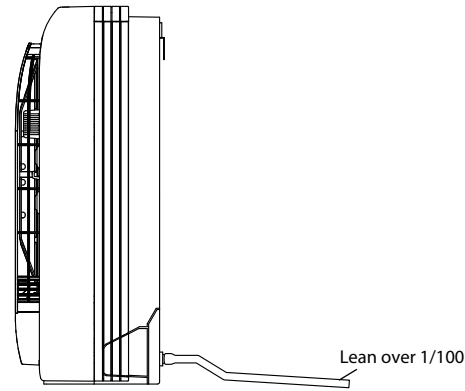


Fig. 6.2

## NOTE ON DRAINPIPE INSTALLATION

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- Incorrect installation could cause water to flow back into the unit and flood.

## Indoor Drainpipe Installation

Install the drainpipe as illustrated in Figure 6.2.

1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp. (See Fig 6.1)

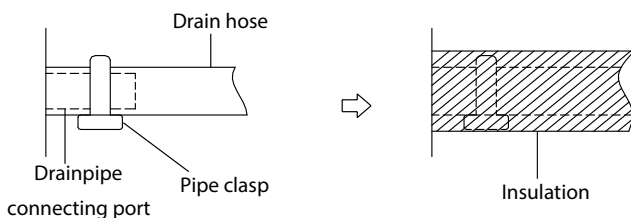


Fig. 6.1

**NOTE:** When connecting multiple drainpipes, install the pipes as illustrated in Fig 6.3.

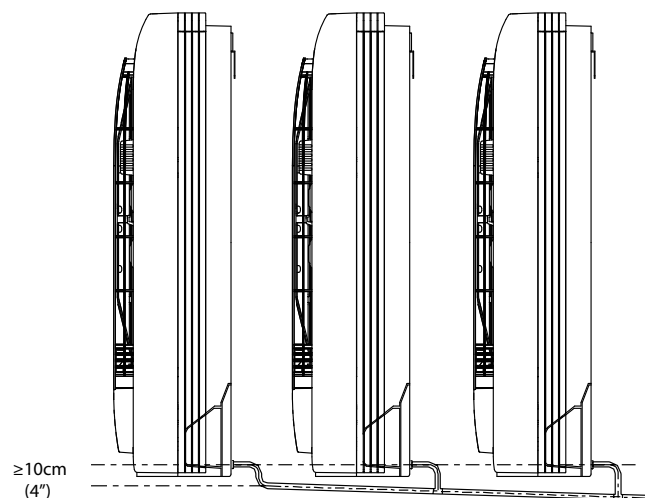
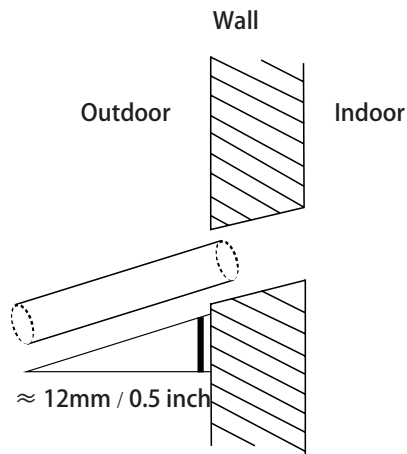


Fig. 6.3

- Using a 65-mm (2.5") core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12mm (0.5"). This will ensure proper water drainage (See Fig. 6.4). Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it once you finish installation.



**Fig. 6.4**

**NOTE:** When drilling the hole, make sure to avoid wires, plumbing, and other sensitive components.

- Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

**NOTE:** The drainpipe outlet should be at least 5cm (1.9") above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that might otherwise come back into the house.

# Refrigerant Piping Connection

# 7

## Safety Precautions

### WARNING

- All field piping must be completed by a licensed technician and must comply with the local and national regulations.
- When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- When installing the refrigeration system, ensure that air, dust, moisture or foreign substances do not enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion or injury.
- Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation work.

## Notes On Pipe Length and Elevation

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in Table 7.1:

**Table 7.1: The Maximum Length And Drop Height Based on Models. (Unit: m/ft.)**

Type of model	Capacity (Btu/h)	Length of piping	Maximum drop height
North America, Australia and the eu frequency conversion Split Type	<15K	25/82	10/32.8
	≥15K - <24K	30/98.4	20/65.6
	≥24K - <36K	50/164	25/82
	≥36K - ≤60K	65/213	30/98.4
Other Split Type	12K	15/49	8/26
	18K-24K	25/82	15/49
	30K-36K	30/98.4	20/65.6
	42K-60K	50/164	30/98.4

Refrigerant Piping Connection

## Refrigerant Piping Connection Instructions

### ! CAUTION

- The branching pipe must be installed horizontally. An angle of more than 10° may cause malfunction.
- **DO NOT** install the connecting pipe until both indoor and outdoor units have been installed.
- Insulate both the gas and liquid piping to prevent water leakage.

### Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.

### ! CAUTION

**DO NOT** deform pipe while cutting. Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

1. Make sure that the pipe is cut at a perfect 90° angle. Refer to Fig. 7.1 for examples of bad cuts.

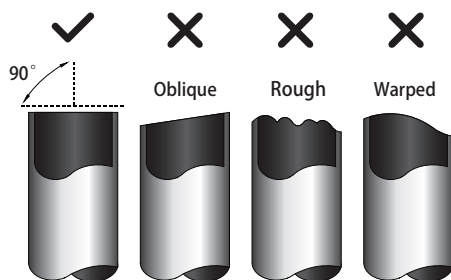


Fig. 7.1

### Step 2: Remove burrs.

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.

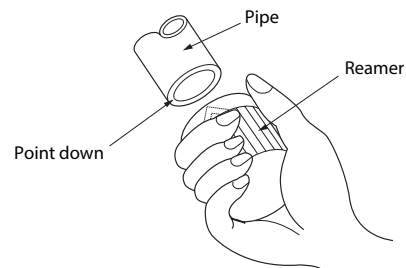


Fig. 7.2

### Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

1. After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
2. Sheath the pipe with insulating material.
3. Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring. See Fig. 7.3

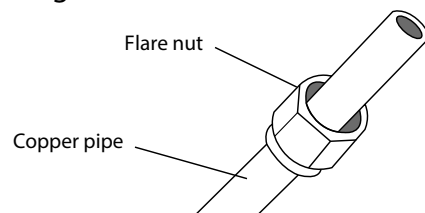


Fig. 7.3

4. Remove PVC tape from ends of pipe when ready to perform flaring work.
5. Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.

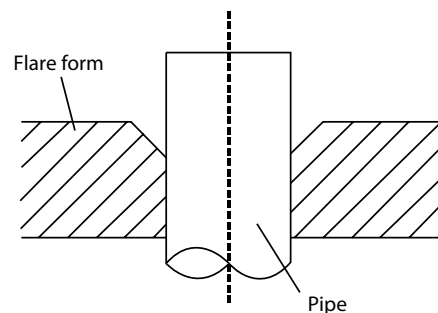
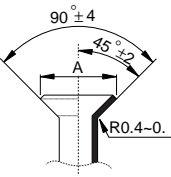


Fig. 7.4

- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions shown in table 7.2.

**Table 7.2: PIPING EXTENSION BEYOND FLARE FORM**

Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 6.4	18-20 N.m (183-204 kgf.cm)	8.4/0.33	8.7/0.34	
Ø 9.5	25-26 N.m (255-265 kgf.cm)	13.2/0.52	13.5/0.53	
Ø 12.7	35-36 N.m (357-367 kgf.cm)	16.2/0.64	16.5/0.65	
Ø 15.9	45-47 N.m (459-480 kgf.cm)	19.2/0.76	19.7/0.78	
Ø 19.1	65-67 N.m (663-683kgf.cm)	23.2/0.91	23.7/0.93	
Ø 22	75-85 N.m (765-867kgf.cm)	26.4/1.04	26.9/1.06	

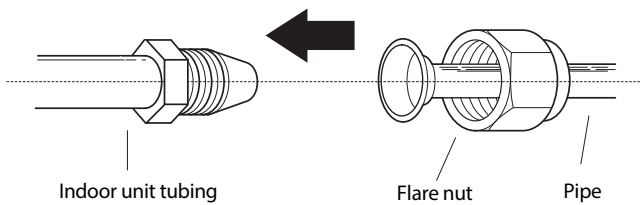
**Fig. 7.6**

- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

**Step 4: Connect pipes**

Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low-pressure pipe, then the high-pressure pipe.

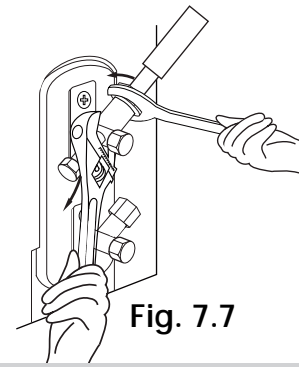
- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect.



**Fig. 7.6**

- Tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the nut on the unit tubing.
- While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values in table 7.2.

**NOTE:** Use both a spanner and a torque wrench when connecting or disconnecting pipes to/from the unit.



**Fig. 7.7**

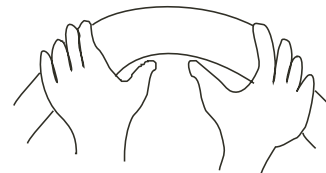
**! CAUTION**

- Ensure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Make sure the pipe is properly connected.
- Over tightening may damage the bell mouth and under tightening may lead to leakage.

**NOTE ON MINIMUM BEND RADIUS**

Carefully bend the tubing in the middle according to the diagram below. **DO NOT** bend the tubing more than 90° or more than 3 times.

Bend the pipe with thumb



min-radius 10cm (3.9")

**Fig. 7.8**

- After connecting the copper pipes to the indoor unit, wrap the power cable, signal cable and the piping together with binding tape.

**NOTE:** **DO NOT** intertwine signal cable with other wires. While bundling these items together, do not intertwine or cross the signal cable with any other wiring.

- Thread this pipeline through the wall and connect it to the outdoor unit.
- Insulate all the piping, including the valves of the outdoor unit.
- Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

**! CAUTION**

Check to make sure there is no refrigerant leak after completing the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

## Safety Precautions

### **WARNING**

- Disconnect the power supply before working on the unit.
- All wiring must be performed according to local and national regulations.
- Wiring must be done by a qualified technician. Improper connections may cause electrical malfunction, injury, or fire.
- An independent circuit and single outlet must be used for this unit.  
**DO NOT** plug another appliance or charger into the same outlet. If the cannot handle the load or there is a defect in the wiring, it can lead to shock, fire, and unit and property damage.
- Connect the power cable to the terminals and fasten it with a clamp. An insecure connection may cause fire.
- Make sure that all wiring is done correctly and the control board cover is properly installed. Failure to do so can cause overheating at the connection points, fire, and electrical shock.
- Ensure that main power supply connection is made through a switch that disconnects all poles, with contact gap of at least 3mm (0.118").
- **DO NOT** modify the length of the power cord or use an extension cord.

### **CAUTION**

- Connect the outdoor wires before connecting the indoor wires.
- Make sure you ground the unit. The grounding wire should be located away from gas pipes, water pipes, lightning rods, telephone wires or other grounding wires. Improper grounding may cause electrical shock.
- **DO NOT** connect the unit to the power source until all wiring and piping is completed.
- Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion and interference.

To prevent distortion when the compressor starts (you can find the unit's power information on the rating sticker):

- The unit must be connected to the main outlet. Normally, the power supply must have a impedance of 32 ohms.
- No other equipment should be connected to the same power circuit.

### TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's printed circuit board (PCB) is designed with a fuse that provides overcurrent protection. The specifications of the fuse are printed on the circuit board, examples of such are T5A/250VAC and T10A/250VAC.

## Outdoor Unit Wiring

### **WARNING**

Before performing any electrical or wiring work, turn off the main power to the system.

1. Prepare the cable for connection
  - a. You must first choose the right cable size. Be sure to use H07RN-F cables.

**Table 8.1: Minimum Cross-Sectional Area of Power and Signal Cables in North America**

Rated Current of Appliance (A)	AWG
≤7	18
7 - 13	16
13 - 18	14
18 - 25	12
25 - 30	10

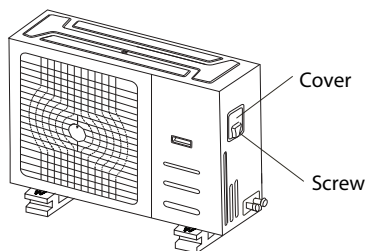
**Table 8.2: Other World Regions**

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm <sup>2</sup> )
≤ 6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25 - 32	4
32 - 45	6

- b. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 15cm (5.9") of wire.
- c. Strip the insulation from the ends.
- d. Using a wire crimper, crimp u-lugs on the ends.

**NOTE:** When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.

2. Remove the electric cover of the outdoor unit. If there is no cover on the outdoor unit, take off the bolts from the maintenance board and remove the protection board. (See Fig. 8.1)

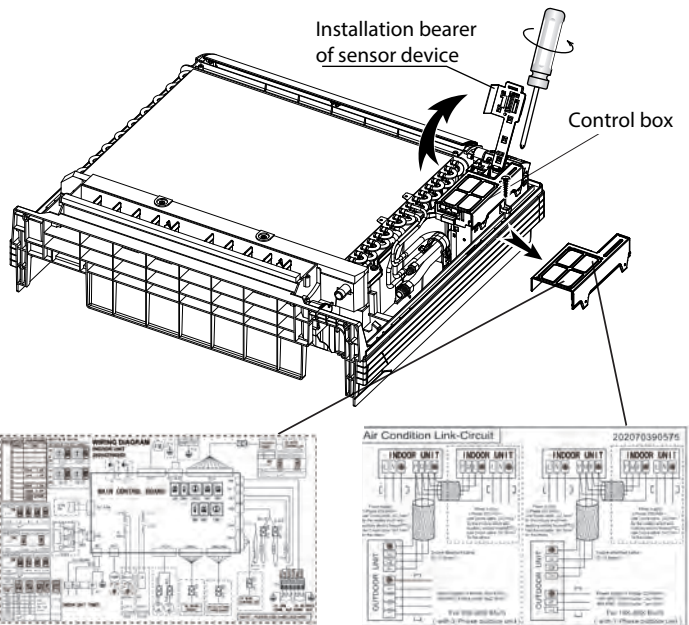


**Fig. 8.1**

3. Connect the u-lugs to the terminals  
Match the wire colors/labels with the labels on the terminal block, Firmly screw the u-lug of each wire to its corresponding terminal.
4. Clamp down the cable with the cable clamp.
5. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
6. Reinstall the cover of the electric control box.

## Indoor Unit Wiring

1. Prepare the cable for connection
  - a. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 15cm (5.9") of the wire.
  - b. Strip the insulation from the ends of the wires.
  - c. Using a wire crimper, crimp the u-lugs to the ends of the wires.
2. Rotate the sensor device's installation bearer to the other side. Then remove the cover of the electrical box. (Also, remove the electrical box also if its capacity is 18000btu/h and has networking functionality.)
3. Connect the u-lugs to the terminals. Match the wire colors/labels with the labels on the terminal block, Firmly screw the u-lug of each wire to its corresponding terminal. Refer to the Serial Number and Wiring Diagram located on the cover of the electric control box.



Wiring diagram

Connective wiring diagram

**Fig. 8.2**

## ! CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
  - The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.
4. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the u-lugs.
  5. Reattach the electric box cover.

## Power Specifications

MODEL(Btu/h)		<16K	16K~18K
POWER	PHASE	1 Phase	1 Phase
	FREQUENCY AND VOLT	220-240V~,50Hz/60Hz	220-240V~,50Hz/60Hz
CIRCUIT BREAKER/FUSE(A)		20/16	20/16
INDOOR UNIT POWER WIRING(mm <sup>2</sup> )		---	3x1.0
INDOOR/OUODOOR CONNECTING WIRING(mm <sup>2</sup> )	OUTDOOR UNIT POWER WIRING	3x1.5	3x2.5
	STRONG ELECTRIC SIGNAL	4x1.0	---
	WEAK ELECTRIC SIGNAL	---	3x0.2
	GROUND WIRING	1.5	2.5

# Air Evacuation

## Preparations and Precautions

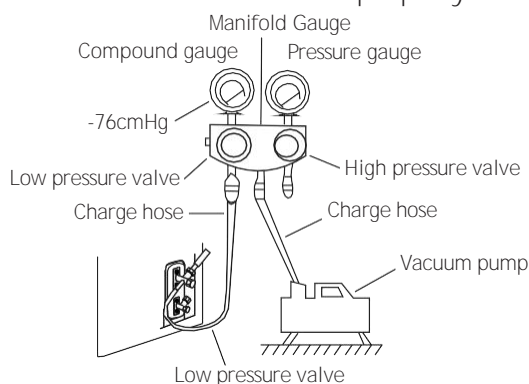
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

### BEFORE PERFORMING EVACUATION

- ☑ Check to make sure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected

### Evacuation Instructions

Before using a manifold gauge and a vacuum pump, read their operation manuals to make sure you know how to use them properly.



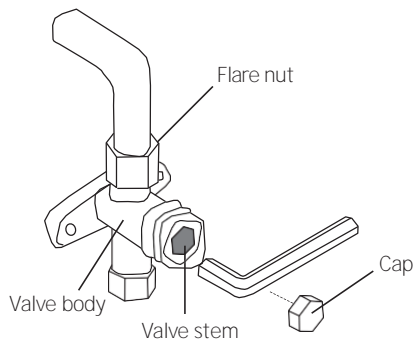
1. Open both King Valves fully until you hit the stopper. Do not force.
2. Connect low pressure manifold gauge hose to mini-split adapter; connect mini-split adapter to low pressure lineset valve A
3. Connect the manifold **gauge's** charge hose from the to the vacuum pump.
4. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.

3. Pressure test Connect nitrogen tank regulator to charging hose on manifold gauges. Pressurize lineset to 200 psi of dry nitrogen.
4. Check for leaks Spray soap bubbles on fittings at outdoor and indoor units to check for bubbles/ leaks. If leaks are present, retorque flare nut. If leak is still present, release nitrogen, inspect and re-work flare. Repeat. Once there are no leaks, proceed to step 6.
5. Discharge nitrogen pressure from lineset A and disconnect nitrogen tank.
6. Turn on the vacuum pump to evacuate the system.
7. Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76cmHG (-1x10<sup>5</sup>Pa).
8. **At this step It is recommended to use a micron gauge and Vacuum the lineset to below 500 microns.**
9. Close the manifold **gauge's** Low Pressure valve and turn off the vacuum pump.
10. Wait for 15 minutes, then check that there has been no change in system pressure.

**NOTE:** If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve). If there is a change in system pressure, there may be a gas leak.

11. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench 1/4 counterclockwise. Listen for gas to exit the system, then close the valve after 5 seconds.

# Air Evacuation



12. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. It should read slightly higher than the atmospheric pressure.
13. Remove the charge hose from the service port.
14. Using hexagonal wrench, fully open both the high pressure and low pressure valves.

## OPEN VALVE STEMS GENTLY

When opening valve stems, turn the hexagonal wrench until it hits against the stopper. **DO NOT** try to force the valve to open further.

15. Tighten valve caps by hand, then tighten it using the proper tool.
16. If the outdoor unit uses all vacuum valves, and the vacuum position is at the main valve, the system is not connected with the indoor unit. The valve must be tightened with a screw nut. Check for gas leaks before operation to prevent leakage.  
Release refrigerant (See Fig. 9.3) Release refrigerant into the lineset by opening the larger (gas side, or suction) lineset valve fully. Then open the smaller (liquid side) lineset valve fully. NOTE: do not force valves open past the point it stops turning under normal hand pressure.

17. Repeat for each zone Disconnect your gauges and attach to lineset valve B. Repeat steps 2 - 10 for each remaining zone in sequence.
18. Test Run Once you complete the vacuum test on the last zone, leave the gauges in place. Follow the remaining steps to test run the system, and add refrigerant if needed.
19. Record Pressure. Start the unit in cooling mode. Run for 10 minutes and monitor operating pressure reading. Power down the unit and wait 5 minutes. Remove the low-pressure gauge and attach the high-pressure gauge to the service port. Change to Heat mode and restart. Run for 10 minutes and monitor the operating pressure. Normal pressure will vary based on outside temperature and cooling vs. heating mode. Enter both results in the adjacent chart. Completing this step on first startup will provide information in case troubleshooting is required.
20. Add refrigerant (if needed) Depending on lineset length and the configuration of your system, you may need to add refrigerant.

Note: The system must be running in cooling mode as you add refrigerant.

## Note On Adding Refrigerant

### ! CAUTION

- Refrigerant charging must be performed after wiring, vacuuming, and the leak testing.
- **DO NOT** exceed the maximum allowable quantity of refrigerant or overcharge the system. Doing so can damage the unit or impact its functioning.
- Charging with unsuitable substances may cause explosions or accidents. Ensure that the appropriate refrigerant is used.
- Refrigerant containers must be opened slowly. Always use protective gear when charging the system.
- **DO NOT** mix refrigerants types.

Some systems require additional charging depending on pipe lengths. The standard pipe length varies according to local regulations. For example, in North America, the standard pipe length is 7.5m (25'). In other areas, the standard pipe length is 5m (16'). The additional refrigerant to be charged can be calculated using the following formula:

#### Liquid Side Diameter

	$\phi 6.35(1/4")$	$\phi 9.52(3/8")$
R410A:	(Total pipe length - standard pipe length) $\times 15g(0.16oz)/m(ft)$	(Total pipe length - standard pipe length) $\times 30g(0.32oz)/m(ft)$

## Test Run

### Before Test Run

A test run must be performed after the entire system has been completely installed. Confirm the following points before performing the test:

- a) Indoor and outdoor units are properly installed.
- b) Piping and wiring are properly connected.
- c) No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- d) Refrigeration system does not leak.
- e) Drainage system is unimpeded and draining to a safe location.
- f) Heating insulation is properly installed.
- g) Grounding wires are properly connected.
- h) Length of the piping and additional refrigerant stow capacity have been recorded.
- i) Power voltage is the correct voltage for the air conditioner.

### CAUTION

Failure to perform the test run may result in unit damage, property damage or personal injury.

### Test Run Instructions

1. Open both the liquid and gas stop valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode.
4. For the Indoor Unit
  - a. Ensure the remote control and its buttons work properly.
  - b. Ensure the louvers move properly and can be changed using the remote control.
  - c. Double check to see if the room temperature is registered correctly.
  - d. Ensure the indicators on the remote control and the display panel on the indoor unit work properly.
  - e. Ensure the manual buttons on the indoor unit works properly.

- f. Check to see that the drainage system is unimpeded and draining smoothly.
- g. Ensure there is no vibration or abnormal noise during operation.
5. For the Outdoor Unit
  - a. Check to see if the refrigeration system is leaking.
  - b. Make sure there is no vibration or abnormal noise during operation.
  - c. Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.
6. Drainage Test
  - a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.
  - b. Remove the test cover. Add 2,000ml of water to the tank through the attached tube.
  - c. Turn on the main power switch and run the air conditioner in COOL mode.
  - d. Listen to the sound of the drain pump to see if it makes any unusual noises.
  - e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
  - f. Make sure that there are no leaks in any of the piping.
  - g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

**NOTE:** If the unit malfunctions or does not operate according to your expectations, please refer to the Troubleshooting section of the Owner's Manual before calling customer service.

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

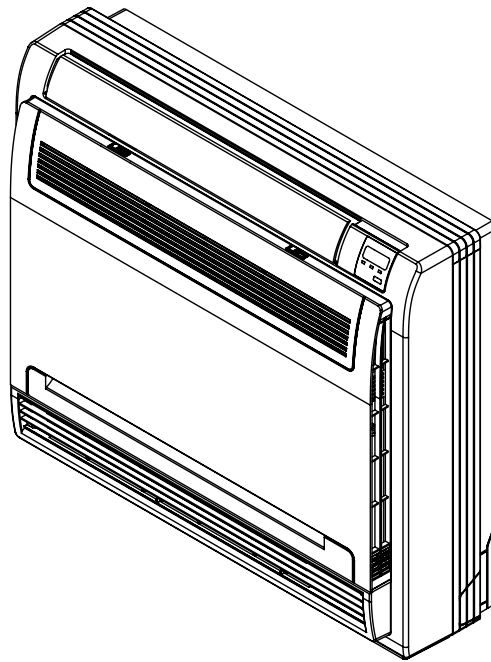
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# Installation Manual

## Wall Ceiling air handler

**Model**  
**BM18MFCC**



**IMPORTANT NOTE:**

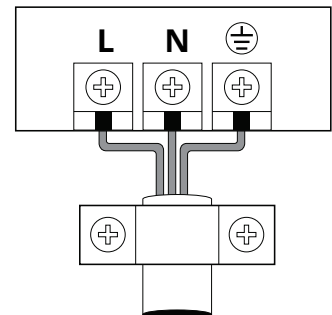
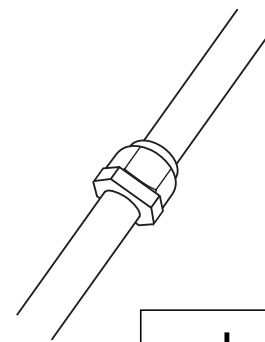
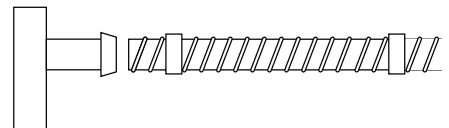
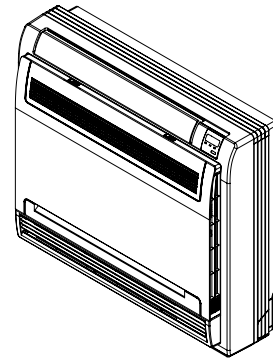
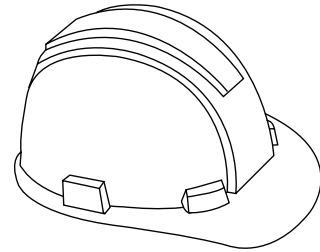
Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.



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






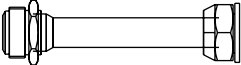
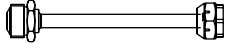
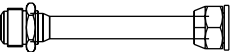

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# Accessories

# 1

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or equipment failure.

Name	Name	Shape	Quantity
<b>Remote Control</b>	Remote controller (some models)		1
<b>Batteries</b>	AAA		2
<b>Remote control holder (some models)</b>	Remote sheath		1
	Screws for remote sheath		2
<b>EMC Magnetic Ring (some models)</b>	Magnetic ring (wrap the electric wires S1 & S2 ( P & Q & E ) around the magnetic ring twice)	 S1&S2(P&Q&E)	1
	Magnetic ring (Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		1
<b>Others</b>	Owner's manual		1
	Installation manual		1
	Refrigerant line adaptor - 1/2" to 5/8" NOTE: Pipe size may differ from appliance to appliance. Use the refrigerant adaptor if needed always at the condenser.		1 (on some models)
	Refrigerant line adaptor - 1/4" to 3/8" NOTE: Pipe size may differ from appliance to appliance. Use the refrigerant adapter if needed always at the condenser.		1 (on some models)
	Refrigerant line adaptor - 3/8" to 1/2" NOTE: Pipe size may differ from appliance to appliance. Use the refrigerant adapter if needed always at the condenser.		1 (on some models)
	Red short connected wire (Applied to the W/L pin of outdoor unit terminal block be short-circuited.)		1 (on some models)

# Safety Precautions

# 2

## Read Safety Precautions Before Installation

Incorrect installation due to ignoring instructions can cause serious damage or injury.

The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



**Failure to observe a warning may result in death. The appliance must be installed in accordance with national regulations.**



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

### **WARNING**

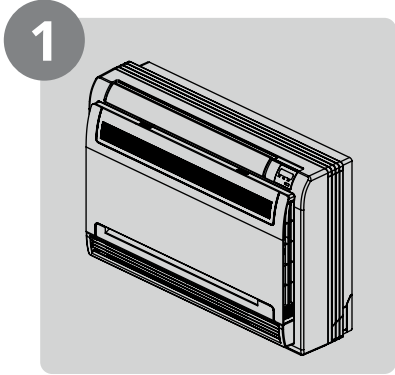
- **Carefully read the Safety Precautions before installation.**
- In commercial environments, such as restaurant kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- **Only trained and certified technicians should install, repair and service this air conditioning unit.**  
Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment and personal property.
- **Strictly follow the installation instructions set forth in this manual.**  
Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment.
- Before you install the unit, consider strong winds, typhoons and earthquakes that might affect your unit and locate it accordingly. Failure to do so could cause the equipment to fail.
- After installation, ensure there are no refrigerant leaks and that the unit is operating properly. Refrigerant is both toxic and flammable and poses a serious health and safety risk.

### **Note about Fluorinated Gasses**

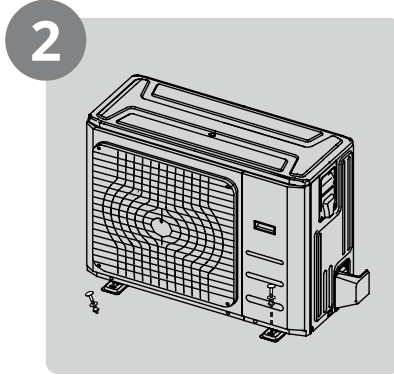
1. This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation and recycling must be performed by a certified technician.
4. If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

# Installation Summary - Indoor Unit

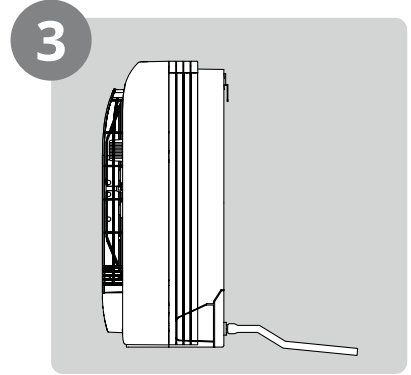
## INSTALLATION ORDER



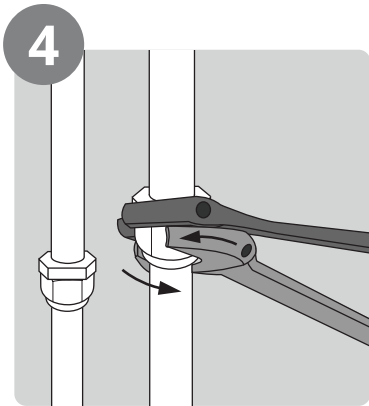
**1**  
Install the indoor unit  
(Page 7)



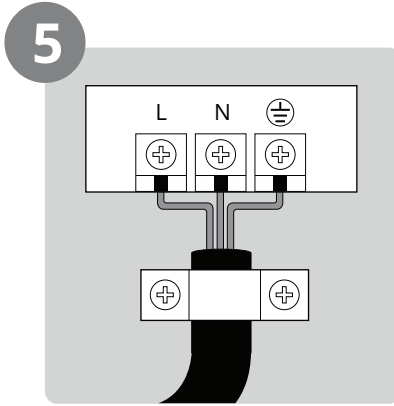
**2**  
Install the outdoor unit  
(Separate Manual)



**3**  
Install the drainpipe  
(Page 11)



**4**  
Connect the refrigerant  
pipes (Page 13)



**5**  
Connect the wires  
(Page 16)

# Indoor Unit Installation

# 4

## Indoor Unit Installation Instructions

**NOTE:** Panel installation should be performed after piping and wiring have been completed.

### Step 1: Select installation location

The BM18MFCC can be installed vertically on a low wall or horizontally on the ceiling. Your chosen location should meet these conditions:

- Enough room for installation and maintenance.
- Enough room for the connecting pipe and drainpipe.
- The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- The air inlet and outlet are not impeded.
- The airflow can fill the entire room.
- There is no direct radiation from heaters.

## ! CAUTION

**DO NOT** install the unit in the following locations:

- ⊘ Areas with oil drilling or fracking
- ⊘ Coastal areas with high salt content in the air
- ⊘ Areas with caustic gases in the air, such as near hot springs
- ⊘ Areas with power fluctuations, such as factories
- ⊘ Enclosed spaces, such as cabinets
- ⊘ Areas with strong electromagnetic waves
- ⊘ Areas that store flammable materials or gas
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms

## Safety Precautions

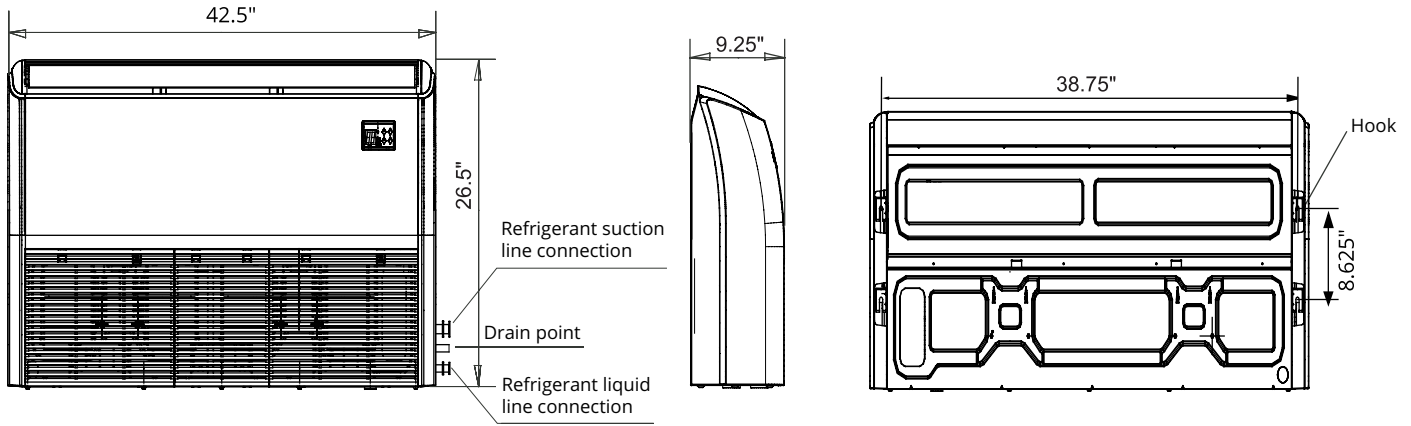
### ! WARNING

- Securely install the indoor unit on a structure that can sustain its weight. If the structure is too weak, the unit may fall and cause personal injury, unit and property damage, or death.
- **DO NOT** install the indoor unit in a bathroom or laundry room as excessive moisture can short the unit and corrode the wiring.

### ! CAUTION

- Install the indoor and outdoor units, cables and wires at least 3 feet from televisions or radios to prevent static or image distortion. Depending on the appliances, a 3 foot distance may not be sufficient.
- If the indoor unit is installed on metal, it must be electrically grounded.

## Step 2: Install the main body

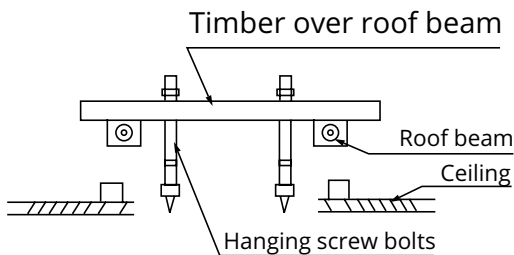


### 1. Ceiling Mount Installation

This unit surface-mounts on ceilings or low walls. For a ceiling installation, locate your ceiling type from the diagrams below and perform the indicated actions. The unit should be hung from threaded rod in all ceiling installations.

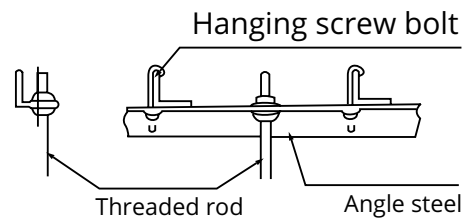
#### WOODEN ROOF

Screw or nail 2X4 across roof beams, drill holes and bolt through M10 or M8 threaded rod.



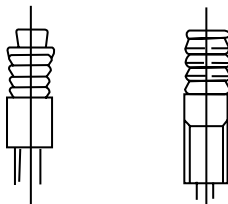
#### STEEL ROOF BEAM STRUCTURE

Drill through angle steel and bolt in M10 or M8 threaded rod.



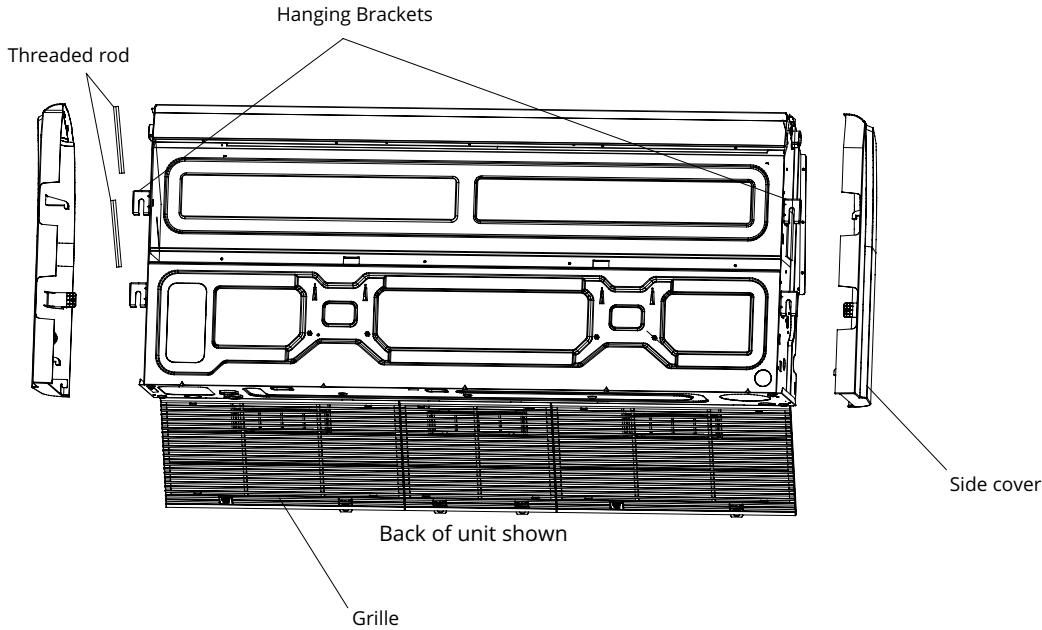
#### CONCRETE SLAB

Use concrete anchors that accommodate M10 or M8 threaded rod.

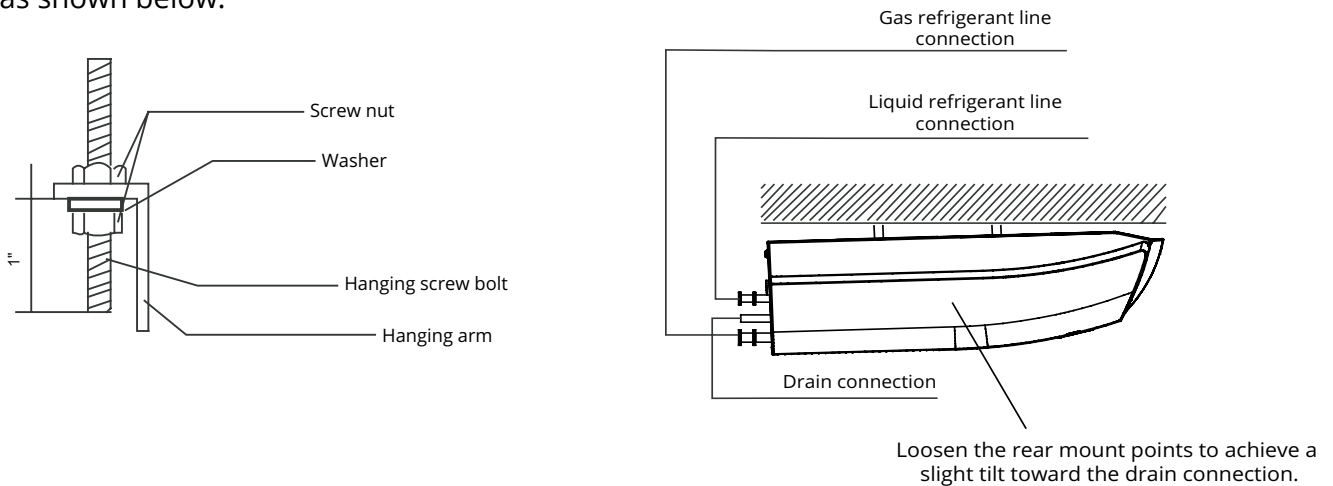


## Ceiling Installation cont'd

- Remove the side covers and the grille.

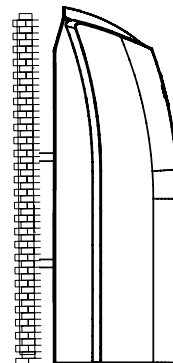


- Bolt the threaded rod to the hanging bracket as shown below.



## 2. Wall Mounted Installation

For best results, secure the unit through the mount points to wall studs with lag screws. If attaching to drywall or concrete, use appropriate anchors and test by applying side to side pressure. It is acceptable to rest the unit on the floor, provided you still secure it to the wall.



# Drainpipe Installation

# 5

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.

## ! CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage.
- **DO NOT** pull the drainpipe forcefully. This could disconnect it.

## NOTE ON PURCHASING PIPES

Installation requires either 5/16" inner diameter polyethylene tube or PVC drain pipe sold separately.

## Indoor Drainpipe Installation

Install the drainpipe as illustrated in Figure 5.2.

1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp. (See Fig 5.1)

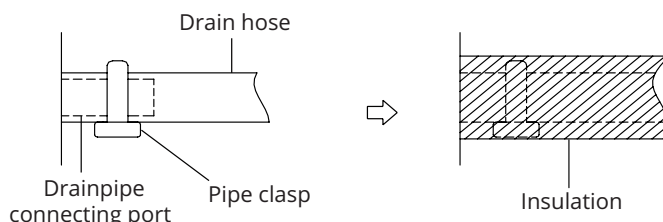


Fig. 5.1

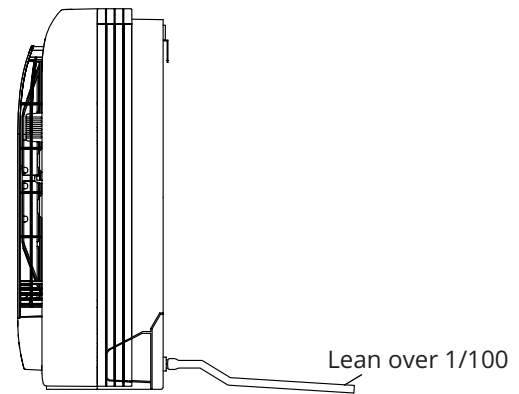


Fig. 5.2

## NOTE ON DRAINPIPE INSTALLATION

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- Incorrect installation could cause water to flow back into the unit and flood.

**NOTE:** When connecting multiple drainpipes, install the pipes as illustrated in Fig 5.3.

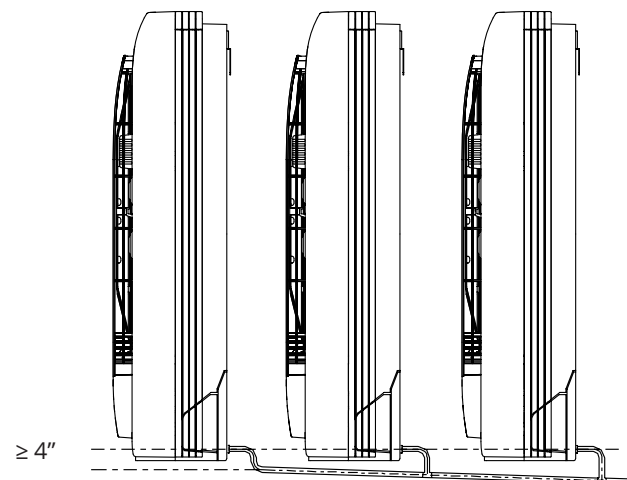


Fig. 5.3

- Using a 2.5" hole saw drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 0.5". This will ensure proper water drainage (See Fig. 5.4). Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it once you finish installation.

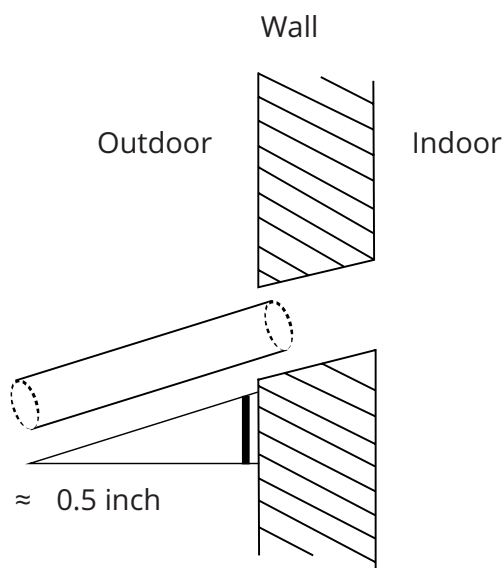


Fig. 5.4

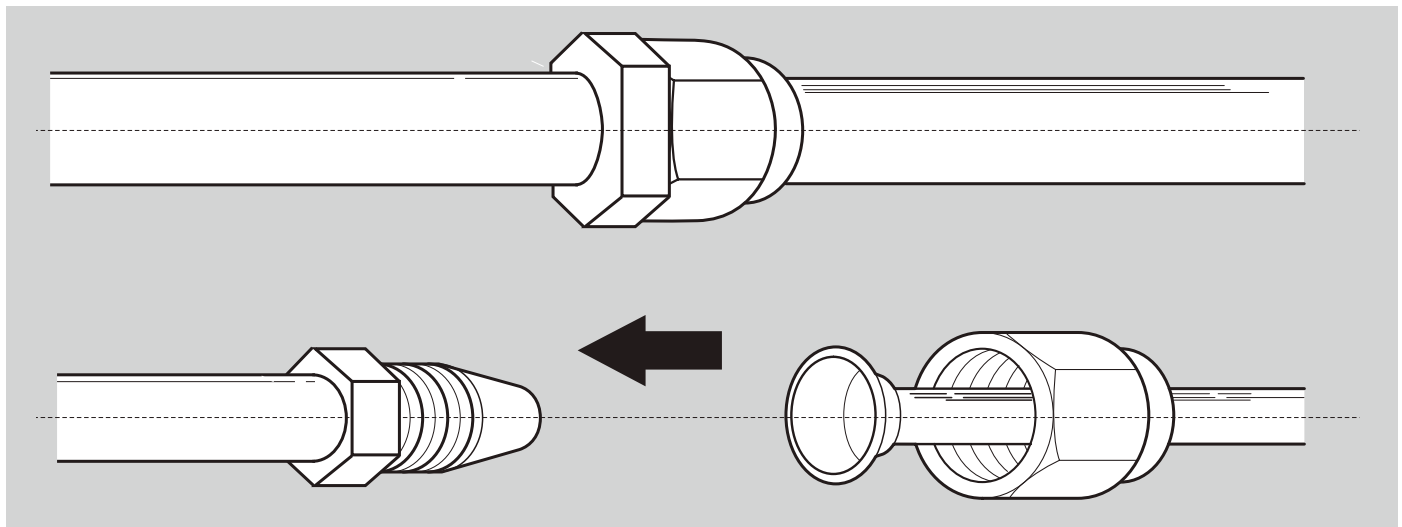
**NOTE:** When drilling the hole, make sure to avoid wires, plumbing, and other sensitive components.

- Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

**NOTE:** The drainpipe outlet should be at least 1.9" above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that might otherwise come back into the house.

# Refrigerant Piping Connection

6



## Note on Pipe Length

The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 16.5ft. In North America, standard pipe length is 25'. A minimum pipe run of 10 feet is required to minimize vibration & excessive noise. Refer to the table below for specifications on the maximum length and drop height of piping

## Maximum Length and Drop Height of Refrigerant Piping per Unit Model

Model	Max Length	Max Drop Height	Add'l Refrigerant
18k	98 feet	33 feet	0.16/ foot

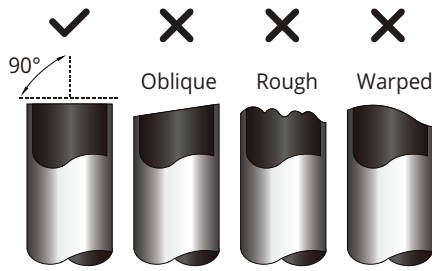
## Connection Instructions – Refrigerant Piping

### Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.

- Using a pipe cutter, cut the pipe a little longer than the measured distance.
- Make sure that the pipe is cut at a perfect 90° angle. Refer to **Fig. 6.1** for bad cut examples.



**Fig 6.1**

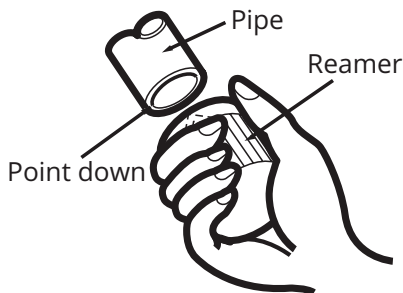
**DO NOT DEFORM PIPE WHILE CUTTING**

Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

**Step 2: Remove burrs**

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

- Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
- Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.

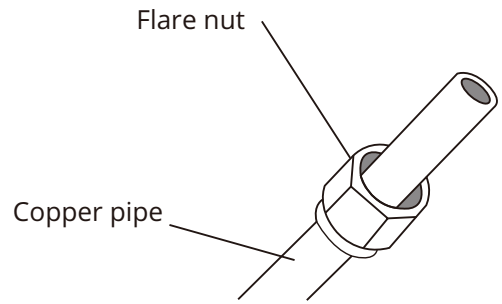


**Fig 6.2**

**Step 3: Flare pipe ends**

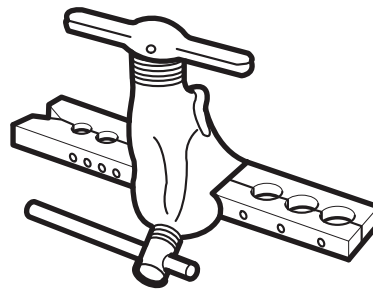
Proper flaring is essential to achieve an airtight seal.

- After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
- Sheath the pipe with insulating material.
- Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring. See **Fig. 6.3**.



**Fig 6.3**

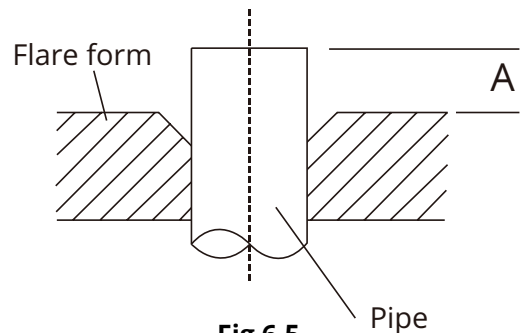
- Remove PVC tape from ends of pipe when ready to perform flaring work.
- Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the table below.



**Fig 6.4**

**Table 7.1: Torque chart and flaring guide**

Pipe gauge	Flaring torque	Flare dimension (A) (Unit: Inch)		Flare shape
		Min.	Max.	
1/4"	14 ft/ lbs	0.33	0.34	
3/8"	18 ft/ lbs	0.52	0.53	
1/2"	26 ft/ lbs	0.64	0.65	
5/8"	34 ft/ lbs	0.76	0.78	



**Fig 6.5**

- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared.
- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

#### Step 4: Connect pipes

When connecting refrigerant pipes, be careful not to use excessive torque or to deform the piping in any way. You should first connect the low-pressure pipe, then the high-pressure pipe.

### MINIMUM BEND RADIUS

When bending connective refrigerant piping, the minimum bending radius is 4in. See Fig.6.6.

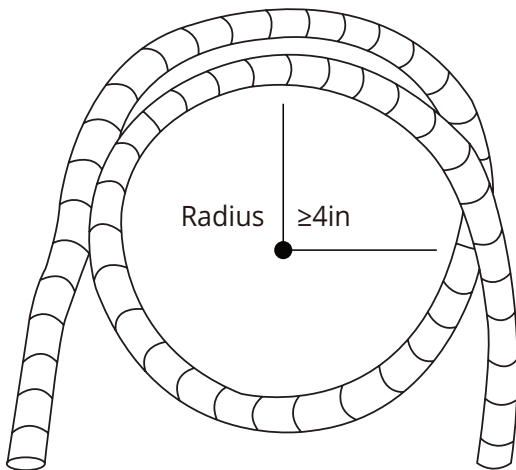


Fig 6.6

### Torque Requirements

Outer Diameter of Pipe (inch)	Tightening Torque (ft/lb)	Add. Tightening Torque (ft/lb)
1/4"	11 ft/ lb	12 ft/ lb
3/8"	18 ft/ lb	20 ft/ lb
1/2"	25 ft/ lb	26 ft/ lb
5/8"	33 ft/ lb	35 ft/ lb

### ! DO NOT USE EXCESSIVE TORQUE

Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table above.

**Note:** Use of an approved refrigerant sealant is recommended for all flare joint connections.

### Instructions for Connecting Piping to Indoor Unit

- Align the center of the two pipes that you will connect. See Fig. 6.7.

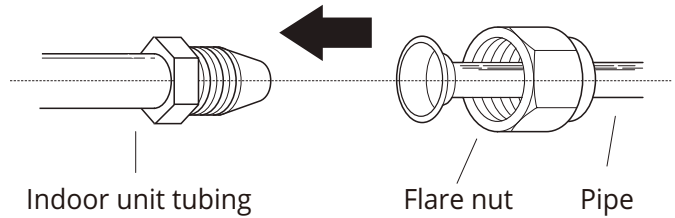


Fig 6.7

- Tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the nut on the unit tubing.
- While firmly gripping the nut on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the **Torque Requirements** table below. Loosen the flaring nut slightly, then tighten again.

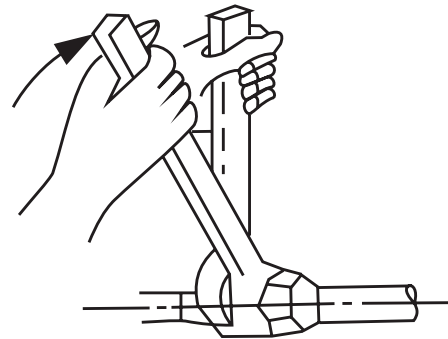


Fig 6.8

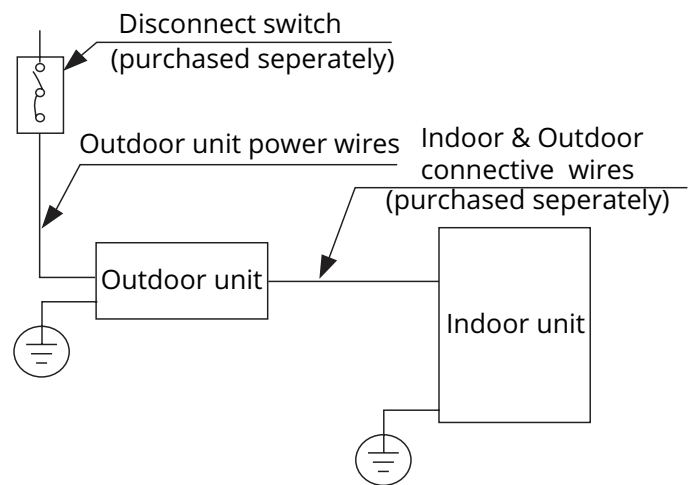
## ! BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS

1. All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. Power from your panel must be on a dedicated circuit with the correct amperage breaker, run through an approved electrical disconnect box mounted on an exterior wall near the condenser.

6. Make sure to properly ground the air conditioner.
7. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
8. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
9. If the unit has an auxiliary electric heater, it must be installed at least 40" away from any combustible materials.
10. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off.
11. Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion and interference.

### NOTE ON Electrical Disconnect

You must use a dedicated circuit, with an approved electrical disconnect switch to provide power at the outside unit. The inside unit wires connect to the outside unit, not to power circuits indoors.



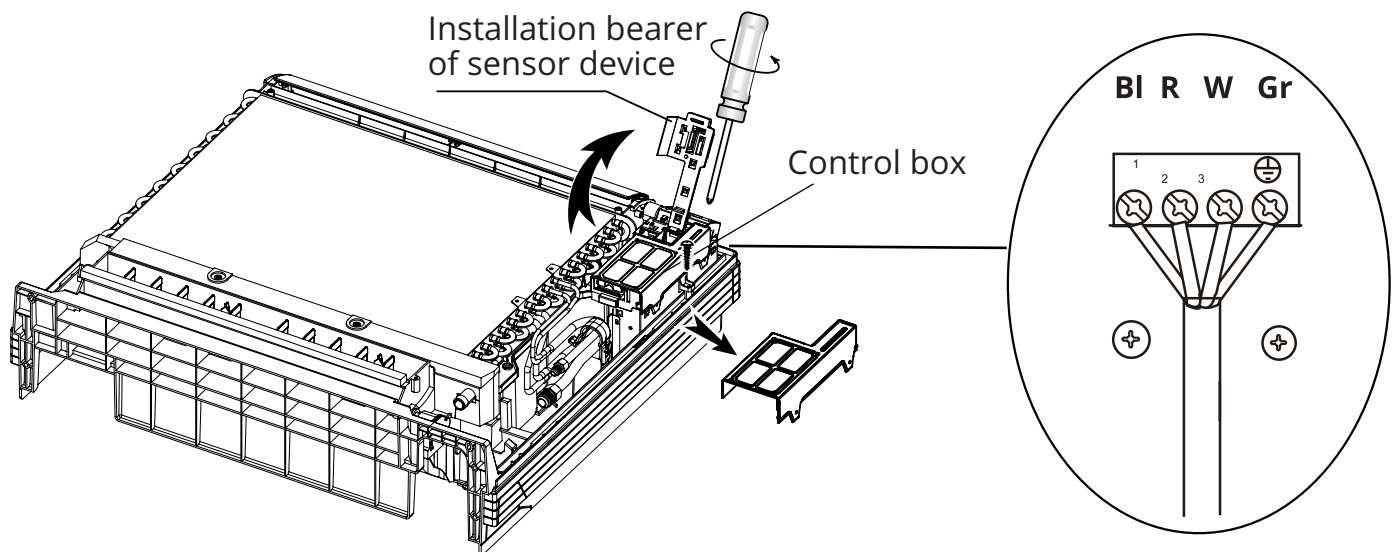
**NOTE:** This diagram is for explanation purposes only. Your machine may be slightly different.

### ! WARNING

**BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**

## Indoor Unit Wiring

1. Prepare the cable for connection.
  - a. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 5.9" of the wire.
  - b. Strip the insulation from the ends of the wires.
  - c. Using a wire crimper, crimp the u-lugs to the ends of the wires.
2. Remove the cover of the electric control box on your indoor unit.
3. Connect the u-lugs to the terminals. Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal. Refer to the Wiring Diagram located on the cover of the electric control box.
4. Clamp down the cable with the cable clamp.
5. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
6. Reinstall the cover of the electric control box.



## **Install Outdoor Unit** (see separate manual)

When you have finished installing all indoor air handlers, proceed to installation of the outdoor unit. Complete installation instructions and startup procedures are given in the outdoor unit installation manual. Copies are always available at **AlpineHomeAir.com** by searching your unit's model number and scrolling to Documents.

**The design and specifications are subject to change without  
prior notice for product improvement.**

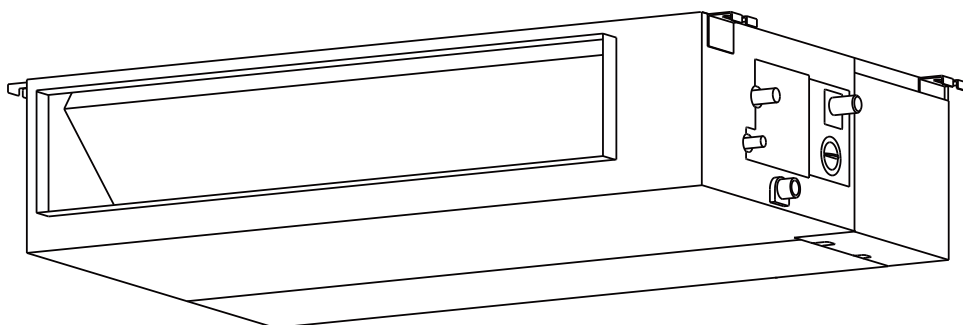


**AlpineHomeAir.com**

## MIDDLE STATIC PRESSURE DUCT TYPE AIR CONDITIONER

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# Owner's Manual & Installation Manual



### **IMPORTANT NOTE:**

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

Please check the applicable models, technical data, F-GAS(if any) and manufacturer information from the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit.  
(European Union products only)

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# Safety Precautions

## Read Safety Precautions Before Operation and Installation

**Incorrect installation due to ignoring instructions can cause serious damage or injury.** The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION**.



### WARNING

This symbol indicates the possibility of personnel injury or loss of life.



### CAUTION

This symbol indicates the possibility of property damage or serious consequences.



### WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision(EN Standard requirements).

This appliance is not intended for use by persons(including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance(IEC Standard requirements).



### WARNINGS FOR PRODUCT USE

- If an abnormal situation arises (like a burning smell), immediately turn off the unit and disconnect the power. Call your dealer for instructions to avoid electric shock, fire or injury.
- **Do not** insert fingers, rods or other objects into the air inlet or outlet. This may cause injury, since the fan may be rotating at high speeds.
- **Do not** use flammable sprays such as hair spray, lacquer or paint near the unit. This may cause fire or combustion.
- **Do not** operate the air conditioner in places near or around combustible gases. Emitted gas may collect around the unit and cause explosion.
- **Do not** operate your air conditioner in a wet room such as a bathroom or laundry room. Too much exposure to water can cause electrical components to short circuit.
- **Do not** expose your body directly to cool air for a prolonged period of time.
- **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.
- If the air conditioner is used together with burners or other heating devices, thoroughly ventilate the room to avoid oxygen deficiency.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.

## CLEANING AND MAINTENANCE WARNINGS

- Turn off the device and disconnect the power before cleaning. Failure to do so can cause electrical shock.
- **Do not** clean the air conditioner with excessive amounts of water.
- **Do not** clean the air conditioner with combustible cleaning agents. Combustible cleaning agents can cause fire or deformation.



### CAUTION

- Turn off the air conditioner and disconnect the power if you are not going to use it for a long time.
- Turn off and unplug the unit during storms.
- Make sure that water condensation can drain unhindered from the unit.
- **Do not** operate the air conditioner with wet hands. This may cause electric shock.
- **Do not** use device for any other purpose than its intended use.
- **Do not** climb onto or place objects on top of the outdoor unit.
- **Do not** allow the air conditioner to operate for long periods of time with doors or windows open, or if the humidity is very high.



### ELECTRICAL WARNINGS

- Only use the specified power cord. If the power cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Keep power plug clean. Remove any dust or grime that accumulates on or around the plug. Dirty plugs can cause fire or electric shock.
- **Do not** pull power cord to unplug unit. Hold the plug firmly and pull it from the outlet. Pulling directly on the cord can damage it, which can lead to fire or electric shock.
- **Do not** modify the length of the power supply cord or use an extension cord to power the unit.
- **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- If connecting power to fixed wiring, 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.

### TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection. The specifications of the fuse are printed on the circuit board ,such as :

**Indoor unit:** T5A/250VAC, T10A/250VAC, etc.

**Outdoor unit:** T20A/250VAC( $\leq 24000$ Btu/h units), T30A/250VAC( $> 24000$ Btu/h units)

**NOTE:** For the units with R32 or R290 refrigerant , only the blast-proof ceramic fuse can be used.



## WARNINGS FOR PRODUCT INSTALLATION

1. Installation must be performed by an authorized dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
2. Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.  
(In North America, installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.)
3. Contact an authorized service technician for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
4. Only use the included accessories, parts, and specified parts for installation. Using non-standard parts can cause water leakage, electrical shock, fire, and can cause the unit to fail.
5. Install the unit in a firm location that can support the unit's weight. If the chosen location cannot support the unit's weight, or the installation is not done properly, the unit may drop and cause serious injury and damage.
6. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
7. For units that have an auxiliary electric heater, **do not** install the unit within 1 meter (3 feet) of any combustible materials.
8. **Do not** install the unit in a location that may be exposed to combustible gas leaks. If combustible gas accumulates around the unit, it may cause fire.
9. Do not turn on the power until all work has been completed.
10. When moving or relocating the air conditioner, consult experienced service technicians for disconnection and reinstallation of the unit.
11. How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections .

### Note about Fluorinated Gasses(Not applicable to the unit using R290 Refrigerant)

1. This air-conditioning unit contains fluorinated greenhouse gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself or the "Owner's Manual - Product Fiche " in the packaging of the outdoor unit. (European Union products only).
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation and recycling must be performed by a certified technician.
4. For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO<sub>2</sub> equivalent or more, but of less than 50 tonnes of CO<sub>2</sub> equivalent, If the system has a leak-detection system installed, it must be checked for leaks at least every 24 months.
5. When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.



## WARNING for Using R32/R290 Refrigerant

- When flammable refrigerant are employed, appliance shall be stored in a well -ventilated area where the room size corresponds to the room area as specific for operation.

For R32 frigerant models:

Appliance shall be installed, operated and stored in a room with a floor area larger than X m<sup>2</sup>.

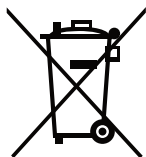
Appliance shall not be installed in an unvertilated space, if that space is smaller than X m<sup>2</sup> (Please see the following form).

Model (Btu/h)	Amount of refrigerant to be charged (kg)	Minimum room area (m <sup>2</sup> )
≤12000	≤1.11	1
18000	≤1.65	2
24000	≤2.58	5
30000	≤3.08	7
36000	≤3.84	10
42000-48000	≤4.24	12
60000	≤4.39	13

- Reusable mechanical connectors and flared joints are not allowed indoors. (EN Standard Requirements).
- Mechanical connectors used indoors shall have a rate of not more than 3g/year at 25% of the maximum allowable pressure. When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (UL Standard Requirements)
- When mechanical connectors are reused indoors, sealing parts shall be renewed. When flared joints are reused indoors, the flare part shall be re-fabricated. (IEC Standard Requirements)

## European Disposal Guidelines

This marking shown on the product or its literature, indicates that waste electrical and eletrical equipment should not be mixed with general household waste.



### Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

This appliance contains refrigerant and other potentially hazardous materials. When disposing of this appliance, the law requires special collection and treatment. **Do not** dispose of this product as household waste or unsorted municipal waste.

When disposing of this appliance, you have the following options:

- Dispose of the appliance at designated municipal electronic waste collection facility.
- When buying a new appliance, the retailer will take back the old appliance free of charge.
- The manufacturer will take back the old appliance free of charge.
- Sell the appliance to certified scrap metal dealers.

### Special notice

Disposing of this appliance in the forest or other natural surroundings endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.

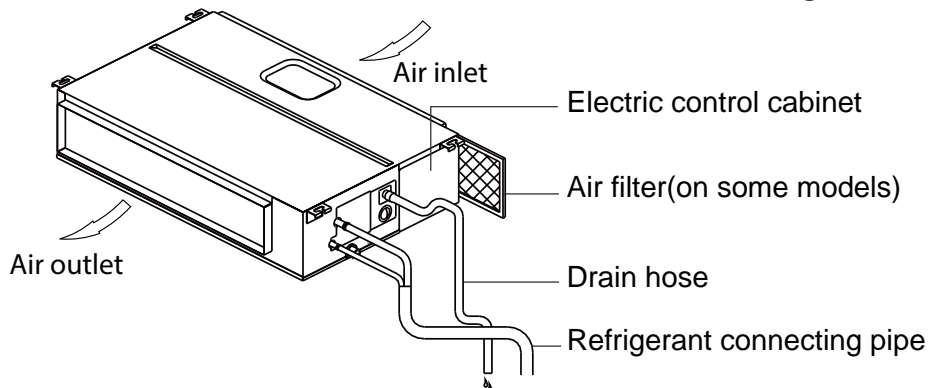
# Unit Specifications and Features

## Indoor unit

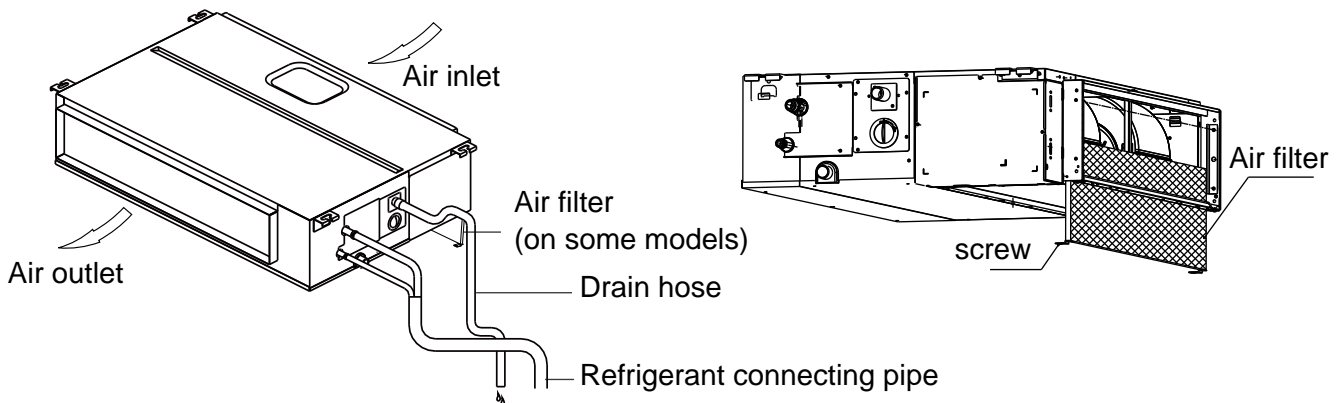
**NOTE:** Different models have different display panel. Not all the indicators describing below are available for the air conditioner you purchased. Please check the indoor display panel of the unit you purchased. Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.

This display panel on the indoor unit can be used to operate the unit in case the remote control has been misplaced or is out of batteries.

### (A) For the unit which the filter is removed for left or right side

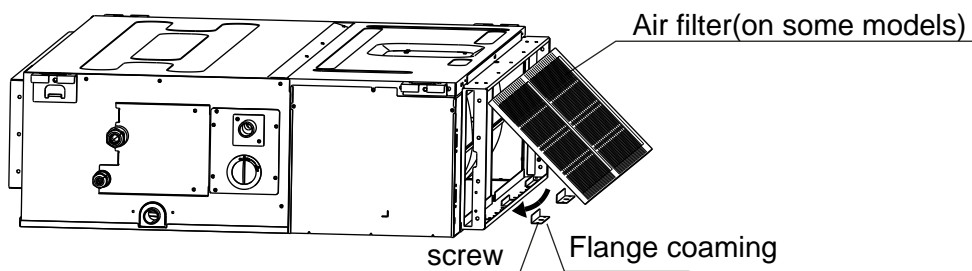


### (B) For the unit which the filter is removed from the bottom side



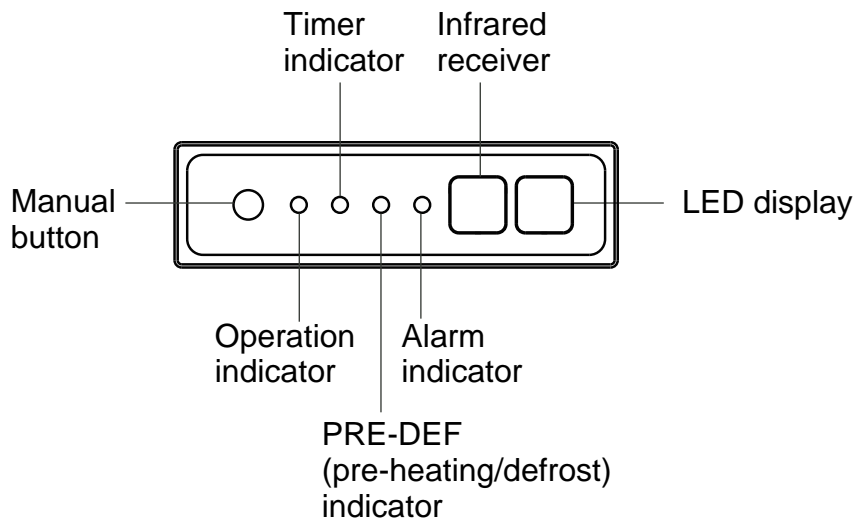
1. Put the filter into the flange subassembly through the bottom side;
2. Lock the screw.

### (C) For the unit which the filter is removed from the back



1. Remove two flange coaming;
2. Put the filter into the flange subassembly;
3. Rotate the air filter;
4. Put back to the flange coaming.

## Display panel



- MANUAL button** : This button selects the mode in the following order: AUTO, FORCED COOL, OFF.
  - FORCED COOL mode** : In FORCED COOL mode, the Operation light flashes. The system will then turn to AUTO after it has cooled with a high wind speed for 30 minutes. The remote control will be disabled during this operation.
  - OFF mode** : When the panel is turned OFF, the unit turns off and the remote control is re-enabled.

## Operating temperature

When your air conditioner is used outside of the following temperature ranges, certain safety protection features may activate and cause the unit to disable.

### Inverter Split Type

	COOL mode	HEAT mode	DRY mode
Room Temperature	17°C - 32°C (62°F - 90°F)	0°C - 30°C (32°F - 86°F)	10°C - 32°C (50°F - 90°F)
Outdoor Temperature	0°C - 50°C (32°F - 122°F)	-15°C - 24°C (5°F - 75°F)	0°C - 50°C (32°F - 122°F)
	-15°C - 50°C (5°F - 122°F) (For models with low temp. cooling systems.)		
	0°C - 52°C (32°F - 126°F) (For special tropical models)		0°C - 52°C (32°F - 126°F) (For special tropical models)

#### FOR OUTDOOR UNITS WITH AUXILIARY ELECTRIC HEATER

When outside temperature is below 0°C (32°F), we strongly recommend keeping the unit plugged in at all time to ensure smooth ongoing performance.

## Fixed-speed Type

	COOL mode	HEAT mode	DRY mode
Room Temperature	17°C-32°C (62°F-90°F)	0°C-30°C (32°F-86°F)	10°C-32°C (50°F-90°F)
Outdoor Temperature	18°C-43°C (64°F-109°F)	-7°C-24°C (19°F-75°F)	11°C-43°C (52°F-109°F)
	-7°C-43°C (19°F-109°F) (For models with low-temp cooling systems)		18°C-43°C (64°F-109°F)
	18°C-52°C (64°F-126°F) (For special tropical models)		18°C-52°C (64°F-126°F) (For special tropical models)

**NOTE:** Room relative humidity less than 80%. If the air conditioner operates in excess of this figure, the surface of the air conditioner may attract condensation. Please sets the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

**To further optimize the performance of your unit, do the following:**

- Keep doors and windows closed.
- Limit energy usage by using TIMER ON and TIMER OFF functions.
- Do not block air inlets or outlets.
- Regularly inspect and clean air filters.

## Other features

### Default Setting

When the air conditioner restarts after a power failure, it will default to the factory settings (AUTO mode, AUTO fan, 24°C (76°F)). This may cause inconsistencies on the remote control and unit panel. Use your remote control to update the status.

### Auto-Restart (some models)

In case of power failure, the system will immediately stop. When power returns, the Operation light on the indoor unit will flash. To restart the unit, press the **ON/OFF** button on the remote control. If the system has an auto restart function, the unit will restart using the same settings.

### Three-minute protection feature (some models)

A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it restarts immediately after operation.

### Louver Angle Memory Function (some models)

Some models are designed with a louver angle memory function. When the unit restarts after a power failure, the angle of the horizontal louvers will automatically return to the previous position. The angle of the horizontal louver should not be set too small as condensation may form and drip into the machine. To reset the louver, press the manual button, which will reset the horizontal louver settings.

### Refrigerant Leak Detection System (some models)

In the event of a refrigerant leak, the LCD screen will display "EC" and the LED indicator light will flash.

# Care and Maintenance

## Cleaning Your Indoor Unit

### BEFORE CLEANING OR MAINTENANCE

**ALWAYS TURN OFF YOUR AIR CONDITIONER SYSTEM AND DISCONNECT ITS POWER SUPPLY BEFORE CLEANING OR MAINTENANCE.**

### CAUTION

Only use a soft, dry cloth to wipe the unit clean. If the unit is especially dirty, you can use a cloth soaked in warm water to wipe it clean.

- **Do not** use chemicals or chemically treated cloths to clean the unit
- **Do not** use benzene, paint thinner, polishing powder or other solvents to clean the unit. They can cause the plastic surface to crack or deform.
- **Do not** use water hotter than 40°C (104°F) to clean the front panel. This can cause the panel to deform or become discolored.

## Cleaning Your Air Filter

A clogged air conditioner can reduce the cooling efficiency of your unit, and can also be bad for your health. Make sure to clean the filter once every two weeks.

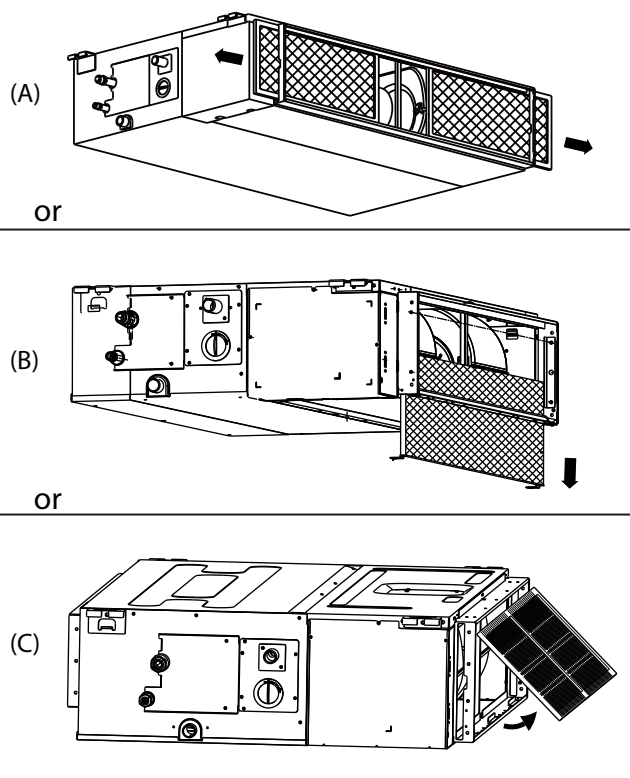
### WARNING: DO NOT REMOVE OR CLEAN THE FILTER BY YOURSELF

Removing and cleaning the filter can be dangerous. Removal and maintenance must be performed by a certified technician.

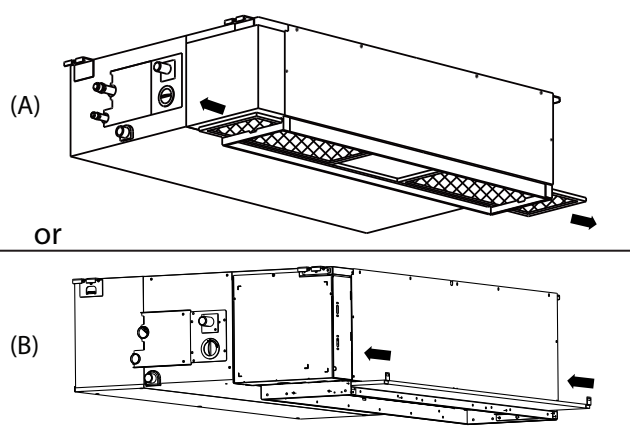
1. If the unit you purchased is a rear ventilated one, take off the filter in the directions indicated by the arrows in the following diagram.
2. If the unit you purchased is a descending ventilated model, take off the filter in the directions indicated by the arrows in the following diagram.

3. Remove the air filter.
4. Clean the air filter by vacuuming the surface or washing it in warm water with mild detergent.
5. Rinse the filter with clean water and allow it to air-dry. **DO NOT** let the filter dry in direct sunlight.
6. Reinstall the filter.

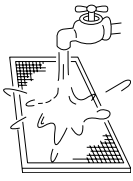
Rear ventilated model



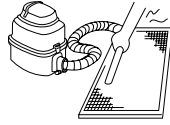
Descending ventilated model



If using water, the inlet side should face down and away from the water stream.



If using a vacuum cleaner, the inlet side should face the vacuum.



### CAUTION

- Before changing the filter or cleaning, turn off the unit and disconnect its power supply.
- When removing filter, do not touch metal parts in the unit. The sharp metal edges can cut you.
- Do not use water to clean the inside of the indoor unit. This can destroy insulation and cause electrical shock.
- Do not expose filter to direct sunlight when drying. This can shrink the filter.

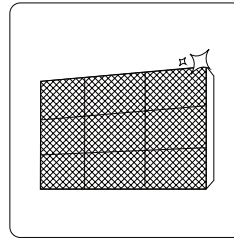


### CAUTION

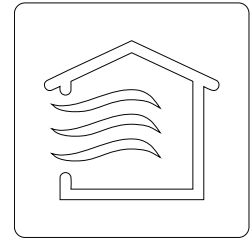
- Any maintenance and cleaning of outdoor unit should be performed by an authorized dealer or a licensed service provider.
- Any unit repairs should be performed by an authorized dealer or a licensed service provider.

## Maintenance – Long Periods of Non-Use

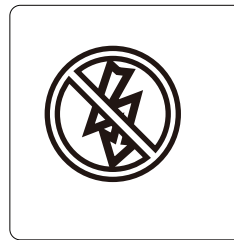
If you plan not to use your air conditioner for an extended period of time, do the following:



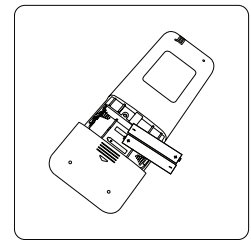
Clean all filters



Turn on FAN function until unit dries out completely



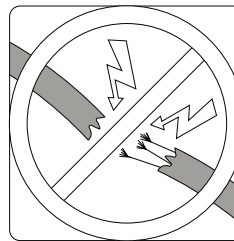
Turn off the unit and disconnect the power



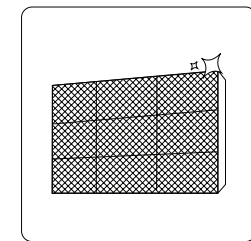
Remove batteries from remote control

## Maintenance – Pre-Season Inspection

After long periods of non-use, or before periods of frequent use, do the following:



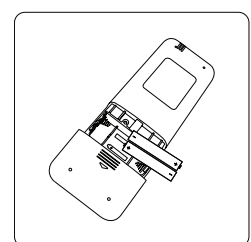
Check for damaged wires



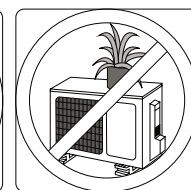
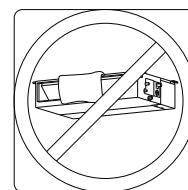
Clean all filters



Check for leaks



Replace batteries



Make sure nothing is blocking all air inlets and outlets

# Troubleshooting

## SAFETY PRECAUTIONS

If any of the following conditions occurs, turn off your unit immediately!

- The power cord is damaged or abnormally warm
- You smell a burning odor
- The unit emits loud or abnormal sounds
- A power fuse blows or the circuit breaker frequently trips
- Water or other objects fall into or out of the unit

**DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AN AUTHORIZED SERVICE PROVIDER IMMEDIATELY!**

## Common Issues

The following problems are not a malfunction and in most situations will not require repairs.

Issue	Possible Causes
<b>Unit does not turn on when pressing ON/OFF button</b>	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
	Cooling and Heating Models: If the Operation light and PRE-DEF (Pre-heating/Defrost) indicators are lit up, the outdoor temperature is too cold and the unit's anti-cold wind is activated in order to defrost the unit.
	In Cooling-only Models: If the "Fan Only" indicator is lit up, the outdoor temperature is too cold and the unit's anti-freeze protection is activated in order to defrost the unit.
<b>The unit changes from COOL/HEAT mode to FAN mode</b>	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
<b>The indoor unit emits white mist</b>	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
<b>Both the indoor and outdoor units emit white mist</b>	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
<b>The indoor unit makes noises</b>	A rushing air sound may occur when the louver resets its position.
	A squeaking sound is heard when the system is OFF or in COOL mode. The noise is also heard when the drain pump (optional) is in operation.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion and contraction of the unit's plastic parts.
<b>Both the indoor unit and outdoor unit make noises</b>	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.

Issue	Possible Causes
<b>The outdoor unit makes noises</b>	The unit will make different sounds based on its current operating mode.
<b>Dust is emitted from either the indoor or outdoor unit</b>	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
<b>The unit emits a bad odor</b>	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
<b>The fan of the outdoor unit does not operate</b>	During operation, the fan speed is controlled to optimize product operation.

**NOTE:** If problem persists, contact a local dealer or your nearest customer service center. Provide them with a detailed description of the unit malfunction as well as your model number.

## Troubleshooting

When troubles occur, please check the following points before contacting a repair company.

Problem	Possible Causes	Solution
<b>Poor Cooling Performance</b>	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant



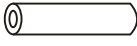



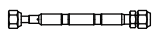

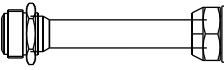

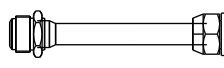
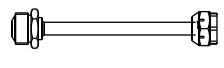
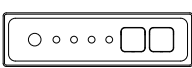

Problem	Possible Causes	Solution
<b>The unit is not working</b>	Power failure	Wait for the power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace batteries
	The Unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
	Timer is activated	Turn timer off
<b>The unit starts and stops frequently</b>	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant.
	Incompressible gas or moisture has entered the system.	Evacuate and recharge the system with refrigerant
	System circuit is blocked	Determine which circuit is blocked and replace the malfunctioning piece of equipment
	The compressor is broken	Replace the compressor
	The voltage is too high or too low	Install a manostat to regulate the voltage
<b>Poor heating performance</b>	The outdoor temperature is extremely low	Use auxiliary heating device
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
<b>Indicator lamps continue flashing</b>	The unit may stop operation or continue to run safely. If the indicator lamps continue to flash or error codes appear, wait for about 10 minutes. The problem may resolve itself. If not, disconnect the power, then connect it again. Turn the unit on. If the problem persists, disconnect the power and contact your nearest customer service center.	
<b>Error code appears and begins with the letters as the following in the window display of indoor unit:</b>	<ul style="list-style-type: none"> <li>• E(x), P(x), F(x)</li> <li>• EH(xx), EL(xx), EC(xx)</li> <li>• PH(xx), PL(xx), PC(xx)</li> </ul>	

**NOTE:** If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact an authorized service center.

# Accessories

The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. The items are not included with the air conditioner must be purchased separately.

Accessories

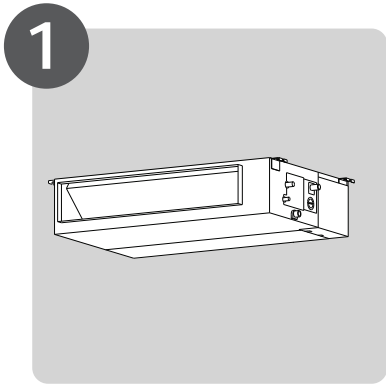
Name of Accessories	Q'ty(pc)	Shape	Name of Accessories	Q'ty(pc)	Shape
Manual	2~4		Drain joint (some models)	1	
Soundproof/insulation sheath	2		Seal ring (some models)	1	
Copper nut	2		Connecting wire for display (2m) (some models)	1	
Orifice (some models)	1		Magnetic ring (wrap the electric wires S1 & S2 ( P & Q & E ) around the magnetic ring twice) (some models)	1	 S1&S2(P&Q&E)
Transfer connector (ΦΦ 12.7-ΦΦ 15.9) (some models)	1		Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.) (some models)	Varies by model	
Transfer connector (ΦΦ 9.52-ΦΦ 12.7) (some models)	1				
Transfer connector (ΦΦ 6.35-ΦΦ 9.52) (some models)	1				
Display panel *Just for testing purposes only ( some models- KJR-120G,KJR-120H)	1		—	1	

## Optional accessories

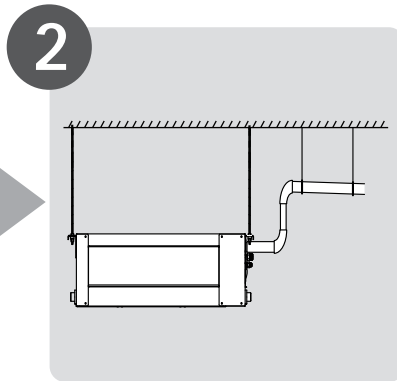
- There are two types of remote controls: wired and wireless. Select a remote controller based on customer preferences and requirements and install in an appropriate place. Refer to catalogues and technical literature for guidance on selecting a suitable remote controller.

Name	Shape	Quantity(PC)	
Connecting pipe assembly	Liquid side	Φ 6.35(1/4in)	Parts you must purchase separately. Consult the dealer about the proper pipe size of the unit you purchased.
		Φ 9.52(3/8in)	
		Φ 12.7(1/2in)	
	Gas side	Φ 9.52(3/8in)	
		Φ 12.7(1/2in)	
		Φ16(5/8in)	
		Φ19(3/4in)	
		Φ22(7/8in)	

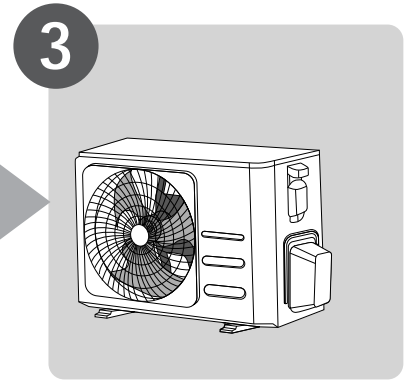
# Installation Summary



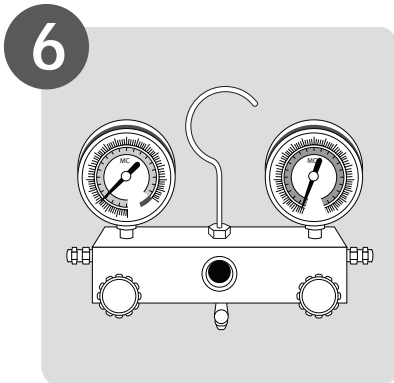
1  
Install the indoor unit



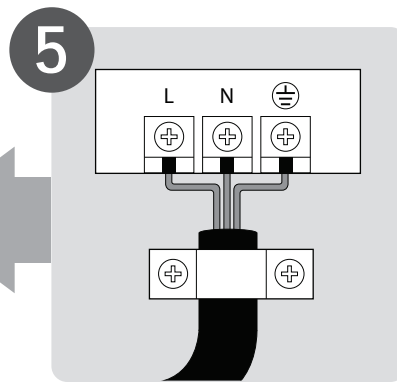
2  
Install the drainpipe



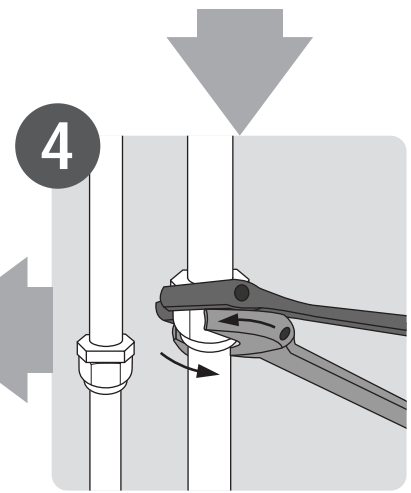
3  
Install the outdoor unit



6  
Evacuate the refrigeration system



5  
Connect the wires



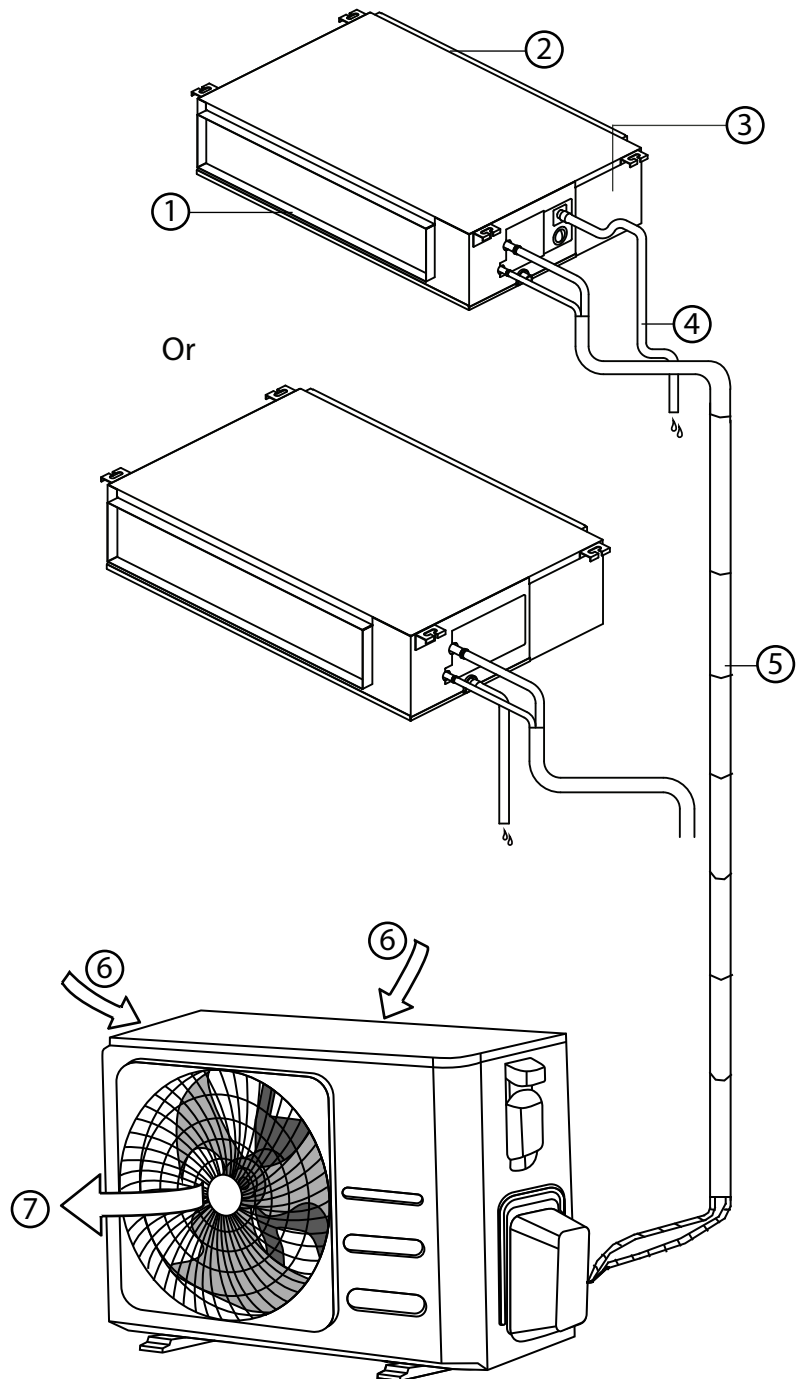
4  
Connect the refrigerant pipes



7  
Perform a test run

# Unit Parts

**NOTE:** The installation must be performed in accordance with the requirement of local and national standards. The installation may be slightly different in different areas.



- ① Air outlet
- ② Air inlet
- ③ Electric control cabinet
- ④ Drain pipe
  
- ⑤ Connecting pipe
- ⑥ Air inlet
- ⑦ Air outlet

## NOTE ON ILLUSTRATIONS

Illustrations in this manual are for explanatory purposes. The actual shape of your indoor unit may be slightly different. The actual shape shall prevail.

# Indoor Unit Installation

## Installation Instructions – Indoor unit

**NOTE:** Panel installation should be performed after piping and wiring have been completed.

### Step 1: Select installation location

Before installing the indoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

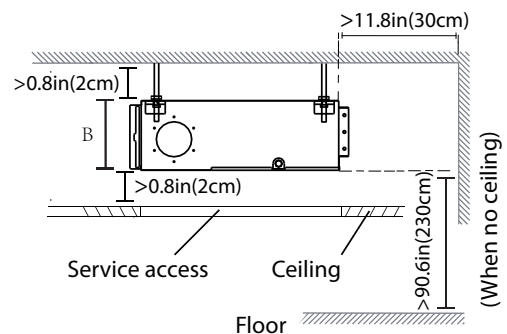
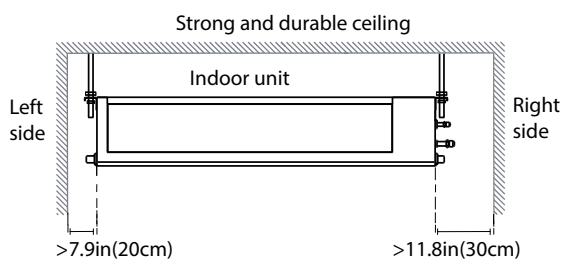
#### Proper installation locations meet the following standards:

- ☑ Enough room exists for installation and maintenance.
- ☑ Enough room exists for the connecting the pipe and drainpipe.
- ☑ The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- ☑ The air inlet and outlet are not blocked.
- ☑ The airflow can fill the entire room.
- ☑ There is no direct radiation from heaters.
- ☑ Models with a cooling capacity of 9000Btu to 18000Btu only apply to one room.

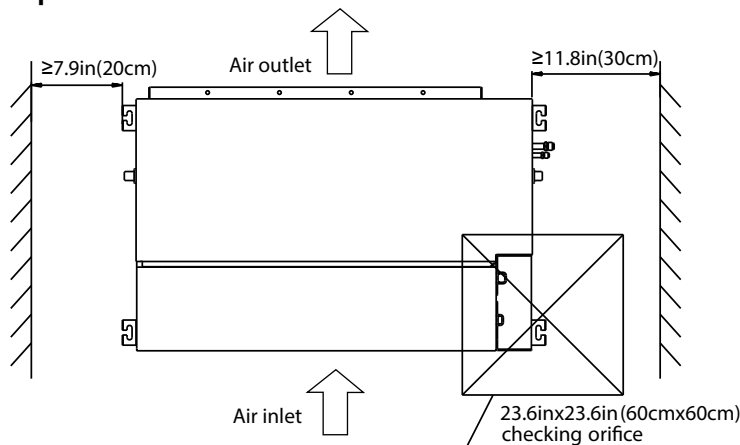
#### DO NOT install unit in the following locations:

- ⊘ Areas with oil drilling or fracking
- ⊘ Coastal areas with high salt content in the air
- ⊘ Areas with caustic gases in the air, such as hot springs
- ⊘ Areas that experience power fluctuations, such as factories
- ⊘ Enclosed spaces, such as cabinets
- ⊘ Kitchens that use natural gas
- ⊘ Areas with strong electromagnetic waves
- ⊘ Areas that store flammable materials or gas
- ⊘ Rooms with high humidity, such as bathrooms or laundry rooms

### Installation place

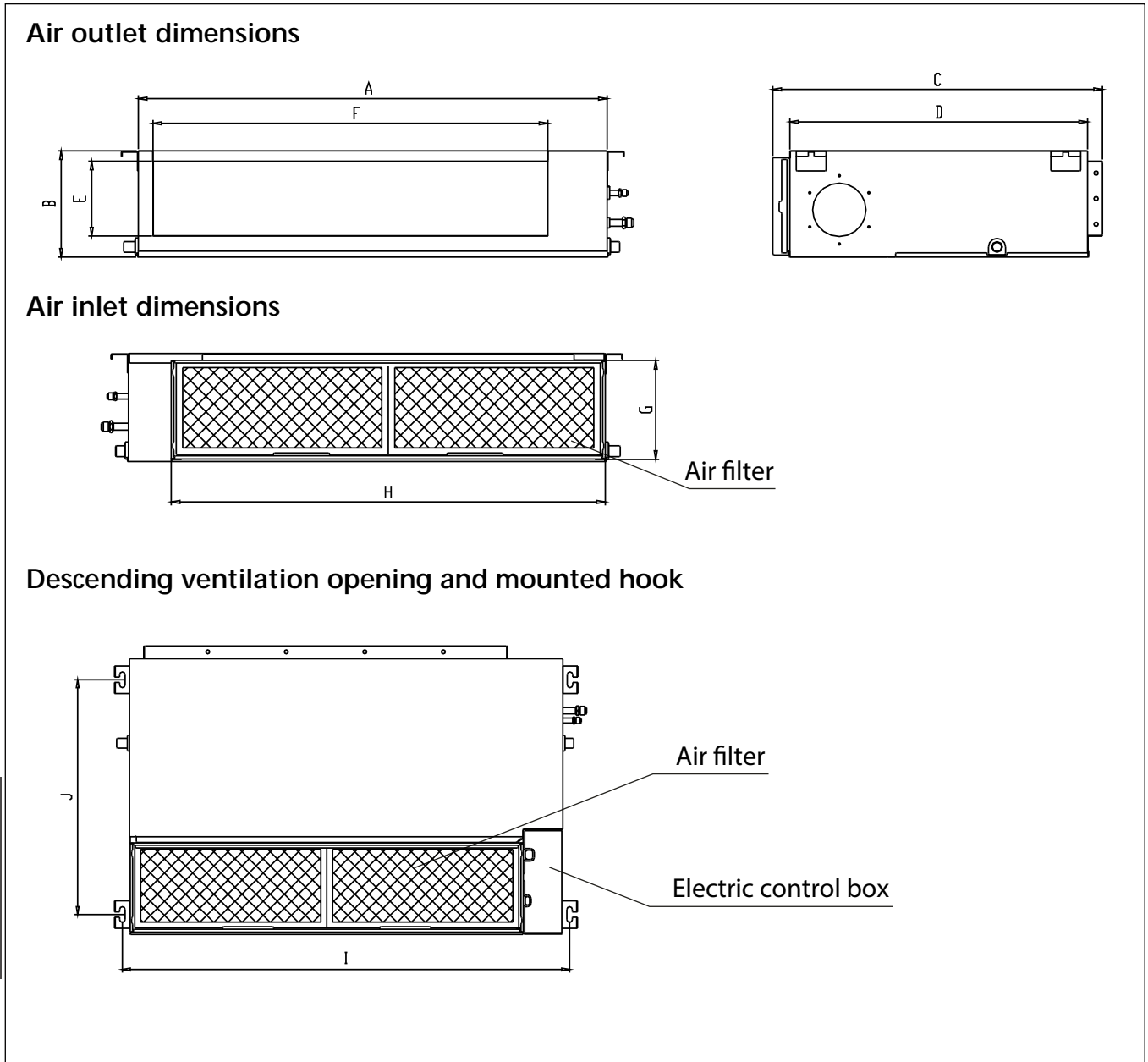


### Maintenance space



## Step 2: Hang indoor unit.

1. Please refer to the following diagrams to locate the four positioning screw bolt holes on the ceiling. Be sure to mark the places where you will drill ceiling hook holes.

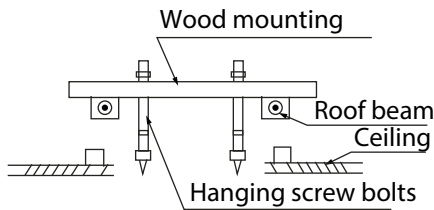


(unit: mm/inch)

MODEL (Btu/h)	Outline dimension				air outlet opening size		air return opening size		Size of mounted lug	
	A	B	C	D	E	F	G	H	I	J
9K/12K	700/27.6	200/7.9	506/19.9	450/17.7	152/6	537/21.1	186/7.3	599/23.6	741/29.2	360/14.2
18K	880/34.6	210/8.3	674/26.5	600/23.6	136/5.4	706/27.8	190/7.5	782/30.8	920/36.2	508/20
24K~36K	1100/43.3	249/9.8	774/30.5	700/27.6	175/6.9	926/36.5	228/8.9	1001/39.4	1140/44.9	598/23.5
30K~36K	1360/53.5	249/9.8	774/30.5	700/27.6	175/6.9	1186/46.7	228/8.9	1261/49.6	1400/55.1	598/23.5
36K~60K	1200/47.2	300/11.8	874/34.4	800/31.5	227/8.9	1044/41.1	280/11	1101/43.3	1240/48.8	697/27.4

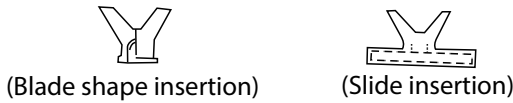
## Wood

Place the wood mounting across the roof beam, then install the hanging screw bolts.



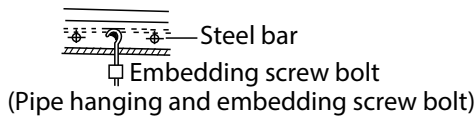
## New concrete bricks

Inlay or embed the screw bolts.



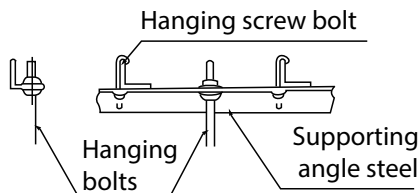
## Original concrete bricks

Use an embedding screw bolt, crock, and stick harness.



## Steel roof beam structure

Install and use the supporting steel angle.

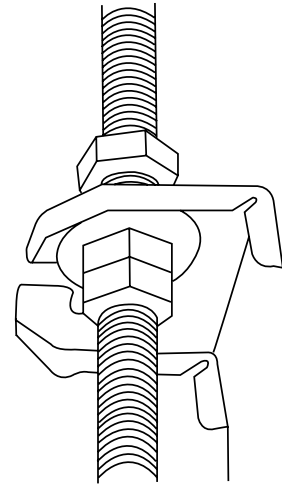


## CAUTION

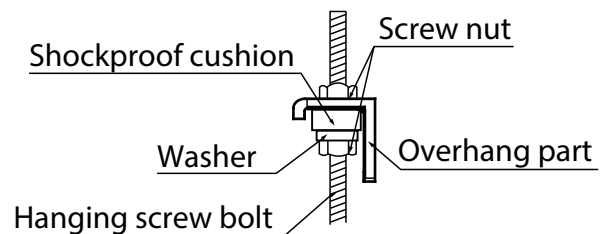
The unit body must be completely aligned with the hole. Ensure that the unit and the hole are the same size before moving on.

2. Install and fit pipes and wires after you have finished installing the main body. When choosing where to start, determine the direction of the pipes to be drawn out. Especially in cases where there is a ceiling involved, align the refrigerant pipes, drain pipes, and indoor and outdoor lines with their connection points before mounting the unit.

3. Install hanging screw bolts.
  - Cut off the roof beam.
  - Strengthen the point at which the cut was made. Consolidate the roof beam.
4. After you select an installation location, align the refrigerant pipes, drain pipes, as well as indoor and outdoor wires with their connection points before mounting the unit.
5. Drill 4 holes 10cm (4") deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
6. Secure the bolt using the washers and nuts provided.
7. Install the four suspension bolts.
8. Mount the indoor unit with at least two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the washers and nuts provided.



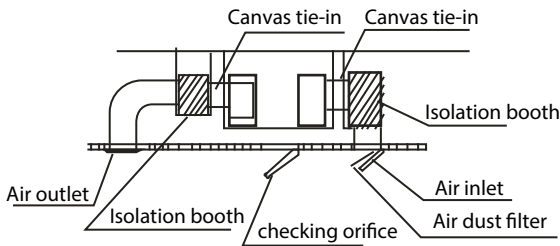
9. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks.



**NOTE:** Confirm the minimum drain tilt is 1/100 or more.

### Step 3: Duct and accessories installation

1. Install the filter (optional) according to the size of the air inlet.
2. Install the canvas tie-in between the body and duct.
3. The air inlet and air outlet duct should be far enough apart enough to avoid air passage short-circuit.
4. Connect the duct according to the following diagram:



5. Refer to the following static pressure guidelines when installing the indoor unit.

MODEL (Btu/h)	Static Pressure (Pa/in.wg)
9K	0~50/0~0.2
12K	0~50/0~0.2
18K	0~100/0~0.4
24K	0~160/0~0.64
30K~36K	0~160/0~0.64
42K~60K	0~160/0~0.64

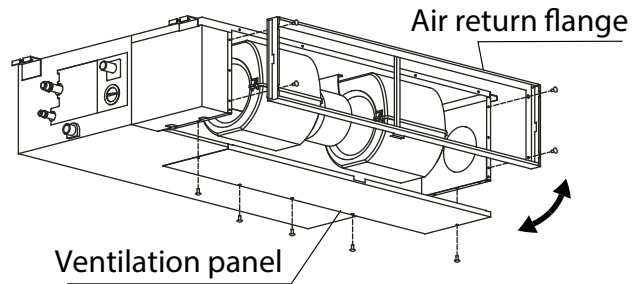
Change the fan motor static pressure according to external duct static pressure.

#### NOTE:

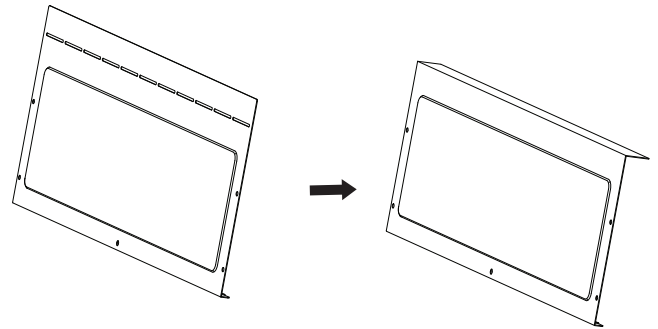
1. Do not place the connecting duct weight on the indoor unit.
2. When connecting the duct, use a nonflammable canvas tie-in to prevent vibrating.
3. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

### Step 4: Adjust the air inlet direction (From rear side to under-side)

1. Take off the ventilation panel and flange.

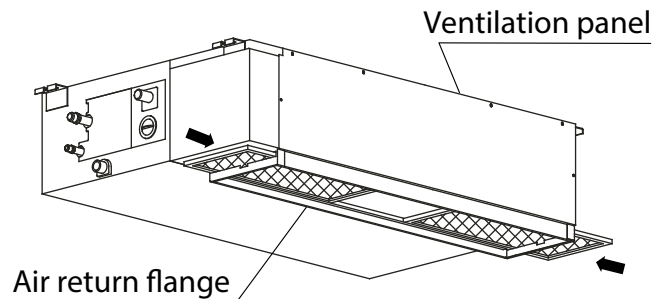


Bend the rear ventilation panel 90 degrees along the dotted line into a descending ventilation panel.(some models)

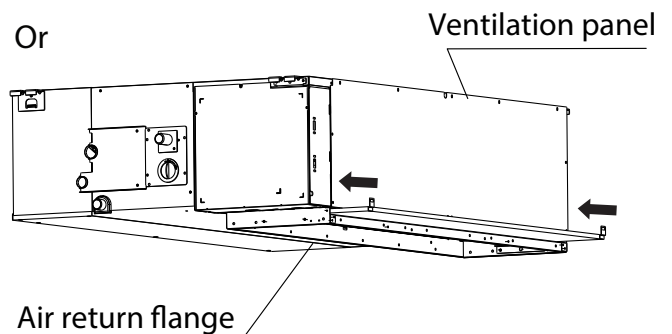


2. Change the mounting positions of the ventilation panel and air return flange.

3. When installing the filter mesh, fit it into the flange as illustrated in the following figure.



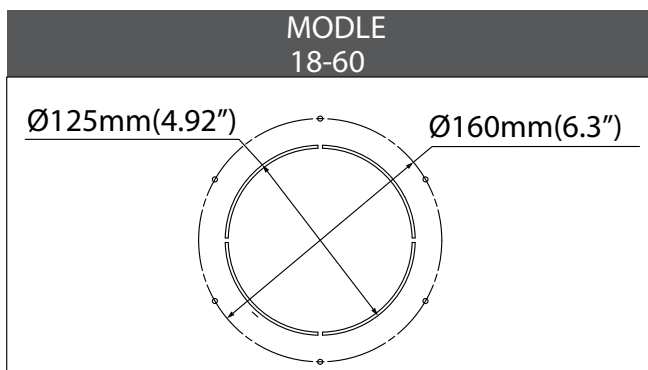
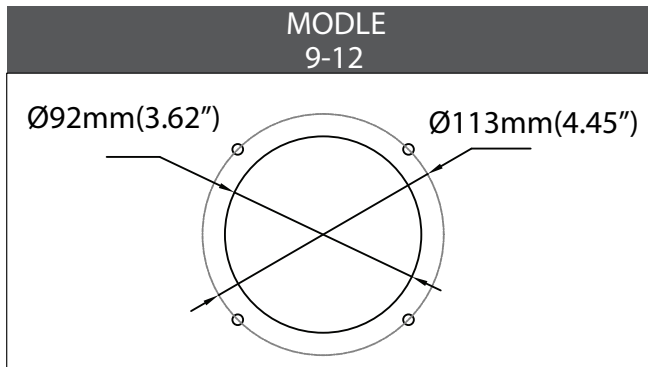
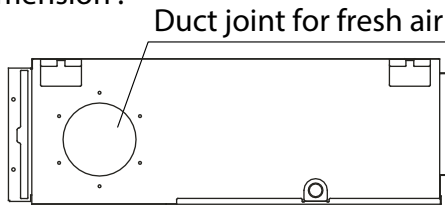
Or



**NOTE:** All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

## Step 5: Fresh air duct installation

Dimension :

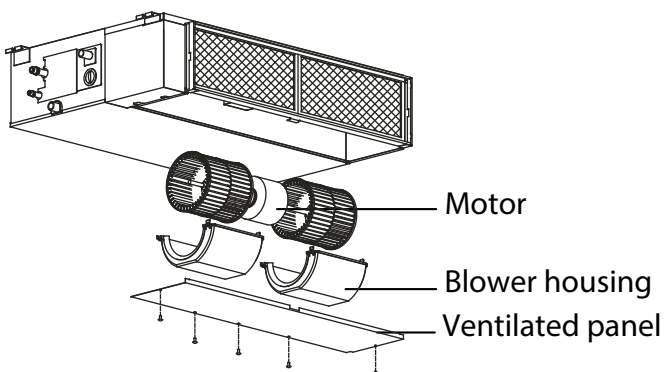


## Step 6: Motor and drain pump maintenance

(the rear ventilated panel is used as an example)

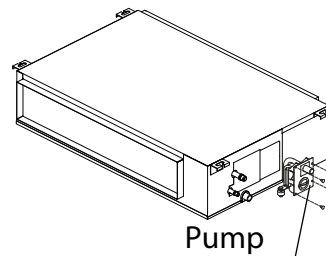
### Motor maintenance:

1. Take off the ventilated panel.
2. Take off the blower housing.
3. Take off the motor.



### Pump maintenance:

1. Remove four screws from the drain pump.
2. Unplug the pump power supply and water level switch cable.
3. Detach the pump.

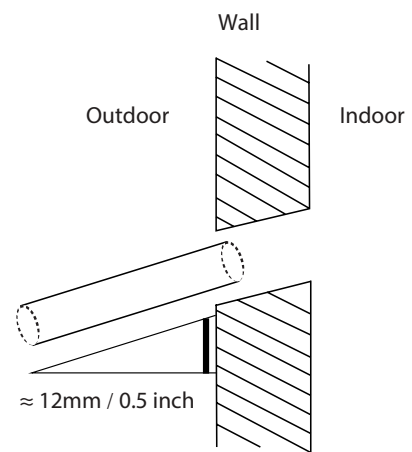


## Step 7: Drill wall hole for connective piping

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65mm (2.5in) or 90mm(3.54in) (depending on models) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12mm (0.5in). This will ensure proper water drainage.
3. Place the protective wall cuff in the hole. This protects the edges of the hole and will help seal it when you finish the installation process.

### ⚠ CAUTION

When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.



## Step 8: Connect drain hose

The drainpipe is used to drain water away from the unit. Improper installation may cause unit and property damage.

### CAUTION

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage.
- **DO NOT** pull the drainpipe forcefully. This could disconnect it.

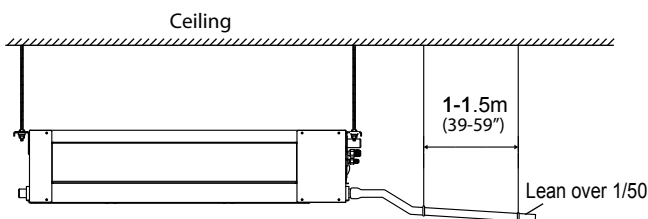
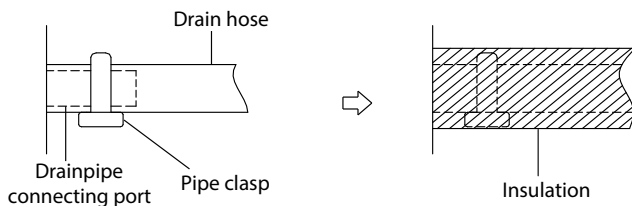
### NOTE ON PURCHASING PIPES

Installation requires a polyethylene tube (exterior diameter = 3.7-3.9cm, interior diameter = 3.2cm), which can be obtained at your local hardware store or dealer.

## Indoor Drainpipe Installation

Install the drainpipe as illustrated in the following Figure.

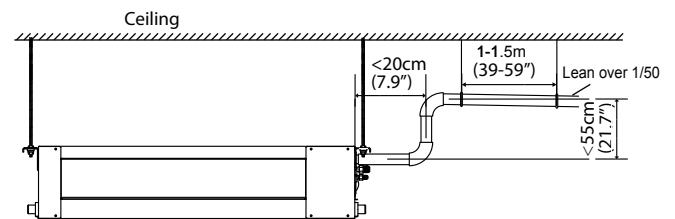
1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.



## NOTE ON DRAINPIPE INSTALLATION

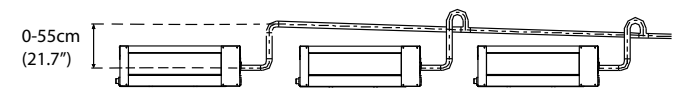
- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 1-1.5m (39-59").
- If the outlet of the drainpipe is higher than the body's pump joint, use a lift pipe for the indoor unit's exhaust outlet. The lift pipe must be installed no higher than 55cm (21.7") from the ceiling board. The distance between the unit and the lift pipe must be less than 20cm (7.9"). Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly tilted up (<75mm / 3").

## Drainpipe installation for units with a pump

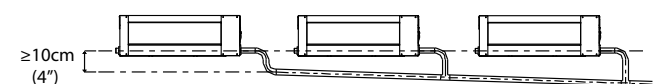


**NOTE:** When connecting multiple drainpipes, install the pipes as illustrated.

## Units with a pump



## Units without a pump



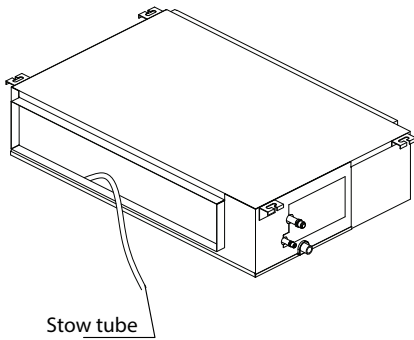
3. Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

**NOTE:** The drainpipe outlet should be at least 5cm (1.9") above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that might otherwise come back into the house.

### Drainage test

Check whether the drainpipe is unhindered. This test should be performed on newly built houses before the ceiling is paved.

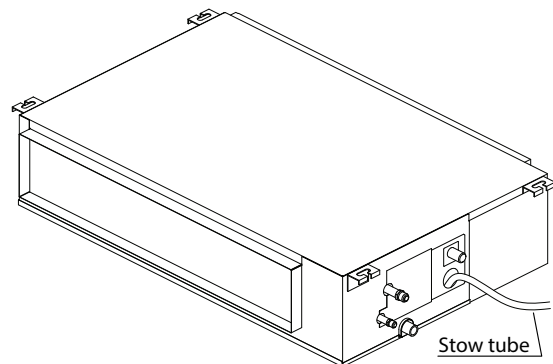
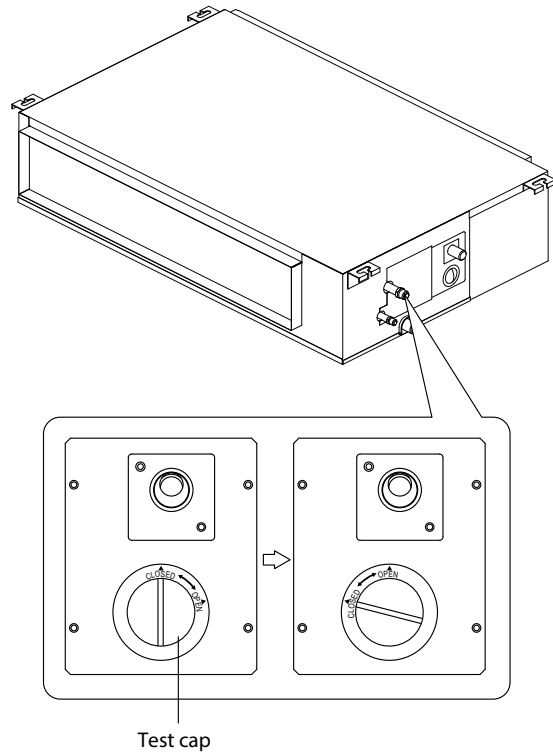
### Units without a pump.



Fill the water pan with 2 liters of water. Check that the drainpipe is unhindered.

### Units with a pump.

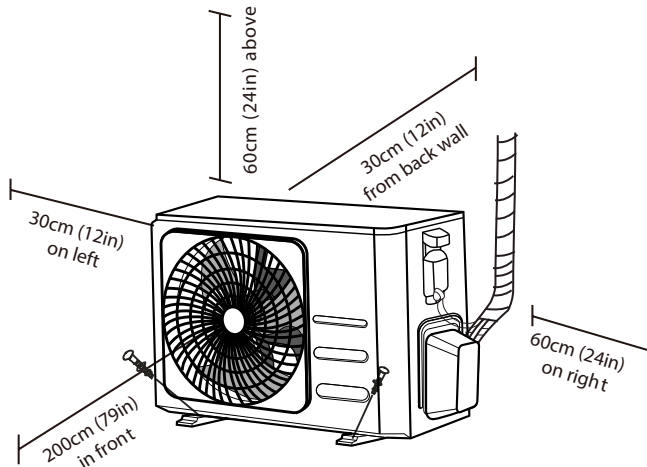
1. Remove the test cover. Fill the water pan with 2 liters of water.



2. Turn on the unit in COOLING mode. You will hear the drain pump. Check whether the water is discharged properly (a 1-minute lag is possible, depending on the length of the drain pipe), Check whether water leaks from the joints.
3. Turn off the air conditioner and put the cap back on.

# Outdoor Unit Installation

Install the unit by following local codes and regulations, there may be differ slightly between different regions.



## Installation Instructions – Outdoor unit

### Step 1: Select installation location

Before installing the outdoor unit, you must choose an appropriate location. The following are standards that will help you choose an appropriate location for the unit.

#### Proper installation locations meet the following standards:

- ☑ Meets all spatial requirements shown in Installation Space Requirements above.
- ☑ Good air circulation and ventilation
- ☑ Firm and solid—the location can support the unit and will not vibrate
- ☑ Noise from the unit will not disturb others
- ☑ Protected from prolonged periods of direct sunlight or rain
- ☑ Where snowfall is anticipated, raise the unit above the base pad to prevent ice buildup and coil damage. Mount the unit high enough to be above the average accumulated area snowfall. The minimum height must be 18 inches

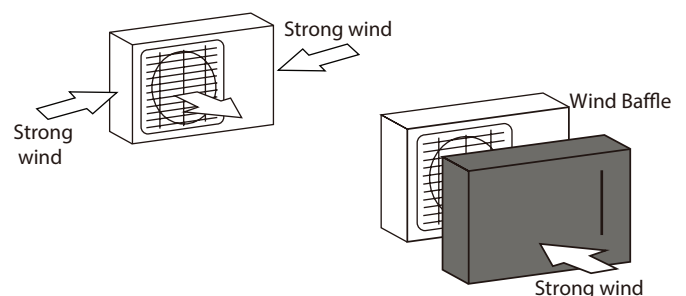
### **DO NOT** install unit in the following locations:

- ⊘ Near an obstacle that will block air inlets and outlets
- ⊘ Near a public street, crowded areas, or where noise from the unit will disturb others
- ⊘ Near animals or plants that will be harmed by hot air discharge
- ⊘ Near any source of combustible gas
- ⊘ In a location that is exposed to large amounts of dust
- ⊘ In a location exposed to a excessive amounts of salty air

### SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

#### If the unit is exposed to heavy wind:

Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See Figures below.



#### If the unit is frequently exposed to heavy rain or snow:

Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

#### If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.

## Step 2: Install drain joint(Heat pump unit only)

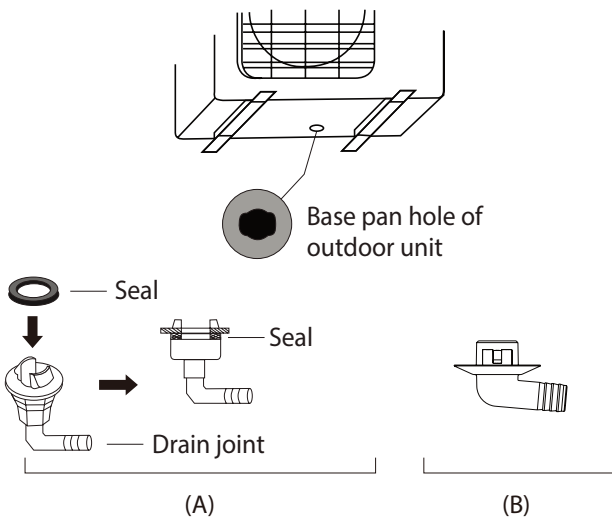
Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

**If the drain joint comes with a rubber seal** (see Fig. A ), do the following:

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

**If the drain joint doesn't come with a rubber seal** (see Fig. B ), do the following:

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



## ! IN COLD CLIMATES

In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

## Step 3: Anchor outdoor unit

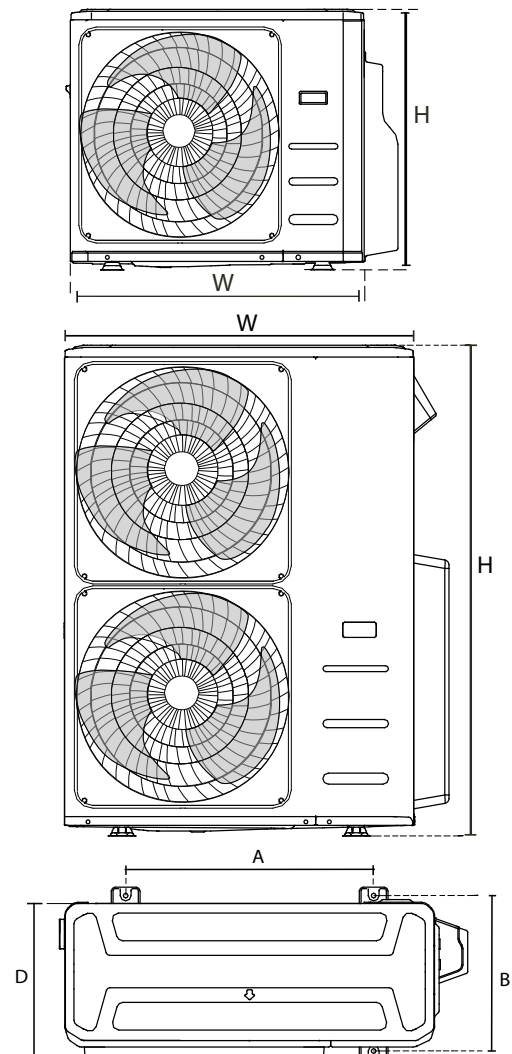
The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolt(M10). Prepare the installation base of the unit according to the dimensions below.

### UNIT MOUNTING DIMENSIONS

The following is a list of different outdoor unit sizes and the distance between their mounting feet. Prepare the installation base of the unit according to the dimensions below.

#### Outdoor Unit Types and Specifications

##### Split Type Outdoor Unit



(unit: mm/inch)

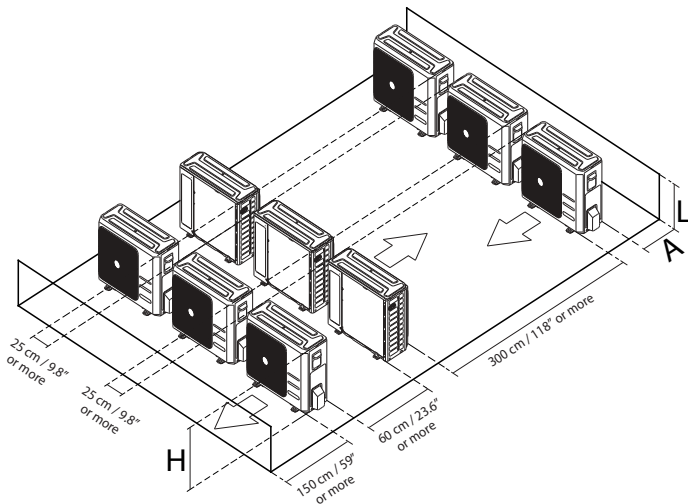
Outdoor Unit Dimensions W x H x D	Mounting Dimensions	
	Distance A	Distance B
760x590x285 (29.9x23.2x11.2)	530 (20.85)	290 (11.4)
810x558x310 (31.9x22x12.2)	549 (21.6)	325 (12.8)
845x700x320 (33.27x27.5x12.6)	560 (22)	335 (13.2)
900x860x315 (35.4x33.85x12.4)	590 (23.2)	333 (13.1)
945x810x395 (37.2x31.9x15.55)	640 (25.2)	405 (15.95)
990x965x345 (38.98x38x13.58)	624 (24.58)	366 (14.4)
938x1369x392 (36.93x53.9x15.43)	634 (24.96)	404 (15.9)
900x1170x350 (35.4x46x13.8)	590 (23.2)	378 (14.88)
800x554x333 (31.5x21.8x13.1)	514 (20.24)	340 (13.39)
845x702x363 (33.27x27.6x14.3)	540 (21.26)	350 (13.8)
946x810x420 (37.24x31.9x16.53)	673 (26.5)	403 (15.87)
946x810x410 (37.24x31.9x16.14)	673 (26.5)	403 (15.87)
952x1333x410 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)
952x1333x415 (37.5x52.5x16.34)	634 (24.96)	404 (15.9)
890x673x342 (35x26.5x13.46)	663 (26.1)	354 (13.94)

### Rows of series installation

The relations between H, A and L are as follows.

	L	A
L ≤ H	$L \leq 1/2H$	25 cm / 9.8" or more
	$1/2H < L \leq H$	30 cm / 11.8" or more
L > H	Can not be installed	

Outdoor Unit  
Installation



# Refrigerant Piping Connection

When connecting refrigerant piping, **do not** let substances or gases other than the specified refrigerant enter the unit. The presence of other gases or substances will lower the unit's capacity, and can cause abnormally high pressure in the refrigeration cycle. This can cause explosion and injury.

## Note on Pipe Length

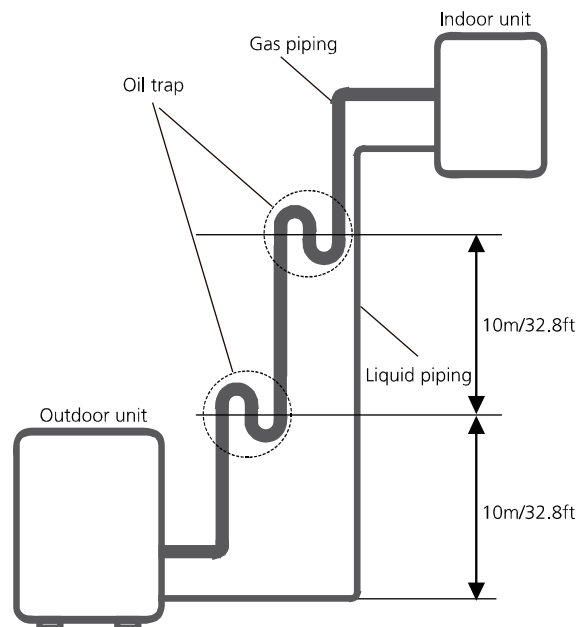
Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in the following table :

**The Maximum Length And Drop Height Based on Models. (Unit: m/ft.)**

Type of model	Capacity (Btu/h)	Length of piping	Maximum drop height
North America, Australia and the eu frequency conversion Split Type	<15K	25/82	10/32.8
	≥15K - <24K	30/98.4	20/65.6
	≥24K - <36K	50/164	25/82
	≥36K - ≤60K	65/213	30/98.4
Other Split Type	12K	15/49	8/26
	18K-24K	25/82	15/49
	30K-36K	30/98.4	20/65.6
	42K-60K	50/164	30/98.4

## CAUTION

- Oil traps  
If the indoor unit is installed higher than the outdoor unit:  
-If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.  
An oil trap should be installed every 10m (32.8ft) of vertical suction line riser.

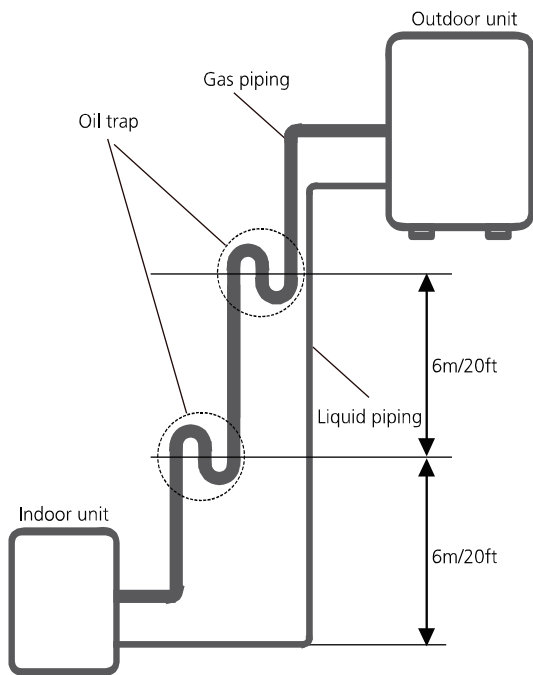


The indoor unit is installed higher than the outdoor unit

## ⚠ CAUTION

If the outdoor unit is installed higher than the indoor unit:

-It is recommended that vertical suction risers not be upsized. Proper oil return to the compressor should be maintained with suction gas velocity. If velocities drop below 7.62m/s (1500fpm (feet per minute)), oil return will be decreased. An oil trap should be installed every 6m(20ft) of vertical suction line riser.



The outdoor unit is installed higher than the indoor unit

## Connection Instructions – Refrigerant Piping

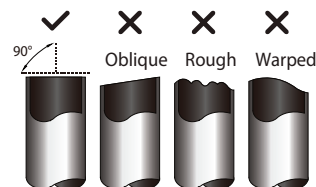
### ⚠ CAUTION

- The branching pipe must be installed horizontally. An angle of more than 10° may cause malfunction.
- **DO NOT** install the connecting pipe until both indoor and outdoor units have been installed.
- Insulate both the gas and liquid piping to prevent water leakage.

### Step 1: Cut pipes

When preparing refrigerant pipes, take extra care to cut and flare them properly. This will ensure efficient operation and minimize the need for future maintenance.

1. Measure the distance between the indoor and outdoor units.
2. Using a pipe cutter, cut the pipe a little longer than the measured distance.
3. Make sure that the pipe is cut at a perfect 90° angle.



### ⚠ DO NOT DEFORM PIPE WHILE CUTTING

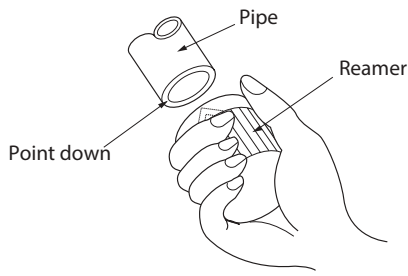
Be extra careful not to damage, dent, or deform the pipe while cutting. This will drastically reduce the heating efficiency of the unit.

### Step 2: Remove burrs.

Burrs can affect the air-tight seal of refrigerant piping connection. They must be completely removed.

1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.

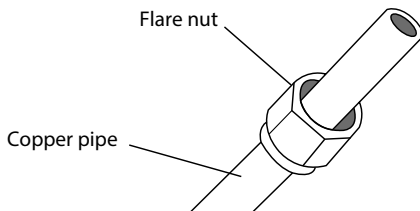
- Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



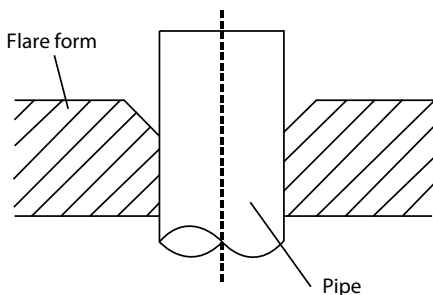
### Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

- After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
- Sheath the pipe with insulating material.
- Place flare nuts on both ends of pipe. Make sure they are facing in the right direction, because you can't put them on or change their direction after flaring.



- Remove PVC tape from ends of pipe when ready to perform flaring work.
- Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.



- Place flaring tool onto the form.

- Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions.

### PIPING EXTENSION BEYOND FLARE FORM

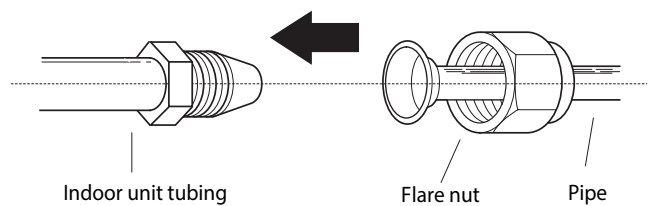
Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 6.35	18-20 N.m (183-204 kgf.cm)	8.4/0.33	8.7/0.34	
Ø 9.52	25-26 N.m (255-265 kgf.cm)	13.2/0.52	13.5/0.53	
Ø 12.7	35-36 N.m (357-367 kgf.cm)	16.2/0.64	16.5/0.65	
Ø 16	45-47 N.m (459-480 kgf.cm)	19.2/0.76	19.7/0.78	
Ø 19	65-67 N.m (663-683 kgf.cm)	23.2/0.91	23.7/0.93	
Ø 22	75-85 N.m (765-867 kgf.cm)	26.4/1.04	26.9/1.06	

- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

### Step 4: Connect pipes

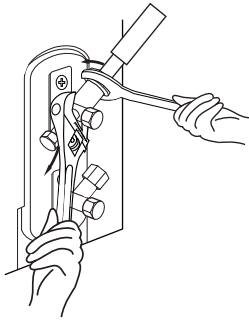
Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low-pressure pipe, then the high-pressure pipe.

- When connecting the flare nuts, apply a thin coat of refrigeration oil to the flared ends of the pipes.
- Align the center of the two pipes that you will connect.



- Tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the nut on the unit tubing.
- While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values in above table.

**NOTE:** Use both a spanner and a torque wrench when connecting or disconnecting pipes to/from the unit.



### **CAUTION**

- Ensure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.
- Make sure the pipe is properly connected. Over tightening may damage the bell mouth and under tightening may lead to leakage.

### **NOTE ON MINIMUM BEND RADIUS**

Carefully bend the tubing in the middle according to the diagram below. **DO NOT** bend the tubing more than 90° or more than 3 times.

Bend the pipe with thumb



min-radius 10cm (3.9")

6. After connecting the copper pipes to the indoor unit, wrap the power cable, signal cable and the piping together with binding tape.

**NOTE: DO NOT** intertwine signal cable with other wires. While bundling these items together, do not intertwine or cross the signal cable with any other wiring.

7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

### **CAUTION**

Check to make sure there is no refrigerant leak after completing the installation work. If there is a refrigerant leak, ventilate the area immediately and evacuate the system (refer to the Air Evacuation section of this manual).

## Wiring

### **BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS**

1. All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. Power voltage should be within 90-110% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 1/8in (3mm) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.

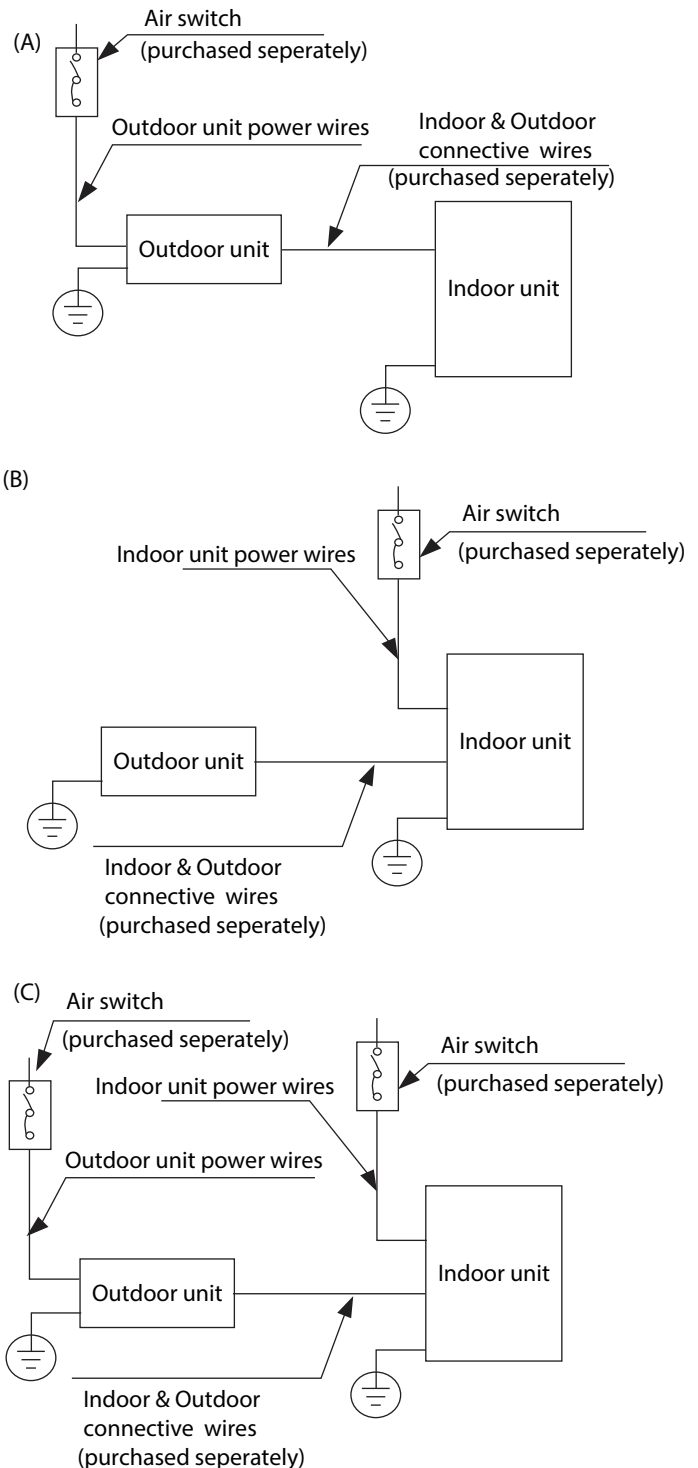
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected.  
Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
11. If the unit has an auxiliary electric heater, it must be installed at least 1 meter (40in) away from any combustible materials.
12. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.
13. Make sure that you do not cross your electrical wiring with your signal wiring. This may cause distortion and interference.
14. The unit must be connected to the main outlet. Normally, the power supply must have an impedance of 32 ohms.
15. No other equipment should be connected to the same power circuit.
16. Connect the outdoor wires before connecting the indoor wires.

**! WARNING**

**BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFF THE MAIN POWER TO THE SYSTEM.**

**NOTE ON AIR SWITCH**

When the maximum current of the air conditioner is more than 16A, an air switch or leakage protection switch with protective device shall be used (purchased separately). When the maximum current of the air conditioner is less than 16A, the power cord of air conditioner shall be equipped with plug (purchased separately).



**NOTE:** The cognographs are for explanation purpose only. Your machine may be slightly different. The actual shape shall prevail.

## Outdoor Unit Wiring

### WARNING

Before performing any electrical or wiring work, turn off the main power to the system.

1. Prepare the cable for connection
  - a. You must first choose the right cable size. Be sure to use H07RN-F cables.

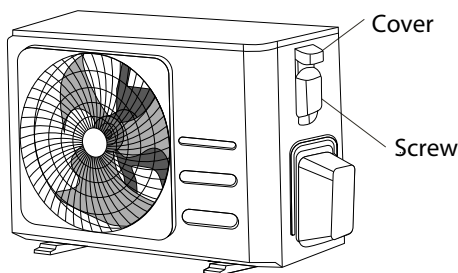
### Minimum Cross-Sectional Area of Power and Signal Cables (For reference)

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm <sup>2</sup> )
> 3 and ≤ 6	0.75
> 6 and ≤ 10	1
> 10 and ≤ 16	1.5
> 16 and ≤ 25	2.5
> 25 and ≤ 32	4
> 32 and ≤ 40	6

- b. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal approximately 15cm (5.9") of wire.
- c. Strip the insulation from the ends.
- d. Using a wire crimper, crimp u-lugs on the ends.

**NOTE:** When connecting the wires, strictly follow the wiring diagram found inside the electrical box cover.

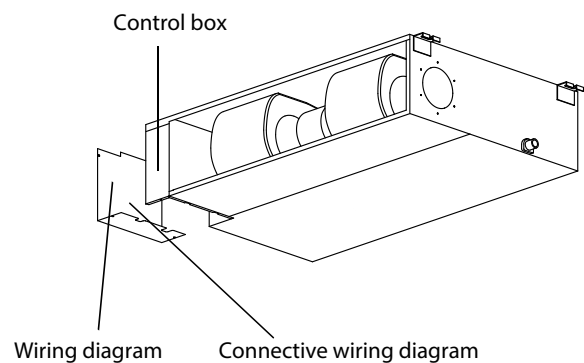
2. Remove the electric cover of the outdoor unit. If there is no cover on the outdoor unit, take off the bolts from the maintenance board and remove the protection board.



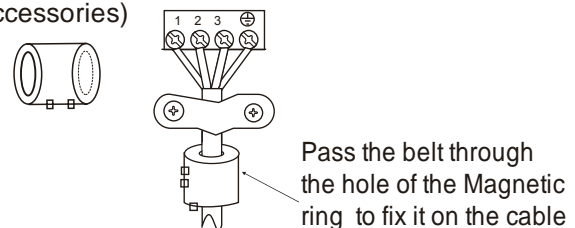
3. Connect the u-lugs to the terminals  
Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.
4. Clamp down the cable with the cable clamp.
5. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
6. Reinstall the cover of the electric control box.

## Indoor Unit Wiring

1. Prepare the cable for connection.
  - a. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 15cm (5.9") of the wire.
  - b. Strip the insulation from the ends of the wires.
  - c. Using a wire crimper, crimp the u-lugs to the ends of the wires.
2. Remove the cover of the electric control box on your indoor unit.
3. Connect the u-lugs to the terminals.  
Match the wire colors/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal. Refer to the Serial Number and Wiring Diagram located on the cover of the electric control box.



**Magnetic ring** (if supplied and packed with the accessories)



## CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
- The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.

4. Clamp down the cable with the cable clamp. The cable must not be loose or pull on the u-lugs.

5. Reattach the electric box cover.

## Power Specifications

**NOTE:** Electric auxiliary heating type circuit breaker/fuse need to add more than 10 A.

### Indoor Power Supply Specifications

MODEL(Btu/h)		≤18K	19K~24K	25K~36K	37K~48K	49K~60K
POWER	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/ FUSE(A)		25/20	32/25	50/40	70/55	70/60

MODEL(Btu/h)		≤36K	37K~60K	≤36K	37K~60K
POWER	PHASE	3 Phase	3 Phase	3 Phase	3 Phase
	VOLT	380-420V	380-420V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	32/25	32/25	45/35

### Outdoor Power Supply Specifications

MODEL(Btu/h)		≤18K	19K~24K	25K~36K	37K~48K	49K~60K
POWER	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/ FUSE(A)		25/20	32/25	50/40	70/55	70/60

MODEL(Btu/h)		≤36K	37K~60K	≤36K	37K~60K
POWER	PHASE	3 Phase	3 Phase	3 Phase	3 Phase
	VOLT	380-420V	380-420V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	32/25	32/25	45/35

### Independent Power Supply Specifications

MODEL(Btu/h)		≤18K	19K~24K	25K~36K	37K~48K	49K~60K
POWER (indoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		15/10	15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	32/25	50/40	70/55	70/60

MODEL(Btu/h)		≤36K	37K~60K	≤36K	37K~60K
POWER (indoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	3 Phase	3 Phase	3 Phase	3 Phase
	VOLT	380-420V	380-420V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	32/25	32/25	45/35

### Inverter Type A/C Power Specifications

MODEL(Btu/h)		≤18K	19K~24K	25K~36K	37K~48K	49K~60K
POWER (indoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	220-240V	220-240V	220-240V	220-240V	220-240V
CIRCUIT BREAKER/FUSE(A)		15/10	15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	208-240V	208-240V	208-240V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	25/20	40/30	50/40	50/40

MODEL(Btu/h)		≤36K	37K~60K	≤36K	37K~60K
POWER (indoor)	PHASE	1 Phase	1 Phase	1 Phase	1 Phase
	VOLT	220-240V	220-240V	220-240V	220-240V
CIRCUIT BREAKER/FUSE(A)		15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	3 Phase	3 Phase	3 Phase	3 Phase
	VOLT	380-420V	380-420V	208-240V	208-240V
CIRCUIT BREAKER/FUSE(A)		25/20	32/25	32/25	40/30

# Air Evacuation

## Preparations and Precautions

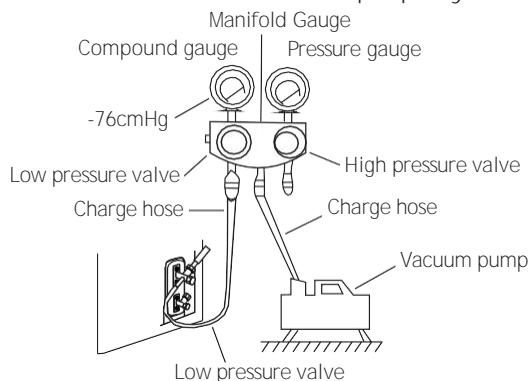
Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system. Evacuation should be performed upon initial installation and when unit is relocated.

### BEFORE PERFORMING EVACUATION

- ☑ Check to make sure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected

### Evacuation Instructions

Before using a manifold gauge and a vacuum pump, read their operation manuals to make sure you know how to use them properly.



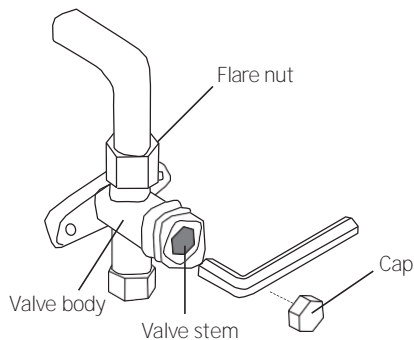
1. Open both King Valves fully until you hit the stopper. Do not force.
2. Connect low pressure manifold gauge hose to mini-split adapter; connect mini-split adapter to low pressure lineset valve A
3. Connect the manifold **gauge's** charge hose from the to the vacuum pump.
4. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.

3. Pressure test Connect nitrogen tank regulator to charging hose on manifold gauges. Pressurize lineset to 200 psi of dry nitrogen.
4. Check for leaks Spray soap bubbles on fittings at outdoor and indoor units to check for bubbles/ leaks. If leaks are present, retorque flare nut. If leak is still present, release nitrogen, inspect and re-work flare. Repeat. Once there are no leaks, proceed to step 6.
5. Discharge nitrogen pressure from lineset A and disconnect nitrogen tank.
6. Turn on the vacuum pump to evacuate the system.
7. Run the vacuum for at least 15 minutes, or until the Compound Meter reads -76cmHG (-1x10<sup>5</sup>Pa).
8. **At this step It is recommended to use a micron gauge and Vacuum the lineset to below 500 microns.**
9. Close the manifold **gauge's** Low Pressure valve and turn off the vacuum pump.
10. Wait for 15 minutes, then check that there has been no change in system pressure.

**NOTE:** If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve). If there is a change in system pressure, there may be a gas leak.

11. Insert hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench 1/4 counterclockwise. Listen for gas to exit the system, then close the valve after 5 seconds.

# Air Evacuation



12. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. It should read slightly higher than the atmospheric pressure.
13. Remove the charge hose from the service port.
14. Using hexagonal wrench, fully open both the high pressure and low pressure valves.

## OPEN VALVE STEMS GENTLY

When opening valve stems, turn the hexagonal wrench until it hits against the stopper. **DO NOT** try to force the valve to open further.

15. Tighten valve caps by hand, then tighten it using the proper tool.
16. If the outdoor unit uses all vacuum valves, and the vacuum position is at the main valve, the system is not connected with the indoor unit. The valve must be tightened with a screw nut. Check for gas leaks before operation to prevent leakage.  
Release refrigerant (See Fig. 9.3) Release refrigerant into the lineset by opening the larger (gas side, or suction) lineset valve fully. Then open the smaller (liquid side) lineset valve fully. NOTE: do not force valves open past the point it stops turning under normal hand pressure.

17. Repeat for each zone Disconnect your gauges and attach to lineset valve B. Repeat steps 2 - 10 for each remaining zone in sequence.
18. Test Run Once you complete the vacuum test on the last zone, leave the gauges in place. Follow the remaining steps to test run the system, and add refrigerant if needed.
19. Record Pressure. Start the unit in cooling mode. Run for 10 minutes and monitor operating pressure reading. Power down the unit and wait 5 minutes. Remove the low-pressure gauge and attach the high-pressure gauge to the service port. Change to Heat mode and restart. Run for 10 minutes and monitor the operating pressure. Normal pressure will vary based on outside temperature and cooling vs. heating mode. Enter both results in the adjacent chart. Completing this step on first startup will provide information in case troubleshooting is required.
20. Add refrigerant (if needed) Depending on lineset length and the configuration of your system, you may need to add refrigerant.

Note: The system must be running in cooling mode as you add refrigerant.

## Note on Adding Refrigerant

Some systems require additional charging depending on pipe lengths. The standard pipe length varies according to local regulations. For example, in North America, the standard pipe length is 7.5m (25'). In other areas, the standard pipe length is 5m (16'). The refrigerant should be charged from the service port on the outdoor unit's low pressure valve. The additional refrigerant to be charged can be calculated using the following formula:

### Liquid Side Diameter

	φ6.35(1/4")	φ9.52(3/8")	φ12.7(1/2")
<b>R22 (orifice tube in the indoor unit):</b>	(Total pipe length - standard pipe length) x 30g (0.32oz)/m(ft)	(Total pipe length - standard pipe length) x 65g(0.69oz)/m(ft)	(Total pipe length - standard pipe length) x 115g(1.23oz)/m(ft)
<b>R22 (orifice tube in the outdoor unit):</b>	(Total pipe length - standard pipe length) x 15g(0.16oz)/m(ft)	(Total pipe length - standard pipe length) x 30(0.32oz)/m(ft)	(Total pipe length - standard pipe length) x 60g(0.64oz)/m(ft)
<b>R410A: (orifice tube in the indoor unit):</b>	(Total pipe length - standard pipe length) x 30g(0.32oz)/m(ft)	(Total pipe length - standard pipe length) x 65g(0.69oz)/m(ft)	(Total pipe length - standard pipe length) x 115g(1.23oz)/m(ft)
<b>R410A: (orifice tube in the outdoor unit):</b>	(Total pipe length - standard pipe length) x 15g(0.16oz)/m(ft)	(Total pipe length - standard pipe length) x 30g(0.32oz)/m(ft)	(Total pipe length - standard pipe length) x 65g(0.69oz)/m(ft)
<b>R32 :</b>	(Total pipe length - standard pipe length) x 12g(0.13oz)/m(ft)	(Total pipe length - standard pipe length) x 24g(0.26oz)/m(ft)	(Total pipe length - standard pipe length) x 40g(0.42oz)/m(ft)

 **CAUTION** DO NOT mix refrigerant types.

Only for Australia models :

- This unit contains factory charged refrigerant covering 20m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 20m refrigerant piping. When refrigerant piping exceeds 20m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 20m.
- If an existing pipe system is used, a required refrigerant charge volume will vary depending on the liquid pipe size.

Formula to calculate the volume of additional refrigerant required :

Additional charge volume (kg) = { Main length (m) – Factory charged volume 20(m) } × 0.03(kg/m)

- Make sure to remove the additional refrigerant amount according to the nameplate rated charge (under 5m refrigerant piping ) under market or government verification testing .

# Test Run

## Before Test Run

A test run must be performed after the entire system has been completely installed. Confirm the following points before performing the test:

- a) Indoor and outdoor units are properly installed.
- b) Piping and wiring are properly connected.
- c) No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- d) Refrigeration system does not leak.
- e) Drainage system is unimpeded and draining to a safe location.
- f) Heating insulation is properly installed.
- g) Grounding wires are properly connected.
- h) Length of the piping and additional refrigerant stow capacity have been recorded.
- i) Power voltage is the correct voltage for the air conditioner.

## CAUTION

Failure to perform the test run may result in unit damage, property damage, or personal injury.

## Test Run Instructions

1. Open both the liquid and gas stop valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode.
4. For the Indoor Unit
  - a. Ensure the remote control and its buttons work properly.
  - b. Ensure the louvers move properly and can be changed using the remote control.
  - c. Double check to see if the room temperature is being registered correctly.
  - d. Ensure the indicators on the remote control and the display panel on the indoor unit work properly.
  - e. Ensure the manual buttons on the indoor unit works properly.

- f. Check to see that the drainage system is unimpeded and draining smoothly.
  - g. Ensure there is no vibration or abnormal noise during operation.
5. For the Outdoor Unit
    - a. Check to see if the refrigeration system is leaking.
    - b. Make sure there is no vibration or abnormal noise during operation.
    - c. Ensure the wind, noise, and water generated by the unit do not disturb your neighbors or pose a safety hazard.
  6. Drainage Test
    - a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.
    - b. Remove the test cover. Add 2,000ml of water to the tank through the attached tube.
    - c. Turn on the main power switch and run the air conditioner in COOL mode.
    - d. Listen to the sound of the drain pump to see if it makes any unusual noises.
    - e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
    - f. Make sure that there are no leaks in any of the piping.
    - g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

**NOTE:** If the unit malfunctions or does not operate according to your expectations, please refer to the Troubleshooting section of the Owner's Manual before calling customer service.

# Impedance Information

(Applicable to some countries of Middle East Area only)

To be in compliance with EN61000-3-11, the product MTI-48HWN1-R shall be connected only to a supply of the system impedance:  $|Z_{sys}| = 0.267802236 \Omega$  or less. Before connecting the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

To be in compliance with EN61000-3-11, the product MTI-60HWN1-R shall be connected only to a supply of the system impedance:  $|Z_{sys}| = 0.214 \Omega$  or less. Before connecting the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

To be in compliance with EN61000-3-11, the product MTIT4-36CWN1-QC5 (Indoor Unit: MTIT4-36CWN1-QC5 , Outdoor Unit: MOT4DU-36CN1-QC5) shall be connected only to a supply of the system impedance:  $|Z_{sys}| = 0.021893 \Omega$  or less. Before connecting the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

To be in compliance with EN61000-3-11, the product MTIT4-36CWN1-QC5 (Indoor Unit: MTIT4-36CWN1-QC5 , Outdoor Unit: MOT4V-36CN1-QC5 ) shall be connected only to a supply of the system impedance:  $|Z_{sys}| = 0.024 \Omega$  or less. Before connecting the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

To be in compliance with EN61000-3-11, the product MTIT-32CWN1-QC5 shall be connected only to a supply of the system impedance:  $|Z_{sys}| = 0.083964 \Omega$  or less. Before connecting the product to public power network, please consult your local power supply authority to ensure the power network meet above requirement.

**The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details. Any updates to the manual will be uploaded to the service website, please check for the latest version.**

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