

Bosch Inverter One-Two/One-Three/One-Four/One-Five Split-Type Air Conditioner / Heat Pump

Climate 5000 AA Series



BOSCH

Installation Manual



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1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings



Warnings in this document are identified by a warning triangle printed against a grey background. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- ▶ **DANGER** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- ▶ **WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- ▶ **CAUTION** indicates a hazardous situation which, if not avoided, could result in minor to moderate injury.
- ▶ **NOTICE** is used to address practices not related to personal injury.

Important information



This symbol indicates important information where there is no risk to people or property.

1.2 Safety

Please read safety precautions before installation

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



WARNING:

- ▶ In certain functional environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.



WARNING:

- ▶ Only trained and certified technicians should install, repair and service this air conditioning unit.
- ▶ Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment and personal property.



WARNING: INSTALLATION REQUIREMENTS

- ▶ Strictly follow the installation instructions set forth in this manual. Improper installation may result in electrical shock, short circuit, leaks, fire or other damage to the equipment.
- ▶ Before you install the unit, consider strong winds, typhoons and earthquakes that might affect your unit and locate it accordingly. Failure to do so could cause the equipment to fail.
- ▶ After installation, ensure there are no refrigerant leaks and that the unit is operating properly. Refrigerant is both toxic and flammable and poses a serious health and safety risk.

NOTICE: FLUORINATED GASSES [REFRIGERANT]

- ▶ This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the outdoor unit itself.
- ▶ Installation, service, maintenance and repair of this unit must be performed by a certified technician.
- ▶ Product removal and recycling must be performed by a certified technician.
- ▶ If the system has a leak-detection system installed, it must be checked for leaks at least every 12 months.
- ▶ When the unit is checked for leaks, proper record-keeping of all checks is strongly recommended.

2 Components

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

Name	Image	Quantity	
Drain joint		1	
Seal ring		1	
Connecting pipe assembly	Liquid side	Φ6.35 (1/4 in)	Parts not included. Piping kits are available as an accessory.
		Φ9.52 (3/8 in)	
	Gas side	Φ9.52 (3/8 in)	
		Φ12.7 (1/2 in)	
		Φ 16 (5/8 in)	
Multi-zone installation manual		1	
Transfer connector NOTE: Pipe sizes may vary between air handler equipment and condensing section connections. To meet different pipe size requirements, it may be necessary to install an adapter (transfer connector) on the outdoor unit connection.		Not included, but may be required - 1 per indoor unit	
Magnetic ring (Hitch on the connective cable between the indoor unit and outdoor unit after installation.)		Not included, but recommended to use 1 per cable.	
Power cable for connection with external power supply		Not included (see section 9 for cable requirements)	

Table 1

3 Installation Overview / Order

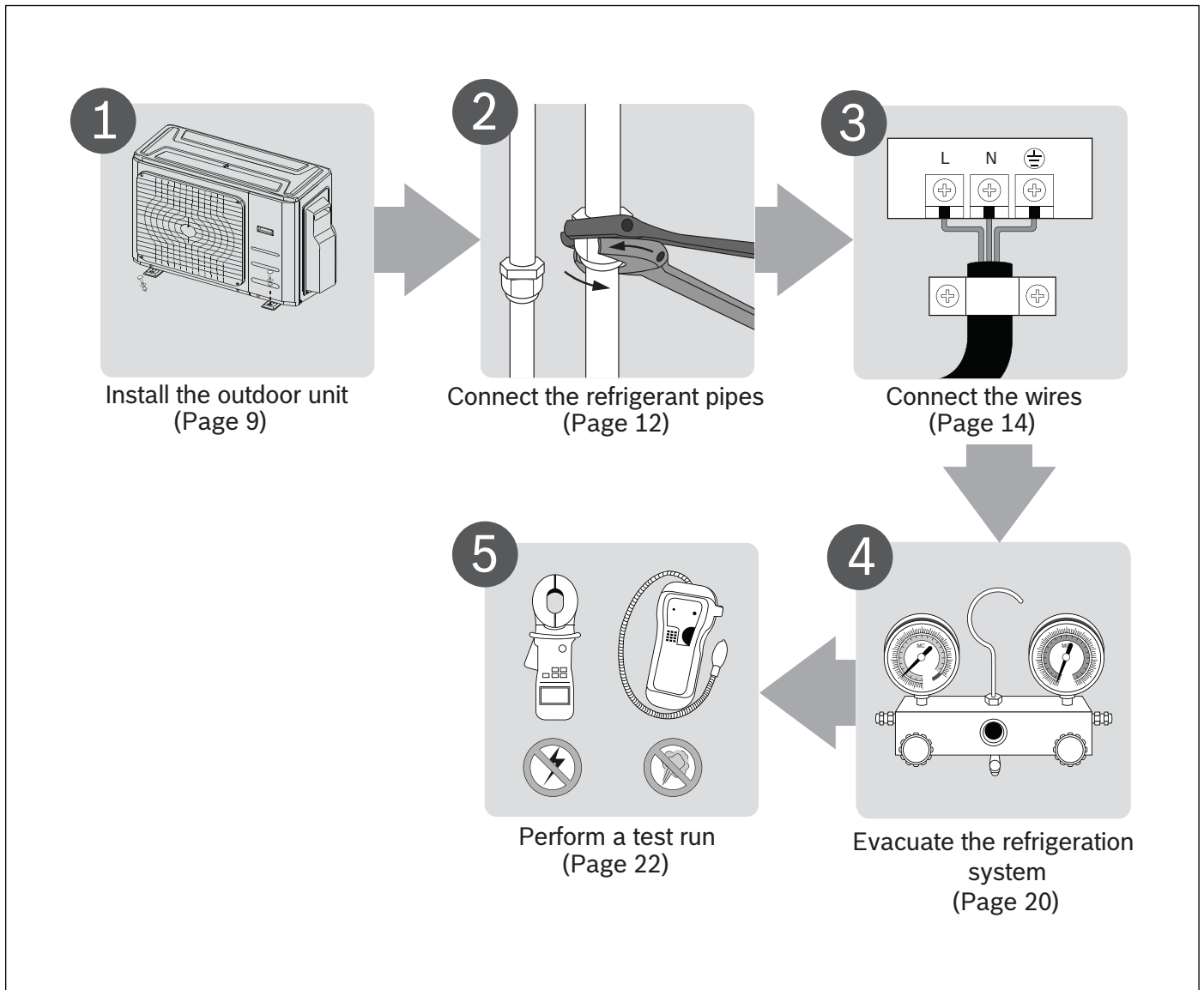


Figure 1

4 Installation Diagram

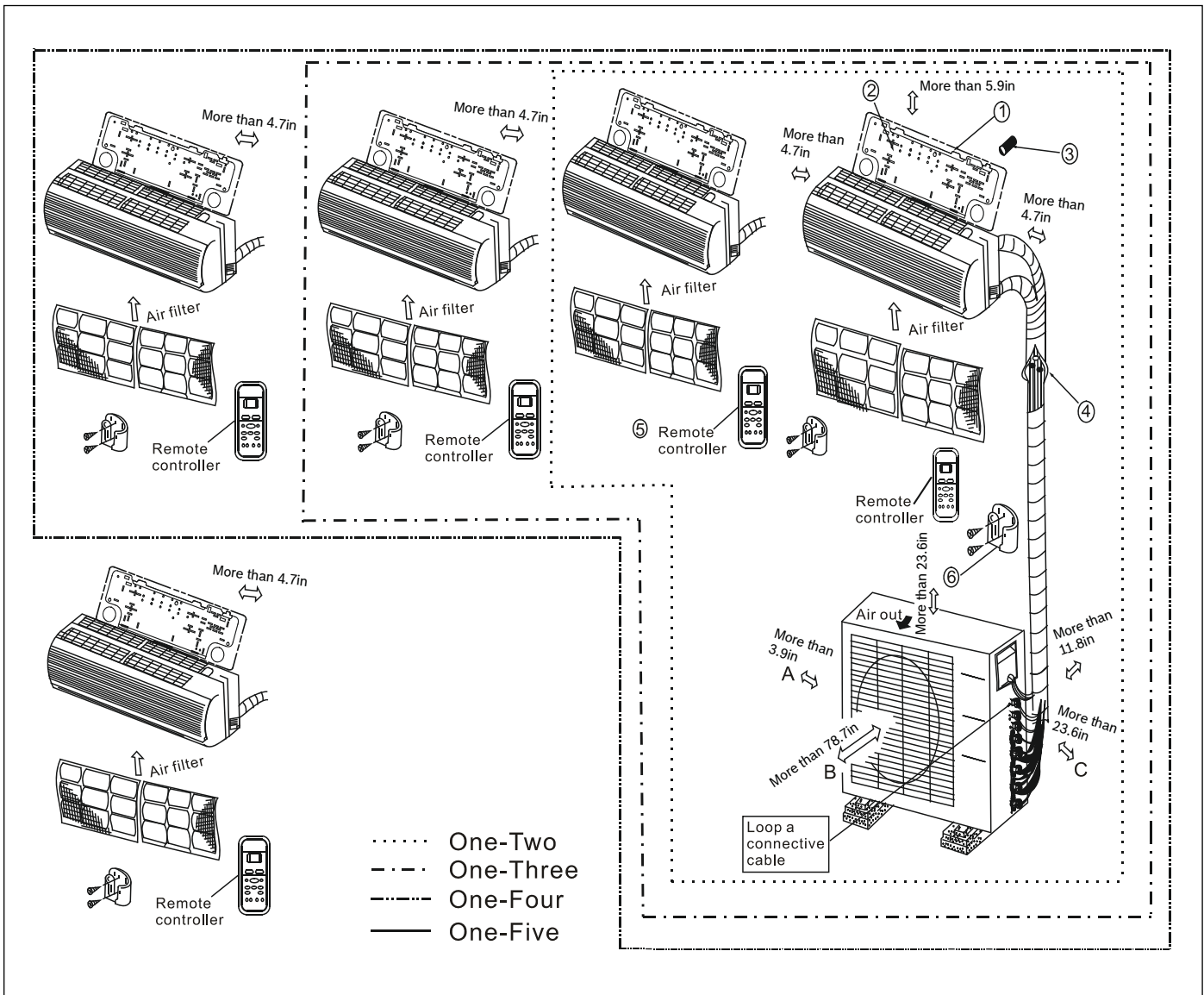


Figure 2

NOTICE:

- ▶ This illustration is for demonstration purposes only. The actual shape of your air conditioner may be slightly different.
- ▶ Copper lines must be independently insulated.



CAUTION:

- ▶ To prevent wall damage, use a stud finder to locate studs.
- ▶ A minimum pipe run of 10ft is recommended to minimize vibration & excessive noise.
- ▶ Two of the A, B, and C air circulation pathways must be free from obstructions at all times.

5 Specifications

Number of units that can be used together	Connected units	1-5 units
Compressor stop/start frequency	Stop time	3 min or more
Power source voltage	voltage fluctuation	within $\pm 10\%$ of rated voltage
	voltage drop during start	within $\pm 15\%$ of rated voltage
	interval unbalance	within $\pm 3\%$ of rated voltage

Table 2

	1 drive 2	1 drive 3	1 drive 4	1 drive 5
Model	BMS500-AAM018-1CSXXA	BMS500-AAM027-1CSXXA	BMS500-AAM036-1CSXXA	BMS500-AAM048-1CSXXA
Max. equivalent length for all connected indoor units	98.4 ft / 30 m	147.6 ft / 45 m	196.8 ft / 60 m	246 ft / 75 m
Max. equivalent length for one indoor unit	82 ft / 25 m	98.4 ft / 30 m	114.8 ft / 35 m	114.8 ft / 35 m
Max. height different between indoor and outdoor unit	OU higher than IU	49 ft / 15 m	49 ft / 15 m	49 ft / 15 m
	OU lower than IU	49 ft / 15 m	49 ft / 15 m	49 ft / 15 m
Max. height different between indoor units	32.8 ft / 10 m	32.8 ft / 10 m	32.8 ft / 10 m	32.8 ft / 10 m

Table 3 Refrigerant pipe requirements

When installing multiple indoor units with a single outdoor unit, ensure that the length of the refrigerant pipe and the drop height between the indoor and outdoor units meet the requirements illustrated in the following diagram (indoor units may be located above or below the outdoor unit as long as they meet these height difference requirements):

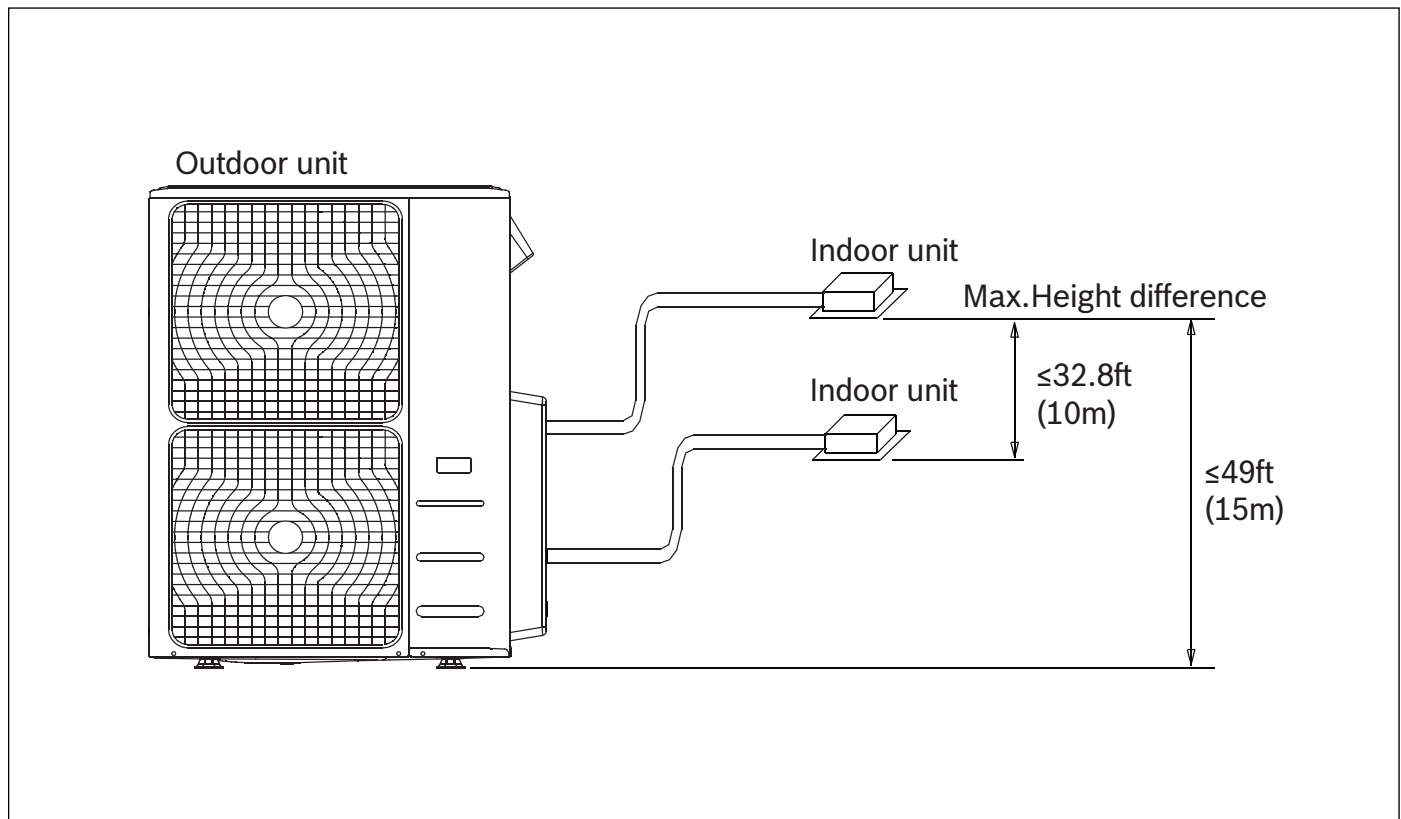


Figure 3

6 Outdoor unit installation

Step 1: Select installation location

The outdoor unit should be installed in the location that meets the following requirements:

- ▶ Place the outdoor unit as close to the indoor unit as possible.
- ▶ Ensure that there is enough room for installation and maintenance.
- ▶ The air inlet and outlet must not be obstructed or exposed to strong wind.
- ▶ Ensure the location of the unit will not be subject to snowdrifts, accumulation of leaves or other seasonal debris. If possible, provide an awning for the unit. Ensure the awning does not obstruct airflow.
- ▶ The installation area must be dry and well ventilated.
- ▶ There must be enough room to install the connecting pipes and cables and to access them for maintenance.
- ▶ The area must be free of combustible gases and chemicals.
- ▶ The pipe length between the outdoor and indoor unit may not exceed the maximum allowable pipe length.
- ▶ If possible, DO NOT install the unit where it is exposed to direct sunlight.
- ▶ If possible, make sure the unit is located far away from your neighbors' property so that the noise from the unit will not disturb them.
- ▶ If the location is exposed to strong winds (for example: near a seaside), the unit must be placed against the wall to shelter it from the wind. If necessary, use an awning. (See Fig.4 & 5)

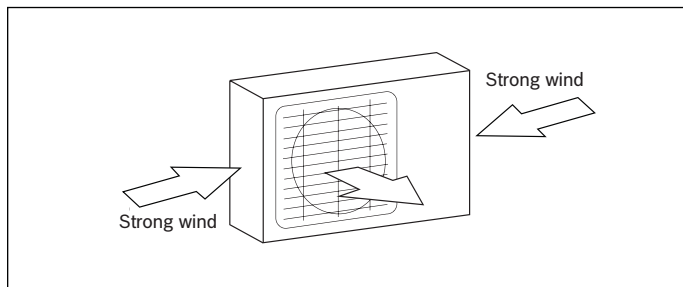


Figure 4

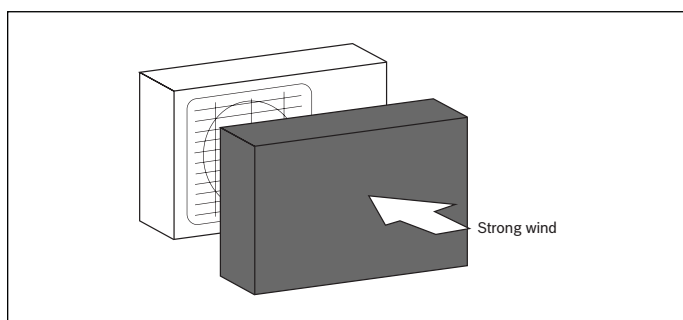


Figure 5

- ▶ Install the indoor and outdoor units, cables and wires at least 3ft from televisions or radios to prevent static or image distortion. Depending on the radio waves, a 3ft distance may not be enough to eliminate all interference.

Step 2: Install outdoor unit.



CAUTION:

- ▶ Be sure to remove any obstacles that may block air circulation.
- ▶ Make sure you refer to Length Specifications to ensure there is enough room for installation and maintenance.

Fix the outdoor unit with anchor bolts (M10).

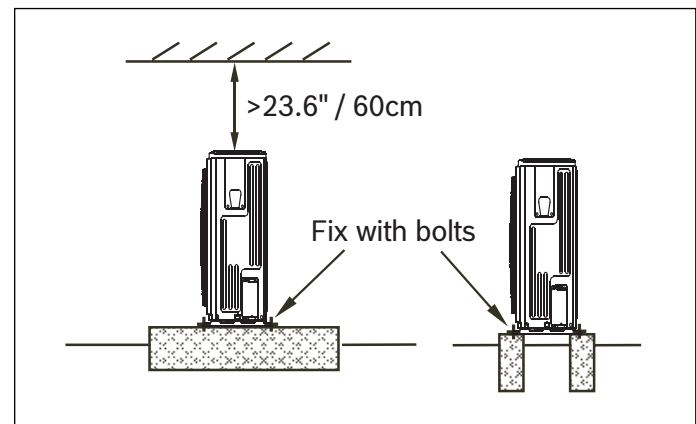


Figure 6

Split type outdoor unit mounting dimensions

Outdoor Unit	Dimensions [in.]	Mounting Dimensions [in. (mm)]	
	W x H x D	Distance A	Distance B
BMS500-AAM018-1CSXXA	33.3x14.3x27.6	21.3 (540)	13.8 (350)
BMS500-AAM027-1CSXXA	37.2x16.1x31.9	26.5 (673)	15.9 (403)
BMS500-AAM036-1CSXXA	37.2x16.1x31.9	26.5 (673)	15.9 (403)
BMS500-AAM048-1CSXXA	37.5x16.3x52.5	25.0 (634)	15.9 (404)

Table 4

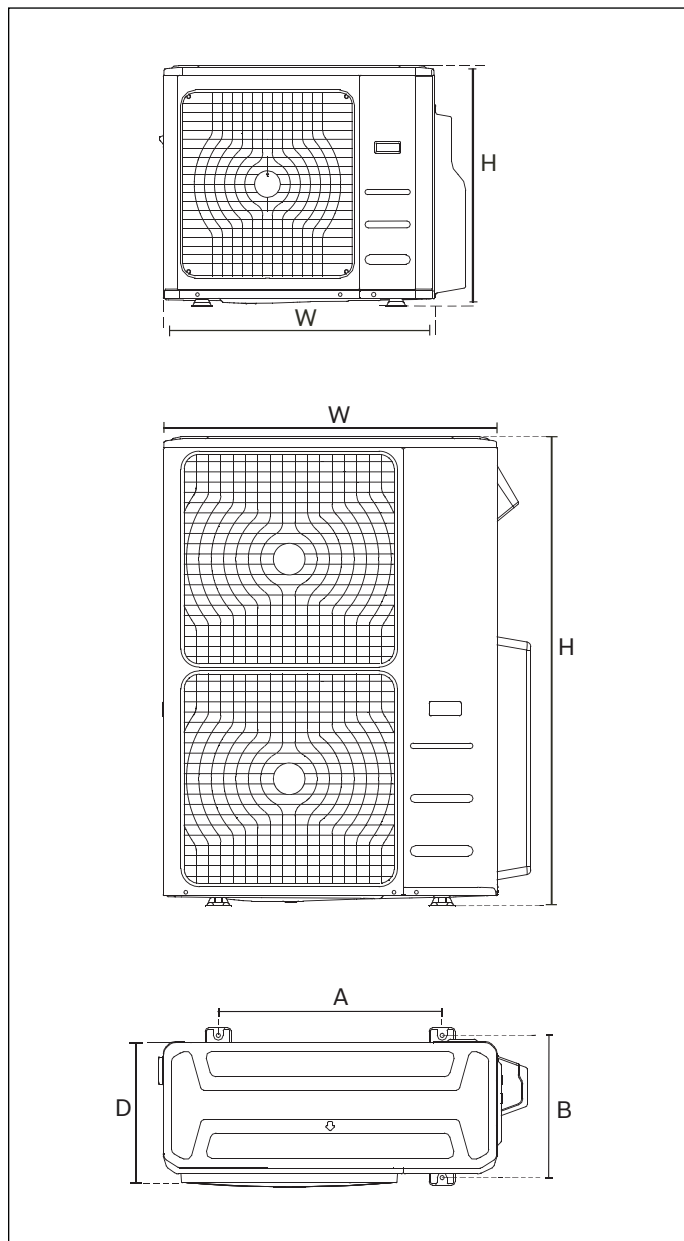


Figure 7

Row of series installation

The relations between H, A and L are as follows:

	L	A
L ≤ H	$L \leq 1/2H$	9.8" / 25 cm or more
	$1/2H < L \leq H$	11.8" / 30 cm or more
L > H	Can not be installed	

Table 5

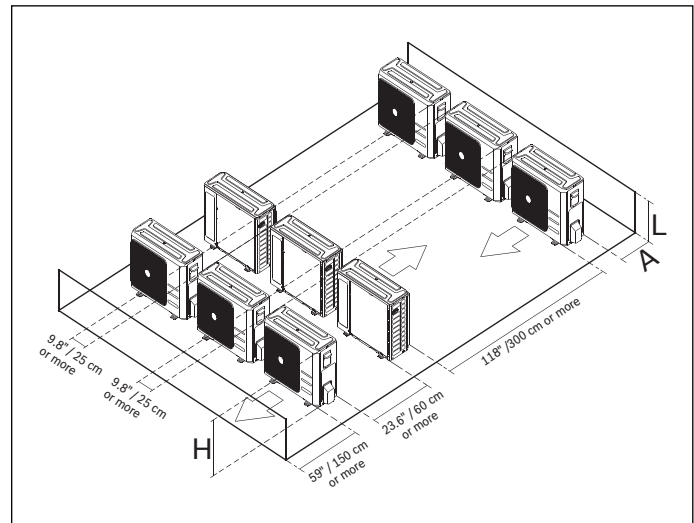


Figure 8



The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P) (See Fig. 9)

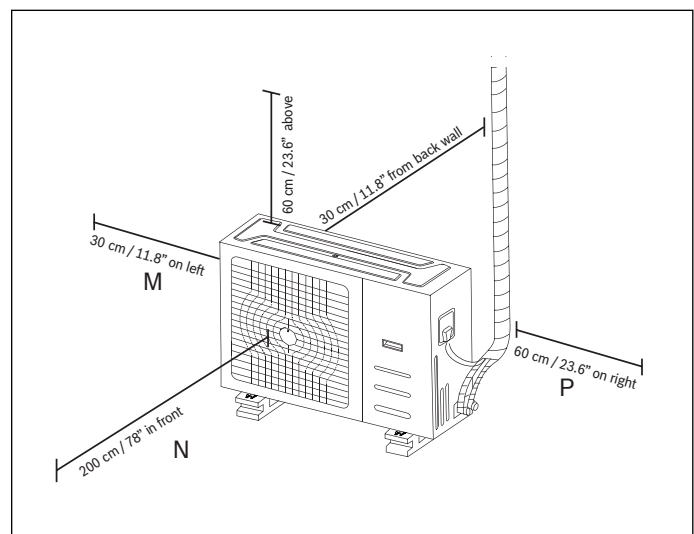


Figure 9

Drain joint installation

Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. (See Fig. 10)

1. Fit the rubber seal on the end of the drain joint where it will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan.
3. Rotate the drain joint 90° until it clicks in place and faces 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.

i Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

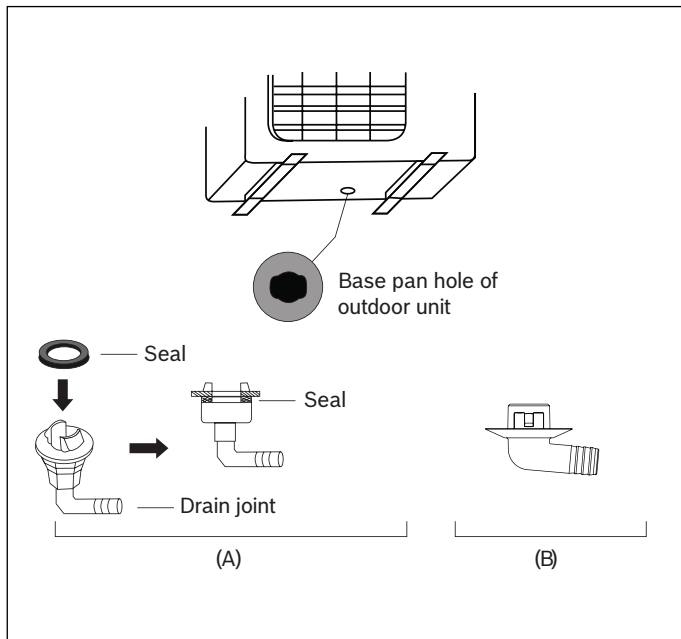


Figure 10

Drilling a hole in the wall

You must drill a hole in the wall for the refrigerant piping, and signal cable that will connect the indoor and outdoor units.

1. Determine the location of the wall hole based on the location of the outdoor unit.
2. Using a 65-mm (2.5") core drill, drill a hole in the wall.

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

3. Place the protective wall cuff in the hole. This protects the edges of the hole and helps seal it when you finish the installation process.

Connecting a 24k Btuh Indoor Unit

A 24K Btuh indoor unit can only be connected to an A system connection point. If there are two 24K Btuh indoor units, they can be connected with the A and B connection points. (See Fig. 11)

Connective pipe sizes

Indoor Unit capacity (Btu/h)	Liquid	Gas
9K	1/4"	3/8"
12K/18K	1/4"	1/2"
24K	3/8"	5/8"

Table 6

Multi-zone condensing section refrigerant line connection sizes

Model	A (liq /gas) (inches)	B (liq /gas) (inches)	C (liq /gas) (inches)	D (liq /gas) (inches)	E (liq /gas) (inches)
BMS500-AAM018-1CSXXA	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	N/A	N/A	N/A
BMS500-AAM027-1CSXXA	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	N/A	N/A
BMS500-AAM036-1CSXXA	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	Φ 1/4" / 1/2"	N/A
BMS500-AAM048-1CSXXA	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	Φ 1/4" / 3/8"	Φ 1/4" / 1/2"	Φ 1/4" / 1/2"

Table 7

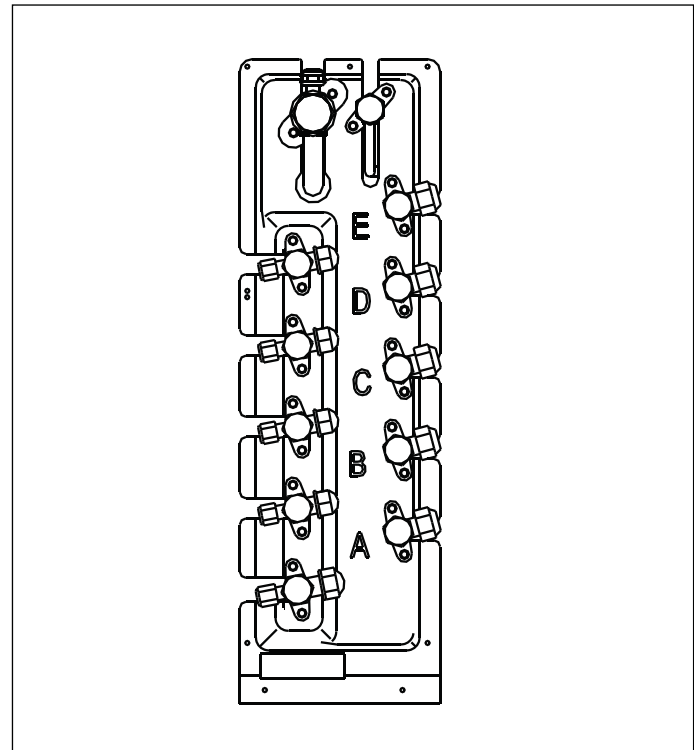


Figure 11

7 Refrigerant piping connection



WARNING:

- ▶ All field piping must be completed by a licensed technician and must comply with the local and national regulations.
- ▶ When the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. If the refrigerant leaks and its concentration exceeds its proper limit, hazards due to lack of oxygen may result.
- ▶ When installing the refrigeration system, ensure that air, dust, moisture or foreign substances do not enter the refrigerant circuit. Contamination in the system may cause poor operating capacity, high pressure in the refrigeration cycle, explosion or injury.
- ▶ Ventilate the area immediately if there is refrigerant leakage during the installation. Leaked refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation work.

7.1 Refrigerant Piping Connection Instructions

NOTICE:

- ▶ 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 minimize the need for future maintenance.

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

NOTICE:

- ▶ 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.

3. Make sure that the pipe is cut at a perfect 90° angle. Refer to Fig. 12 for cut examples.

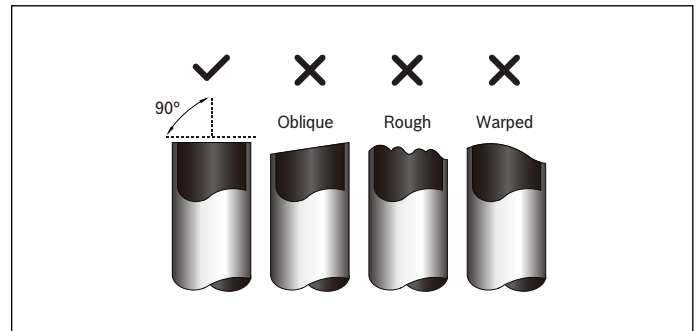


Figure 12

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.

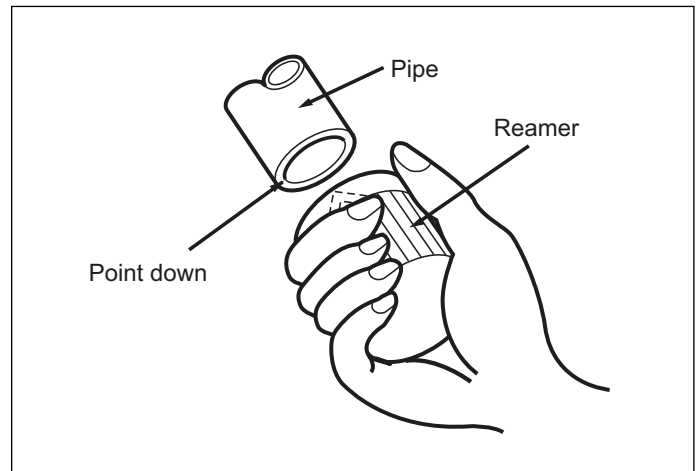


Figure 13

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 proper direction, because you can't put them on or change their direction after flaring. See Fig. 14.

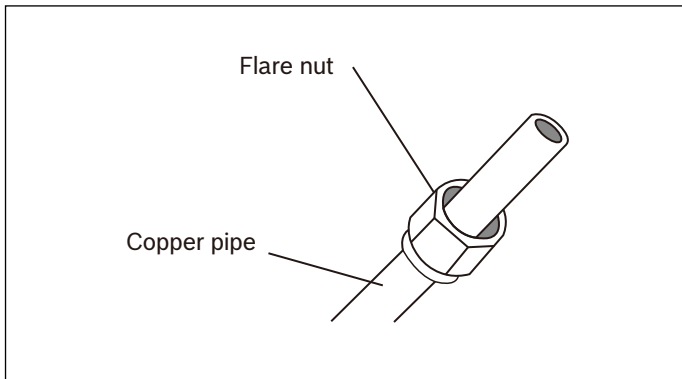


Figure 14

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

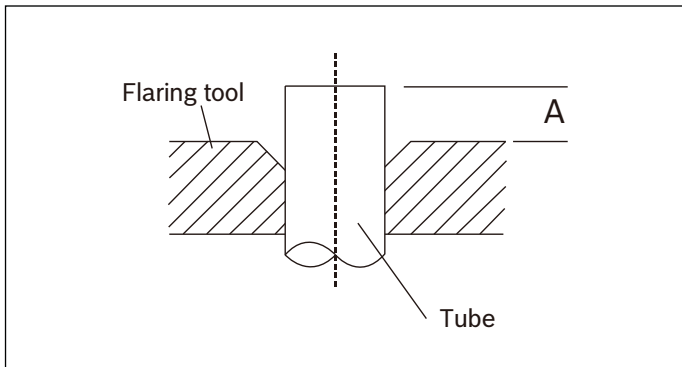


Figure 15

6. Place flaring tool onto the flaring block.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions shown in table 8.

Piping extension beyond flare form

Outer diameter of tube in. (mm)	Tightening Torque lb ft (N·m)	Max. Tightening Torque lb ft (N·m)	Fig. 15, A in. (mm)	
			Min.	Max.
1/4" (6.4)	11.0 (15.0)	11.8 (16.0)	0.0275 (0.7)	0.05 (1.3)
3/8" (9.5)	18.4 (25.0)	19.2 (26.0)	0.04 (1.0)	0.063 (1.6)
1/2" (12.7)	25.8 (35.0)	26.6 (36.0)	0.04 (1.0)	0.07 (1.8)
5/8" (15.9)	33.2 (45.0)	34.7 (47.0)	0.078 (2.0)	0.086 (2.2)

Table 8

8. Remove the flaring tool and flaring block, 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.

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

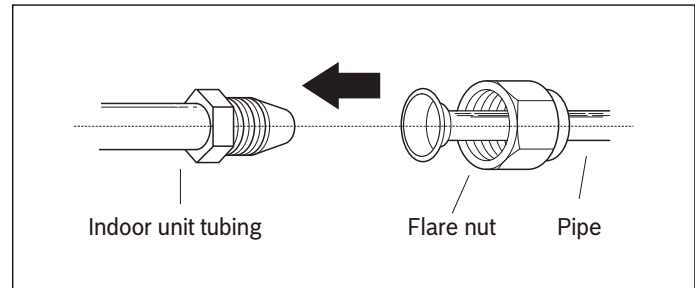


Figure 16

3. Tighten the flare nut as tightly as possible by hand.
4. Using a wrench, grip the nut on the unit tubing.
5. While firmly gripping the nut, use a torque wrench to tighten the flare nut according to the torque values in table 7.

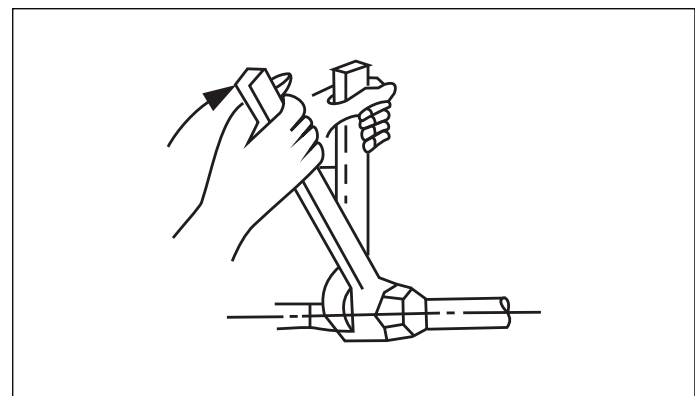


Figure 17

**CAUTION:**

- ▶ Ensure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite.

**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 Air Evacuation section of this manual).

NOTICE:

- ▶ Make sure the pipe is properly connected. Over tightening may damage the bell mouth and under tightening may lead to leakage.

**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.

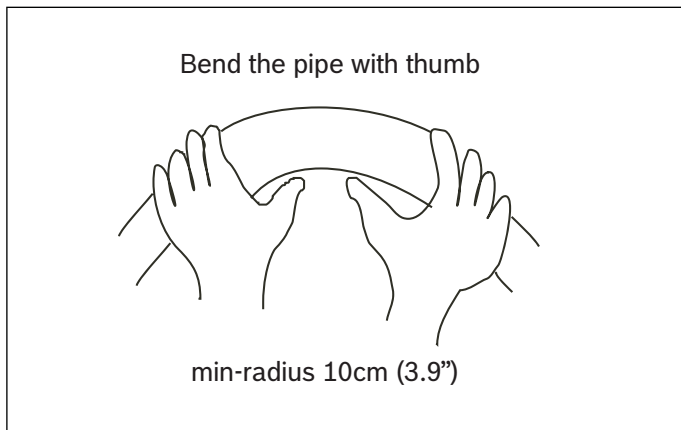


Figure 18

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



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.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

8 Wiring



WARNING:

- ▶ Be sure to disconnect the power supply before working on the unit.
- ▶ All electrical wiring must be done according to local and national regulations.
- ▶ Electrical wiring must be done by a qualified technician. Improper connections may cause electrical malfunction, injury and fire.
- ▶ An independent circuit and single outlet must be used for this unit. DO NOT plug another appliance or charger into the same outlet. If the electrical circuit capacity is not enough or there is a defect in the electrical work, it can lead to shock, fire, unit and property damage.
- ▶ Connect the power cable to the terminals and fasten it with a clamp. An insecure connection may cause fire.
- ▶ Make sure that all wiring is done correctly and the control board cover is properly installed. Failure to do so can cause overheating at the connection points, fire, and electrical shock.
- ▶ Ensure that main supply connection is made through a switch that disconnects all poles, with contact gap of a least 3mm (0.118”).
- ▶ DO NOT modify the length of the power cord or use an extension cord.



CAUTION:

- ▶ Connect the outdoor wires before connecting the indoor wires.
- ▶ Make sure you ground the unit. The grounding wire should be away from gas pipes, water pipes, lightning rods, telephone or other grounding wires. Improper grounding may cause electrical shock.
- ▶ DO NOT connect the unit with the power source until all wiring and piping is completed.
- ▶ Make sure that you do not cross your electrical wiring with your signal wiring, as this can cause distortion and interference.

Follow these instructions to prevent distortion when the compressor starts:

- ▶ The unit must be connected to the main outlet. Normally, the power supply must have a low output impedance of 32 ohms.
- ▶ No other equipment should be connected to the same power circuit.
- ▶ The unit's power information can be found on the rating sticker on the product.

8.1 Outdoor unit wiring



WARNING:

- ▶ Before performing any electrical or wiring work, turn off the main power to the system.

1. Prepare the cable for connection
 - a. You must first choose the right cable size before preparing it for connection. Be sure to use SOOW type cables.

Rated Current of Appliance (A)	AWG
≤ 7	18
7 - 13	16
13 - 18	14
18 - 25	12
25 - 30	10

Table 9

- b. Using wire strippers, strip the rubber jacket from both ends of signal/ power cable to reveal about 15cm (5.9”) of the wires inside.
- c. Strip the insulation from the ends of the wires.
- d. Using a wire crimper, crimp u-lugs on the ends of the wires.



While connecting the wires, please 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, disassemble the bolts from the maintenance board and remove the protection board. (See Fig. 19)

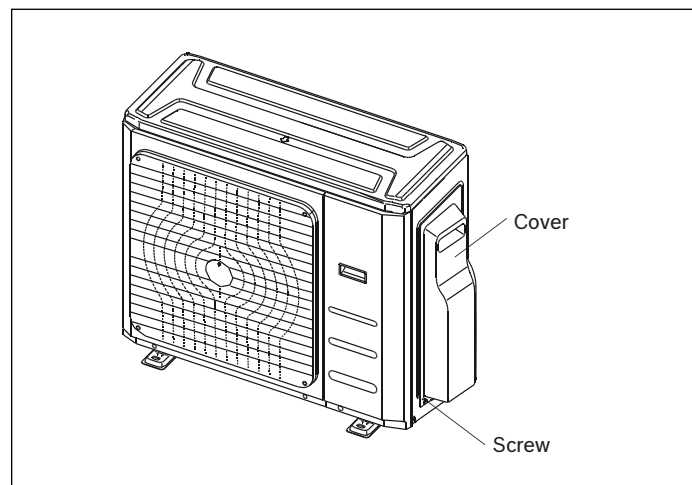


Figure 19

3. Connect the u-lugs to the terminals. Match the wire colors/labels with the labels on the terminal block, and firmly screw the u-lug of each wire to its corresponding terminal.
4. Clamp down the cable with designated cable clamp.

8.2 Wiring Diagrams



CAUTION:

- ▶ Connect the connective cables to the terminals, as identified, with their matching numbers on the terminal block of the indoor and outdoor units. For example, in the US models shown in the following diagram, Terminal L1(A) of the outdoor unit must connect with terminal L1 on the indoor unit.

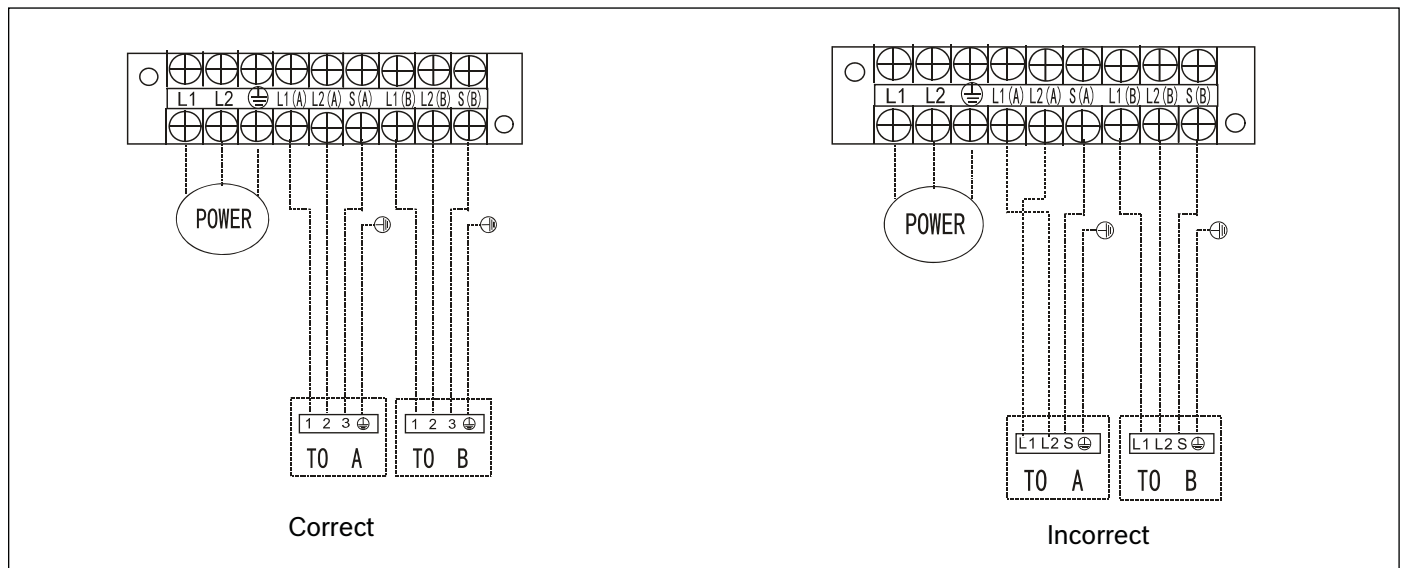


Figure 20



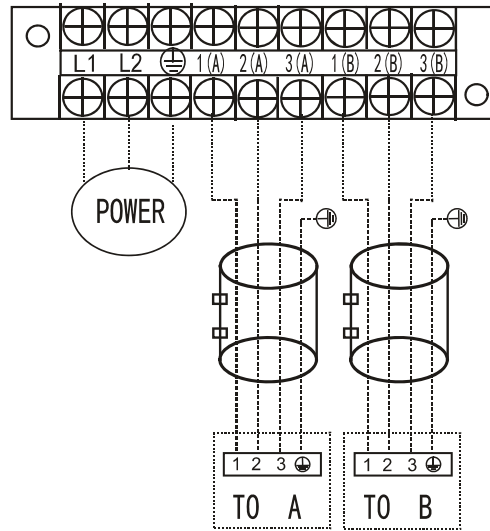
CAUTION:

After confirmation of the conditions in Figures 20 & 21, follow these guidelines when performing wiring:

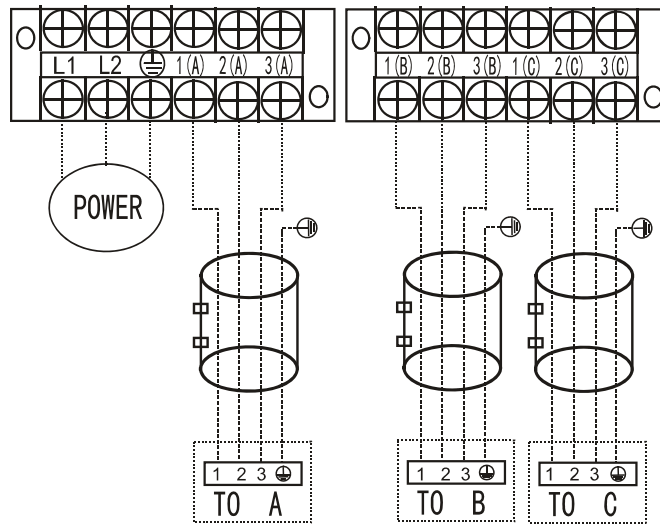
- ▶ Always have an individual power circuit specifically for the air conditioner. Always follow the circuit diagram posted on the inside of the control cover.
- ▶ Screws fastening the wiring in the casing of electrical fittings may come loose during transportation. Because loose screws may cause wire burn-out, check that the screws are tightly fastened. Check the specifications for the power source.
- ▶ Confirm that electrical capacity is sufficient.
- ▶ Confirm that the cable thickness is as specified in the power source specifications.
- ▶ Always install an earth leakage circuit breaker in wet or moist areas.
- ▶ The following can be caused by a drop in voltage: vibration of a magnetic switch, damaging the contact point, broken fuses, and disturbance of normal functioning.
- ▶ Disconnection from a power supply must be incorporated into the fixed wiring. It must have an air gap contact separation of at least 3mm in each active (phase) conductors.
- ▶ Before accessing terminals, all supply circuits must be disconnected.



Refer to the following figures for unit wiring. Run the main power cord through the lower line-outlet of the cord clamp.



One-two model



One-three model

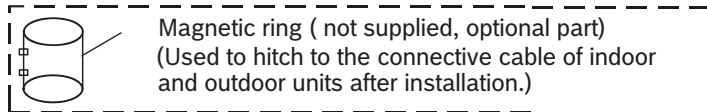
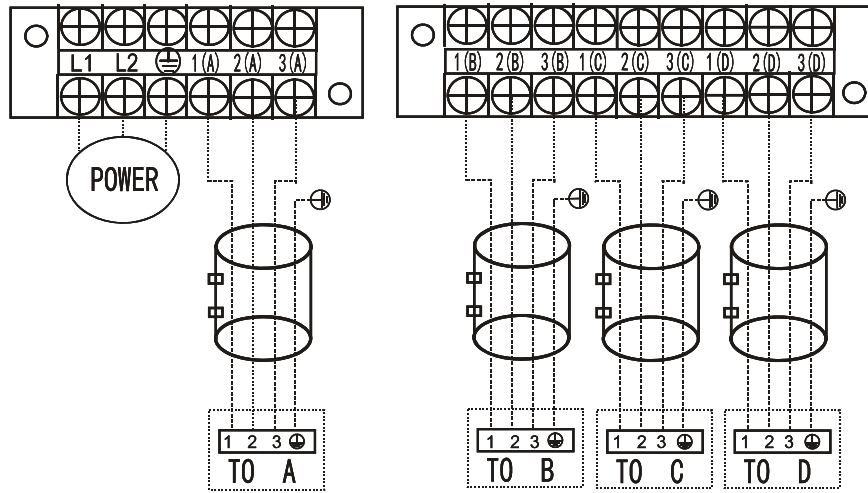
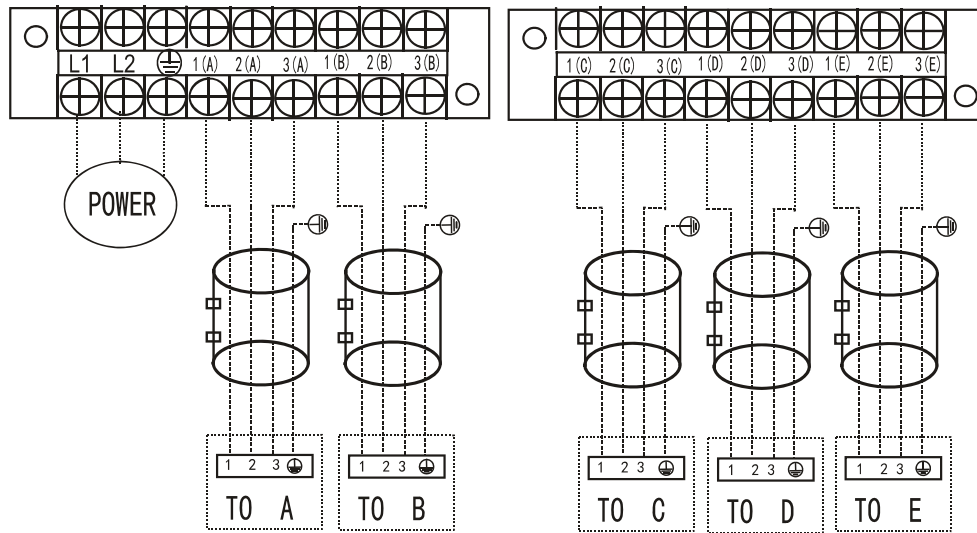


Figure 21



One-four model



One-five model

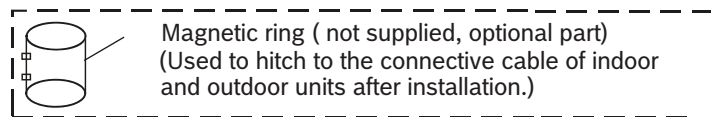


Figure 22

9 Air evacuation



CAUTION:

- ▶ Use a vacuum pump with a gauge reading lower than -29.92"Hg.
- ▶ The outdoor unit does not need to be vacuumed. DO NOT open the outdoor unit's gas and liquid stop valves.
- ▶ Ensure that the Compound Meter reads -29.92"Hg or below after 2 hours. If after three hours the gauge reading is still above -29.92"Hg, check if there is a gas leak or water inside the pipe. If there is no leak, perform another evacuation for 1 or 2 hours.
- ▶ DO NOT use refrigerant gas to evacuate the system.

9.1 Evacuation instructions

Before using the manifold gauge and vacuum pump, read their operation manuals to familiarize yourself with how to use them properly.

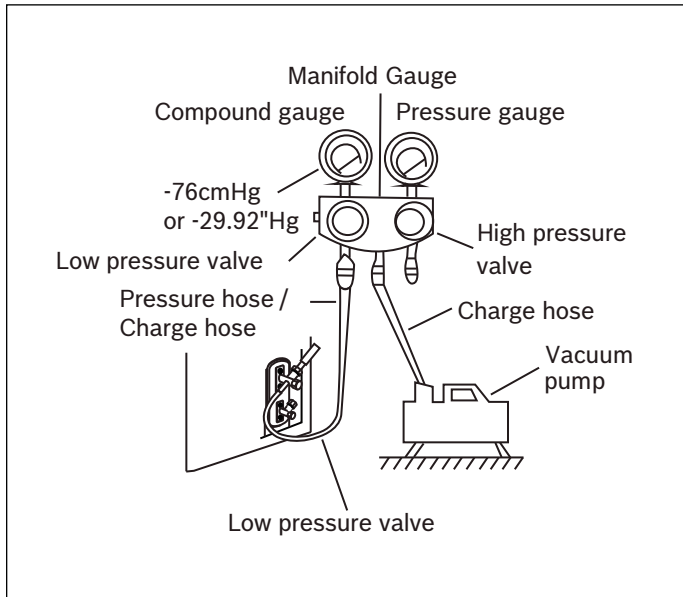


Figure 23

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. Open the Low Pressure side of the manifold gauge. Keep the High Pressure side closed.
4. Turn on the vacuum pump to evacuate the system.
5. Run the vacuum until the Compound Meter reads -76cmHg/ -29.92"Hg (-101 kPa). It is recommended to use a micron gauge; run the vacuum until the micron gauge reads 350 to 500 microns or less.
6. Close the Low Pressure side of the manifold gauge, and turn off the vacuum pump.

7. Wait for approximately 10 to 15 minutes, then check that there has been no change in system pressure. It is recommended to use a micron gauge; check to make sure the system is still below 500 microns.



If there is no change in system pressure, unscrew the cap from the packed valve (high pressure valve). If there is a change in system pressure, there may be a gas leak.

8. Insert a 5mm allen 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.

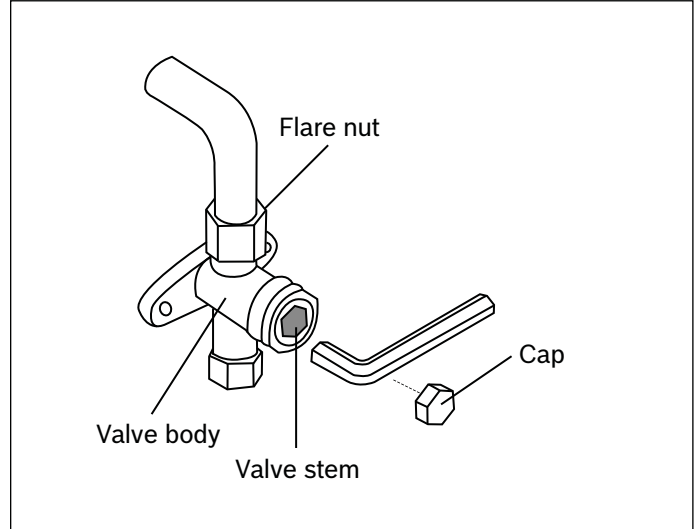


Figure 24

9. 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.
10. Remove the charge hose from the service port.
11. Using hexagonal wrench, fully open both the high pressure and low pressure valves.

NOTICE: Open valve stems gently

- ▶ When opening valve stems, turn the hexagonal allen wrench until it hits against the stopper. Do not try to force the valve to open further.

12. 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.
13. If the outdoor unit uses all vacuum valves, and the vacuum position is at the main valve, the system is not connected with the indoor unit. The valve must be tightened with a screw nut. Check for gas leaks before operation to prevent leakage.

9.2 Adding refrigerant



CAUTION:

- ▶ Refrigerant charging must be performed after wiring, vacuuming, and the leak testing.
- ▶ DO NOT exceed the maximum allowable quantity of refrigerant or overcharge the system. Doing so can damage the unit or impact its functioning.
- ▶ Charging with unsuitable substances may cause explosions or accidents. Ensure that the appropriate refrigerant is used.
- ▶ Refrigerant containers must be opened slowly. Always use protective gear when charging the system.
- ▶ DO NOT mix refrigerants types.

N=2(one-twin models), N=3(one-three models), N=4(one-four models), N=5(one-five models).

Depending on the length of connective piping or the pressure of the evacuated system, you may need to add refrigerant. Refer to table below for refrigerant amounts to be added:

Additional refrigerant per pipe length

Connective Pipe	Air Purging	Additional Refrigerant	
Pre-charge pipe length(ft/m) (Standard pipe lengthxN)	Vacuum Pump	N/A	
More than (Standard pipe lengthxN)ft/m	Vacuum Pump	Liquid Side: Ø 6.35 (ø 0.25") (Total pipe length - standard pipe lengthxN) x 15g/m (Total pipe length - standard pipe lengthxN) x 0.16oz/ft	Liquid Side: Ø 9.52 (ø 0.375") (Total pipe length - standard pipe lengthxN) x 30g/m (Total pipe length - standard pipe lengthxN)x 0.32oz/ft

Table 10



The standard pipe length is 7.5m (24.6').

9.3 Safety And Leakage Check

Electrical safety check

Perform the electrical safety check after completing installation. Cover the following areas:

1. Insulated resistance The insulated resistance must be more than $2M\Omega$.
2. Grounding work After finishing grounding work, measure the grounding resistance by visual detection and using the grounding resistance tester. Make sure the grounding resistance is less than 4Ω .
3. Electrical leakage check (performing during test while unit is on) During a test operation after completed installation, use the electroprobe and multimeter to perform an electrical leakage check. Turn off the unit immediately if leakage happens. Try and evaluate different solutions until the unit operates properly.

Gas leak check

1. **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.
2. **Leak Detector Method**: If using leak detector, refer to the device's operation manual for proper usage instructions.

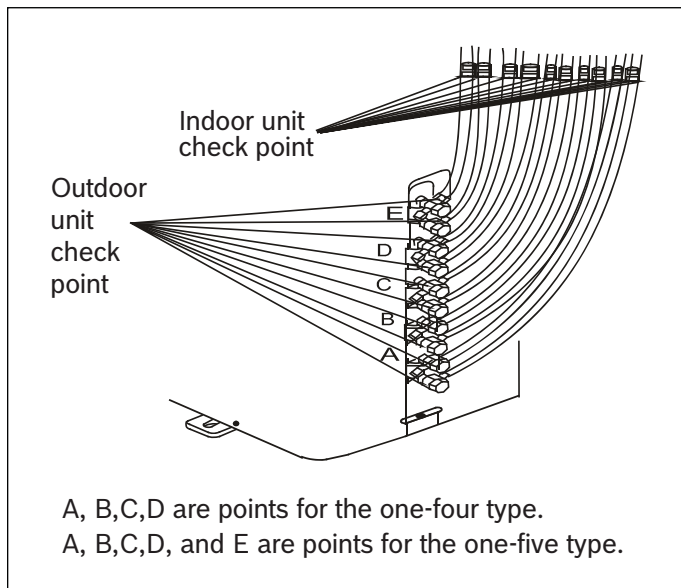


Figure 25



The illustration is for example purposes only. The actual order of A, B, C, D, and E on the machine may be slightly different from the unit you purchased but the general shape will remain the same.

10 Test run

10.1 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:

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



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.



CAUTION:

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

10.2 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 louvers move properly and can be changed using the remote control.
 - c. Double check to see if the room temperature is 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. Check to see that the drainage system is unimpeded and draining smoothly.
 - 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 neighbors or pose a safety hazard.

11 Automatic Wiring/Piping Correction Function

Climate 5000 models now feature automatic correction of wiring/piping errors. Press the "check switch" on the outdoor unit PCB board for 5 seconds until the LED displays "CE", indicating that this function is working. Approximately 5-10 minutes after the switch is pressed, the "CE" disappears, meaning that the wiring/piping error is corrected and all wiring/piping is properly connected.

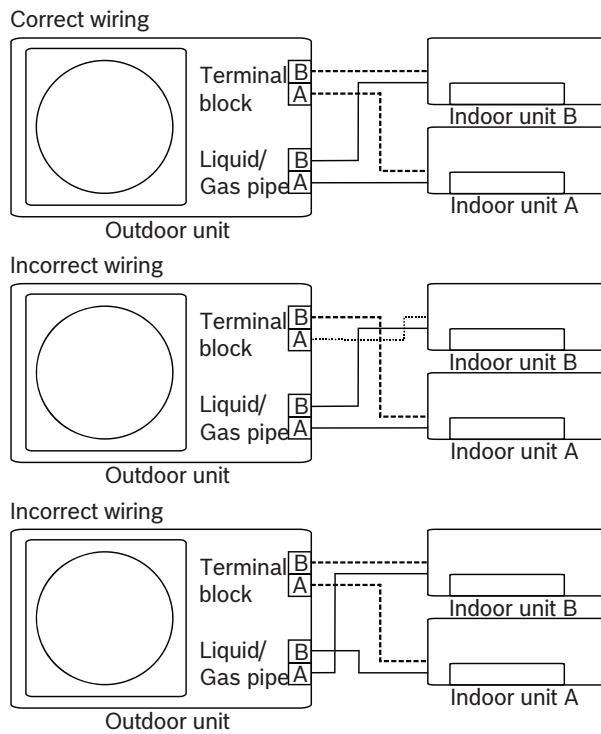
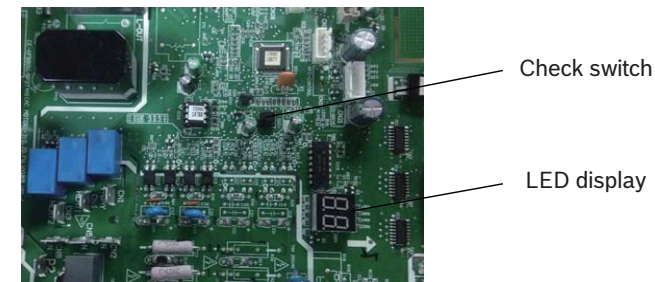


Figure 26

11.1 How To Activate This Function

1. Check that outside temperature is above 41°F (5°C).
(This function does not work when outside temperature is not above 41°F (5°C))
2. Check that the stop valves of the liquid pipe and gas pipe are open.
3. Turn on the breaker and wait at least 2 minutes.
4. Press the check switch on the outdoor PCB board until the LED displays "CE".

12 Features and operation

12.1 Protection of the air conditioner

Compressor protection

The compressor cannot restart for 3 minutes after it stops.

Anti-cold air

The unit is designed not to blow cold air on HEAT mode, when the indoor heat exchanger is in one of the following three situations and the set temperature has not been reached.

- A) When heating has just started.
- B) During defrosting.
- C) Low temperature heating.

The indoor or outdoor fan will stop running when defrosting.

Defrosting

Frost may be generated on the outdoor unit during a heat cycle when outdoor temperature is low and humidity is high resulting in lower heating efficiency in the air conditioner.

Under these conditions, the air conditioner will stop heating operations and start defrosting automatically.

The time to defrost may vary from 4 to 10 minutes, depending the outdoor temperature and the amount of frost buildup on the outdoor unit.

Auto-Restart

In case of power failure, the system will immediately stop. When power returns, the Operation light on the indoor unit will flash. To restart the unit, press the ON/OFF button on the remote control. The unit will restart with the same settings as before it lost power.

12.2 Operation

White mist emerging from the indoor unit

A white mist may be generated due to a large temperature difference between air inlet and air outlet on COOL mode in places with high relative humidity.

A white mist may be generated due to moisture created in the defrosting process when the air conditioner restarts in HEAT mode operation after defrosting.

Noise coming from the air conditioner

You may hear a low hissing sound when the compressor is running or has just stopped running. This sound is the sound of the refrigerant flowing or coming to a stop.

You may also hear a low "squeaking" sound when the compressor is running or has just stopped running. This is caused by tempera heat expansion and cold contraction of the plastic parts in the unit when the temperature is changing.

A noise may be heard due to the louver restoring itself to its original position when power is first turned on.

Dust blowing out from the indoor unit.

This happens when the air conditioner has not been used for a long time or during its first use.

The air conditioner turns to FAN ONLY mode from COOL or HEAT mode.

When the indoor temperature reaches the set temperature setting, the compressor will stop automatically, and the air conditioner turns to FAN only mode. The compressor will start again when the indoor temperature rises on COOL mode or falls on HEAT mode to the set point. Droplets of water may form on the surface of the indoor unit when cooling occurs in relatively high humidity (generally higher than 80% relative humidity). Adjust the horizontal louver to the maximum air outlet position and select HIGH fan speed.

Operation mode selection

While two or more indoor units are simultaneously operating, make sure the modes do not conflict with each other. The heat mode claims precedence over all other modes. If the unit initially started to operate in HEAT mode, the other units can operate in HEAT mode only. For example: If the unit initially started operates under COOL (or FAN) mode, the other units can operate under any mode except HEAT. If one of the unit selects HEAT mode, the other operating units will stop operation and display "--" (for units with display window only) or the auto and operation indication light will flash rapidly, the defrost indication light will turn off, and the timer indication light will remain on (for units without a display window). Alternatively, the defrost and alarm indication light (if applicable) will light up, or the operation indication light will flash rapidly, and the timer indication light will turn off (for the floor and standing type).

Optimal operation

To achieve optimal performance, please note the following:

- ▶ Adjust the direction of the air flow so that it is not blowing directly on people.
- ▶ Adjust the temperature to achieve the highest possible level of comfort. Do not adjust the unit to excessive temperature levels.
- ▶ Close doors and windows in COOL mode or HEAT mode.
- ▶ Use the TIMER ON button on the remote controller to select a time you want to start your air conditioner.
- ▶ Do not place any object near the air inlet or air outlet, as the efficiency of the air conditioner may be reduced and the air conditioner may stop running.
- ▶ Clean the air filter periodically, otherwise cooling or heating performance may be reduced.
- ▶ Do not operate unit with horizontal louver in closed position.

13 Troubleshooting



CAUTION:

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

- ▶ The power cord is damaged or abnormally warm
- ▶ You smell a burning odor
- ▶ The unit emits loud or abnormal sounds
- ▶ A power fuse blows or the circuit breaker frequently trips
- ▶ Water or other objects fall into or out of the unit

DO NOT ATTEMPT TO FIX THESE YOURSELF! CONTACT AUTHORIZED SERVICE PROVIDER IMMEDIATELY!

13.1 Common issues

The following problems are not a malfunction and in most situations will not require repairs.

Issue	Possible Causes
Unit does not turn on when pressing ON/OFF button	The Unit has a 3-minute protection feature that prevents the unit from overloading. The unit cannot be restarted within three minutes of being turned off.
The unit changes from COOL/HEAT mode to FAN mode	The unit may change its setting to prevent frost from forming on the unit. Once the temperature increases, the unit will start operating in the previously selected mode again.
	The set temperature has been reached, at which point the unit turns off the compressor. The unit will continue operating when the temperature fluctuates again.
The indoor unit emits white mist	In humid regions, a large temperature difference between the room's air and the conditioned air can cause white mist.
Both the indoor and outdoor units emit white mist	When the unit restarts in HEAT mode after defrosting, white mist may be emitted due to moisture generated from the defrosting process.
The indoor unit makes noises	A rushing air sound may occur when the louver resets its position.
	A squeaking sound may occur after running the unit in HEAT mode due to expansion & contraction of the unit's plastic parts.
Both the indoor unit and outdoor unit make noises	Low hissing sound during operation: This is normal and is caused by refrigerant gas flowing through both indoor and outdoor units.
	Low hissing sound when the system starts, has just stopped running, or is defrosting: This noise is normal and is caused by the refrigerant gas stopping or changing direction.
	Squeaking sound: Normal expansion and contraction of plastic and metal parts caused by temperature changes during operation can cause squeaking noises.
The outdoor unit makes noises	The unit will make different sounds based on its current operating mode.
Dust is emitted from either the indoor or outdoor unit	The unit may accumulate dust during extended periods of non-use, which will be emitted when the unit is turned on. This can be mitigated by covering the unit during long periods of inactivity.
The unit emits a bad odor	The unit may absorb odors from the environment (such as furniture, cooking, cigarettes, etc.) which will be emitted during operations.
	The unit's filters have become moldy and should be cleaned.
The fan of the outdoor unit does not operate	During operation, the fan speed is controlled to optimize product operation.
Operation is erratic, unpredictable, or unit is unresponsive	Interference from cell phone towers and remote boosters may cause the unit to malfunction. In this case, try the following:
	<ul style="list-style-type: none"> ▶ Disconnect the power, then reconnect. ▶ Press ON/OFF button on remote control to restart operation.

Table 11



If a problem persists, contact a local dealer or your nearest customer service center. Provide them with a detailed description of the unit malfunction as well as your model number.

13.2 Troubleshooting

When troubles occur, please check the following points before contacting a repair company.

Problem	Possible Causes	Solution
Poor Cooling Performance	Temperature setting may be higher than ambient room temperature	Lower the temperature setting
	The heat exchanger on the indoor or outdoor unit is dirty	Clean the affected heat exchanger
	The air filter is dirty	Remove the filter and clean it according to instructions
	The air inlet or outlet of either unit is blocked	Turn the unit off, remove the obstruction and turn it back on
	Doors and windows are open	Make sure that all doors and windows are closed while operating the unit
	Excessive heat is generated by sunlight	Close windows and curtains during periods of high heat or bright sunshine
	Too many sources of heat in the room (people, computers, electronics, etc.)	Reduce amount of heat sources
	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
The unit is not working	SILENCE function is activated	SILENCE function can lower product performance by reducing operating frequency. Turn off SILENCE function.
	Power failure	Wait for the power to be restored
	The power is turned off	Turn on the power
	The fuse is burned out	Replace the fuse
	Remote control batteries are dead	Replace batteries
	The Unit's 3-minute protection has been activated	Wait three minutes after restarting the unit
The unit starts and stops frequently	Timer is activated	Turn timer off
	There's too much or too little refrigerant in the system	Check for leaks and recharge the system with refrigerant.
	Incompressible gas or moisture has entered the system.	Evacuate and recharge the system with refrigerant
	The compressor is broken	Replace the compressor
Poor heating performance	The voltage is too high or too low	Install a manostat to regulate the voltage
	The outdoor temperature is lower than 7°C (44.5°F)	Use auxiliary heating device
	Cold air is entering through doors and windows	Make sure that all doors and windows are closed during use
Indicator lamps continue flashing	Low refrigerant due to leak or long-term use	Check for leaks, re-seal if necessary and top off refrigerant
"Error code appears in the window display of indoor unit: • E0, E1, E2... • P1, P2, P3... • F1, F2, F3..."	The unit may stop operation or continue to run safely. If the indicator lamps continue to flash or error codes appear, wait for about 10 minutes. The problem may resolve itself. If not, disconnect the power, then connect it again. Turn the unit on. If the problem persists, disconnect the power and contact your nearest customer service center.	

Table 12



If your problem persists after performing the checks and diagnostics above, turn off your unit immediately and contact your nearest customer service center.

14 Disposal guidelines

Components

Many parts in the Air Conditioner can be fully recycled in the end of the product life. Contact your city authorities for information about the disposal of recyclable products.

Refrigerant

At the end of the service life of this appliance and prior to its environmental disposal, a person qualified to work with refrigerant circuits must recover the refrigerant from within the sealed system.

**WARNING:**

- ▶ Improper disposal of this appliance endangers your health and is bad for the environment. Hazardous substances may leak into the ground water and enter the food chain.
- ▶ Disposing of this product correctly will help ensure that the waste undergoes the necessary treatment, recovery and recycling.

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