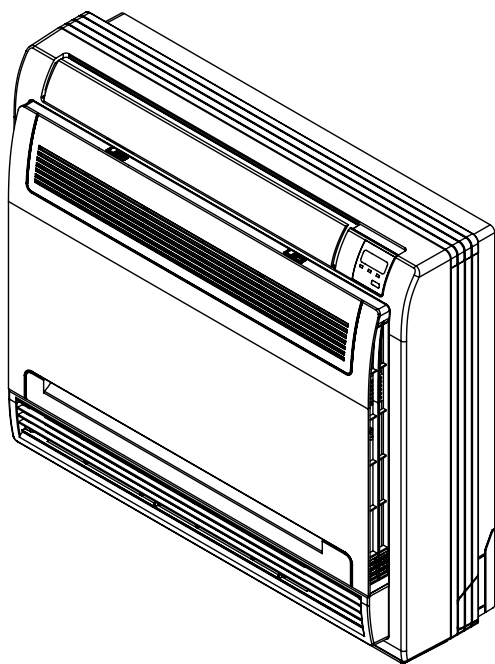




# Installation Manual

## Wall Ceiling air handler

**Model**  
**BM18MFCC**



### **IMPORTANT NOTE:**

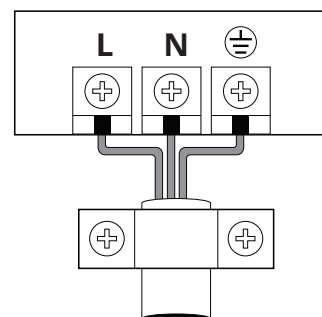
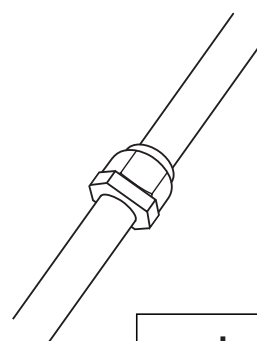
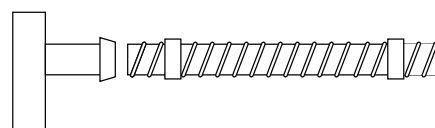
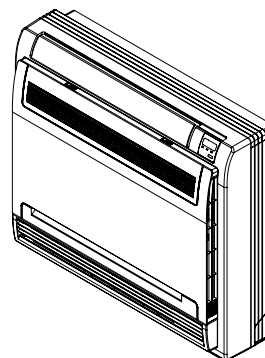
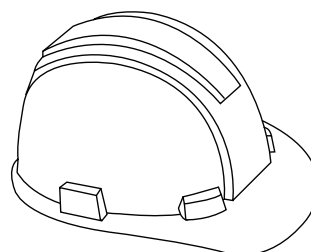
Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.



# Table of Contents

## Installation Manual









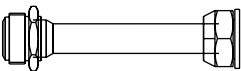
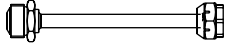
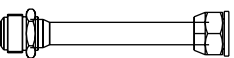

1	Accessories .....	03
2	Safety Precautions .....	04
3	Installation Summary - Indoor Unit.....	05
4	Indoor Unit Installation .....	06
	Indoor Unit Parts .....	07
	Indoor Unit Installation Instructions .....	08
5	Drainpipe Installation .....	09
6	Refrigerant Piping Connection .....	11
	Note on Pipe Length .....	11
	Connection Instructions .....	11
7	Wiring.....	14



# 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 adaptor 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 adaptor 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

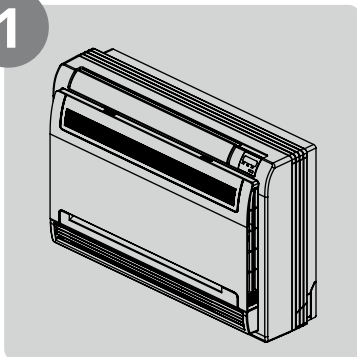
1. This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, service, maintenance and repair of this unit must be performed by a certified technician.
3. Product uninstallation 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

3

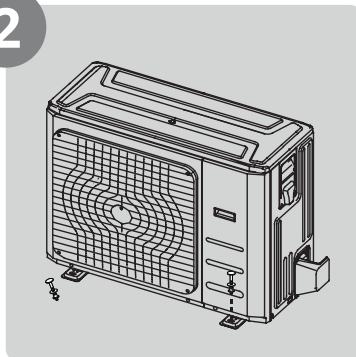
## INSTALLATION ORDER

1



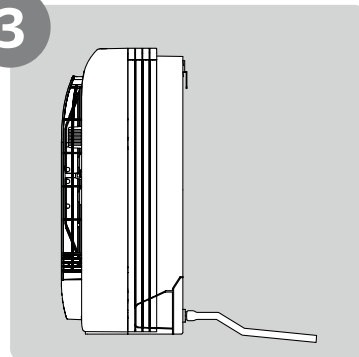
**Install the indoor unit  
(Page 7)**

2



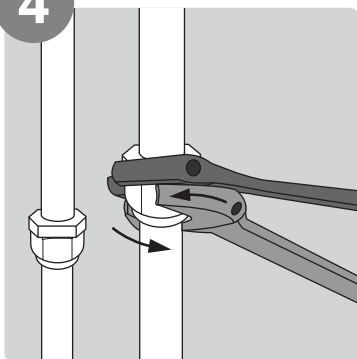
**Install the outdoor unit  
(Separate Manual)**

3



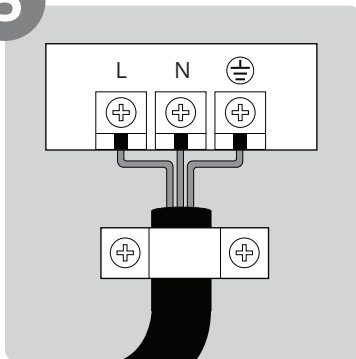
**Install the drainpipe  
(Page 11)**

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

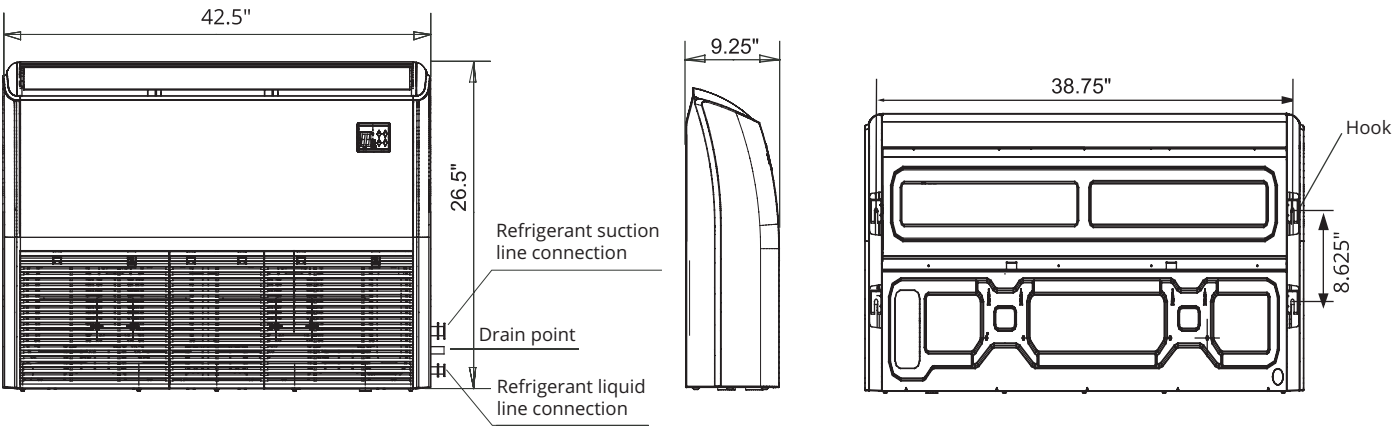
### WARNING

- 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



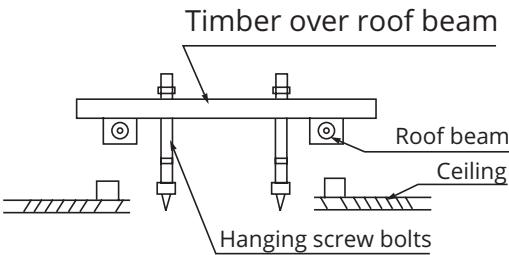
Indoor Unit  
Installation

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.

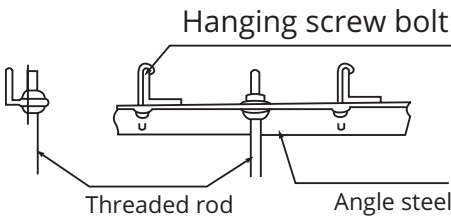
WOODEN ROOF

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



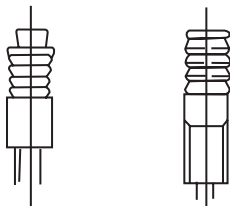
STEEL ROOF BEAM STRUCTURE

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



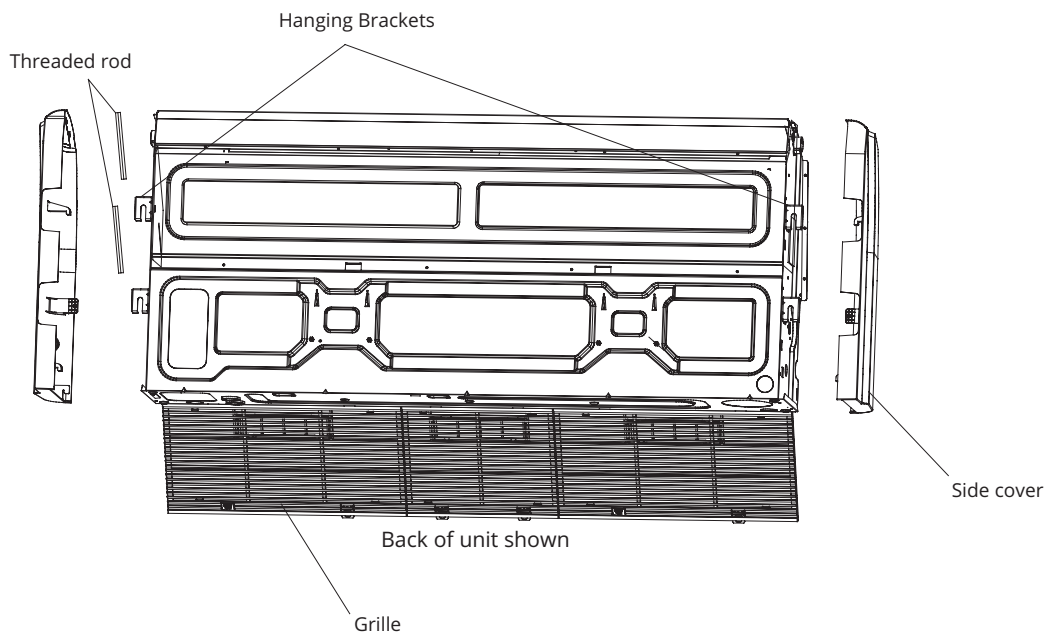
CONCRETE SLAB

Use concrete anchors that accommodate M10 or M8 threaded rod.

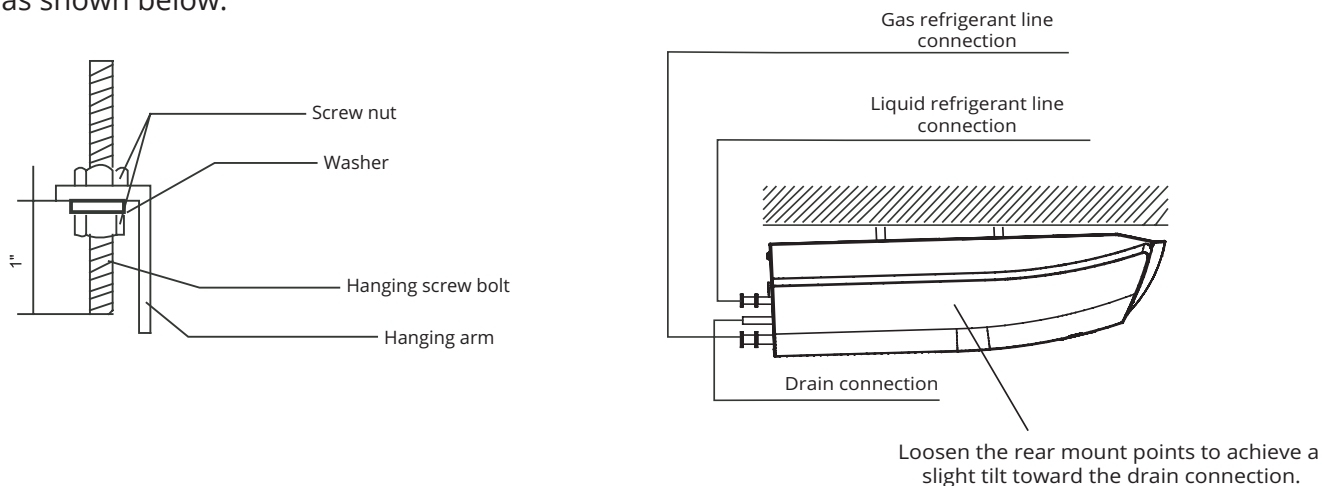


## Ceiling Installation cont'd

- Remove the side covers and the grille.

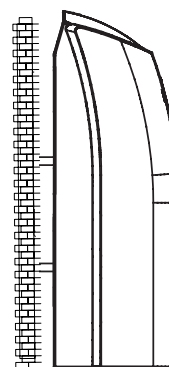


- Bolt the threaded rod to the hanging bracket as shown below.



## 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)

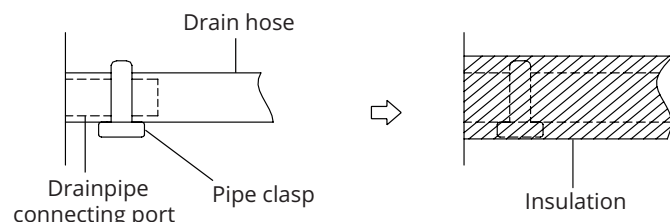


Fig. 5.1

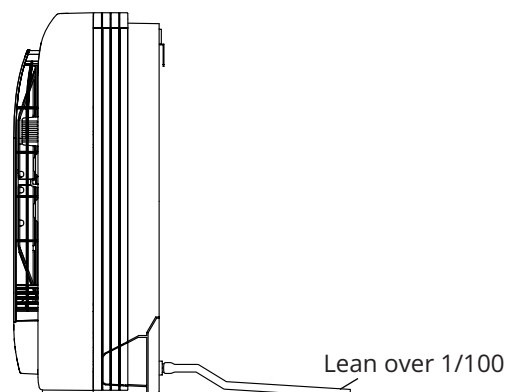


Fig. 5.2

## 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.

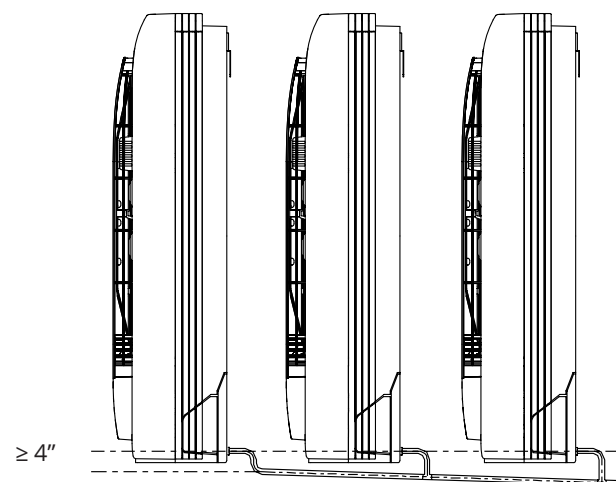
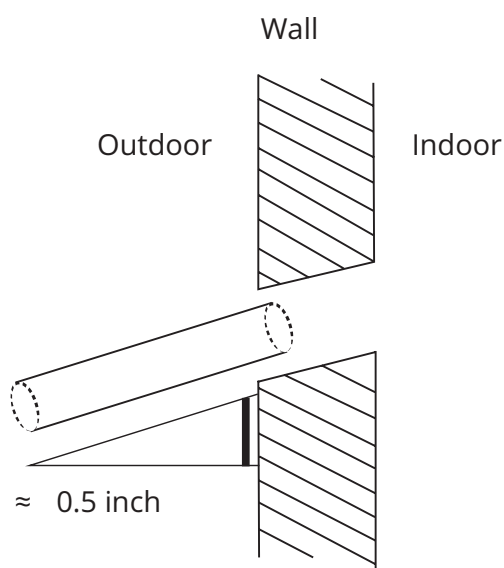


Fig. 5.3

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**

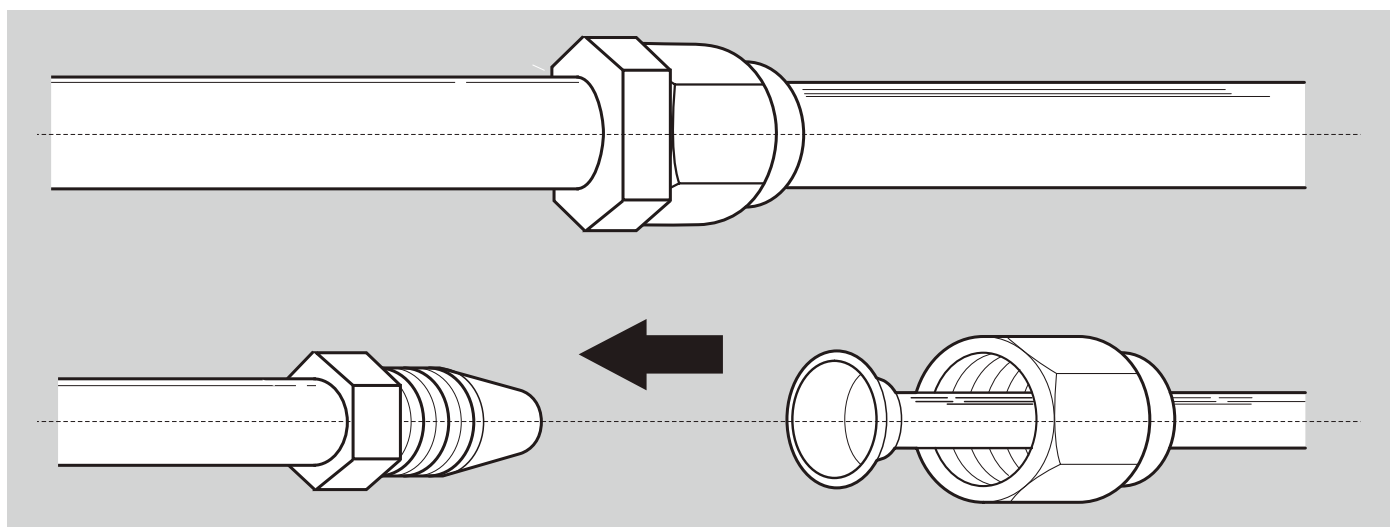
**NOTE:** When drilling the hole, make sure to avoid wires, plumbing, and other sensitive components.

4. 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.

- 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. Refer to **Fig. 6.1** for bad cut examples.

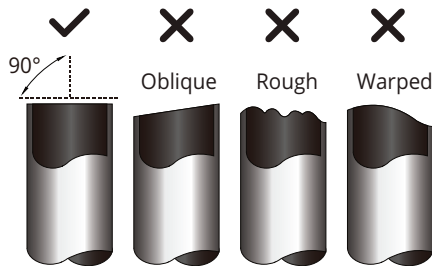


Fig 6.1

**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.

- 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.

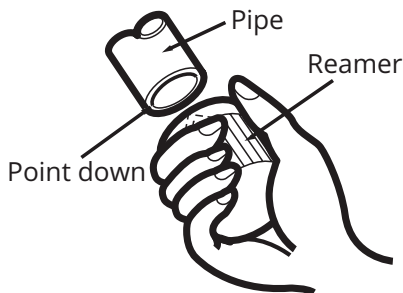


Fig 6.2

**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. 6.3**.

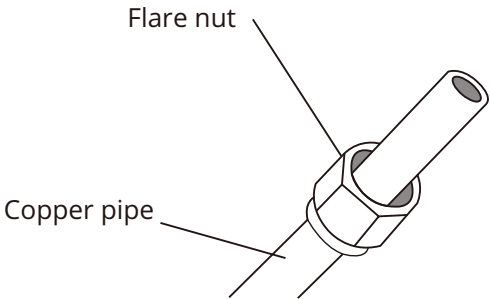


Fig 6.3

- 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 edge of the flare form in accordance with the dimensions shown in the table below.

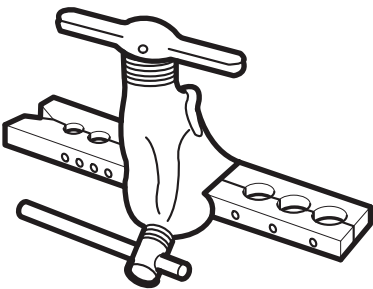


Fig 6.4

**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	

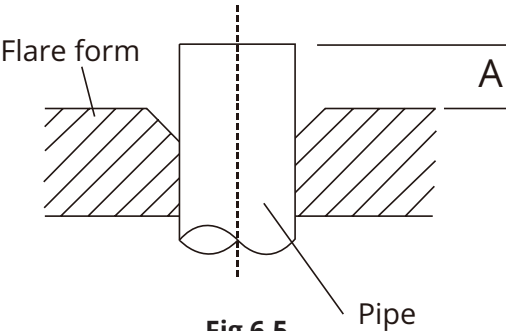


Fig 6.5

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 4in. See **Fig.6.6**.

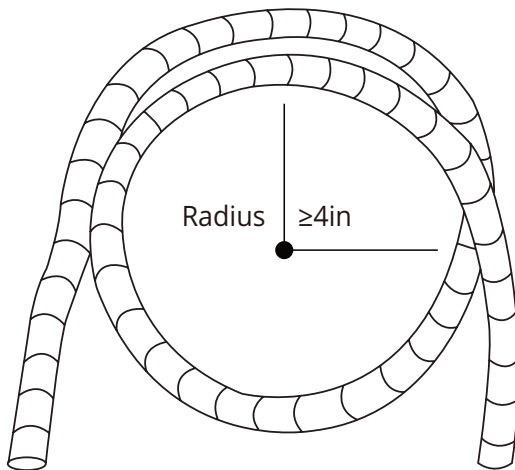


Fig 6.6

### 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

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

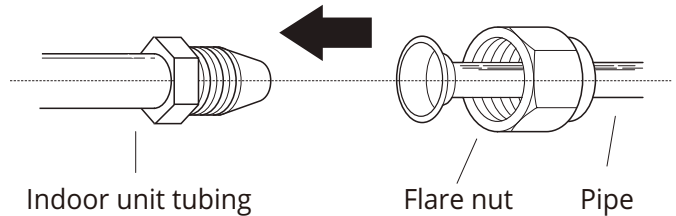


Fig 6.7

2. Tighten the flare nut as tightly as possible by hand.
3. Using a spanner, grip the nut on the unit tubing.
4. 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.

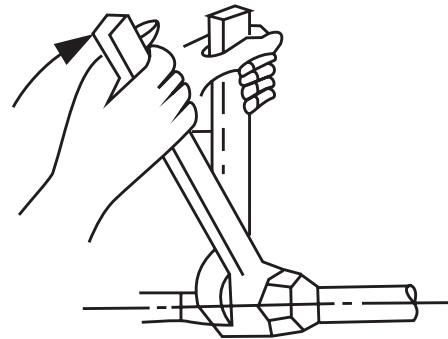


Fig 6.8

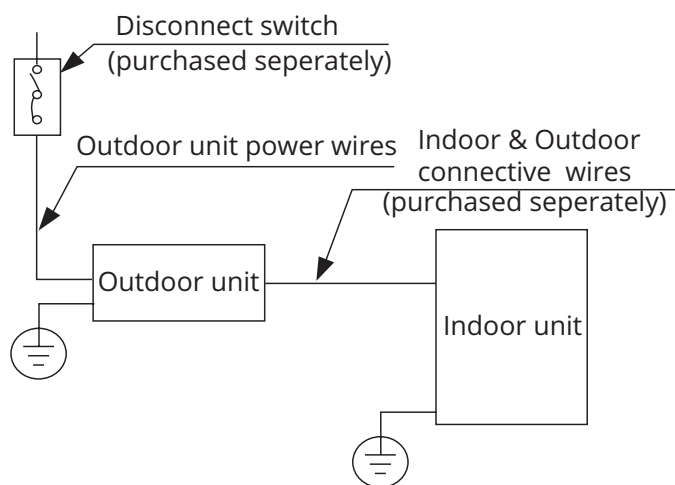
## ⚠ BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS

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.

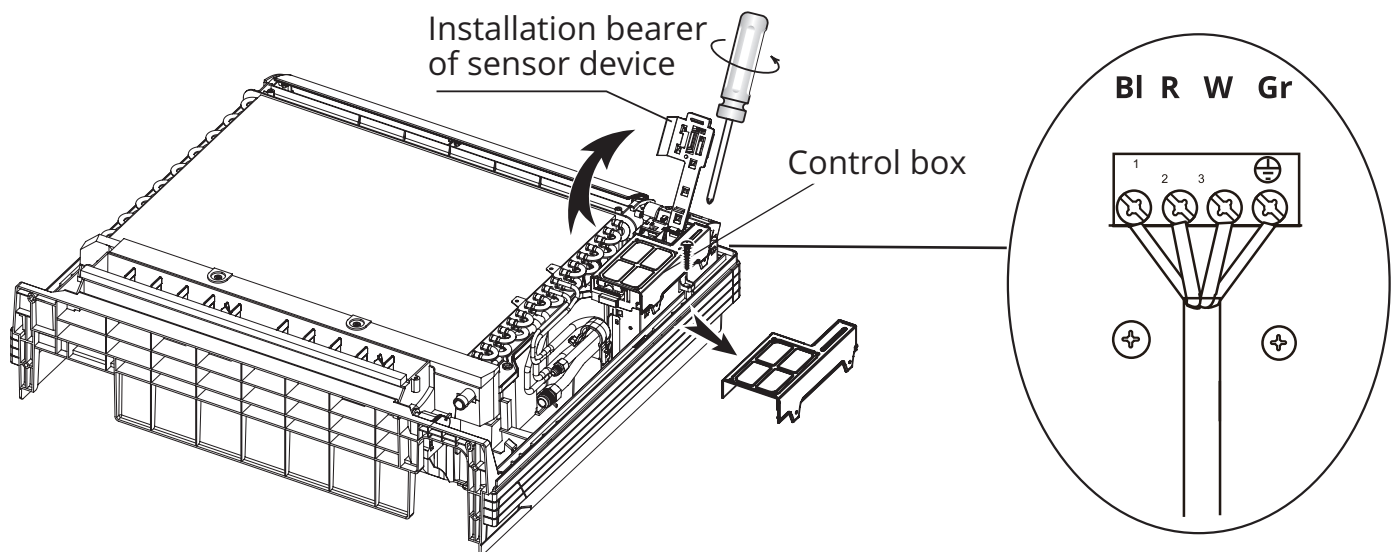


### WARNING

**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**