

DUCT SERIE H5

Installation and
user's manual

MUCR-H5



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IMPORTANT:

Thank you for selecting super quality Air Conditioners. To ensure satisfactory operation for many years to come, this manual should be read carefully before the installation and before using the air conditioner. After reading, store it in a safe place. Please refer to the manual for questions on use or in the event that any irregularities occur. This Air Conditioner should be used for household use.
This unit must be installed by a professional according to CE 795/2010.

WARNING:

The power supply must be SINGLE-PHASE (one phase (L) and one neutral (N)) with its grounded power (GND) and its manual switch. Any breach of these specifications involves a breach of the warranty conditions provided by the manufacturer.

NOTE:

In line with the company's policy of continual product improvement, the aesthetic and dimensional characteristics, technical data and accessories of this appliance may be changed without notice.

INSTALLATION MANUAL

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

INVERTER SPLIT-TYPE ROOM AIR CONDITIONER

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

Read This Manual:

Inside you will find many helpful hints on how to use and maintain your air conditioner properly.

Just a little preventative care on your part can save you a great deal of time and money over the life of your air conditioner.

You'll find many answers to common problems in the chart of troubleshooting tips. If you review the chart of Troubleshooting Tips first, you may not need to call for service.

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PRECAUTIONS

- Keep this manual where the operator can easily find them.
- Read this manual attentively before starting up the units.
- For safety reason the operator must read the following cautions carefully.

The safety precautions listed here are divided into two categories.



WARNING

If you do not follow these instructions exactly, the unit may cause property damage, personal injury or loss of life.



CAUTION

If you do not follow these instructions exactly, the unit may cause minor or moderate property damage, personal injury.

After completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained. Also, inform customers that they should store this installation manual along with the owner's manual for future reference.



WARNING

Be sure only trained and qualified service personnel to install, repair or service the equipment.

Improper installation, repair, and maintenance may result in electric shocks, short-circuit, leaks, fire or other damage to the equipment.

Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock and fire.

When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage. 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. otherwise, it will cause the set to fall, water leakage, electrical shock and fire.

Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop to cause injury.

The appliance must be installed 2.3m above floor.

The appliance shall not be installed in the laundry.

Before obtaining access to terminals, all supply circuits must be disconnected.

The appliance must be positioned so that the plug is accessible.

The enclosure of the appliance shall be marked by word, or by symbols, with the direction of the fluid flow.

For electrical work, follow the local national wiring standard, regulation and these installation instructions. An independent circuit and single outlet must be used.

If electrical circuit capacity is not enough or defect in electrical work, it will cause electrical shock or fire.

Use the specified cable and connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.

Wiring routing must be properly arranged so that control board cover is fixed properly.

If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.

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

An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

When carrying out piping connection, take care not to let air substances go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.

Do not modify the length of the power supply cord or use of extension cord, and do not share the single outlet with other electrical appliances.

Otherwise, it will cause fire or electrical shock.

If the refrigerant leaks during installation, ventilate the area immediately.
Toxic gas may be produced if the refrigerant comes into the place contacting with fire.

The temperature of refrigerant circuit will be high, please 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, lightning rod or atelephone ground wire. Inappropriate grounding may result in electric shocks.

Be sure to install an earth leakage breaker.

Failure to install an earth leakage breaker may result in electric shocks.

Connect the outdoor unit wires , then connect the indoor unit wires.

You are not allowed to 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 in order to ensure proper drainage and insulate piping in order 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 wires should be at least 1 meter away from televisions or radios in order to prevent image interference or noise.

Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.

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

Don't install the air conditioner in the following circumstance:

- There is petrolatum existing.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- The Volt vibrates violently (in the factories).
- In buses or cabinets.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic wave existing.

- There are inflammable materials or gas.
- There is acid or alkaline liquid evaporating.
- Other special conditions.

The appliance shall 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.

An all-pole disconnection device which has at least 3mm clearances in all poles , and have a leakage current that may exceed 10mA, the residual current device (RCD) having a rated residual operating current not exceeding 30mA, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.

INSTALLATION INFORMATION

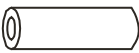











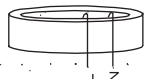




- To install properly, please read this "installation manual" at first.
- The air conditioner must be installed by qualified persons.
- When installing the indoor unit or its tubing, please follow this manual as strictly as possible.
- If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant standards to electrical appliances.
- When all the installation work is finished, please turn on the power only after a thorough check.
- Regret for no further announcement if there is any change of this manual caused by product improvement.

INSTALLATION ORDER

- Indoor unit installation;
- Outdoor unit installation;
- Install the refrigerant pipe;
- Connect the drain pipe ;
- Electric wiring work;
- Twins function
- Test operation.

ACCESSORIES

Please check whether the following fittings are of full scope. If there are some spare fittings , please restore them carefully.

	NAME	SHAPE	QUANTITY
Tubing & Fittings	1. Soundproof / insulation sheath		2
	2. Binding tape		1
	3. Seal sponge		1
Drainpipe Fittings (for cooling & heating)	4. Drain joint		1
	5. Seal ring		1
Remote controller & Its Frame (Match with remote controller)	6. Remote controller		1 (on some models)
	7. Frame		1 (on some models)
	8. Mounting screw(ST2.9 0-C-H)		2 (on some models)
	9. Alkaline dry batteries (Am4)		2 (on some models)
	10. Remote controller manual RG51		1 (on some models)
Wire controller & Its Frame (Match with wire controller)	11. Wirecontroller KJR-12B		1
	12. Wire controller owner's manual		1
	13. Wire controller installation manual		1
EMC & Its Fitting (for some models)	14. Magnetic ring (twist the electric wires Land N around the magnetic ring to five circles)		1
Others	15. Owner's manual		1
	16. Installation manual		1
	17. Connecting wire for display (2M)		1 (on some models)
	18. Cord protection rubber ring		1 (on some models)

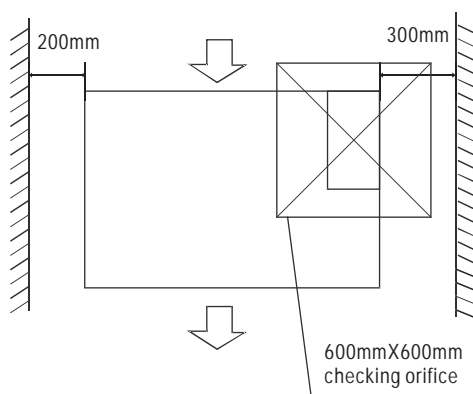
1. INDOOR UNIT INSTALLATION

1.1 Installation place

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 endure the weight of the indoor unit.
- The outlet and the inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The connecting pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters.

Maintenance roomage



1.2 Install the main body

1 Installing Ø10 hanging screw bolts. (4 bolts)

- Please refer to the following figures for positioning 4 screw bolts.
- Evaluate the ceiling construction and please install with Ø10 hanging screw bolts.
- Consult the construction personnel for the specific procedures.
 - Do keep the ceiling flat. Consolidate the roof beam to avoid possible vibration.
- Carry out the pipe and line operation in the ceiling after finishing the installation of the main body. While choosing where to start the operation, determine the direction of the pipes to be drawn out. Especially in case there is a ceiling, position the refrigerant pipes, drain pipes, indoor & outdoor lines to the connection places before hanging up the machine.
- The installation of hanging screw bolts.
 - Cut off the roof beam.
 - Strengthen the place that has been cut off, and consolidate the roof beam.
- After the selection of installation location, position the refrigerant pipes, drain pipes, indoor & outdoor wires to the connection places before hanging up the machine.
- The installation of hanging screw bolts.



NOTE

Confirm the minimum drain tilt is 1/100 or more

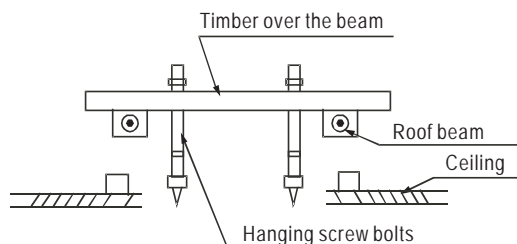


CAUTION

Keep 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 1 meter is kept.)

1.2.1 Wooden construction

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



1.2.2 New concrete bricks

Inlaying or embedding the screw bolts.



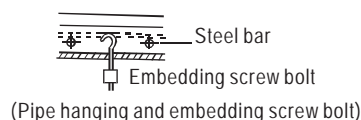
(Blade shape insertion)



(Slide insertion)

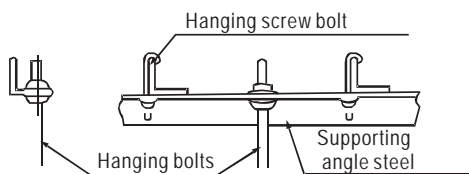
1.2.3 For Original concrete bricks

Use embedding screw bold, crock and stick harness.



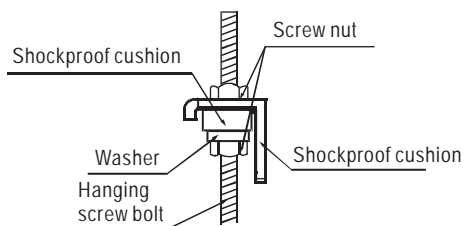
1.2.4 Steel roof beam structure

Install and use directly the supporting angle steel.



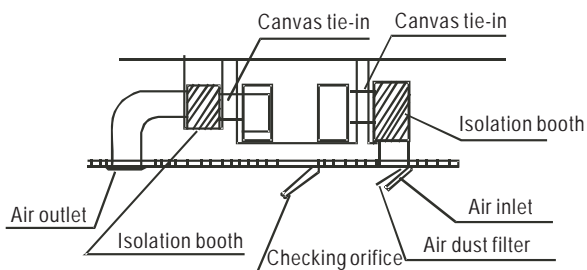
2 Overhanging the indoor unit

- (1) Overhang the indoor unit onto the hanging screw bolts with block.
- (2) Position the indoor unit in a flat level by using the level indicator, unless it may cause leakage.



1.3 Duct and accessories installation

1. Install the filter(optional) according to air inlet size.
2. Install the canvas tie-in between the body and duct.
3. Air inlet and air outlet duct should be apart far enough to avoid air passage short-circuit.
4. Recommended duct connection.



5. Please refer to the following static pressure to install

Model (Btu/h)	Static pressure (Pa)(max)
Model≤12	40
12<Model≤24	100
24<Model≤42	100
42<Model≤60	100

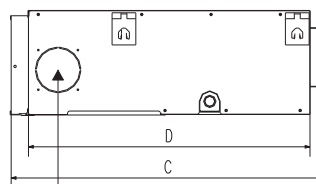
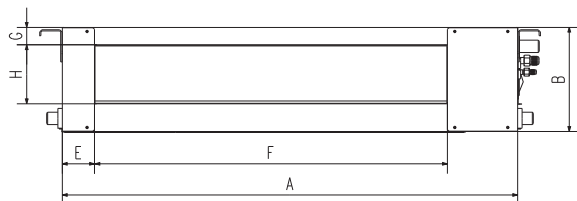


NOTE

1. Do not put the connecting duct weight on the indoor unit.
2. When connecting duct, use inflammable canvas tie-in to prevent vibrating.
3. Insulation foam should be wrapped outside the duct to avoid condensate an internal duct under layer shall be added to reduce the noise for special requirement.

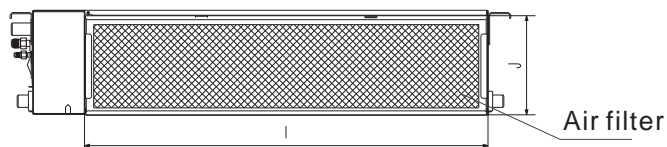
The positioning of ceiling hole, indoor unit and hanging screw bolts

Dimension and air outlet size

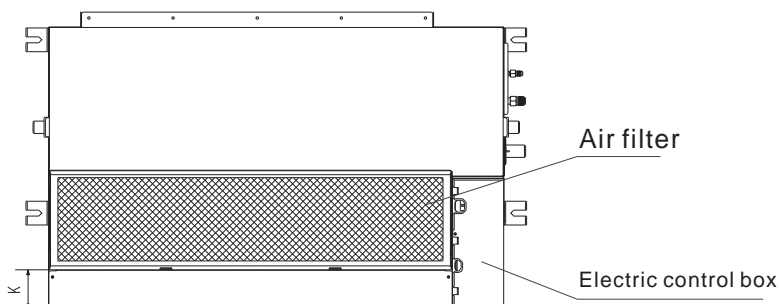


Fresh air intake (See pag. 22)

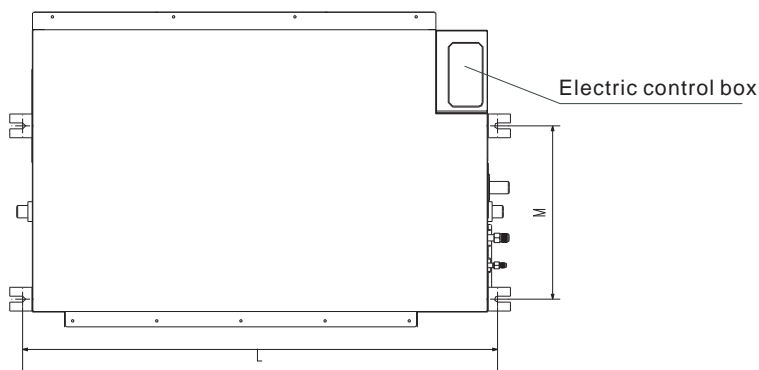
Air inlet size



Position size of ventilation opening



Size of mounted hook

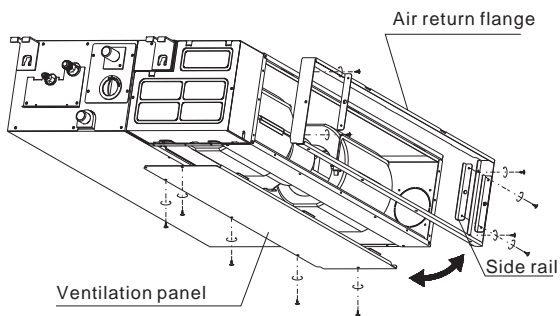


Unit: mm

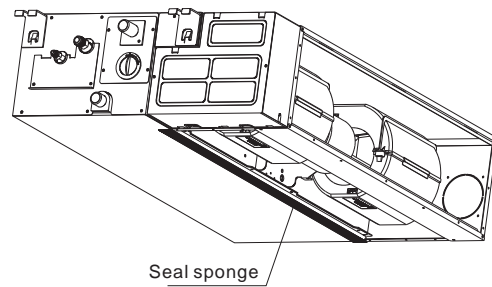
Model (Btu/h)	Outline dimension				Air outlet opening size				Air return opening size			Size of mounted lug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
12K	700	210	635	570	65	493	35	119	595	200	80	740	350
18K	920	270	635	570	65	713	35	179	815	260	20	960	350
24K	920	270	635	570	65	713	35	179	815	260	20	1180	490
30K	1140	270	775	710	65	933	35	179	1035	260	45	1240	500
36K to 55K	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

How to adjust the air inlet direction? (From rear side to under-side.)

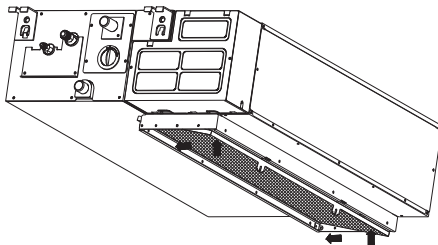
1. Take off ventilation panel and flange, cut off the staples at side rail.



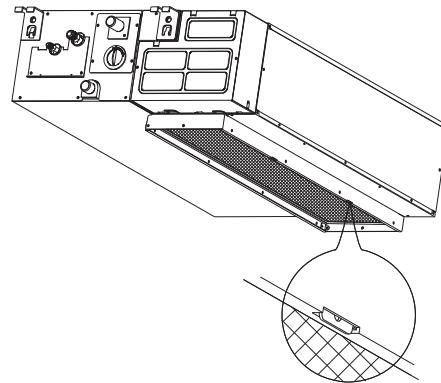
2. Stick the attached seal sponge as per the indicating place in the following fig, and then change the mounting positions of air return panel and air return flange .



3. When install the filter mesh, please plug it into flange inclined from air return opening, and then push up.



4. The installation has finish, upon filter mesh which fixing block shave been inserted to the flange positional holes.

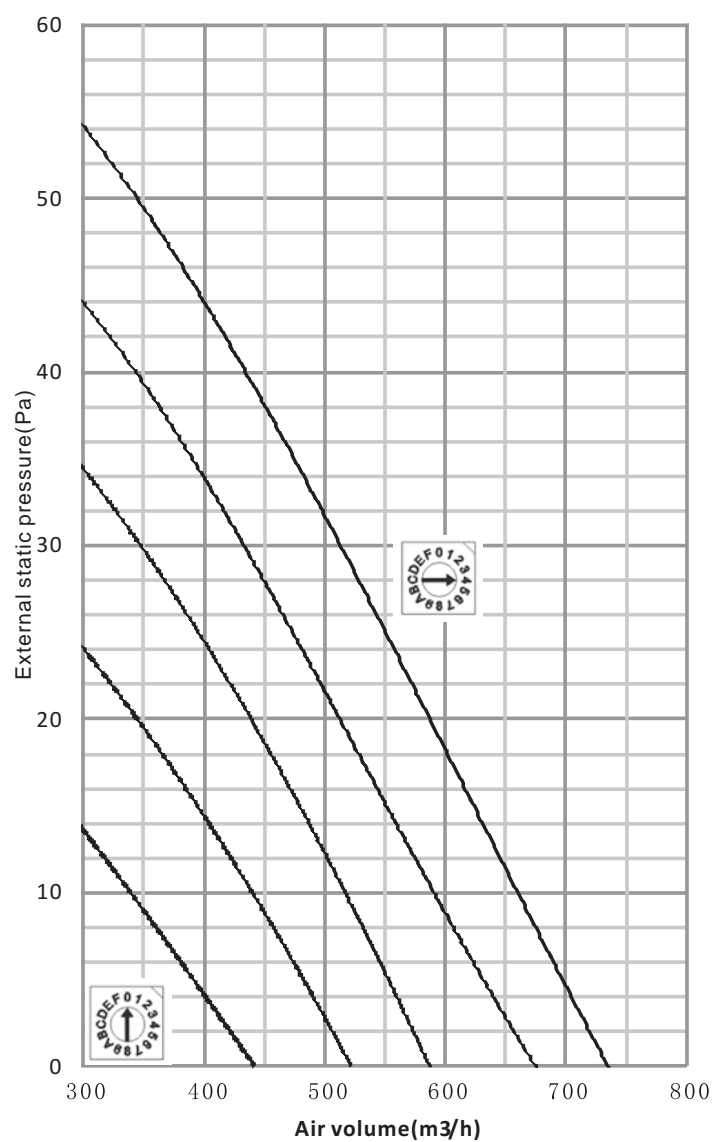


NOTE

All the figures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased. The actual unit shall prevail.

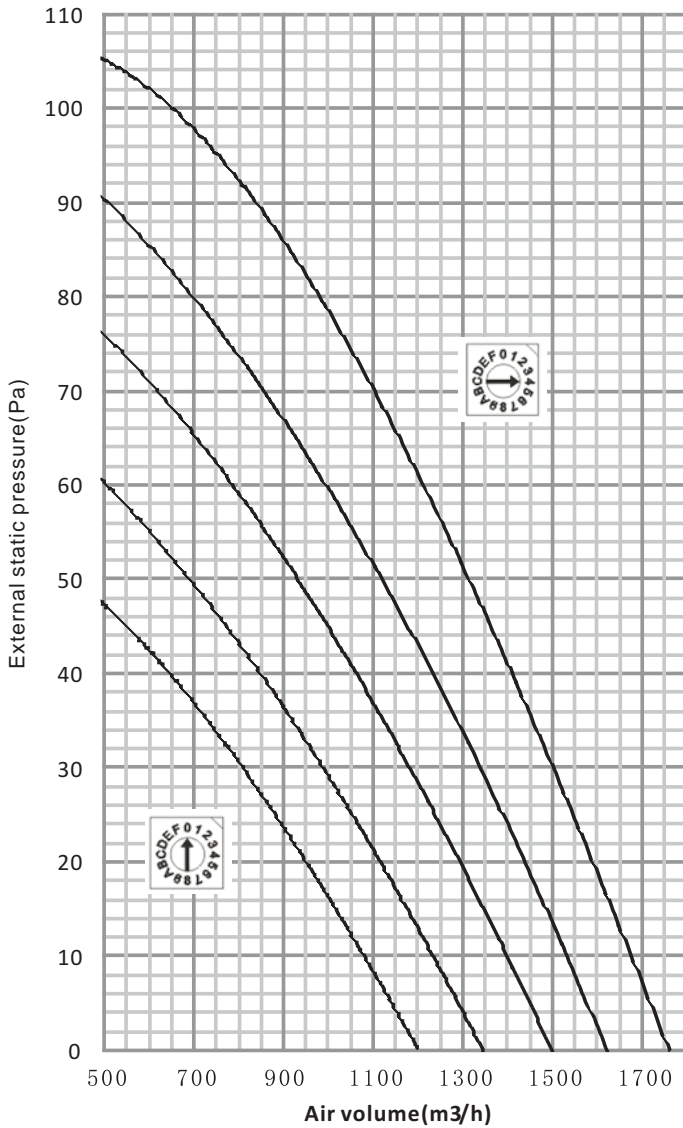
Static pressure curve(middle static pressure duct)

High Speed

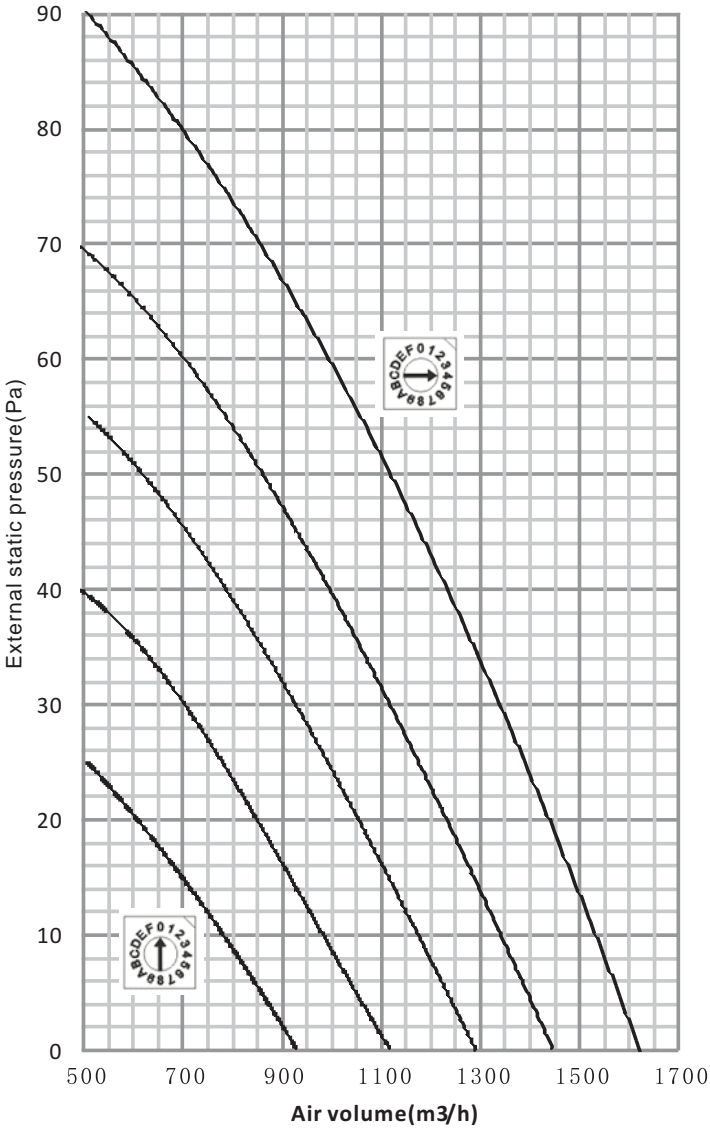


18K

High Speed

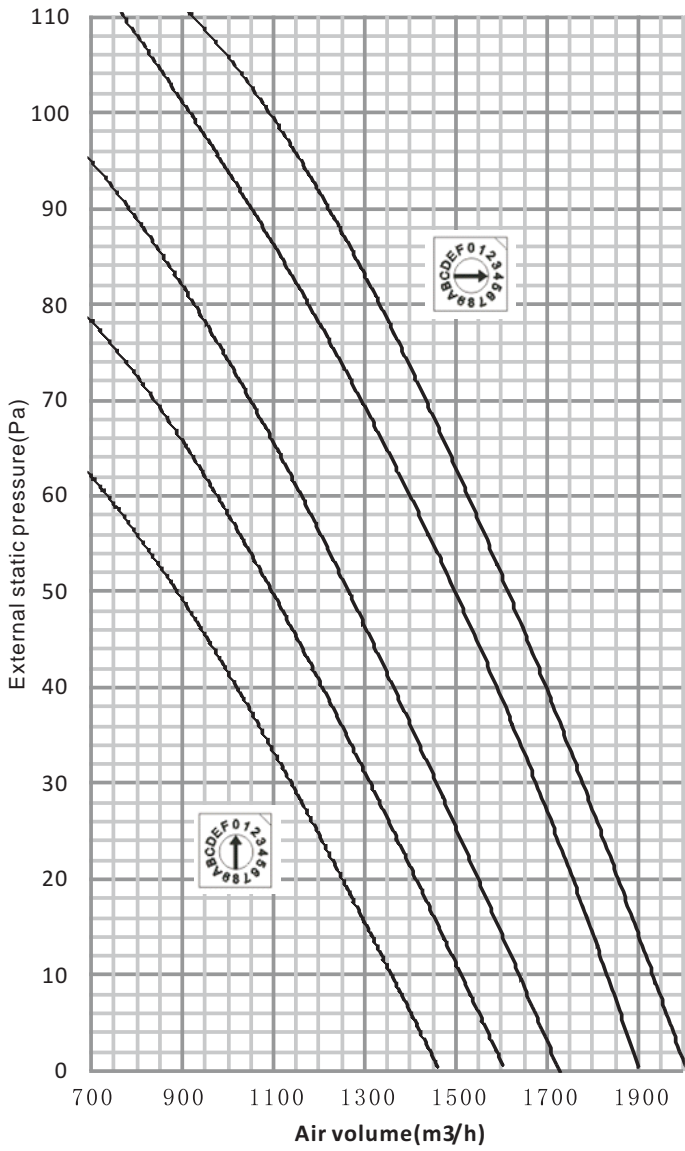


Low Speed

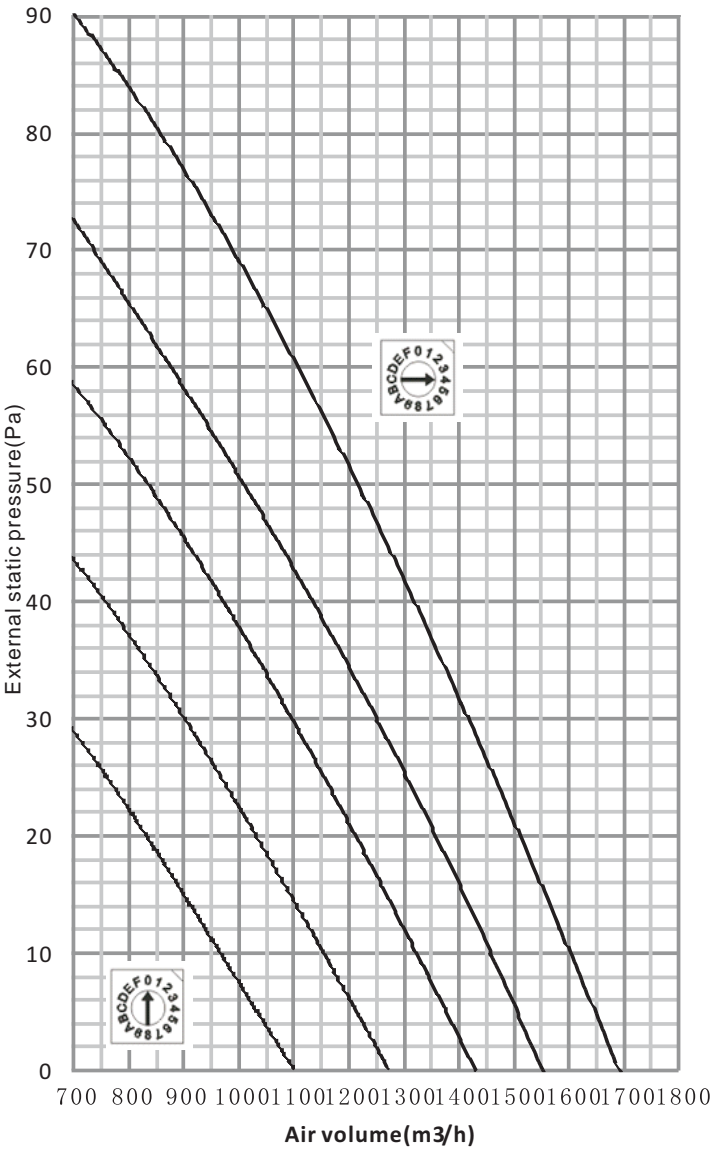


24K

High Speed

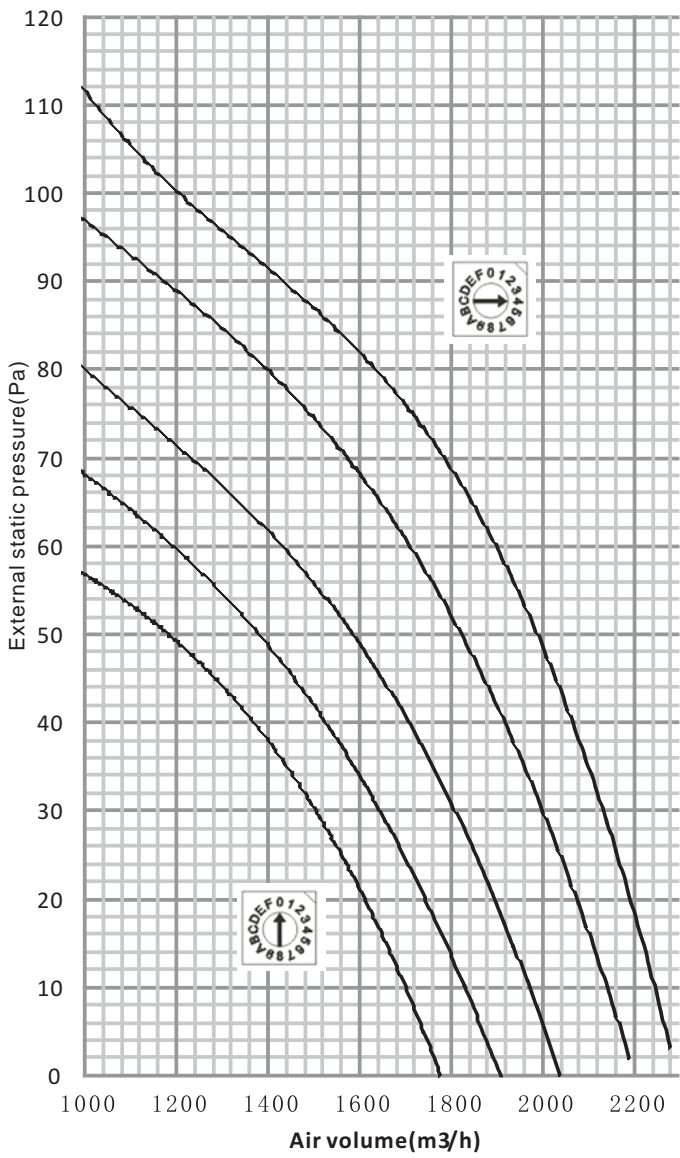


Low Speed

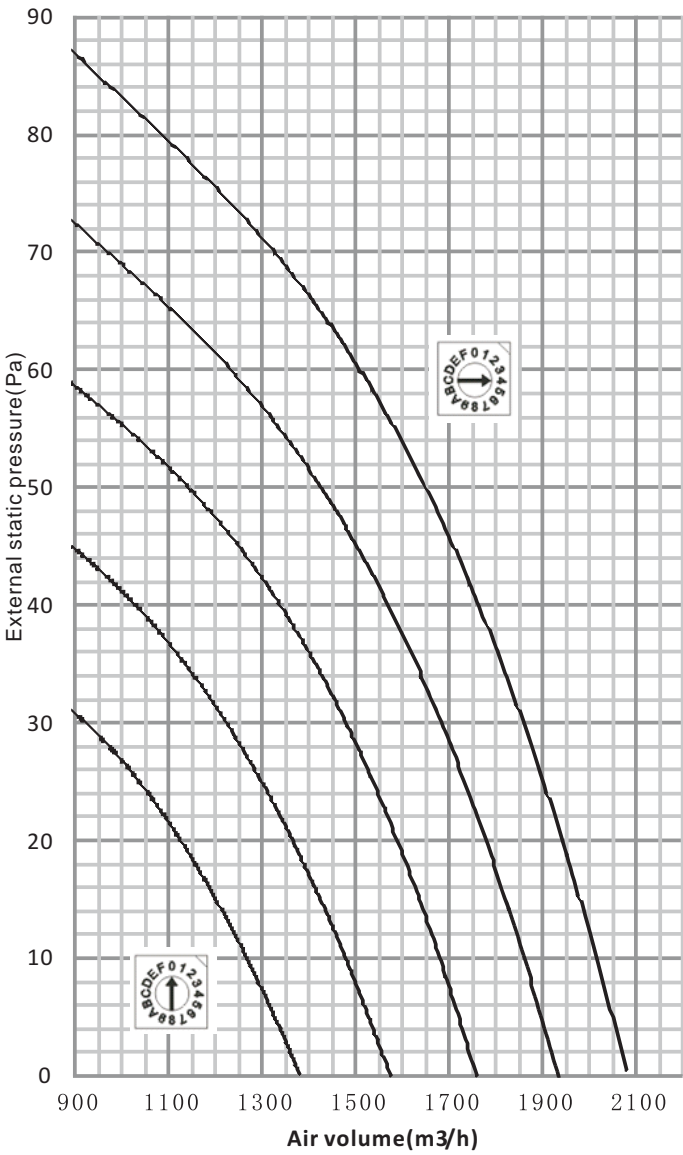


30K

High Speed

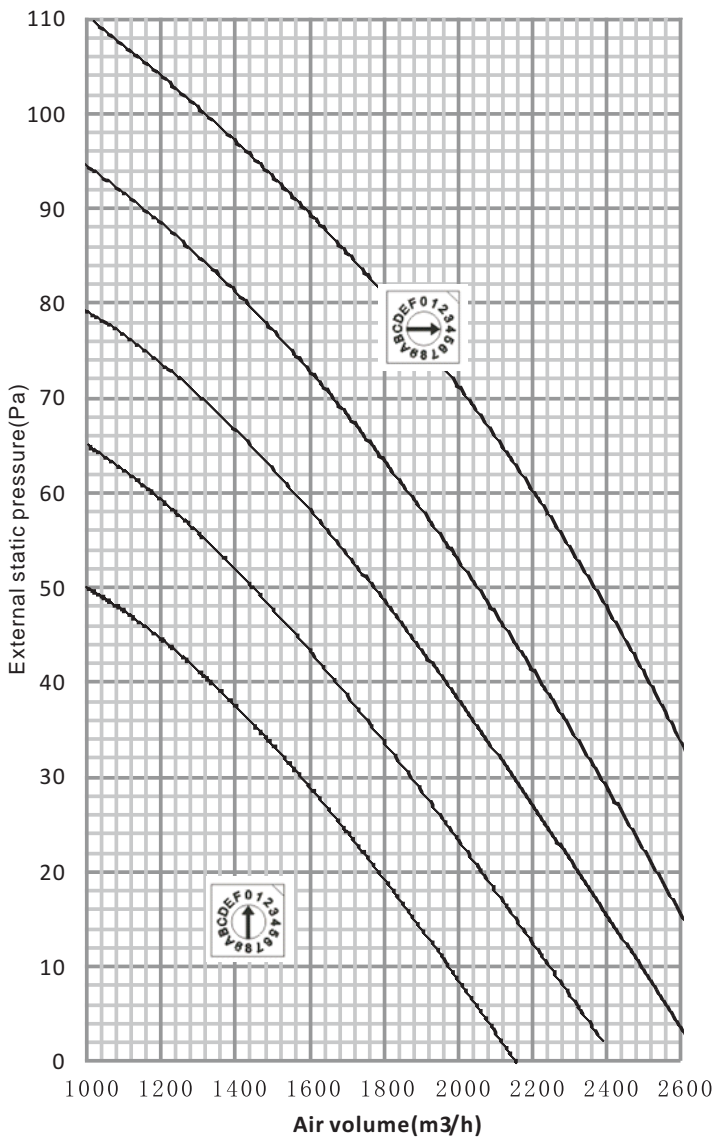


Low Speed

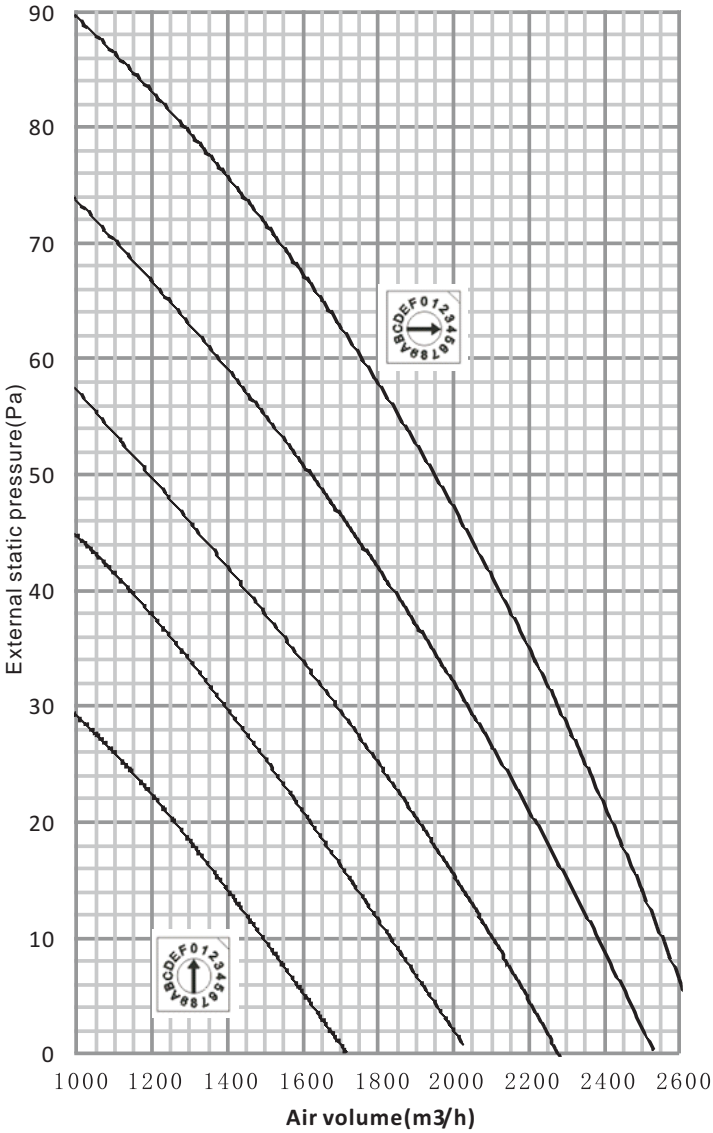


36K

High Speed

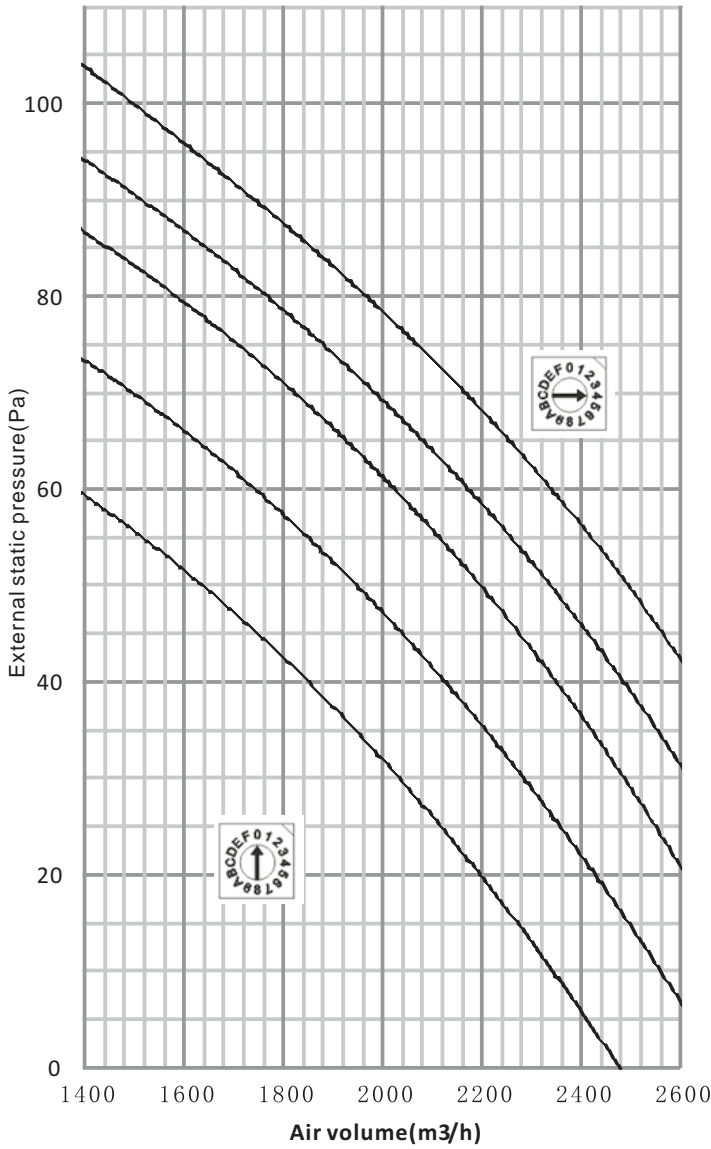


Low Speed

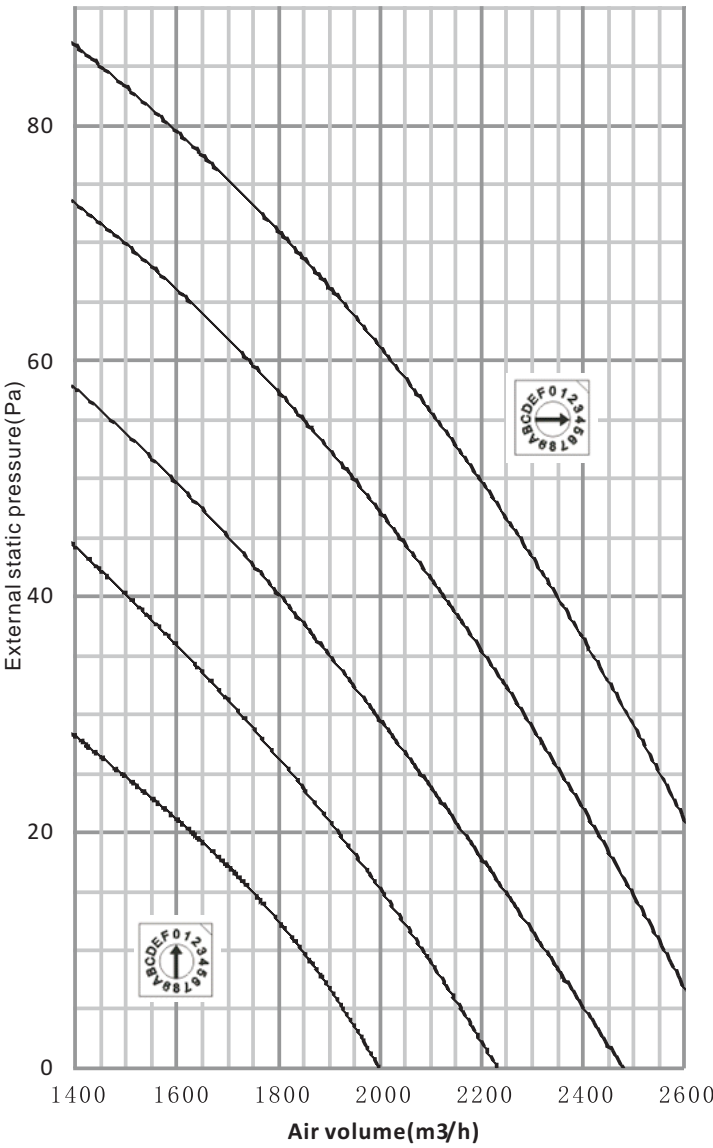


48K/55K

High Speed



Low Speed



2. OUTDOOR UNIT INSTALLATION

2.1 Precautions for selecting the location

- 1) Choose a place solid enough to bear the weight and vibration of the unit, where the operation noise will not be amplified.
- 2) Choose a location where the hot air discharged from the unit or the operation noise will not cause a nuisance to the neighbours of the user.
- 3) Avoid places near a bedroom and the like, so that the operation noise will cause no trouble.
- 4) There must be sufficient spaces for carrying the unit into and out of the site.
- 5) There must be sufficient space for air passage and no obstructions around the air inlet and the air outlet.
- 6) The site must be free from the possibility of flammable gas leakage in a nearby place.
- 7) Install units, power cords and inter-unit wire at least 3m away from television and radio sets. This is to prevent interference to images and sounds. (Noises may be heard even if they are more than 3m away depending on radio wave conditions.)
- 8) In coastal areas or other places with salty atmosphere of sulfate gas, corrosion may shorten the life of the air conditioner.
- 9) Since drain flows out of the outdoor unit, do not place under the unit anything which must be kept away from moisture.

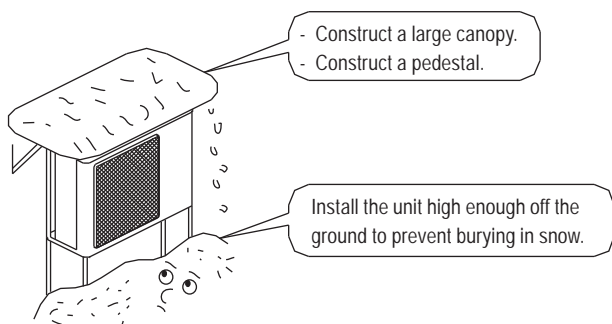
NOTE: Cannot be installed hanging from ceiling or stacked.



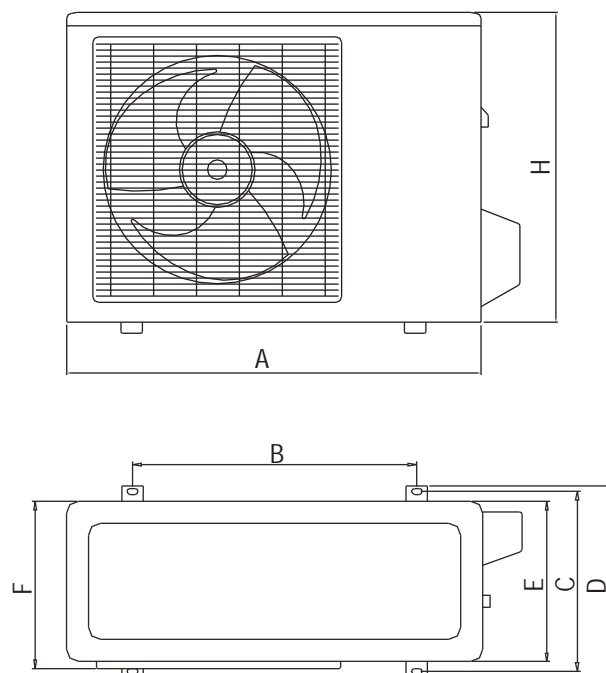
CAUTION

When operating the air conditioner in a low outdoor ambient temperature, be sure to follow the instructions described below.

- To prevent exposure to wind, install the outdoor unit with its suction side facing the wall.
- Never install the outdoor unit at a site where the suction side may be exposed directly to wind.
- To prevent exposure to wind, it is recommended to install a baffle plate on the air discharge side of the outdoor unit.
- In heavy snowfall areas, select an installation site where the snow will not affect the unit.



2.2 Figure of body size



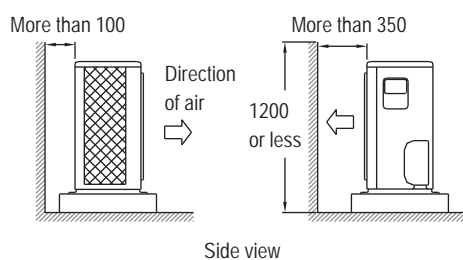
Unit:mm

MODEL(Btu/h)	A	B	C	D	E	F	H
12K/18K	810	549	325	350	305	310	558
24K	845	560	335	360	312	320	700
30K/36K/42K	945	640	405	448	385	395	810
48K/55K	938	634	404	448	368	392	1369

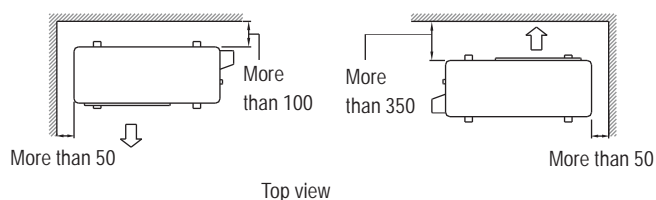
2.3 Installation guidelines

- Where a wall or other obstacle is in the path of outdoor unit's inlet or outlet airflow, follow the installation guidelines below.
- For any of the below installation patterns, the wall height on the outlet side should be 1200mm or less.

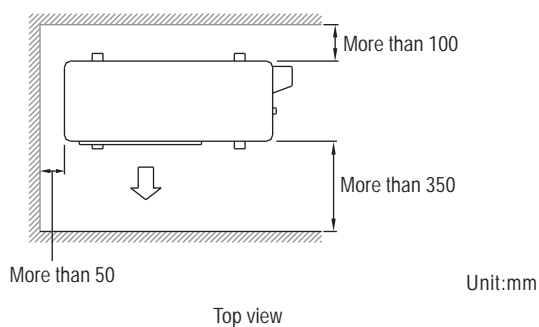
Wall facing one side



Walls facing two sides



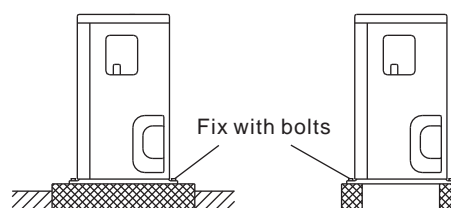
Walls facing three sides



2.4 Outdoor unit installation

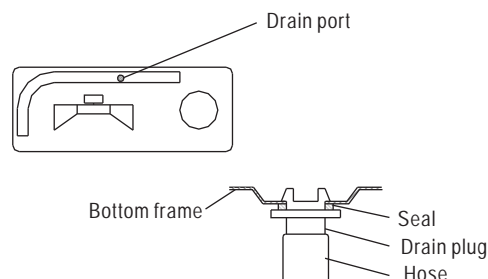
1) Installing outdoor unit

- When installing the outdoor unit, refer to "Precautions for selecting the location" .
- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installed.
- Fix the unit securely by means of the foundation bolts. (Prepare 4 sets of M8 or M10 foundation bolts, nuts and washers each which are available on the market.)



2) Drain work

- If drain work is necessary, follow the procedures below.
- Use drain plug for drainage.
- If the drain port is covered by a mounting base or floor surface, place additional foot bases of at least 30mm in height under the outdoor unit's feet.
- In cold areas, do not use a drain hose with the outdoor unit. (Otherwise, drain water may freeze, impairing heating performance.)



3. INSTALL THE REFRIGERANT PIPE



All field piping must be provided by a licensed refrigeration technician and must comply with the relevant local and national codes.

Precautions

- Execute heat insulation work completely on both sides of the gas piping and liquid piping. Otherwise, this can sometimes result in water leakage.
(When using a heat pump, the temperature of the gas piping can reach up to approximately 120°C. Use insulation which is sufficiently resistant.)
- Also, in cases where the temperature and humidity of the refrigerant piping sections might exceed 30°C or Rh80%, reinforce the refrigerant insulation (20mm or thicker). Condensation may form on the surface of the insulating material.
- Before rigging tubes, check which type of refrigerant is used.
- Use a pipe cutter and flare suitable for used refrigerant.
- Only use annealed material for flare connections.
- Do not mix anything other than the specified refrigerant, such as air, etc., inside the refrigerant circuit.
- If the refrigerant gas leaks during the work, ventilate the area. A toxic gas is emitted by the refrigerant gas being exposed to a fire.
- Make sure there is no refrigerant gas leak. A toxic gas may be released by the refrigerant gas leaking indoor and being exposed to flames from an area heater, cooking stove, etc.
- Refer to the table below for the dimensions of flare nuts spaces and the appropriate tightening torque. (Over tightening may damage the flare and cause leaks.)

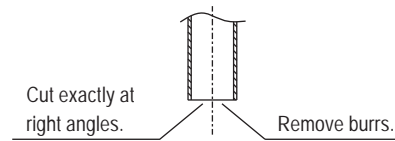
Pipe gauge (mm)	Tightening torque	Flare dimension A (mm)	Flare shape
Ø6.35	15~16 N.m (153~163 kgf.cm)	8.3~8.7	
Ø9.52	25~26 N.m (255~265 kgf.cm)	12.0~12.4	
Ø12.7	35~36 N.m (357~367 kgf.cm)	15.4~15.8	
Ø15.9	45~47 N.m (459~480 kgf.cm)	18.6~19.0	
Ø19.1	97.2~118.6 N.m (990~1210 kgf.cm)	22.9~23.3	

- Check whether the height drop between the indoor unit and outdoor unit, and the length of refrigerant pipe meet the following requirements:

The type of models	Capacity (Btu/h)	Max. allowable piping length	Max. allowable piping height
R410A inverter Split type air conditioner	<15000	25m	10m
	>15000~<24000	30m	20m
	>24000~<36000	50m	25m
	>36000~<60000	65m	30m

3.1 Flaring the pipe end

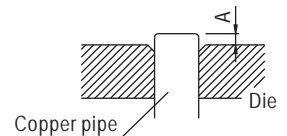
- 1) Cut the pipe end with a pipe cutter.
- 2) Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.



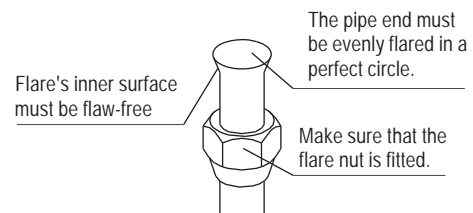
- 3) Put the flare nut on the pipe.
- 4) Flare the pipe.

Outer diam. (mm)	A (mm)	
	Max.	Min.
Ø6.35	1.3	0.7
Ø9.52	1.6	1.0
Ø12.7	1.8	1.0
Ø15.9	2.2	2.0

Set exactly at the position shown below.

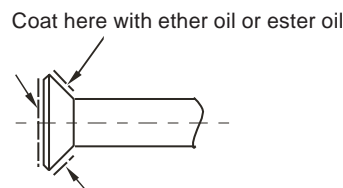


- 5) Check that the flaring is properly made.

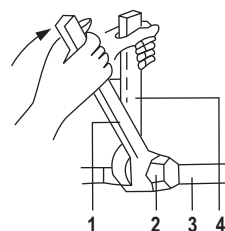


3.2 Refrigerant piping

- Coat the flare both inside and outside with ether oil or ester oil.



- Align the centres of both flares and tighten the flare nuts 3 or 4 turns by hand. Then tighten them fully with the torque wrenches.



- 1 Torque wrench
- 2 Flare nut
- 3 Piping union
- 4 Spanner

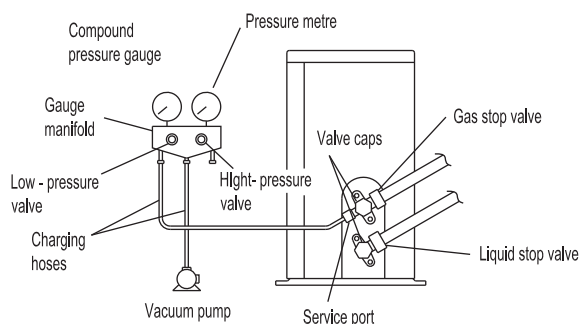
3.3 Purging air and checking gas leakage

- When piping work is completed, it is necessary to purge the air and check for gas leakage.



WARNING

- Do not mix any substance other than the specified refrigerant into the refrigeration cycle.
 - When refrigerant gas leaks occur, ventilate the room as soon as possible.
 - The specified refrigerant should always be recovered and never be released directly into the environment.
 - Use a vacuum pump for the specified refrigerant. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.
-
- If using additional refrigerant, perform air purging from the refrigerant pipes and indoor unit using a vacuum pump, then charge additional refrigerant.
 - Use a hexagonal wrench(4mm) to operate the stop valve rod.
 - All refrigerant pipe joints should be tightened with a torque wrench at the specified tightening torque.



- Connect projection side of charging hose (which comes from gauge manifold) to gas stop valve's service port.
- Full open gauge manifold's low-pressure valve (Lo) and completely close its high-pressure valve (Hi) (High-pressure valve subsequently requires no operation.)
- Do vacuum pumping and make sure that the compound pressure gauge reads -0.1MPa (-76cmHg).^{*1}
- Close gauge manifold's low-pressure valve (Lo) and stop vacuum pump. (Keep this state for a few minutes to make sure that the compound pressure gauge pointer does not swing back.)^{*2}
- Remove caps from liquid stop valve and gas stop valve.
- Turn the liquid stop valve's rod 90 degrees counterclockwise with a hexagonal wrench to open valve. Close it after 5 seconds, and check for gas leakage. Using soapy water, check for gas leakage from indoor unit's flare and outdoor unit's flare and valve rods. After the check is complete, wipe all soapy water off.
- Disconnect charging hose from gas stop valve's service port then fully open liquid and gas stop valves. (Do not attempt to turn valve rod beyond its stop.)
- Tighten valve caps and service port caps for the liquid and gas stop valves with a torque wrench at the specified torques.

^{*1}. Pipe length vs. Vacuum pump run time

Pipe length	Up to 15m	More than 15m
Run time	Not less than 10 min	Not less than 15min

- ^{*2}. If the compound pressure gauge pointer swings back, refrigerant may have water content or a loose pipe joint may exist. Check all pipe joints and retighten nuts as needed, then repeat steps 2) through 4).

3.4 Additional refrigerant charge



CAUTION

- Refrigerant may only be charged after performing the leak test and the vacuum pumping.
 - Check the type of refrigerant to be used on the machine nameplate. Charging with an unsuitable refrigerant may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.
 - Refrigerant containers shall be opened slowly.
-
- The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid pipe of the outdoor unit/indoor unit connection.

Pipe length and refrigerant amount:

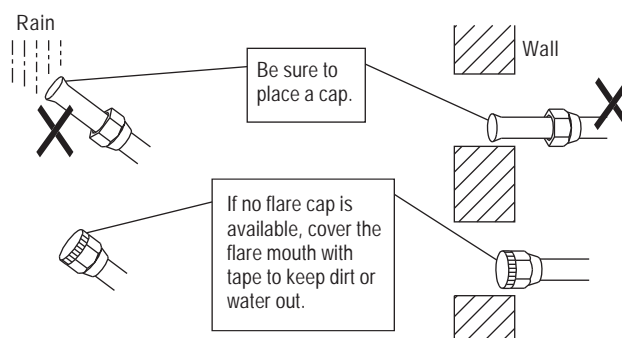
Connective pipe length	Air purging method	Additional amount of refrigerant to be charged	
Less than 5m	Use vacuum pump.	_____	
More than 5m	Use vacuum pump.	Liquid side: Φ 6.35mm (1/4") R410A: (L-5)x15g/m	Liquid side: Φ 9.52mm (3/8") R410A: (L-5)x30g/m

- Be sure to add the proper amount of additional refrigerant. Failure to do so may result in reduced performance.

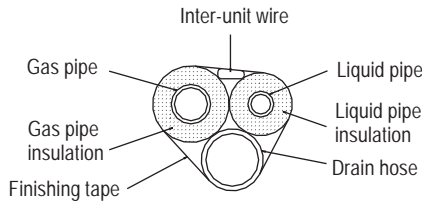
3.5 Refrigerant piping work

1) Caution on the pipe handling

- Protect the open end of the pipe against dust and moisture.
- All pipe bends should be as gentle as possible. Use a pipe bender for bending.

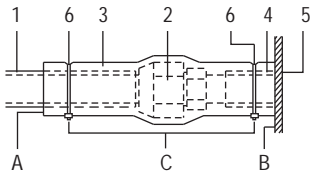


- 2) Be sure to insulate both the gas and liquid piping. Use separate thermal insulation pipes for gas and liquid refrigerant pipes. See the figure below.



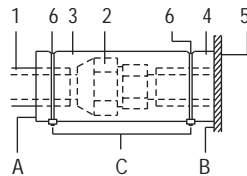
Piping insulation procedure

Gas piping



- 1 Piping insulation material(field supply)
- 2 Flare nut connection
- 3 Insulation for fitting (field supply)
- 4 Piping insulation material (main unit)
- 5 Indoor unit
- 6 Clamp (field supply)
- A Turn seams up
- B Attach to base
- C Tighten the part other than the piping insulation material

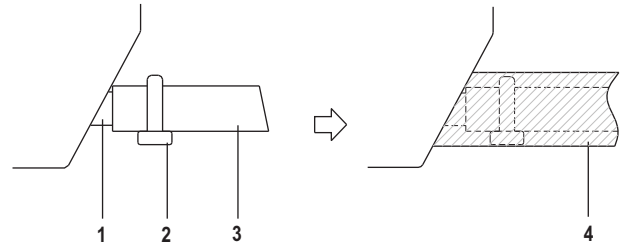
Liquid piping



4. CONNECT THE DRAIN PIPE

4.1 Install the drain pipes.

- Keep piping as short as possible and slope it downwards at a gradient of at least 1/100 so that air may not remain trapped inside the pipe.
- Keep pipe size equal to or greater than that of the connecting pipe (PVC pipe, nominal diameter 20mm in, outside diameter 25mm).
- Push the drain hose as far as possible over the drain socket, and tighten the metal clamp securely.

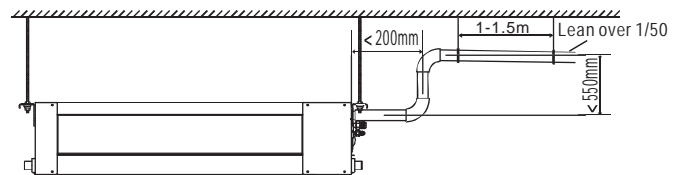


- 1 Drain socket (attached to the unit)
- 2 metal clamp
- 3 Drain hose
- 4 Insulation (field supply)

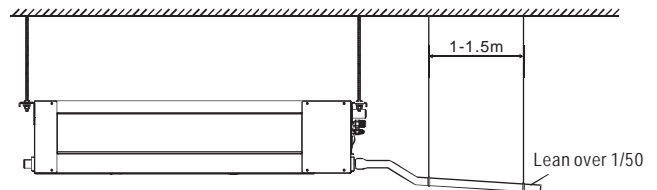
- Insulate the drain hose inside the building.
- If the drain hose cannot be sufficiently set on a slope, fit the hose with drain raising piping (field supply).
- Make sure that heat insulation work is executed on the following 2 spots to prevent any possible water leakage due to dew condensation.
 - 1 Indoor drain pipe.
 - 2 Drain socket.

4.2 How to perform piping

The drain pipe installation for the unit with pump.



The drain pipe installation for the unit without pump.



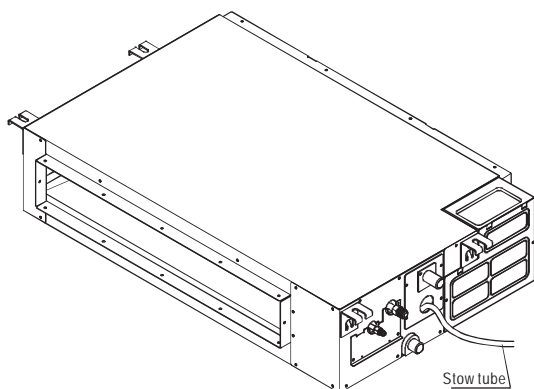
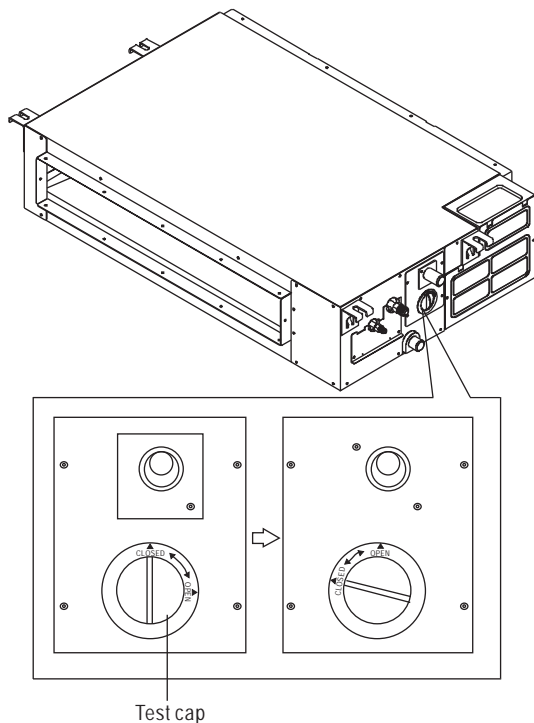
- For local insulation, be sure to insulate local piping all the way into the pipe connections inside the unit. Exposed piping may cause condensation or may cause burns when touched.
- Make sure that no oil remains on plastic parts of the decoration panel (optional equipment). Oil may cause degradation and damage to plastic parts.

4.3 Testing of drain piping

- Check whether the drainpipe is unhindered.
- New built house should have this test done before paving the ceiling.

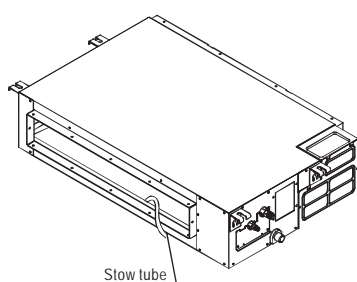
■ The unit with pump.

1. Remove the test cover, and stow about 2000ml water to the water pan.



2. Operate the air conditioner in "COOLING" mode. The sound of the drain pump shall be heard. Check whether the water is discharged well (1 min lag is possible, according to the length of the drain pipe), and check whether the water leaks from the joints.
3. Power off the air conditioner and recover the cap.

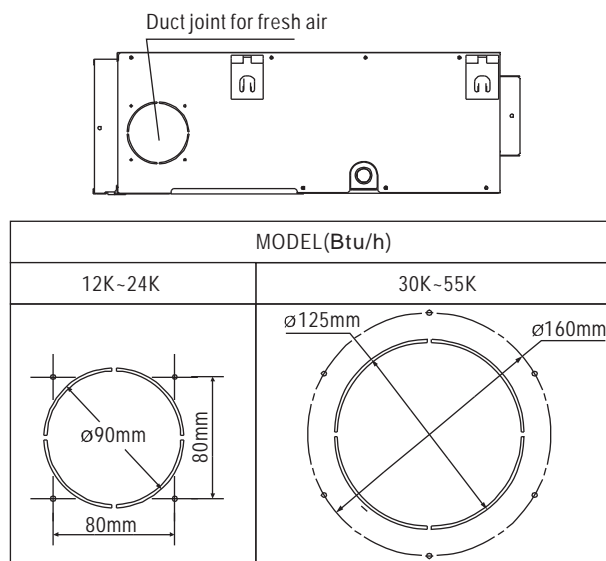
■ The unit without pump.



- Stow 2000ml water to the water pan through the stow tube, check whether the drainpipe is unhindered.

4.4 Fresh air duct installation

Dimension :

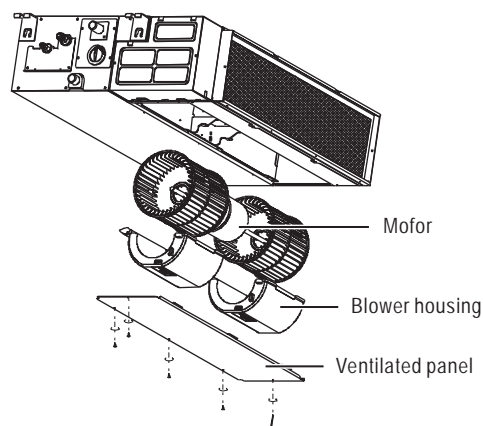


■ Motor and drain pump maintenance

(Take rear ventilated as example)

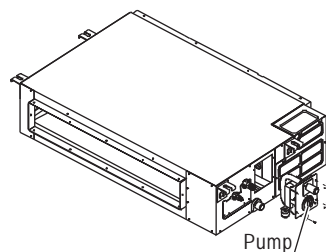
Motor maintain:

1. Take off the ventilated panel.
2. Take off the blower housing.
3. Take off the motor.



Pump maintenance:

1. Screw off four screws from drain pump.
2. Plug off pump power supply and water level switch cable.
3. Take off pump.



5. ELECTRIC WIRING WORK

Minimum nominal cross-sectional area of conductors:

General instructions

- All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.
- Use copper wire only.
- Follow the 'Wiring diagram' attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- A circuit breaker capable of shutting down power supply to the entire system must be installed.
- Note that the operation will restart automatically if the main power supply is turned off and then turned back on again.
- Be sure to ground the air conditioner.
- Do not connect the ground wire to gas pipes, water pipes, lightning rods, or telephone ground wires.
 - Gas pipes: might cause explosions or fire if gas leaks.
 - Water pipes: no grounding effect if hard vinyl piping is used.
 - Telephone ground wires or lightning rods: might cause abnormally high electric potential in the ground during lightning storms.

Rated current of appliance (A)	Nominal cross-sectional area (mm ²)
≤6	0.75
>6 and ≤10	1.0
>10 and ≤16	1.5
>16 and ≤25	2.5
>25 and ≤32	4.0
>32 and ≤45	6.0
>45 and ≤60	10.0

NOTE:

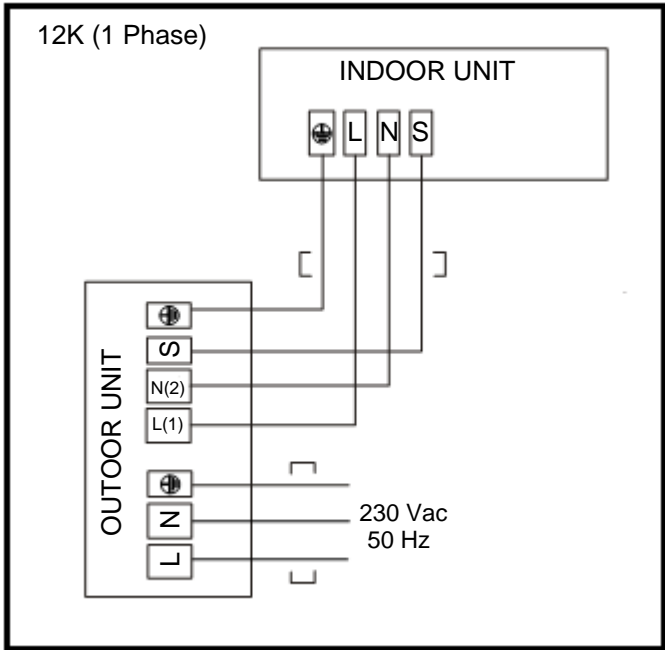
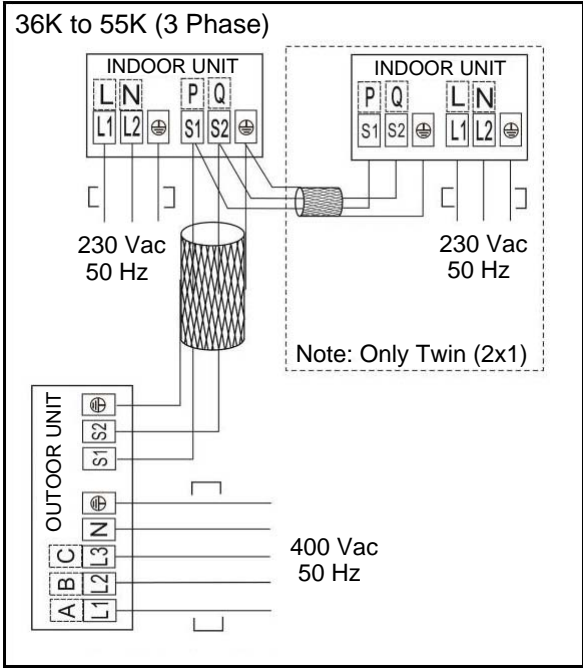
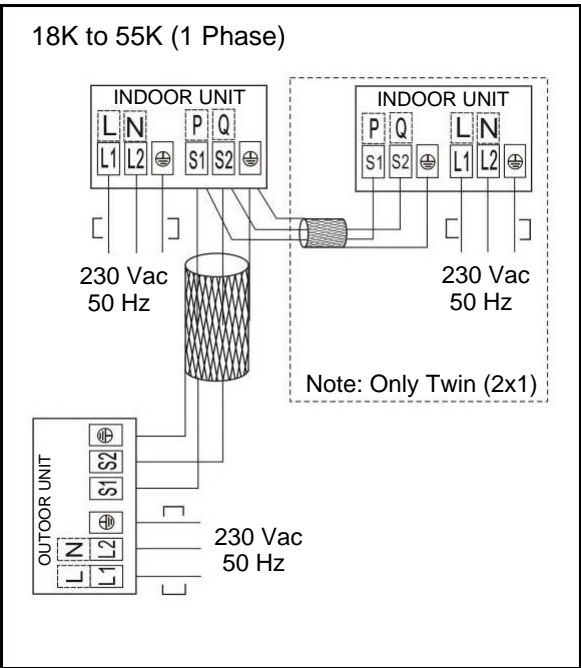
The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate which located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse and switch.

The specification of power

Model		12K	18K – 24K	30k	36K (1Ph)	36K (3Ph)
INDOOR UNIT POWER	Phase	—————	1-phase	1-phase	1-phase	1-phase
	Frequency and Voltage	—————	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz
	POWER WIRING (mm ²)	—————	3×1.0	3×1.0	3×1.0	3×1.0
	CIRCUIT BREAKER/ Fuse (A)	—————	15/10	15/10	15/10	15/10
OUTDOOR UNIT POWER	Phase	1-phase	1-phase	1-phase	1-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz	380-420V, 50Hz
	POWER WIRING (mm ²)	3×2.5	3×2.5	3×4.0	3×4.0	5×2.5
	CIRCUIT BREAKER/ Fuse (A)	20/16	30/20	40/30	40/30	30/20
Indoor/Outdoor Connecting Wiring (mm ²)		4×1.5	2×0.75 (Shielded)	2×0.75 (Shielded)	2×0.75 (Shielded)	2×0.75 (Shielded)

Model(Btu/h)		48K (1Ph)	55K (1Ph)	48 - 55K (3Ph)
INDOOR UNIT POWER	Phase	1-phase	1-phase	1-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz
	Power Wiring (mm ²)	3×1.0	3×1.0	3×1.0
	Circuit Breaker/Fuse (A)	15/10	15/10	15/10
OUTDOOR UNIT POWER	Phase	1-phase	1-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	380-415V, 50Hz
	Power Wiring (mm ²)	3×6.0	3×6.0	5×2.5
	Circuit Breaker/Fuse (A)	40/35	50/40	30/25
Indoor/Outdoor Connecting Wiring (mm ²)		2×0.75 (Shielded)	2×0.75 (Shielded)	2×0.75 (Shielded)

Connecting wiring



















CONTROL

- The capacity of the system and the network address of the air-conditioner can be set by the switches on the indoor Main Control Board.
- Before setting, turn off the power. After setting, restart the unit.
- Setting is not allowed when the unit is power on.

Network address set

Every air-conditioner in network has only one network address to distinguish each other. Address code of air-conditioner in LAN is set by code switches S1 & S2 on the Main Control Board of the indoor unit, and the set range is 0-63.

Toggle switch set				Network address code
S1	S2			
				00~15
				16~31
				32~47
				48~63

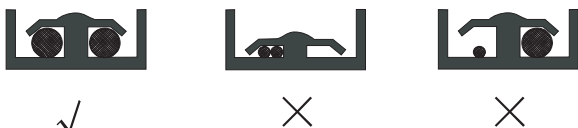
Note: Address setting is only required if you connect a centralized controller.

How to connect wiring

- Remove the control box lid of the indoor unit.
Remove the cover of the outdoor unit.
- Follow the "Wiring diagram label" attached to the indoor unit's control box lid to wire the outdoor unit, indoor unit and the remote controller.
Securely fix the wires with a field supplied champ.
- Attach the cover of the outdoor unit.

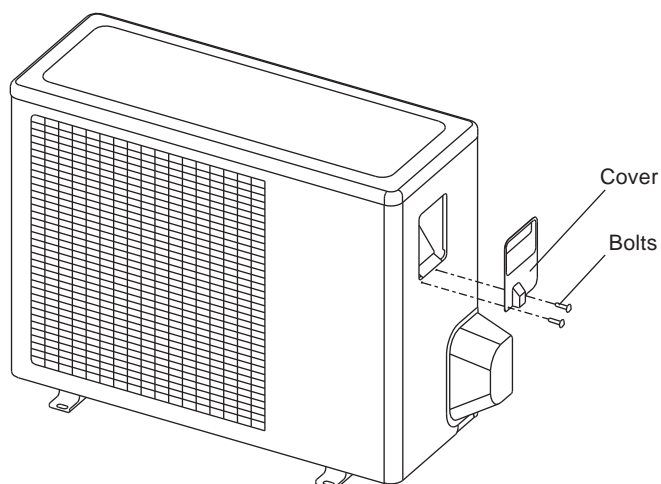
Precautions

- 1 Observe the notes mentioned below when wiring to the power supply terminal board.
 - Do not connect wires of different gauge to the same power supply terminal. (Looseness in the connection may cause overheating.)
 - When connecting wires of the same gauge, connect them according to the figure.



Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal. (Tightening torque: $1.31\text{N.m} \pm 10\%$).

- When attaching the control box lid, make sure not to pinch any wires.
 - After all wiring connections are done, fill in any gaps in the casing wiring holes with putty or insulation material (field supply) thus to prevent small animals or dirt from entering the unit from outside and causing short circuits in the control box.
- 2 Do not connect wires of different gauge to the same grounding terminal. Looseness in the connection may deteriorate the protection.
 - 3 Use only specified wires and tightly connect wires to the terminals. Be careful that wires do not place external stress on the terminals. Keep wiring in neat order so that they do not obstruct other equipment such as popping open the service cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in the worst case, electric shock or fire.

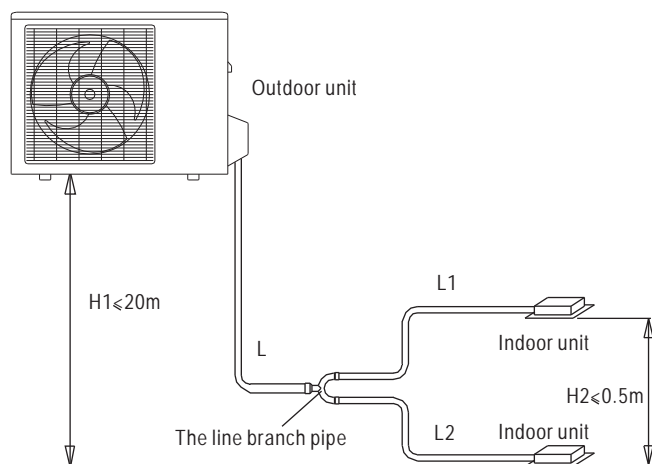


6. REFRIGERANT PIPE (the unit with the twins function)

6.1 Length and drop height permitted of the refrigerant piping

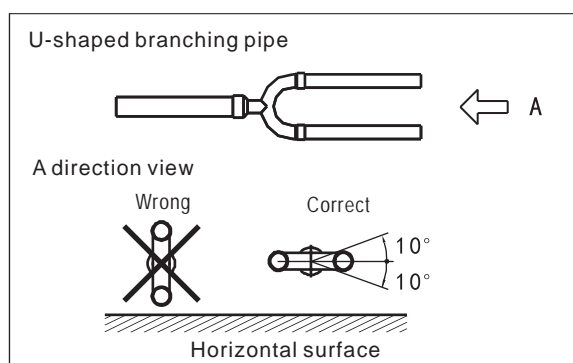
Note: Reduced length of the branching tube is the 0.5m of the equivalent length of the pipe.

Pipe length	Total pipe length (Actual)	Max value		Piping
		18K+18K	30m	
Drop height	(farthest from the line pipe branch)	24K+24K/ 30K+30K	50m	L+L1+L2
	(farthest from the line pipe branch)	15m		L1:L2
	(farthest from the line pipe branch)	10m		L1-L2
Drop height	Indoor unit-outdoor unit drop height	20m		H1
	Indoor unit to indoor unit drop height	0.5m		H2



Note The indoor units should be installed equivalently at the both side of the U type branch pipe.

The branching pipe must be installed horizontally, error angle of it should not large than 10°. Otherwise, malfunction will be caused.



6.2 Size of joint pipes for indoor unit

Size of joint pipes for indoor unit

Capacity of indoor unit (Btu/h)	Size of main pipe(mm)		
	Gas side	Liquid side	Available branching pipe
18K	Ø12.7 (1/2)	Ø6.35 (1/4)	FQZHN-01D
24K	Ø15.9 (5/8)	Ø9.5 (3/8)	FQZHN-01D
30K	Ø15.9 (5/8)	Ø9.5 (3/8)	FQZHN-01D

6.3 Size of joint pipes for outdoor unit

Base on the following tables, select the diameters of the outdoor unit connective pipes. In case of the main accessory pipe large than the main pipe, take the large one for the selection.

Size of joint pipes for outdoor unit

Model (Btu/h)	Size of main pipe(mm)		
	Gas side	Liquid side	The 1st branching pipe
36K	Ø15.9 (5/8)	Ø9.5 (3/8)	FQZHN-01D
48K	Ø15.9 (5/8)	Ø9.5 (3/8)	FQZHN-01D
55K	Ø15.9 (5/8)	Ø9.5 (3/8)	FQZHN-01D

6.4 Refrigerant amount to be added

Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor/indoor unit connection. The refrigerant is R410A.

(Refer to pag. 20)

7. TEST OPERATION

Make sure the control box lids are closed on the indoor and outdoor units.

Refer to "For the following items, take special care during construction and check after installation is finished" on page 4.

After finishing the construction of refrigerant piping, drain piping, and electric wiring, conduct test operation accordingly to protect the unit.

- 1 Open the gas side stop valve.
- 2 Open the liquid side stop valve.
- 3 Electrify crank case heater for 6 hours.
- 4 Set to cooling operation with the remote controller and start operation by pushing ON/OFF button.
- 5 Check the following points. If there is any malfunction, please resolve it according to the chapter "Troubleshooting" in the "Owner's Manual".
 - The indoor unit
 - Whether the switch on the remote controller works well.
 - Whether the buttons on the remote controller works well.
 - Whether the air flow louver moves normally.
 - Whether the room temperature is adjusted well.
 - Whether the indicator lights normally.
 - Whether the temporary buttons works well.
 - Whether there is vibration or abnormal noise during operation.
 - Whether the drainage flows smoothly.
 - The outdoor unit
 - Whether there is vibration or abnormal noise during operation.
 - Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
 - Whether the refrigerant is leaking.

- 6 Turn off the main power supply after operation.



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

USER'S MANUAL

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

INVERTER SPLIT-TYPE ROOM AIR CONDITIONER

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

Read This Manual:

Inside you will find many helpful hints on how to use and maintain your air conditioner properly.

Just a little preventative care on your part can save you a great deal of time and money over the life of your air conditioner.

You'll find many answers to common problems in the chart of troubleshooting tips. If you review the chart of Troubleshooting Tips first, you may not need to call for service.

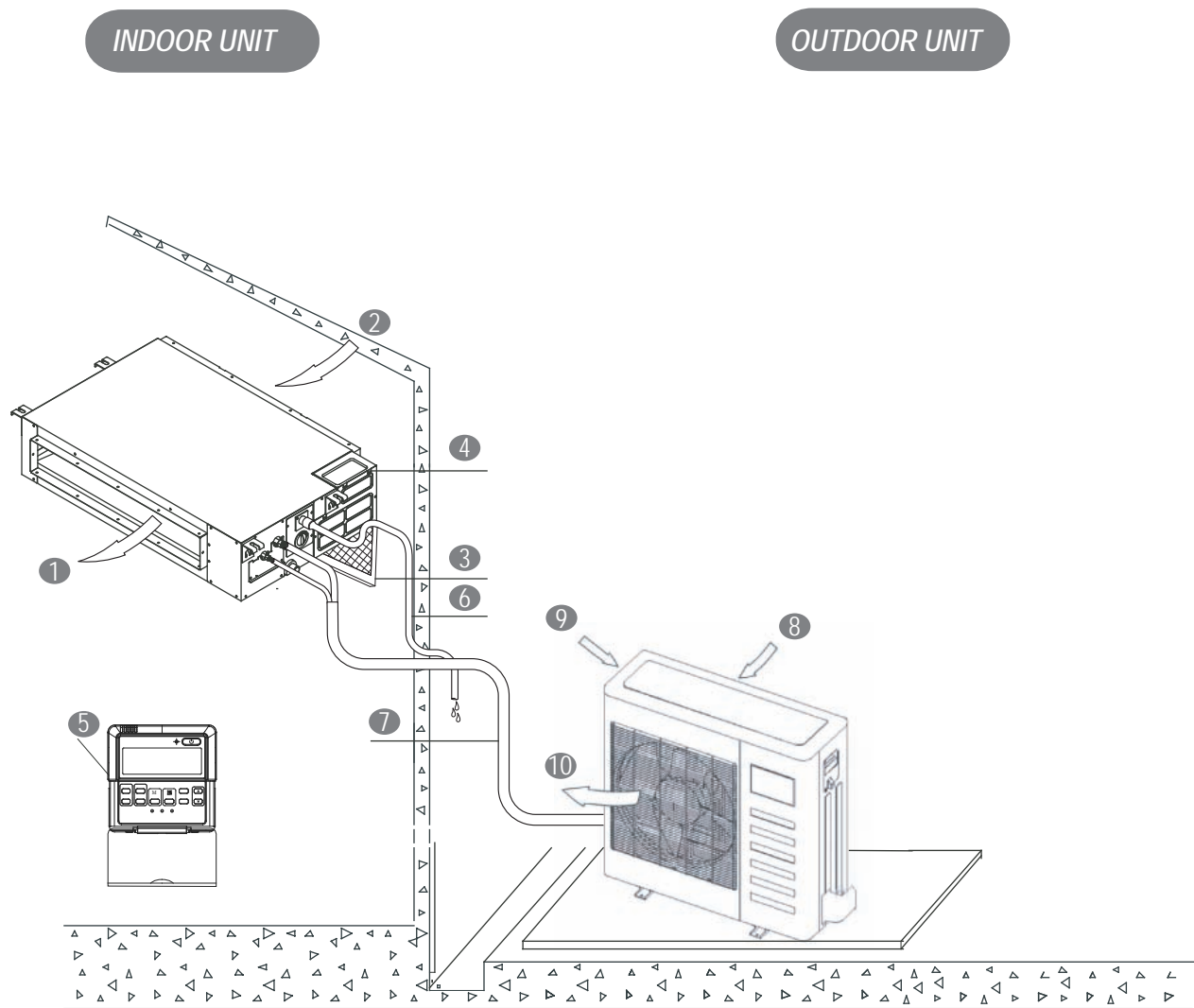


Fig.1

INDOOR UNIT

- ① Air outlet
- ② Air inlet
- ③ Air filter (on some models)
- ④ Electric control cabinet
- ⑤ Wire controller
- ⑥ Drain pipe

OUTDOOR UNIT

- ⑦ Connecting pipe
- ⑧ Air inlet
- ⑨ Air inlet (side and rear)
- ⑩ Air outlet

**NOTE**

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

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FOLLOWING SYMPTOMS ARE NOT AIR CONDITIONER TROUBLES.....	33
TROUBLESHOOTING.....	34

1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.



WARNING

The appliance shall be installed in accordance with national wiring regulations. Failure to observe a warning may result in death.



CAUTION

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



WARNING

Ask your dealer for installation of the air conditioner.

Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.

Ask your dealer for improvement, repair, and maintenance.

Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.

In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.

Never let the indoor unit or the remote controller get wet.
It may cause an electric shock or a fire.

Never press the button of the remote controller with a hard, pointed object.
The remote controller may be damaged.

Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.
Use of wire or copper wire may cause the unit to break down or cause a fire.

It is not good for your health to expose your body to the air flow for a long time.

Do not insert fingers, rods or other objects into the air inlet or outlet.
When the fan is rotating at high speed, it will cause injury.

Never use a flammable spray such as hair spray, lacquer or paint near the unit.
It may cause a fire.

Never touch the air outlet or the horizontal blades while the swing flap is in operation.
Fingers may become caught or the unit may break down.

Never put any objects into the air inlet or outlet.
Objects touching the fan at high speed can be dangerous.

Never inspect or service the unit by yourself.
Ask a qualified service person to perform this work.

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.
Contact your local government for information regarding the connection systems available.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the ground and get into the food chain, damaging your health and well-being

To prevent refrigerant leak, contact your dealer.
When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.

The refrigerant in the air conditioner is safe and normally does not leak.
If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.

Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.
Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.



CAUTION

Do not use the air conditioner for other purposes.
In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.

Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.
Otherwise, an electric shock and injury may result.

In order to avoid electric shock or fire, make sure that an earth leak detector is installed.

Be sure the air conditioner is grounded.
In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.

In order to avoid injury, do not remove the fan guard of the outdoor unit.

Do not operate the air conditioner with a wet hand.
An electric shock may happen.

Do not touch the heat exchanger fins.
These fins are sharp and could result in cutting injuries.

Do not place items which might be damaged by moisture under the indoor unit.
Condensation may form if the humidity is above 80%, the drain outlet is blocked or the filter is polluted.

After a long use, check the unit stand and fitting for damage.
If damaged, the unit may fall and result in injury.

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.

Arrange the drain hose to ensure smooth drainage.
Incomplete drainage may cause wetting of the building, furniture etc.

Never touch the internal parts of the controller.
Do not remove the front panel. Some parts inside are dangerous to touch, and a machine trouble may happen.

Never expose little children, plants or animals directly to the air flow.
Adverse influence to little children, animals and plants may result.

Do not allow a child to mount on the outdoor unit or avoid placing any object on it.
Falling or tumbling may result in injury.

Do not operate the air conditioner when using a room fumigation - type insecticide.
Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.

Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.
It may cause incomplete combustion or deformation of the unit due to the heat.

Do not install the air conditioner at any place where flammable gas may leak out.
If the gas leaks out and stays around the air conditioner, a fire may break out.

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

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

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

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

2. PARTS NAMES

The air conditioner consists of the indoor unit, the outdoor unit, the connecting pipe and the remote controller.

(Refer to Fig.2-1)

Function indicators on indoor unit display panel

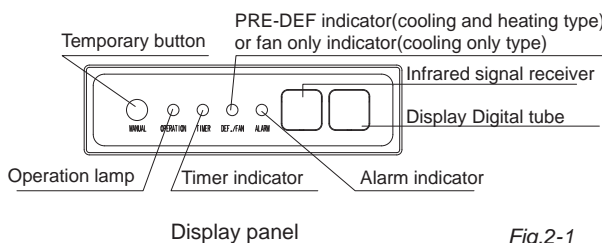


Fig.2-1

- 1 FORCED AUTO**
The OPERATION lamp is lit, and the air conditioner will run under FORCED AUTO mode. The remote controller operation is enabled to operate according to the received signal.
- 2 FORCED COOL**
The OPERATION lamp flashes, the air conditioner will turn to FORCED AUTO after it is enforced to cool with a wind speed of HIGH for 30 minutes. The remote controller operation is disabled.
- 3 OFF**
The OPERATION lamp goes off. The air conditioner is OFF while the remote controller operation is enabled.

3. AIR CONDITIONER OPERATIONS AND PERFORMANCE

Use the system in the following temperature for safe and effective operation. The Max operation temperature for the air conditioner. (Cooling/Heating)

Table 2-1

Temperature Mode	Outdoor temperature	Room temperature
Cooling operation	-15°C ~ 50°C / 5 °F ~ 122°F	17°C ~ 32°C (62°F ~ 90°F)
Heating operation	-15°C ~ 24°C / 5 °F ~ 76°F	0°C ~ 30°C (32°F ~ 86°F)
Dry operation	0°C ~ 50°C / 32 °F ~ 122°F	17°C ~ 32°C (62°F ~ 90°F)



NOTE

- 1 If air conditioner is used outside the above conditions, it may cause the unit to function abnormally.
- 2 The phenomenon is normal that the surface of air conditioning may condense water when the relative larger humidity in room, please close the door and window.
- 3 Optimum performance will be achieved within these operating temperature range.

Three-minute protection feature

A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it restarts immediately after operation.

Power failure

Power failure during operation will stop the unit completely.

- The OPERATION lamp on the indoor unit will start flashing when power is restored.
- To restart operation, push the ON/OFF button on the remote controller.

4. HINTS FOR ECONOMICAL OPERATION

The following should be noticed to ensure an economical operation. (Refer to corresponding chapter for details)

- Adjust the air flow direction properly to avoid winding toward your body.
- Adjust the room temperature properly to get a comfortable situation and to avoid supercooling and superheat.
- In cooling, close the curtains to avoid direct sunlight.
- To keep cool or warm air in the room, never open doors or windows more often than necessary.
- Set the timer for the desired operating time.
- Never put obstructions near the air outlet or the air inlet. Or it will cause lower efficiency, even a sudden stop.
- Adjust the air flow direction properly to avoid winding toward your body.
- Adjust the room temperature properly to get a comfortable situation and to avoid supercooling and superheat.
- In cooling, close the curtains to avoid direct sunlight.
- To keep cool or warm air in the room, never open doors or windows more often than necessary.
- If you don't plan to use the unit for a long time, please disconnect power and remove the batteries from the remote controller. When the power switch is connected, some energy will be consumed, even if the air conditioner isn't in operation. So please disconnect the power to save energy. And please switch the power on 12 hours before you restart the unit to ensure a smooth operation.
- A clogged air filter will reduce cooling or heating efficiency, please clean it once two weeks.

5. MAINTENANCE



CAUTION

Before you clean the air conditioner, be sure the power supply is off.

Check if the wiring is not broken off or disconnected.

Use a dry cloth to wipe the indoor unit and remote controller.

A wet cloth may be used to clean the indoor unit if it is very dirty.

Never use a damp cloth on the remote controller.

Do not use a chemically-treated duster for wiping or leave such material on the unit for long. it may damage or fade the surface of the unit.

Do not use benzene, thinner, polishing powder, or similar solvents for cleaning. These may cause the plastic surface to crack or deform.

■ Maintenance after a long stop period

(eg. at the beginning of the season)

Check and remove everything that might be blocking inlet and outlet vents of indoor units and outdoor units.

Clean air filters and casings of indoor units.

Refer to "Cleaning the air filter" for details on how to proceed and make sure to install cleaned air filters back in the same position.

Check and remove everything that might be blocking inlet and outlet vents of indoor units and outdoor units.

Clean air filters and casings of indoor units.

Refer to "Cleaning the air filter" for details on how to proceed and make sure to install cleaned air filters back in the same position.

Turn on the power at least 12 hours before operating the unit in order to ensure smoother operation. As soon as the power is turned on, the remote controller displays appear.

■ Maintenance before a long stop period

(eg. at the end of the season)

Let the indoor units run in fan only operation for about half a day in order to dry the interior of the units.

Clean air filters and casings of indoor units. Refer to "Cleaning the air filter" for details on how to proceed and make sure to install cleaned air filters back in the same position.

■ Cleaning the air filter(on some models)

The air filter can prevent the dust or other particulate from going inside. In case of blockage of the filter, the working efficiency of the air conditioner may greatly decrease.

Therefore, the filter must be cleaned once two weeks during long time usage.

If the air conditioner is installed in a dust place, clean the air filter frequent.

If the accumulated dust is too heavy to be cleaned, please replace the filter with a new one(replaceable air filter is an optional fitting).

- For your purchasing unit is a rear ventilated one, please remove the filter fixed screws (2 screws) and take down the filter away from the unit.

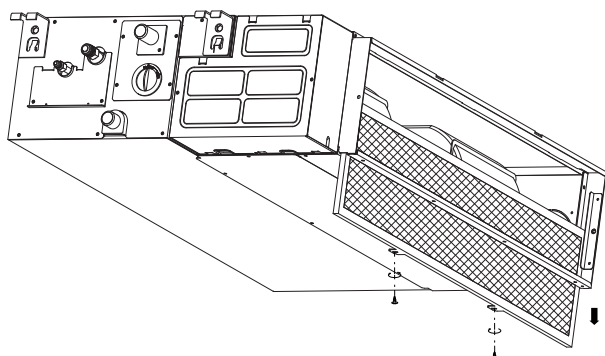


Fig.5-1

- For your purchasing unit is a descensional ventilated one, please push the filter up slightly to let the position retainer escape away from the flange fixed holes, and take off the filter according to the arrow direction shows in the following fig.

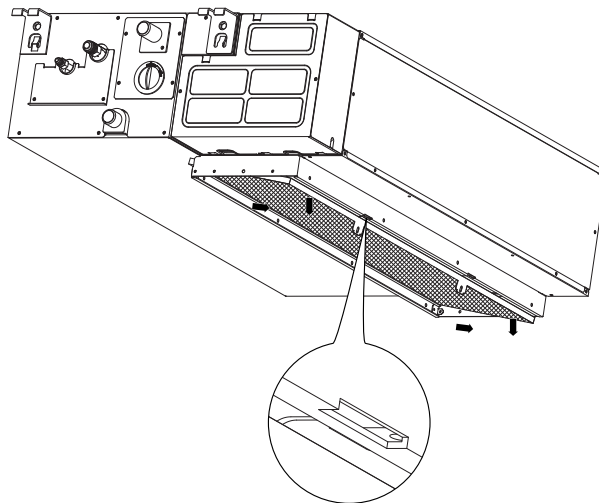


Fig.5-2

- Clean the air filter (Vacuum cleaner or pure water may be used to clean the air filter. If the dust accumulation is too heavy, please use soft brush and mild detergent to clean it and dry out in cool place).

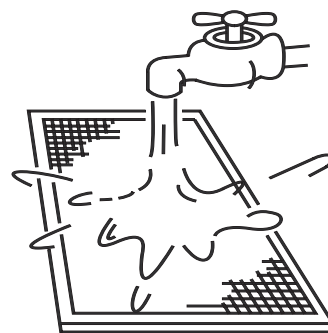


Fig.5-3

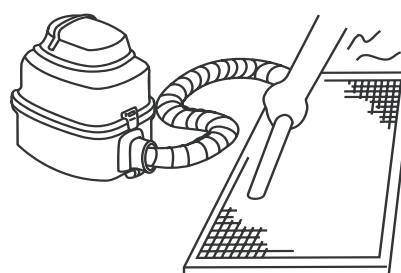


Fig.5-4

The air-in side should face up when using vacuum cleaner.
(Refer to Fig.5-4)
The air-in side should face down when using water. (Refer to Fig.5-3)



CAUTION

Do not dry out the air filter under direct sunshine or with fire.

5. Re-install the air filter
6. Install and close the air-in grill in the reverse order of step 1 and 2 and connect the control box cables to the corresponding terminators of the main body .

6. FOLLOWING SYMPTOMS ARE NOT AIR CONDITIONER TROUBLES

Symptom 1: The system does not operate

- The air conditioner does not start immediately after the ON/OFF button on the remote controller is pressed.
If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 3 minutes after it is turned ON.
- If the operation lamp and the "PRE-DEF indicator(cooling and heating type) or fan only indicator(cooling only type)" light, it means you choose the heating model, When just starting, if the compressor has not started, the indoor unit appears "anti cold wind" protection because of its overflow outlet temperature.

Symptom 2: Change into the fan mode during cooling mode

- In order to prevent the indoor evaporator frosting, the system will change into fan mode automatically, restore to the cooling mode after soon.
- When the room temperature drops to the set temperature, the compressor goes off and the indoor unit changes to fan mode; when the temperature rises up, the compressor starts again. It is same in the heating mode.

Symptom 3: White mist comes out of a unit

Symptom 3.1: Indoor unit

- When humidity is high during cooling operation If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your dealer for details on cleaning the unit. This operation requires a qualified service person

Symptom 3.2: Indoor unit, outdoor unit

- When the system is changed over to heating operation after defrost operation Moisture generated by defrost becomes steam and is exhausted.

Sptom 4: Noise of air conditionerscooling

Symptom 4.1: Indoor unit

- A continuous low "shah" sound is heard when the system is in cooling operation or at a stop.
When the drain pump (optional accessories) is in operation, this noise is heard.
- A "pishi-pishi" squeaking sound is heard when the system stops after heating operation.
Expansion and contraction of plastic parts caused by temperature change make this noise.

Symptom 4.2: Indoor unit, outdoor unit

- A continuous low hissing sound is heard when the system is in operation.
This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- A hissing sound which is heard at the start or immediately after stopping operation or defrost operation.
This is the noise of refrigerant caused by flow stop or flow change.

Symptom 4.3: Outdoor unit

- When the tone of operating noise changes.
This noise is caused by the change of frequency.

Symptom 5: Dust comes out of the unit

- When the unit is used for the first time in a long time.
This is because dust has gotten into the unit.

Symptom 6: The units can give off odours

- The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

Symptom 7: The outdoor unit fan does not spin.

- During operation. The speed of the fan is controlled in order to optimize product operation.

7. TROUBLESHOOTING

7.1. Troubles and causes of air conditioner

If one of the following malfunctions occur, stop operation, shut off the power, and contact with your dealer.

- The operation lamp is flashing rapidly (5Hz). This lamp is still flashing rapidly after turn off the power and turn on again. (Refer to Table 7-1, Table 7-2 and Table 7-3)
- Remote controller receives malfunction or the button does not work well.
- A safety device such as a fuse, a breaker frequently actuates.
- Obstacles and water enter the unit.
- Water leaks from indoor unit.
- Other malfunctions.

If the system does not properly operate except the above mentioned cases or the above mentioned malfunctions is evident, investigate the system according to the following procedures. (Refer to Table 7-4)



CAUTION

Please cut off the power supply when appearing the above malfunction, check if the voltage provided is out of range, check if the installation of air-conditioner is correct, then electrify again after 3 minutes power off. If the problem is still existent, please contact the local service station or the equipment provider.

Table 7-1 Indoor unit error codes

NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Indoor fan speed has been out of control			⊙	⊙	E8
2	Communication malfunction between indoor and outdoor units		⊙			E1
3	Open or short circuit of T1 temperature sensor (Room sensor)	⊙				E2
4	Open or short circuit of T2 temperature sensor (Middle pipe sensor)	⊙				E3
5	Open or short circuit of T2B temperature sensor (Outer pipe sensor)	⊙				E4
6	Indoor EEPROM malfunction			⊙		E7
7	Refrigerant leakage detection	○		⊙	⊙	EC
8	Water-level alarm malfunction				⊙	EE
9	Outdoor unit malfunction				○	Ed
10	Communication malfunction between master unit and slave unit (only in Twin function)		⊙		⊙	F3
11	Other malfunction of master unit or slave unit (only in Twin function)	⊙			⊙	F4
<div> Light Fast flashing Slow flashing </div>						

Table 7-2 Outdoor unit error codes (18 to 55K)

Display	Malfunction or Protection
E0	Outdoor EEPROM malfunction
E2	Communication malfunction between indoor and outdoor units.
E3	Communication malfunction between IPM board and outdoor main board
E4	Open or short circuit of outdoor temperature sensor T3 or T4
E5	Voltage protection of compressor
E8	Outdoor fan speed has been out of control
P0	Top temperature protection of compressor
P1	High pressure protection (For 36k models)
P2	Low pressure protection(For 36k models)
P3	Current protection of compressor
P4	Discharge temperature protection of compressor
P5	High temperature protection of condenser
P6	IPM module protection
P7	High temperature protection of evaporator

In low ambient cooling mode, the LED displays "LC" or alternative displays between running frequency and "LC" (each displays 0.5s)

Table 7-3

Symptoms	Causes	Solution
Unit does not start	<ul style="list-style-type: none"> Power failure. Power switch is off. Fuse of power switch may have burned. Batteries of remote controller exhausted or other problem of controller. 	<ul style="list-style-type: none"> Wait for the comeback of power. Switch on the power. ReplLocation: Replace the batterises or check the controller.
Air flowing normally but completely can't cooling	<ul style="list-style-type: none"> Temperature is not set correctly. Be in 3 minutes protection of compressor. 	<ul style="list-style-type: none"> Set the temperature properly. Wait.
Units start or stop frequently	<ul style="list-style-type: none"> Refrigerant is too little or too much. Air or no concretingc gas in the refrigerating circuit. Compressor is malfunction. Voltage is too high or too low. System circuit is blocked. 	<ul style="list-style-type: none"> Check leakage, and rightly recharge refrigerant. Vacuum and recharge refrigerant. Maintenance or change compressor. Install manostat. Find reasons and solution.
Low cooling effect	<ul style="list-style-type: none"> Outdoor unit and indoor unit heat exchanger is dirty. The air filter is dirty. Inlet/outlet of indoor/outdoor units is blocked. Doors and windows are open Sunlight directly shine. Too much heat resource. Outdoor temp. is too high. Leakage of refrigerant or lack of refrigerant. 	<ul style="list-style-type: none"> Clean the heat exchanger. Clean the air filter. Eliminate all dirties and make air smooth. Close doors and windows. Make curtains in order to shelter from sunshine. Reduce heat source. AC cooling capacity reduces (normal). Check leakage and rightly recharge refrigerant.
Low heating effect	<ul style="list-style-type: none"> Outdoor temperature is lower than 7°C Doors and windows not completely closed. Leakage of refrigerant or lack of refrigerant. 	<ul style="list-style-type: none"> Use heating device. Close doors and windows. Check leakage and rightly recharge refrigerant.

7.2. Troubles and causes of wire controller

Before asking for serving or repairing , check the following points. (Refer to Table 7-4)

Table 7-4

Symptoms	Solution	Causes
The fan speed can not be changed.	<ul style="list-style-type: none"> ● Check whether the MODE indicated on the display is "AUTO" 	When the automatic mode is selected, the air conditioner will automatically change the fan speed.
	<ul style="list-style-type: none"> ● Check whether the MODE indicated on the display is "DRY" 	When dry operation is selected, the air conditioner automatically change the fan speed. The fan speed can be selected during "COOL" , "FAN ONLY" , and "HEAT"
The wire controller signal is not transmitted even when the ON/OFF button is pushed.	<ul style="list-style-type: none"> ● Check whether the signal transmitter of the wire controller is properly directed to the infrared signal receiver of the indoor unit. 	The power supply is off.
The TEMP. indicator does not come on.	<ul style="list-style-type: none"> ● Check whether the MODE indicated on the display is FAN ONLY 	The temperature cannot be set during FAN mode.
The indication on the display disappears after a lapse of time.	<ul style="list-style-type: none"> ● Check whether the timer operation has come to an end when the TIMER OFF is indicated on the display. 	The air conditioner operation will stop up to the set time
The TIMER ON indicator goes off after a lapse of certain time.	<ul style="list-style-type: none"> ● Check whether the timer operation is started when the TIMER ON is indicated on the display. 	Up to the set time, the air conditioner will automatically start and the appropriate indicator will go off.
No receiving tone sounds from the indoor unit even when the ON/OFF button is pressed.	<ul style="list-style-type: none"> ● Check whether the signal transmitter of the wire controller is properly directed to the infrared signal receiver of the indoor unit when the ON/OFF button is pressed. 	Directly transmit the signal transmitter of the wire controller to the infrared signal receiver of the indoor unit, and then repeatedly push the ON/OFF button twice.



WIRED CONTROLLER

Please read this Owner's Manual carefully before operation.
Save this manual in a safe place for future reference.



Safety precautions

The following contents are stated on the product and the operation manual, including usage, precautions against personal harm and property loss, and the methods of using the product correctly and safely. After fully understanding the following contents (identifiers and icons), read the text body and observe the following rules.


■ Identifier description


Identifier	Meaning
 Warning	Means improper handling may lead to personal death or severe injury.
 Caution	Means improper handling may lead to personal injury or property loss.
<p>[Note]: 1. "Harm" means injury, burn and electric shock which need long-term treatment but need no hospitalization</p> <p>2. "Property loss" means loss of properties and materials.</p>	

■ Icon description

Icon	Meaning
	It indicates forbidding. The forbidden subject-matter is indicated in the icon or by images or characters aside.
	It indicates compulsory implementation. The compulsory subject-matter is indicated in the icon or by images or characters aside.

Warning

 Warning	Delegate installation	Please entrust the distributor or professionals to install the unit. The installers must have the relevant know-how. Improper installation performed by the user without permission may cause fire, electric shock, personal injury or water leakage.
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 Usage Warning	Forbid	Do not spray flammable aerosol to the wire controller directly. Otherwise, fire may occur.
	Forbid	Do not operate with wet hands or let water enter the wire controller. Otherwise, electric shock may occur.

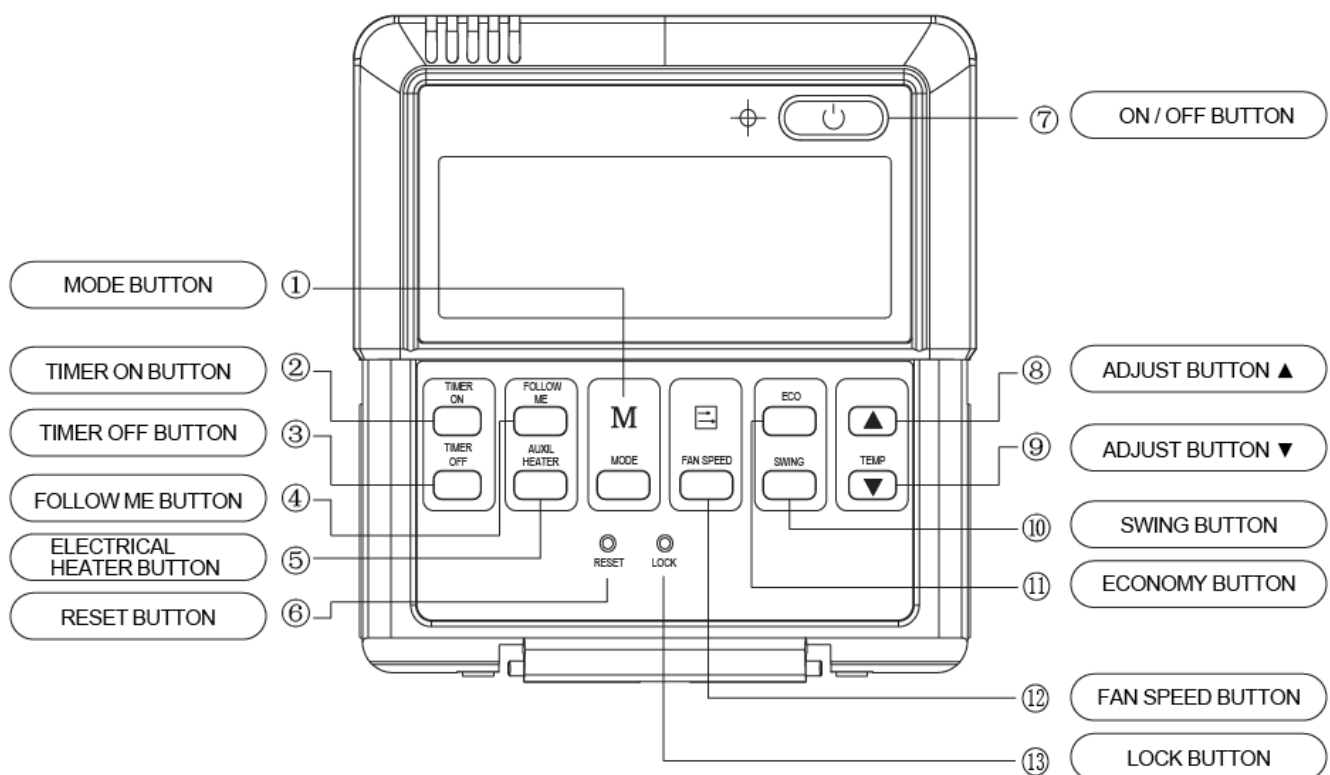
Wired Remote Controller KJR-12B



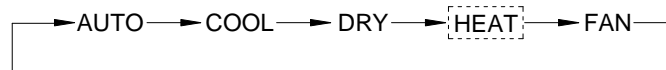
Usage condition:

1. Power supply: 5V DC.
2. Operation temperature: -15℃~+43℃.
3. Operation humidity: 40%-90%, RH.

Name and functions of buttons on the wire controller

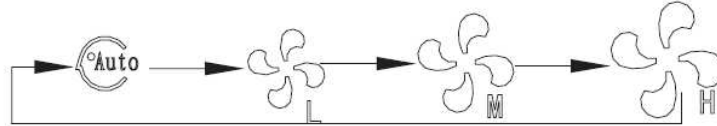


1. Mode button: When press this button, the operation mode change as the following sequence:



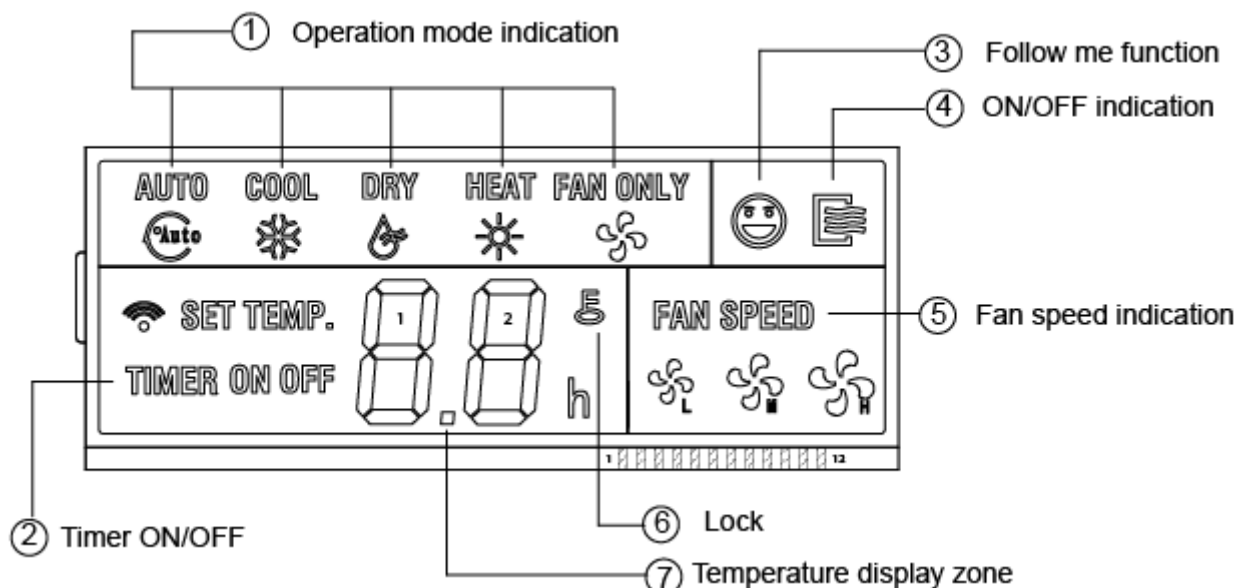
2. Timer on button: Press this button, timer on function is active. Then every press, the time increase 0.5h, after 10h, 1h increasement after each press. If cancel this Function, just set it to "0.0"
3. Timer off button: Press this button, timer off function is active. Then every press, the time increase 0.5h, after 10h, 1h increasement after each press. If cancel this function, just set it to "0.0" .
4. Follow me button: When under cool, heat and auto mode, press this button, follow me function is active. Press again, this function is ineffective.
5. Electrical heater button: If press this button in heat mode, electrical heater function become ineffective.
6. Reset button (hidden): Use a 1mm stick to press in the little hole , then the current setting is canceled . The wire controllers enter into original state.
7. ON/OFF button: When in off state, press this button, the indicator is on, the wire controller enter into on state, and send setting information to indoor PCB. When in on state, press this button, the indicator is off, and send instruction. If timer on or timer off has been set, it cancel this setting then send instruction to stop the machine.
8. Adjust button: Set indoor temperature up. If press and hold on, it will increase at 1degree per 0.5 second.

9. Adjust button: Set indoor temperature down. if press and hold on, it will decrease at 1degree per 0.5 Second.
10. Swing button: First press, start swing function; second press, stop swing. (Match to some model with swing function).
11. Economy operation button: press this button, the indoor unit operates in economy mode, press again, exit this mode (it may be ineffective for some models)
12. Fan speed button: press this button consecutively; the fan speed will circle as follow:



13. Lock button (hidden): When you push the LOCK button, all current settings are locked in and the wire controller does not accept any operation except that of the LOCK button. Use the lock mode when you want to prevent setting from being changed accidentally or play fully. Push the LOCK button again when you want to cancel the LOCK mode.

Name and function of LCD on the wire controller



1. Operation mode indication: When press" MODE" button, the following mode can be selected in circle. Auto Cool Dry Heat Fan only Auto.
Auto→ Cool→ Dry →Heat→ Fan only →Auto
For cooling only model, heat mode is skipped.
2. Timer: When adjust setting on time or only on time is set, the "ON" is lighted. When adjust setting off time or only off time is set, the" OFF" is lighted. If on and off timer are both set, the "ON" and "OFF" are both lighted.
3. Follow me function: There is a temperature sensor inside the wire controller, after setting temperature, it will compare the two temperatures, and the space of wire controller will be the same as setting temperature. It is available under cooling, heating, auto mode.
4. ON/OFF indication: When it is on, the icon display, otherwise it is extinguished.
5. Fan speed indication: There are four fan modes: low, middle, high, auto. For some models, no middle fan then the middle fan is seen as high speed.
6. Lock: When the "LOCK" button is pressed, the icon appears and other buttons is unable, press again, the icon disappears.
7. Temperature display zone: Generally it displays setting temperature; it can be adjusted by press temperature button▲and▼ .But in fan mode, no display here.

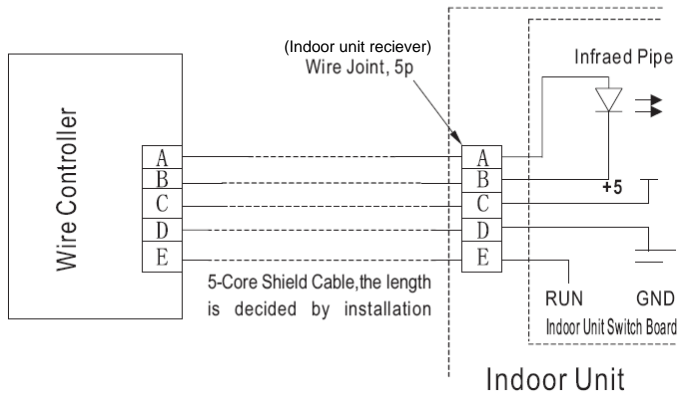
Remark:

The wired controller will reset to factory setting with auto mode, auto fan and 24°C setting temperature when the air conditioner restarts after power failure.

And this may cause inconsistent displays on the wired controller and on the air conditioner. You need to readjust the running status through the wired controller.

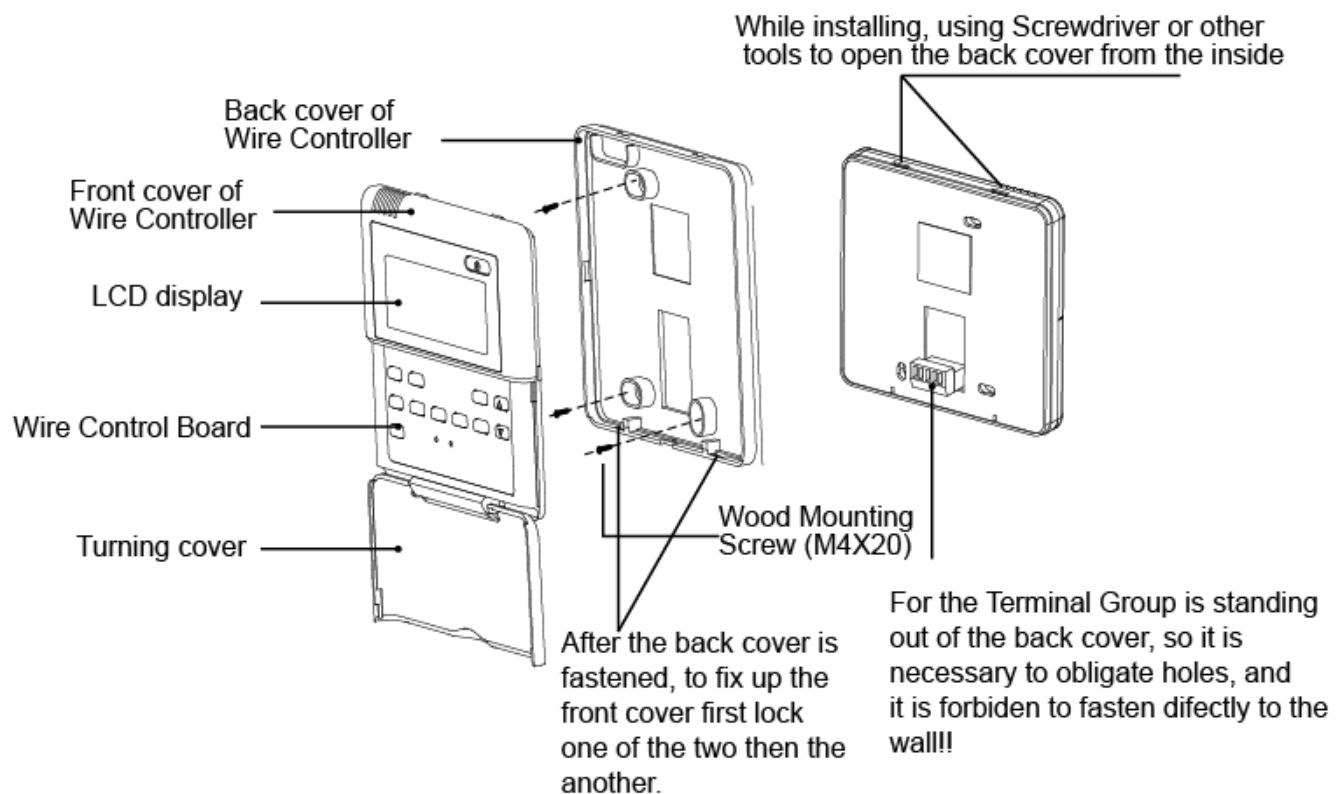
Installation

Wiring Principle Sketch:



Installation Notice:

When the air conditioner needs the constant frequency wire controller, be sure adding a wire joint with 5 terminal named A, B, C, D, E in indoor unit, and fixing an infrared emitter whose anode and cathode connecting with A and B near the receiver in the indoor unit switch board, then connecting the terminal +5v, GND, Run in the switch board to C,D,E respectively.



NOTE

- The connecting wire should be a little longer as to take away the switch board easily for maintenance.
- The connecting wire should be a little longer as to take away the controller easily for maintenance.



www.mundoclima.com

ASK FOR MORE INFORMATION

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TECHNICAL ASSISTANCE

Phone: (+34) 93 652 53 57