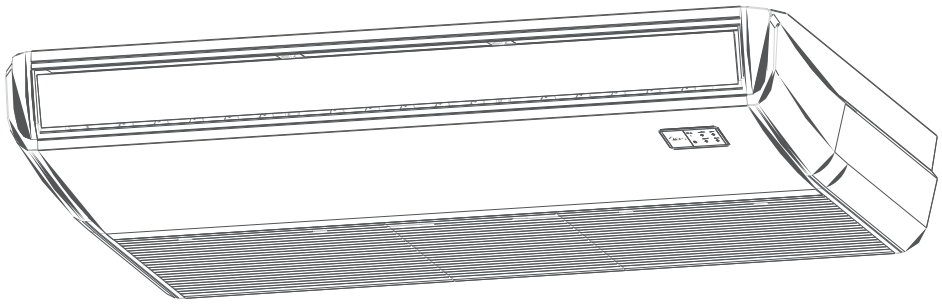
MULTI-ZONE
DUCTLESS INVERTER
SPLIT AIR CONDITIONER
WITH HEAT PUMP

INSTALLATION MANUAL

UNIVERSAL FLOOR/CEILING INDOOR UNIT



IMPORTANT NOTICE

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

CONTENTS PAGE

1. PRECAUTIONS

- **Keep this manual where the operator can easily find it.**
- **Read this manual carefully before starting up the units.**
- **For safety reasons, the operator must read the following cautions carefully.**
- **Installation must be performed by authorized personnel only in accordance with NEC and CEC requirements (applicable to North America only).**

The safety precautions listed here are divided into two categories.

WARNING

Failure to follow these instructions exactly may result in property damage, personal injury, or loss of life.

CAUTION

Failure to follow these instructions exactly may result in minor or moderate property damage or personal injury.

After completing the installation, make sure that the unit operates properly during the start-up operation. Instruct the customer on how to operate and maintain the unit. Also, inform the customer that he or she should store this manual with the user's manual for future reference.

WARNING

Only trained and qualified service personnel should install, repair, or service the equipment.

Improper installation, repair, or maintenance may result in electrical shock, short-circuiting, leaks, fire, or other damage to the equipment.

Install the unit strictly according to these installation instructions.
If installation is done incorrectly, water leakage, electrical shock, or fire may result.
To prevent refrigerant leakage when installing the unit in a small room, do not allow refrigerant concentration to exceed allowable safety limits.
Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.

Use the attached accessories parts and specified parts for installation.
If the wrong parts are used, set failure, water leakage, electrical shock, or fire may result.

Install the unit at a strong, firm location that can withstand the unit's weight.
If there is not enough support or the unit is not installed properly, the unit may fall and cause injuries.

The appliance must not be installed in a laundry room.

Before obtaining access to terminals, disconnect all supply circuits.

The appliance must be positioned so that the plug is accessible.
The enclosure of the appliance must be marked, by word or symbols, with the direction of the fluid flow.

For electrical work, follow the local national wiring standard, regulations, and these installation instructions. An independent circuit and single outlet must be used.
If the capacity of the electrical circuit is not large enough or the electrical work is defective, electrical shock or fire may result.

Use the specified cable, connect it tightly, and clamp the cable so that no external force will affect the terminal.
If the connection or fixing is not perfect, overheating or fire will occur at the connection.

Wiring routing must be properly arranged so that the control board cover is fixed properly.
If the control board cover is not fixed perfectly, overheating, electrical shock, or fire will occur at the connection point of the terminal.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or a similarly qualified person to avoid a hazard.

In fixed wiring, an all-pole disconnection switch with a contact separation of at least 3 mm in all poles should be connected.

When connecting pipes, do not let air substances enter the refrigeration cycle.
Otherwise, lower capacity, abnormal high pressure in the refrigeration cycle, explosion, or injury may result.
Do not modify the length of the power supply cord or use an extension cord, and do not share the single outlet with other electrical appliances.
Otherwise, electrical shock or fire may result.

Carry out the specified installation work after taking into account strong winds, typhoons, or earthquakes.
Improper installation work may cause the equipment to fall, causing accidents.

If the refrigerant leaks during installation, ventilate the area immediately.
Toxic gas may be produced if the refrigerant comes into contact with a source of fire.

The temperature of the refrigerant circuit will be high, so keep the interconnection cable away from the copper tube.

After completing the installation work, check that the refrigerant does not leak.
Toxic gas may be produced if the refrigerant leaks into the room and comes into contact with a source of fire, such as a fan heater, stove, or cooker.

CAUTION

Ground the air conditioner.
Do not connect the ground wire to gas or water pipes, a lightning rod, or a telephone ground wire. Inappropriate grounding may result in electrical shock.

Install an earth leakage breaker.
Failure to install an earth leakage breaker may result in electrical shock.

Connect the outdoor unit wires, then connect the indoor unit wires.
Do not connect the air conditioner with the power supply until the wiring and piping is done.

While following the instructions in this installation manual, install drain piping to ensure proper drainage and insulate the piping to prevent condensation.
Improper drain piping may result in water leakage and property damage.

Install the indoor and outdoor units, power supply wiring, and connecting wiring at least 1 meter away from televisions or radios to prevent image interference or noise.
Depending on the radio waves, a distance of 1 meter may not be sufficient to eliminate noise.

The appliance is not intended for use by young children or infirm persons without supervision.

Do not install the air conditioner in the following circumstances or locations:

- If petrolatum is nearby
- If salty air is near the location (such as a coast)
- If caustic gas (such as sulfide) is in the air (near a hot spring)
- If the volt vibrates violently (in factories)
- In buses or cabinets
- In a kitchen full of oil gas
- If a strong electromagnetic wave is in the air
- If inflammable materials or gas are nearby
- If acid or alkaline liquid is evaporating nearby
- If other special conditions exist

The appliance must be installed in accordance with national wiring regulations.

Do not operate your air conditioner in a wet room, such as a bathroom or laundry room.

Use an all-pole disconnection device that has at least 3 mm clearance in all poles, a leakage current thatexceeds 10mA, and a residual current device (RCD) with a rated residual operating current not exceeding 30mA. The disconnection must be incorporated in the fixed wiring in accordance with wiring rules.

2. INSTALLATION INFORMATION

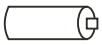
- **To ensure proper installation, please read this installation manual first.**
- **The air conditioner must be installed by qualified persons.**
- **When installing the indoor unit or its tubing, please follow this manual as strictly as possible.**
- **If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards for electrical appliances.**
- **When all the installation work is finished, conduct a thorough check before turning on the power.**
- **No announcement will be given if any change is made to this manual due to product improvement.**

INSTALLATION ORDER

- Select the location
- Install the indoor unit
- Install the outdoor unit
- Install the connecting pipe
- Connect the drain pipe
- Install the wiring
- Test the operation

3. ATTACHED FITTINGS

Ensure that the following fittings are of full scope. If there are spare fittings, restore them carefully.

	NAME	SHAPE	QUANTITY
Remote control and its holder	1. Remote control (on some models)		1
	2. Remote control holder (on some models)		1
	3. Mounting screw (ST2.9×10-C-H)		2
	4. Alkaline dry batteries (AM4)		2
Others	5. User's manual	————	1
	6. Installation manual	————	1
	7. Remote control manual	————	1

4. INSPECTING AND HANDLING THE UNIT

At delivery, the package should be checked and any damage should be reported immediately to the the service agent.

When handling the unit, take into account the following:

1 Fragile, handle the unit with care.

Keep the unit upright in order to avoid compressor damage.

2 Choose beforehand the path along which the unit will be brought in.

3 Move the unit in its original packaging as much as possible.

4 When lifting the unit, always use protectors to prevent belt damage and pay attention to the position of the unit's center of gravity.

5. INDOOR UNIT INSTALLATION

5.1 Installation place

(Refer to Fig. 5-1, Fig. 5-2 and Table 5-1 for specifications.)

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

- There is enough room for installation and maintenance.
- The ceiling is horizontal and its structure can withstand the weight of the indoor unit.
- The inlet and outlet are not impeded, and the influence of external air is small.
- The airflow can extend throughout the room.
- The connecting pipe and drain pipe can be easily extracted.
- There is no direct radiation from heaters.

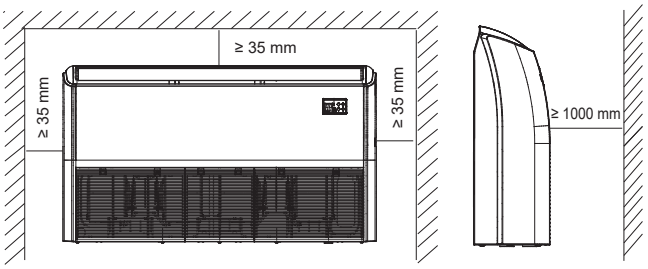
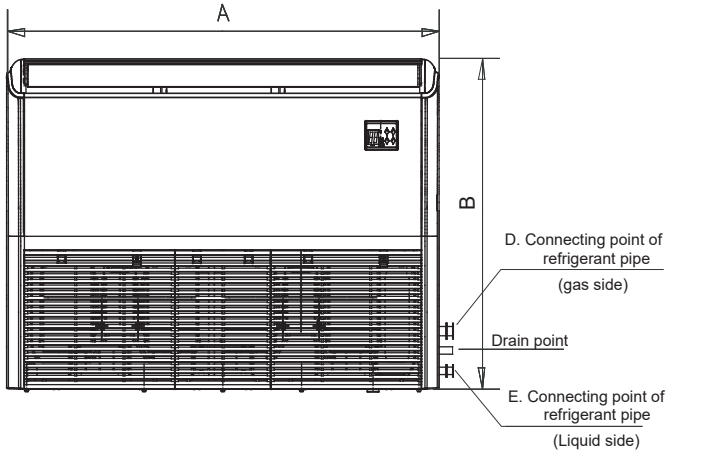


Fig. 5-1

CAUTION

Keep the indoor unit, outdoor unit, power supply wiring, and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if a 1-meter distance is maintained.)

5.2 Installing the main body



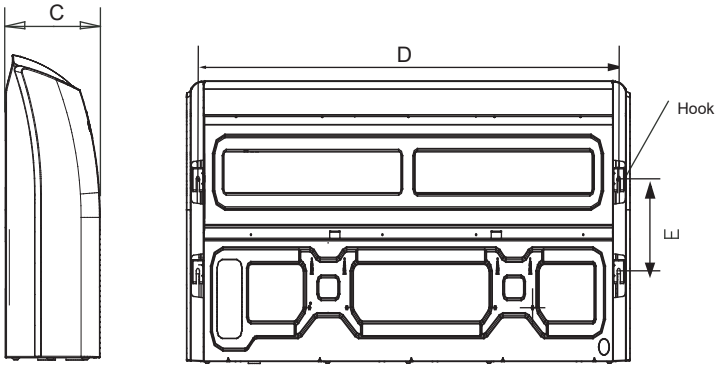


Fig. 5-2

A Installing Ø 10 hanging screw bolts (4 bolts)

- Refer to *Fig. 5-3* and *Fig. 5-4* for the hanging screw bolts distance.
- Evaluate the ceiling construction and install with Ø 10 hanging screw bolts.
- The handling to the ceiling will vary depending on the construction. Consult the construction person for the specific condition.
  - Keep the ceiling flat. Consolidate the roof beam to avoid possible vibration.
  - Cut off the roof beam.
  - Strengthen the place that has been cut off and consolidate the roof beam.
- After the installation location is selected, position the refrigerant pipes, drain pipes, and indoor and outdoor wires to the connection places before hanging up the machine.
- Install the hanging screw bolts.

WOODEN CONSTRUCTION

Put the square timber traversely over the roof beam, then install the hanging screw bolts.

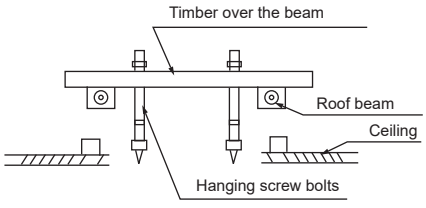
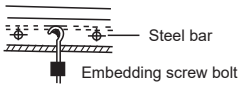


Fig. 5-3

NEW CONCRETE BRICKS

Inlaying or embedding the screw bolts.

Fig. 5-4



(Pipe hanging and embedding screw bolt)

Fig. 5-5

FOR ORIGINAL CONCRETE BRICKS

Install the hanging hook with an expansible bolt into the concrete 45-50 mm deep to prevent the hook from coming loose.

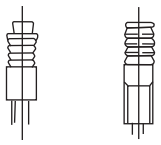


Fig. 5-6

STEEL ROOF BEAM STRUCTURE

Install and use the supporting angle steel.

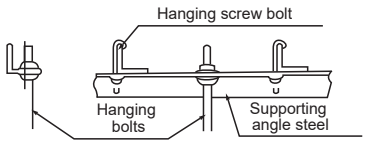


Fig. 5-7

B Installing the indoor unit

- Remove the side board and the grille. *(Refer to Fig. 5-8.)*

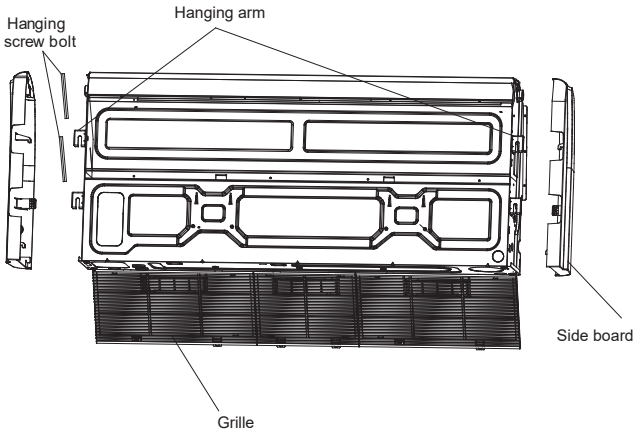


Fig. 5-8

- Locate the hanging arm on the hanging screw bolt. *(Refer to Fig. 5-9.)*

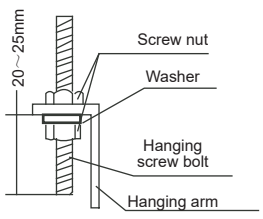


Fig. 5-9

2. Ceiling Installation

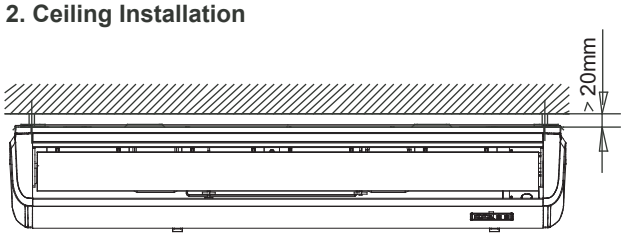


Fig. 5-10

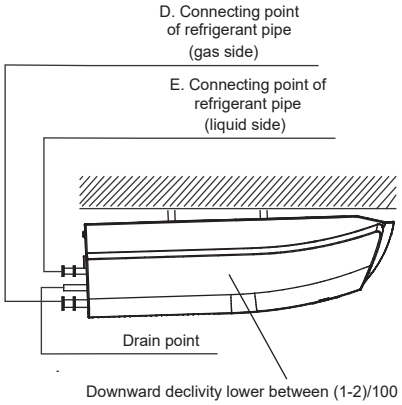


Fig. 5-11

3. Wall Mounting Installation

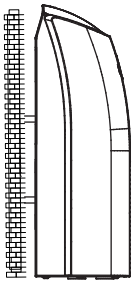


Fig. 5-12

5.3 The dimension of the unit

Table 5-1 unit：mm

MODEL	A	B	C	D	E
18-24	1068	675	235	983	220
30-48	1285	675	235	1200	220
36-48	1650	675	235	1565	220
60	1650	675	235	1565	220

6. OUTDOOR UNIT INSTALLATION

Outdoor Unit Installation Instructions

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 units must not exceed the maximum allowable pipe length.
- ☑ If possible, **DO NOT** install the unit where it will be exposed to direct sunlight.
- ☑ If possible, make sure the unit is located far away from neighboring properties so the noise from the unit will not disturb others.
- ☑ If the location is exposed to strong winds (for example, near a seaside), the unit should be placed against a wall to shelter it from the wind. If necessary, use an awning. (See Fig. 6.1 and Fig. 6.2.)
- ☑ Install the indoor and outdoor units, cables, and wires at least 1 meter from televisions or radios to prevent static or image distortion. Depending on the radio waves, a 1 meter distance may not be enough to eliminate all interference.

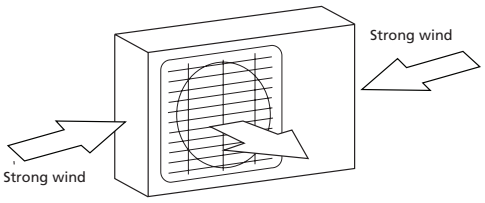


Fig. 6.1

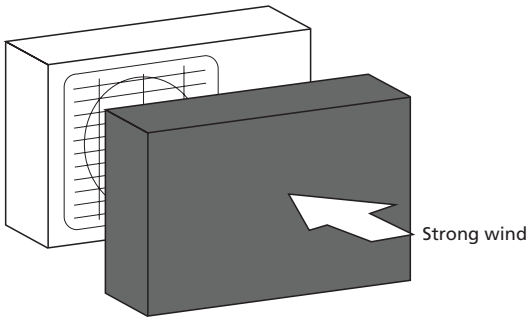


Fig. 6.2

Step 2: Install the outdoor unit

Fix the outdoor unit with anchor bolts (M10)

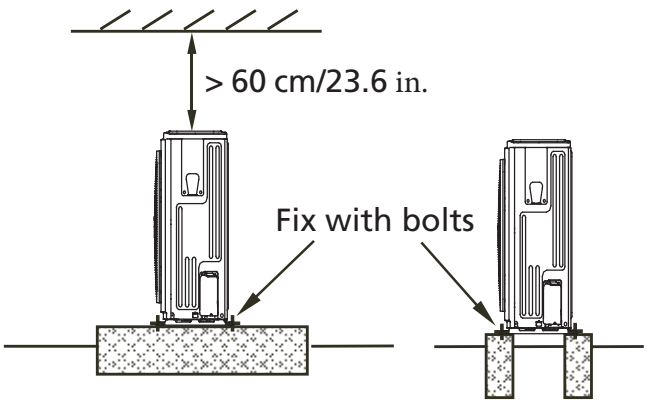


Fig. 6.3

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.

Split Type Outdoor Unit

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

Fig. 6.4

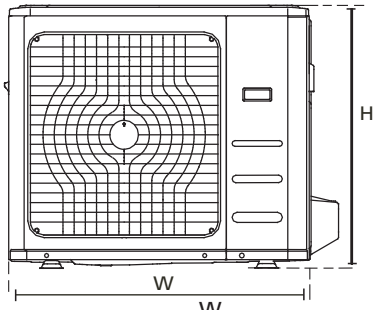


Fig. 6.5

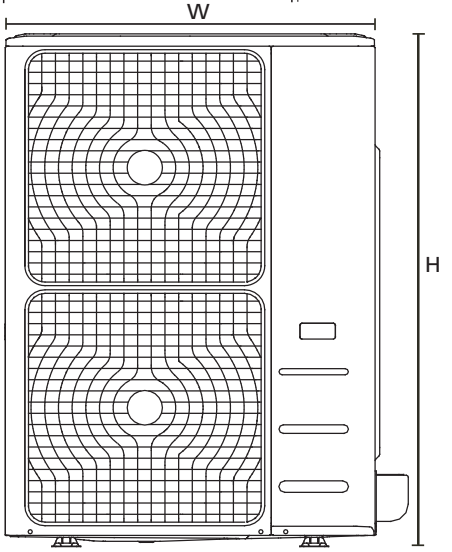


Fig. 6.6

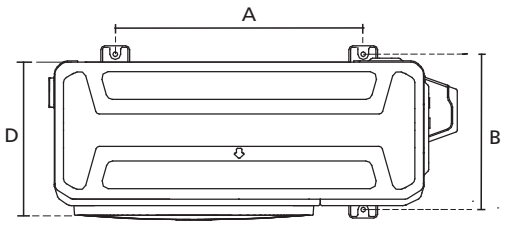


Table 6.1: Length Specifications of Split-Type Outdoor Unit (unit: mm/inch)

Outdoor Unit Dimensions	Mounting Dimensions	
W x H x D	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 (37.24x31.9x16.53)	673 (26.5)	403 (15.87)
946x810x410 (37.24x31.9x16.14)	673 (26.5)	403 (15.87)
952x1333x410 (37.5x52.5x16.14)	634 (24.96)	404 (15.9)
952x1333x415 (37.5x52.5x16.34)	634 (24.96)	404 (15.9)

Vertical Discharge Type Outdoor Unit

(Refer to Figures 6.7, 6.8, and 6.9 and Table 6.2

Fig. 6.7

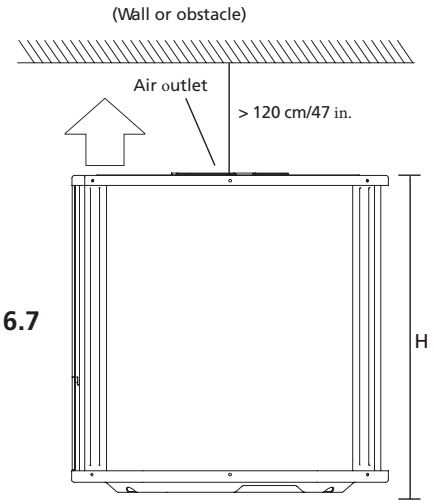
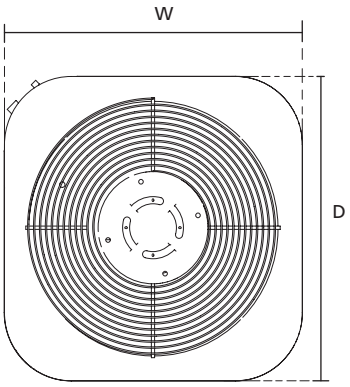


Fig. 6.8



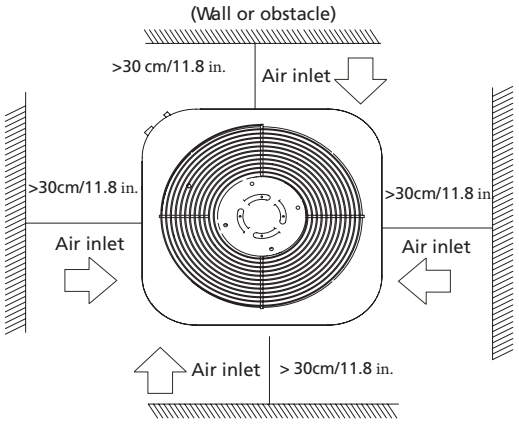


Fig. 6.9

Table 6.2: Length Specifications of Vertical Discharge Outdoor Unit (unit: mm/inch)

MODEL	DIMENSIONS		
	W	H	D
18	554/21.8	633/25	554/21.8
24	554/21.8	633/25	554/21.8
36	554/21.8	759/29.8	554/21.8
36	600/23.6	633/25	600/23.6
36	600/23.6	759/29.8	600/23.6
36/48/60	710/28	759/29.8	710/28
60	710/28	843/33	710/28

NOTE: The minimum distance between the outdoor unit and the 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. 6.10.)

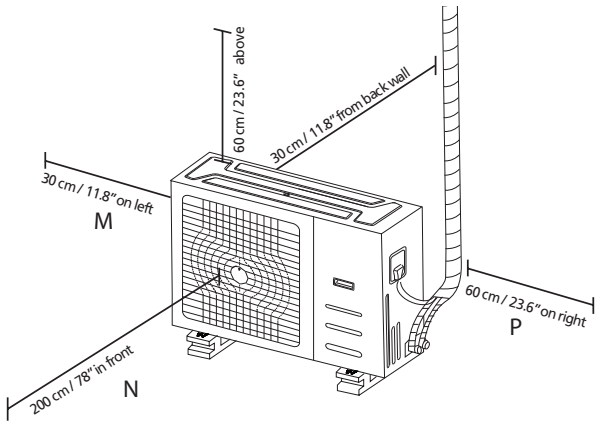


Fig. 6.10

Drain Joint Installation

Before bolting the outdoor unit in place, install the drain joint at the bottom of the unit. (See Fig. 6.11.)

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

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

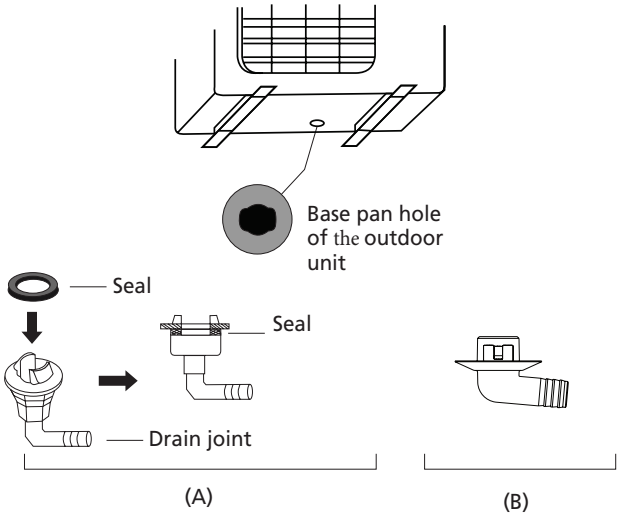


Fig. 6.11

Notes on Drilling a Hole in the Wall

You must drill a hole in the wall for the refrigerant piping and the 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 in.) 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 cuff in the hole. This will protect the edges of the hole and will help seal it when you finish the installation process.

7. CONNECT THE DRAIN PIPE

■ Install the indoor unit's drain pipe

The outlet has a PTI screw bread. Use sealing materials and a pipe sheath (fitting) when connecting the PVC pipes.

CAUTION

- The drain pipe and the connections of the indoor unit must be heat insulated or they will condense dew.
- A hard PVC binder must be used for pipe connection. Make sure there is no leakage.
- Do not impose pressure on the side of the indoor unit pipes.
- When the declivity of the downward drain pipe is greater than 1/100, prevent winding.
- When pulled out transversely, the total length of the drain pipe must not exceed 20 m. If a pipe is unusually long, install a prop stand to prevent winding.
- Refer to Fig. 7-1 for the installation of the pipes.

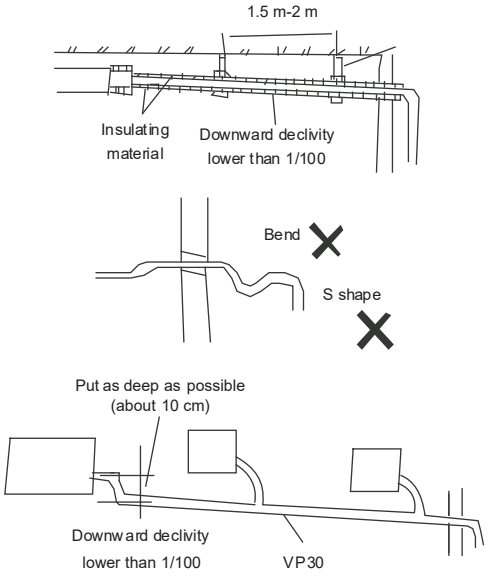


Fig. 7-1

■ Drainage test

- **Ensure that the drainpipe is unhindered.**
- **In a newly built house, this test should be performed before the ceiling is paved.**

8. INSTALL THE CONNECTING PIPE

Safety Precautions

⚠ WARNING

- All field piping must be completed by a licensed technician and must comply with 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 installation. Leaked refrigerant gas is both toxic and flammable. Ensure there is no refrigerant leakage after completing the installation work.

Notes on Pipe Length and Elevation

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in Table 8.1:

Table 8.1: The Maximum Length and Drop Height Based on Models (unit: m/ft.)

Type of model	Capacity (Btu/h)	Length of piping	Maximum drop height
50 Hz T1 Condition/R22 Split Type	12 K	15/49	8/26
	18 K - 24 K	30/98.4	10/32.8
	30 K - 42 K	50/164	20/65.6
	48 K - 60 K	50/164	25/82
50 Hz Vertical Discharge, 60 Hz T1 condition/R22 Split Type, Vertical Discharge	12 K	15/49	8/26
	18 K - 24 K	30/98.4	10/32.8
	30 K - 60 K	30/98.4	20/65.6
R410A Inverter Split Type	< 15 K	25/82	10/32.8
	≥ 15 K - < 24 K	30/98.4	20/65.6
	≥ 24 K - < 36 K	50/164	25/82
	≥ 36K - ≤ 60K	65/213	30/98.4
R410A Split Type	12K	15/49	8/26
	18K - 30K	25/82	15/49
	36K	30/98.4	20/65.6
	48K - 60K	50/164	25/82
50 Hz/60 Hz T3 condition (outdoor unit down)	18K - 24K	35/114	10/32.8
	30K	30/98.4	15/49
	36K	30/98.4	20/65.6
	42K - 60K	50/164	25/82
50 Hz/60 Hz T3 Condition (outdoor unit up)	18K - 24K	25/82	15/49
	30K	30/98.4	20/65.6
	36K	30/98.4	25/82
	42K	50/164	30/98.4
	48K - 60K	50/164	35/114
Unit with quick joint	12K - 18K	5/16.4	5/16.4

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 the indoor and outdoor units have been installed.
- Insulate both the gas and liquid piping 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, damage, or dent the pipe during cutting, or the heating efficiency of the unit will be drastically reduced.

1. Make sure that the pipe is cut at a perfect 90° angle. Refer to Fig. 8.1 for examples of bad cuts.

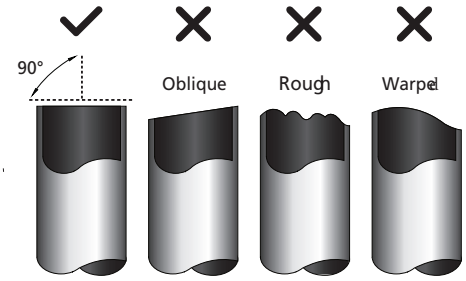


Fig. 8.1

Step 2: Remove burrs

Burrs can affect the airtight seal of the refrigerant piping connection and 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.

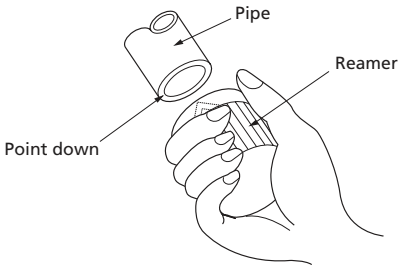


Fig. 8.2

Step 3: Flare pipe ends

Proper flaring is essential for an airtight seal.

1. After removing burrs from the 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 the pipe. Make sure they are facing in the right direction because you can't put them or change their direction after flaring. See Fig. 8.3.

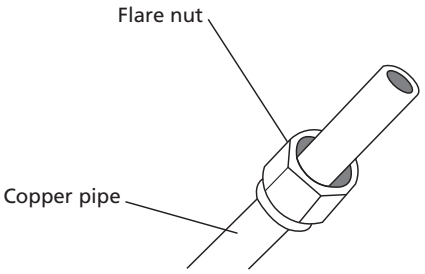


Fig. 8.3

4. When you're ready to perform flaring work, remove the PVC tape from the ends of the pipe.
5. Clamp the flare form on the end of the pipe. The end of the pipe must extend beyond the flare form.

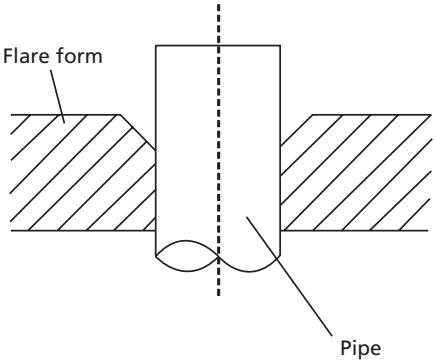


Fig. 8.4

6. Place the flaring tool on 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 8-2.

Table 8.2: PIPING EXTENSION BEYOND FLARE FORM

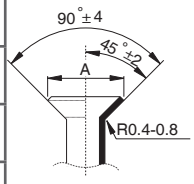
Pipe gauge	Tightening torque	Flare dimension (A) (Unit: mm/in.)		Flare shape
		Min.	Max.	
Ø 6.4	14.2-17.2 N.m (144-176 kgf.cm)	8.3/0.3	8.3/0.3	
Ø 9.5	32.7-39.9 N.m (333-407 kgf.cm)	12.4/0.48	12.4/0.48	
Ø 12.7	49.5-60.3 N.m (504-616 kgf.cm)	15.4/0.6	15.8/0.6	
Ø 15.9	61.8-75.4 N.m (630-770 kgf.cm)	18.6/0.7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

Fig. 8.5

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. 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.

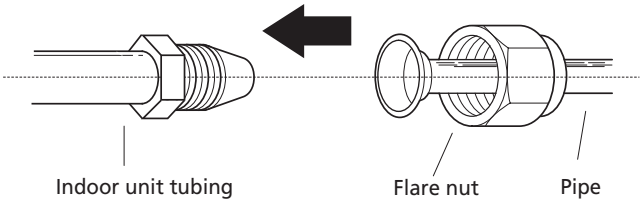


Fig. 8.6

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 8.2.

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

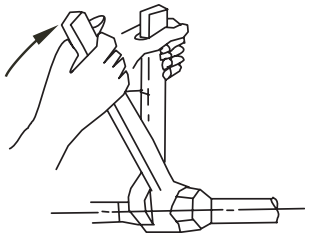


Fig. 8.7

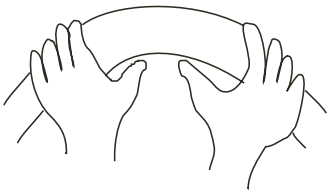
CAUTION

- Be sure 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.

Bend the pipe with your thumb



min-radius 10 cm (3.9 in.)

Fig. 8.8

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

NOTE: While bundling these items, **DO NOT** intertwine the signal cable with other wires.

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 units.

CAUTION

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

9. AIR EVACUATION

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 vacuuming. **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 of operation. If after 3 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 leakage, 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 familiarize yourself with how to use them properly.

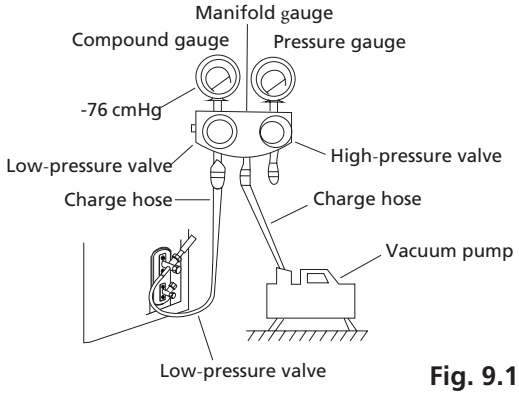


Fig. 9.1

1. Connect the charge hose of the manifold gauge to the 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 for at least 15 minutes, or until the compound meter reads -76 cmHG (-1x105 Pa).
6. Close the low-pressure side of the manifold gauge and turn off the vacuum pump.
7. Wait 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 a hexagonal wrench into the packed valve (high-pressure valve) and open the valve by turning the wrench in a 1/4 counterclockwise turn. Listen for gas to exit the system, then close the valve after 5 seconds.

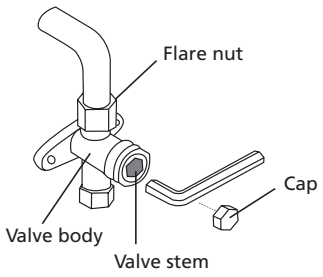


Fig. 9.2

9. Watch the pressure gauge for 1 minute to ensure there is no change in pressure. The pressure gauge should read slightly higher than the atmospheric pressure.
10. Remove the charge hose from the service port.
11. Using a 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 the valve caps by hand, then tighten them using the proper tool.

Note on Adding Refrigerant

CAUTION

- Refrigerant charging must be performed after wiring, vacuuming, and the leak test.
- **DO NOT** exceed the maximum allowable quantity of refrigerant or overcharge the system. Doing so can damage or impact the unit's function.
- 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.

■ The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit connection.(suitable for throttle outdoor unit)

Table 9-1

Liquid tube (mm)		R410A	R22
Ø 6.35	orifice in the indoor unit	0.022 kg/m×(L-5)	0.030 kg/m×(L-5)
	orifice in the outdoor unit	0.011 kg/m×(L-5)	0.015 kg/m×L
Ø 9.52	orifice in the indoor unit	0.060 kg/m×(L-5)	0.065 kg/m×(L-5)
	orifice in the outdoor unit	0.030 kg/m×(L-5)	0.030 kg/m×L
Ø 12.7	orifice in the indoor unit	0.110 kg/m×(L-5)	0.115 kg/m×(L-5)
	orifice in the outdoor unit	0.060 kg/m×(L-5)	0.060 kg/m×L
Ø 15.9	orifice in the indoor unit	0.170 kg/m×(L-5)	0.190 kg/m×(L-5)
	orifice in the outdoor unit	0.085 kg/m×(L-5)	0.095 kg/m×L
Ø 19	orifice in the indoor unit	0.250 kg/m×(L-5)	0.290 kg/m×(L-5)
	orifice in the outdoor unit	0.125 kg/m×(L-5)	0.145 kg/m×L

NOTE: The table above refers to the liquid tube.

The number of bends is up to the length of the max. height drop. Usually a bend is necessary every 10 m.
If a negative result is achieved for R from Table 9-1, no refrigerant needs to be added or removed.
Additional refrigerant will be twice R from Table 9-1 if the indoor unit installed throttle assembly.

10. WIRING

The appliance must be installed in accordance with national wiring regulations.

The air conditioner should use a separate power supply with rated voltage.

The external power supply to the air conditioner should have ground wiring that is linked to the ground wiring of the indoor and outdoor units.

The wiring should be performed by qualified persons according to the circuit drawing.

An all-pole disconnection device that has at least 3 mm separation distance in all poles and a residual current device (RCD) with a rating above 10 mA must be incorporated in the fixed wiring according to the national rule.

Be sure to carefully locate the power wiring and the signal wring to avoid cross-disturbance.

After the wiring is complete, the power should not be turned on until the wiring has been carefully checked.

The power cord type designation is H07RN-F.

NOTE: Remark per EMC Directive 2004/108/EC.

To prevent flicker impressions during the start of the compressor (technical process), take note of the following installation conditions:

1. The air conditioner's power must be connected at the main power distribution. The distribution must be of a low impedance. Normally the required impedance reaches a 32 A fusing point.
2. No other equipment should be connected with this power line.
3. Refer to your power supplier to see if restrictions apply for products like washing machines, air conditioners, or electric ovens.
4. For power details concerning your air conditioner, refer to the product's rating plate.
5. Contact your local dealer with any questions.

10.1 Connect the cable

- Remove the outdoor unit's electric cover. If there is no cover on the outdoor unit, disassemble the bolts from the maintenance board and remove the protection board. (See Fig. 10.1 and 10.2.)

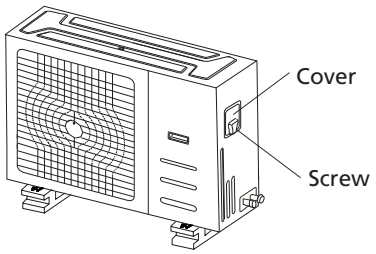


Fig. 10.1

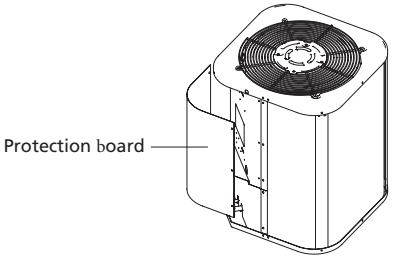


Fig. 10.2

- Connect the connective cables to the terminals as identified by their respective numbers on the terminal block of the indoor and outdoor units.
- Reinstall the cover or the protection board.

10.2 Specification of Power

(Refer to Tables 10-1 to 10-8.)

10.3 Wiring figure

(Refer to Figures 10-3 to 10-6.)

11. TEST OPERATION

1 The test operation must be carried out after the entire installation has been completed.

2 Please confirm the following points before the test operation:

- The indoor unit and outdoor units are installed properly
- Tubing and wiring are correctly completed
- The refrigerant pipe system was checked for leakage
- The drainage is unimpeded
- The heating insulation works well
- The ground wiring is connected correctly
- The length of the tubing and the added stow capacity of the refrigerant have been recorded
- The power voltage fits the rated voltage of the air conditioner
- There is no obstacle at the outlet or inlet of the outdoor or indoor units
- The gas side and liquid side stop valves are both open
- The air conditioner is preheated

3 According to the user's requirement, install the remote control frame where the remote control's signal can reach the indoor unit smoothly.

4 Test operation

- Set the air conditioner to "COOLING" mode with the remote control and check the following points. If there is any malfunction, resolve it according to the Troubleshooting chapter in the User's Manual.

- 1) The indoor unit
  a. The switch on the remote control works well
  b. The buttons on the remote control work well
  c. The airflow louver moves normally
  d. The room temperature is adjusted well
  e. The indicator lights normally
  f. The temporary buttons work well
  g. Drainage is normal
  h. There is no vibration or abnormal noise during operation
  I. The air conditioner heats well (HEATING/COOLING models only)
  2) The outdoor unit
- a. There are no vibrations or abnormal noises during operation
  b. No wind, noise, or condensation generated by the air conditioner have influenced your neighborhood
  c. No refrigerant has leaked

CAUTION

A protection feature prevents the air conditioner from activating for approximately 3 minutes when it is restarted immediately after shutting off.

The Specification of Power (Indoor Power Supply)

■ **Table 10-1**

MODEL		18	24	30-36	42-48	60
POWER	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240 V	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		20/16	40/25	50/30	60/45	60/50

■ **Table 10-2**

MODEL		30-36	42-60	30-36	42-60
POWER	PHASE	3Phase	3Phase	3Phase	3Phase
	FREQUENCY AND VOLT	380-420 V	380-420 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		25/20	25/20	40/25	45/35

The Specification of Power (Outdoor Power Supply)

■ **Table 10-3**

MODEL		12-18	24	30-36	42-48	60
POWER	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240 V	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		20/16	40/30	60/40	70/55	70/60

■ **Table 10-4**

MODEL		30-36	42-60	30-36	42-60
POWER	PHASE	3Phase	3Phase	3Phase	3Phase
	FREQUENCY AND VOLT	380-420 V	380-420 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		25/20	25/20	40/25	45/35

The Specification of Power (Independent Power Supply)

■ **Table 10-5**

MODEL		18	24	30-36	42-48	60
POWER (indoor)	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240V	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		20/16	20/16	20/16	20/16	20/16
POWER (outdoor)	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240V	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		20/16	40/25	50/30	60/45	60/50

■ **Table 10-6**

MODEL		30-36	42-60	30-36	42-60
POWER (indoor)	PHASE	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		20/16	20/16	20/16	20/16
POWER (outdoor)	PHASE	3Phase	3Phase	3Phase	3Phase
	FREQUENCY AND VOLT	380-420V	380-420 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		25/20	25/20	40/25	45/35

The Specification of Power for the Invert-Type Air Conditioner (Independent Power Supply)

■ **Table 10-7**

MODEL		18	24	30-36	42-48	60
POWER (indoor)	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	220-240V	220-240 V	220-240 V	220-240 V	220-240 V
CIRCUIT BREAKER/FUSE (A)		15/10	15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	1Phase	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	208-240 V	208-240 V	208-240 V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		30/20	30/20	40/30	40/35	50/40

■ **Table 10-8**

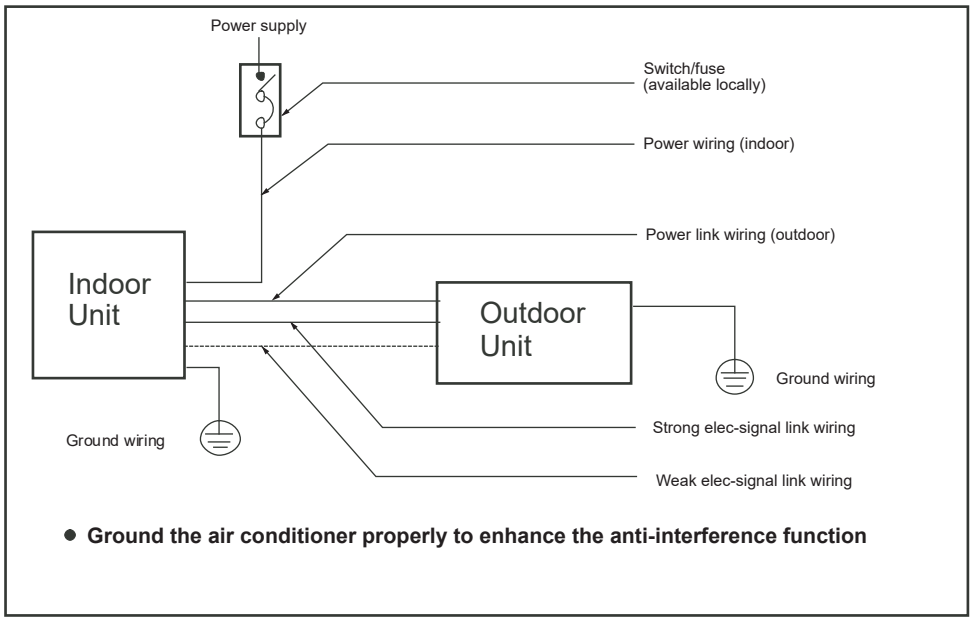
MODEL		30-36	42-60	30-36	42-60
POWER (indoor)	PHASE	1Phase	1Phase	1Phase	1Phase
	FREQUENCY AND VOLT	220-240 V	220-240 V	220-240 V	220-240 V
CIRCUIT BREAKER/FUSE (A)		15/10	15/10	15/10	15/10
POWER (outdoor)	PHASE	3Phase	3Phase	3Phase	3Phase
	FREQUENCY AND VOLT	380-420V	380-420V	208-240 V	208-240 V
CIRCUIT BREAKER/FUSE (A)		30/20	30/25	50/40	50/40

CAUTION

The power supply mentioned above can be applied to the table. Before accessing the terminals, disconnect all supply circuits.

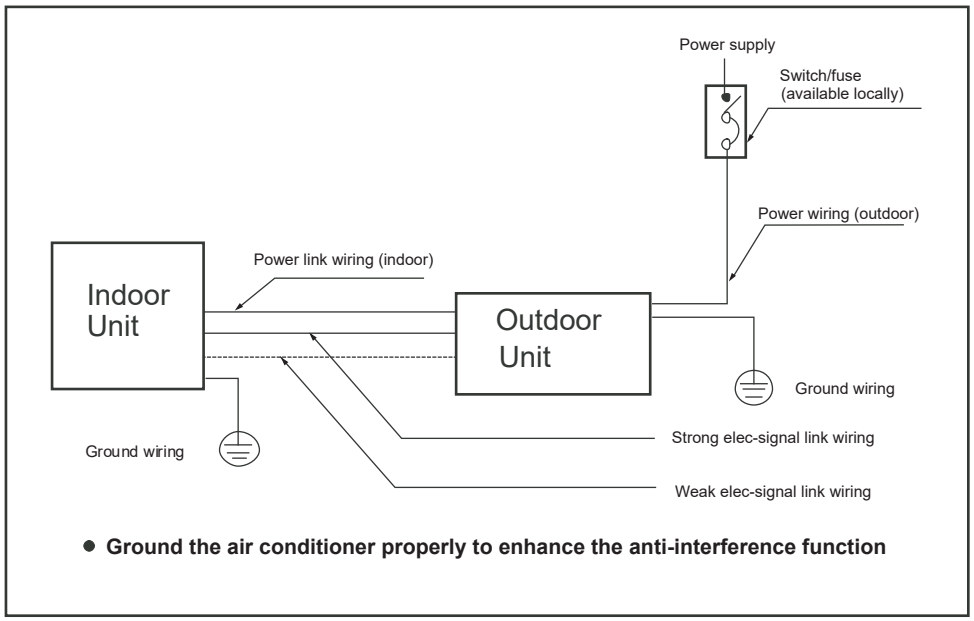
■ Wiring Figure

■ **Fig. 10-3**



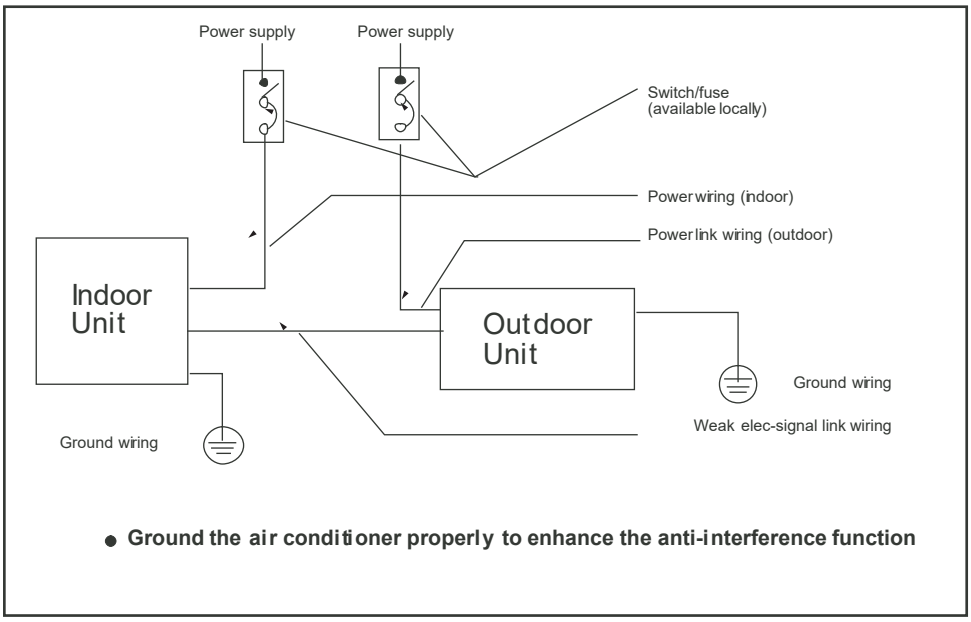
● **Ground the air conditioner properly to enhance the anti-interference function**

■ **Fig. 10-4**



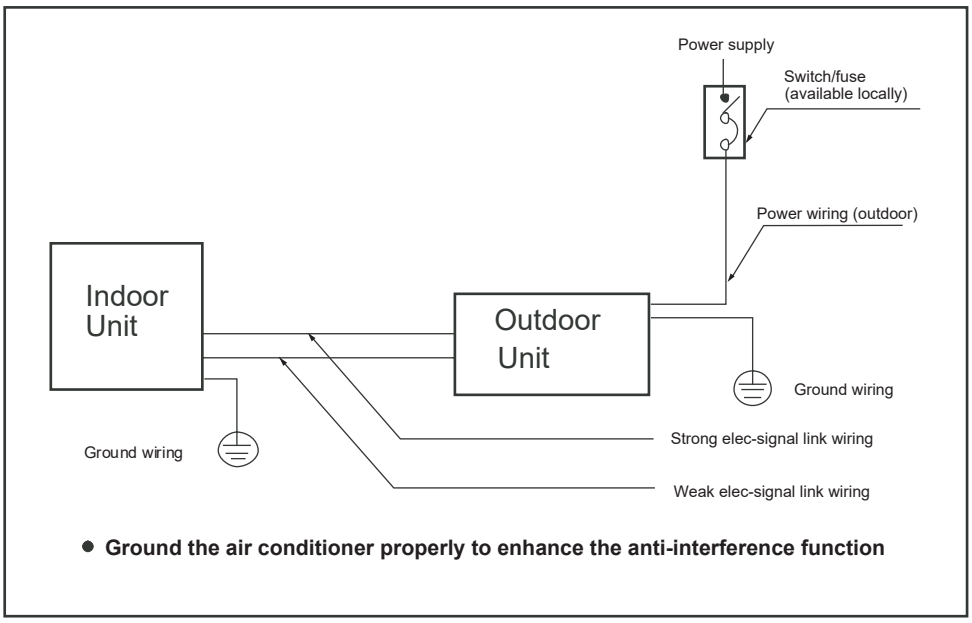
● **Ground the air conditioner properly to enhance the anti-interference function**

■ **Fig. 10-5**



● **Ground the air conditioner properly to enhance the anti-interference function**

■ **Fig. 10-6**



● **Ground the air conditioner properly to enhance the anti-interference function**

CAUTION

A disconnection device with an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.

When wiring, choose the corresponding chart to avoid damage. The signs of the indoor terminal block in some of the following figures may be replaced by L N L1 N1.

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