

## Installer's Manual

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# Split System (R-410A)

*Air Handler for  
Multi-Split*

*Inverter System*  
9,000 Btu/h to 24,000 Btu/h

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The manufacturer has a policy of continuous data improvement and it reserves the right to change design and specifications without notice. We are committed to using environmentally conscious print practices.

MS-SVN34D-EN 11 Jun 2020  
Supersedes MS-SVN34C-EN (January 2016)

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## Ceiling Concealed Type Models:

4MXD8509A10N0  
4MXD8512A10N0  
4MXD8518A10N0  
4MXD8521A10N0  
4MXD8524A10N0

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June 2020

MS-SVN34D-EN

# Warnings and Cautions

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**Warnings and Cautions.** Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

**Attention:** Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

**⚠ WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE:** Indicates a situation that could result in equipment or property-damage only accidents.

## **⚠ WARNING**

**This equipment is to be serviced by professionally trained personnel ONLY. Under NO circumstances should an unqualified person service it. This equipment contains refrigerant under PRESSURE and operates at HIGH VOLTAGE. Improperly installed, adjusted or altered equipment by an unqualified person poses safety hazards including FIRE, ELECTROCUTION, or EXPLOSION, which could result in death or serious injury.**

## **⚠ WARNING**

**Electrocution and Fire Hazards with Improperly Installed and Grounded Field Wiring!**

**Improperly installed and grounded field wiring poses FIRE & ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring MUST be performed by qualified personnel. Failure to follow these requirements could result in death or serious injury.**

# Warnings and Cautions

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## WARNING

### **R-410A Refrigerant under Higher Pressure than R-22!**

The units described in this manual uses R410-A refrigerant which operates at 50 to 70% higher pressures than R-22. Use only R-410A approved service equipment. Refrigerant cylinders are painted with "pink" color to indicate the type of refrigerant and may contain a "dip" tube to allow for charging of liquid refrigerant into the system. For specific handling concerns with R-410A, please contact your local sales office.

Failure to use R-410A approved service equipment could result in standard equipment exploding under R-410A higher pressure which could result in death or serious injury.

### *NOTICE*

### **Use PVE Oil with R-410A Mini Split Units!**

Most R-410A mini-splits use a PVE oil (Polyvinyl Ether Oil) that readily absorbs moisture from the atmosphere. To limit this "hygroscopic" action, the system should remain sealed whenever possible. If a system has been open to the atmosphere for more than 4 hours, the compressor oil must be replaced. Never break a vacuum with air and always change the driers when opening the system for component replacement. For specific handling concerns with the PVE oil, contact your local sales office.

**USE ONLY THE FACTORY RECOMMENDED - DAFNE HERMETIC OIL FV50S - for servicing these units.**

### **Important!**

### **Environmental Concerns**

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain chlorofluorocarbons (CFC's) and those containing hydrochlorofluorocarbons (HCFC's). Not all refrigerants containing these compounds have the same potential impact to the environment. The Company advocates the responsible handling of all refrigerants, including industry replacements for CFC's such as HCFC's and HFC's.

### **Responsible Refrigerant Practices**

The manufacturer believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

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## Safety Precautions

Warnings, Cautions and Notices: Warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in serious injury or death. Cautions are designed to alert personnel to conditions that could result in minor to moderate injury. Notices alert to the possibility of equipment and/or property damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

 <b>WARNING</b>	This mark indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	This mark indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.
<b>NOTICE</b>	This mark indicates a situation which could result in equipment and/or property damage

 <b>WARNING</b>	
1.	Installation should be left to the dealer or another professional. Improper installation may cause water leakage, electrical shock or fire.
2.	Install the air conditioner according to the instructions given in this manual. Incomplete installation work may cause water leakage, electrical shock or fire.
3.	Be sure to use the supplied or specified installation parts. Use of other parts may cause the unit to come loose, resulting in water leakage, electrical shock or fire.
4.	Install the air conditioner on a solid base that can support the weight of the unit. An inadequate base or incomplete installation may cause injury or property damage in the event the unit falls off of the base.
5.	Electrical work should be carried out in accordance with the installation manual and local, state and National Electric Code (NEC). Insufficient capacity or incomplete electrical work may cause electrical shock or fire.
6.	Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.
7.	For wiring, use a cable that is long enough to cover the entire distance without a splice. Do not use an extension cord. Do not put other loads on the power supply, use a dedicated power circuit. (Failure to do so may cause abnormal heat, electric shock or fire.)
8.	Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the interconnecting wires so their terminals receive no external stresses. Incomplete connections or clamping may cause terminal overheating or fire.
9.	After connecting the interconnecting and supply wiring, be sure to shape the cables so that they do not put undue force on the electrical covers or panels. Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock or fire.
10.	After all installation is complete, check to make sure that there is no refrigerant leakage.
11.	If any refrigerant has leaked out during the installation work, ventilate the room. (The refrigerant produces a toxic gas if exposed to flames.)
12.	When installing or relocating the system, be sure to keep the refrigerant circuit free from substances other than the specified refrigerant (R410-A), such as air. (Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.)

## Ceiling Concealed Unit

13. During pump-down, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump-down, air will be sucked in when the refrigerant piping is removed, causing abnormal pressure in the refrigerant cycle which could lead to breakage and even injury.
14. During installation, attach the refrigerant piping securely before running the compressor. If the compressor is not attached and the stop valve is open during pump-down, air will be sucked in when the compressor is run, causing abnormal pressure in the refrigerant cycle which could lead to breakage and even injury.
15. Be sure to establish a ground. Do not ground the unit to a utility pipe, arrester, or telephone ground. Incomplete ground may cause electrical shock, or fire. A high surge current from lightning or other sources may cause damage to the air conditioner.
16. Be sure to follow your local, state and National Electric Codes when grounding this unit.
17. This appliance is not intended for use by persons with a 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.
18. Children should be supervised to ensure that they do not play with the appliance.
19. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid electrical risk during and after replacement.

### CAUTION

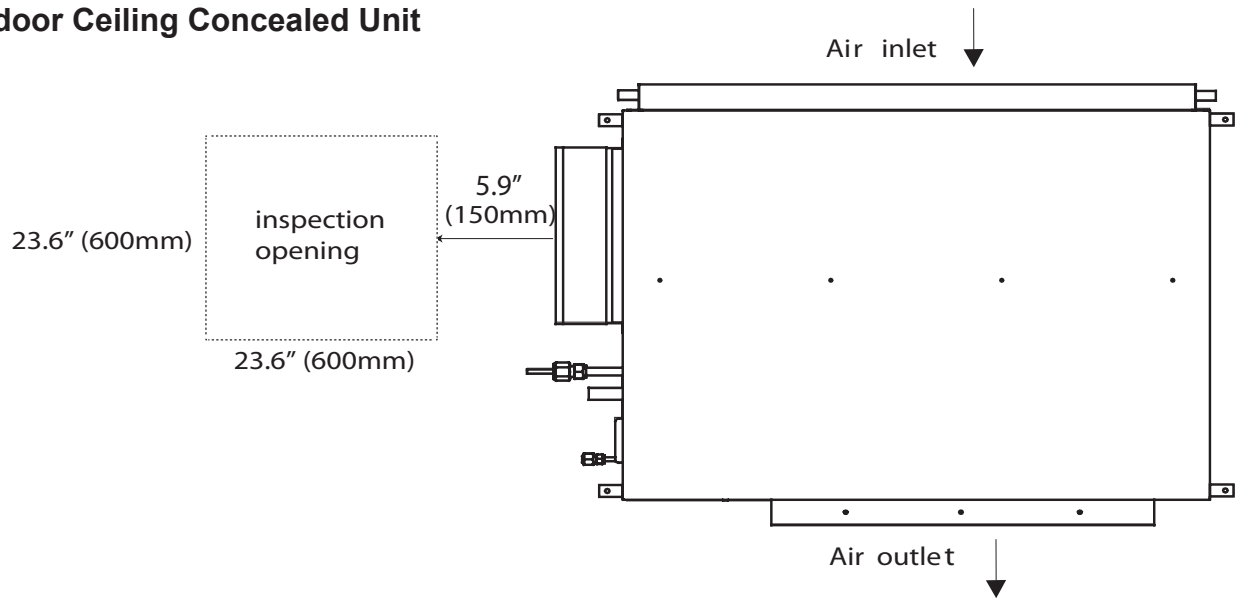
Do not install the air conditioner in a place where there is danger of exposure to flammable gas leakage. If gas leaks and builds up around the unit, it may result in fire.

### NOTICE

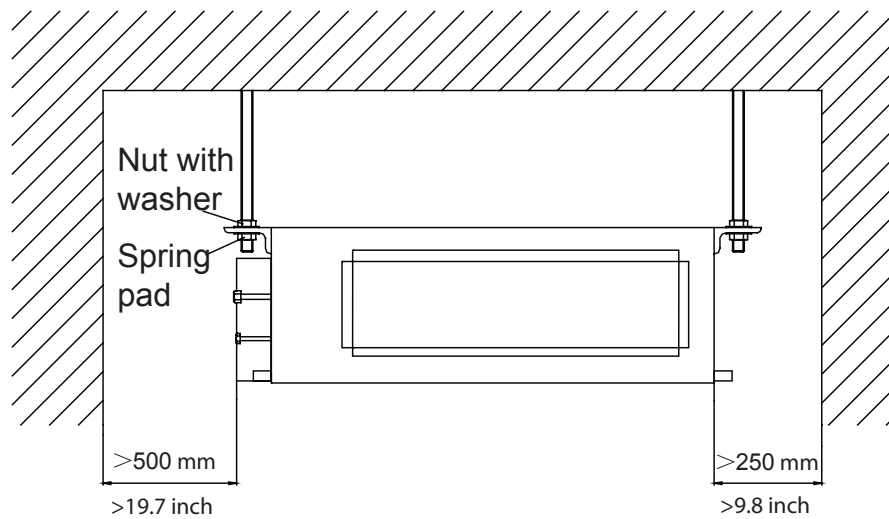
1. Establish drain piping according to the instructions in this manual. Inadequate piping may cause flooding.
2. Tighten the flare nut according to the specified method such as with a torque wrench. If the flare nut is tightened too hard, the flare nut may crack and cause refrigerant leakage.

## Clearance Requirements

### Indoor Ceiling Concealed Unit



**NOTE:** Be sure to place an inspection/service opening at the position indicated in the diagram above for maintenance of the equipment.



**NOTE:** The minimum distance from the floor to the bottom of the unit is 5.6 feet (1.7m). The maximum distance from the floor to the bottom of the unit is 13 feet (4m) for adequate comfort control.

# Ceiling Concealed Unit

## Installation Location

### Indoor Unit



- |   |
|---|
| 1. Adequate Support Required!   |
| 2. The wall/ceiling structure must be adequate to support the weight of the unit. Failure to ensure adequate structural support could result in the unit falling from its location which could result in death, serious injury, or equipment or property-only damage. |

1. Avoid locating the indoor unit where the return and/or supply air may be obstructed
2. Select a location where it is easy to drain the condensing water and connect to the outdoor unit
3. Keep the indoor unit far away from heat sources, vapor and flammable gas
4. Be sure that the installation of the indoor unit conforms to the installation dimension diagram
5. Be sure to leave enough space to allow access for routine maintenance; clearance between the bottom of the indoor unit and the floor should not be less than 66"
6. Install in a location where the unit is more than 3 feet away from other electronic appliances such as television, audio devices, etc.
7. Select a location where air filters can be easily removed and replaced

For instructions on installing the outdoor unit please refer to the installation guide supplied with the selected outdoor unit for your application.



## Installing the Indoor Unit

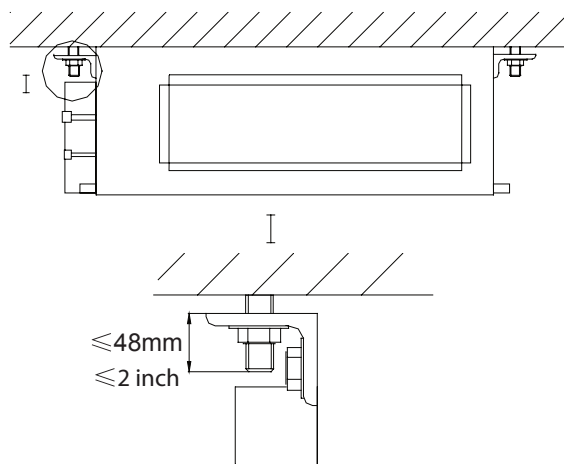
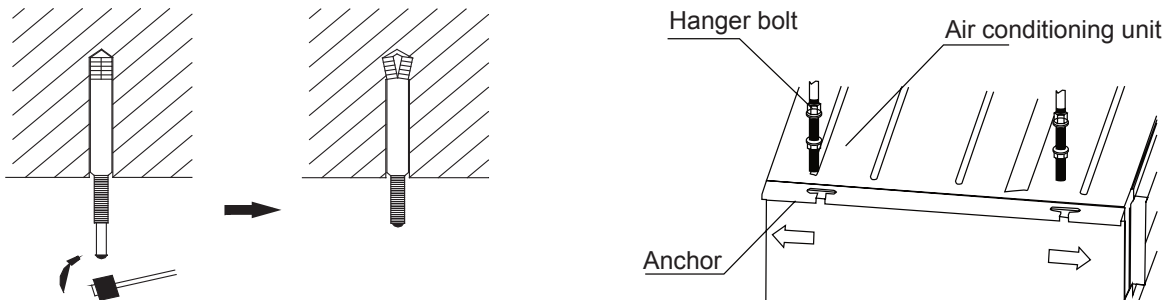


### Hazardous Service Procedures!

The maintenance and troubleshooting procedures recommended in this section of the manual could result in exposure to electrical, mechanical or other potential safety hazards. Always refer to the safety warnings provided throughout this manual concerning these procedures. When possible, disconnect all electrical power including remote disconnect and discharge all energy storing devices such as capacitors before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. When necessary to work with live electrical components, have a qualified licensed electrician or other individual who has been trained in handling live electrical components perform these tasks. Failure to follow all of the recommended safety warnings provided, could result in death or serious injury.

### Mounting Location

1. Confirm the mounting location with the customer. Keep in mind the guidelines for a safe installation location on page 8.
2. Ensure the hanging point is strong enough to support 4 times the weight of the unit.
3. The weight of the unit should be shared equally by the expansion bolts.
4. Insert the M10 (or larger) expansion bolts into the hole and knock the nail into the bolt. Refer to the outline dimension drawings for the distance between holes.
5. Insert the hanger on the indoor unit as shown below.
6. Install the indoor unit on the ceiling support bolts.

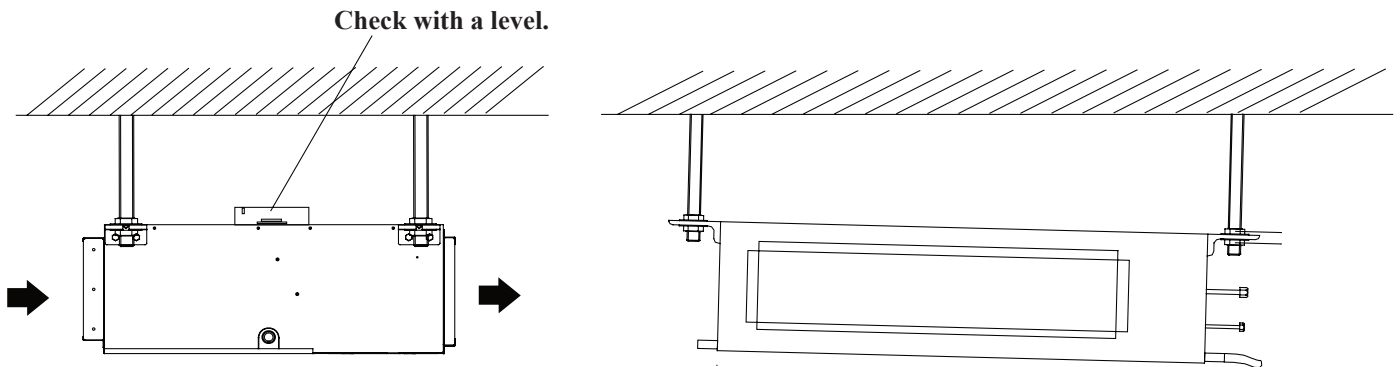


## Ceiling Concealed Unit

- If there is an opening in the ceiling, it should be reinforced to keep it flat and prevent vibration.
- If the support structure of the ceiling is not strong enough, a beam made of angle iron can be used to mount the unit to for added support.
- If the indoor unit is not installed in an air conditioned area, please insulate around the unit to prevent condensation. The thickness of the insulation depends on the actual installation environment.

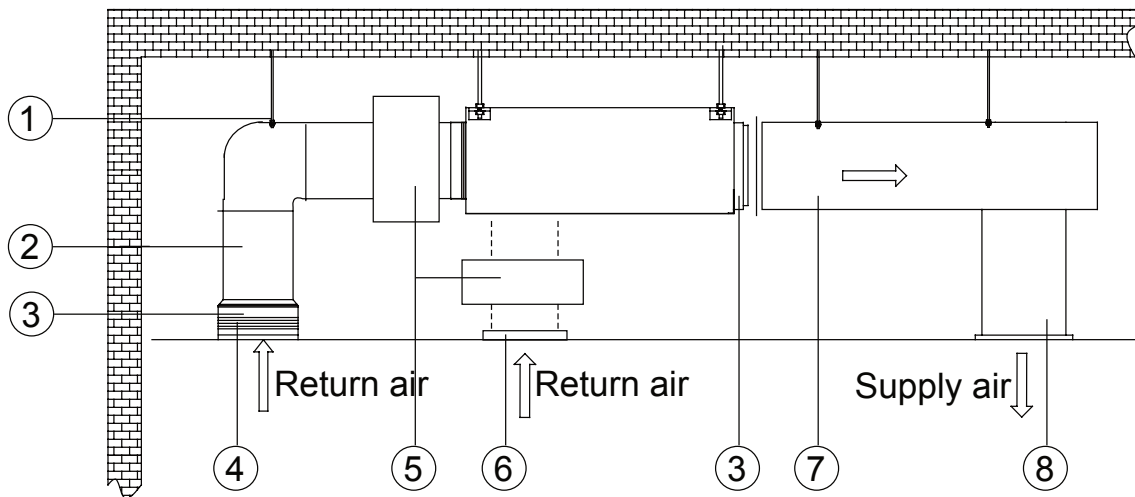
### Leveling the Indoor Unit

After installation of the indoor unit, the leveling must be checked to make sure the unit is kept horizontal fore and aft and a downward slope of 5° is kept toward the drain pipe left and right as shown below.



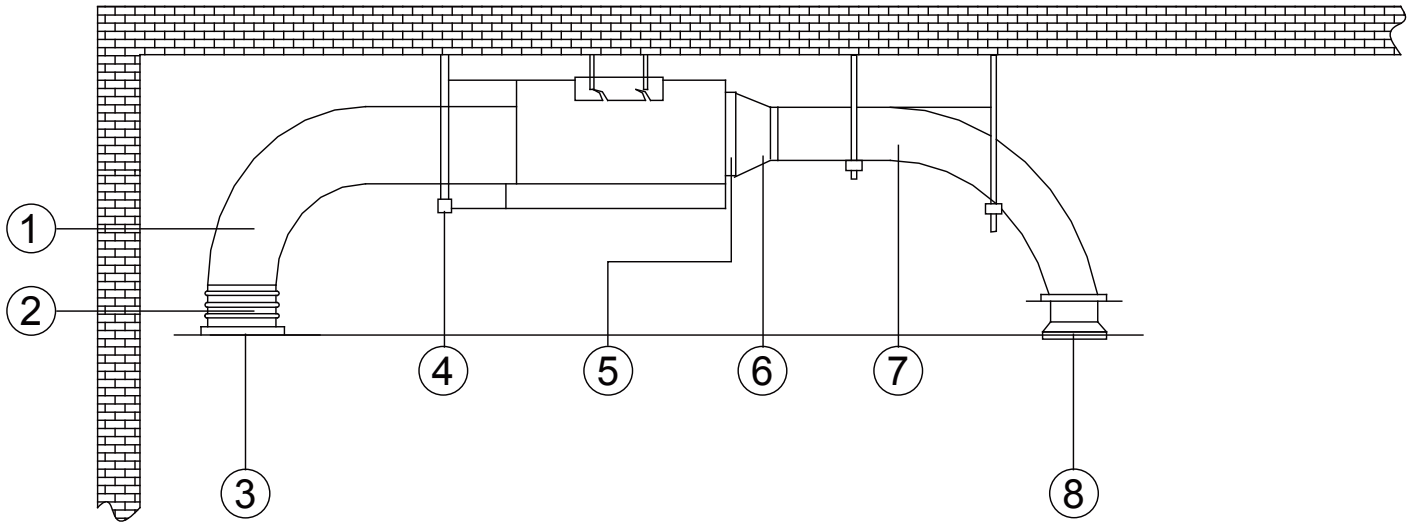
### Installation with Air Supply Connections

#### Installation with Rectangular Connections



No.	Name	No.	Name
1	Hanger	5	Plenum Box
2	Return Air Connection	6	Filter Screen
3	Flexible Connection	7	Main Air Supply Connection
4	Return Air Outlet	8	Air Supply Outlet

## Installation with Round Connections



No.	Name	No.	Name
1	Return Air Connection	5	Air Supply Outlet
2	Flexible Connection	6	Transition Connection
3	Return Air Louver	7	Air Supply Connection
4	Hanger	8	Diffuser

- Pre-install the outlet of the round duct on the transition connection and tighten it with a tapping screw.
- Place the transition connection to the air outlet of the unit and attach it with a rivet.
- Connect the outlet to the short duct and secure them with tape.

### CAUTION

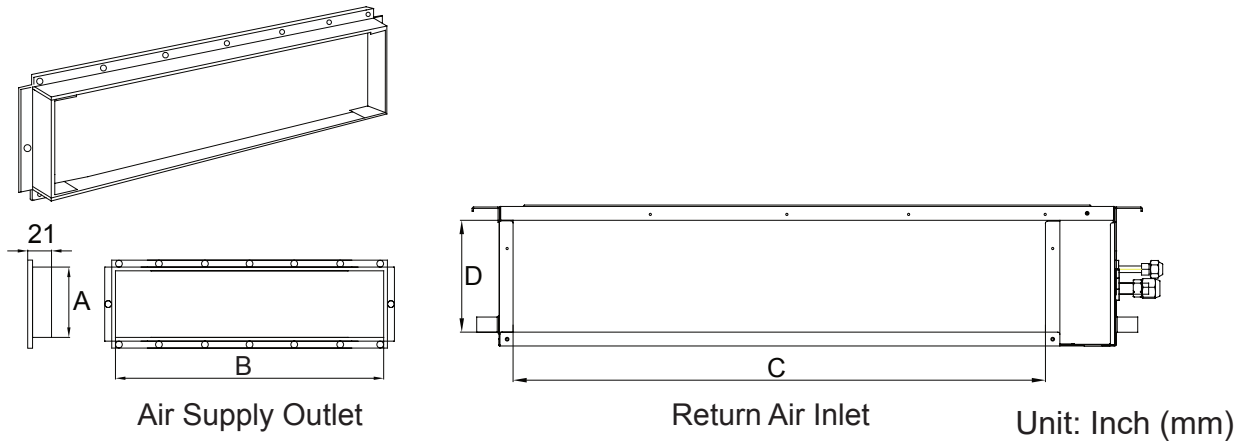
This unit is intended for free-air discharge or for connections supplying only one room. improper installation could contribute to the spread of smoke or flames in the event of a fire.

### NOTICE

The maximum length of the duct connections means the maximum length of the air supply duct plus the maximum length of the return air duct and cannot exceed 3.3 ft. (1m)

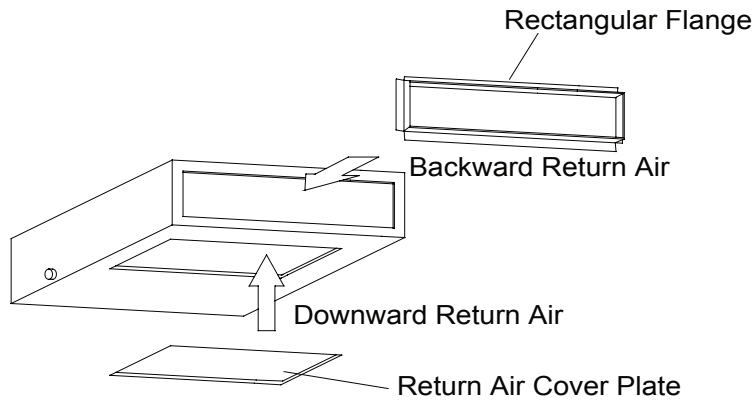
# Ceiling Concealed Unit

## Dimensions of the Air Supply Outlet and Return Air Inlet



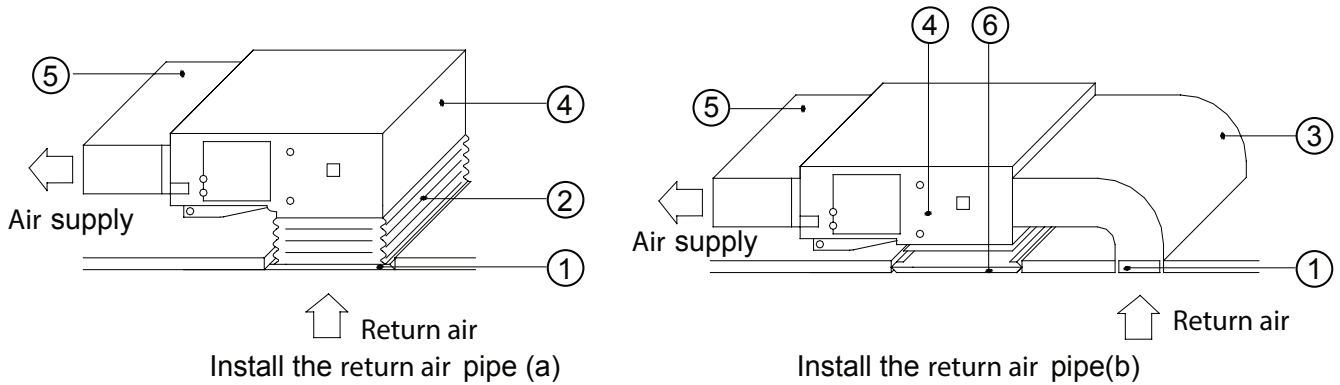
Models	Air Supply Outlet		Return Air Inlet	
	A	B	C	D
4MXD8509A	6.1	26.1	22.8	6.4
4MXD8512A	(156)	(662)	(580)	(162)
4MXD8518A	6.1	33.9	30.7	6.4
	(156)	(862)	(780)	(162)
4MXD8521A	6.1	41.8	38.6	6.4
4MXD8524A	(156)	(1062)	(980)	(162)

## Installation of the Return Air Connection



1. The default installation location of the rectangular flange is in the back and the return air cover plate is in the bottom.
2. If downward return air is desired, exchange the location of the rectangular flange and the return air cover plate.
3. Connect one end of the return air duct to the return air outlet of the unit by rivets and the other to the return air louver. For convenience you may adjust the height with a section of flexible connection material.
4. More noise is likely to be produced in the downward return air mode than the backward return air mode. It is suggested to install sound insulation and a plenum box to minimize the noise.
5. The installation method can be chosen when considering the installation location available in the building and maintenance access, etc.

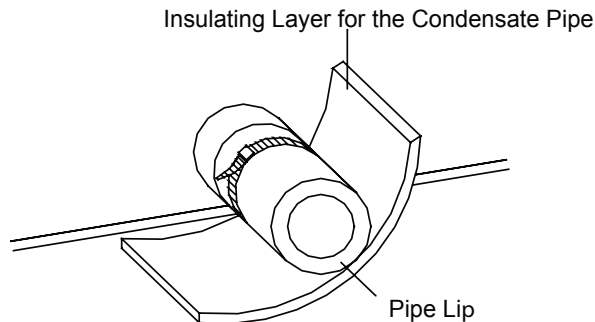
Parts and Components of the Return Air Connection



No.	Name	No.	Name
1	Return Air Louver (with Filter Screen)	4	Indoor Unit
2	Flexible Connection	5	Air Supply Connection
3	Return Air Connection	6	Access Grille

Installation of the Condensate Pipe

Insulation of the Condensate Pipe



Thermal Insulation of the Condensate Pipe

1. The condensate pipe should keep a downward sloping angle of 5~10°, which can facilitate drainage of the condensate water. The joints of the condensate pipe should be insulated with insulation material to prevent condensation.
2. There is a condensate outlet on both the left and right sides of the unit. Once the proper drain position is determined, the unused location should be sealed by a rubber plug. Be sure to secure with a clamp and insulate completely to avoid condensate build-up.
3. The outlet on the right side of the unit is sealed by default.

**CAUTION**

Seal properly and verify there is no water leakage from the joint of the condensate pipe. Failure to do so may result in equipment and/or property damage.

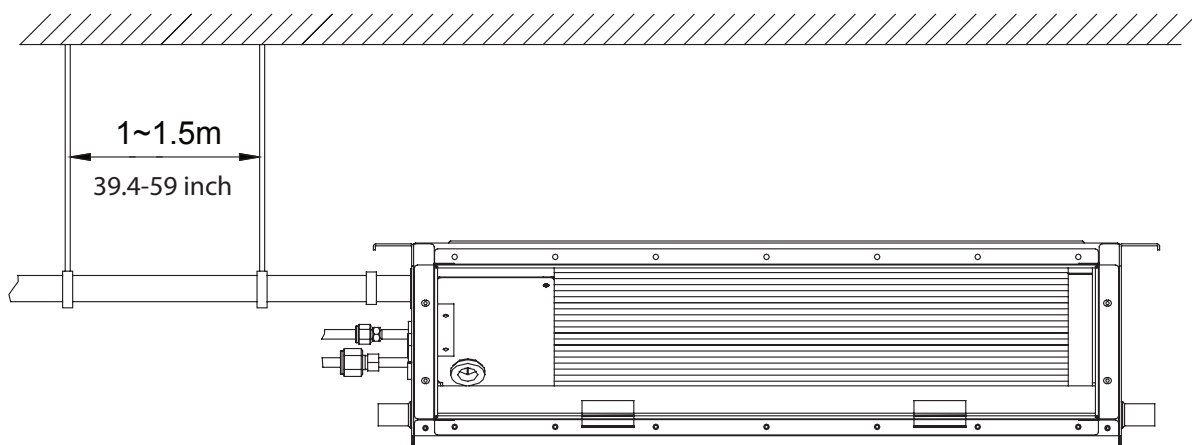
# Ceiling Concealed Unit

## Design of the Drain Pipe

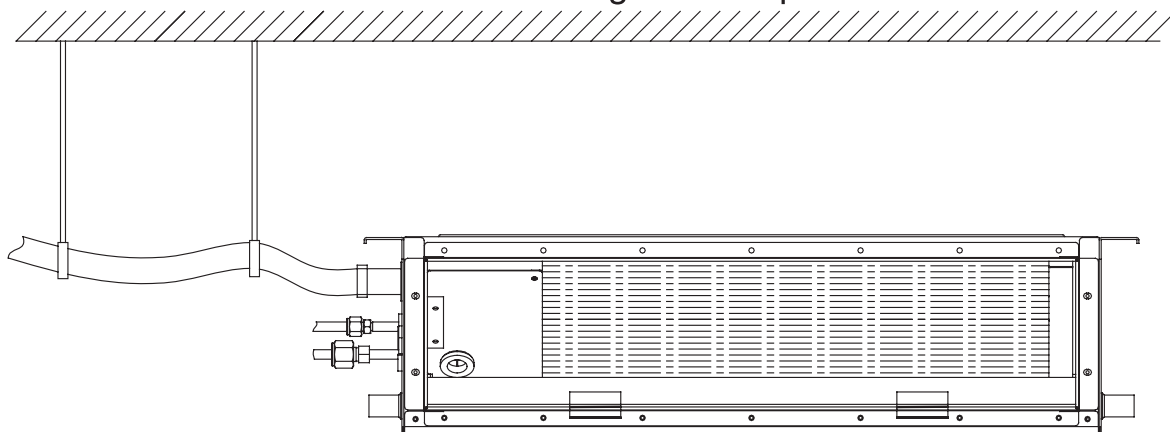
1. The drain pipe should always keep a downward sloping angle of 5~10° to avoid water accumulation or improper drainage which could lead to equipment and/or property damage.
2. When connecting the drain pipe to the unit, avoid excessive force on the connection. The pipe should be as close to the unit as possible.
3. The drain pipe can be ordinary hard PVC pipe which can be purchased locally. During the connection, insert the end of the PVC pipe to the drain outlet, then tighten it to the drain hose with a hose clamp. Do not connect the drain outlet and the drain hose with an adhesive.
4. When the drain pipe is used for multiple units, the joined section of the pipe should be 3.9 inches (100mm) lower than the drain hole of each device and it is suggested to use a larger diameter pipe when connecting multiple units.

## Installation of the Drain Pipe

1. The diameter of the drain pipe should be greater than or equal to that of the refrigerant pipe. (PVC pipe, outer diameter : 1 inch (25mm), wall thickness  $\geq$  0.05 inches (1.5mm).
2. The drain pipe should be as short as possible and with at least a 1/100 degree of slope to avoid forming air pockets.
3. If the proper degree of slope of the drain pipe is not feasible, a lift bracket should be installed.
4. A distance of 39.4 to 59 inches (1 to 1.5m) should be kept between the hangers to avoid the drain hose sagging or bending

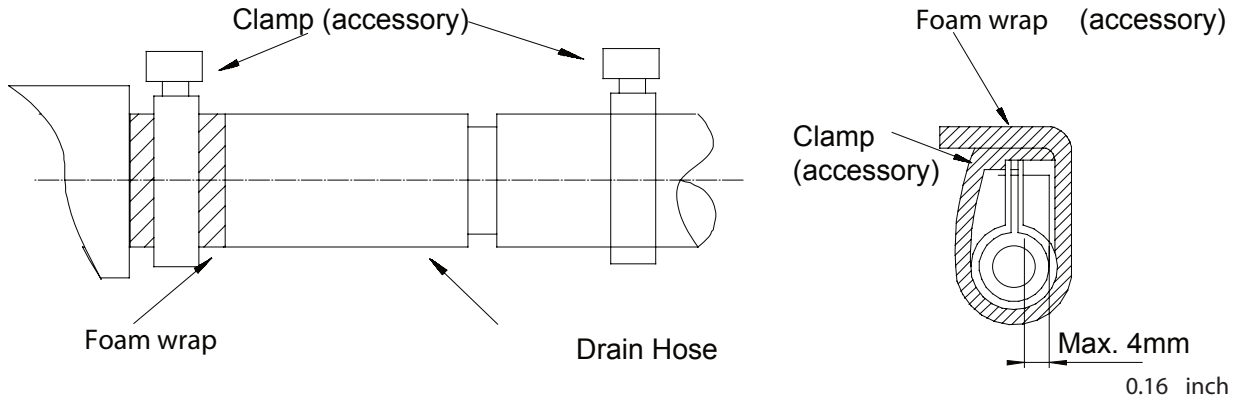


CORRECT with a min. degree of slope 1/100



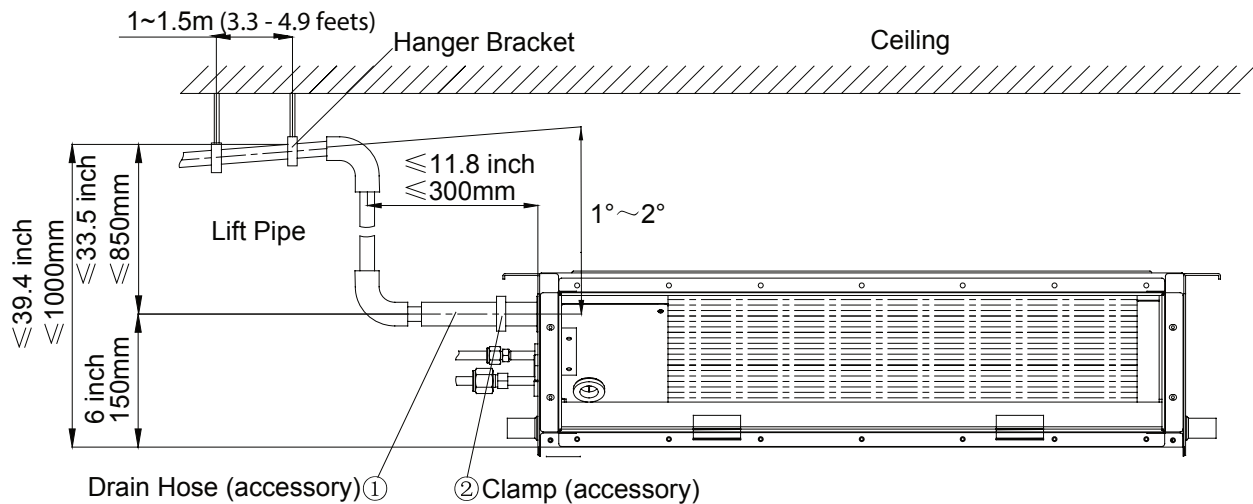
INCORRECT with sagging and bending of pipe

5. Insert the drain hose into the drain hole and tighten it with clamps.
6. Insert the drain pipe into the opposite end of the drain hose and clamp securely. Do not use adhesive at this joint
7. Wrap the clamps with a large amount of foam wrap for thermal insulation to prevent condensation and water damage.



## Precautions for the Drain Pipe

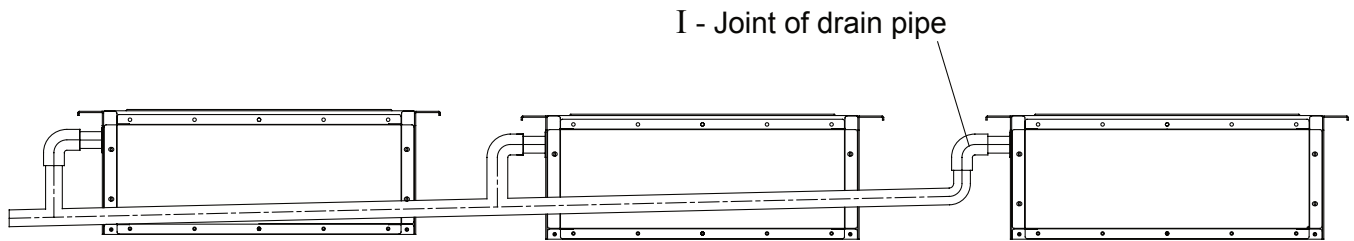
The installation height of the lift pipe should be less than 33.5 inches (850mm). It is recommended to set an inclination angle of 1~2° for the lift pipe toward the drainage direction. If the lift pipe and the unit form a right angle, the height of the lift pipe must be less than 31.5 inches (800mm).



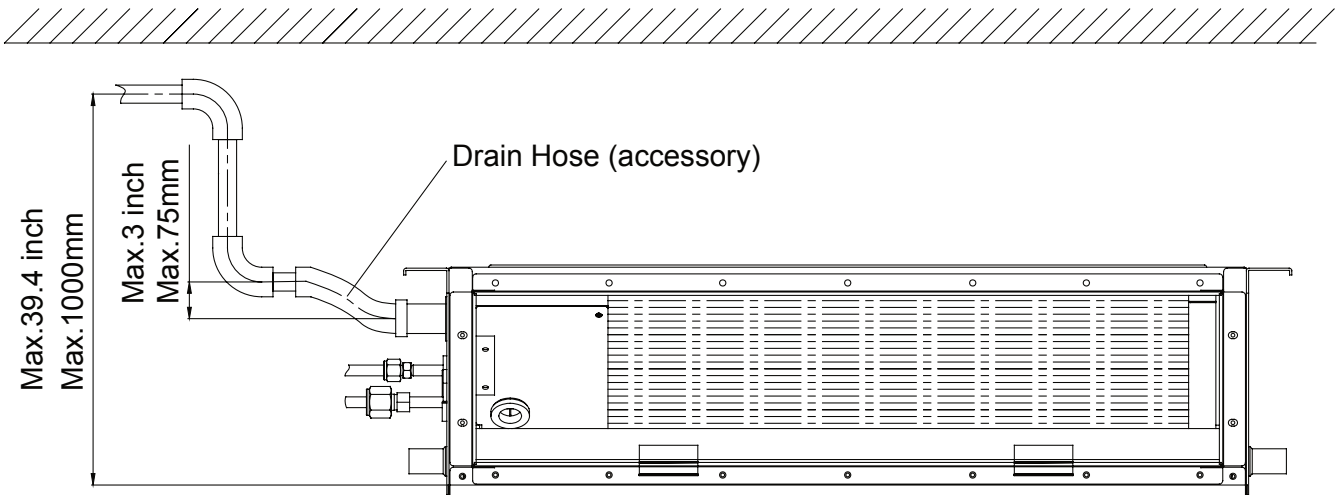
## Ceiling Concealed Unit

### NOTES:

1. The connection height of the drain hose should be within 33.5 inches (850mm) so that the outlet of the drain hose does not suffer from external force.
2. If multiple drain pipes converge, please follow the installation diagrams below.



The specification of the joint of the drain pipe should be suitable to the running capacity of the unit



### Test the Drainage System

1. After the electrical installation, test the drainage system.
2. During the test, check to ensure the water flow goes through the pipe correctly and observe the joint carefully to see if it leaks. If this unit is installed in a newly built house, it is suggested to perform this test prior to the ceiling installation.



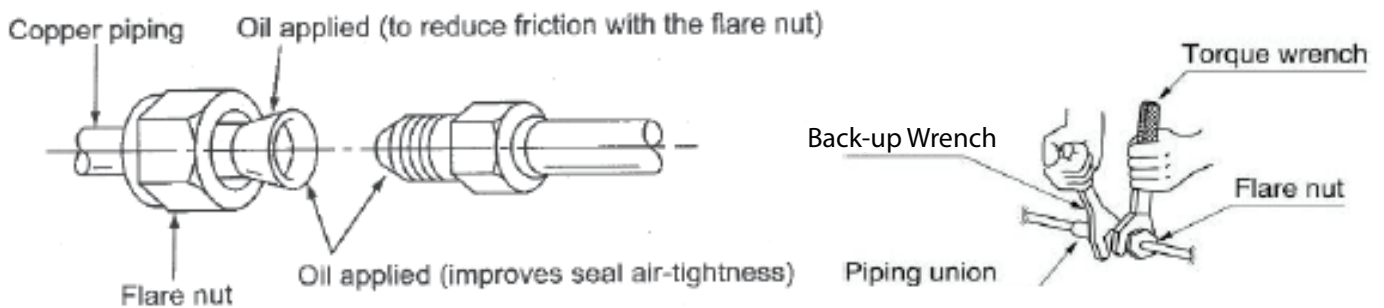
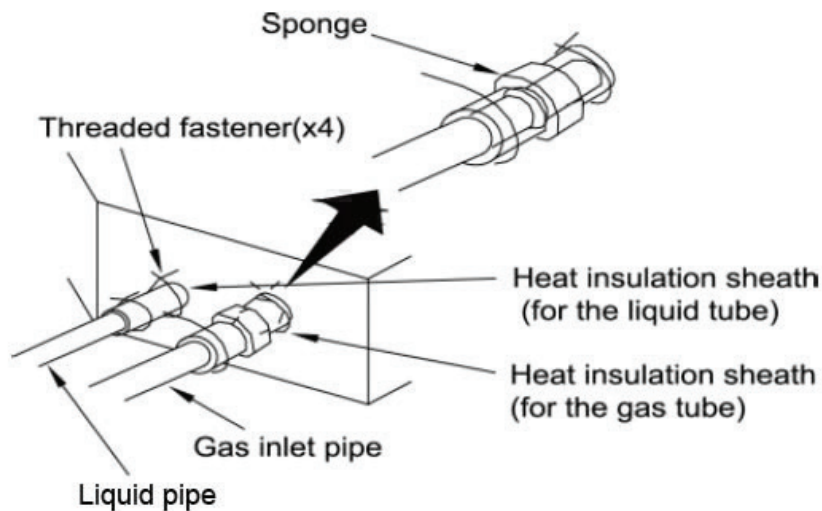
## Connecting the Pipe at the Indoor Unit

Detach the caps and plugs from the pipes.

### NOTICE

1. Be sure to connect the pipe to the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.
2. Do not remove the flare nut until the connection pipe is to be connected so as to prevent dust and impurities from coming into the pipe system.

1. When connecting the pipe to the unit or removing it from the unit, please use both the spanner and the torque wrench. See illustration below.
2. When connecting, smear both inside and outside of the flare nut with refrigeration oil, tighten it by hand and then tighten it with the spanner.
3. Refer to the table below before tightening to determine the appropriate torque (too tight would damage the nut and lead to leakage).
4. Examine the connection pipe to see if it leaks, then apply the thermal insulation for the liquid and gas lines, as shown below.
5. Use the medium-sized sponge wrap to insulate the coupler of the gas pipe and secure with tape.



Pipe Diameter	Thickness of Copper Tube	Tightening Torque
Φ6.35 (.25)	≥0.8 (0.031)	15 ~ 30 N•m
Φ9.52 (.37)	≥0.8 (0.031)	35 ~ 40 N•m
Φ12.7 (.50)	≥0.8 (0.031)	45 ~ 50 N•m
Φ15.9 (.63)	≥1.0 (0.039)	60 ~ 65 N•m

## Ceiling Concealed Unit

### ⚠ CAUTION

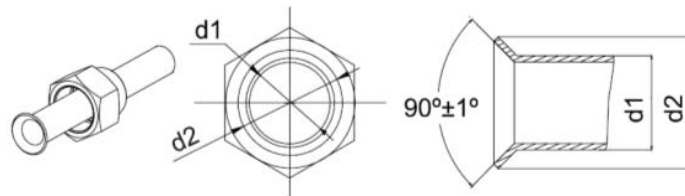
1. During the connection of the indoor unit and the refrigerant pipe, never pull any joints of the indoor unit by force: otherwise the capillary pipe or other pipe may crack, which would then result in leakage.
2. The refrigerant pipe should be supported by brackets, don't let the unit withstand the weight of the drainage piping.

If the specification of the outdoor unit pipe joint does not conform to that of the indoor unit, then the joint specification of the outlet pipe of the indoor unit takes precedence. A reducing nipple shall be installed at the joint of the outdoor unit so as to make the joint of the outdoor unit compatible with that of the indoor unit.

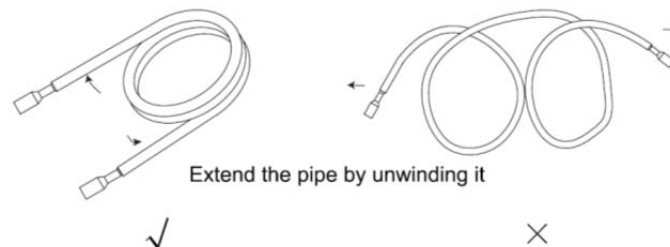
## Installation of the Connection Pipe

### Flare Processing

1. Cut the connection pipe with the pipe cutter and remove the burrs.
2. Hold the pipe downward to prevent cuttings from entering the pipe.
3. Remove the flare nuts at the stop valve of the outdoor unit and inside the accessory bag of the indoor unit, put them onto the connection pipe as shown below then flare the connection pipe with a flaring tool.
4. Check if the flare part is spread evenly and there are no cracks.

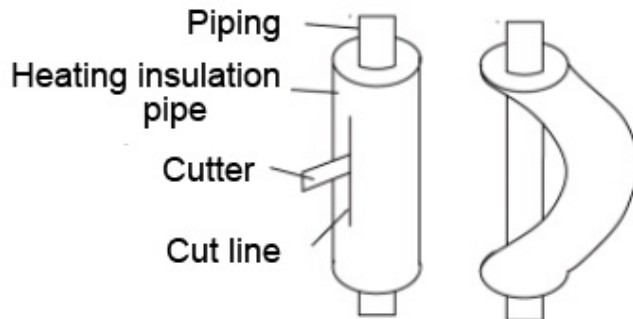


### Bending Pipes



1. The pipes should be shaped by your hands. Be careful not to collapse them.
2. Do not bend the pipes in an angle more than  $90^\circ$
3. When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them anymore. Do not bend or stretch the pipes more than three times.

4. Do not bend the pipe while it is encased in the insulation. In this case cut the insulation with a sharp cutter as shown below, and bend it after exposing the pipe. After bending the pipe as you want, be sure to put the insulation back on the pipe, and secure it with tape.



### NOTICE

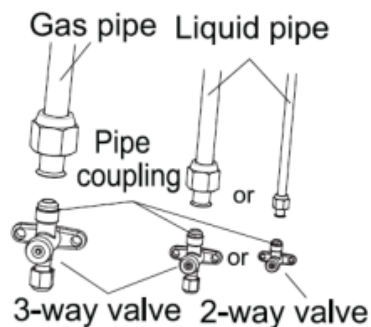
1. To prevent breaking of the pipe, avoid sharp bends. Bend the pipe with a radius of curvature of 5.9 in. (150 mm) or more.
2. If the pipe is bent repeatedly at the same place, it will break.

### ⚠ CAUTION

Be sure to connect the gas pipe after connecting the liquid pipe completely.

### Connecting the Pipe at the Outdoor Units

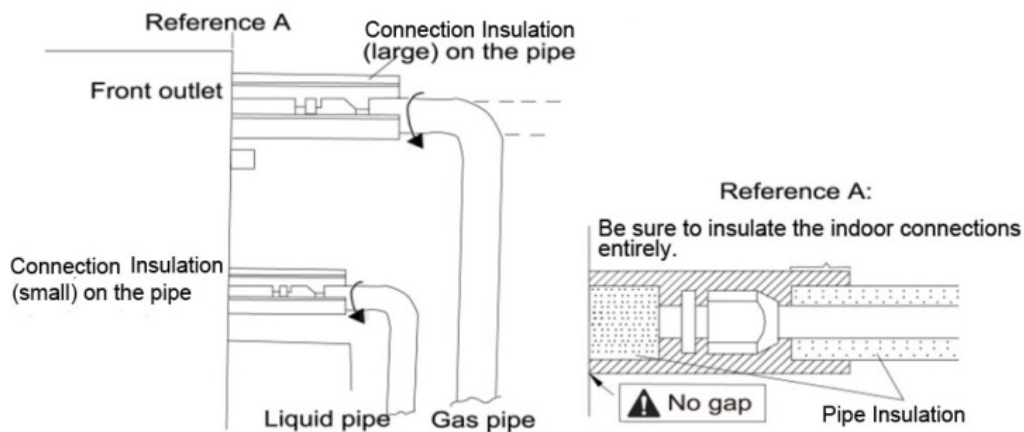
Tighten the flare nut of the connection pipe at the outdoor unit valve connector. The tightening method is the same as the method at the indoor unit.



## Ceiling Concealed Unit

### Insulation of the Pipe Joints

1. The refrigerant pipe should be insulated with appropriate insulating material and plastic tape in order to prevent condensation and water leakage.
2. The joints of the indoor unit should be wrapped with insulating material. No gap is allowed on the joint of the indoor unit, as shown below.



### Wiring the Indoor Unit

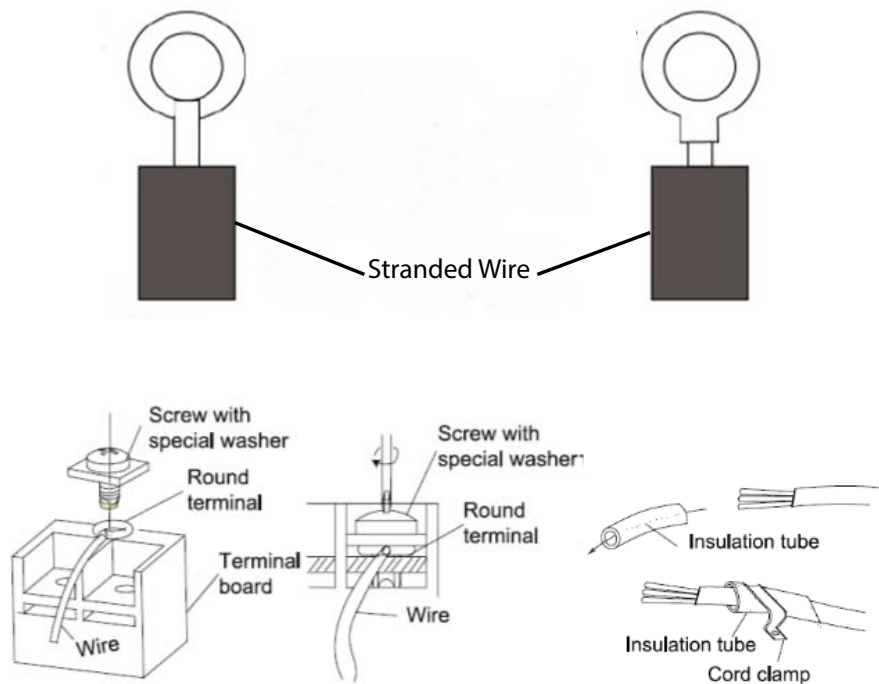
#### WARNING

1. If the power cord or the signal line are damaged, they must be replaced with the required replacement part.
2. Prior to wiring, please check the voltage marked on the nameplate and carry out the wiring following the wiring diagram.
3. The dedicated power cord must be used for the air conditioning unit and the electrical leakage protection switch and air switch must be installed in case of an overload condition.
4. The air conditioning unit must be grounded to prevent electrical shock hazards caused by failed insulation.
5. All wiring should be done strictly in accordance with the wiring diagram, otherwise improper wiring would cause abnormal operation or damage to the unit.
6. Do not let the electric wires touch the refrigerant pipe, the compressor, the fan or other moving parts.
7. Do not modify the wiring inside the indoor unit, otherwise the manufacturer will not assume any responsibility for damage or abnormal operation of the unit.

1. Dismantle the cover of the electric box of the indoor unit.
2. Insert the power cord through the rubber ring.
3. Pull the 4-core cable through the hole of the chassis and the bottom of the appliance upward, then connect the power line and the communication line from the outdoor unit to the corresponding terminals N(1), 2, 3 and grounding terminal of the indoor unit. Wiring shall be done properly as per the wiring diagram. (NOTE: Be sure the wiring terminals A/B/C/D and piping ports A/B/C/D of the indoor unit match with that of the outdoor unit respectively).

## Strand Wiring

1. Cut the wire end with a wire cutter or wire cutting pliers, then strip the insulation about 10mm (3/8")
2. Using a screwdriver, remove the terminal screw(s) on the terminal board.
3. Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
4. Position the round terminal wire, and replace and tighten the terminal screw with a screwdriver.
5. Fix the connection cord and power cord by a cord clamp.
6. After passing the connection cord and power cord through the insulation tube, fasten it with the cord clamp.



### WARNING

1. Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
2. Improperly installed field wiring poses fire and electrocution hazards. Pay special attention to the wiring of the units.
3. Connect the connection cords firmly to the terminal block. Improper installation may cause a fire.
4. Always fasten the outside covering of the connection cord with cord clamps. (If the insulator is not clamped, electric leakage may occur)
5. Always connect the ground wire.

### Note:

Match the terminal block numbers and connection cord colors with those of the indoor unit.

## Ceiling Concealed Unit

### Electric Wiring

#### Wiring Precautions



#### WARNING

1. Before obtaining access to terminals, all supply circuits must be disconnected.
2. Improperly installed and grounded field wiring poses fire and electrocution hazards. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring **MUST** be performed by qualified personnel. Failure to follow these requirements could result in death or serious injury.

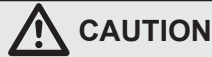
#### Electrical Notes:

1. EACH unit should be installed with its own dedicated power supply source. The power source needs to be sized correctly for the unit capacity.
2. Before turning on, verify that the voltage is within the 187~252 V range (for single phase unit).
3. Always use a grounded terminal and install a special receptacle to supply power to the air conditioner. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure.
4. Use a dedicated breaker and receptacle matched to the capacity of the air conditioner.

### Electrical Cable Connection

Type	Model	Power Supply	Running Current (A)	Input Power (W)		Wiring between indoor unit and outdoor unit
			Indoor Fan Motor	Cooling	Heating	
Cooling and Heating	4MXD8509A	208/230V-60Hz	0.28	80	80	AWG 14 x 4 Stranded
	4MXD8512A		0.31			
	4MXD8518A		0.41	100	100	
	4MXD8521A		0.5	124	124	
	4MXD8524A					

NOTE: The sectional area listed above is applicable to the power cord with a maximum length of 49.2 feet (15 meters). For a longer cord, its sectional area should be enlarged to avoid cord burnout due to over-current.



Improper operation may lead to personal injury or property damage.

1. The fuse is located on the main board.
2. Install a separate disconnect at the outdoor unit. The power supply, wiring and grounding of equipment must comply with National, State and/or Local Codes. The power supply must agree with the equipment nameplate.
3. Improperly installed and grounded field wiring poses fire & electrocution hazards. For high voltage connections, flexible electrical conduit is recommended whenever vibration transmission may create a noise problem within the structure. To avoid these hazards you **MUST** follow requirements for field wiring installation and grounding as described in the National Electrical Codes (NEC) and your local/state electrical codes. All field wiring **MUST** be performed by qualified personnel. Failure to follow these requirements could result in death or serious injury.
4. The communication wiring between the indoor and outdoor units should be at least 14 AWG stranded wire, with an absolute maximum length of 230 ft. (70m). Shorter lines result in more robust communication between the indoor and outdoor unit. Please select the appropriate line length as per the actual installation conditions. The communication wires cannot be spliced together.
5. For the wired controller: The communication distance between the main board and the wired controller can be up to 65 ft. (The standard distance is 25 ft.)

**Note:** When connecting the power supply cord, make sure that the phase of the power supply matches with the voltage and phase indicated on the nameplate, If not, the compressor will run improperly.

### Grounding Requirements

- Be sure to follow your local, state and National Electric Codes (NEC) when grounding this unit.
- The air conditioner is classified as a Class I appliance and must be grounded.
- The yellow-green line of the air conditioner is the ground wire and can not be used for other purposes or cut off, otherwise it would create an electric shock hazard.
- Do not ground the unit to a utility pipe, arrester or telephone ground. Incomplete ground may cause electrical shock or fire. A high surge current from lightning or other sources may cause damage to the air conditioner.

### Installation of Controllers

Refer to the Installation Manual of the controller for more details.

#### Wiring of the Signal Line of the Wired Controller at the Indoor Unit

1. Open the cover of the electric box of the indoor unit.
2. Let the signal line go through the rubber ring.
3. Insert the signal line to the four-pin socket on the printed circuit board of the indoor unit
4. Fix the signal line with a plastic wire tie.

## Ceiling Concealed Unit

### Installation Checklist

Check the following points before testing the unit:

NO.	Item to be checked	Possible problem
1	Have the indoor and outdoor units been securely installed?	The units may fall, vibrate or make noise.
2	Has the refrigerant leak test been completed?	Unresolved leaks may cause insufficient cooling or heating.
3	Have the pipes been properly insulated?	Lack of insulation may cause condensation and water damage.
4	Is the water condensate drainage sufficient?	Lack of proper drainage may cause condensation and water damage.
5	Does the voltage of the power supply comply with the voltage on the nameplate?	Improper wiring can create malfunction and fire or electrocution hazard.
6	Is the electric wiring and drain piping installed correctly?	Improper wiring and drainage can create a malfunction, fire or electrocution hazard and water damage to the unit and property.
7	Is the unit grounded properly?	Improper grounding can cause malfunction and fire or electrocution hazard.
8	Does the power cord match the unit requirements?	Improper wiring can create malfunction and fire or electrocution hazard.
9	Are there any obstructions near the air inlets and air outlets for the indoor and outdoor units?	Improper ventilation and airflow will cause insufficient cooling and heating.
10	Have dust and debris been cleaned and removed from the installation site?	Excessive dust and debris in and around the units may cause a malfunction or damage to the units.
11	Are the gas valve and liquid valve of the connection pipes open completely?	Restricted refrigerant flow may cause insufficient cooling or heating.

### Test Operation:

1. Turn on main power to the units.
2. Using the remote control, press the ON/OFF button to start operation.
3. Press the MODE button to select and test each option for normal operation. Cycle through all functions: AUTO, COOL, DRY, FAN and HEAT.
4. Note: If the ambient temperature is lower than 61°F (16°C) the air conditioner will not run in COOL mode.
5. Go over basic operating, maintenance and troubleshooting functions with the customer.

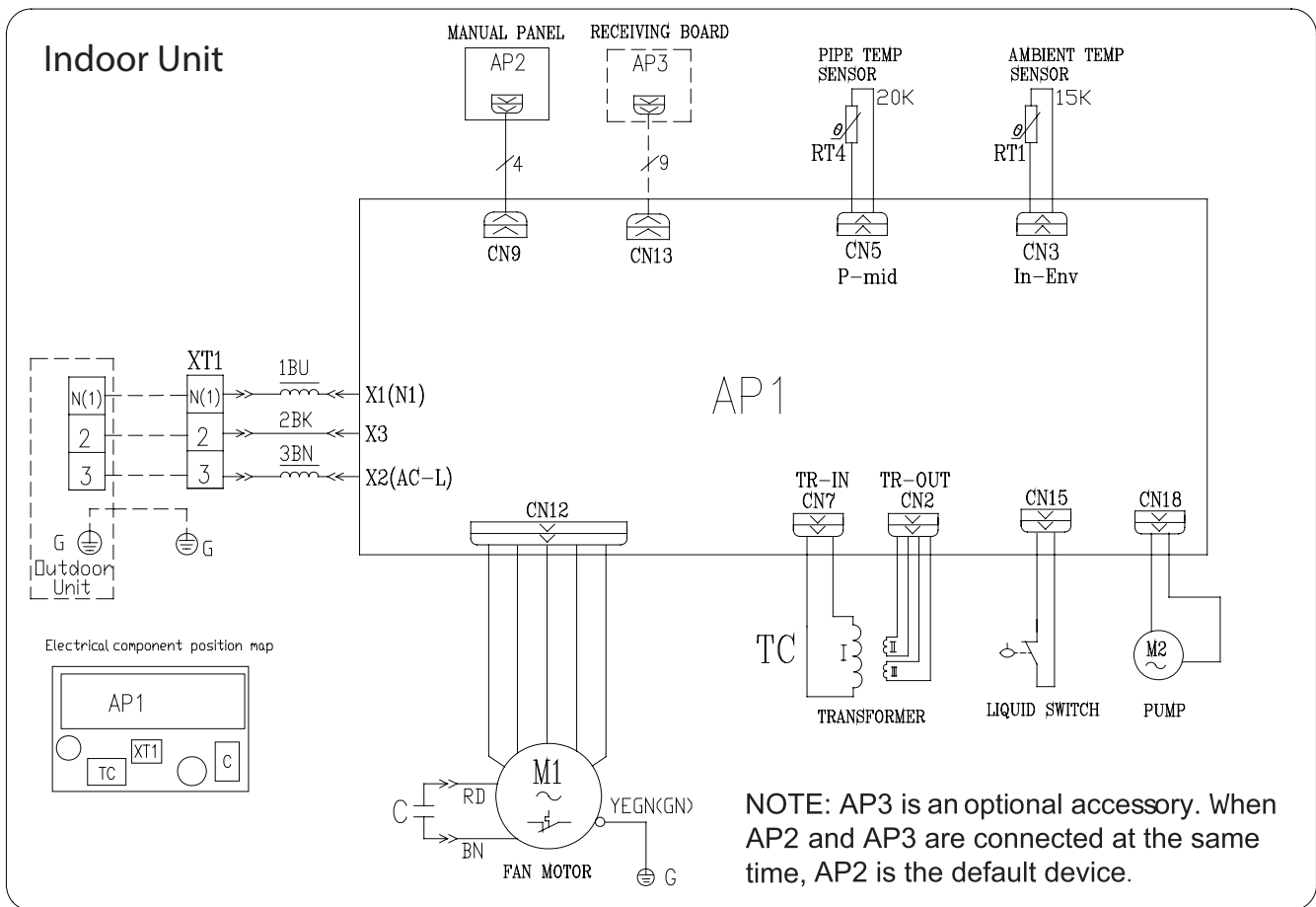


## Wiring Diagrams

### Color Key

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	COMP	Compressor
YE	Yellow	BN	Brown		Grounding wire
RD	Red	BU	Blue		
YE/GN	Yellow/Green	BK	Black		
VT	Violet	OG	Orange		

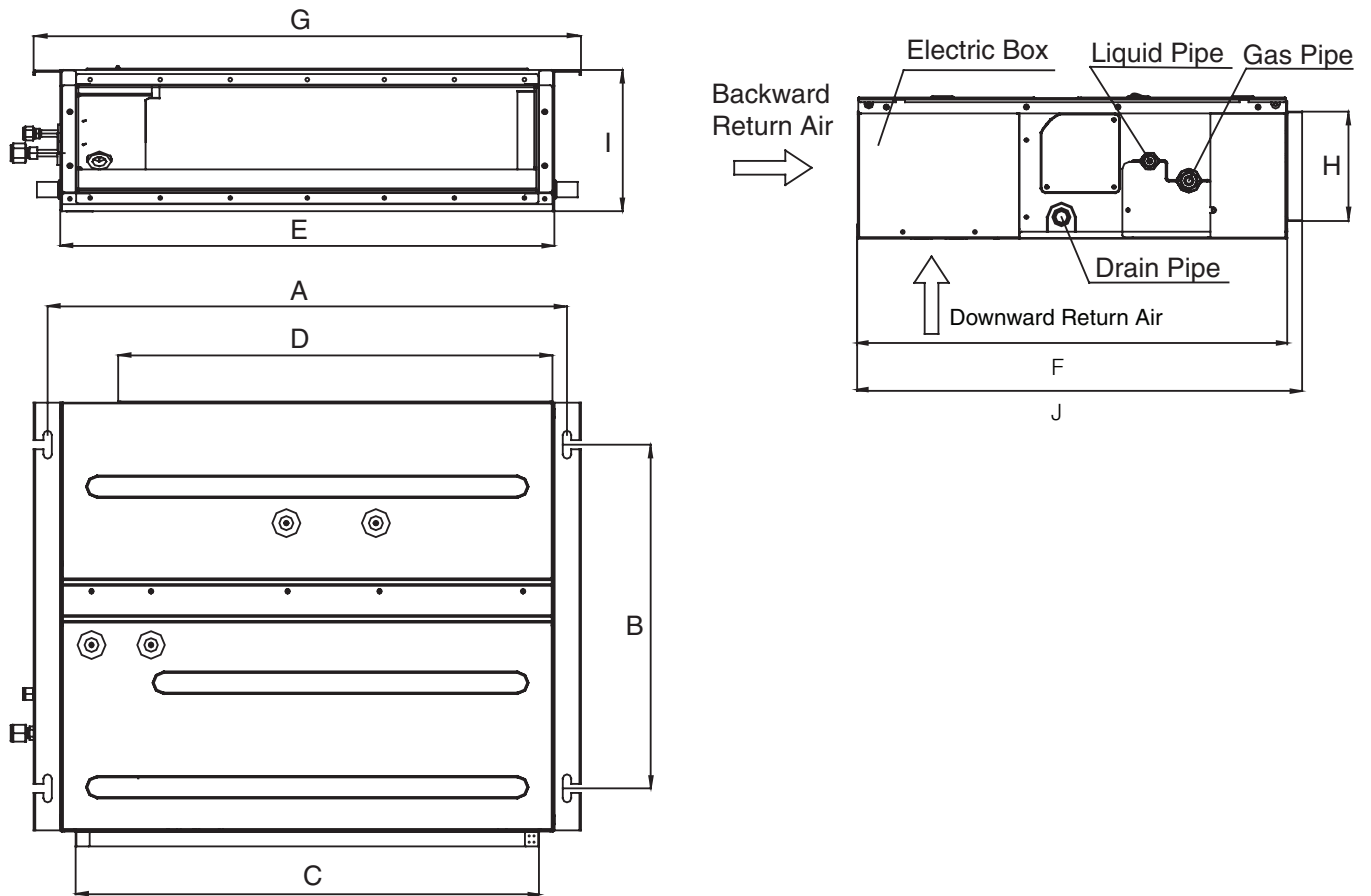
### Ceiling Concealed



**NOTE:** The wiring diagrams in this guide are included as a reference. The manufacturer has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice. Always check the unit nameplate and wiring diagram for the actual unit requirements.

# Ceiling Concealed Unit

## Indoor Unit Dimensions



MODEL	Unit Dimensions - In. (mm)									
	A	B	C	D	E	F	G	H	I	J
4MXD8509A	30	19	26	24	28	24	31	6	8	25
4MXD8512A	(742)	(491)	(662)	(620)	(700)	(615)	(782)	(156)	(200)	(635)
4MXD8518A	37	19	34	32	35	24	39	6	8	25
4MXD8521A	(942)	(491)	(862)	(820)	(900)	(615)	(982)	(156)	(200)	(635)
4MXD8524A	45	19	42	40	43	24	47	6	8	25
	(1142)	(491)	(1062)	(1020)	(1100)	(615)	(1182)	(156)	(200)	(635)

## Troubleshooting



### WARNING

Improper operation may lead to personal injury or casualty.

- Turn off the main power switch immediately if a malfunction is detected. Contact your servicing or installing dealer. If the unit continues to run during a malfunction, the unit may be damaged or electric shock or fire may occur.
- Do not try to move or reposition the units. Please contact the servicing/installing dealer to repair or move the units.
- Check the following items before contacting the dealer.

Condition		Possible Reason
Unit doesn't run	When unit is started immediately after it is just turned off	Overload protection switch delays unit start up for three minutes
	When power is turned on	The unit is in standby for one minute
Mist comes from the unit	When cooling cycle starts	Indoor high humidity air is cooled rapidly
Sound comes from the unit	Slight cracking sound is heard when unit starts	This sound occurs when the electronic expansion valve initializes.
	There is sound when cooling	The sound of gas refrigerant flowing in unit
	There is sound when unit starts or stops	This sound occurs when gas refrigerant starts or stops flowing.
	There is slight sound when unit is running or after running	The sound of the drainage system operating.
Cracking sound is heard when unit is operating and after operating	Cracking sound is heard when unit is operating and after operating	This sound occurs when the unit panels expand or contract due to temperature change.
The unit blows out dust	When the unit has been off for a period of time.	Dust in indoor unit is blown out
The unit emits odor	When the unit is operating	The room odor absorbed by the unit is blown out again
Indoor unit still runs after switch off	After every indoor unit receives the "stop" signal, fan will keep running	Indoor fan motor will keep running 20-70s so as to use excess cooling and heating and prepare for the next operation
Mode conflict	COOL or HEAT mode can not be operated	When the indoor operating mode conflicts with that of outdoor unit, indoor fault indicator will flash and conflict will be shown on the wired controller after 5 minutes. Indoor unit stops to run and meanwhile change outdoor operating mode as the same as that of indoor unit, then the unit will go back to normal. COOL mode doesn't conflict with DRY mode. FAN mode doesn't conflict with any mode.

**NOTE:** If the problem persists after checking the above items and taking appropriate measures, please stop operation of the unit immediately and contact your local service agency or dealer. Diagnostics and repairs should be completed by a professional service technician.

# Ceiling Concealed Unit

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## General Maintenance

Regular checks, maintenance and care should be performed by professional personnel, which will prolong the unit life span.

### Filter Change

Regular filter changes are essential for efficient operation and extending the unit life. Change the unit filter every 30-90 days as needed. Refer to the suggestions on the type of filter selected.

### Drain Pipe

Regularly check to see if the drain pipe is clogged in order to ensure drain condensate doesn't overflow and cause water damage.

### Check Before Seasonal Use

1. If the inlet/outlet of the indoor/outdoor unit is clogged or obstructed
2. If the ground wire is secured properly.
3. If the batteries of the wireless remote controller have been replaced.
4. If the filter screen has been cleaned and replaced securely.
5. After long periods of shutdown open the main power switch 8 hours before operating the unit so as to preheat the compressor crankcase.
6. If the outdoor unit is installed firmly.
7. If there is something abnormal, please contact your installing dealer.

### Maintenance After Seasonal Use

1. Cut off main power supply of the unit.
2. Clean the filter screen and indoor and outdoor units
3. Clean any dust and debris on the indoor and outdoor units.
4. In the event of rusting, use anti-rust paint to stop spreading of rust.

### Parts Replacement

Purchase parts from the installing or servicing center or dealer if necessary.

NOTE: During leakage testing, never mix oxygen, ethyne and other dangerous gas into refrigeration circuit. In case of hazard, it's better to use nitrogen or refrigerant to accomplish such test.

### After-sales Service

In the event you have problems with the unit or require service, please contact your local installing/servicing dealer.