SPLIT-TYPE ROOM AIR CONDITIONER

Installation Manual

senville®

IMPORTANT NOTE:

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

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Explanation of symbols displayed on the indoor unit or outdoor unit

	**WARNING**	This symbol shows that this appliance used a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.
	**CAUTION**	This symbol shows that the operation manual should be read carefully.
	**CAUTION**	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	**CAUTION**	
	**CAUTION**	This symbol shows that information is available such as the operating manual or installation manual.

Safety Precautions

It is really important you 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.

Explanation of Symbols

WARNING

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

CAUTION

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

⚠ WARNING

This appliance is not intended for use by persons(including children) with reduced physical, sensory or mental capabilities, or 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. Children should be supervised to ensure that they do not play with the appliance.

⚠ ELECTRICAL WARNINGS

- Only use the specified wire. If the wire is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The product must be properly grounded at the time of installation, or electric 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.
- Disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- Do not share the electrical outlet with other appliances. Improper or insufficient power supply can cause fire or electric shock.
- If connecting power to fixed wiring, an all-pole disconnection device which has at least 3mm clearances in all poles, and have 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.

⚠ WARNINGS FOR PRODUCT INSTALLATION

- Turn off the air conditioner and disconnect the power before performing any installation or repairing. Failure to do so can cause electric shock.
- Installation must be performed by an authorized 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 authorized 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 meter (3 feet) of any combustible materials.
- For the units that have a wireless network function, the USB device access, replacement, maintenance operations must be carried out by professional staff.
- 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 experienced service technicians for disconnection and reinstallation of the unit.
- How to install the appliance to its support, please read the information for details in "indoor unit installation" and "outdoor unit installation" sections .

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 , for example : T3.15AL/250VAC, T5AL/250VAC, T3.15A/250VAC, T5A/250VAC, T20A/250VAC, T30A/250VAC,etc.
NOTE: Only the blast-proof ceramic fuse can be used.

⚠ WARNING FOR USING FLAMMABLE REFRIGERANTS

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.

For R454B refrigerant charge amount and minimum room area:

The machine you purchased may be one of the types in the table below. The indoor and outdoor units are designed to be used together. Please check the machine you purchased.The indoor unit should be installed at least 6.0ft /1.8m above from the floor, the height of the room cannot be less than 7.3ft /2.2m, and the minimum room area of operating or storage should be as specified in the following table.

A_{min} [ft²/m²]	**h_{inst}[ft/m]**					
m_c or m_{REL} [oz/kg]	6.0～7.3/ 1.8～2.2	7.6/2.3	7.9/2.4	8.6/2.6	9.2/2.8	9.9/3.0
<=62.6/1.776	12/1.10					
63.4/1.8	60/5.53	57/5.29	55/5.07	51/4.68	47/4.35	44/4.06
70.5/2.0	67/6.15	64/5.88	61/5.64	56/5.2	52/4.83	49/4.51
77.5/2.2	73/6.76	70/6.47	67/6.2	62/5.72	58/5.31	54/4.96
84.6/2.4	80/7.38	76/7.06	73/6.76	68/6.24	63/5.8	59/5.41
91.7/2.6	86/7.99	83/7.64	79/7.32	73/6.76	68/6.28	64/5.86
98.7/2.8	93/8.6	89/8.23	85/7.89	79/7.28	73/6.76	68/6.31
105.8/3.0	100/9.22	95/8.82	91/8.45	84/7.8	78/7.24	73/6.76
112.8/3.2	106/9.83	102/9.41	97/9.01	90/8.32	84/7.73	78/7.21
119.9/3.4	113/10.45	108/9.99	104/9.58	96/8.84	89/8.21	83/7.66
126.9/3.6	120/11.06	114/10.58	110/10.14	101/9.36	94/8.69	88/8.11
134/3.8	126/11.68	121/11.17	116/10.7	107/9.88	99/9.17	93/8.56
141.1/4.0	133/12.29	127/11.76	122/11.27	112/10.4	104/9.66	97/9.01
148.1/4.2	139/12.9	133/12.34	128/11.83	118/10.92	110/10.14	102/9.46
155.1/4.4	146/13.52	140/12.93	134/12.39	124/11.44	115/10.62	107/9.91
162.2/4.6	153/14.13	146/13.52	140/12.96	129/11.96	120/11.11	112/10.37
169.2/4.8	159/14.75	152/14.11	146/13.52	135/12.48	125/11.59	117/10.82
176.3/5.0	166/15.36	159/14.69	152/14.08	140/13	130/12.07	122/11.27
Area formula	**A_{min}** is the required minimum room area in ft²/m² **m_c** is the actual refrigerant charge in the system in oz/kg **m_{REL}** is the refrigerant releasable charge in oz/kg (Applicable to the units with refrigerant sensors only) **h_{inst}** is the height of the bottom of the appliance relative to the floor of the room after installation. **WARNING:** The minimum room area or minimum room area of conditioned space is based on releasable charge and total system refrigerant charge.					

For the units with refrigerant sensors, when the unit detects a refrigerant leak, the minimum airflow of the indoor unit is as follows:

Model	Indoor unit	Outdoor unit	Indoor Nominal air volume	
06K	SENA-06HF-IGG	SENA-06HF-OG	550m³/h	325CFM
09K	SENA-09HF-IGG	SENA-09HF-OG		
12K	SENA-12HF-IGG	SENA-12HF-OG		
18K	SENA-18HF-IGG	SENA-18HF-OG	850m³/h	500CFM
24K	SENA-24HF-IGG	SENA-24HF-OG	1050m³/h	620CFM
33K	SENA-33HF-IGG	SENA-33HF-OG	1250m³/h	735CFM

1. **Installation**(where refrigerant pipes are allowed)
   - Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.
   - Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
   - That the installation of pipe-work shall be kept to a minimum.
   - That pipe-work shall be protected from physical damage.
   - Where refrigerant pipes shall be compliance with national gas regulations.
   - That mechanical connections shall be accessible for maintenance purposes.
   - Be more careful that foreign matter(oil, water,etc) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc.
   - All working procedure that affects safety means shall only be carried by competent persons.
   - Appliance shall be stored in a well ventilated area where the room size corresponds to the room area as specifiec for operation.
   - Joints shall be tested with detection equipment with a capability of 5 g/year of refrigerant or better, with the equipment in standstill and under operation or under a pressure of at least these standstill or operation conditions after installation. Detachable joints shall NOT be used in the indoor side of the unit (brazed, welded joint could be used).
   - In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
   - LEAK DETECTION SYSTEM installed. Unit must be powered except for service. When the refrigerant sensor detects refrigerant leakage, the indoor unit will display a error code and emit a buzzing sound, the compressor of outdoor unit will immediately stop, and the indoor fan will start running. The service life of the refrigerant sensor is 15 years. When the refrigerant sensor malfunctions, the indoor unit will display the error code “FHCC”. The refrigerant sensor can not be repaired and can only be replaced by the manufacture. It shall only be replaced with the sensor specified by the manufacture.(Applicable to the units with refrigerant sensors only)

2. **When a FLAMMABLE REFRIGERANT is used,** the requirements for installation space of appliance and/or ventilation requirements are determined according to
   - the mass charge amount(M) used in the appliance,
   - the installation location,
   - the type of ventilation of the location or of the appliance.
   - piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.
   - that protection devices, piping, and fittings shall be protected as far as possible against adverse environmental effects, for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris;
   - that piping in refrigeration systems shall be so designed and installed to minimize the likelihood of hydraulic shock damaging the system;
   - that steel pipes and components shall be protected against corrosion with a rustproof coating before applying any insulation;
   - that precautions shall be taken to avoid excessive vibration or pulsation;
   - the minimum floor area of the room shall be mentioned in the form of a table or a single figure without reference to a formula;
   - after completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements:

   a. The minimum test pressure for the low side of the system shall be the low side

design pressure and the minimum test pressure for the high side of the system shall be the high side design pressure, unless the high side of the system can not be isolated from the low side of the system in which case the entire system shall be pressure tested to the low side design pressure.

b. The test pressure after removal of pressure source shall be maintained for at least 1 h with no decrease of pressure indicated by the test gauge, with test gauge resolution not exceeding 5% of the test pressure.

c. During the evacuation test, after achieving a vacuum level specified in the manual or less, the refrigeration system shall be isolated from the vacuum pump and the pressure shall not rise above 1500 microns within 10 min. The vacuum pressure level shall be specified in the manual, and shall be the lessor of 500 microns or the value required for compliance with national and local codes and standards, which may vary between residential, commercial,and industrial buildings.

- field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.

3 . Qualification of workers

Any maintenance, service and repair operations must be required qualification of the working personnel. Every working procedure that affects safety means shall only be carried out by competent persons that joined the training and achieved competence should be documented by a certificate. The training of these procedures is carried out by national training organizations or manufacturers that are accredited to teach the relevant national competency standards that may be set in legislation. All training shall follow the ANNEX HH requirements of UL 60335-2-40 4th Edition.

Examples for such working procedures are:

- breaking into the refrigerating circuit;
- opening of sealed components;
- opening of ventilated enclosures.

4. Ventilated area

Ensure that the area is in the open or that it it adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

5. Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

6. Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch(or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for refrigerant systems. Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

NOTE Examples of leak detection fluids are
- bubble method,
- fluorescent method agents.

If a leak is suspected, all naked flames shall be removed/extinguished.
If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. See the following instructions of removal of refrigerant.

7. Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.
The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using flame to open circuit; and
- open the circuit

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.
For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

8. Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Works shall be undertaken with appropriate tools only (In case of uncertainty, please consult the manufacturer of the tools for use with flammable refrigerants)
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete(if not already).
- Extreme care shall be taken not to overfill the refrigeration system.
- Prior to recharging the system it shall be pressure tested with oxygen free nitrogen (OFN). The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

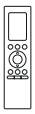
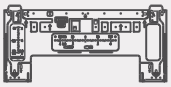
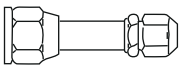
9. Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated.

Let's Start Installing Your AC

Check over the 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. The items are not included with the air conditioner must be purchased separately.

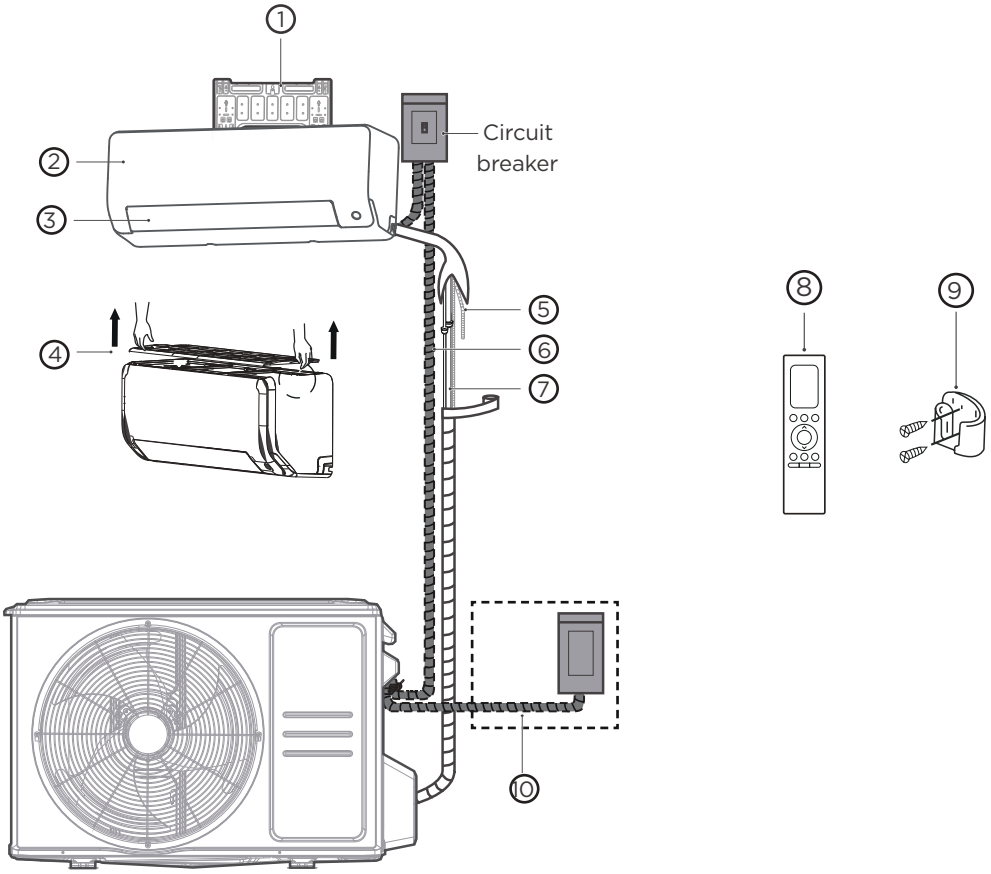
Name of Accessories	Q'ty(pc)	Shape	Name of Accessories	Q'ty(pc)	Shape
Manual	2-3		Remote controller	1	
Drain joint	1		Battery	2	
Seal	1		Remote controller holder(purchase separately)	1	
Mounting plate+ Cardboard	1+1		Fixing screw for remote controller holder(purchase separately)	2	
Anchor	5		**Small Filter** (Need to be installed on the back of main air filter by the authorized technician while installing the machine)	1~2	
Mounting plate fixing screw	5				
Transfer connector (Φ3/4in(19mm) transfer to Φ5/8in(16mm). Packed with the indoor unit, the North America market 33K hyper heat unit only.)	1	 **NOTE:** In North America market, when 33K hyper heat indoor unit matches with multi-zone condensers, you must purchase pipe with liquid side Φ3/8in(9.52mm) and gas side Φ5/8in(16mm).The transfer connector need to be installed on the indoor unit gas side to meet the pipe size.				
Copper nut	2	 **NOTE:** Used to connect the connecting pipes between indoor and outdoor units.			

Name	Model	Pipe specification		Remark
		Liquid side	Gas side	
Connecting pipe assembly	6K	Φ1/4in(Φ 6.35mm)	Φ3/8in(Φ 9.52mm)	Parts you must purchase separately. Consult the dealer about the proper pipe size of the unit you purchased.
	9K	Φ1/4in(Φ 6.35mm)	Φ3/8in(Φ 9.52mm)	
	12K	Φ1/4in(Φ6.35mm)	Φ3/8in(Φ 9.52mm)	
	18K	Φ1/4in(Φ6.35mm)	Φ1/2in(Φ12.7mm)	
	24K	Φ3/8in(Φ 9.52mm)	Φ5/8in(Φ 16mm)	
	30K	Φ3/8in(Φ 9.52mm)	Φ5/8in(Φ 16mm)	
	33K	Φ3/8in(Φ 9.52mm)	Φ3/4in(Φ 19mm)	
	36K	Φ3/8in(Φ 9.52mm)	Φ5/8in(Φ16mm)	

Installation Overview

NOTE ON ILLUSTRATIONS:

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



① Wall Mounting Plate

② Front Panel

③ Louver

④ Air Filter(Pull it upwards)

⑤ Drain Pipe (purchase separately)

⑥ Connection Cable (purchase separately)

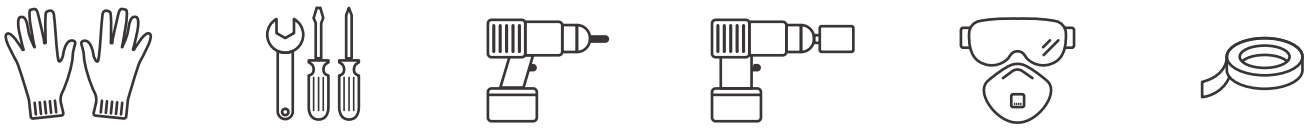
⑦ Refrigerant Piping (purchase separately)

⑧ Remote Controller

⑨ Remote controller Holder (purchase separately)

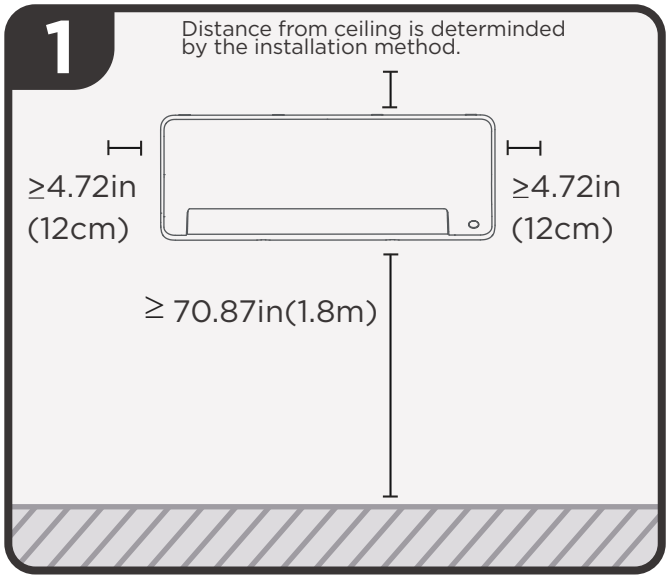
⑩ Outdoor Unit Power Cable (purchase separately)

It would be perfect you had these tools

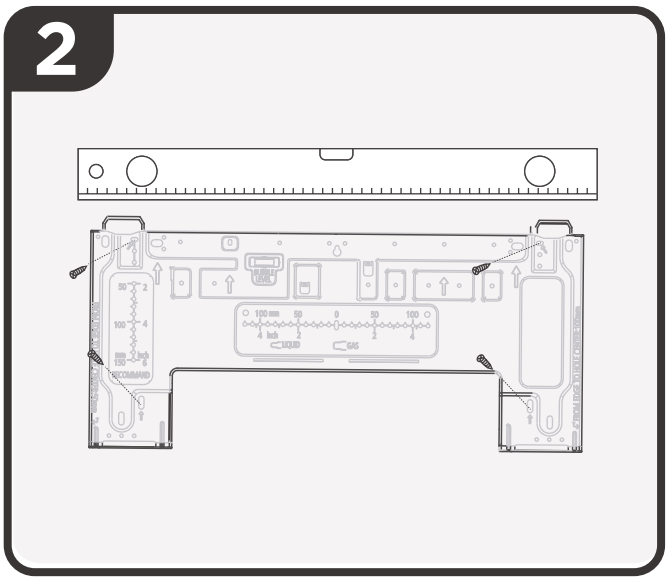


Gloves | Screwdriver & wrench | Hammer drill | Core drill | Goggles & masks | Vinyl tape

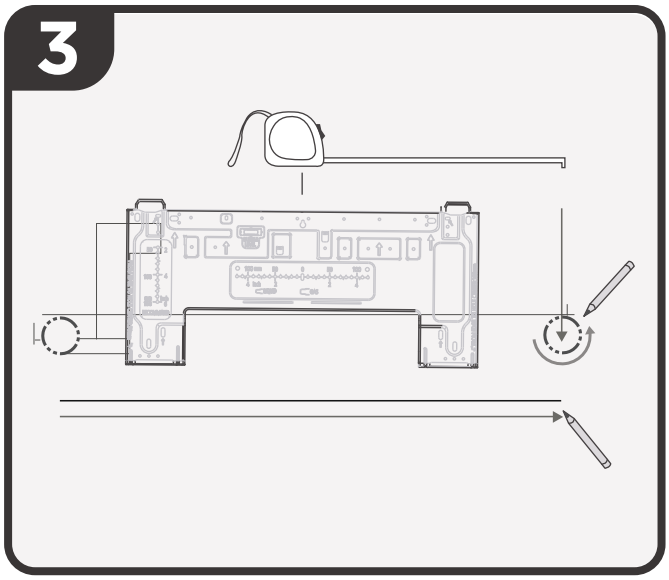
Installation Summary - Indoor Unit



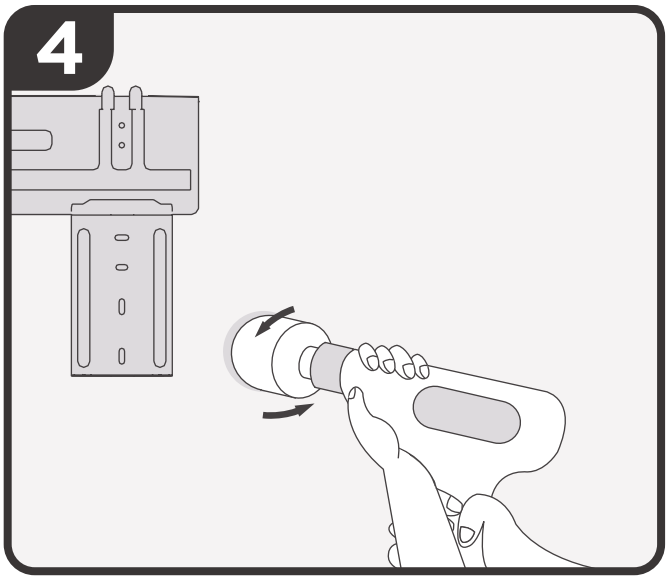
Select Installation Location



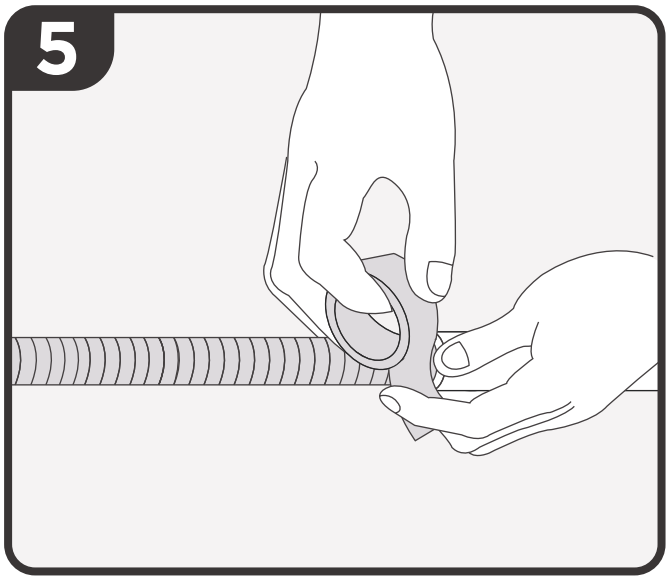
Attach Mounting Plate



Determine Wall Hole Position

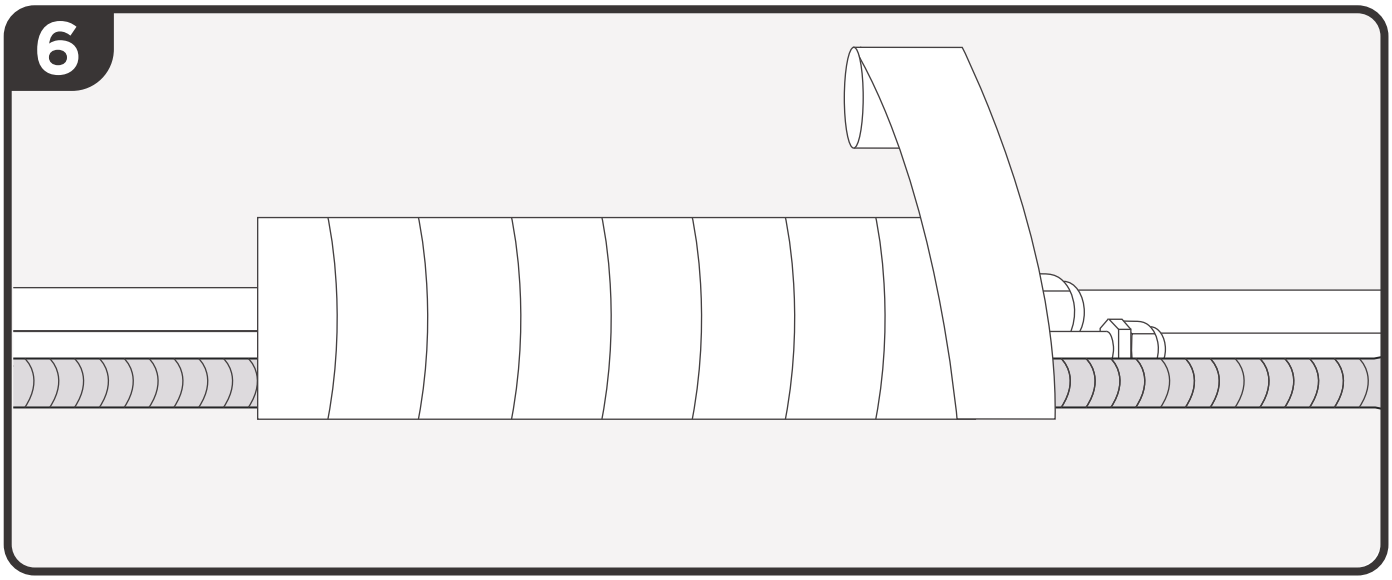


Drill Wall Hole

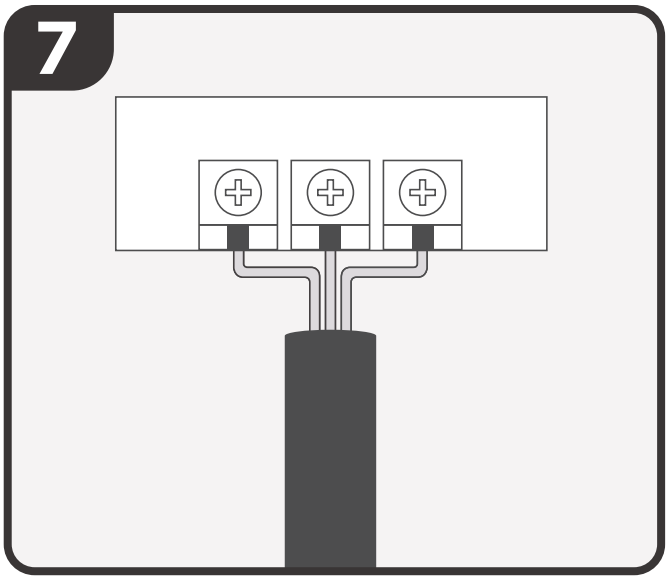


Prepare Drain Hose

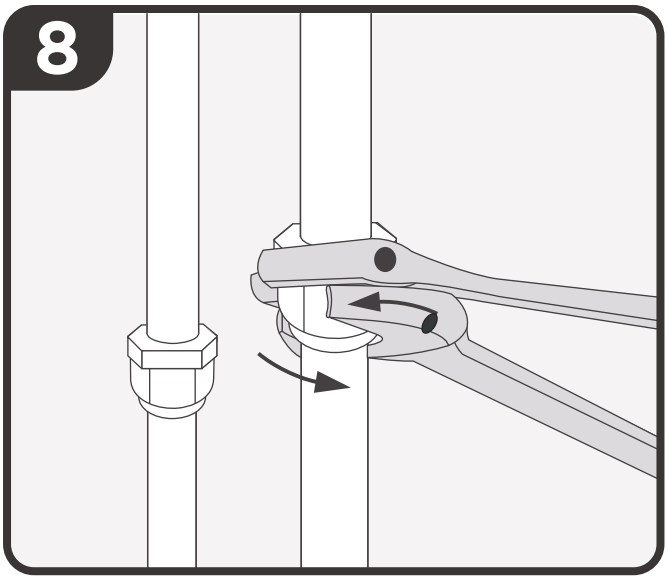
Installation Summary - Indoor Unit



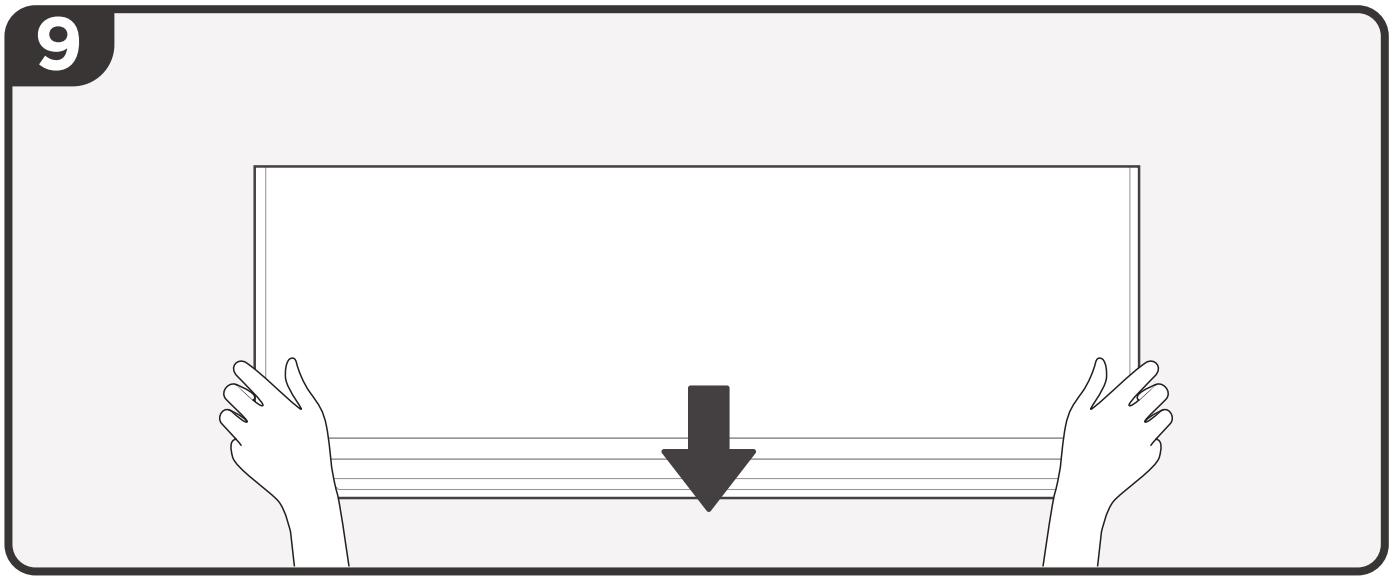
Wrap Piping and drain hose



Connect Wiring



Connect Piping



Mount Indoor Unit

Install Your Indoor Unit.

1 Select installation location

NOTE : PRIOR TO INSTALLATION

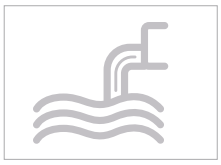
Before installing the indoor unit, refer to the label on the product box to make sure that the model number of the indoor unit matches the model number of the outdoor unit.

The following are standards that will help you choose an appropriate location for the unit.

Proper installation locations meet the following standards:



☑ Good air circulation



☑ Convenient drainage



☑ Noise from the unit will not disturb other people.

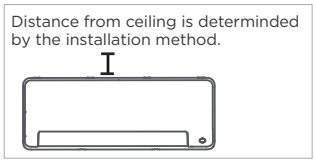


☑ A location at least one meter from all other electrical devices (e.g., TV, radio, computer)



☑ Firm and solid—the location will not vibrate

☑ Strong enough to support the weight of the unit



If no need the back holder to prop up the unit:
Finishing the pipe and cable connections before mount the indoor unit on the wall. If the installation height is limited, 5cm from the ceiling is allowable, but this can lower product performance. To ensure enough space to install and remove the top air filter, keep at least 3.94in(10cm) or more from the ceiling.

Need the back holder to prop up the unit:
If connecting pipe and cable with front panel open, the minimum distance from ceiling is 8.67in(22cm) or more, if connecting pipe and cable without front panel(remove it) , the minimum distance from ceiling is 11cm or more.

DO NOT install unit in the following locations:

⊘ Near any source of heat, steam, or combustible gas

⊘ Near flammable items such as curtains or clothing

⊘ Near any obstacle that might block air circulation

⊘ Near the doorway

⊘ In a location subject to direct sunlight

NOTE: FOR PRODUCT INSTALLATION

If there is no fixed refrigerant piping:
While choosing a location, be aware that you should leave ample room for a wall hole (see Drill wall hole for connecting piping step) for the signal cable and refrigerant piping that connect the indoor and outdoor units. The default position for all piping is the right side of the indoor unit (while facing the unit). However, the unit can accommodate piping to both the left and right.

2 Drill wall hole for connecting piping

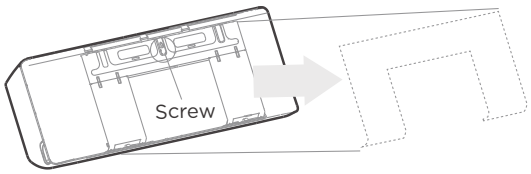
Determine wall hole location

NOTE : The wall hole size

The size of the wall hole is determined by the connecting pipes. When the pipe size of the gas side is Φ5/8in(Φ 16mm) or more, the wall hole should be Φ3.54in(Φ90mm). When the pipe size of gas side is less than Φ5/8in(Φ16mm), the wall hole should be Φ2.5in(Φ65mm).

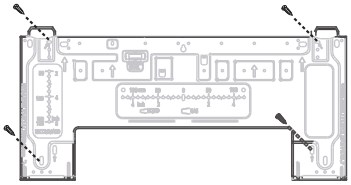
Step 1:

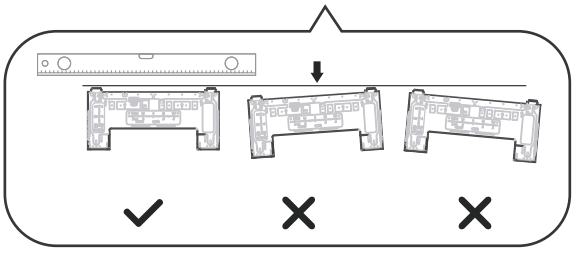
Remove the screw that attaches the mounting plate to the back of the indoor unit.



Step 2:

Secure the mounting plate to the wall with the screws provided. Make sure that mounting plate is flat against the wall.





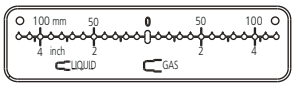
Correct orientation of Mounting Plate

Step 3:

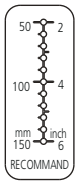
Confirm the mounting plate you own. Determine the location of the wall hole based on the position of the mounting plate. The dotted rectangular box on the right figure shows the size of your product.

CAUTION: For the convenience of installation, there are bubble level, carved dimensions on the mounting plate.The Bubble level on the mounting plate can't be removed. If it is broken, make sure to clean up the leaking liquid.

Horizontal direction ruler

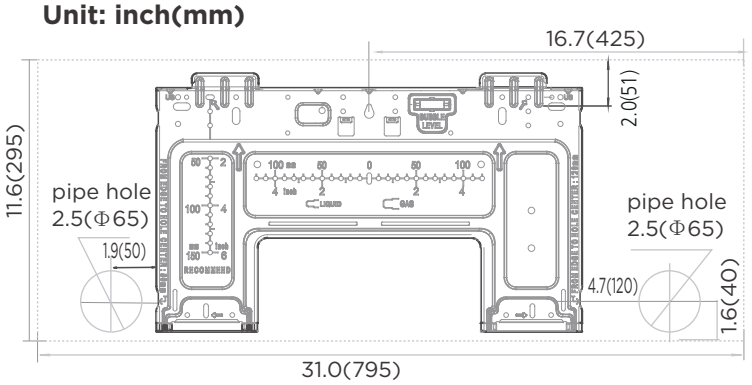




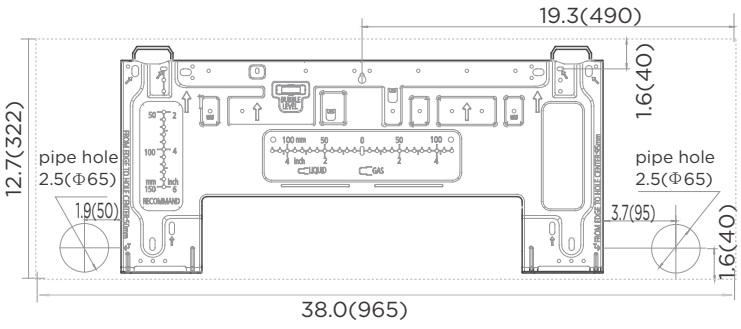


Vertical direction ruler

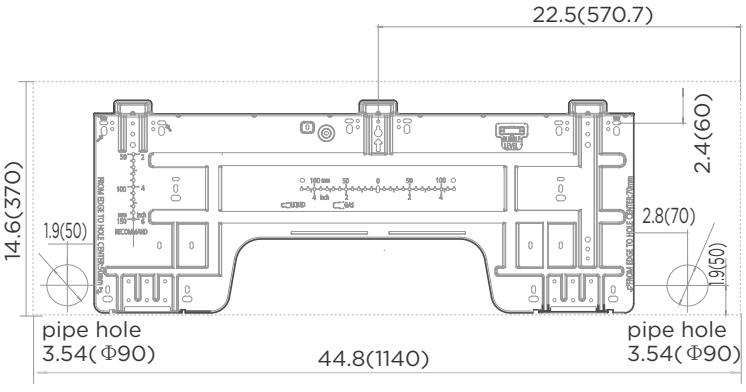
Unit: inch(mm)



6K/9K/12K



18K

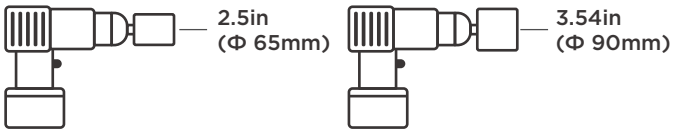


24K/30K/33K/36K

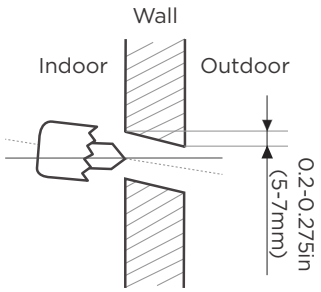
⚠ CAUTION

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

Drill wall hole



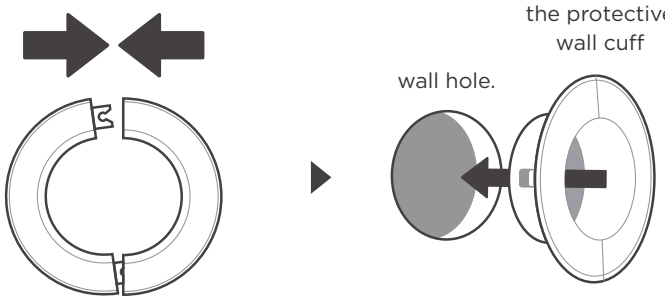
Using a 2.5in(65mm) or 3.54in(90mm) core drill(according to the unit you purchased)



Drill the wall hole

Step 1:

Using a 2.5in(65mm) or 3.54in(90mm) core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 0.2-0.275in(5-7mm). This will ensure proper water drainage.



Place the protective wall cuff in the hole.

Step 2:

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.

NOTE : FOR CONCRETE OR BRICK WALLS

If the wall is made of brick, concrete, or similar material, drill 0.2in-diameter(5mm-diameter) holes in the wall and insert the sleeve anchors provided. Then secure the mounting plate to the wall by tightening the screws directly into the clip anchors.

3 Install refrigerant pipe & drain hose

Prepare refrigerant piping

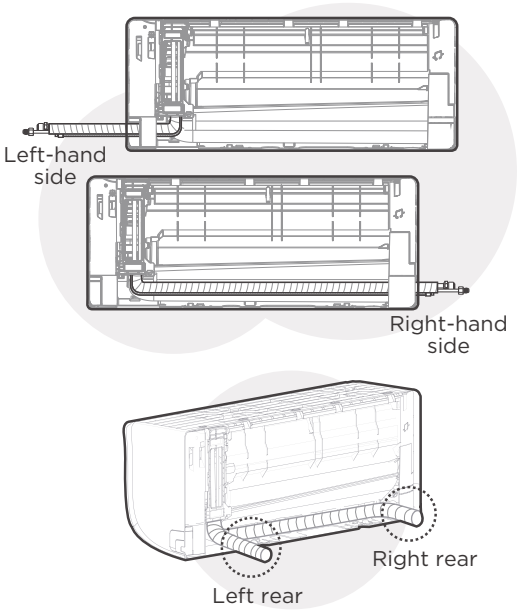
Step 1:

Based on the position of the wall hole relative to the mounting plate, choose the side from which the piping will exit the unit. You have four options for the exit direction of the piping.

NOTE ON PIPING CONNECTING

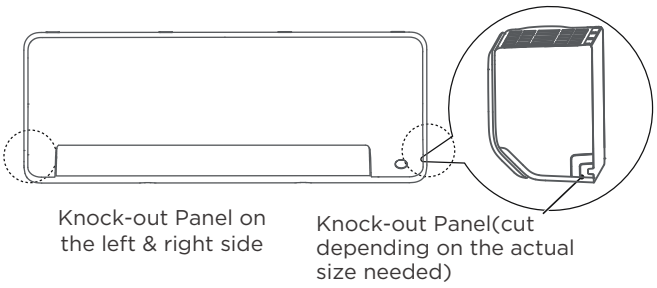
In North America, a conduit tube must be used to connect the cable. To ensure an enough space for the pipes running and the machine is against the wall after installation, it is recommended to attach the drain hose to the right-hand side (when you're facing the back of the unit).

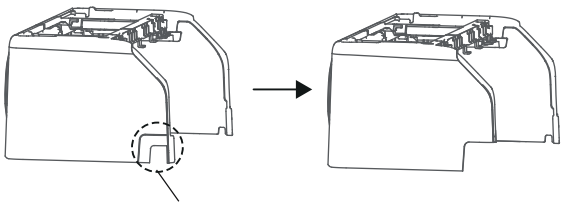
When choose Left-hand side or Right-hand side piping, please make sure that the pipes come out horizontally so as not to affect the lower panel installation.



Step 2:

If the wall hole is behind the unit, keep the knock-out panel in place. If the wall hole is to the side of the indoor unit, remove the plastic knock-out panel from that side of the unit.Use needle nose pliers if the plastic panel is too difficult to remove by hand.





Step 3:

Use the holder at the back of the unit to prop up the unit, giving you enough room to connect the refrigerant piping, and drain hose.

Step 4:

Connect the indoor unit's refrigerant piping to the connective piping that will join the indoor and outdoor units. Refer to the **Refrigerant Piping Connection** section of this manual for detailed instructions.

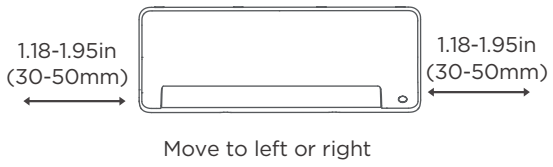
Step 5:

Based on the position of the wall hole relative to the mounting plate, determine the necessary angle of your piping. Grip the refrigerant piping at the base of the bend. Slowly, with even pressure, bend the piping towards the hole. Do not dent or damage the piping during the process.

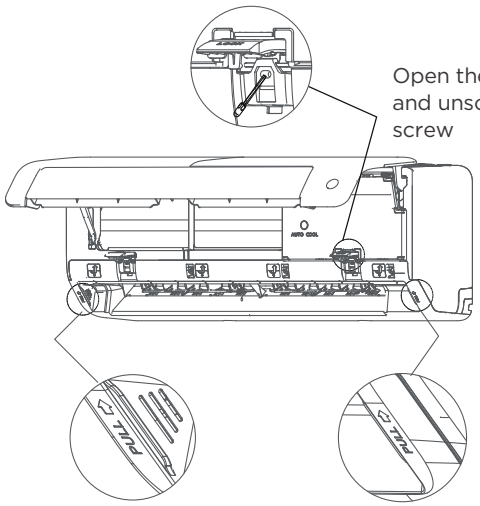
⚠ CAUTION

Be extremely careful not to dent or damage the piping while bending them away from the unit. Any dents in the piping will affect the unit's performance.

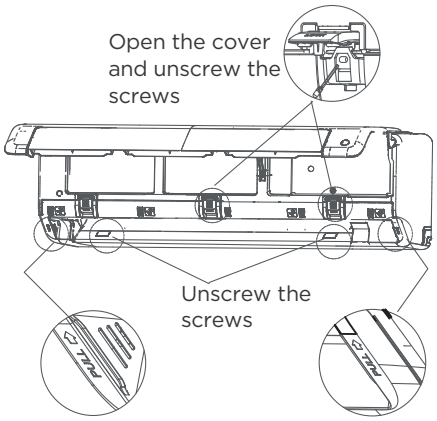
If refrigerant piping is already embedded in the wall, do the following:



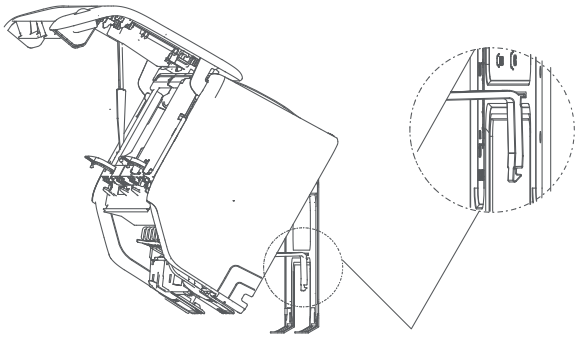
Move to left or right



Model A



Model B



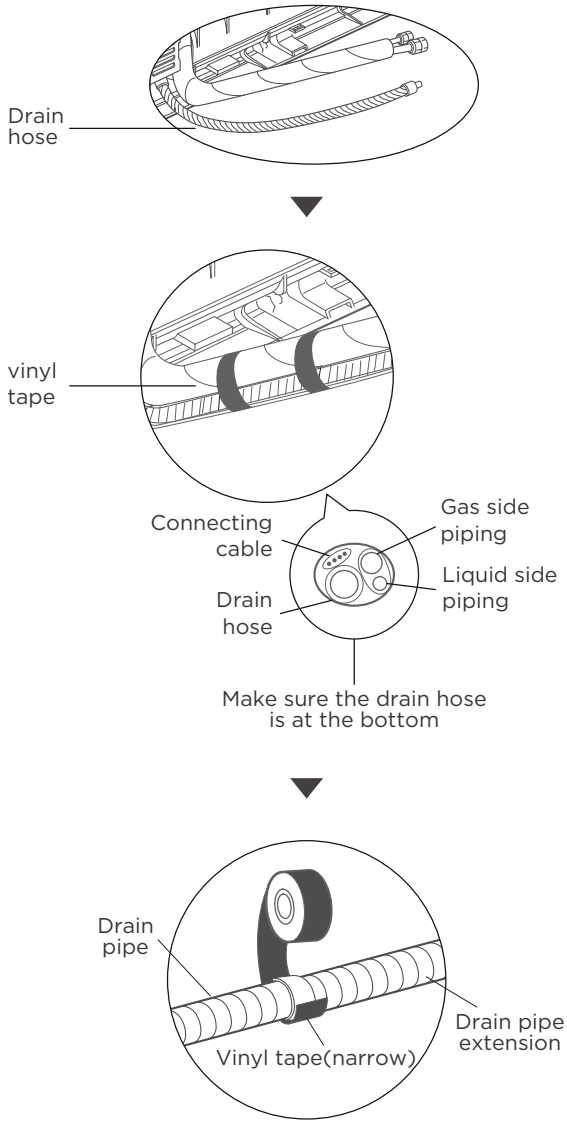
Use the holder at the back of the unit against on the mounting plate to prop up the unit

NOTE : UNIT IS ADJUSTABLE

Keep in mind that the hooks on the mounting plate are smaller than the holes on the back of the unit.
If you find that you don't have ample room to connect embedded pipes to the indoor unit, the unit can be adjusted left or right by about 1.18-1.95in(30-50mm), depending on the model.

- Open and fix the position of the panel, then, open the covers of the two lock blocks, unscrew the screw showed in the picture (Model A & Model B), then hold both sides of the lower panel in the place marked "PULL", pull it upwards to release the buckles, then take the lower panel down.
- Use the holder at the back of the unit to prop up the unit, giving you enough room to connect the refrigerant piping, and drain hose.
- Connect drain hose and refrigerant piping (refer to **Refrigerant Piping Connection** section of this manual for instructions).
- Keep pipe connection point exposed to perform the leak test (refer to **Electrical Checks and Leak Checks** section of this manual).
- After the leak test, wrap the connection point with insulation tape.
- Release the holder that is propping up the unit.
- Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.

Connect drain hose



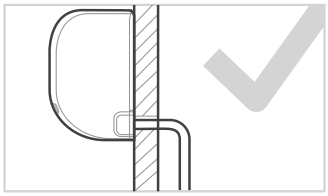
Step 1:

The drain hose can be attached to the left or right side. To ensure proper drainage, attach the drain hose on the same side that your refrigerant piping exits the unit. Attach drain hose extension (purchased separately) to the end of drain hose.

- Wrap the connection point firmly with Teflon tape to ensure a good seal and to prevent leaks.
- For the portion of the drain hose that will remain indoors, wrap it with foam pipe insulation to prevent condensation.
- Remove the air filter and pour a small amount of water into the drain pan to make sure that water flows from the unit smoothly.

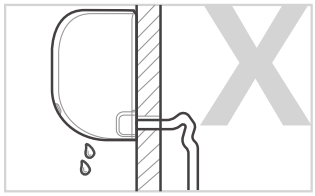
NOTE ON DRAIN HOSE PLACEMENT

Make sure to arrange the drain hose according to the following figures.



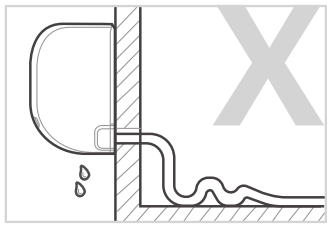
CORRECT

Make sure there are no kinks or dent in drain hose to ensure proper drainage.



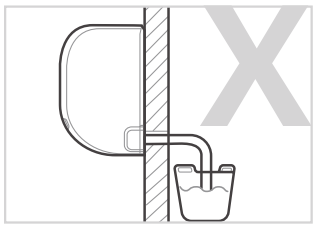
NOT CORRECT

Kinks in the drain hose will create water traps.



NOT CORRECT

Kinks in the drain hose will create water traps.

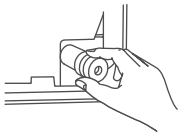


NOT CORRECT

Do not place the end of the drain hose in water or in containers that collect water. This will prevent proper drainage.

⚠ CAUTION

PLUG THE UNUSED DRAIN HOLE



To prevent unwanted leaks you must plug the unused drain hole with the rubber plug provided.

4 Electrical work preparation

⚠ WARNING

- **BEFORE PERFORMING ANY ELECTRICAL WORK, READ THESE REGULATIONS**
- **BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK, TURN OFFTHE MAIN POWER TO THE SYSTEM.**

1. All wiring must comply with local and national electrical codes, regulations and must be installed by a licensed electrician.
2. All electrical connections must be made according to the Electrical Connection Diagram located on the panels of the indoor and outdoor units.
3. If there is a serious safety issue with the power supply, stop work immediately. Explain your reasoning to the client, and refuse to install the unit until the safety issue is properly resolved.
4. If connecting power to fixed wiring, a surge protector and main power switch should be installed.
5. Only connect the unit to an individual branch circuit outlet. Do not connect another appliance to that outlet.
6. Make sure to properly ground the air conditioner.
7. Every wire must be firmly connected. Loose wiring can cause the terminal to overheat, resulting in product malfunction and possible fire.
8. Do not let wires touch or rest against refrigerant tubing, the compressor, or any moving parts within the unit.
9. To avoid getting an electric shock, never touch the electrical components soon after the power supply has been turned off. After turning off the power, always wait 10 minutes or more before you touch the electrical components.

⚠ WARNING

All wiring must be performed strictly in accordance with the wiring diagram located on the back of the Indoor Unit's front panel.

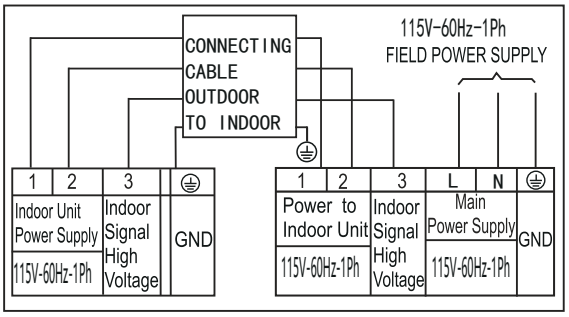
Connect signal and power cables

The signal cable enables communication between the indoor and outdoor units. You must first choose the right cable size before preparing it for connection.

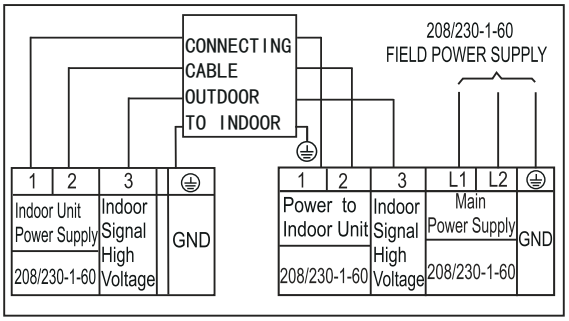
NOTE: Choose the cable type according to the local electrical codes and regulations. Please choose the right cable size according to the Minimum Circuit Ampacity indicated on the nameplate of the unit.

⚠ DO NOT MIX UP LIVE AND NULL WIRES

This is dangerous, and can cause the air conditioning unit to malfunction.

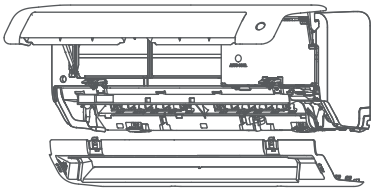


Connection Diagram (115V)

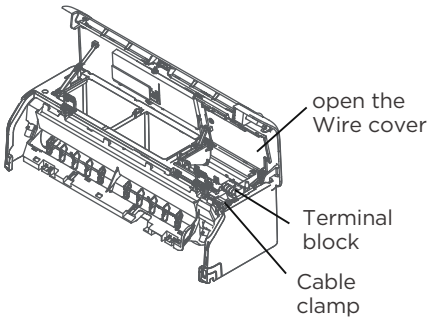


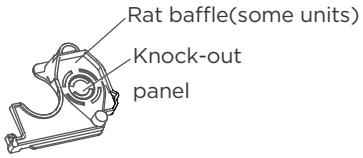
Connection Diagram (208/230V)

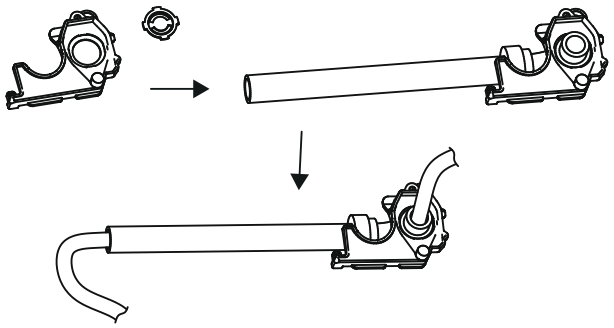
1. Open and fix the position of the panel, then open the covers of the two lock blocks, remove the screw , then hold both sides of the lower panel in the place marked “PULL”, pull it upwards to release the buckles, then take the lower panel down(please refer to Page 38).
2. Open the wire box cover on the right side of the unit. This will reveal the terminal block.
3. Unscrew the cable clamp below the terminal block and place it to the side.
4. Facing the back of the unit, remove the plastic panel on the bottom left-hand side.
5. Feed the signal wire through this slot, from the back of the unit to the front.
6. Facing the front of the unit, connect the wire according to the indoor unit’s wiring diagram, connect the u-lug and firmly screw each wire to its corresponding terminal.
7. After checking to make sure every connection is secure, use the cable clamp to fasten the signal cable to the unit. Screw the cable clamp down tightly.
8. Replace the wire cover on the front of the unit, and the plastic panel on the back.



First open the front panel, then remove the lower panel.





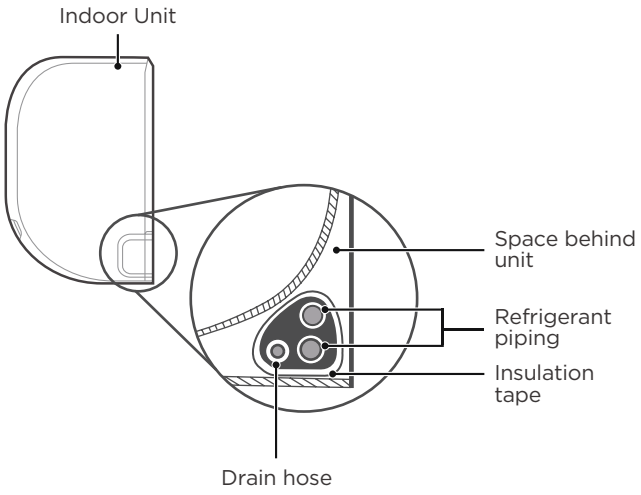


First remove the knok-out panel to create a slot through whick the conduit tube can install. Then make the cable through the conduit tube and connect to the indoor unit.

5 Wrap piping & Cables

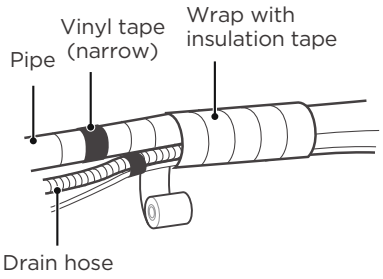
NOTE

Before passing the piping, and drain hose through the wall hole, you must bundle them together to save space, protect them, and insulate them.



Step 1:

Bundle the drain hose, refrigerant pipes as shown above.



Step 2:

Using adhesive vinyl tape, attach the drain hose to the underside of the refrigerant pipes.

Step 3:

Using insulation tape, wrap the refrigerant pipes, and drain hose tightly together. Double-check that all items are bundled.

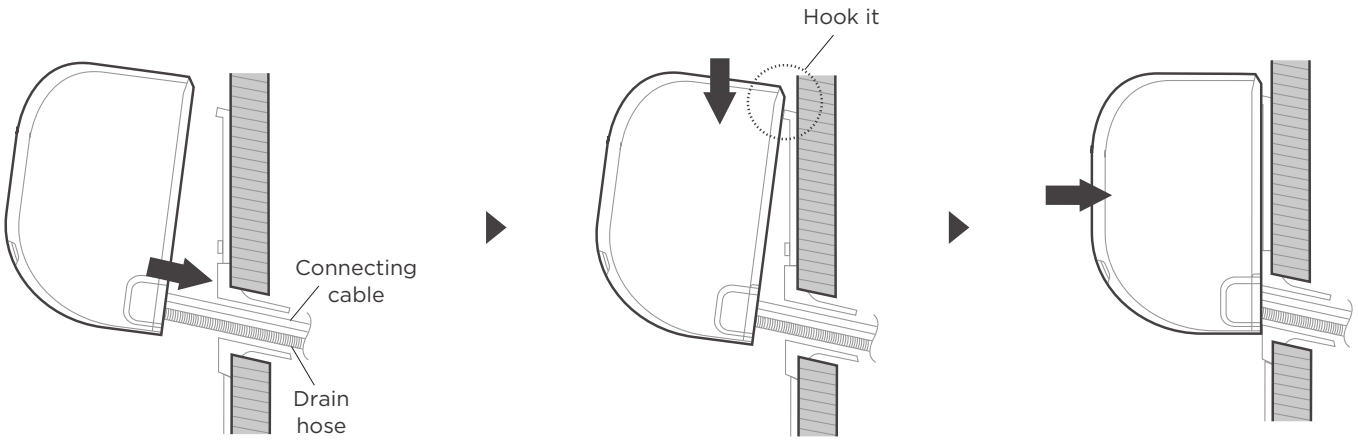
DRAIN HOSE MUST BE ON BOTTOM

Make sure that the drain hose is at the bottom of the bundle. Putting the drain hose at the top of the bundle can cause the drain pan to overflow, which can lead to fire or water damage.

DO NOT WRAP ENDS OF PIPING

When wrapping the bundle, keep the ends of the piping unwrapped. You need to access them to test for leaks at the end of the installation process (refer to Electrical Checks and Leak Checks section of this manual).

6 Mount indoor unit



Put pipes in wall hole

Hook it and press down lightly to secure

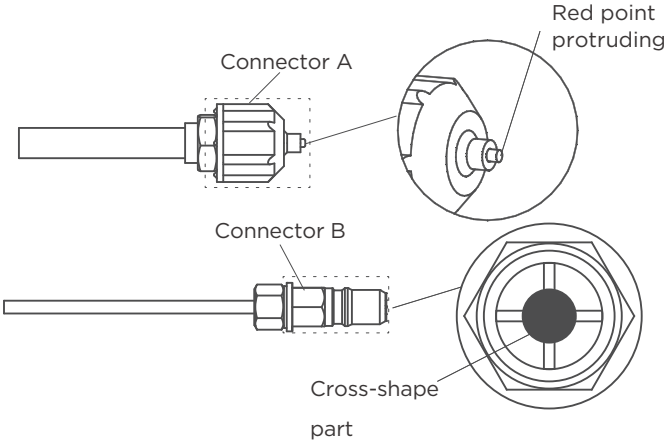
Check that the unit is firmly mounted

If you installed new connective piping to the outdoor unit, do the following:

- If you have already passed the refrigerant piping through the hole in the wall, proceed to Step 4.
- Otherwise, double-check that the ends of the refrigerant pipes are sealed to prevent dirt or foreign materials from entering the pipes.
- Slowly pass the wrapped bundle of refrigerant pipes, drain hose, and signal wire through the hole in the wall.
- Hook the top of the indoor unit on the upper hook of the mounting plate.
- Check that unit is hooked firmly on mounting by applying slight pressure to the left and right-hand sides of the unit. The unit should not jiggle or shift.
- Using even pressure, push down on the bottom half of the unit. Keep pushing down until the unit snaps onto the hooks along the bottom of the mounting plate.
- Again, check that the unit is firmly mounted by applying slight pressure to the left and the right-hand sides of the unit.

⚠ CAUTION

For the units adopt the following pipe connectors, please strictly perform the piping work in accordance with the following instructions.



- Before performing the refrigerant piping connection, always wear work gloves and goggles, and remember that the connectors A and B are not allowed to face people directly.
- Keep pressing the cross-shape part of connector B with a tool for about 5~10 seconds until the red protuding point of connector A retracts completely.
- Remove connectors A and B, then perform the refrigerant piping connection between indoor unit and outdoor unit.

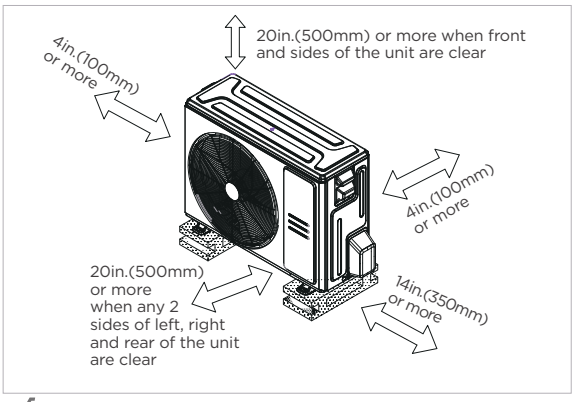
Install Your Outdoor Unit.

1 Select installation location

NOTE : PRIOR TO INSTALLATION

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.



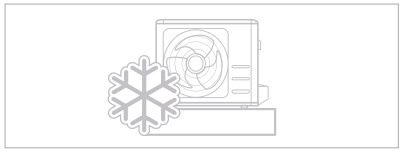
☑ Firm and solid—the location can support the unit and will not vibrate.



☑ Noise from the unit will not disturb other people.



☑ Protected from prolonged periods of direct sunlight or rain.



☑ Where snowfall is anticipated, take appropriate measures to prevent ice buildup and coil damage.

NOTE Install the unit by following local codes and regulations , there may be differ slightly between different regions.

⚠ CAUTION:

SPECIAL CONSIDERATIONS FOR EXTREME WEATHER

If the unit is exposed to heavy wind:

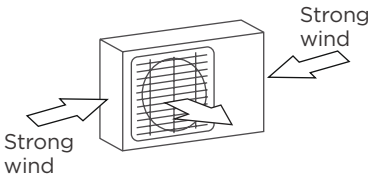
Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds. See Figures below.

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

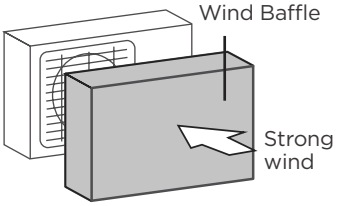
Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

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

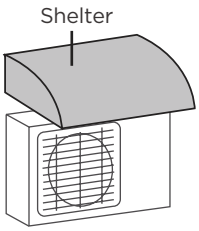
Use outdoor unit that is specially designed to resist corrosion.



90° angle to the direction of the wind



Build a wind Baffle to protect the unit



Build a shelter to protect the unit

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.

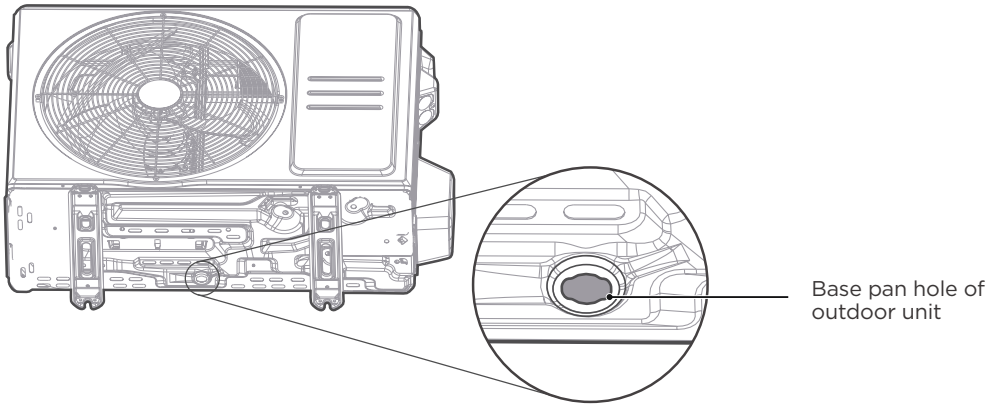
⊘ In a location that is exposed to large amounts of dust

⊘ In a location exposed to a excessive amounts of salty air.

2 Install drain joint

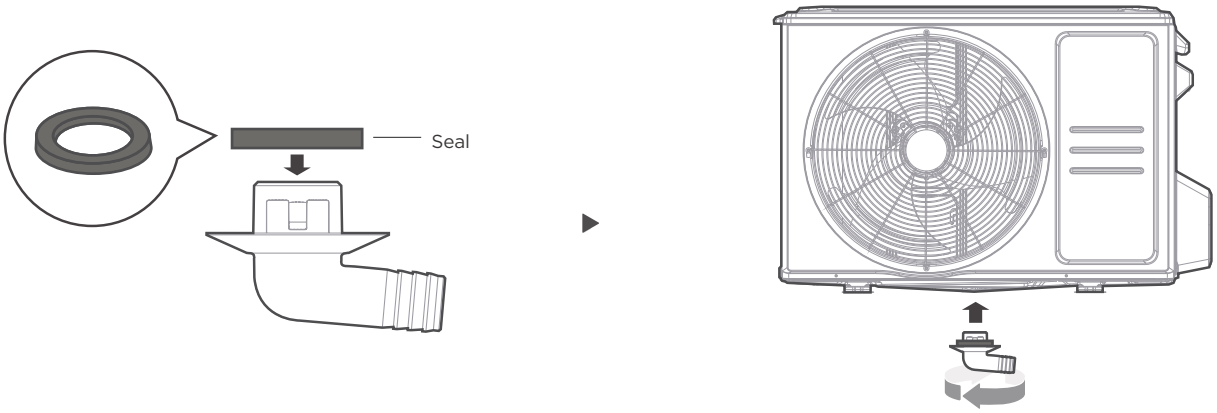
NOTE : PRIOR TO INSTALLATION

Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. For the units with base pan built-in with multiple holes for proper draining during defrost, the drain joint is no need to be installed.



Step 1:

Find out the base pan hole of outdoor unit.



Step 2:

- Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
- Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
- Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

NOTE : IN COLD CLIMATES

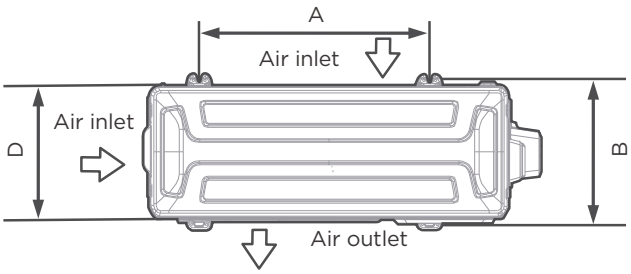
In cold climates, make sure that the drain hose is as vertical as possible to ensure swift water drainage. If water drains too slowly, it can freeze in the hose and flood the unit.

3 Anchor Outdoor Unit

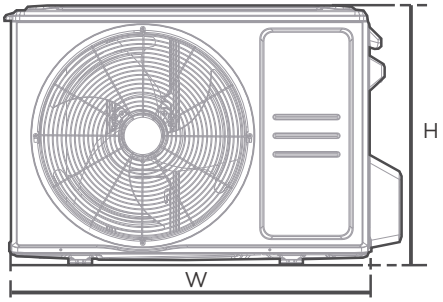
⚠ WARNING

WHEN DRILLING INTO CONCRETE, EYE PROTECTION IS RECOMMENDED AT ALL TIME.

- 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.
- 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.



Top view



Front view

Outdoor Unit Dimensions W x H x D	Mounting Dimensions	
	Distance A	Distance B
30.1inx 21.8inx 11.9in(765mmx555mmx303mm)	17.8in(452mm)	11.3in(286mm)
31.7inx 21.8inx 12.9in(805mmx554mmx330mm)	20.1in(511mm)	12.5in(317mm)
35.0inx 26.5inx 13.5in(890mmx673mmx342mm)	26.1in(663mm)	13.9in(354mm)
37.2inx 31.9inx 16.1in(946mmx810mmx410mm)	26.5in(673mm)	15.9in(403mm)

If you will install the unit on the ground or on a concrete mounting platform, do the following:

- Mark the positions for four expansion bolts based on dimensions chart.
- Pre-drill holes for expansion bolts.
- Place a nut on the end of each expansion bolt.
- Hammer expansion bolts into the pre-drilled holes.
- Remove the nuts from expansion bolts, and place outdoor unit on bolts.
- Put washer on each expansion bolt, the replace the nuts.
- Using a wrench, tighten each nut until snug.

If you will install the unit on a wall-mounted bracket , do the following:

- Mark the position of bracket holes based on dimensions chart.
- Pre-drill the holes for the expansion bolts.
- Place a washer and nut on the end of each expansion bolt.
- Thread expansion bolts through holes in mounting brackets, put mounting brackets in position, and hammer expansion bolts into the wall.
- Check that the mounting brackets are level.
- Carefully lift unit and place its mounting feet on brackets.
- Bolt the unit firmly to the brackets.
- If allowed, install the unit with rubber gaskets to reduce vibrations and noise.

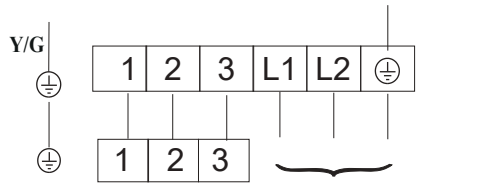
⚠ CAUTION

Make sure that the wall is made of solid brick, concrete, or of similarly strong material.
The wall must be able to support at least four times the weight of the unit.

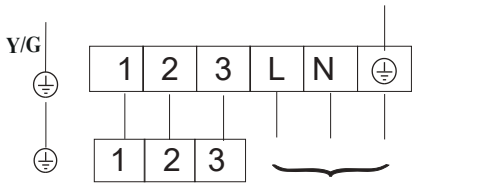
4 Connect signal and power cables

⚠ WARNING - Before the Operation

- ALL WIRING WORK MUST BE PERFORMED STRICTLY IN ACCORDANCE WITH THE WIRING DIAGRAM LOCATED INSIDE OF WIRE COVER OF THE OUTDOOR UNIT.
- BEFORE PERFORMING ANY ELECTRICAL OR WIRING WORK,TURN OFF THE MAIN POWER TO THE SYSTEM.



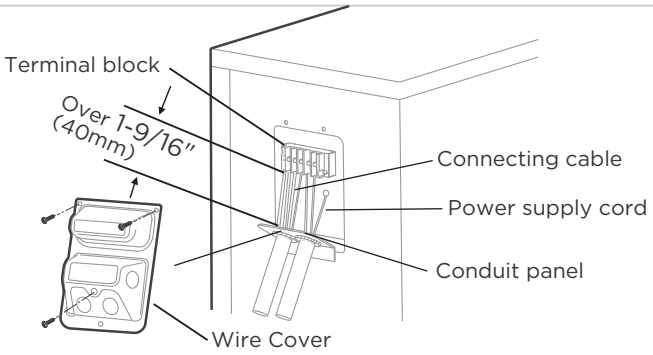
208/230V models



115V models

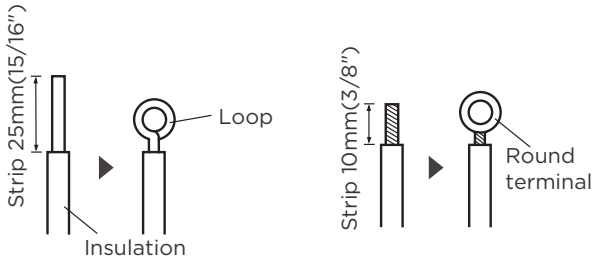
The outside unit's terminal block is protected by an electrical wiring cover on the side of the unit. A comprehensive wiring diagram is printed on the inside of the wiring cover.

- Remove the wire cover from the unit by loosening the 3 screws.
- Dismount caps on the conduit panel.
- Temporarily mount the conduit tubes(not included) on the conduit panel.
- Properly connect both the power supply and low voltage lines to the corresponding terminals on the terminal block.
- Ground the unit in accordance with local codes.
- Be sure to size each wire allowing several inches longer than the required length for wiring.
- Use lock nuts to secure the conduit tubes.



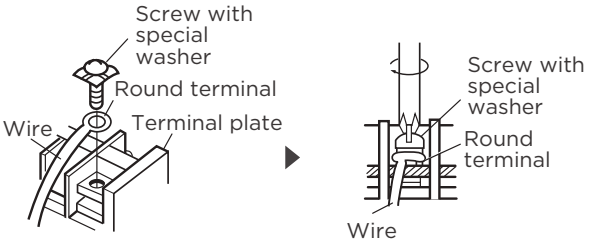
Please select the appropriate through-hole according to the diameter of the wire.

How to properly connect the wire lines.



Solid wire

Strand wire



Step 1:

The treatment about the end of the wire.

Step 2:

connecting the line to the corresponding terminals on the terminal block.

Refrigerant Piping Connection

1 Piping Connection Precautions

⚠ WARNING

WHEN CONNECTING REFRIGERANT PIPING, **DO NOT** LET SUBSTANCES OR GASES OTHER THAN THE SPECIFIED REFRIGERANT ENTER THE UNIT. THE PRESENCE OF OTHER GASES OR SUBSTANCES WILL LOWER THE UNIT'S CAPACITY, AND CAN CAUSE ABNORMALLY HIGH PRESSURE IN THE REFRIGERATION CYCLE. THIS CAN CAUSE EXPLOSION AND INJURY.

Note on Pipe Length

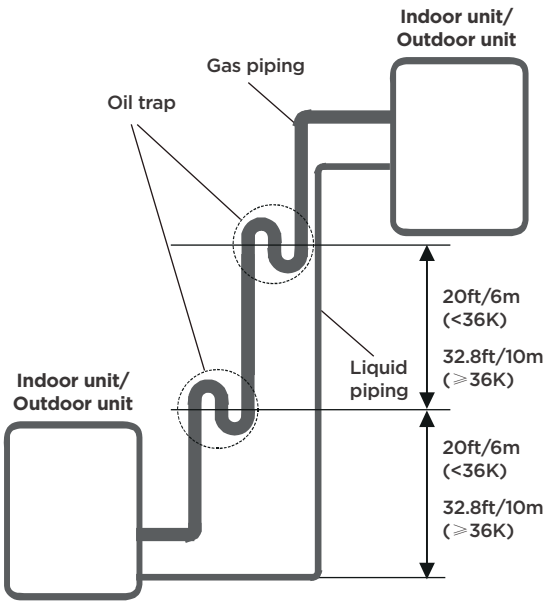
The length of refrigerant piping will affect the performance and energy efficiency of the unit. Nominal efficiency is tested on units with a pipe length of 25ft(7.5m). A minimum pipe run of 9.84ft(3m) is required to minimise vibration & excessive noise. Connection Instructions – Refrigerant Piping.

The maximum length and drop height based on models.

Model	Length of piping	Maximum drop height
6K/9K/12K	82ft/25m	49.2ft/15m
18K	98.4ft/30m	65.6ft/20m
24K/30K/33K	164ft/50m	82ft/25m
36K	213ft/65m	98.4ft/30m

⚠ CAUTION

Oil traps
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 20ft(6m) of vertical suction line riser (＜36k). An oil trap should be installed every 32.8ft(10m) of vertical suction line riser (⩾36k).

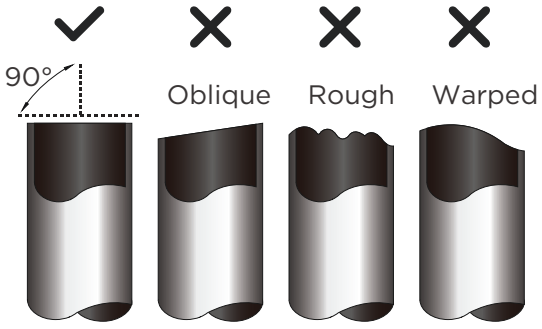


Connection Instructions – Refrigerant Piping

Step 1: Cut pipes

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

- Measure the distance between the indoor and outdoor units.
- Using a pipe cutter, cut the pipe a little longer than the measured distance.
- 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.

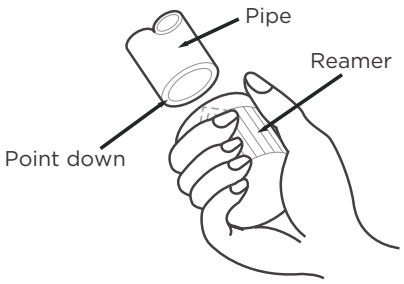
⚠ CAUTION

MUST BE CHECK OVER THE END OF THE PIPE FOR CRACKS AND EVEN FLARING. ENSURE THE PIPE IS SEALED.

Step 2: Remove burrs

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

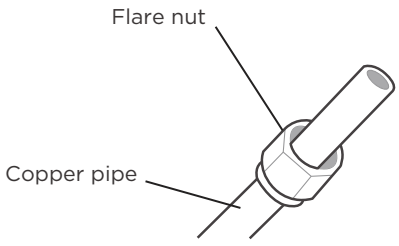
- Hold the pipe at a downward angle to prevent burrs from falling into the pipe.
- Using a reamer or deburring tool, remove all burrs from the cut section of the pipe.



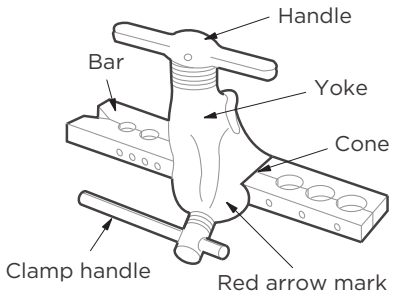
Step 3: Flare pipe ends

Proper flaring is essential to achieve an airtight seal.

- After removing burrs from cut pipe, seal the ends with PVC tape to prevent foreign materials from entering the pipe.
- Sheath the pipe with insulating material.
- 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.

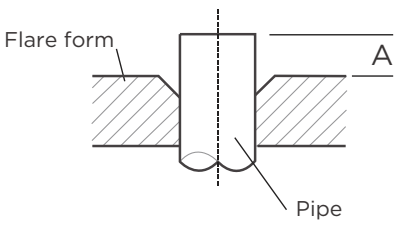


- Remove PVC tape from ends of pipe when ready to perform flaring work.
- Clamp flare form on the end of the pipe. The end of the pipe must extend beyond the edge of the flare form in accordance with the dimensions shown in the table below.



PIPING EXTENSION BEYOND FLARE FORM

Outer Diameter of Pipe	A	
	Min.	Max.
Ø 1/4in (Ø 6.35mm)	0.0275in(0.7mm)	0.05in(1.3mm)
Ø 3/8in (Ø 9.52mm)	0.04in(1.0mm)	0.063in(1.6mm)
Ø1/2in (Ø12.7mm)	0.04in(1.0mm)	0.07in(1.8mm)
Ø 5/8in (Ø16mm)	0.078in(2.0mm)	0.086in(2.2mm)
Ø 3/4in (Ø 19mm)	0.078in(2.0mm)	0.094in(2.4mm)



- Place flaring tool onto the form.
- Turn the handle of the flaring tool clockwise until the pipe is fully flared.
- Remove the flaring tool and flare form, then inspect the end of the pipe for cracks and even flaring.

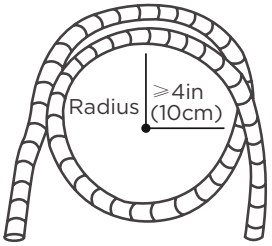
2 Refer to Torque Requirement to connect pipes

⚠ CAUTION

WHEN CONNECTING REFRIGERANT PIPES, BE CAREFUL NOT TO USE EXCESSIVE TORQUE OR TO DEFORM THE PIPING IN ANY WAY. YOU SHOULD FIRST CONNECT THE LOW-PRESSURE PIPE, THEN THE HIGH-PRESSURE PIPE.

MINIMUM BEND RADIUS

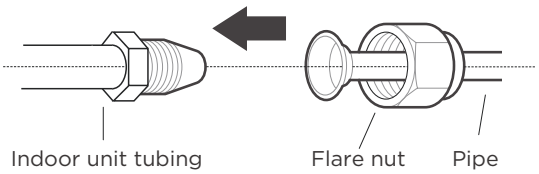
When bending connective refrigerant piping, the minimum bending radius is 10cm.



Instructions for Connecting Piping to Indoor Unit

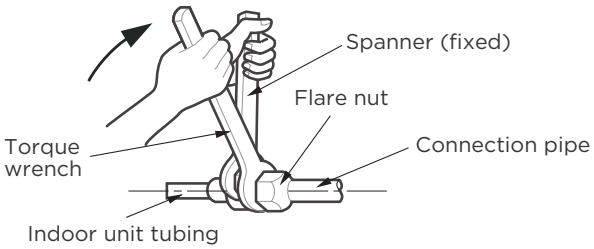
Step 1:

- Align the center of the two pipes that you will connect.

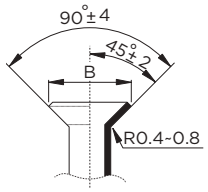


Step 2:

- 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 on the unit tubing, use a torque wrench to tighten the flare nut according to the torque values in the Torque Requirements table below. Loosen the flaring nut slightly, then tighten again.



TORQUE REQUIREMENTS

Outer Diameter of Pipe	Tightening Torque	Flare dimension(B)	Flare shape
Ø 1/4in (Ø 6.35mm)	18~20N.m (180~200kgf.cm)	0.33~0.34in (8.4~8.7mm)	
Ø 3/8in (Ø 9.52mm)	32~39N.m (320~390kgf.cm)	0.52~0.53in (13.2~13.5mm)	
Ø1/2in (Ø 12.7mm)	49~59N.m (490~590kgf.cm)	0.64~0.65in (16.2~16.5mm)	
Ø 5/8in (Ø16mm)	57~71N.m (570~710kgf.cm)	0.76~0.78in (19.2~19.7mm)	
Ø 3/4in (Ø19mm)	67~101N.m (670~1010kgf.cm)	0.91~0.93in (23.2~23.7mm)	

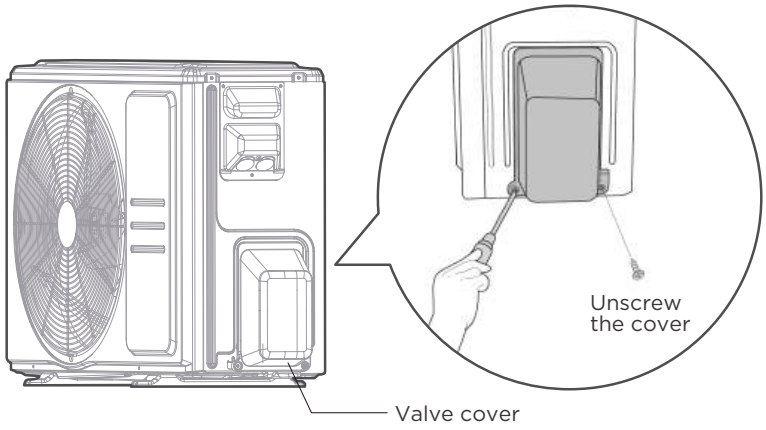
⊘ DO NOT USE EXCESSIVE TORQUE

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

3 Connecting Piping to Outdoor Unit

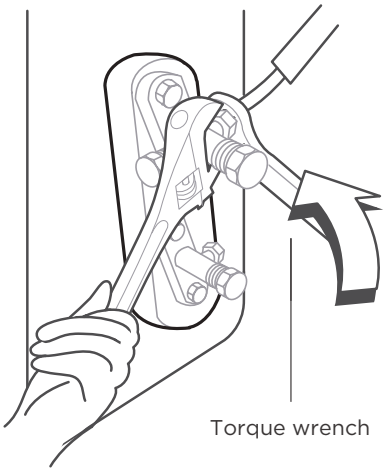
NOTE

This section still needs to be operated according to the **TORQUE REQUIREMENTS** chart on the previous page.



Step 1:

- Unscrew the cover from the packed valve on the side of the outdoor unit.

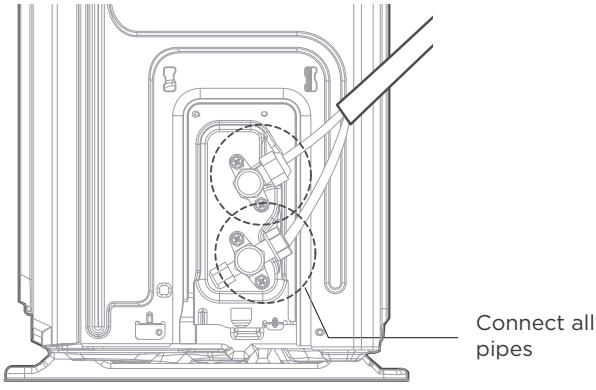


Step 2:

- Remove protective caps from ends of valves.
- Align flared pipe end with each valve, and tighten the flare nut as tightly as possible by hand.
- Using a spanner, grip the body of the valve. **Do not** grip the nut that seals the service valve.

USE SPANNER TO GRIP MAIN BODY OF VALVE

Torque from tightening the flare nut can snap off other parts of valve.



Step 3:

- While firmly gripping the body of the valve, use a torque wrench to tighten the flare nut according to the correct torque values.
- Loosen the flaring nut slightly, then tighten again.
- Repeat Steps 3 to 6 for the remaining pipe.

Air Evacuation

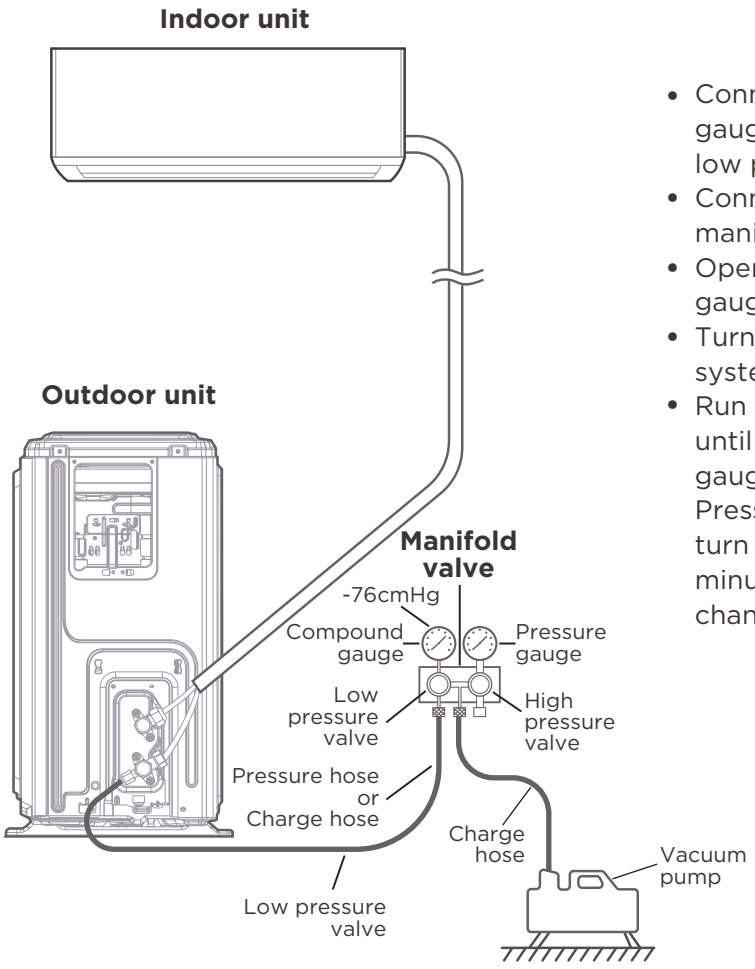
NOTE : PREPARATIONS AND PRECAUTIONS

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. Ensure to evacuate the air inside the indoor unit and pipes with vacuum pump. 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. Incorrect installation due to ignoring of the Instruction will cause serious problem to the machine.

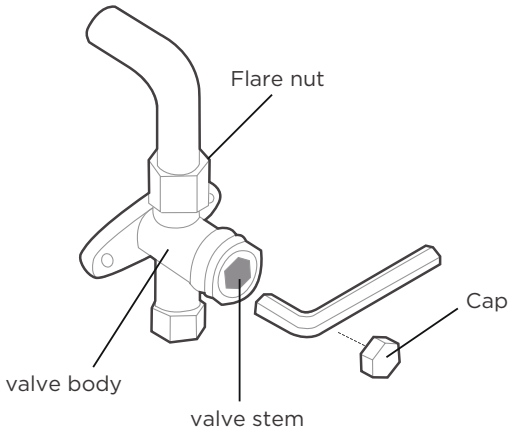
BEFORE PERFORMING EVACUATION

- ☑ Make sure the connective pipes between the indoor and outdoor units are connected properly.
- ☑ Check to make sure all wiring is connected properly.

Evacuation Instructions



- Connect the charge hose of the manifold gauge to service port on the outdoor unit's low pressure valve.
- Connect another charge hose from the manifold gauge to the vacuum pump.
- Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.
- Turn on the vacuum pump to evacuate the system.
- Run the vacuum for at least 15 minutes, or until the vacuum measured using micron gauge to 500 microns. Close the Low Pressure side of the manifold gauge, and turn off the vacuum pump. Wait for 5 minutes, then check that there has been no change in system pressure.



- If there is a change in system pressure, refer to Gas Leak Check section for information on how to check for leaks.
- If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve).
  Insert hexagonal wrench into the packed valve(high pressure valve) and open the valve by turning the wrench in a 1/4 counterclockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.
- 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.
- Remove the charge hose from the service port.
- Using hexagonal wrench, fully open both the high pressure and low pressure valves.
- 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.

OPEN VALVE STEMS GENTLY

Ensure to open all the valves after evacuation. When opening valve stems, turn the hexagonal wrench until it hits against the stopper. Do not try to force the valve to open further.

NOTE ON ADDING REFRIGERANT

Some systems require additional charging depending on pipe lengths. The standard pipe length is 25ft(7.5m). The refrigerant should be charged from the service port on the outdoor unit's low pressure valve. The additional refrigerant to be charged can be calculated using the following formula:

ADDITIONAL REFRIGERANT PER PIPE LENGTH

Connective Pipe Length (ft/m)	Air Purging Method	Additional Refrigerant	
≤ Standard pipe length	Vacuum Pump	N/A	
> Standard pipe length	Vacuum Pump	Liquid Side: Ø 1/4in (Ø 6.35mm) R454B: (Pipe length – standard length) x 15g/m (Pipe length – standard length) x 0.16oz/ft	Liquid Side: Ø 3/8in(Ø9.52mm) R454B: (Pipe length – standard length) x 30g/m (Pipe length – standard length) x 0.32oz/ft

DO NOT MIX REFRIGERANT TYPES.

Make sure the additional amount of refrigerant to be charged is based on the pipe size and length.

Electrical and Gas Leak Checks

⚠ WARNING - RISK OF ELECTRIC SHOCK

ALL WIRING MUST COMPLY WITH LOCAL AND NATIONAL ELECTRICAL CODES, AND MUST BE INSTALLED BY A LICENSED ELECTRICIAN.

BEFORE TEST RUN

Only perform test run after you have completed the following steps:

- Electrical Safety Checks – Confirm that the unit's electrical system is safe and operating properly
- Gas Leak Checks – Check all flare nut connections and confirm that the system is not leaking
- Confirm that gas and liquid (high and low pressure) valves are fully open

Electrical Safety Checks

After installation, confirm that all electrical wiring is installed in accordance with local and national regulations, and according to the Installation Manual.

BEFORE TEST RUN

Check Grounding Work

Measure grounding resistance by visual detection and with grounding resistance tester.

DURING TEST RUN

Check for Electrical Leakage

During the **Test Run**, use an electroprobe and multimeter to perform a comprehensive electrical leakage test.

If electrical leakage is detected, turn off the unit immediately and call a licensed electrician to find and resolve the cause of the leakage.

Note: This may not be required for some locations in North America.

Gas Leak Checks

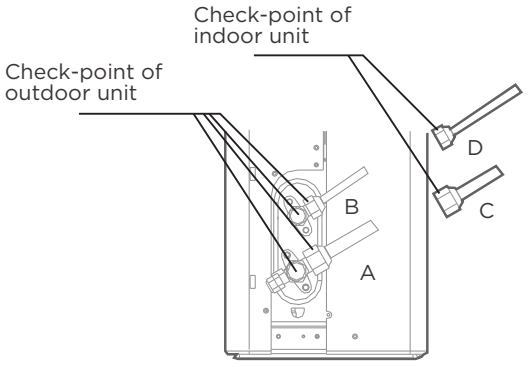
There are two different methods to check for gas leaks.

Soap and Water Method

Using a soft brush, apply soapy water or liquid detergent to all pipe connection points on the indoor unit and outdoor unit. The presence of bubbles indicates a leak.

Leak Detector Method

If using leak detector, refer to the device's operation manual for proper usage instructions.



A: Low pressure stop valve
B: High pressure stop valve
C& D: Indoor unit flare nuts

AFTER PERFORMING GAS LEAK CHECKS

After confirming that the all pipe connection points DO NOT leak, replace the valve cover on the outside unit.

Test Run

Test Run Instructions

You should perform the **Test Run** for at least 30 minutes.

- Connect power to the unit.
- Press the **ON/OFF** button on the remote controller to turn it on.
- Press the **MODE** button to scroll through the following functions, one at a time:
  - COOL–Select lowest possible temperature
  - HEAT–Select highest possible temperature
- Let each function run for 5 minutes, and perform the following checks:

List of Checks to Perform	PASS/FAIL	
No electrical leakage		
Unit is properly grounded		
All electrical terminals properly covered		
Indoor and outdoor units are solidly installed		
All pipe connection points do not leak	Outdoor (2):	Indoor (2):
Water drains properly from drain hose		
All piping is properly insulated		
Unit performs COOL function properly		
Unit performs HEAT function properly		
Indoor unit louvers rotate properly		
Indoor unit responds to remote controller		

DOUBLE-CHECK PIPE CONNECTIONS

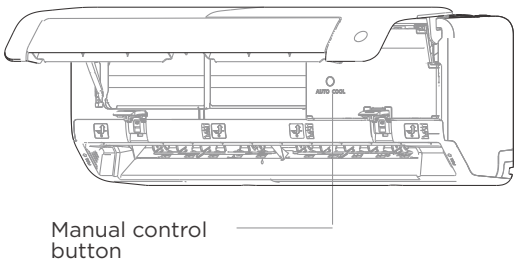
During operation, the pressure of the refrigerant circuit will increase. This may reveal leaks that were not present during your initial leak check. Take time during the Test Run to double-check that all refrigerant pipe connection points do not have leaks. Refer to **Gas Leak Check** section for instructions.

- After the Test Run is successfully completed, and you confirm that all checks points in List of Checks to Perform have PASSED, do the following:
  a. Using remote control, return unit to normal operating temperature.
  b. Using insulation tape, wrap the indoor refrigerant pipe connections that you left uncovered during the indoor unit installation process.

IF AMBIENT TEMPERATURE IS BELOW 60°F(16°C)

You can not use the remote controller to turn on the COOL function when the ambient temperature is below 60°F. In this instance, you can use the **MANUAL CONTROL** button to test the COOL function.

- Lift the front panel of the indoor unit, and raise it until it clicks in place.
- The **MANUAL CONTROL** button is located on the right-hand side of the unit. Press it 2 times to select the COOL function.
- Perform Test Run as normal.



Packing and Unpacking The Unit

Instructions for packing and unpacking the unit:

Unpacking:
Indoor unit:
1. Cut the sealing tape on the carton with a knife, one cut on the left, one cut in the middle and one cut on the right.
2.Use the vice to take out the sealing nails on the top of the carton.
3.Open the carton.
4.Take out the middle support plate if it is included.
5.Take out the accessory package, and take out the connecting wire if it is included.
6.Lift the machine out of the carton and lay it flat.
7.Remove the left and right package foam or the upper and lower packaging foam, untie the packaging bag.

Outdoor Unit
1.Cut the packing belt.
2.Take the unit out of the carton.
3.Remove the foam from the unit.
4.Remove the packaging bag from the unit.

Packing:
Indoor unit:
1.Put the indoor unit into the packing bag.
2.Attach the left and right package foam or the upper and lower packaging foam to the unit.
3.Put the unit into the carton, then put accessory package in.
4.Close the carton and seal it with the tape.
5.Using the packing belt if necessary.

Outdoor unit:
1.Put the outdoor unit into the packing bag.
2.Put the bottom foam into the box.
3.Put the unit into the carton, then put the upper packaging foam on the unit.
4.Close the carton and seal it with the tape.
5.Using the packing belt if necessary.

NOTE: Please keep all packaging items if you may need in the future.

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.

CS019UI-EP(R454B)