perfect aire®

COMFORT... **BUILT TO LAST**

MULTI-ZONE

OUTDOOR UNIT

AB SERIES, HEAT PUMP

INSTALLATION MANUAL

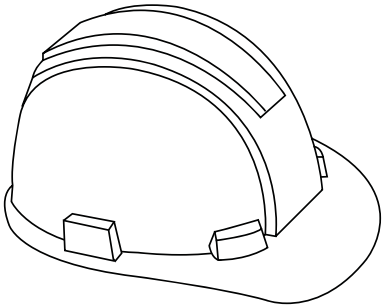
FOR MODELS:

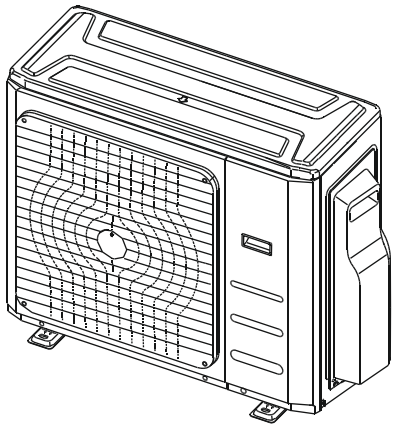
2PAMSH18-MZO2
2PAMSH27-MZO3
2PAMSH36-MZO4
2PAMSH48-MZO5

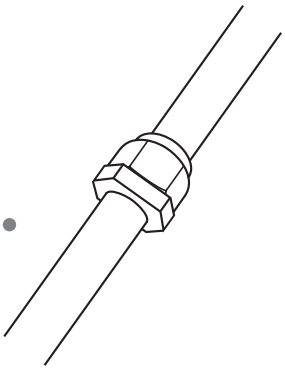
Before using your air conditioner, please read this manual carefully and keep it for future reference, along with your receipt.

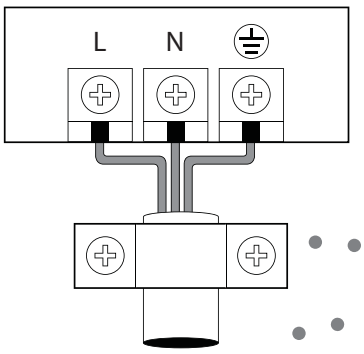
Table of Contents

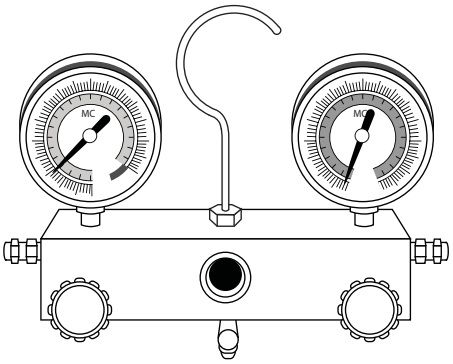
Installation Manual











The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

Accessories

1

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 equipment failure and void warranty.

Name			Shape	Quantity
Installation plate				1
Plastic expansion sheath				5-8 (depending on models)
Self-Tapping Screw A ST3.9X25				5-8 (depending on models)
Drain joint (some models)				1
Seal ring (some models)				1
Connecting pipe assembly	Liquid side	Ø1/4"(Ø6.35mm)		Parts you must purchase. Consult a technician for the proper size.
		Ø3/8"(Ø9.52mm)		
	Gas side	Ø3/8"(Ø9.52mm)		
		Ø1/2"(Ø12.7mm)		
		Ø5/8"(Ø15.9mm)		
Owner's manual				1
Installation manual				1
Flare nut connectors (packed with the indoor or outdoor unit, depending on models) NOTE: Pipe size may differ from unit to unit. To meet different pipe size requirements, the pipe connections may need a flare nut connector installed on the outdoor unit .				Optional part (one piece/one indoor unit)
				Optional part (1-5 pieces for outdoor unit, depending on models)
Magnetic ring (Secure on the connective cable between the indoor unit and outdoor unit after installation.)				Optional part (one piece/one cable)
Cord protection rubber ring (If the cord clamp cannot fasten on a small cord, use the cord protection rubber ring [supplied with accessories] to wrap around the cord. Secure in place with the cord clamp.)				1 (on some models)

Optional Accessories

There are two types of remote controls: wired and wireless.
Select a remote control based on customer preferences and requirements and install in an appropriate place.
Refer to catalogs and technical literature for guidance on selection of a suitable remote control.

Safety Precautions

2

Read Safety Precautions Before Installation

Incorrect installation due to ignoring instructions can cause serious damage or injury and void warranty. The seriousness of potential damage or injuries is classified as either a **WARNING** or **CAUTION.**

WARNING

Failure to observe a warning may result in death. The unit must be installed in accordance with national, regional or local regulations.

CAUTION

Failure to observe a caution may result in injury or equipment damage.

⚠ WARNING

- **Carefully read the Safety Precautions before installation.**
- In certain environments, such as kitchens, server rooms, etc., the use of specially designed air-conditioning units is highly recommended.
- **Only authorized, 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.
- **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 and void warranty.
- Before you install the unit, consider strong winds, heavy rain, snow or other conditions 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.

Note about Fluorinated Gasses

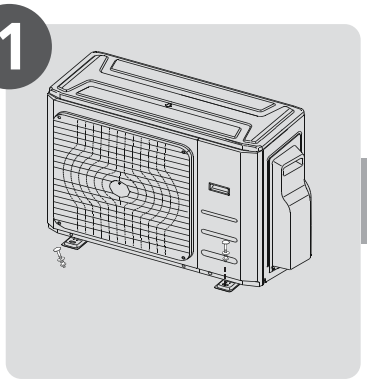
1. This air-conditioning unit contains fluorinated gasses. For specific information on the type of gas and the amount, please refer to the relevant label on the unit itself.
2. Installation, service, maintenance and repair of this unit must be performed by an authorized, trained and certified technician.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

Installation Overview

3

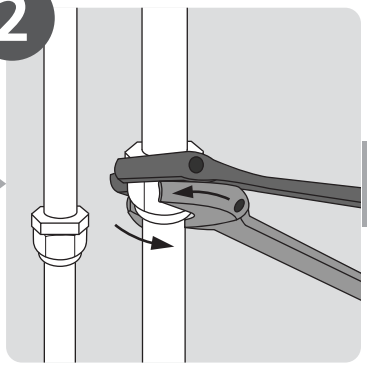
INSTALLATION ORDER

1



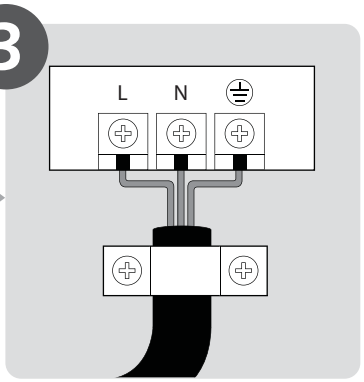
Install the outdoor unit
(Page 9)

2



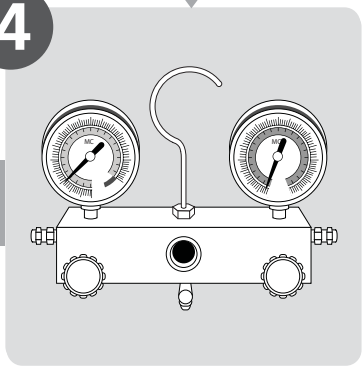
Connect the refrigerant pipes
(Page 12)

3



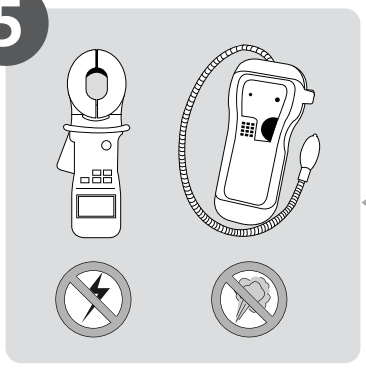
Connect the wires
(Page 14)

4



Evacuate the refrigeration system
(Page 20)

5



Perform a test run
(Page 22)

Installation Diagram

4

Installation Diagram

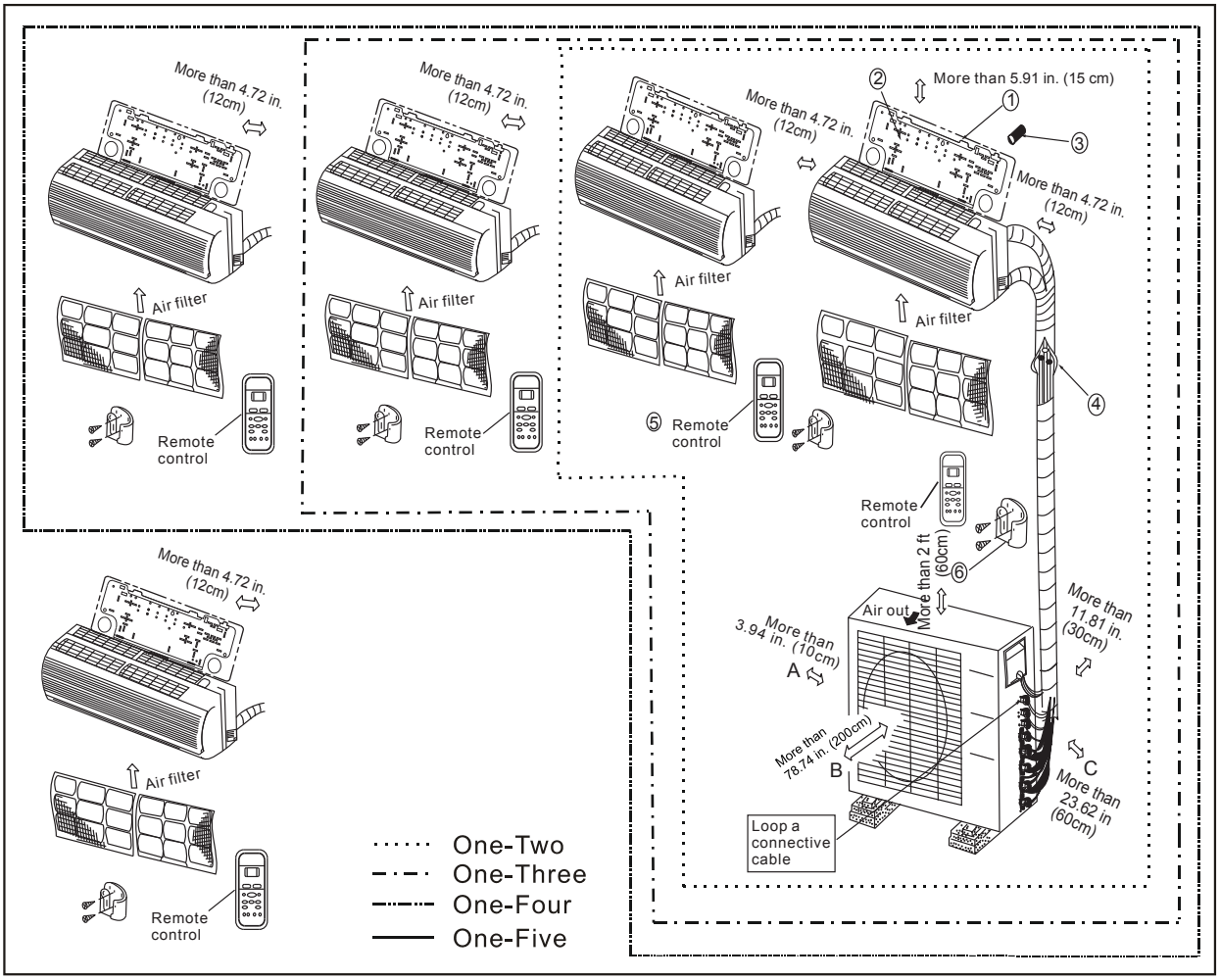


Fig. 4.1

Safety Precautions

⚠ CAUTION

- This illustration is for demonstration purposes only.
  The actual shape of your air condtioner 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 (3m) is required to minimize vibration & excessive noise.
- Two of the A, B, and C air circulation pathways must be free from obstructions at all times.

Specifications

5

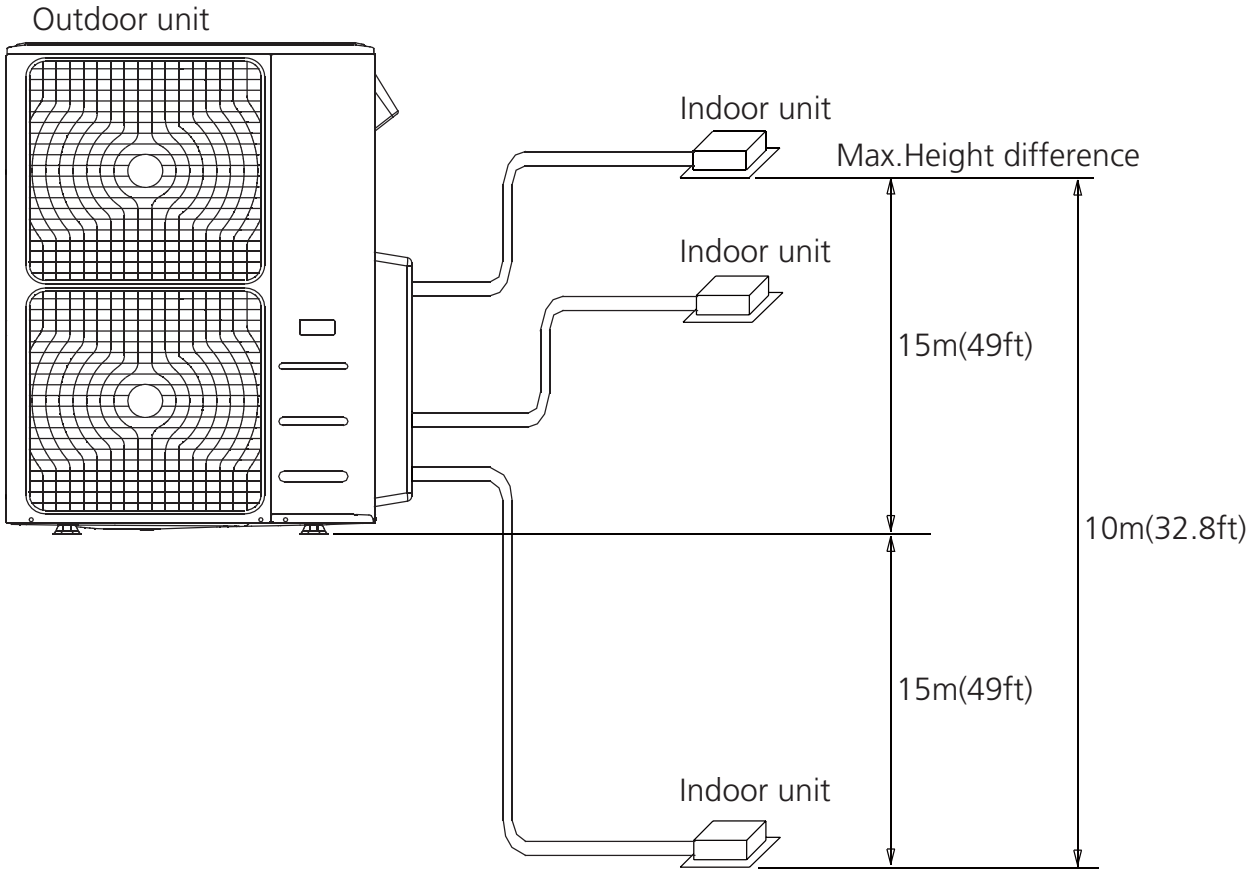
Table 5.1

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 ±10% of rated voltage
	Voltage drop during start	within ±15% of rated voltage
	Interval unbalance	within ±3% of rated voltage

Table 5.2 - units of measurement in this table are in m/ft. *(example: 30m/98.4 ft.)*

		1 drive 2	1 drive 3	1 drive 4	1 drive 5
Max. length for all connected units		30/98.4	45/147.6	60/196.8	75/246
Max. length for one indoor unit		25/82	30/98.4	35/114.8	35/114.8
Max. height differential between indoor units and outdoor unit	OU higher than IU	15/49	15/49	15/49	15/49
	OU lower than IU	15/49	15/49	15/49	15/49
Max. height differential between indoor units		10/32.8	10/32.8	10/32.8	10/32.8

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 and table above.



Outdoor Unit Installation

6

Outdoor Unit Installation Instructions

Step 1: Select installation location.

The outdoor unit should be installed in a 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 protection or enclosure for the unit. Ensure the protection or enclosure does not obstruct airflow.
- ☑ The installation area must be dry and well ventilated.
- ☑ Ensure that there is sufficient room to install the connecting pipes and cables to provide access to them for repair or maintenance.

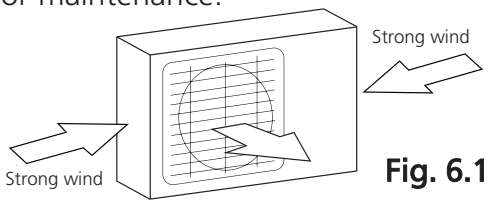


Fig. 6.1

- ☑ 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. Refer to Table 5.2.
- ☑ 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 neighboring property to minimize the noise generated from the unit.
- ☑ If the unit placement 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 enclosure or other. protection. (See Fig. 6.1 & 6.2)
- ☑ Install the indoor and outdoor units, cables and wires at least 3.28 ft (1m) from televisions or radios to prevent static or image distortion. Depending on the radio waves, a 3.28 ft (1m) distance may not be enough to eliminate all interference.

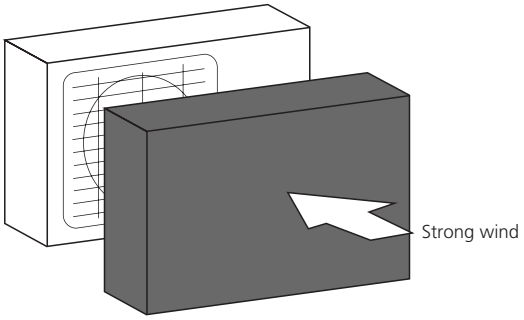


Fig. 6.2

Step 2: Install outdoor unit.

Secure the outdoor unit to a condenser pad with anchor bolts (M10)

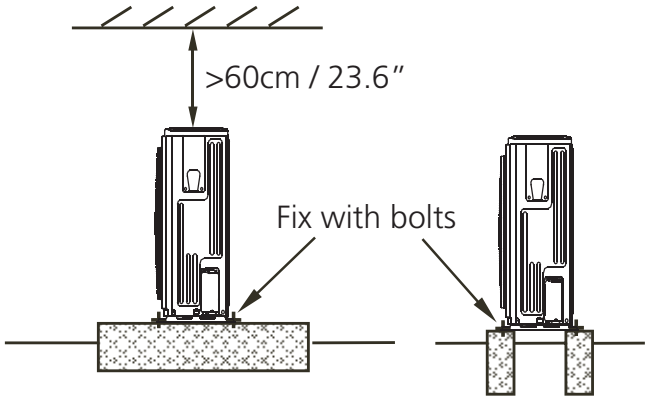


Fig. 6.3

CAUTION

- Be sure to remove any obstacles that may block air circulation.
- Make sure you refer to Dimensional/ Clearance Specifications to ensure there is enough room for installation, maintenance or repair.

Split Type Outdoor Unit

(Refer to Fig 6.4, 6.5, 6.6, 6.10 and Table 6.1)

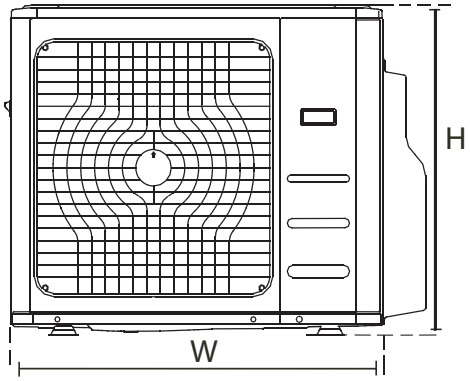


Fig. 6.4

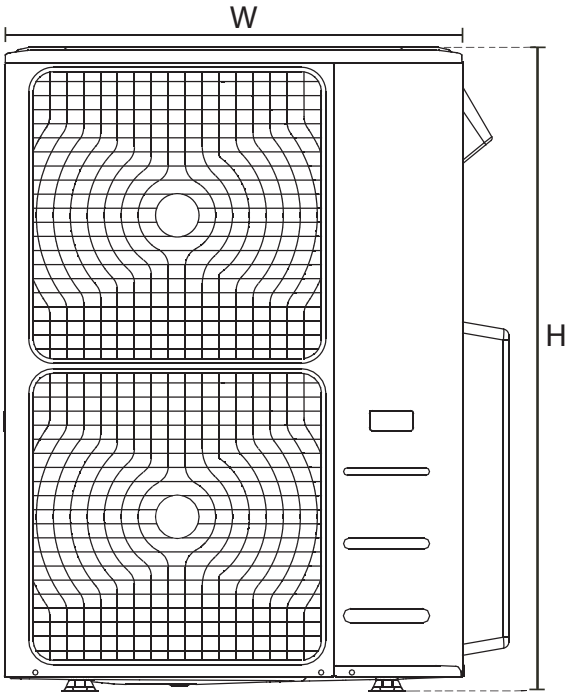


Fig. 6.5

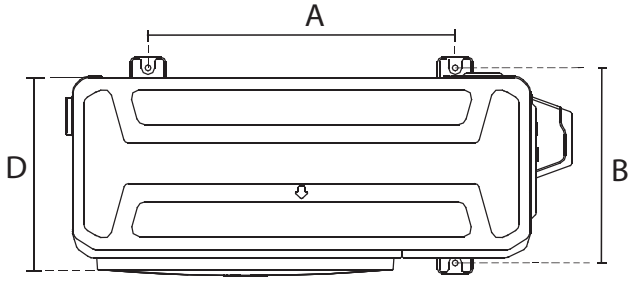


Fig. 6.6

Table 6.1: Dimensional Specifications of Split Type Outdoor Unit (unit: mm/inch)

Outdoor Unit Dimensions W x H x D	Mounting Dimensions	
	Distance A	Distance B
760x590x285 (29.9x23.2x11.2)	530 (20.85)	290 (11.4)
810x558x310 (31.9x22x12.2)	549 (21.6)	325 (12.8)
845x700x320 (33.27x27.5x12.6)	560 (22)	335 (13.2)
900x860x315 (35.4x33.85x12.4)	590 (23.2)	333 (13.1)
945x810x395 (37.2x31.9x15.55)	640 (25.2)	405 (15.95)
990x965x345 (38.98x38x13.58)	624 (24.58)	366 (14.4)
938x1369x392 (36.93x53.9x15.43)	634 (24.96)	404 (15.9)
900x1170x350 (35.4x46x13.8)	590 (23.2)	378 (14.88)
800x554x333 (31.5x21.8x13.1)	514 (20.24)	340 (13.39)
845x702x363 (33.27x27.6x14.3)	540 (21.26)	350 (13.8)
946x810x420 (37.2x31.9x16.53)	673 (26.5)	403 (15.87)
946x810x410 (37.2x31.9x16.14)	673 (26.5)	403 (15.87)
952x1333x410 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)
952x1333x415 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)

Rows of series installation

Table 6.2 The relations between H, A and L are as follows.

	L	A
L ≤ H	L ≤ 1/2H	25 cm / 9.8" or more
	1/2H < L ≤ H	30 cm / 11.8" or more
L > H	Cannot be installed	

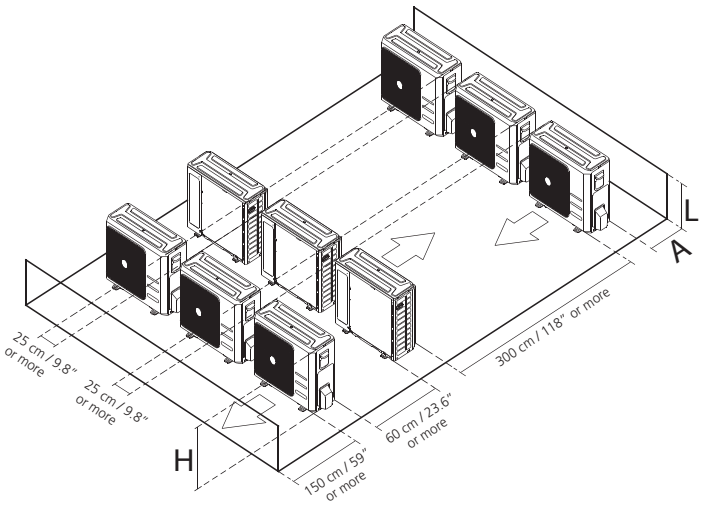


Fig. 6.7

NOTE: The minimum distance requirements 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. 6.8)

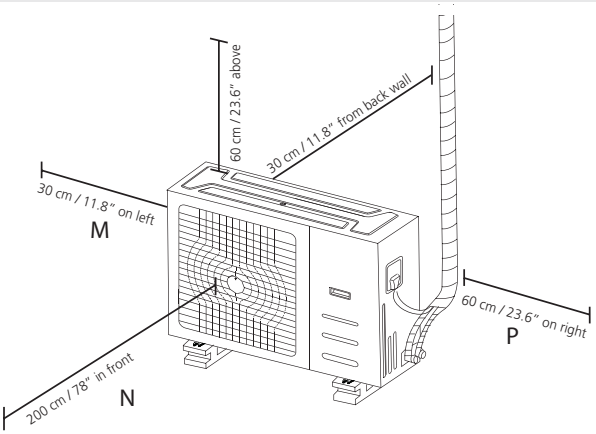


Fig. 6.8

Drain Joint Installation

Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. (See Fig. 6.9)

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 away from the unit during heating mode.

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

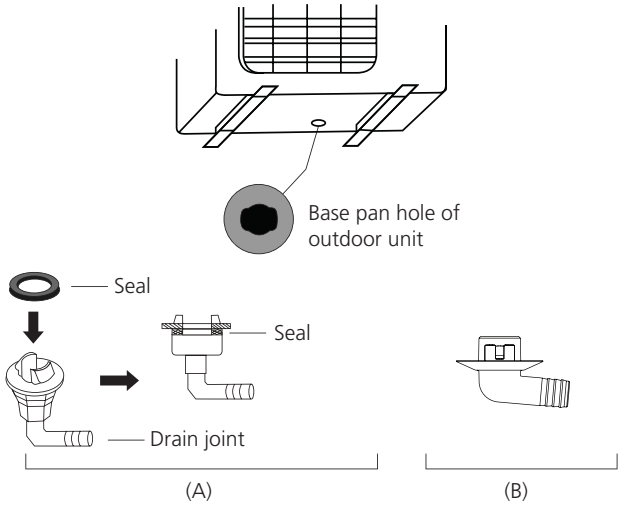


Fig. 6.9

Notes On Drilling Hole In 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.

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

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

When Installing a 24K Indoor Unit

The 24K indoor unit can only be connected with an A system. If there are two 24K indoor units, they can be connected with A and B systems. (See Fig. 6.10)

Table 6.3: Connective pipe size of an A and B system (unit: inch)

Indoor Unit capacity (Btu/h)	Liquid	Gas
7K/9K/12K	1/4	3/8
12K/18K	1/4	1/2
24K	3/8	5/8

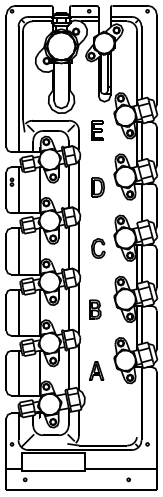


Fig. 6.10

Refrigerant Piping Connection

7

Safety Precautions

⚠ WARNING

- All field piping must be completed by an authorized, certified and licensed technician and must comply with all local or 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.

Refrigerant Piping Connection Instructions

! CAUTION

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

Step1: 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.

! CAUTION

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.

1. Make sure that the pipe is cut at a perfect 90° angle. Refer to Fig. 7.1 for examples of bad cuts

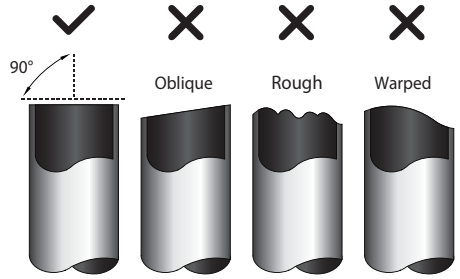


Fig. 7.1

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.

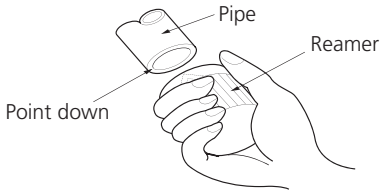


Fig. 7.2

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. Cover the pipe with insulating material, each independently.
3. Place flare nuts on both ends of pipe. Make sure they are placed in the correct orientation, because you can't install them on or change their direction after flaring. See Fig. 7.3

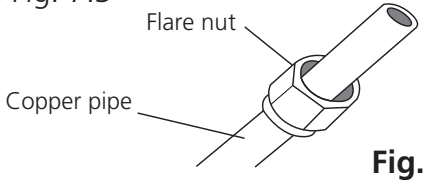


Fig. 7.3

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

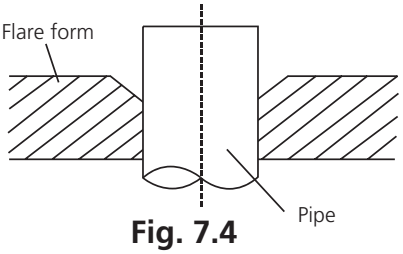


Fig. 7.4

6. Place flaring tool onto the form.
7. Turn the handle of the flaring tool clockwise until the pipe is fully flared. Flare the pipe in accordance with the dimensions shown in table 7.1.

Table 7.1: PIPING EXTENSION BEYOND FLARE FORM

Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm/Inch)		Flare shape
		Min.	Max.	
Ø 1/4"/ Ø 6.4mm	14.2-17.2 N.m (144-176 kgf.cm)	8.3/0.3	8.3/0.3	
Ø 3/8"/ Ø 9.5mm	32.7-39.9 N.m (333-407 kgf.cm)	12.4/0.48	12.4/0.48	
Ø 1/2"/ Ø 12.7mm	49.5-60.3 N.m (504-616 kgf.cm)	15.4/0.6	15.8/0.6	
Ø 5/8"/ Ø 15.9mm	61.8-75.4 N.m (630-770 kgf.cm)	18.6/0.7	19/0.74	
Ø 3/4"/ Ø 19.1mm	97.2-118.6 N.m (990-1210 kgf.cm)	22.9/0.9	23.3/0.91	
Ø 7/8"/ Ø 22mm	109.5-133.7 N.m (1117-1364 kgf.cm)	27/1.06	27.3/1.07	

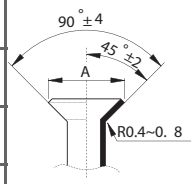


Fig. 7.5

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

Step 4: Connect pipes

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

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.

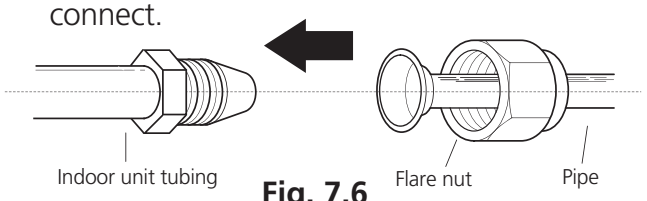


Fig. 7.6

3. Tighten the flare nut as tightly as possible by hand.
4. Using a spanner, 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 7.1.

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

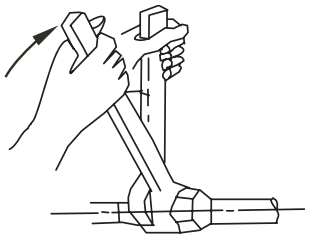


Fig. 7.7

CAUTION

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

NOTE ON MINIMUM BEND RADIUS

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

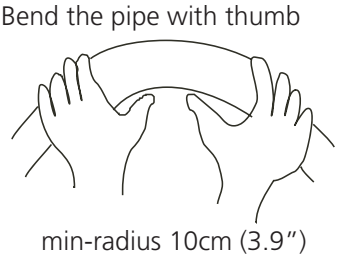


Fig. 7.8

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

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

7. Thread this pipeline through the wall and connect it to the outdoor unit.
8. Insulate all the piping, including the valves of the outdoor unit.
9. Open the stop valves of the outdoor unit to start the flow of the refrigerant between the indoor and outdoor unit.

CAUTION

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

Wiring

8

Safety Precautions

⚠ WARNING

- Be sure to disconnect the power supply before working on the unit.
- All electrical wiring must comply with all local and national regulations.
- Electrical wiring must be done by an authorized or certified technician. Improper connections may cause electrical malfunction, injury and fire and void warranty.
- 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 sufficient or there is a defect in the electrical work, it can lead to shock, fire, unit and property damage and void warranty.
- Connect the power cable to the terminals and fasten it with a clamp. An improperly sealed 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 and void warranty.
- Ensure that main supply connection is made through a switch that disconnects all poles, with contact gap of a least 0.118" (3mm).
- DO NOT modify or splice any 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, interference, and improper or no operations.

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.

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 H07RN-F cables.

Table 8.1: Minimum Cross-Sectional Area of Power and Signal Cables North America

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

Table 8.2: Other Regions

Rated Current of Appliance (A)	Nominal Cross-Sectional Area (mm²)
≤6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25- 32	4
32 - 45	6

b. Using wire strippers, strip the rubber jacket from both ends of signal 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.

NOTE: 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. 8.1)

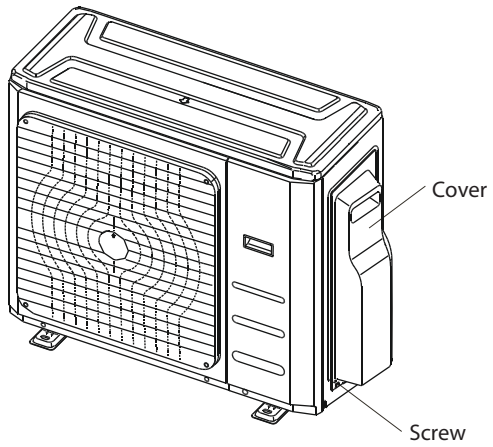


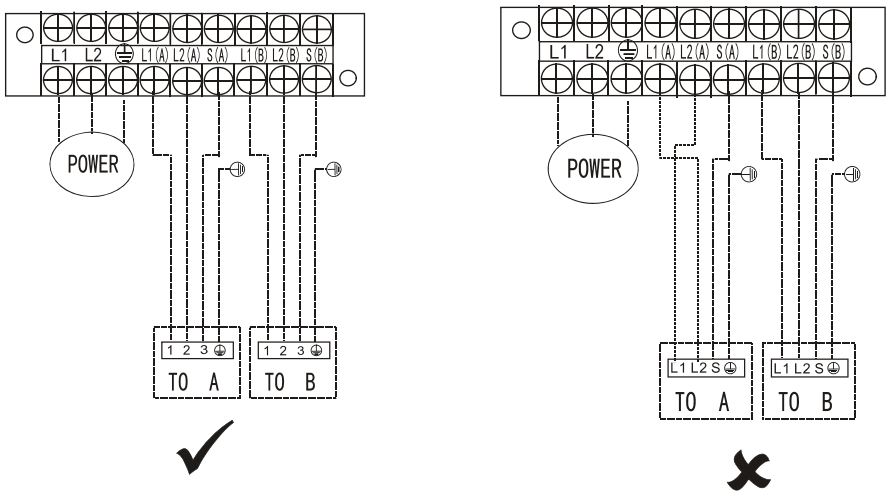
Fig. 8.1

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.
5. Insulate unused wires with electrical tape. Keep them away from any electrical or metal parts.
6. Reinstall the cover of the electric control box.

Wiring Diagram

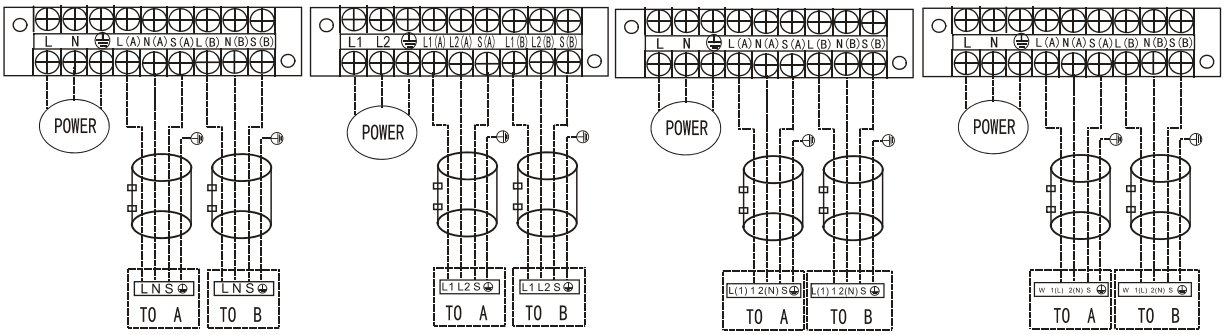
CAUTION

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.

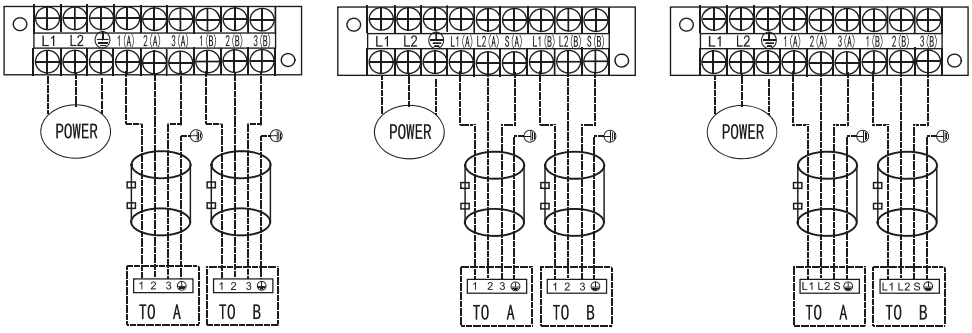


NOTE: Refer to the following figures if end-users wish to perform their own wiring.
Run the main power cord through the lower line-outlet of the cord clamp.

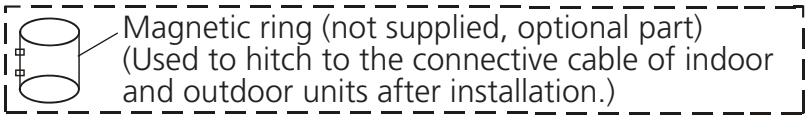
One-two models:



Model A Model B Model C Model D



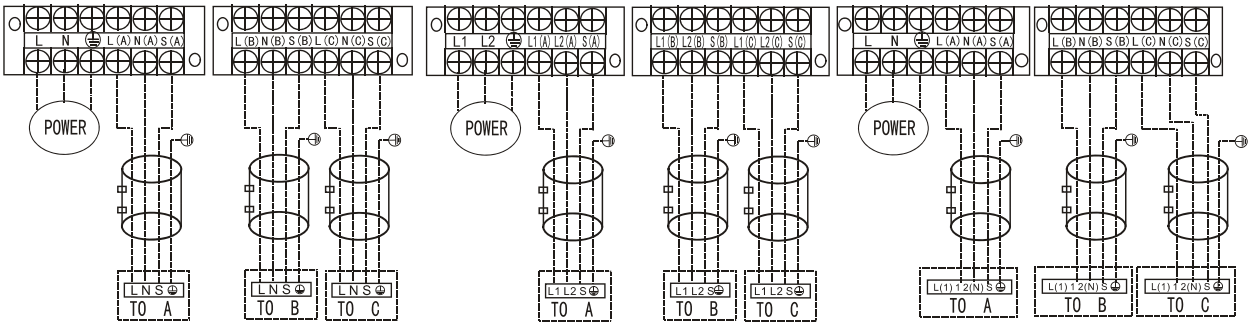
Model E Model F Model G



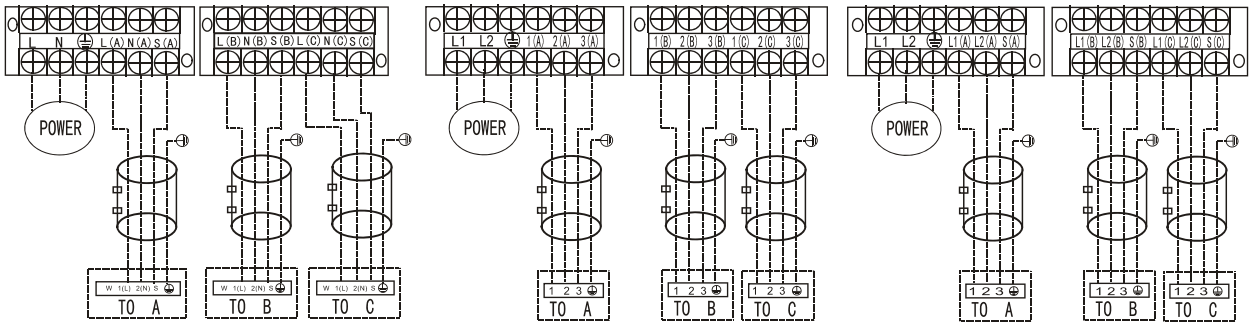
Wiring

NOTE: Please refer to the following figures if end-users wish to perform their own wiring.

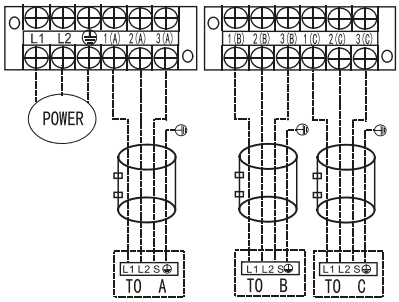
One-three models:



Model A Model B Model C

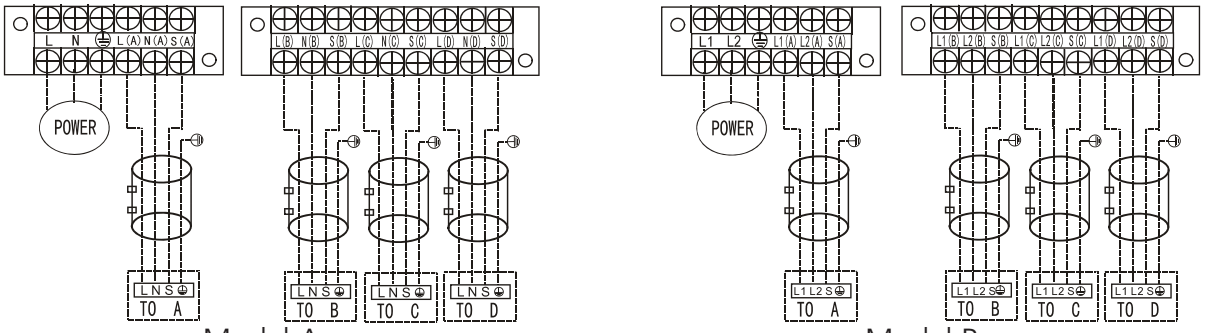


Model D Model E Model F

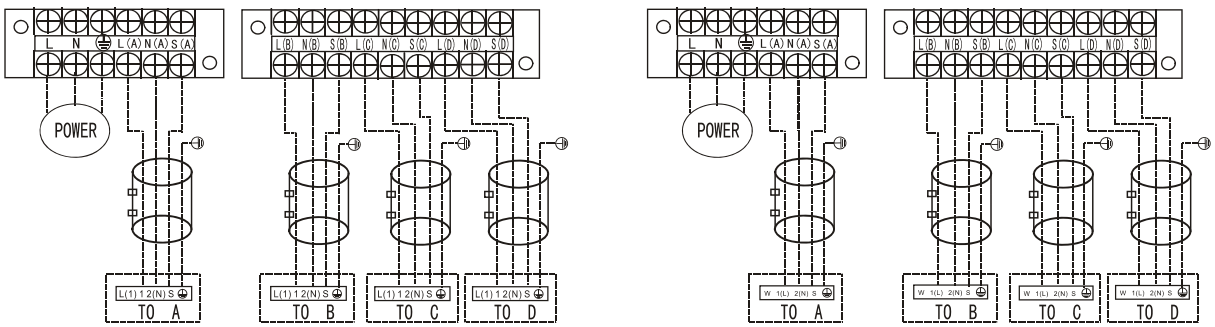


Model G

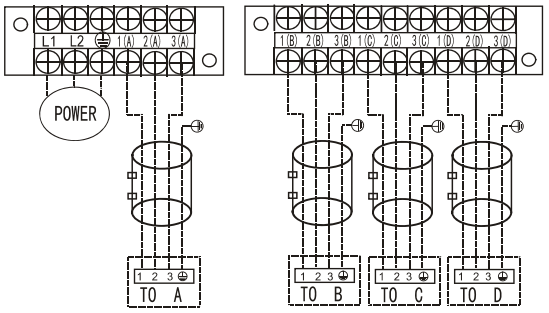
One-four models:



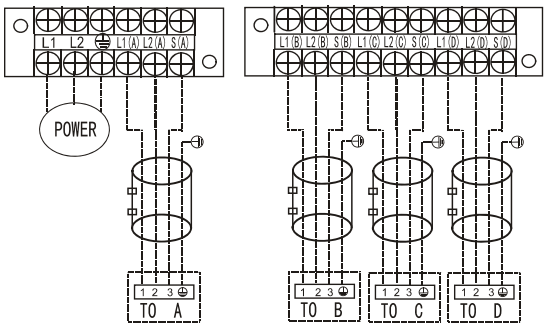
Model A Model B



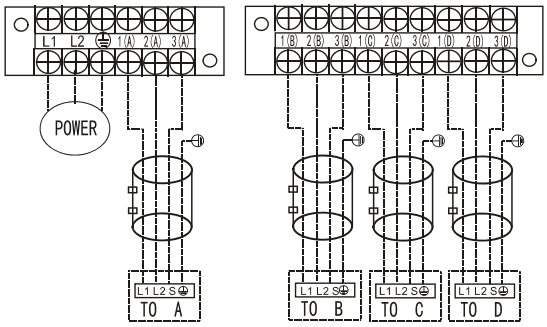
Model C Model D



Model E

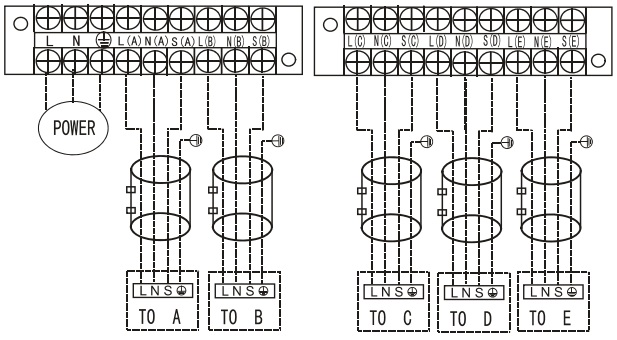


Model F

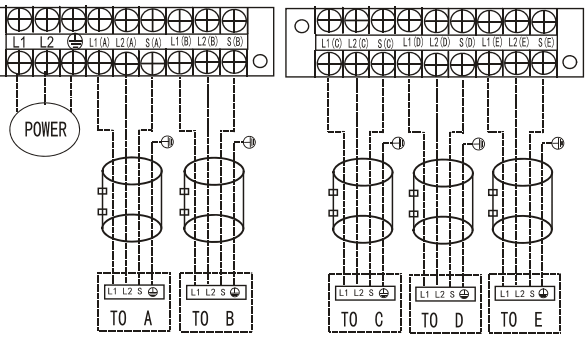


Model G

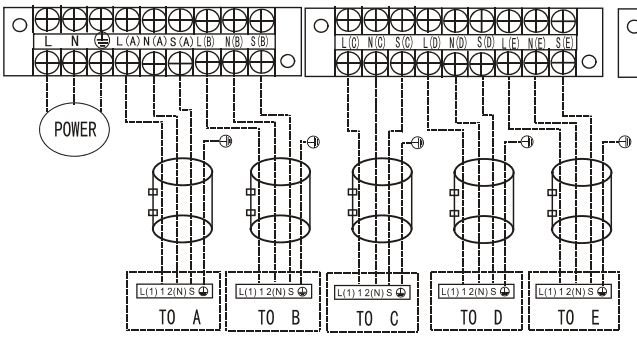
One-five models:



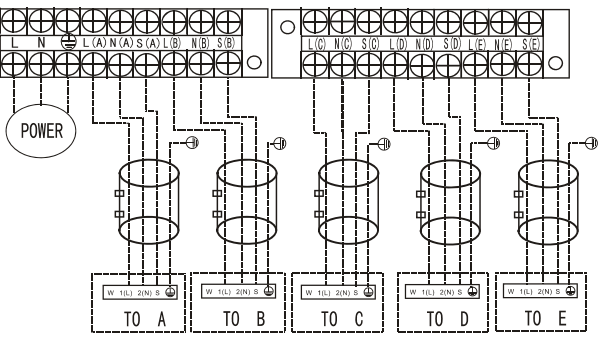
Model A



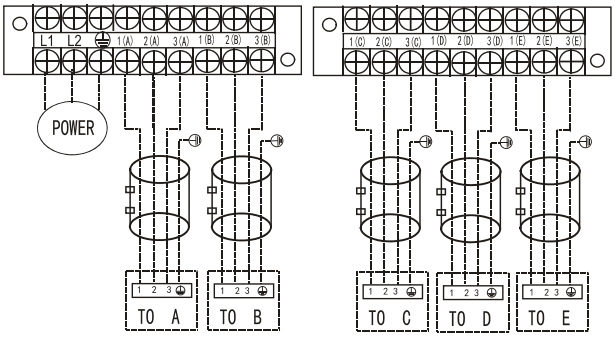
Model B



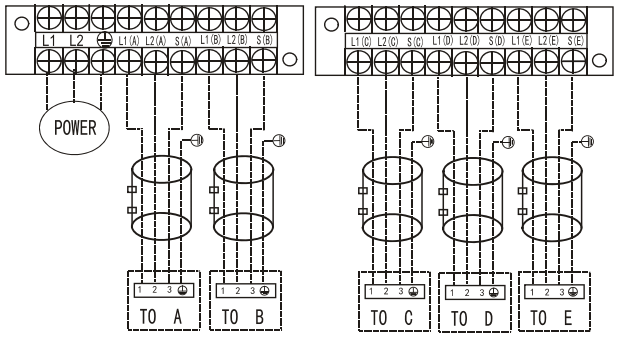
Model C



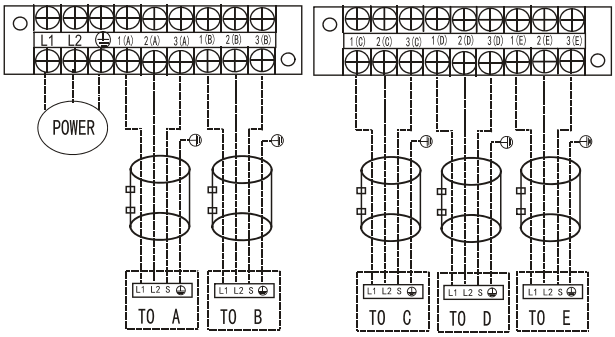
Model D



Model E



Model F



Model G

CAUTION

After confirmation of the above conditions, 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 transporation. 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 starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- 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 1/8" (3mm) in each active (phase) conductors.
- Before accessing terminals, all supply circuits must be disconnected.

Air Evacuation

9

Safety Precautions

CAUTION

- Use a vacuum pump with a gauge reading lower than -0.1MPa and an air discharge capacity above 40L/min.
- 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 -0.1MPa or below after 2 hours. If after three hours the gauge reading is still above -0.1MPa, 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.

Evacuation Instructions

Before using a manifold gauge and a vacuum pump, read their operation manuals to make sure you know how to use them properly.

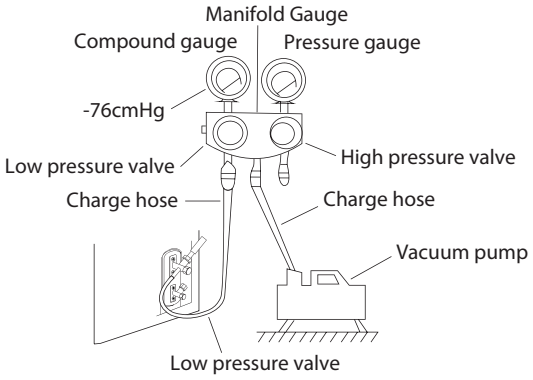


Fig. 9.1

1. Connect the manifold gauge's charge hose to the service port on the outdoor unit's low pressure valve.
2. Connect the manifold gauge's charge hose from the 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 for at least 15 minutes, or until the Compound Meter reads -76cmHG (-1x105Pa).
6. Close the manifold gauge's Low Pressure valve and turn off the vacuum pump.
7. Wait for 5 minutes, then check that there has been no change in system pressure.

NOTE: 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 hexagonal wrench into the packed valve (high pressure valve) and open the valve by turning the wrench 1/4 counterclockwise. Listen for gas to exit the system, then close the valve after 5 seconds.

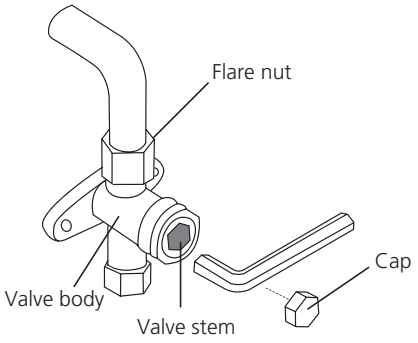


Fig. 9.2

9. Watch the Pressure Gauge for one minute to make sure that there is no change in pressure. It should read slightly higher than the 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.

OPEN VALVE STEMS GENTLY

When opening the valve stems, turn the hexagonal wrench until it hits against the stopper. **DO NOT** try to force the valve to open further.

12. Tighten valve caps by hand, then tighten it completely using the proper tool.
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.

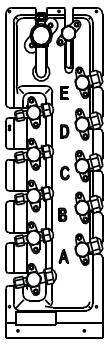


Fig. 9.3

Note On 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 it's 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 Length	Air Purging Method	Additional Refrigerant(R410A:)	
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 1/4") (Total pipe length - standard pipe lengthxN) x15g/m (Total pipe length - standard pipe lengthxN) x0.16oZ/ft	Liquid Side: Ø 9.52 (Ø 3/8") (Total pipe length - standard pipe lengthxN) x30g/m (Total pipe length - standard pipe lengthxN) x0.32oZ/ft

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

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 2MΩ.
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 water method:
   Apply a soap-water solution or a liquid neutral detergent on the indoor unit connection or outdoor unit connections with a soft brush to check for leakage of the connecting points of the piping. If bubbles emerge, the pipes are experiencing leakage.
2. Leak detector:
   Use the leak detector to check for leakage.

NOTE: 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.

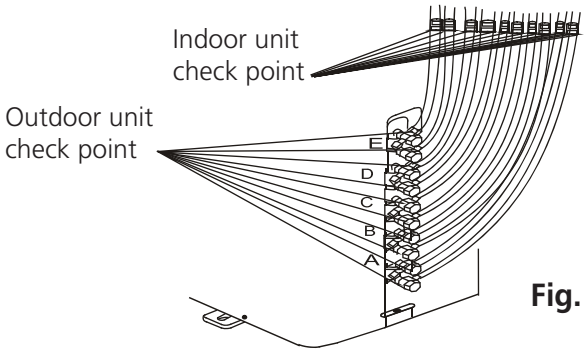


Fig. 9.4

A, B,C,D are points for the one-four type.
A, B,C,D, and E are points for the one-five type.

Test Run

10

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:

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

! CAUTION

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

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.

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

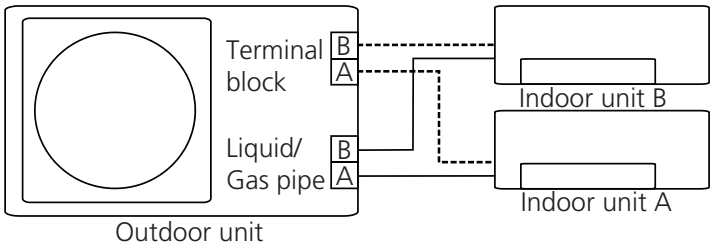
Function of Automatic Wiring/Piping Correction

11

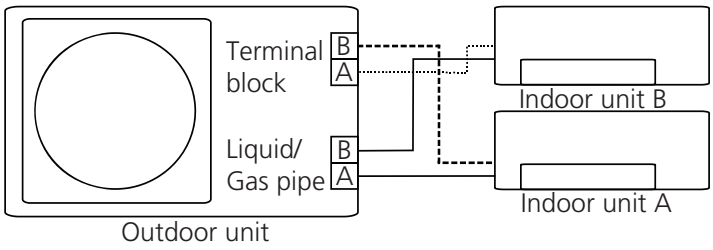
Automatic Wiring/Piping Correction Function

More recent 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.

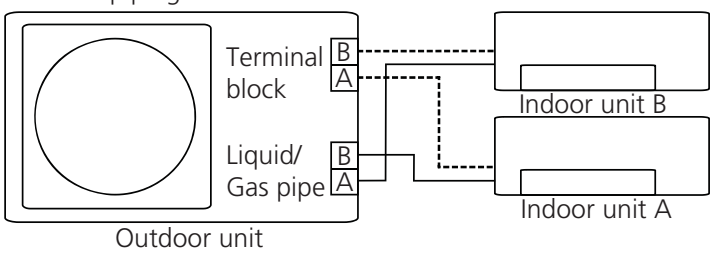
Correct wiring



Incorrect wiring



Incorrect piping



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 unit LED display "CE".

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PA/Manual_Gen2MZMSOutdoorInstall/08172017