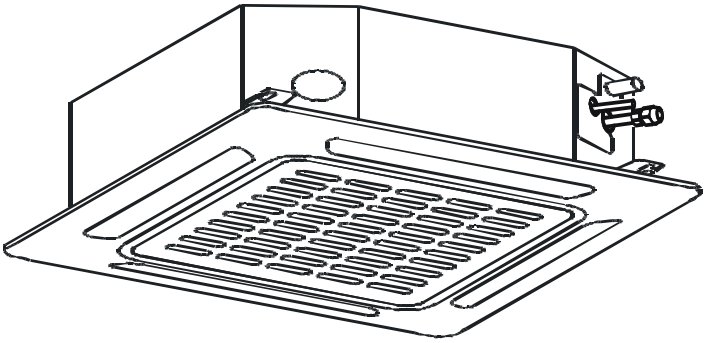
BLUERIDGE®

Ceiling Cassette Indoor Air Handler Installation Manual

Models:
BM12MCC
BM18MCC



IMPORTANT NOTE:

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

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

Table of Contents

Safety Precautions

1

Read Before Using

Incorrect usage may cause serious damage or injury.

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

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

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

This symbol indicates that you must <u>never</u> perform the action indicated.

⚠ WARNING

- Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.
- Be sure only trained and qualified service personnel install, repair or service the equipment.
- Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, personal injury, loss of life, fire or other damage to the equipment.
- Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock and fire.
- When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage. Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the unit to fall, leak water, cause electrical shock, or produce fire.
- Install at a strong and firm location which is able to withstand the unit's weight. If the strength is not enough or installation is not properly done, the set will drop causing injury.
- The appliance must be installed 8' above floor.
- The appliance shall not be installed in the laundry room.
- Before obtaining access to terminals, all supply circuits must be disconnected.
- Read this manual thoroughly before starting up the units.
- For electrical work, follow all local and national wiring codes and these installation instructions. An independent circuit and electrical disconnect must be used. If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock or fire.
- Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it can cause malfunction or fire at the connection.

⚠ WARNING

- Wiring routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it can cause heat-up at connection point of terminal, fire or electrical shock.
- If the supply cord is damaged, it must be replaced by the manufacture or its service agent or a similarly qualified person in order to avoid a hazard.
- An electrical disconnect switch having a contact separation of at least 0.12in in all poles should be connected in fixed wiring.
- When carrying out piping connection, take care to not let air substances go into refrigeration cycle. Otherwise, it can cause lower capacity, abnormally high pressure in the refrigeration cycle, explosion and injury.
- Do not share the single circuit with other electrical appliances. Otherwise, it can cause poor performance, fire or electrical shock.
- If the refrigerant leaks during installation, ventilate the area immediately. Toxic gas may be produced if the refrigerant comes in contact with fire.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- After completing the installation work, check that the refrigerant does not leak. Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.
- After completing the installation, make sure that the unit operates properly during the start-up operation.

! CAUTION

- Ground the air conditioner.
- Be sure to install an earth leakage breaker. Failure to install an earth leakage breaker may result in electric shocks.
- Connect the outdoor unit wires, then connect the indoor unit wires.

⊘ **DO NOT** connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire. Inappropriate grounding may result in electric shocks.

⊘ **DO NOT** connect the air conditioner with the power supply until the wiring and piping is done.

⊘ **DO NOT** operate your air conditioner in a wet room such as a bathroom or laundry room.

⊘ **DO NOT** install the air conditioner in the following circumstance:
- There are combustible gases present.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- There is excessive vibration, as in a shop or factory.
- In small, hot industrial space such as a server room or commercial kitchen.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic waves existing.
- There are inflammable materials or gas.
- There is acid or alkaline liquid evaporating.
- Other special conditions.

Installation Summary

2

Installation information

- To install properly, please read this "installation manual" at first.
- The air conditioner must be installed by qualified persons.
- When installing the indoor unit or its tubing, please follow this manual as strictly as possible.
- If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards to electrical appliances.
- When all the installation work is finished, please turn on the power only after a thorough check.
- Regret for no further announcement if there is any change of this manual caused by product improvement.

Installation order

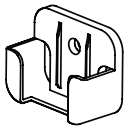
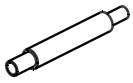
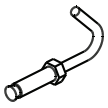
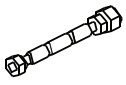
1. Indoor unit installation
2. Outdoor unit installation
3. Install the refrigerant pipe
4. Connect the drain pipe
5. Electric wiring work
6. Installation of the decoration panel
7. Test operation

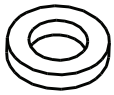
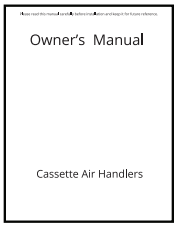
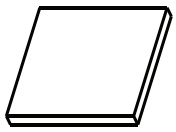
✓	Check off when completed
☐	Is the indoor unit fixed firmly? The unit may drop, vibrate or make noise.
☐	Is the gas leak test finished? It may result in insufficient cooling or heating.
☐	Is the unit fully insulated? Condensate water may drip.
☐	Does drainage flow smoothly? Condensate water may drip.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

Accessories

3

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

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

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

This indoor unit requires installation of an optional decoration panel.

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

Indoor Unit Installation

4

Selecting Installation Site

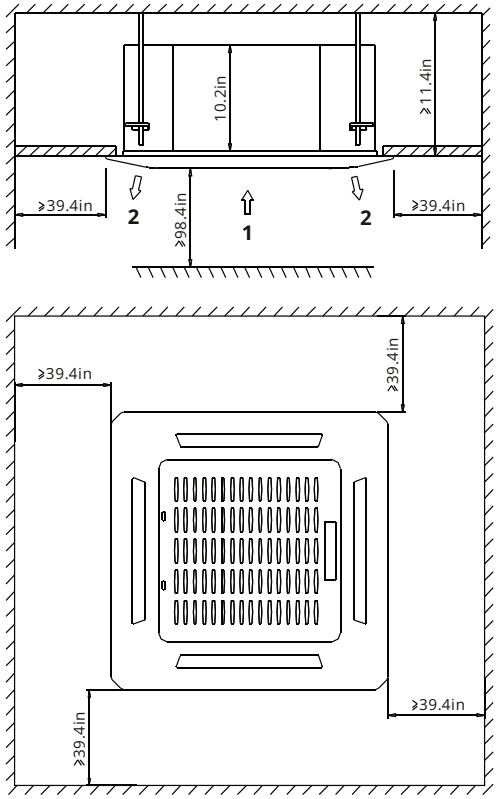
When the conditions in the ceiling are exceeding 86°F and a relative humidity of 80%, or when fresh air is inducted into the ceiling, an additional insulation is required (minimum 0.4in / thickness, polyethylene foam).

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

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

2. Ceiling height

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



1 Air inlet
2 Air outlet

Fig 4.1

3. Use Threaded Rod for Installation

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

⚠ WARNING

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

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

Preparations before installation

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

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

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

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

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

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

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

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

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

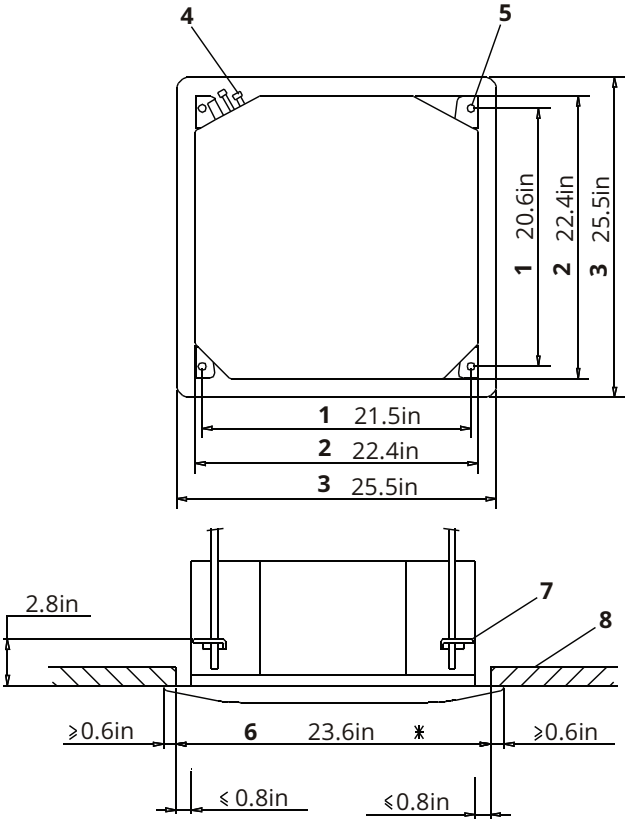


Fig 4.2

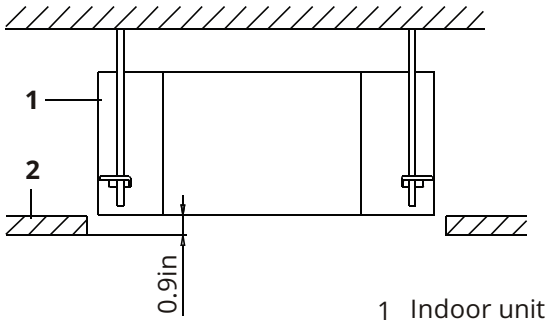
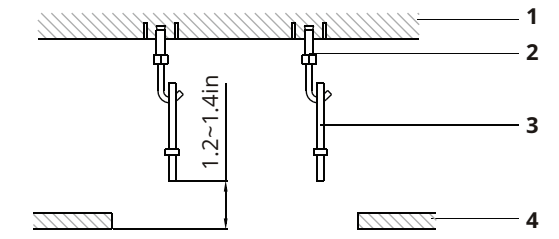


Fig 4.3



1 Ceiling slab
2 Expansible hook (optional)
3 Installation hook (optional)
4 False ceiling

Fig 4.4

Install the indoor unit

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

1. Install the indoor unit.

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

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

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

3. Check if the unit is horizontally leveled.

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

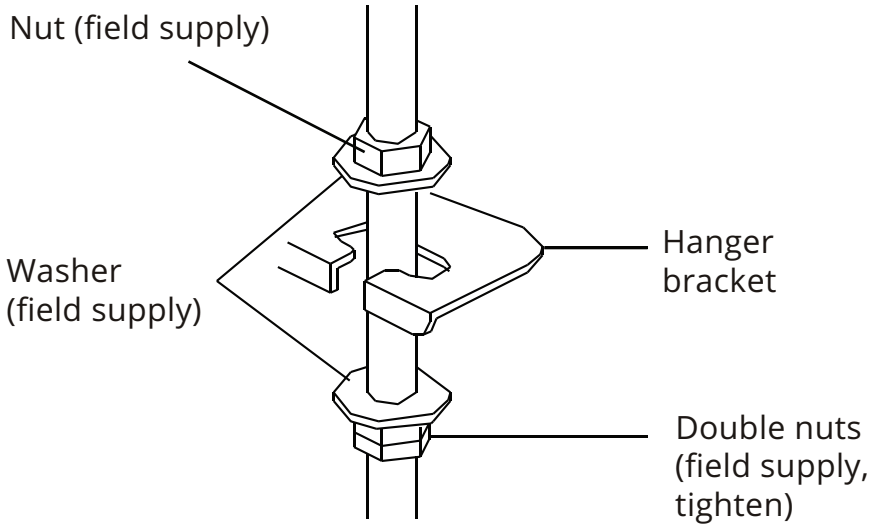


Fig 4.5

Refrigerant Piping Installation

5

WARNING

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

CAUTION

DO NOT mix anything other than the specified refrigerant, such as air, etc., inside the refrigerant circuit.

- Execute heat insulation work completely on both sides of the gas piping and liquid piping. Otherwise, this can sometimes result in water leakage. (When using a heat pump, the temperature of the gas piping can reach up to approximately 248° F. Use insulation which is sufficiently resistant.)
- Also, in cases where the temperature and humidity of the refrigerant piping sections might exceed 86° F or Rh80%, reinforce the refrigerant insulation (3/4" or thicker). Condensation may form on the surface of the insulating material.
- Before rigging tubes, check which type of refrigerant is used.
- Use a pipe cutter and flare suitable for used refrigerant.
- Only use annealed material for flare connections.
- If the refrigerant gas leaks during the work, ventilate the area. A toxic gas is emitted by the refrigerant gas being exposed to a fire.
- Make sure there is no refrigerant gas leak. A toxic gas may be released by the refrigerant gas leaking indoor and being exposed to flames from an area heater, cooking stove, etc.
- Refer to the **Fig 5.1** for the dimensions of flare nuts spaces and the appropriate tightening torque. (Over-tightening may damage the flare and cause leaks.)
- Check whether the height drop between the indoor unit and outdoor unit, and the length of refrigerant pipe meet the following requirements in **Fig 5.2**:

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

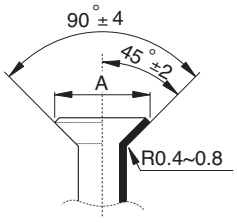


Fig 5.1

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

Fig 5.2

5.1 Flaring the pipe end

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

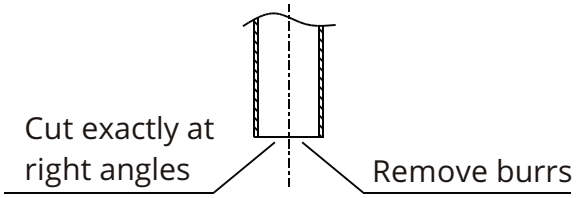


Fig 5.3

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

Set exactly at the position shown below

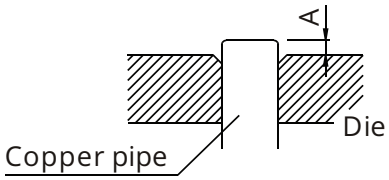


Fig 5.4

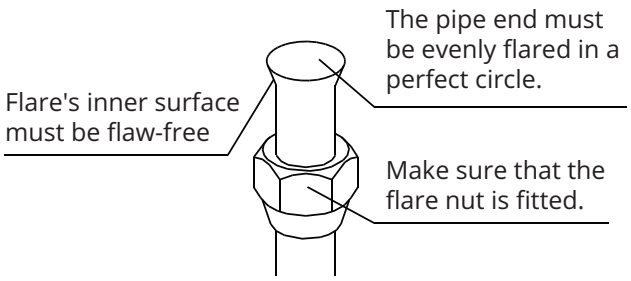


Fig 5.5

5.2 Refrigerant Piping

1. Use Nylog or similar approved refrigerant sealant.

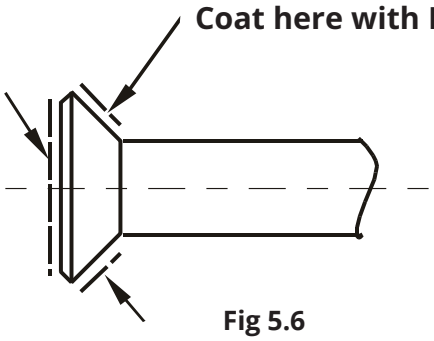


Fig 5.6

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

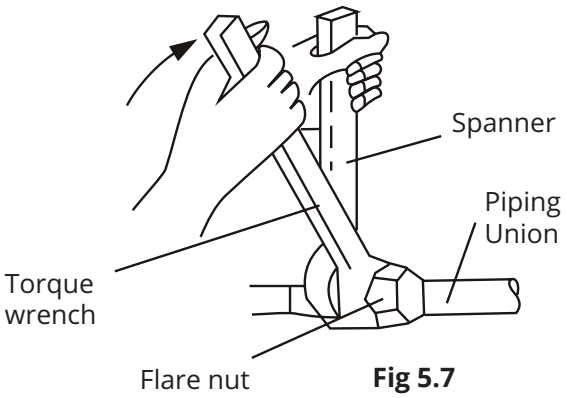


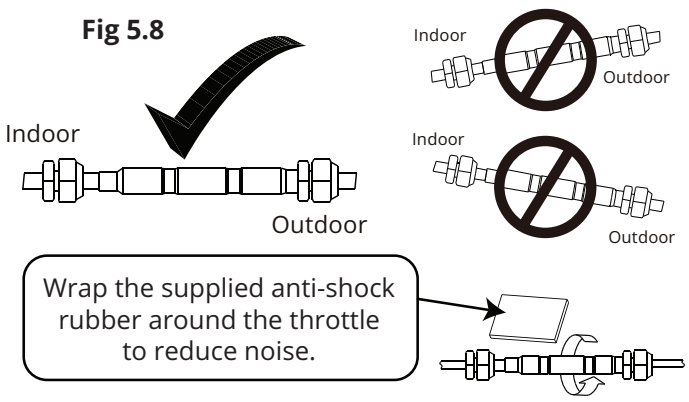
Fig 5.7

4.3 Install refrigerant pipe adapter. (if needed)

CAUTION

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

Fig 5.8



Connecting The Drain Pipe

6

6.1 Installation of drain piping

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

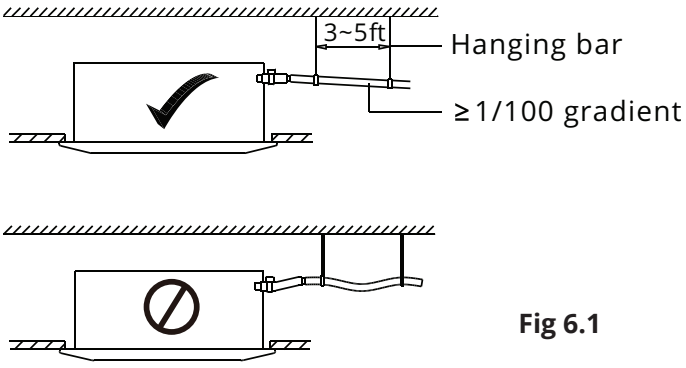
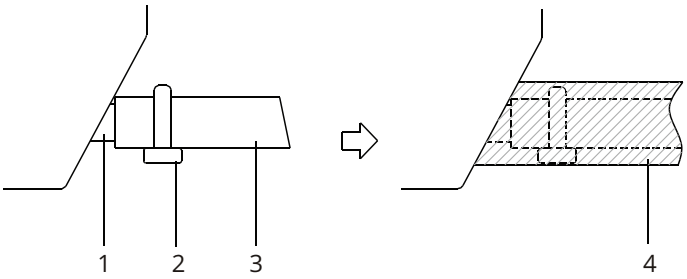


Fig 6.1



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

6.2 Install the drain pipes

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

6.3 How to perform piping

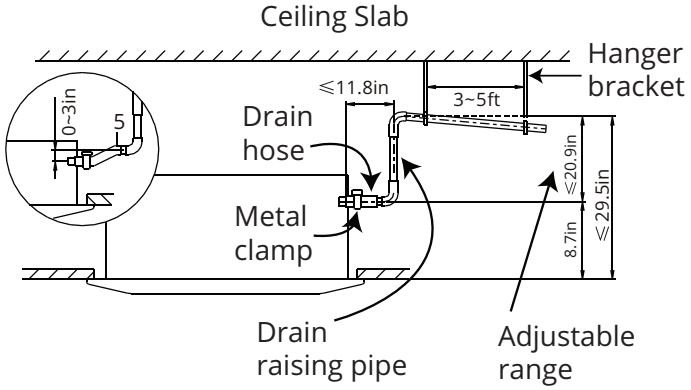


Fig 6.3

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

CAUTION

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

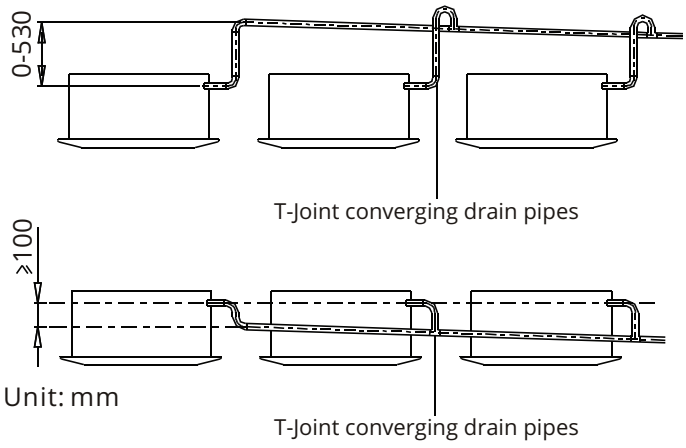


Fig 6.4

6.4 Test the drain piping

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

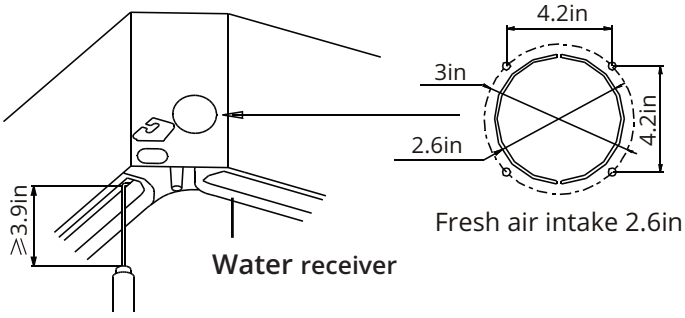


Fig 6.5

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

Electrical Wiring

7

CAUTION

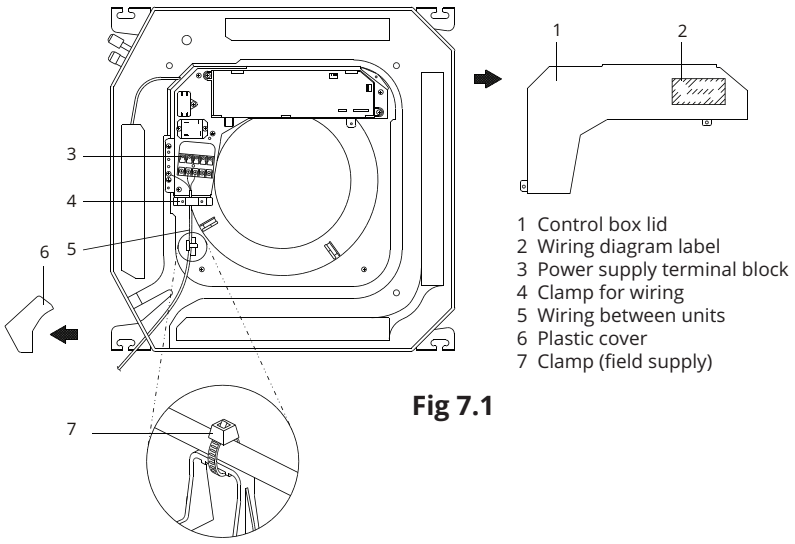
- All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.
- Use copper wire only.
- Follow the 'Wiring diagram' attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- Note that the operation will restart automatically if the main power supply is turned off and then turned back on again.
- Be sure to ground the air conditioner.

DO NOT connect the ground wire to gas pipes, water pipes, lightning rods, or telephone ground wires.

- Gas pipes: might cause explosions or fire if gas leaks.
- Water pipes: no grounding effect if hard vinyl piping is used.
- Telephone ground wires or lightning rods: might cause abnormally high electric potential in the ground during lightning storms.

How to connect wiring

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



1 Control box lid
2 Wiring diagram label
3 Power supply terminal block
4 Clamp for wiring
5 Wiring between units
6 Plastic cover
7 Clamp (field supply)

Fig 7.1

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

Decorative Panel Installation

8

Detach the intake grille

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

1 - Intake grille
2 - Grille hook

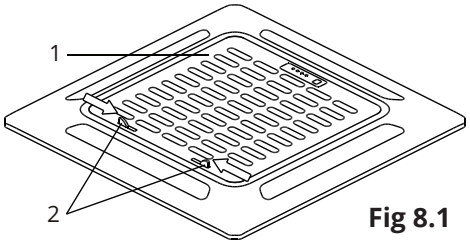
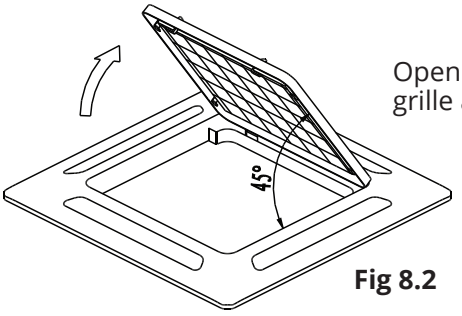


Fig 8.1



Open the intake grille and remove

Fig 8.2

Install the decoration panel

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

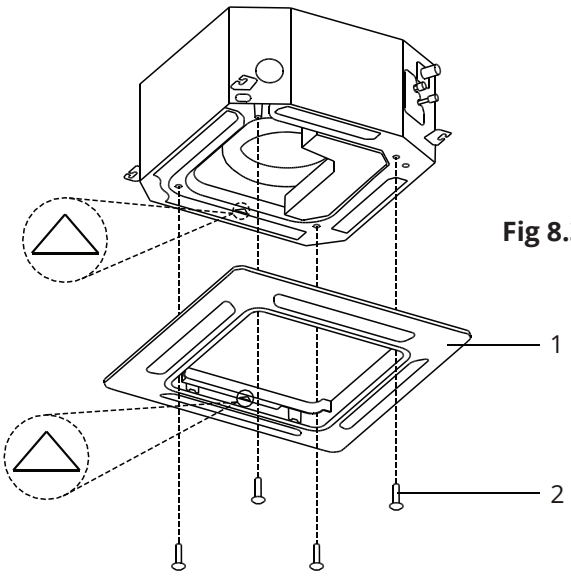


Fig 8.3

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

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

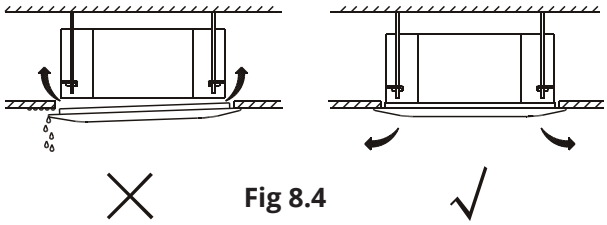
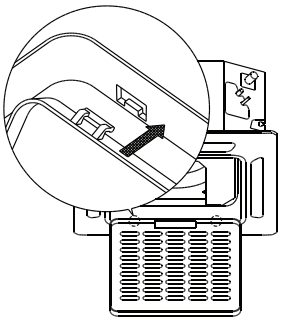


Fig 8.4

Mount the intake grille

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



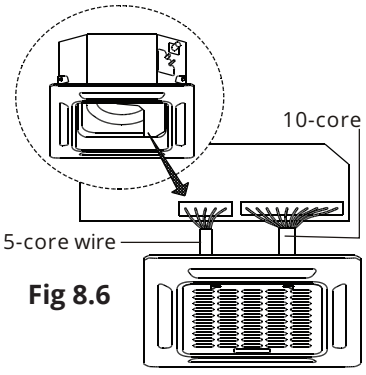


Fig 8.6

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

Fasten the control box lid with 2 screws.

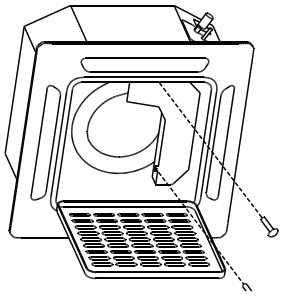
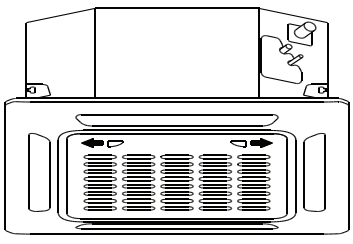


Fig 8.7



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

Fig 8.8

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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