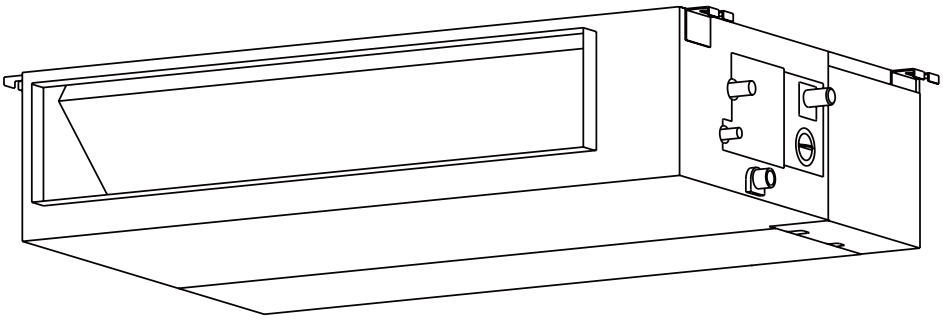
BLUERIDGE®

Concealed Ducted Inside Air Handler Installation Manual

Models:
BM12MCD
BM18MCD



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

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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**.

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

This symbol indicates that you must 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

- ⊘ 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.
- ⊘ **Do not** allow children to play with the air conditioner. Children must be supervised around the unit at all times.

1. Installation must be performed by qualified personnel, according to the installation instructions. Defective 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.)
2. Contact an authorized service technician for repair or maintenance of this unit.
3. 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.
4. 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.
5. For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. You must use an independent circuit and single outlet to supply power. Do not connect other appliances to the same outlet. Insufficient electrical capacity or defects in electrical work can cause electrical shock or fire.

⚠ WARNING

6. For all electrical work, use the specified cables. 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.
7. 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.
8. In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
9. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
10. 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.

ⓘ CAUTION

- ⊘ **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.
- ⊘ **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.

1. The product must be properly grounded at the time of installation, or electrical shock may occur.
2. Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.

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.

Unit Specifications and Features

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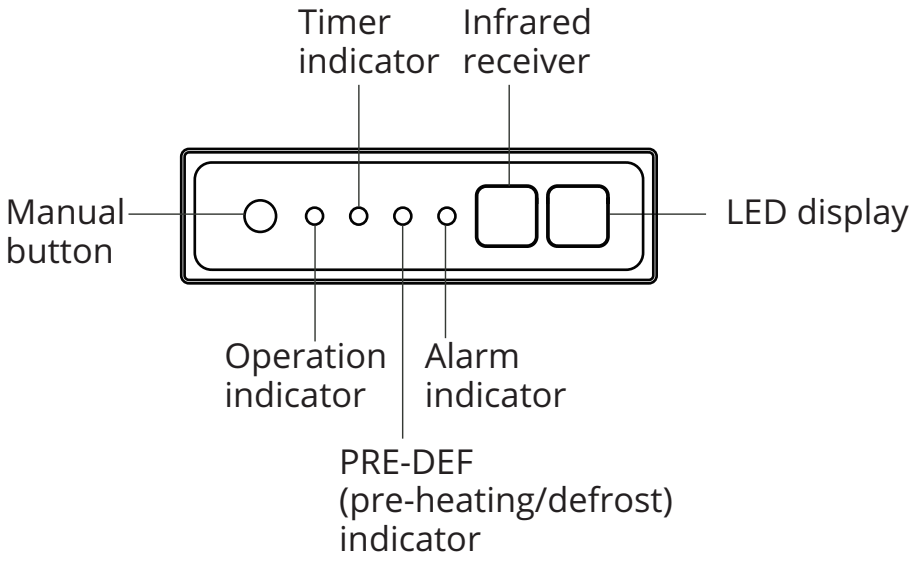
Indoor unit

NOTE: The display panel shown below attaches to the control board inside the concealed ducted unit. The wired remote also must be wired through the display panel. Diagnostic codes shown on the display panel must be read at the unit. The infrared remote control is used for diagnosis only and does not communicate with the wall mounted controller.

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	62°F - 90°F	32°F - 86°F	50°F - 90°F
Outdoor Temperature	5°F - 122°F (For models with low ambient cooling.)	5°F - 75°F	32°F - 122°F

FOR OUTDOOR UNITS WITH AUXILIARY ELECTRIC HEATER

When outside temperature is below 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.

Other features

Default Setting

When the air conditioner restarts after a power failure, it will default to the factory settings (AUTO mode, AUTO fan, 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.

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 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.

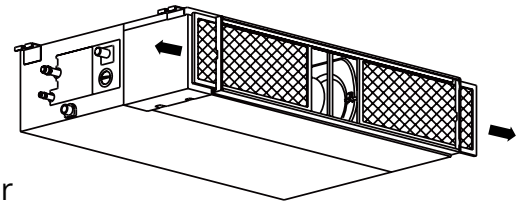
⚠ WARNING: DO NOT REMOVE OR CLEAN THE FILTER BY YOURSELF

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

1. If you plan to do a ducted return, remove the filter and re-install at the wall register. Do not leave the filter inside the plenum or maintenance will be too difficult to perform.
2. Refer to the following diagrams for direct return installations. Remove the filter in the direction shown based on how you configure the unit.
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.

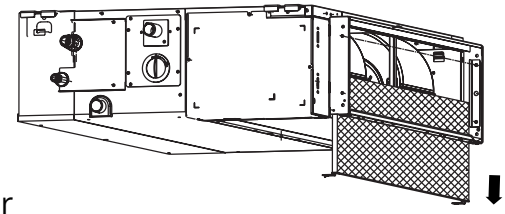
Rear ventilated model

(A)



or

(B)



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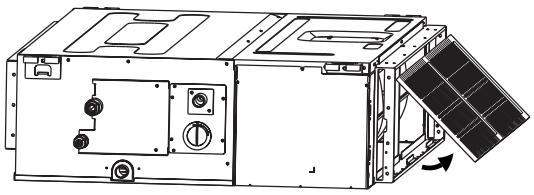
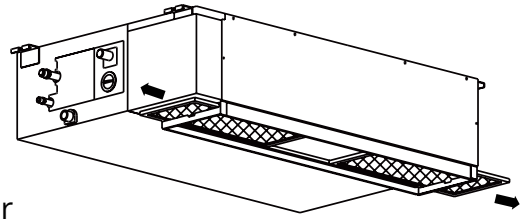
(C)



Descending ventilated model

(A)



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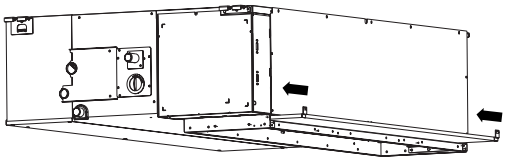
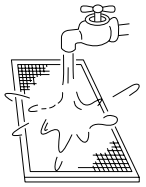
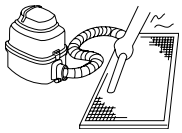


If using water, the inlet side should face down and away from the water stream.	If using a vacuum cleaner, the inlet side should face the vacuum.
	

CAUTION

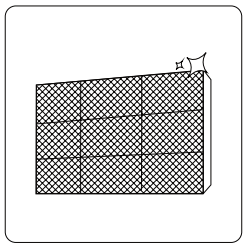
- Before changing the filter or cleaning, turn off the unit and disconnect its power supply.
- When removing filter, do not touch metal parts in the unit. The sharp metal edges can cut you.
- Do not use water to clean the inside of the indoor unit. This can destroy insulation and cause electrical shock.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

CAUTION

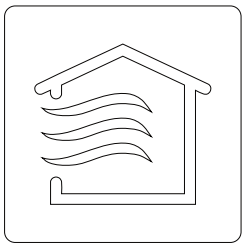
- Any maintenance and cleaning of outdoor unit should be performed by an authorized dealer or a licensed service provider.
- Any unit repairs should be performed by an authorized dealer or a licensed service provider.

Maintenance – Long Periods of Non-Use

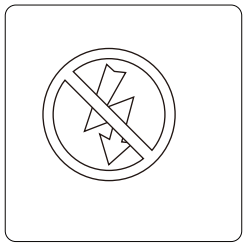
If you plan not to use your air conditioner for an extended period of time, do the following:



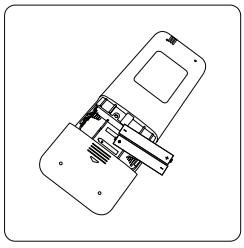
Clean all filters



Turn on FAN function until unit dries out completely



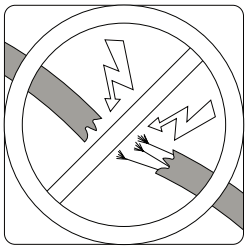
Turn off the unit and disconnect the power



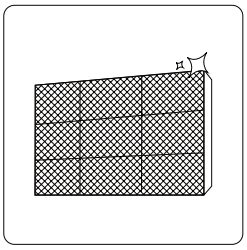
Remove batteries from remote control

Maintenance – Pre-Season Inspection

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

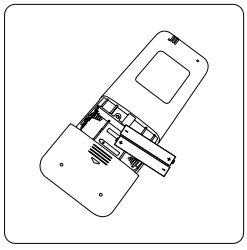


Check for damaged wires

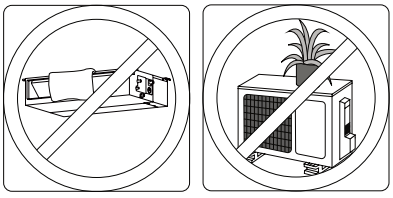


Clean all filters

Check for leaks



Replace batteries



Make sure nothing is blocking all air inlets and outlets

Troubleshooting

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SAFETY PRECAUTIONS

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

- 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
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 defrost cycle is activated in order to defrost the unit.
The unit changes from COOL/HEAT mode to FAN mode	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.
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.
The indoor unit makes noises	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.
Both the indoor unit and outdoor unit make noises	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
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.

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.

Issue	Possible Causes	Solution
Poor Cooling Performance	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

Issue	Possible Causes	Solution
The unit is not working	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
Poor Cooling Performance	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
Poor heating performance	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
Indicator lamps continue flashing	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.	
Error code appears and begins with the letters as the following in the window display of indoor unit: **E(x), P(x), F(x)** **EH(xx), EL(xx), EC(xx)** **PH(xx), PL(xx), PC(xx)**		

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

Accessories

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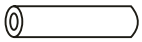
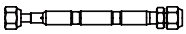
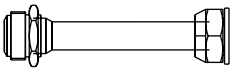
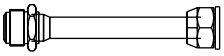
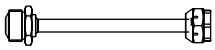
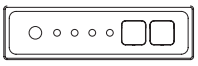
The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail. The items are not included with the air conditioner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

Name	Q'ty(pc)	Shape	Name	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 (Φ12.7-Φ15.9) (some models)	1		**Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.) (some models)**		
Transfer connector (Φ9.52-Φ12.7) (some models)	1				
Transfer connector (Φ6.35-Φ9.52) (some models)	1		**Cord protection rubber ring (some models)**	1	
Display panel *used for testing and connecting wall controller	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	Model	Size	
Insulated copper refrigerant tubing	BM12MCD BM18MCD liquid line	1/4"	Parts you must purchase separately. Consult the dealer about the proper pipe size for the unit you purchased.
	BM12MCD BM18MCD suction line	1/2"	

Installation Summary

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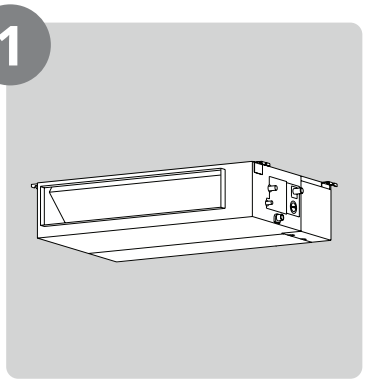
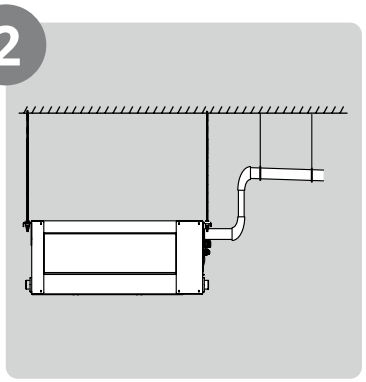
1



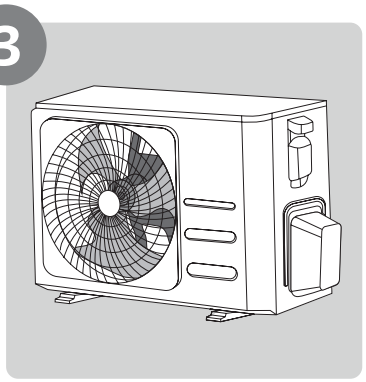
Install the indoor unit

2



Install the drainpipe

3



Install the outdoor unit

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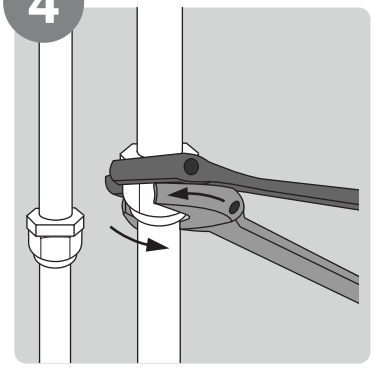

Connect the refrigerant pipes

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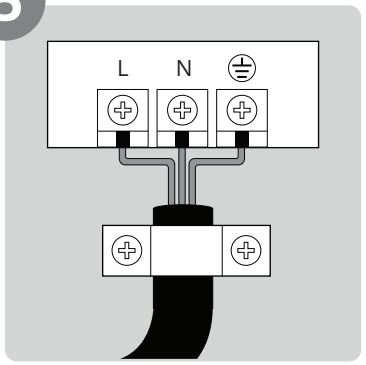

Connect the wires

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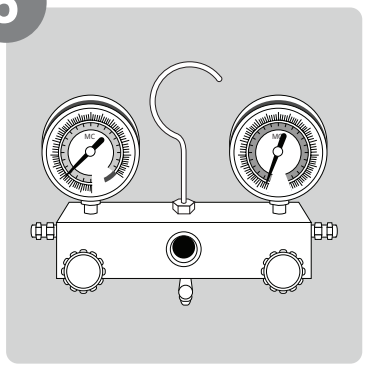


Evacuate the refrigeration system

Unit Parts

7

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.

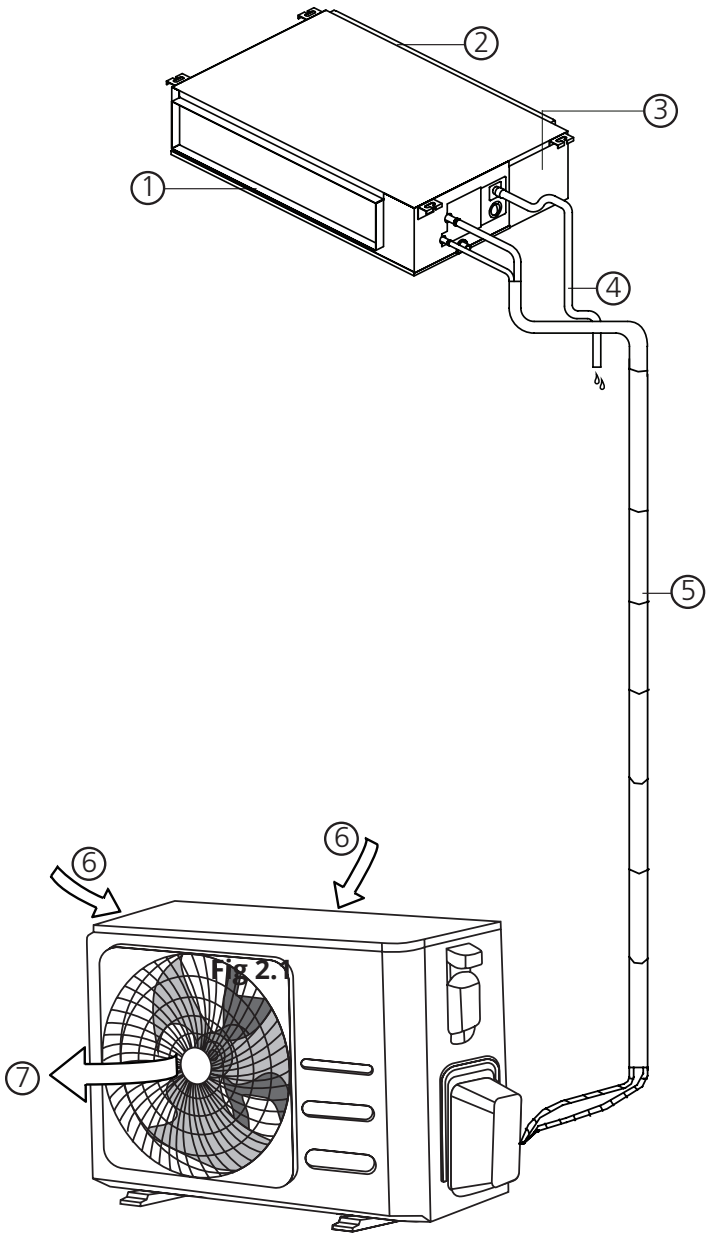


Fig 2.1

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

8

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.

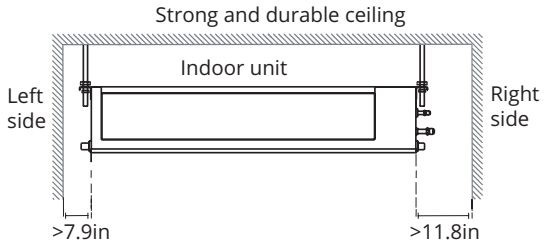
Proper installation locations meet the following standards:

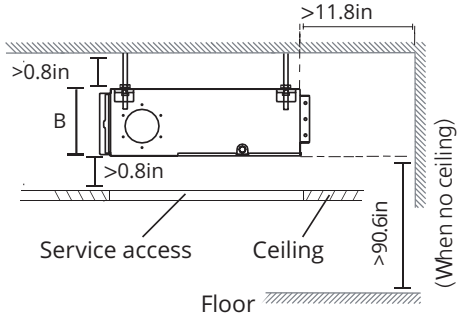
- ☐ Enough room exists for installation and maintenance.
- ☐ Enough room exists for the connecting the pipe and drainpipe.
- ☐ The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- ☐ The air inlet and outlet are not blocked.
- ☐ The airflow can fill the entire room.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

<u>DO NOT</u> install unit in the following locations:

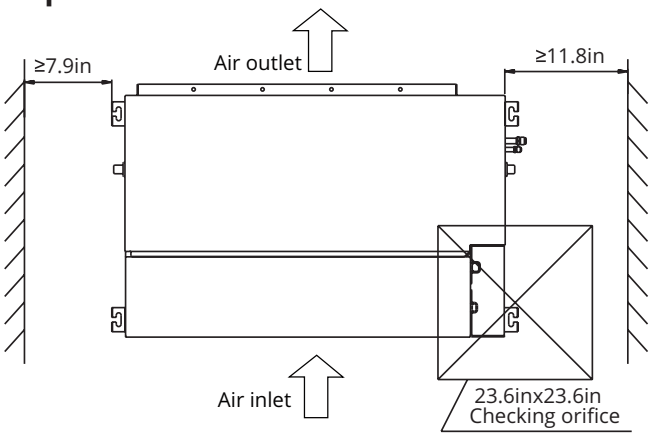
- ⊘ Areas with oil drilling or fracking
- ⊘ Coastal areas with high salt content in the air
- ⊘ Areas with caustic gases in the air, such as hot springs
- ⊘ Areas that experience power fluctuations, such as factories
- ⊘ Enclosed spaces, such as cabinets
- ⊘ Kitchens that use natural gas
- ⊘ Areas with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

Installation place





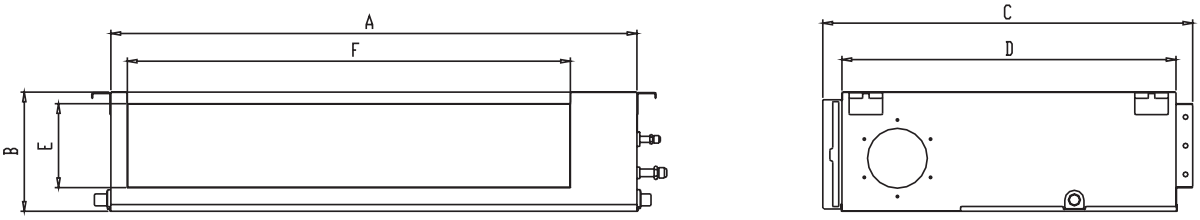
Maintenance space



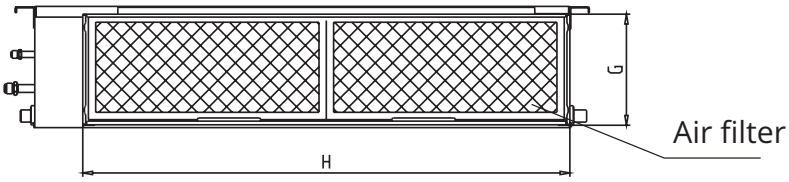
Step 2: Hang indoor unit

1. Please refer to the following diagrams to mark the drill location of ceiling anchors.

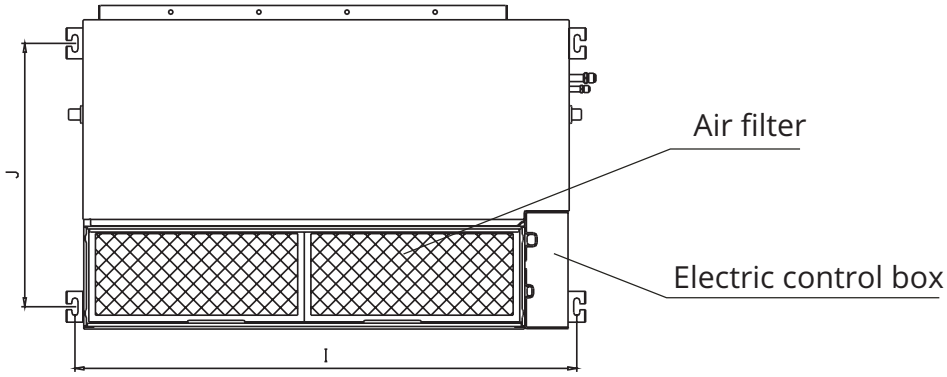
Air outlet dimensions



Air inlet dimensions



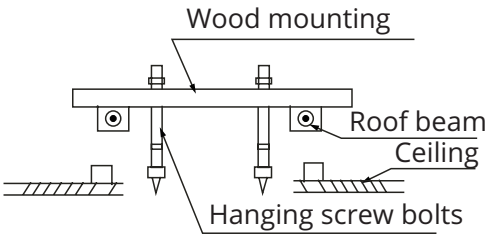
Descending ventilation opening and mount points



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
12K	27.6	7.9	19.9	17.7	6	21.1	7.3	23.6	29.2	14.2
18K	34.6	8.3	26.5	23.6	5.4	27.8	7.5	30.8	36.2	20

Wooden hanging support structure

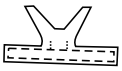
Perform any necessary framing, then bolt through threaded rod to match the mount points



Cement above drop ceiling

Use concrete anchors.

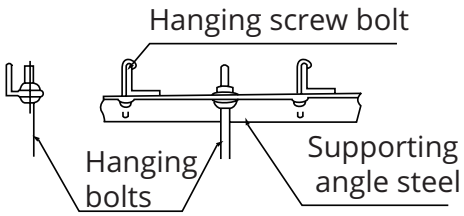
(Blade shape insertion)



(Slide insertion)

Steel roof beam structure

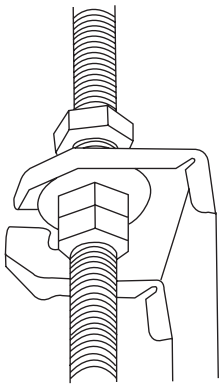
Install and use the supporting steel angle.



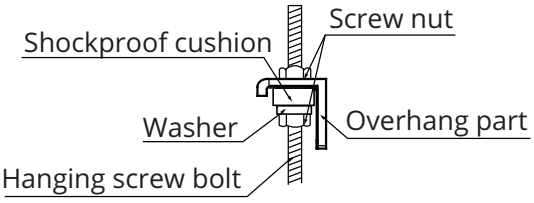
CAUTION

Insure that your threaded rod is completely vertical and level at all 4 corners.

2. Install and t 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. 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.
4. Drill 4 holes 4" deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
5. Secure the bolt using the washers and nuts provided.
6. Install the four suspension bolts.
7. 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.



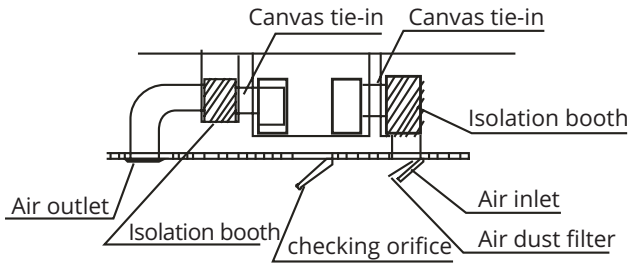
8. Mount the indoor unit onto the hanging screw bolts with a block. Position the indoor unit flat using a level indicator to prevent leaks.



NOTE: Confirm the minimum drain tilt is 1/100 or more.

Step 3: Duct and accessories installation

1. Install the filter at the register for maintenance access, or on the unit if direct return.
2. Install field-supplied fiberboard supply and return plenums (if any).
3. The air inlet and air outlet duct should be far enough apart enough to a 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 (in.wg)
12k	0~0.2
18k	0~0.4

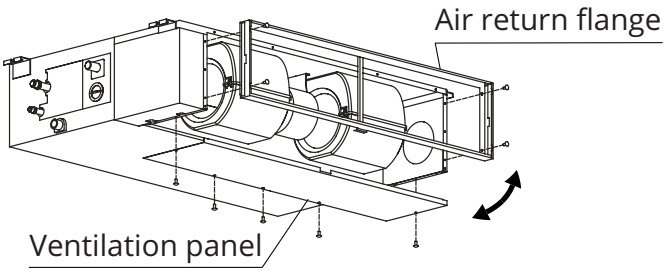
Change the fan motor static pressure according to external duct static pressure.

NOTE:

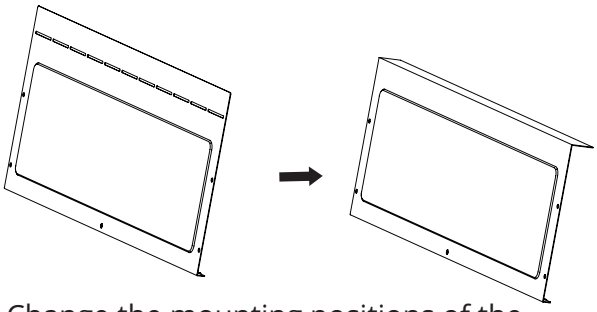
1. Do not place the connecting duct weight on the indoor unit.
2. When connecting the duct, use an nonflammable canvas tie-in to prevent vibrating.
3. Insulation foam must be wrapped outside the duct to avoid condensate. An internal duct underlayer can be added to reduce noise, if the end-user requires.

Step 4: Instructions for converting from rear air return to bottom air return

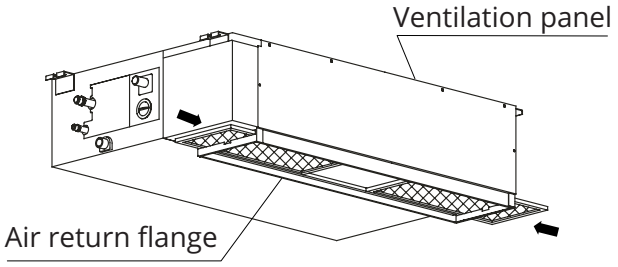
1. Take off the ventilation panel and flange.



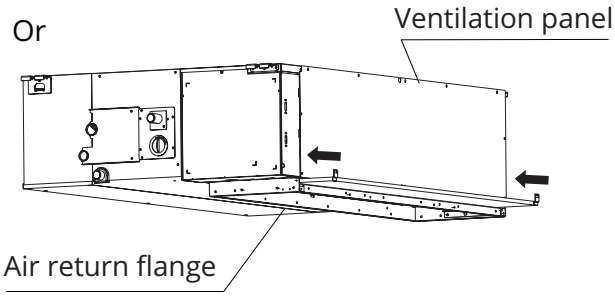
Bend the rear ventilation panel 90 degrees along the dotted line into a descending ventilation panel. (some models)



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

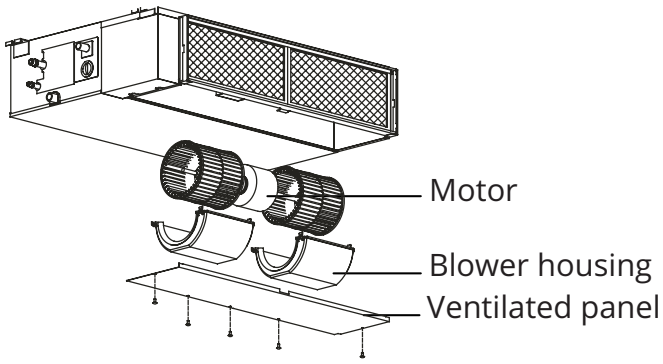


NOTE: All the figures in this manual are for demonstration purposes only. The air conditioner you have purchased may be slightly different in design, though similar in shape.

Step 5: Motor and drain pump maintenance
(the rear ventilated panel is used as an example)

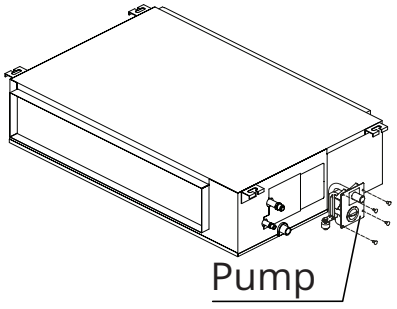
Motor maintenance:

1. Take off the ventilated panel.
2. Take off the blower housing.
3. Take off the motor.



Pump maintainance:

1. Remove four screws from the drain pump.
2. Unplug the pump power supply and water level switch cable.
3. Detach the pump

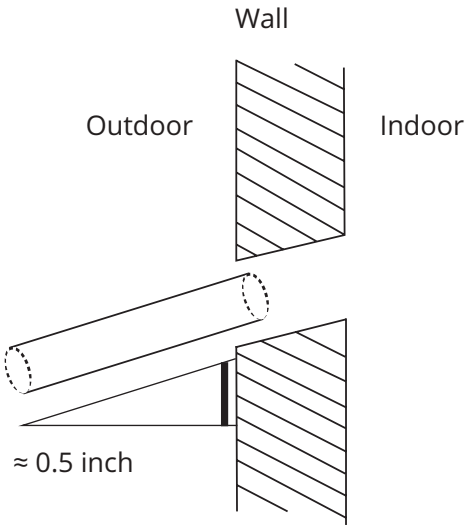


Step 6: Drill wall hole for connective piping

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 2.5in 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 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 7: 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.

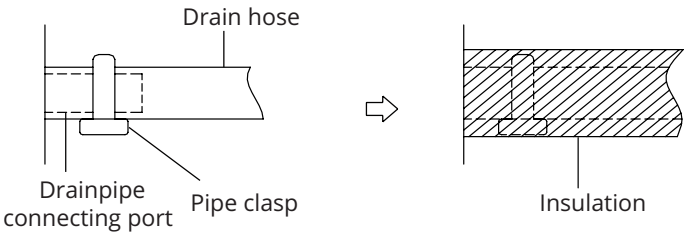
NOTE ON PROPER DRAIN PIPING

Installation requires PVC piping for drainage. Use of flexible plastic drain tubing is discouraged.

Indoor Drainpipe Installation

Install the drainpipe as illustrated in the following Figure.

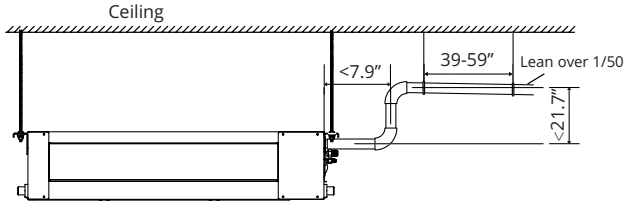
1. Cover the drainpipe with heat insulation to prevent condensation and leakage.
2. Attach the mouth of the drain hose to the unit's outlet pipe. Sheath the mouth of the hose and clip it firmly with a pipe clasp.



NOTE ON PROPER DRAIN PIPING

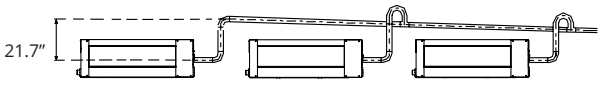
- When using an extended drainpipe, tighten the indoor connection with an additional protection tube. This prevents it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 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 21.7" from the ceiling board. The distance between the unit and the lift pipe must be less than 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 tiled up (<3").

Drainpipe installation for units with a pump



NOTE: When connecting multiple drainpipes, install the pipes as illustrated.

Units with 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 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

9

When connecting refrigerant piping, take care to keep all refrigerant lines clean and clear of debris, moisture and other contaminants. Doing so will help ensure optimal performance and longer service life.

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.

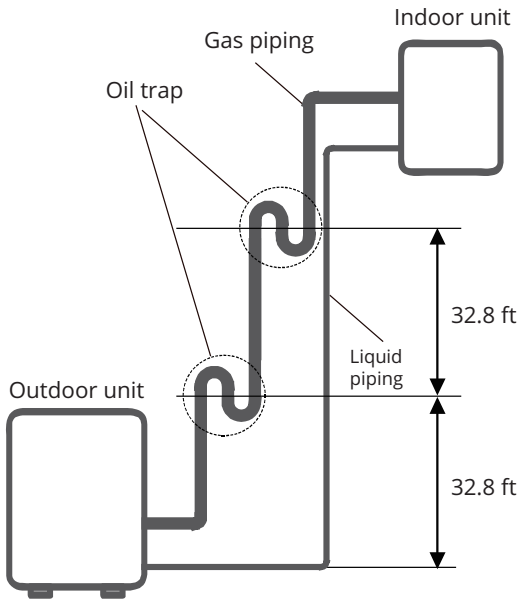
Maximum Length and Drop Height of Refrigerant Piping per Unit Model

Model	Max Length	Max Drop Height	Add'l Refrigerant
9k & 12k	82 feet	33 feet	0.16/ foot
18k	99 feet	66 feet	0.16/ foot
24k	164 feet	82 feet	0.32/ foot

! 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 32.8ft of vertical suction line riser.

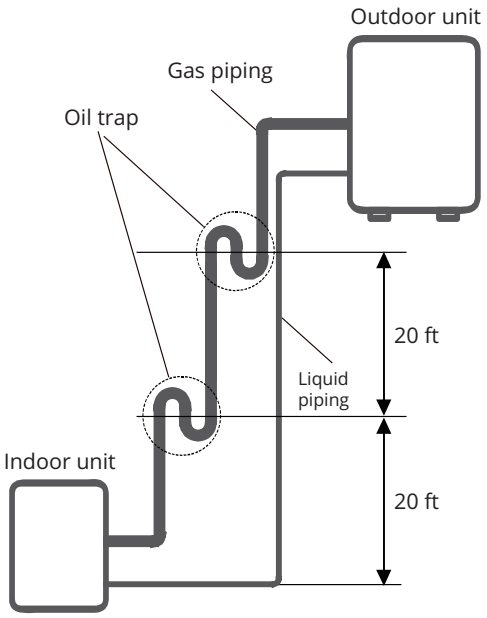


The indoor unit is installed higher than the outdoor unit

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 1500fpm (feet per minute), oil return will be decreased. An oil trap should be installed every 20ft of vertical suction line riser.



The outdoor unit is installed higher than the indoor unit

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. 5.1** for bad cut examples.

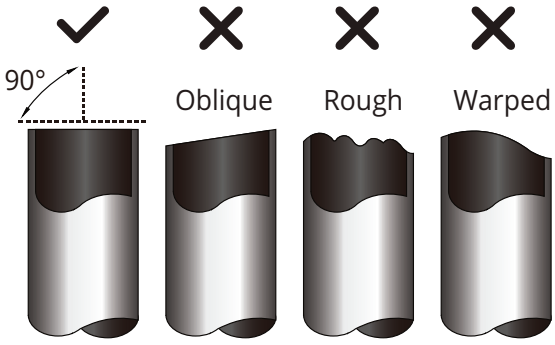


Fig 5.1

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.

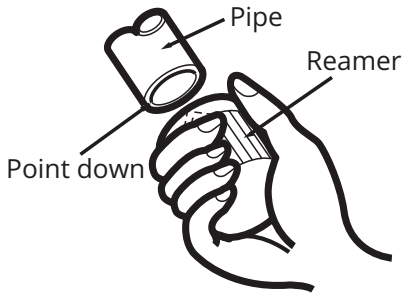


Fig 5.2

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. 5.3**.

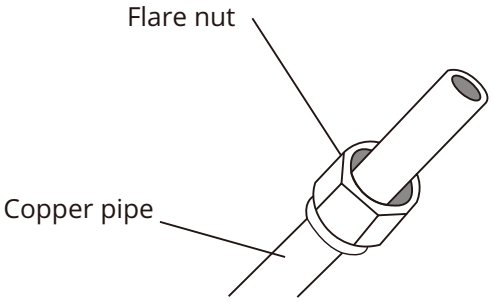


Fig 5.3

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.

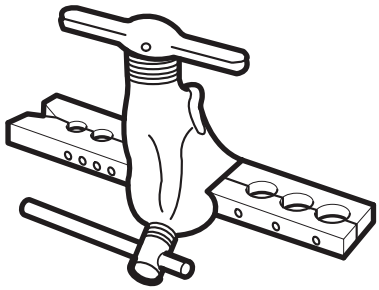
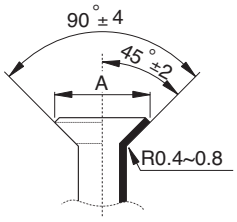


Fig 5.4

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	

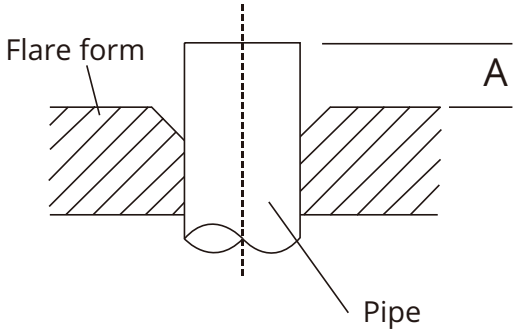


Fig 5.5

1. Place flaring tool onto the form.
2. Turn the handle of the flaring tool clockwise until the pipe is fully flared.
3. 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.5.6**.

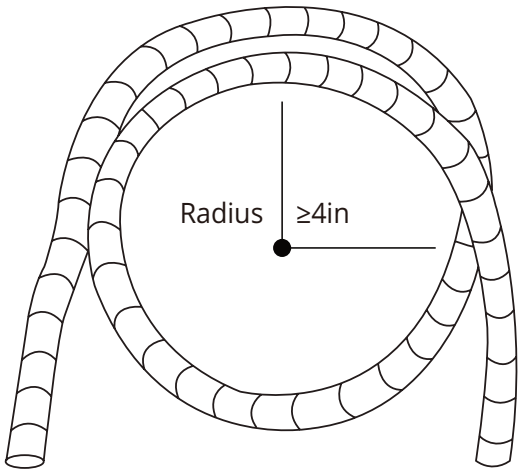


Fig 5.6

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. 5.7**.

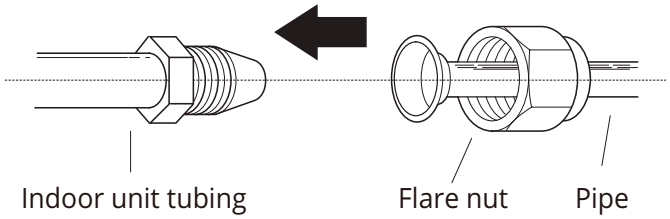


Fig 5.7

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.

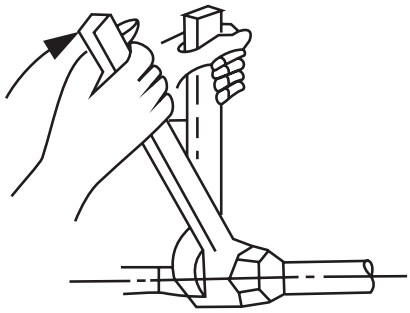


Fig 5.8

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

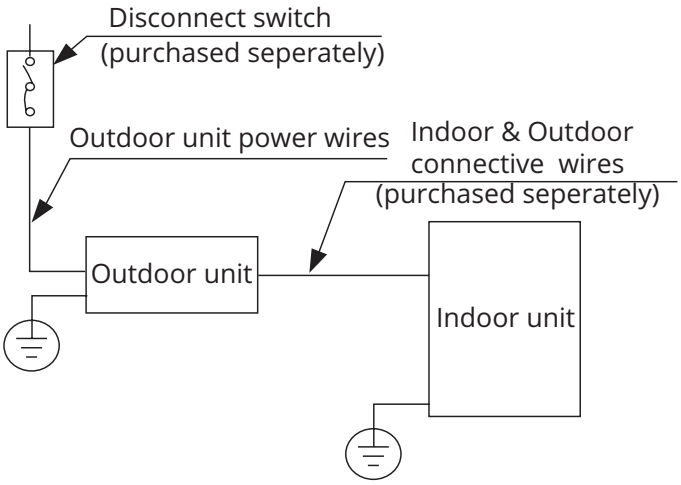
Excessive force can break the nut or damage the refrigerant piping. You must not exceed torque requirements shown in the table above.

Wiring

10

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.



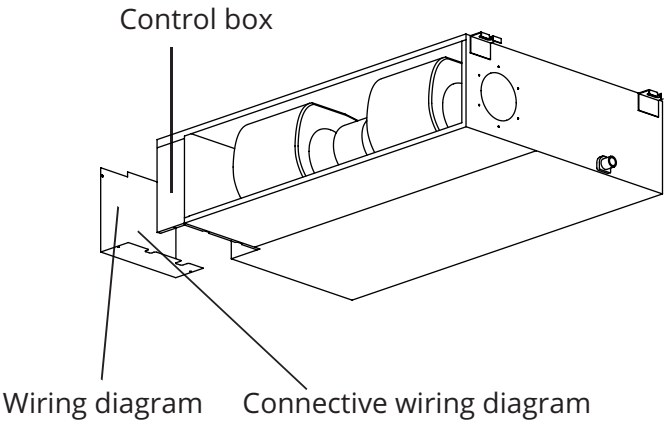
NOTE: This diagram is for explanation purposes only. Your machine may be slightly different.

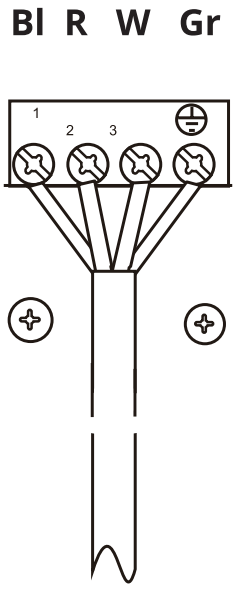
WARNING

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.

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