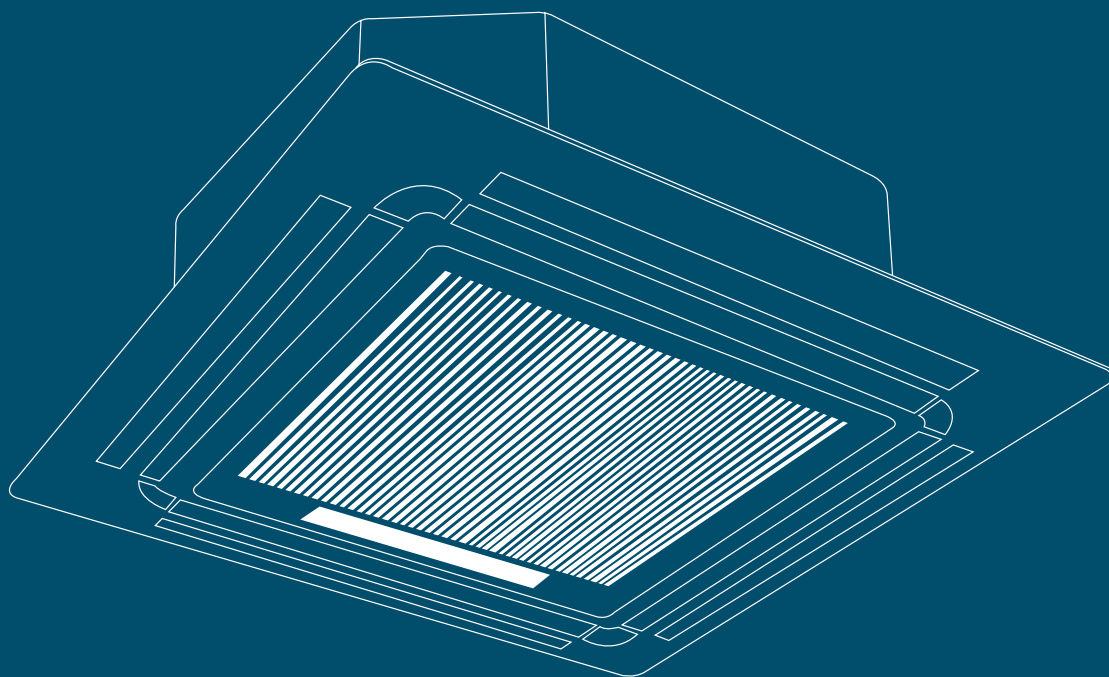


CASSETTE AIR CONDITIONER

# Installation Manual

KCS Series

KCS24 | KCS36 | KCS42 | KCS48



kaden<sup>°</sup>

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# Table of contents

<b>1. Safety precautions</b>	4
<b>2. Accessories</b>	7
<b>3. Installation summary</b>	8
Unit Parts	9
<b>4. Indoor unit installation</b>	10
Installation instructions – Indoor unit	10
Note for new home installation	13
Note on purchasing pipes	13
Note on drainpipe installation	14
<b>5. Outdoor unit installation</b>	15
Installation instructions – Outdoor unit	15
Special considerations for extreme weather	15
<b>6. Refrigerant piping connection</b>	18
Note on pipe length	18
Connection instructions – Refrigerant piping	19
Note on minimum bend radius	21
<b>7. Wiring</b>	22
Note on isolator	22
Outdoor unit wiring	23
Indoor unit wiring	24
Power specifications	25
<b>8. Leak testing and evacuation</b>	26
Leak, pressure test and evacuation	26
Preparations and precautions	27
Opening outdoor unit valves	27
Note on adding refrigerant	27
<b>9. Panel installation</b>	28
<b>10. Test run</b>	30
Before test run	30
Test run instructions	30
<b>11. Error codes</b>	31

## Important note

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

# 1. Safety precautions

## Read safety precautions before operation and installation

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

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



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



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



## WARNINGS FOR PRODUCT USE

- **Do not** share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electrical shock.
- 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.
- Installation must be performed by an authorised dealer or specialist. Defective installation can cause water leakage, electrical shock, or fire.
- Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
- Contact an authorised service technician for repair or maintenance of this unit.
- 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.
- 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.
- Only fully qualified licensed personnel should install service or carry out maintenance to this air conditioning unit. All electrical work is to follow local and national wiring standards 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.
- 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.
- 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.
- In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- 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.



## ELECTRICAL WARNINGS

- Only fully qualified licensed personnel should install, service or carry out maintenance to this air conditioning unit. All electrical work is to follow local and national wiring standards and the Installation Manual.
- The product must be properly grounded at the time of installation, or electrical shock may occur.
- For all electrical work, follow all local and national wiring standards, regulations, and the Installation Manual. Connect cables tightly, and clamp them securely to prevent external forces from damaging the terminal. Improper electrical connections can overheat and cause fire, and may also cause shock. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
- All wiring must be properly arranged to ensure that the control board cover can close properly. If the control board cover is not closed properly, it can lead to corrosion and cause the connection points on the terminal to heat up, catch fire, or cause electrical shock.
- If connecting power to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, and has a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

## TAKE NOTE OF FUSE SPECIFICATIONS

The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection.

The specifications of the fuse are printed on the circuit board, such as:

**Indoor unit:** T3.15A/250VAC, T5A/250VAC, etc.

**Outdoor unit:** T20A/250VAC (7.0kW), T30A/250VAC (7.0kW)



## WARNINGS FOR PRODUCT INSTALLATION











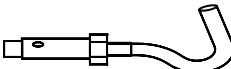

- Installation must be performed by an authorised technician. Defective installation can cause water leakage, electrical shock, or fire.
- Installation must be performed according to the installation instructions. Improper installation can cause water leakage, electrical shock, or fire.
- Contact an authorised service technician for repair or maintenance of this unit. This appliance shall be installed in accordance with national wiring regulations.
- 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.
- 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.
- Install drainage piping according to the instructions in this manual. Improper drainage may cause water damage to your home and property.
- For units that have an auxiliary electric heater, **do not** install the unit within 1 metre (3 feet) of any combustible materials.
- **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** turn on the power until all work has been completed.
- When moving or relocating the air conditioner, consult authorised service technicians for disconnection and re-installation of the unit.
- For instructions about how to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections.

## NOTE ABOUT FLUORINATED GASES

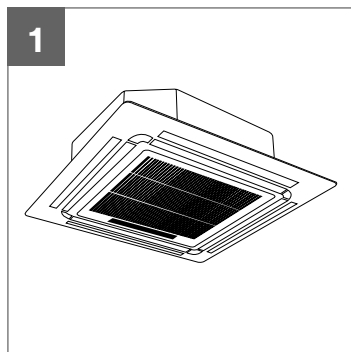
1. This air-conditioning unit contains fluorinated gases. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, decommissioning, service, maintenance and repair of this unit must be performed by a licensed technician.
3. Product decommissioning and recycling must be performed by a licensed 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.
6. Only ARC (Australian Refrigeration Council) license holders can install and commission this air conditioner. This air conditioner must be installed to meet the requirements of the current version of AS/NZS 5149. It is illegal to vent some types of refrigerant to the atmosphere.

## 2. Accessories

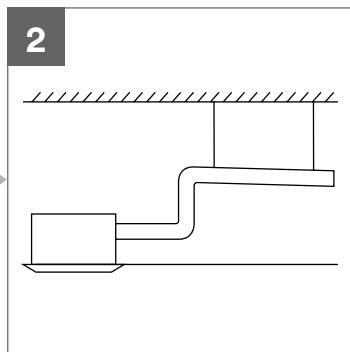
The air conditioning system comes with the following accessories. Use all of the installation parts and accessories to install the air conditioner. Improper installation may result in water leakage, electrical shock and fire, or cause the equipment to fail.

Name of accessories	Qty (pc)	Shape	Name of accessories	Qty (pc)	Shape
Owners, Installation & Remote Controller Manuals	3		Drain joint	1	
Soundproof/insulation sheath	1		Seal ring	1	
Soundproof/insulation sheath	1		Copper nut	2	
Outlet pipe sheath	1		Magnetic ring – wrap the electric wires S1 & S2 (P & Q & E ) around the magnetic ring twice	1	 S1&S2(P&Q&E)
Drain outlet pipe	1		Magnetic ring – hitch it on the connective cable between indoor unit and outdoor unit after installation	Varies by model	
Ceiling hook	4				
Suspension bolt	4				

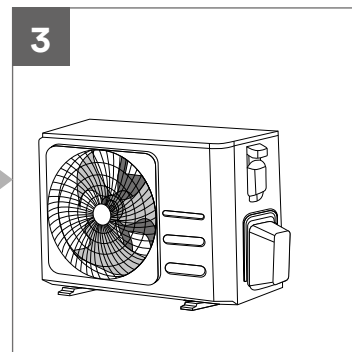
### 3. Installation summary



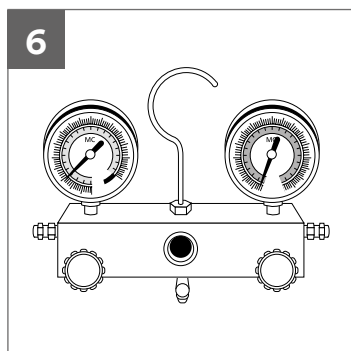
Install the indoor unit



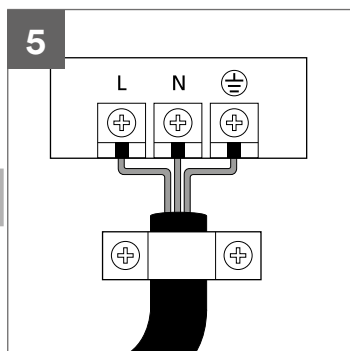
Install the drainpipe



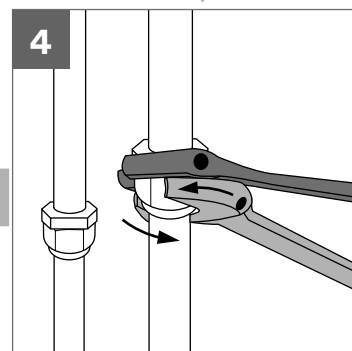
Install the outdoor unit



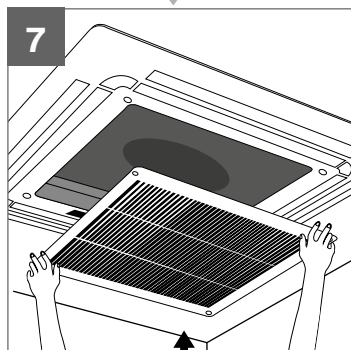
Pressure test and evacuation



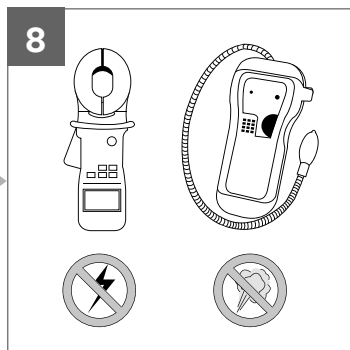
Connect the wires



Connect the refrigerant pipes



Install the front panel

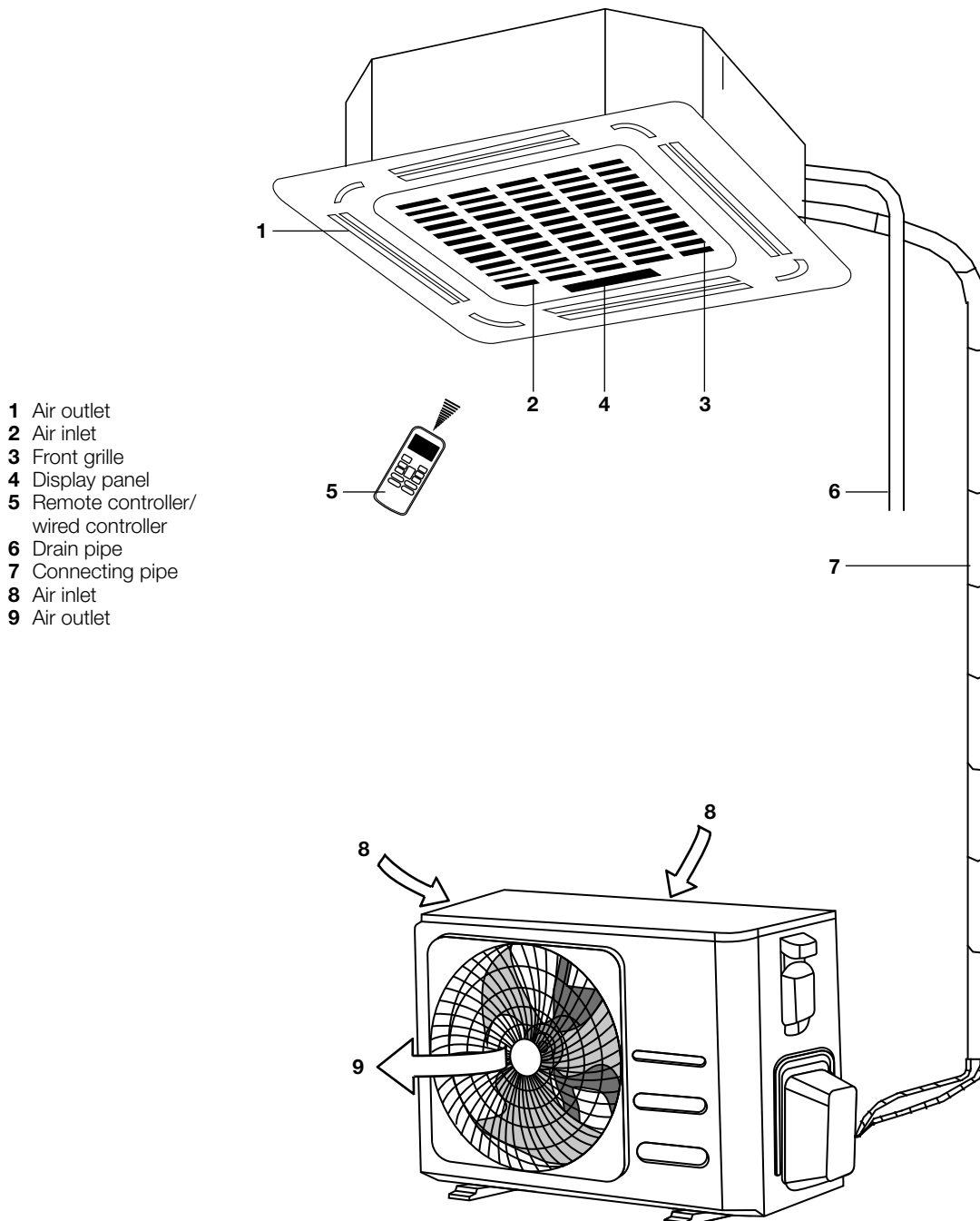


Perform a test run



## Unit parts

**NOTE:** The installation must be performed in accordance with Australian guidelines.  
The installation may be slightly different in different areas.



### Note on illustrations

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

## 4. Indoor unit installation

### Installation instructions – Indoor unit

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

#### Step 1: Select installation location

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

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

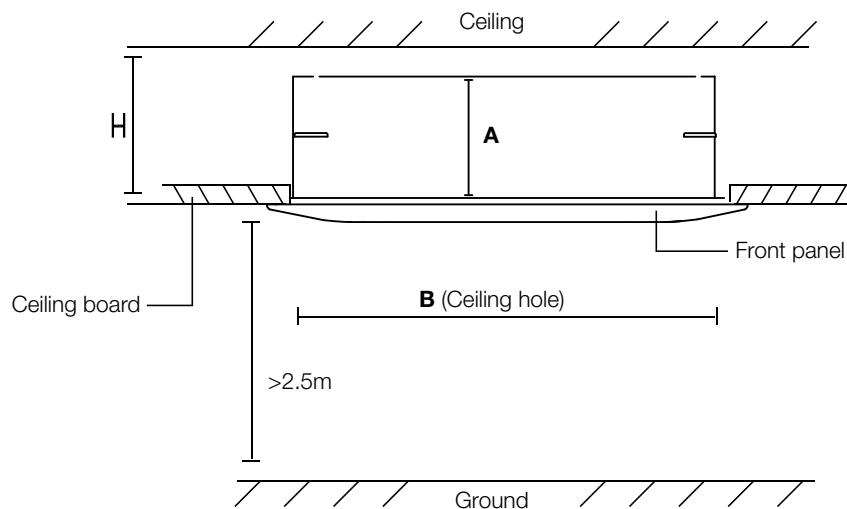
- ✓ Enough room exists for installation and maintenance.
- ✓ Enough room exists for the connecting pipe and drainpipe.
- ✓ The ceiling is horizontal and its structure can sustain the weight of the indoor unit.
- ✓ The air inlet and outlet are not blocked.
- ✓ The airflow can fill the entire room.
- ✓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

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

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

#### Recommended distances between the indoor unit and the ceiling

The distance between the mounted indoor unit and the internal ceiling should meet the following specifications.



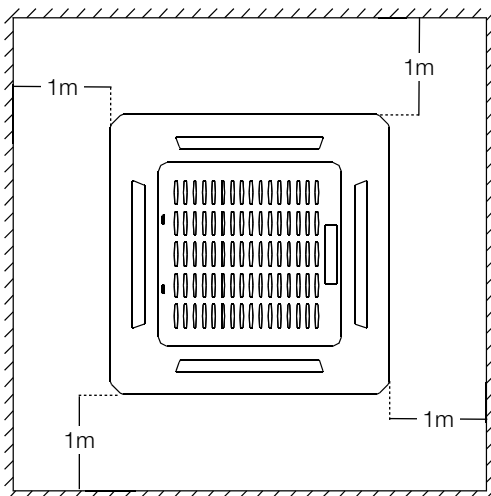
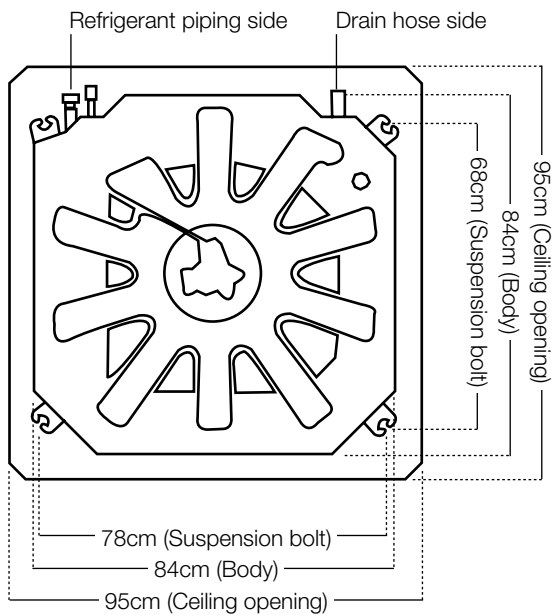
#### Distance from ceiling relative to height of indoor unit

Type	Model	A (mm)	H (mm)	B (mm)
KCS	KCS24	205	> 235	880
	KCS36	245	> 275	
	KCS42	205	> 235	
	KCS48	245	> 275	

## Step 2: Hang indoor unit

Use the included paper template to cut a rectangular hole in the ceiling, leaving at least 1m of space on all sides. The cut hole size should be 4cm larger than the body size. Be sure to mark the areas where ceiling hook holes will be drilled.

### KCS24-48 models ceiling hole size

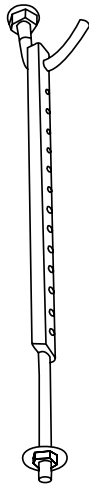




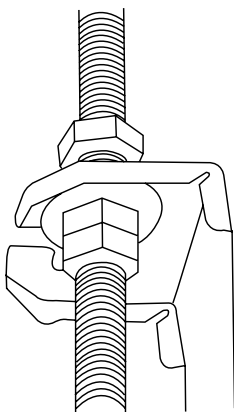
## CAUTION

The unit body should align perfectly with the hole. Ensure that the unit and the hole are the same size before moving on.

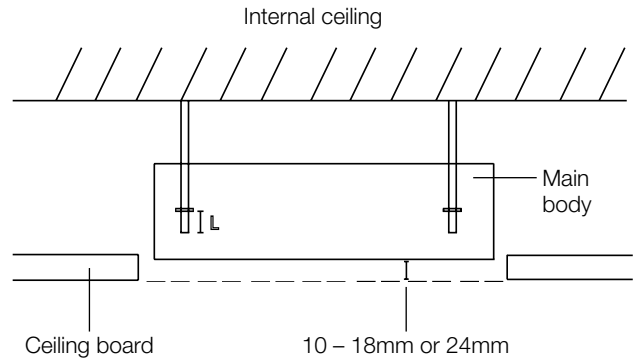
1. Drill 4 holes 5cm deep at the ceiling hook positions in the internal ceiling. Be sure to hold the drill at a 90° angle to the ceiling.
2. Using a hammer, insert the ceiling hooks into the pre-drilled holes. Secure the bolt using the included washers and nuts.
3. Install the four suspension bolts.



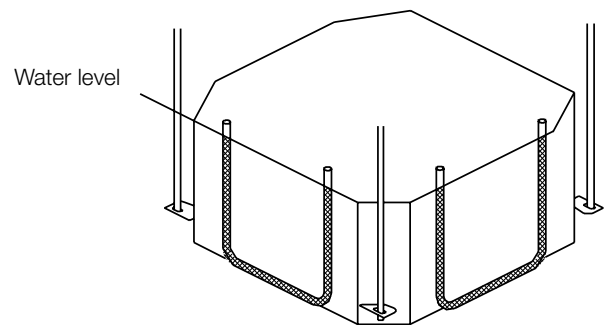
4. Mount the indoor unit. You will need two people to lift and secure it. Insert suspension bolts into the unit's hanging holes. Fasten them using the included washers and nuts.



**NOTE:** The bottom of the unit should be 10-18mm higher than the ceiling board. Generally, L (indicated in the following figure) should be half the length of the suspension bolt or long enough to prevent the nuts from coming off.

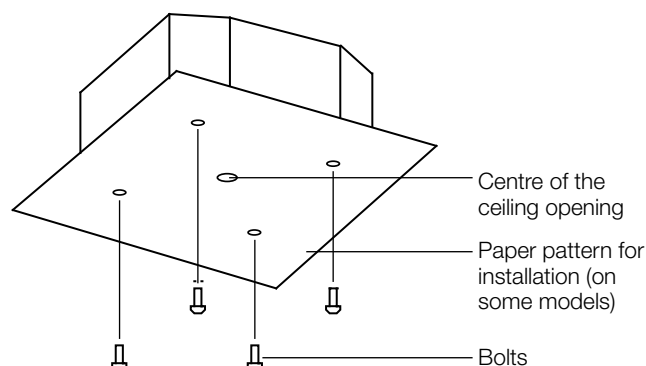


**NOTE:** Ensure that the indoor unit is completely level. The unit is equipped with a built-in drain pump and float switch. If the unit is tilted against the direction of condensate flows (the drainpipe side is raised), the float switch may malfunction and cause water to leak. Improper installation can cause the drain pipe to back up into the unit or water leakage.



## Note for new home installation

When installing the unit in a new home, the ceiling hooks can be embedded in advance. Make sure that the hooks **do not** come loose due to concrete shrinkage. After installing the indoor unit, fasten the installation paper template onto the unit with bolts to determine in advance the dimension and position of the opening on the ceiling. Follow the instructions above for the remainder of the installation.

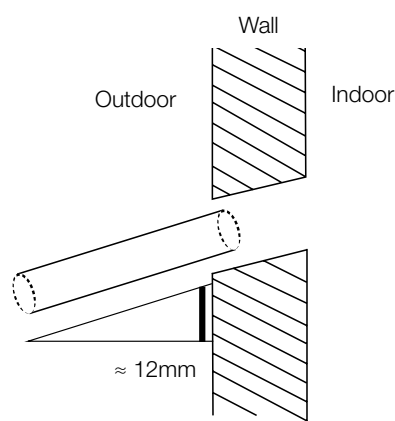


## Step 3: Drill wall hole for connective piping

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65mm or 90mm (depending on models) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 12mm. 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 piping or cables.



## Step 4: Connect drain hose

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

## CAUTION

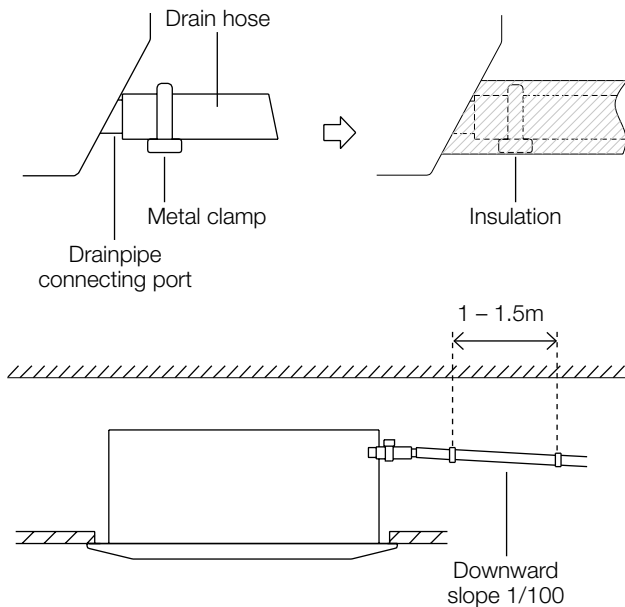
- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a water-level switch malfunction.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate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

## Note on purchasing pipes

Installation requires a polyethylene tube (exterior diameter = 3.7 – 3.9cm, interior diameter = 3.2cm).

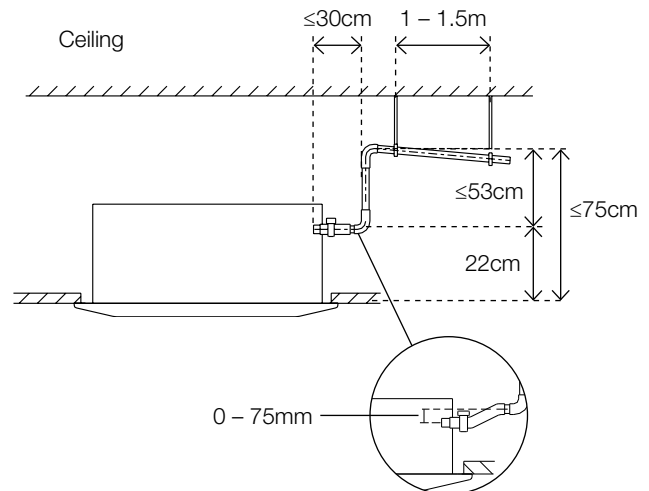
## Indoor drainpipe installation

Install the drainpipe as illustrated in the following figure.

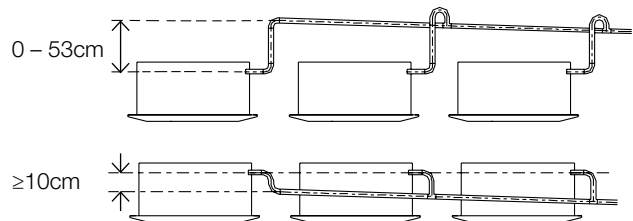


### Note on drainpipe installation

- When using an extended drainpipe, tighten the indoor connection with an additional protection tube to prevent it from pulling loose.
- The drainpipe should slope downward at a gradient of at least 1/100 to prevent water from flowing back into the air conditioner.
- To prevent the pipe from sagging, space hanging wires every 1 – 1.5m.
- If the outlet of the drainpipe is higher than the body's pump joint, provide a lift pipe for the exhaust outlet of the indoor unit. The lift pipe must be installed no higher than 75cm from the ceiling board and the distance between the unit and the lift pipe must be less than 30cm. Incorrect installation could cause water to flow back into the unit and flood.
- To prevent air bubbles, keep the drain hose level or slightly sloping up before the riser.



**NOTE:** When connecting multiple drainpipes, install the pipes as illustrated in the following figure.

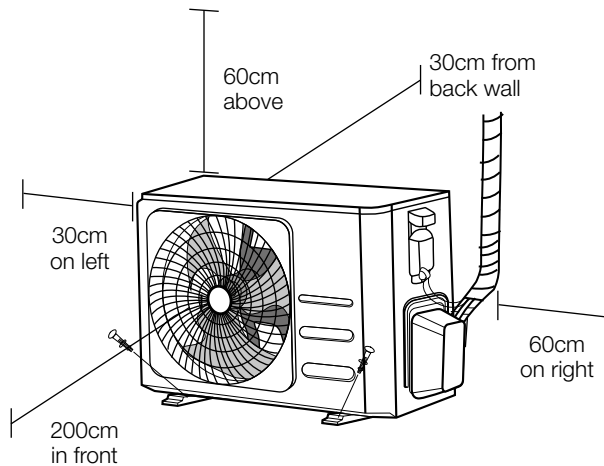


Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

**NOTE:** The drainpipe outlet should be at least 5cm 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 odours that might otherwise come back into the house.

## 5. Outdoor unit installation

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



### Installation instructions – Outdoor unit

#### Step 1: Select installation location

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

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

- ✓ Meets all spatial requirements shown in installation space requirements above.
- ✓ Good air circulation and ventilation.
- ✓ Firm and solid – the location can support the unit and will not vibrate.
- ✓ Noise from the unit will not disturb others.
- ✓ Protected from prolonged periods of direct sunlight or rain.
- ✓ Where snowfall is anticipated, raise the unit above the base pad to prevent ice build-up and coil damage. Mount the unit high enough to be above the average accumulated area snowfall. The minimum height must be 45cm above the base pad.

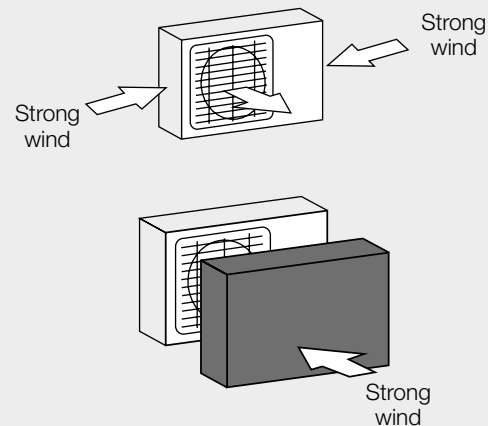
#### DO NOT install unit in the following locations:

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

### Special considerations for extreme weather

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

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



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

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

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

Use outdoor unit that is specially designed to resist corrosion.

## Step 2: Install drain joint

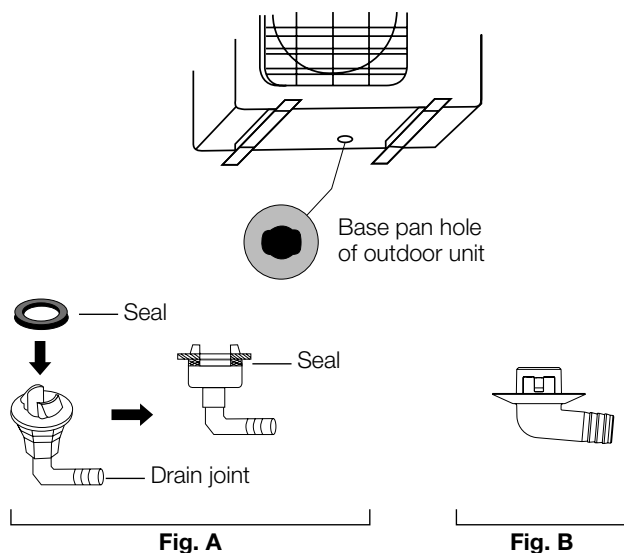
Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

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

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

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

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



### ! IN COLD CLIMATES

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

## Step 3: Anchor outdoor unit

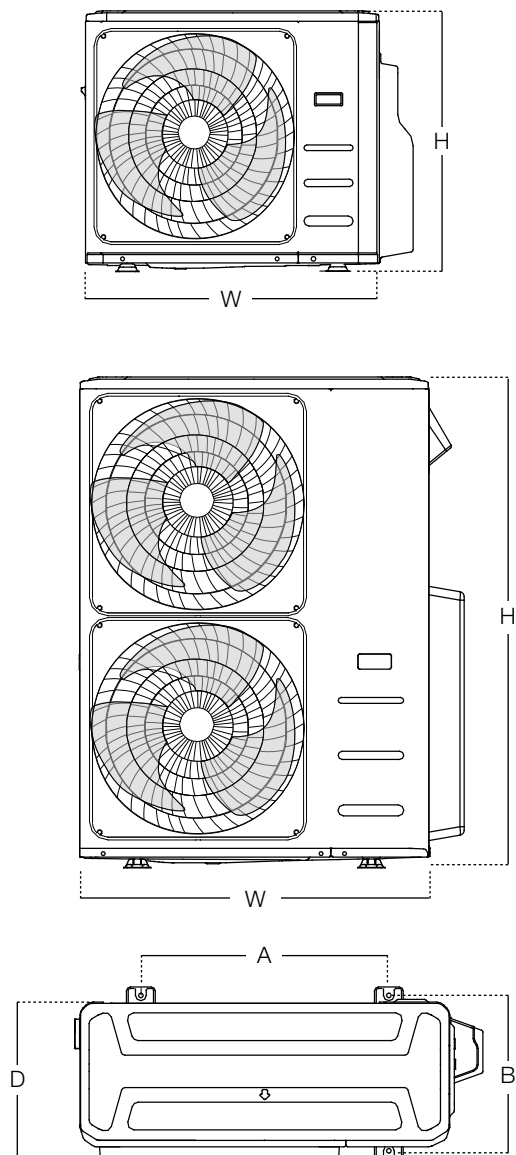
The outdoor unit can be anchored to the ground or to a wall-mounted bracket with bolt (M10). Prepare the installation base of the unit according to the dimensions below.

### Unit mounting dimensions

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

#### Outdoor unit types and specifications

##### Split type outdoor unit



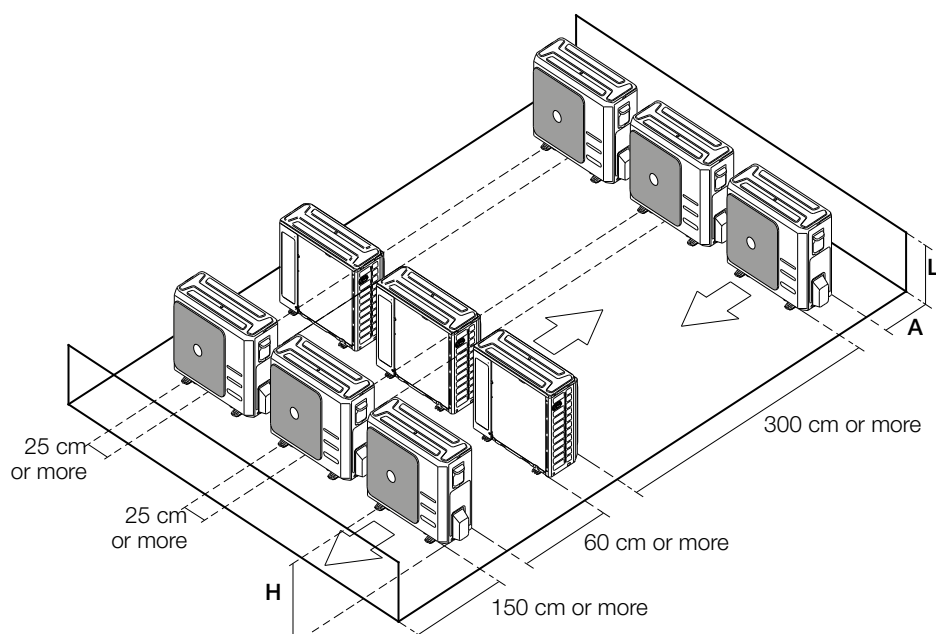


Outdoor unit dimensions W x H x D	Mounting dimensions	
	Distance A	Distance B
946mm x 810mm x 410mm	673mm	403mm
952mm x 1333mm x 415mm	634mm	404mm

### Rows of series installation

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

	L	A
$L \leq H$	$L \leq 1/2H$	25 cm or more
	$1/2H < L \leq H$	30 cm or more
$L > H$	Can not be installed	



## 6. Refrigerant piping connection

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

### Note on pipe length

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

The maximum length and drop height based on models. (Unit: metres.)

Type of model	Models	Length of piping	Maximum drop height
KCS	KSC24	50	25
	KCS24 – KCS36	65	30
	KCS36 – KCS48	65	30

#### ! CAUTION

- Oil traps

If the indoor unit is installed higher than the outdoor unit:

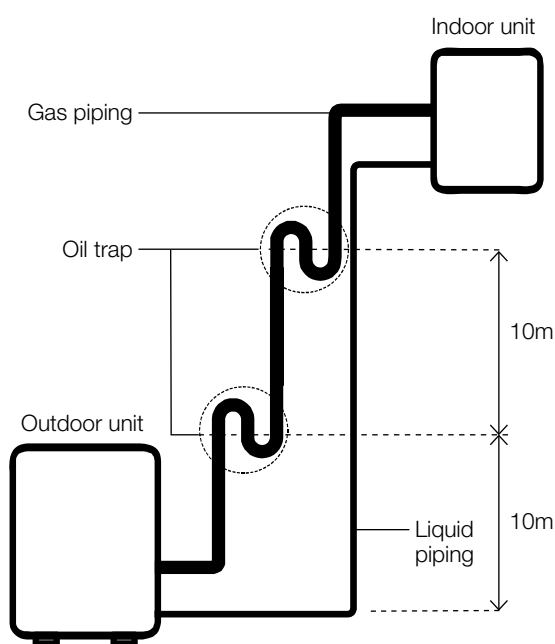
If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.

An oil trap should be installed every 10m of vertical suction line riser.

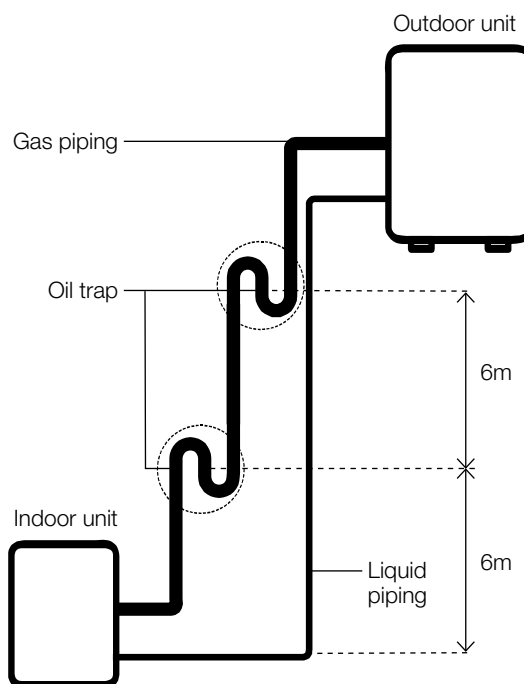
#### ! CAUTION

If the outdoor unit is installed higher than the indoor unit:

It is recommended that vertical suction risers not be up-sized. Proper oil return to the compressor should be maintained with suction gas velocity. If velocities drop below 7.62m/s, oil return will be decreased. An oil trap should be installed every 6m of vertical suction line riser.



The outdoor unit is installed higher than the indoor unit



The indoor unit is installed higher than the outdoor unit

## Connection instructions – Refrigerant piping

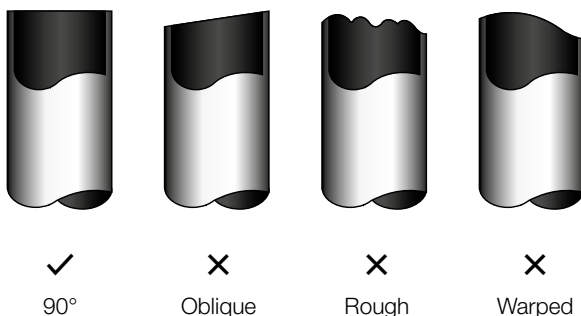
### ! CAUTION

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

### Step 1: Cut pipes

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

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



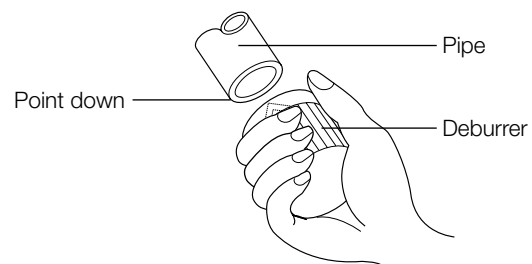
### ! DO NOT DEFORM PIPE WHILE CUTTING

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

### Step 2: Remove burrs

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

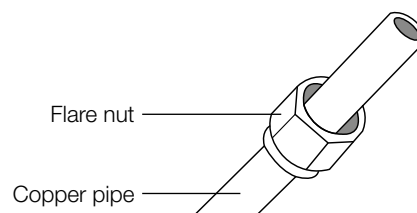
1. Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
2. Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



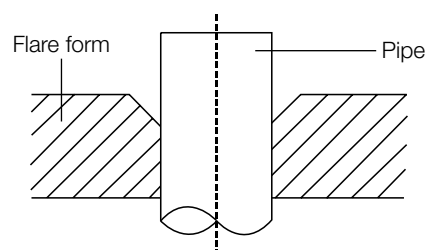
### Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

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



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

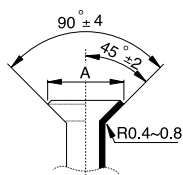


7. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions.

### Piping extension beyond flare form

Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm)	
		Min.	Max.
Ø 6.35	18 – 20 N.m (183 – 204 kgf.cm)	8.4	8.7
Ø 9.52	25 – 26 N.m (255 – 265 kgf.cm)	13.2	13.5
Ø 12.7	35 – 36 N.m (357 – 367 kgf.cm)	16.2	16.5
Ø 15.88	45 – 47 N.m (459 – 480 kgf.cm)	19.2	19.7
Ø 19	65 – 67 N.m (663 – 683 kgf.cm)	23.2	23.7
Ø 22	75 – 85 N.m (765 – 867 kgf.cm)	26.4	26.9

### Flare shape

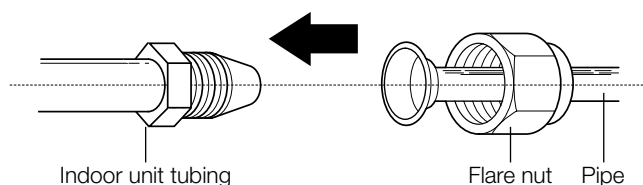


- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

## Step 4: Connect pipes

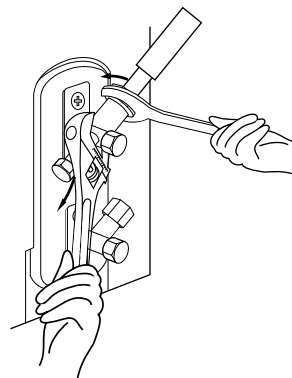
Connect the copper pipes to the indoor unit first, then connect it to the outdoor unit. You should first connect the low-pressure pipe, then the high-pressure pipe.

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



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

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



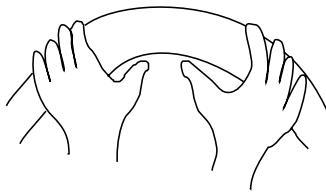
### ! CAUTION

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

### Note on minimum bend radius

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

Bend the pipe with thumb



Min radius 10cm

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

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

7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.



### CAUTION

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

# 7. Wiring



## BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REQUIREMENTS

1. All wiring must comply with local and national electrical codes, 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 and 100% of rated voltage. Insufficient power supply can cause malfunction, electrical shock, or fire.
5. If connecting power to fixed wiring, install a surge protector and main power switch with a capacity of 1.5 times the maximum current of the unit.
6. If connecting power to fixed wiring, a switch or circuit breaker that disconnects all poles and has a contact separation of at least 3mm (1/8 in) must be incorporated in the fixed wiring. The qualified technician must use an approved circuit breaker or switch.
7. Only connect the unit to an individual branch circuit outlet. **Do not** connect another appliance to that outlet.
8. Make sure to properly ground the air conditioner.
9. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
10. **Do not** let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.

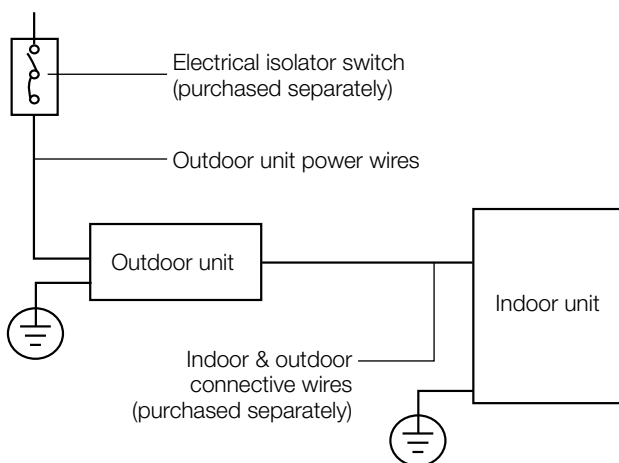


## WARNING

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

## Note on isolator

An electrical isolator must be installed adjacent the outdoor unit so it can be switched off in an emergency.



## Outdoor unit wiring



### WARNING

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

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

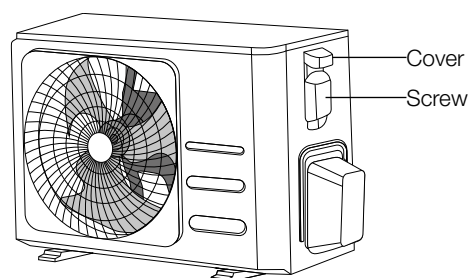
#### Minimum cross-sectional area of power and signal cables (For reference)

Rated current of appliance (A)	Nominal cross-sectional area (mm <sup>2</sup> )
> 3 and ≤ 6	0.75
> 6 and ≤ 10	1
> 10 and ≤ 16	1.5
> 16 and ≤ 25	2.5
> 25 and ≤ 32	4
> 32 and ≤ 40	6

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

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

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

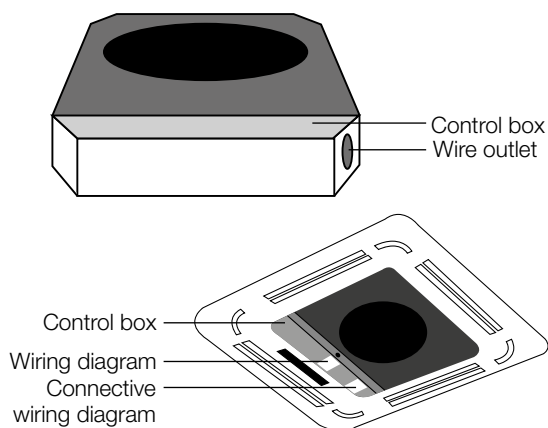


3. Connect the u-lugs to the terminals. Match the wire colours/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal.
4. Clamp down the cable with the cable clamp.
5. Insulate unused wires with electrical tape. Keep them away from any electrical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

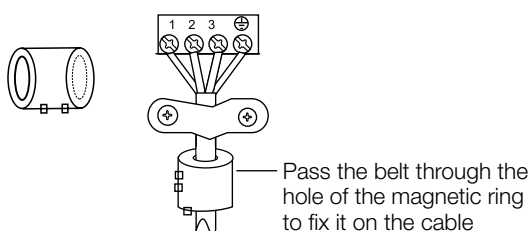
## Indoor unit wiring

1. Prepare the cable for connection
  - a. Using wire strippers, strip the rubber jacket from both ends of the signal cable to reveal about 15cm 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. Open the front panel of the indoor unit. Using a screwdriver, remove the cover of the electric control box on your indoor unit.
3. Thread the power cable and the signal cable through the wire outlet.
4. Connect the u-lugs to the terminals. Match the wire colours/labels with the labels on the terminal block. Firmly screw the u-lug of each wire to its corresponding terminal. Refer to the Serial Number and Wiring Diagram located on the cover of the electric control box.

### KCS models



### Magnetic ring (if supplied and packed with the accessories)



## ! CAUTION

- While connecting the wires, please strictly follow the wiring diagram.
  - The refrigerant circuit can become very hot. Keep the interconnection cable away from the copper tube.
5. Clamp down the cable with the cable clamp.  
The cable must not be loose or pull on the u-lugs.
  6. Locate the factory test cable. This has two 5-conductor cream-coloured female connectors plugged into connector CN14 of the indoor unit printed circuit board (PCB) using a 10-conductor white plug.
  7. Remove the factory test cable from the white-coloured connector CN14 of the indoor PCB.
  8. Plug the cable from the cassette cover panel with the same type of white connector into CN14 of the indoor PCB.
  9. Ensure the control panel cable from the cassette cover panel is attached to the black 10-conductor connector plug.
  10. Re-attach the electrical enclosure cover being careful not to squash the wiring.



## Power specifications

### Indoor power supply specifications

MODEL (Btu/h)		KCS24	KCS36	KCS42-48
Power	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		32/25	50/40	70/55

### Outdoor power supply specifications

MODEL (Btu/h)		KCS24	KCS36	KCS42-48
Power	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		32/25	50/40	70/55

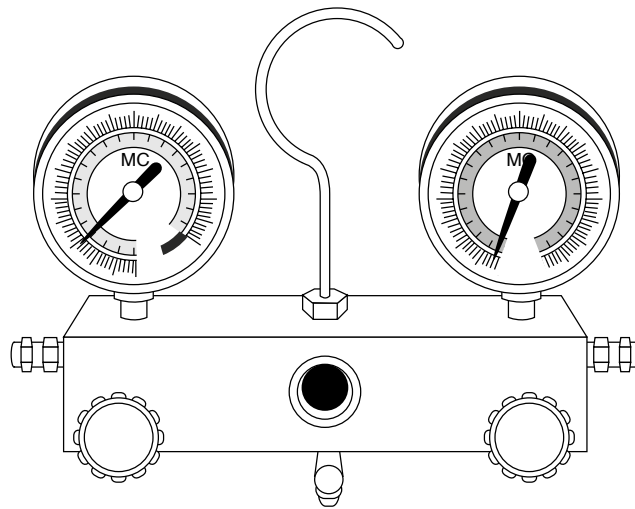
### Independent power supply specifications

MODEL (Btu/h)		KCS24	KCS36	KCS42-48
Power (indoor)	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		15/10	15/10	15/10
Power (outdoor)	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		32/25	50/40	70/55

### Inverter type A/C power specifications

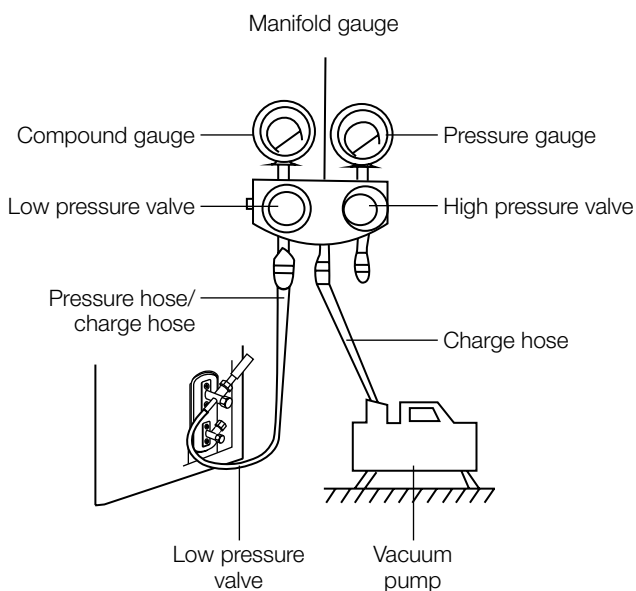
MODEL(Btu/h)		KCS24	KCS36	KCS42-48
Power (indoor)	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		15/10	15/10	15/10
Power (outdoor)	Phase	1 Phase	1 Phase	1 Phase
	Volt	208 – 240V	208 – 240V	208 – 240V
Circuit breaker/fuse (A)		25/20	40/30	50/40

## 8. Leak testing and evacuation



### Leak, pressure test and evacuation

The interconnecting pipe work and indoor unit must be pressure tested at 1000kpa and leak tested before being evacuated. Before using the manifold gauge and vacuum pump, read their operation manuals to familiarise yourself with how to use them properly.



1. Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
2. Connect another charge hose from the manifold gauge to the vacuum pump.
3. Monitor test pressure and check with a leak detector and bubble solution. Safely release the test pressure.
4. Open the low pressure side of the manifold gauge. Keep the high pressure side closed.
5. Turn on the vacuum pump to evacuate the system.
6. Evacuate the interconnecting pipes to  $\leq 500$  microns.
7. Close the low pressure side of the manifold gauge, and turn off the vacuum pump.
8. Wait for 5 minutes, then check that there has been no change in system vacuum.
9. If the vacuum does not settle, repeat from Step 1 of Leak, pressure test and evacuations. If there is no change in system vacuum, unscrew the cap from the packed valve (high pressure valve).

## Preparations and precautions

Air and foreign matter in the refrigerant circuit can cause abnormal rises in pressure, which can damage the air conditioner, reduce its efficiency, and cause injury. Use a vacuum pump and manifold gauge to evacuate the refrigerant circuit, removing any non-condensable gas and moisture from the system.

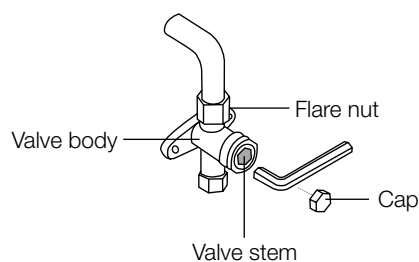
Evacuation should be performed upon initial installation and when unit is relocated.

## Before performing evacuation

- ✓ Check to make sure that both high-pressure and low-pressure pipes between the indoor and outdoor units are connected properly in accordance with the Refrigerant piping connection section of this manual.
- ✓ Pressure test the interconnecting pipes.
- ✓ Check to make sure all wiring is connected properly.

## Opening outdoor unit valves

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



2. Watch the pressure gauge for one minute to make sure that there is no change in pressure. The pressure gauge should read slightly higher than atmospheric pressure.
3. Remove the charge hose from the service port.
4. Using a hexagonal wrench, fully open both the high pressure and low pressure valves.
5. Tighten valve caps on all three valves (service port, high pressure, low pressure) by hand. You may tighten it further using a torque wrench if needed.

## Note on adding refrigerant

Some systems require additional charging depending on pipe lengths. The additional refrigerant to be charged can be calculated using the below.

Connective pipe length (m)	Evacuation method	Additional refrigerant	
Standard pipe length is 20m	Vacuum pump	Liquid side: ø 6.35 (ø 0.25") <b>Inverter R410A:</b> Pipe length - Standard length x 15g/m	Liquid side: ø 9.52 (ø 0.375") <b>Inverter R410A:</b> Pipe length - Standard length x 30g/m

**! CAUTION – DO NOT MIX REFRIGERANT TYPES.**

## 9. Panel installation

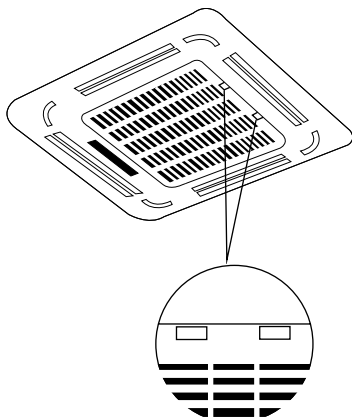
### CAUTION

**Do not** place the panel face down on the floor, against a wall, or on uneven surfaces.

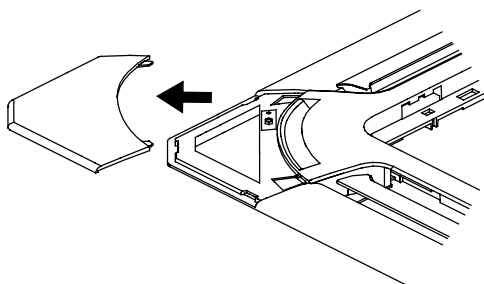
### KCS models

#### Step 1: Remove the front grille.

1. Push both of the tabs towards the middle simultaneously to unlock the hook on the grille.
2. Hold the grille at a 45° angle, lift it up slightly and detach it from the main body.



**Step 2: Remove the installation covers at the four corners by sliding them outwards.**

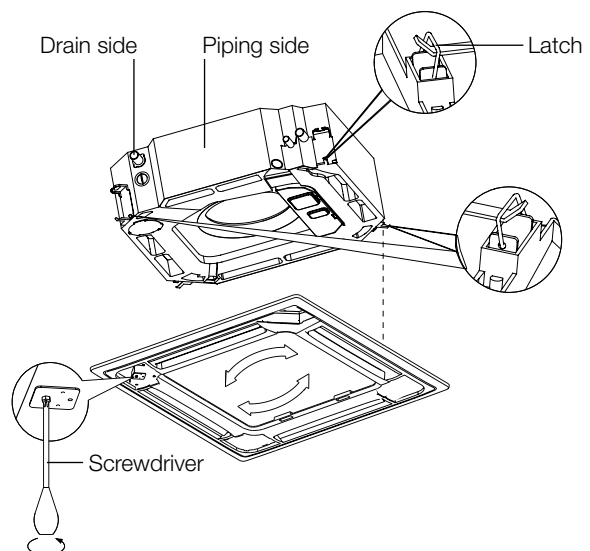


#### Step 3: Install the panel

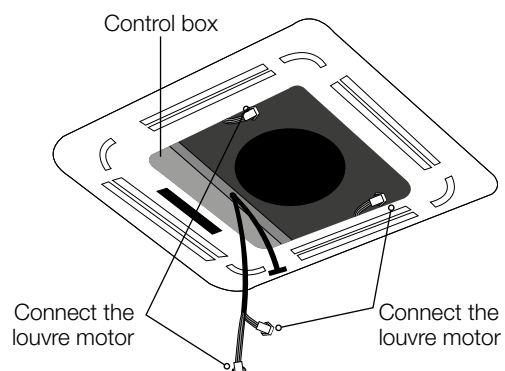
Align the front panel to the main body, taking into account the position of the piping and drain sides. Hang the four latches of the decorative panel to the hooks of the indoor unit. Tighten the panel hook screws evenly at the four corners.

**NOTE:** Tighten the screws until the thickness of the sponge between the main body and the panel reduces to 4 – 6mm. The edge of the panel should be in contact with the ceiling well.

Adjust the panel by turning it to the arrowed direction so that the ceiling opening is completely covered.

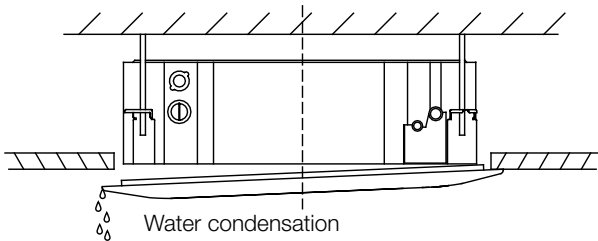


1. Connect the two louvre motor connectors to the corresponding wires in the control box.



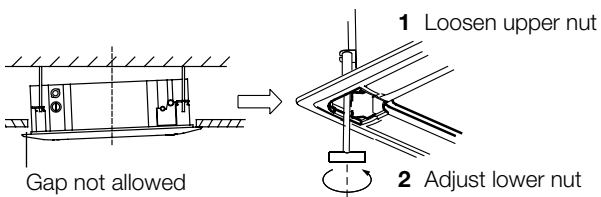
2. Remove foam stops from inside the fan.
3. Attach the side of the front grille to the panel.
4. Connect the display panel cable to the corresponding wire on the main body.
5. Close the front grille.
6. Fasten the installation covers at all four corners by pushing them inwards.

**NOTE:** If the height of the indoor unit needs to be adjusted, you can do so through the openings at the panel's four corners. Make sure that the internal wiring and drainpipe are not affected by this adjustment.



## ! CAUTION

Failure to tighten screws can cause water leakage.



## ! CAUTION

If the unit is not hung correctly and a gap exists, the unit's height must be adjusted to ensure proper function. The unit's height can be adjusted by loosening the upper nut, and adjusting the lower nut.

# 10. Test run

## Before test run

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

1. Indoor and outdoor units are properly installed.
2. Piping and wiring are properly connected.
3. No obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
4. Refrigeration system does not leak.
5. Drainage system is unimpeded and draining to a safe location.
6. Heating insulation is properly installed.
7. Grounding wires are properly connected.
8. Length of the piping and additional refrigerant stow capacity have been recorded.
9. Power voltage is the correct voltage for the air conditioner.

## CAUTION

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

## Test run instructions

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

### f. Drainage test

- Ensure the drainpipe flows smoothly. For new buildings, perform this test before finishing the ceiling.
- Remove the test cover. Add 2,000ml of water to the tank through the attached tube.
- Turn on the main power switch and run the air conditioner in COOL mode.
- Listen to the sound of the drain pump to see if it makes any unusual noises.
- Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
- Make sure that there are no leaks in any of the piping.
- Stop the air conditioner. Turn off the main power switch and reinstall the test cover.

### g. Ensure there is no vibration or abnormal noise during operation.

### 5. For the outdoor unit

- a. Check to see if the refrigeration system is leaking.
- b. Make sure there is no vibration or abnormal noise during operation.
- c. Ensure the wind, noise, and water generated by the unit **do not** disturb your neighbours or pose a safety hazard.

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

# 11. Error codes

Operation lamp	Timer lamp	Display	LED status
△ 1 time	×	E0	Indoor unit EEPROM parameter error
△ 2 times	×	E1	Indoor/outdoor units communication error
△ 4 times	×	E3	Indoor fan speed has been out of control
△ 5 times	×	E4	Indoor room temperature sensor T1 open circuit or short circuit
△ 6 times	×	E5	Evaporator coil temperature sensor T2 open circuit or short circuit
△ 7 times	×	EC	Refrigerant leakage detection
△ 1 times	○	F0	Overload current protection
△ 2 times	○	F1	Outdoor ambient temperature sensor T4 open circuit or short circuit
△ 3 times	○	F2	Condenser coil temperature sensor T3 open circuit or short circuit
△ 4 times	○	F3	Compressor discharge temperature sensor T5 open circuit or short circuit
△ 5 times	○	F4	Outdoor unit EEPROM parameter error
△ 6 times	○	F5	Outdoor fan speed has been out of control
△ 1 times	△	P0	IPM malfunction or IGBT over-strong current protection
△ 2 times	△	P1	Over voltage or over low voltage protection
△ 3 times	△	P2	High temperature protection of IPM module or compressor top
△ 5 times	△	P4	Inverter compressor drive error

○ light

×

△ flash

\*Fault Symptom: The display board shows a garbled code or a code that is not an error code found in the service manual nor a temperature reading.

## Trouble shooting:

Use the remote controller. If the unit does not respond to the remote, the indoor PCB needs to be replaced; if the unit does respond, then the display board needs to be replaced.

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

**kaden°**<sup>TM</sup>

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