

EMI  *Ductless*

Comfort Where It Counts.

ENVIROair

MZI Series

~16 SEER Inverter Multi-Zone Ductless Split Systems

Air Handler (Indoor) Models - MWAH
Condenser (Outdoor) Models - MHA

Installation, Operation and Maintenance Manual



An ISO 9001-2008 Certified Company

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Read This Manual



Inside you will find many helpful hints on how to install and test the air conditioner properly.
All the illustrations and specifications in the manual are subject to change without prior notice for product improvement. The actual shape should prevail.

CAUTION


- Contact an authorised service technician for repair or maintenance of this unit.
- Contact an authorised installer for installation of this unit.
- The air conditioner is not intended for use by young children or infirmed persons without supervision.
- Young children should be supervised to ensure that they do not play with the air conditioner.
- If the power cord is to be replaced, replacement work shall be performed by authorised personnel only.
- Installation work must be performed in accordance with the national wiring Standards by authorised personnel only.






SAFETY PRECAUTIONS

- Read the follow SAFETY PRECAUTIONS carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- Incorrect installation due to ignoring of the instruction will cause harm or damage.
 - **The seriousness is classified by the following indications.**

 WARNING	This symbol indicates the possibility of death or serious injury.
 CAUTION	This symbol indicates the possibility of injury or damage to property.

- **The items to be followed are classified by the symbols:**

	Symbol with background white denotes item that is PROHIBITED from doing.
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 WARNING	
1) Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock fire.	
2) Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock fire.	
3) Use the attached accessories parts and specified parts for installation. otherwise, it will cause the set to fall, water leakage, electrical shock fire.	
4) 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 and cause injury.	
5) For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock fire.	
6) 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.	
7) 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.	
8) When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9) 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.	
 CAUTION	
1) This equipment must be earthed and installed with earth leakage current breaker. It may cause electrical shock if grounding is not perfect.	
2) Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.	
3) Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.	

1. Wall-mounted type

Selecting installation place

Read completely, then follow step by step.

Indoor unit

- Do not expose the indoor unit to heat or steam.
- Select a place where there are no obstacles in front or around the unit.
- Make sure that condensation drainage can be conveniently routed away.
- Do not install near a doorway.
- Ensure that the space on the left and right of the unit is more than 12cm.
- Use a stud finder to locate studs to prevent unnecessary damage to the wall.
- The indoor unit should be installed on the wall at a height of 2.0 metres or more from the floor.
- The indoor unit should be installed allowing a minimum clearance of 15cm from the ceiling.
- Any variations in pipe length will/may require adjustment to refrigerant charge.
- There should not be any direct sunlight. Otherwise, the sun will fade the plastic cabinet and affect its appearance. If unavoidable, sunlight prevention should be taken into consideration.

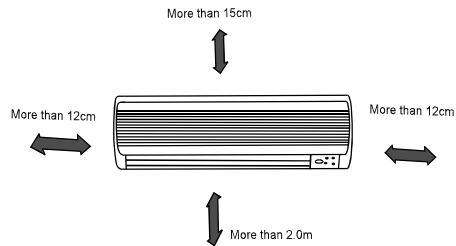


Fig.1

Outdoor unit

- If an awning is built over the outdoor unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
- Ensure that the clearance around the back of the unit is more than 30cm and left side is more than 30cm. The front of the unit should have more than 200cm of clearance and the connection side (right side) should have more than 60cm of clearance.
- Do not place animals and plants in the path of the air inlet or outlet.
- Take the air conditioner weight into account and select a place where noise and vibration will not be an issue.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.

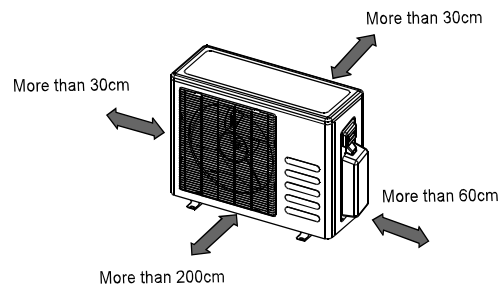


Fig.2

Rooftop installation:

- If the outdoor unit is installed on a roof structure, be sure to level the unit.
- Ensure the roof structure and anchoring method are adequate for the unit location.
- Consult local codes regarding rooftop mounting.
- If the outdoor unit is installed on roof structures or external walls, this may result in excessive noise and vibration, and may also be classed as a non serviceable installation.

INSTALLATION INSTRUCTIONS

Tools needed for installation:

Level gauge	Vacuum pump
Screwdriver	Gauge manifold
Electric drill, Hole core drill (ϕ 65mm)	Users manual
Flaring tool set	Thermometer
Specified torque wrenches: 1.8kgf.m, 4.2kgf.m, 5.5kgf.m, 6.6kgf.m(different depending on model No.)	Multimeter
Spanner (half union)	Pipe cutter
Hexagonal wrench (4mm)	Measuring tape
Gas-leak detector	

Accessories

Number	Name of Accessories			Q' ty/one unit
1	Installation Plate			1
2	Plastic Expansion Sheath			5-8 (depending on models)
3	Self-tapping Screw A ST3.9X25			5-8 (depending on models)
4	Connecting pipe Assembly	Liquid side	Φ 6.35	Parts you must purchase Consult the technician for the proper size.
		Gas side	Φ 9.53	
			Φ 12.7	
5	Remote controller			1
6	Self-tapping Screw B ST2.9X10		Optional parts	2
7	Remote controller holder			1
8	Seal (for cooling& heating models only)			1
9	Drain Joint (for cooling& heating models only)			1
10	Transfer connector(Packed with the indoor unit) (NOTE: Pipe size differ from appliance to appliance. To meet different pipe size requirement, sometimes the pipe connections need the transfer connector to install on the outdoor unit .)			1 (on some models)
11	Magnetic ring (Hitch it on the connective cable between indoor unit and outdoor unit after installation.)			Optional part (one piece/one cable)

Note: Except the above parts provided, the other parts needed during installation you must purchase.

INSTALLATION INSTRUCTIONS

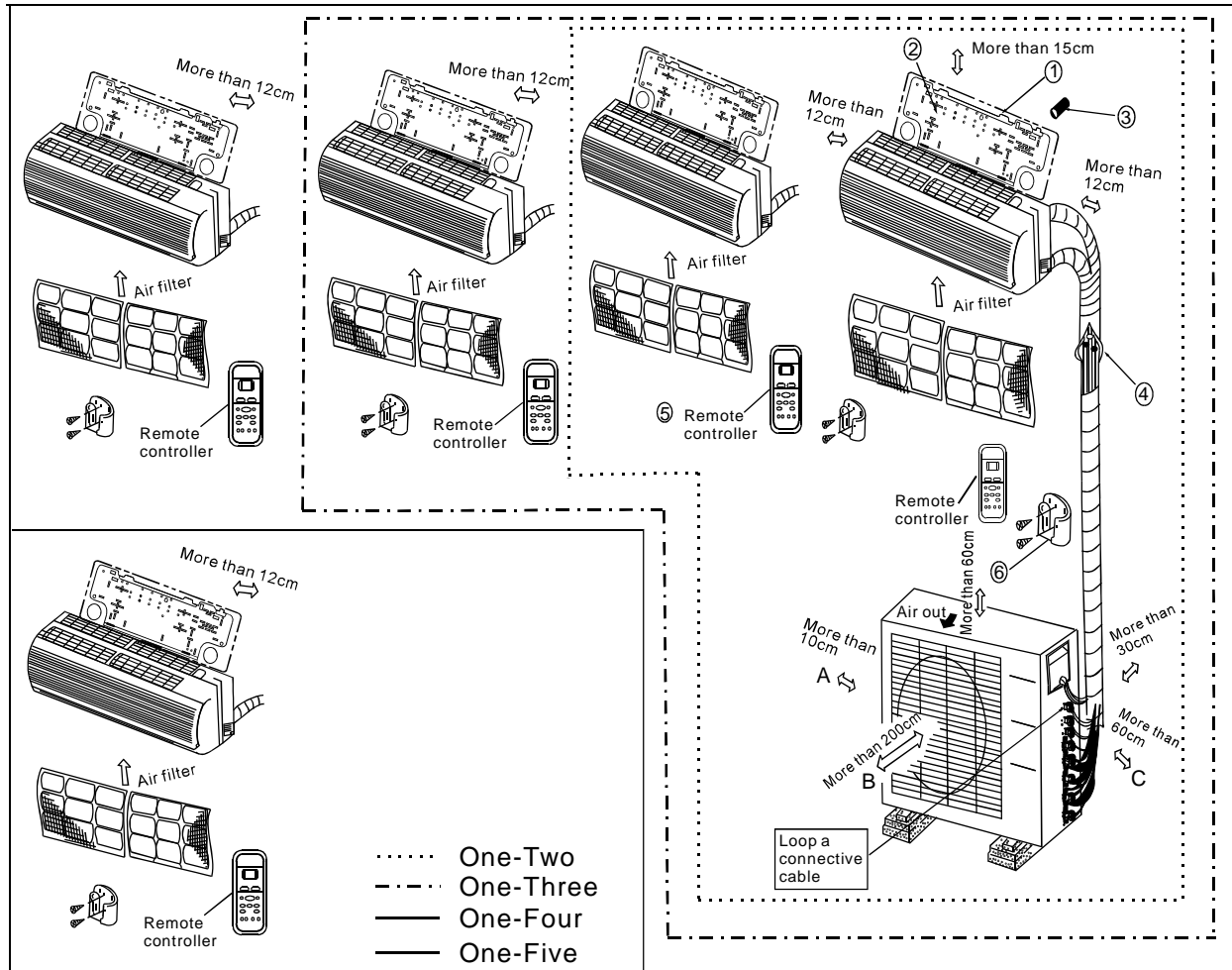


Fig.3



CAUTIONS

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

CAUTION

- Use a stud finder to locate studs to prevent unnecessary damage to the wall.
- A minimum pipe run of 3 metres is required to minimise vibration & excessive noise.
- Two of the A, B and C directions should be free from obstructions.

INSTALLATION INSTRUCTIONS

Indoor unit installation(wall-mounted type)

1. Fit the Installation Plate

1. Fit the installation plate horizontally on structural parts of the wall with spaces around the installation plate.
2. If the wall is made of brick, concrete or the like, drill five or eight 5mm diameter holes in the wall. Insert Clip anchor for appropriate mounting screws.
3. Fit the installation plate on the wall with five or eight type "A" screws.

Note:

Fit the Installation Plate and drill holes in the wall according to the wall structure and corresponding mounting points on the installation plate. The Installation Plate may be slightly different according to the different models of indoor unit.

(Dimensions are in "mm" unless otherwise stated)

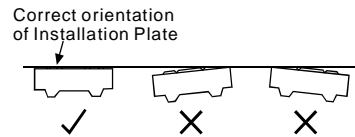


Fig.4

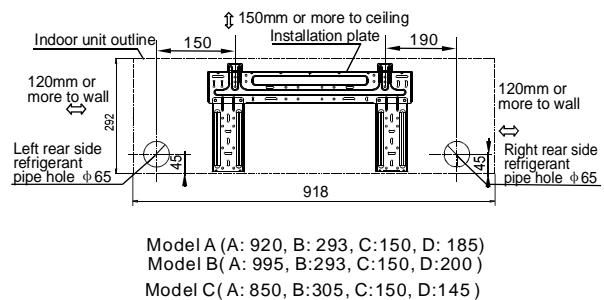
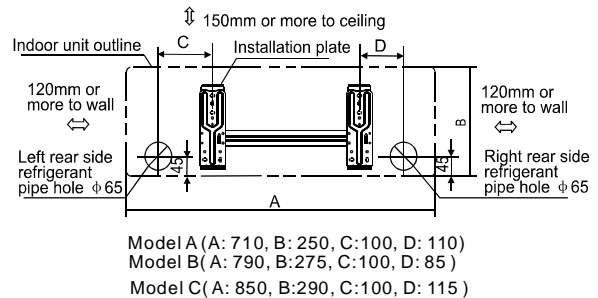
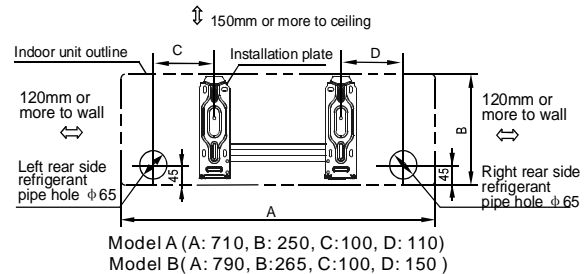


Fig.5

2. Drill a hole in the wall

1. Determine hole positions according to the diagram detailed in Fig.5. Drill one (1) hole ($\phi 65$ mm) slanting slightly to outdoor side.
2. Always use wall hole conduit when drilling metal grid, metal plate or the like.

3. Connective Pipe and Drainage Installation

Drainage

1. Run the drain hose sloping downward. Do not install the drain hose as illustrated in Fig.7.

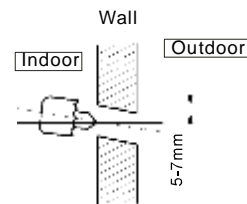


Fig.6

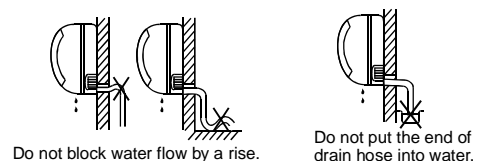


Fig.7

INSTALLATION INSTRUCTIONS

- When connecting extension drain hose, insulate the connecting part of extension drain hose with a shield pipe, do not let the drain hose slack.

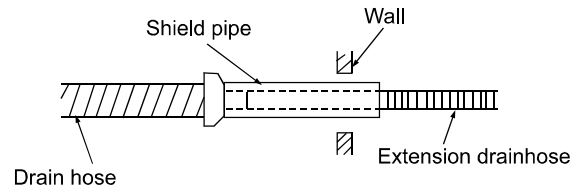


Fig.8

Connective pipe installation

- For the left-hand and right-hand piping, remove the pipe cover from the side panel.
- For the rear-right-hand and rear-left-hand piping, install the piping as shown in Fig.10.
- Fix the end of the connective pipe. (Refer to Tightening Connection in REFRIGERANT PIPING CONNECTION)

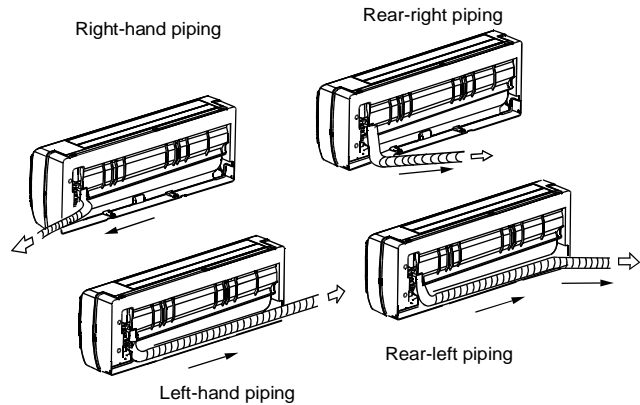


Fig.9

Fig.10

4. Piping and wrapping

Bundle the tubing, connecting cable, and drain hose with tape securely, evenly as shown in Fig.11.

- Because the condensed water from rear of the indoor unit is gathered in ponding box and is piped out of room. Do not put anything else in the box.

CAUTION

- Connect the indoor unit first, then the outdoor unit.
- Do not allow the piping to let out from the back of the indoor unit.
- Be careful not to let the drain hose slack.
- Heat insulated both of the auxiliary piping.
- Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.
- Never intercross nor intertwist the power wire with any other wiring.
- Run the drain hose sloped downward to drain out the condensed water smoothly.

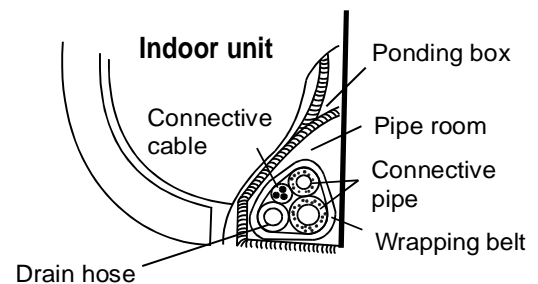


Fig.11

INSTALLATION INSTRUCTIONS

4. Indoor unit installation

1. Pass the piping through the hole in the wall.
2. Put the upper claw at the back of the indoor unit on the upper hook of the installation plate, move the indoor unit from side to side to see that it is securely hooked (see Fig.12).
3. Piping can easily be made by lifting the indoor unit with a cushioning material between the indoor unit and the wall. Get it out after finish piping.
4. Push the lower part of the indoor unit up on the wall, then move the indoor unit from side to side, up and down to check if it is hooked securely.

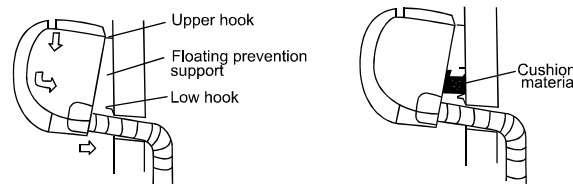


Fig.12

Indoor units that can be used in combination	Number of connected units	1-5units	
	Total of indoor units class KW	10.5KW	
Total length for all rooms		Max. 75m (R410A)	Max. 50m (R407c/R22)
Length for one indoor unit		Max. 15m (R410A)	Max. 10m (R407c/R22)
Difference in height between indoor and outdoor units	When above outdoor unit (B)	Max. 10m	
	When below outdoor unit (A)	Max. 10m	
Difference in height between indoor units		Max. 5m	
Compressor stop/start frequency	1 cycle time	6 min or more (from stop to stop or from start to start)	
	Stop time	3 min or more	
Power source voltage	Voltage fluctuation	within $\pm 10\%$ of rated voltage	
	Voltage drop during start	within $\pm 15\%$ of rated voltage	
	Interval unbalance	within $\pm 3\%$ of rated voltage	

Outdoor unit installation

Outdoor installation precaution

- Install the outdoor unit on a rigid base to prevent increasing noise level and vibration.
- Determine the air outlet direction where the discharged air is not blocked. In the case that the installation place is exposed to strong wind such as a seaside, make sure the fan operating properly by putting the unit lengthwise along the wall or using a dust or shield plates.
- Specially in windy area, install the unit to prevent the admission of wind. If need suspending installation, the installation bracket should accord with technique requirement in the installation bracket diagram.
- The installation wall should be solid brick, concrete or the same intensity construction, or actions to reinforce, damping supporting should be taken. The connection between bracket and wall, bracket and the air conditioner should be firm, stable and reliable.
- Be sure there is no obstacle which block radiating air.

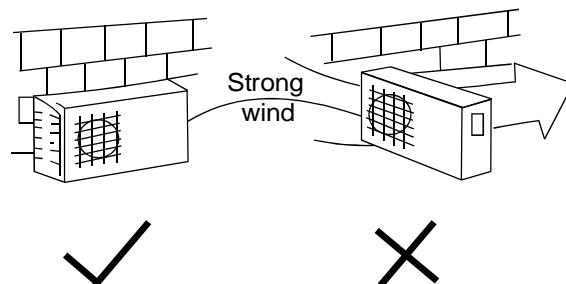


Fig.44

Settlement of outdoor unit

- Anchor the outdoor unit with a bolt and nut $\phi 10$ or $\phi 8$ tightly and horizontally on a concrete or rigid mount.

Outdoor unit dimension mm(L1xHxW1)	Mounting dimensions	
	L2(mm)	W2(mm)
760x590x285	530	290
845x700x320	560	335
900x860x315	590	333
990x965x345	624	366

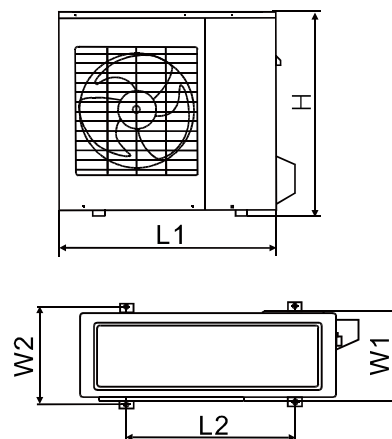


Fig.45

REFRIGERANT PIPE CONNECTION

Drain joint installation

NOTE: The drain joint differ from appliance to appliance.

Fit the seal into the drain joint, then insert the drain joint into the base pan hole of outdoor unit, rotate 90° to securely assemble them. Connecting the drain joint with an extension drain hose (Locally purchased), in case of the water draining off the outdoor unit during the heating mode.

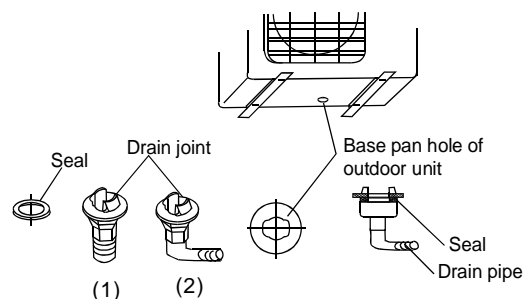


Fig.46

Refrigerant pipe connection

1. Flaring work

Main cause for refrigerant leakage is due to defect in the flaring work. Carry out correct flaring work using the following procedure:

A: Cut the pipes and the cable.

1. Use the piping kit accessory or pipes purchased locally.
2. Measure the distance between the indoor and the outdoor unit.
3. Cut the pipes a little longer than the measured distance.
4. Cut the cable 1.5m longer than the pipe length.

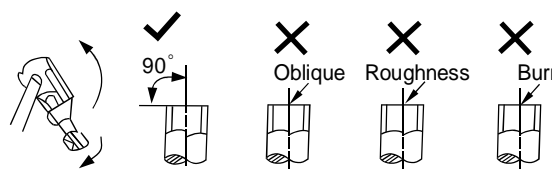


Fig.47

B: Burr removal

1. Completely remove all burrs from the cut cross section of pipe/tube.
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.

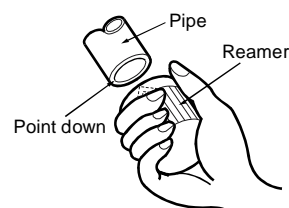


Fig.48

C: Putting nut on

Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal. (not possible to put them on after flaring work)

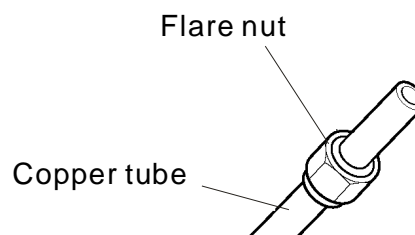


Fig.49

D: Flaring work

Firmly hold copper pipe in a die in the dimension shown in the table below.

Outer diam. (mm)	A(mm)	
	Max.	Min.
φ 6.35	1.3	0.7
φ 9.53	1.6	1.0
φ 12.7	1.8	1.0

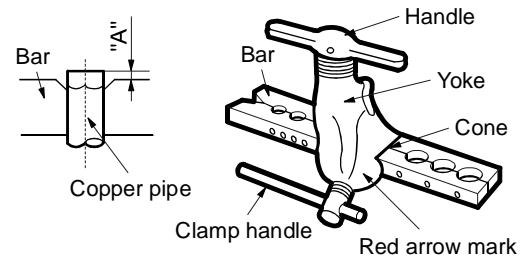


Fig.50

Tightening Connection

- Align the center of the pipes.
- Sufficiently tighten the flare nut with fingers, and then tighten it with a spanner and torque wrench as shown in Fig.51 & 52.

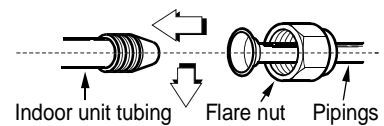


Fig.51

Outer diam.	Tightening torque(N.cm)	Additional tightening torque(N.cm)
φ 6.35	1500 (153kgf.cm)	1600 (163kgf.cm)
φ 9.52	2500 (255kgf.cm)	2600 (265kgf.cm)
φ 12.7	3500 (357kgf.cm)	3600 (367kgf.cm)

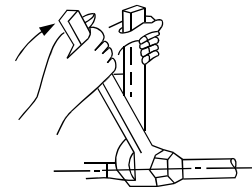


Fig.52

Caution

- Excessive torque can break nut depending on installation conditions.

Electrical work

Electric safety regulations for the initial Installation

1. If there is serious safety problem about the power supply, the technicians should refuse to install the air conditioner and explain to the client until the problem is solved.
2. Power voltage should be in the range of 90%~110%of rated voltage.
3. The creepage protector and main power switch with a 1.5 times capacity of Max. Current of the unit should be installed in power circuit.
4. Ensure the air conditioner is grounded well.
5. According to the attached Electrical Connection Diagram located on the panel of the outdoor unit to connect the wire.
6. All wiring must comply with local and national electrical codes and be installed by qualified and skilled electricians.
7. An individual branch circuit and single receptacle used only for this air conditioner must be available.

ELECTRICAL WORK

Wiring connection

NOTE: Before performing any electrical work, turn off the main power to the system.



CAUTIONS

- Do not touch the capacitor even if you have disconnected the power for there is still high voltage power on it, or electric shock hazard may occur. For your safety, you should start repairing at least 5 minutes later after the power is disconnected.
- The power is supplied from the Outdoor Unit. The Indoor Units are connected with signal wires or power cords are connected reliably and correctly, or the air conditioner could not run normally.

Connect the cable to the outdoor unit

- Remove the electrical control board cover from the outdoor unit by loosening the screw as shown in Fig.53.
- Connect the connective cables to the terminals as identified with their respective matched numbers on the terminal block of indoor and outdoor units.
- Secure the cable onto the control board with the cord clamp.
- To prevent the ingress of water, from a loop of the connective cable as illustrated in the installation diagram of indoor and outdoor units.
- Insulate unused cords (conductors) with PVC-tape. Process them so they do not touch any electrical or metal parts.



CAUTIONS

Make sure to connect the indoor unit (A, B, C, D, E) to the Hi and Lo valve and terminals of signal wires (A, B, C, D, E) of outdoor unit as identified with their respective matched connection. Wrong wiring connections may cause some electrical parts to malfunction.

Minimum nominal cross-sectional area of conductors:

Rated current of appliance (A)	Nominal cross-sectional area (mm ²)
>3 and ≤6	0.75
>6 and ≤10	1
>10 and ≤16	1.5
>16 and ≤25	2.5

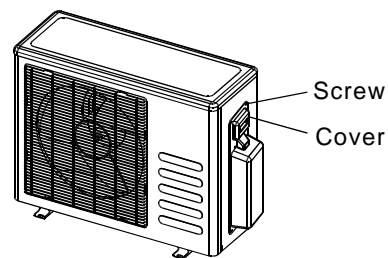


Fig.53

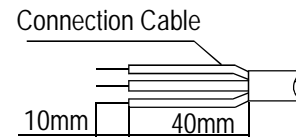
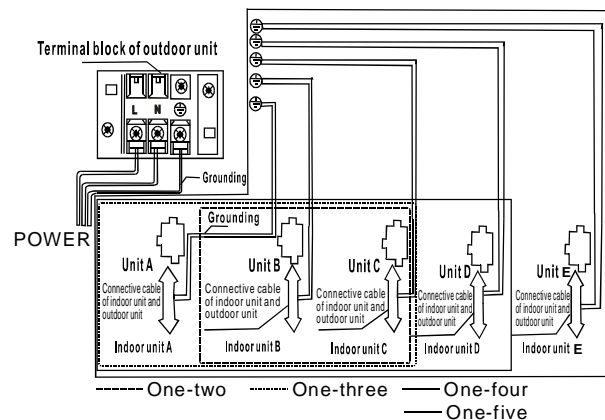


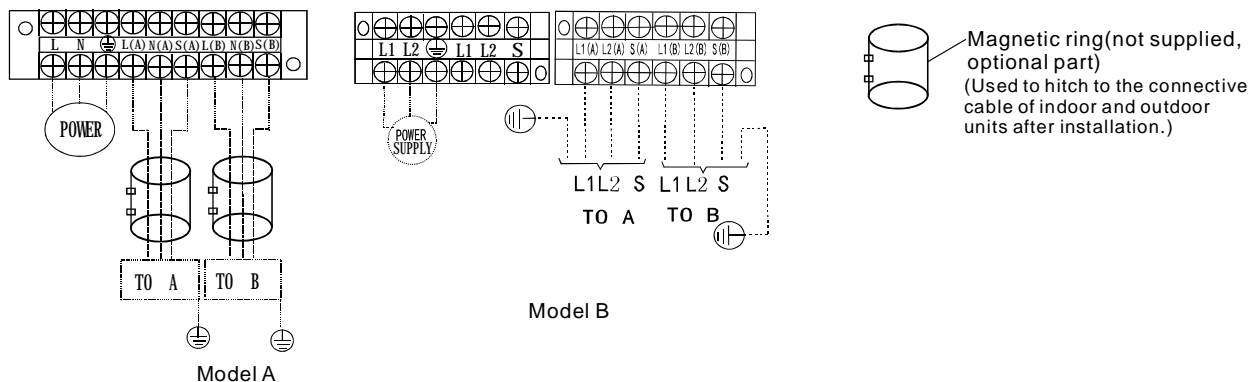
Fig.54



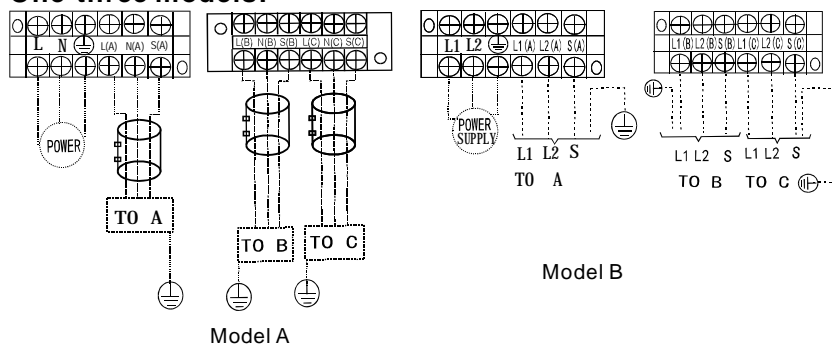
ELECTRICAL WORK

NOTE: please refer to the following figures, if the client want wire by themselves.

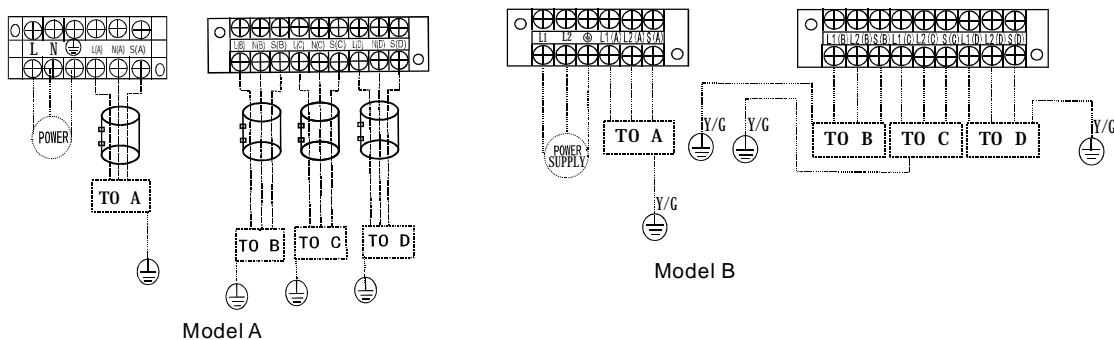
One-two models:



One-three models:



One-four models:



One-five models:

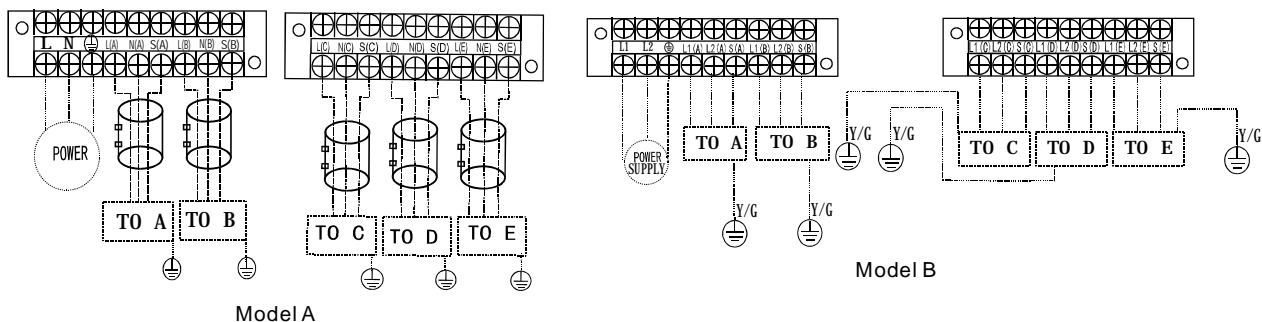


Fig.55

CAUTION

After the confirmation of the above conditions, prepare the wiring as follows:

- 1) **Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.**
- 2) **The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.)**
- 3) **Specification of power source.**
- 4) **Confirm that electrical capacity is sufficient.**
- 5) **See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.**
- 6) **Confirm that the cable thickness is as specified in the power source specification.**
- 7) **Always install an earth leakage circuit breaker in a wet or moist area.**
- 8) **The following would be caused by voltage drop.**

Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.

- 9) **The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.**

Air purging

Air and moisture in the refrigerant system have undesirable effects as indicated below:

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor unit and tubing between the indoor and outdoor unit must be leak tested and evacuated to remove any noncondensables and moisture from the system.

Air purging with vacuum pump

- Preparation

Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Note that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

- 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.	R22: (Pipe length-5m)x30g/m R410A: (Pipe length-5m)x15g/m R407c: (Pipe length-5m)x30g/m

AIR PURGING

- When relocate the unit to another place, perform evacuation using vacuum pump.
- Make sure the refrigerant added into the air conditioner is liquid form in any case.
(Not applicable to the units adopt freon R22)

Caution in handling the packed valve

- Open the valve stem until it hits against the stopper. Do not try to open it further.
- Securely tighten the valve stem cap with a spanner or the like.
- Valve stem cap tightening torque (See Tightening torque table in previous page).

When Using the Vacuum Pump

(For method of using a manifold valve, refer to its operation manual.)

1. Completely tighten the flare nuts, A, B, C, D, connect the manifold valve charge hose to a charge port of the low-pressure valve on the gas pipe side.
2. Connect the charge hose connection to the vacuum pump.
3. Fully open the handle Lo of the manifold valve.
4. Operate the vacuum pump to evacuate. After starting evacuation, slightly loose the flare nut of the Lo valve on the gas pipe side and check that the air is entering (Operation noise of the vacuum pump changes and a compound meter indicates 0 instead of minus)
5. After the evacuation is complete, fully close the handle Lo of the manifold valve and stop the operation of the vacuum pump. Make evacuation for 15 minutes or more and check that the compound meter indicates -76cmHg ($-1 \times 10^5 \text{Pa}$).
6. Turn the stem of the packed valve B about 45° counterclockwise for 6~7 seconds after the gas coming out, then tighten the flare nut again. Make sure the pressure display in the pressure indicator is a little higher than the atmosphere pressure.
7. Remove the charge hose from the Low pressure charge hose.
8. Fully open the packed valve stems B and A.
9. Securely tighten the cap of the packed valve.

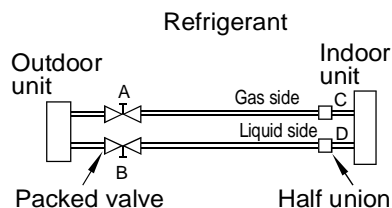


Fig.56

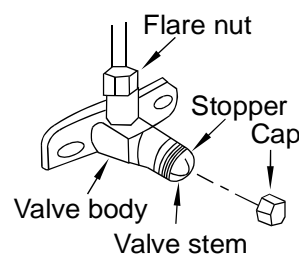


Fig.57

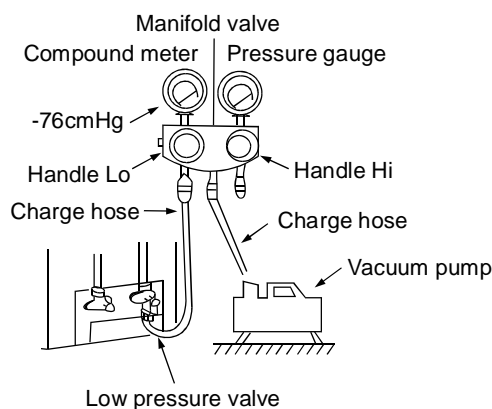


Fig.58

Safety and leakage check

● Electrical safety check

Perform the electric safe check after completing installation:

1. Insulated resistance

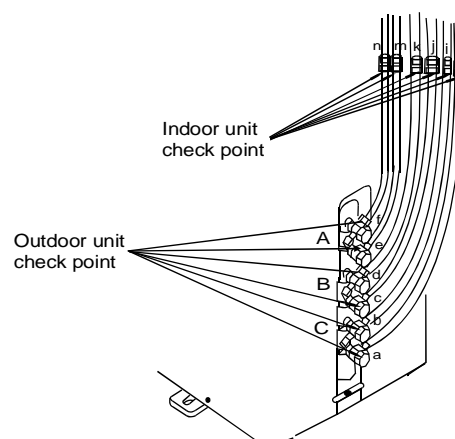
The insulated resistance must be more than $2M \Omega$.

2. Grounding work

After finishing grounding work, measure the grounding resistance by visual detection and grounding resistance tester. Make sure the grounding resistance is less than 4Ω .

3. Electrical leakage check (performing during test running)

During test operation after finishing installation, the serviceman can use the electroprobe and multimeter to perform the electrical leakage check. Turn off the unit immediately if leakage happens. Check and find out the solution ways till the unit operate properly.



a, b, c, d, h, i, j, k are points for one-two type.
a, b, c, d, e, f, g, h, i, j, k, m, n are points for one-three type.

Fig.59

● Gas leak check

1. Soap water method:

Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping. If bubbles come out, the pipes have leakage.

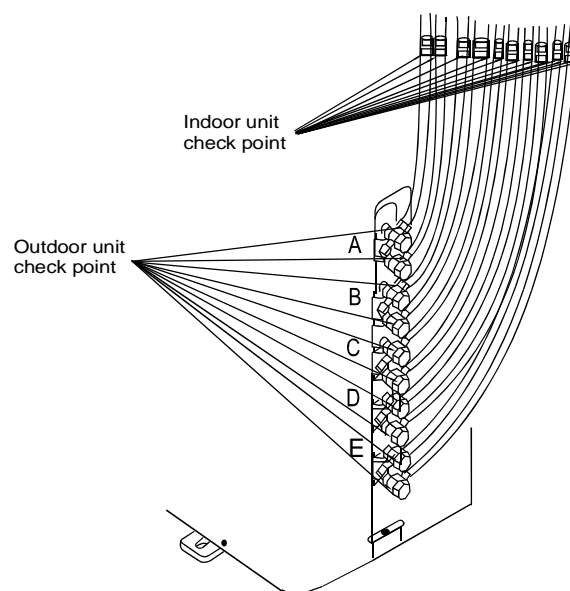
2. Leak detector

Use the leak detector to check for leakage.

CAUTION

A: Lo packed valve B: Hi packed valve
C and D are ends of indoor unit connection.

NOTE: The illustration is for explanation purpose only. The actual order of A, B, C, D and E on the machine may be slightly different from the unit you purchased. The actual shape shall prevail.



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

Fig.60

TEST RUNNING

Test running

Perform test operation after completing gas leak check at the flare nut connections and electrical safety check.

- Check that all tubing and wiring have been properly connected.
 - Check that the gas and liquid side service valves are fully open.
1. Connect the power, press the ON/OFF button on the remote controller to turn the unit on.
 2. Use the MODE button to select COOL, HEAT, AUTO and FAN to check if all the functions works well.
 3. When the ambient temperature is too low(lower than 17°C), the unit cannot be controlled by the remote controller to run at cooling mode, manual operation can be taken. Manual operation is used only when the remote controller is disable or maintenance necessary.
 - Hold the panel sides and lift the panel up to an angle until it remains fixed with a clicking sound.
 - Press the Manual control button to select the AUTO or COOL, the unit will operate under Forced AUTO or COOL mode(see User Manual for details).
 4. The test operation should last about 30 minutes.

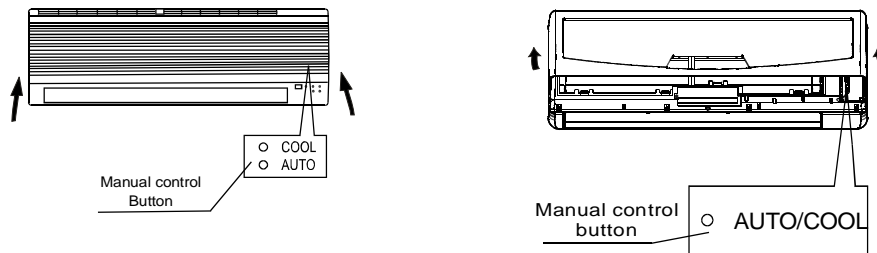


Fig.61

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

INVERTER ONE-TWO/ ONE-THREE/ ONE-FOUR SPLIT-TYPE

ROOM AIR CONDITIONER

USER'S MANUAL

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.

SOCIABLE REMARK

When using this air conditioner in the European countries, the follow information must be followed:

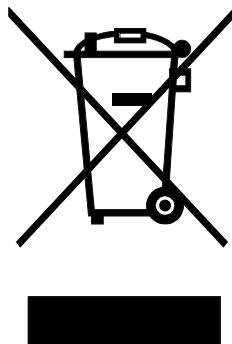
DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

It is prohibited to dispose of this appliance in domestic household waste.

For disposal, there are several possibilities:

- A) The municipality has established collection systems, where electronic waste can be disposed of at least free of charge to the user.
- B) When buying a new product, the retailer will take back the old product at least free of charge.
- C) The manufacture will take back the old appliance for disposal at least free of charge to the user.
- D) As old products contain valuable resources, they can be sold to scrap metal dealers.



Wild disposal of waste in forests and landscapes endangers your health when hazardous substances leak into the ground-water and find their way into the food chain.





SAFETY PRECAUTIONS

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 seriousness is classified by the following indications.

 WARNING	This symbol indicates the possibility of death or serious injury.
 CAUTION	This symbol indicates the possibility of injury or damage to property.

- Meanings of symbols used in this manual are as shown below.

	Never do this.
	Always do this.

WARNING

① Connect with the power properly.

- Otherwise, it may cause electric shock or fire due to excess heat generation.

⊘ Do not operate or stop the unit by switching on or off the power.

- It may cause electric shock or fire due to heat generation.

⊘ Do not damage or use an unspecified power cord.

- It may cause electric shock or fire.

⊘ Do not modify power cord length or share the outlet with other appliances

- It may cause electric shock or fire due to heat generation.

⊘ Do not operate with wet hands or in damp environment.

- It may cause electric shock.

⊘ Do not direct airflow at room occupants only.

- This could damage your health.

① Always ensure effective earthing.

- No earthing may cause electric shock.

⊘ Do not allow water to run into electric parts.

- It may cause failure of machine or electric shock.

① Always install circuit breaker and a dedicated power circuit.

- No installation may cause fire and electric shock.

① Disconnect the power if strange sounds, smell, or smoke comes from it.

- It may cause fire and electric shock.

⊘ Do not drink water drained from air conditioner.

- It contains contaminants and could make you sick.

⊘ Do not open the unit during operation.

- It may cause electric shock.

① Use the correctly rated breaker or fuse.

- There is risk of fire or electric shock.

⊘ Do not use the power cord close to heating appliances

- It may cause fire and electric shock.

⊘ Do not use the power cord near flammable gas or combustibles, such as gasoline, benzene, thinner, etc.

- It may cause an explosion or fire.

① Ventilate room before operating air conditioner if there is a gas leakage from another appliance.

- It may cause explosion, fire and, burns.

⊘ Do not disassemble or modify unit.

- It may cause failure and electric shock.

SAFETY PRECAUTIONS

CAUTION

ⓘ When the air filter is to be removed, do not touch the metal parts of the unit.

- It may cause an injury.

ⓘ Do not clean the air conditioner with water.

- Water may enter the unit and degrade the insulation. It may cause an electric shock.

ⓘ Ventilate the room well when used together with a stove, etc.

- An oxygen shortage may occur.

ⓘ When the unit is to be cleaned, switch off, and turn off the circuit breaker.

- Do not clean unit when power is on as it may cause fire and electric shock, it may cause an injury.

ⓘ Do not put a pet or house plant where it will be exposed to direct air flow.

- This could injure the pet or plant.

ⓘ Do not use for special purposes.

- Do not use this air conditioner to preserve precision devices, food, pets, plants, and art objects. It may cause deterioration of quality, etc.

ⓘ Stop operation and close the window in storm or hurricane.

- Operation with windows opened may cause wetting of indoor and soaking of household furniture.

ⓘ Do not place obstacles around air-inlets or inside of air-outlet.

- It may cause failure of appliance or accident.

ⓘ Turn off the main power switch when not using the unit for a long time.

- It may cause failure of product or fire.

ⓘ Do not use strong detergent such as wax or thinner. Use a soft cloth for cleaning.

- Appearance may be deteriorated due to change of product color or scratching of its surface.

ⓘ Ensure that the installation bracket of the outdoor appliance is not damaged due to prolonged exposure.

- If bracket is damaged, there is concern of damage due to falling of unit.

ⓘ Always insert the filters securely. Clean filter once every two weeks.

- Operation without filters may cause failure.

ⓘ Do not place heavy object on the power cord and take care so that the cord is not compressed.

- There is danger of fire or electric shock.

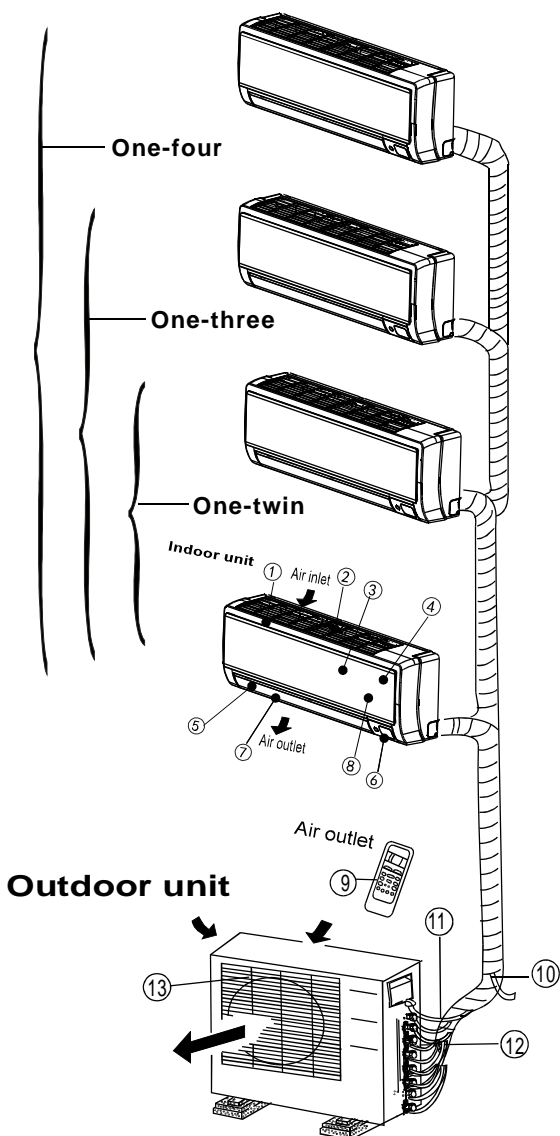
ⓘ Use caution when unpacking and installing. Sharp edges could cause injury.

ⓘ If water enters the unit, turn the unit off and disconnect the power, contact a qualified service technician.

OPERATING INSTRUCTIONS

Identification of parts

Indoor unit



Indoor unit

1. Panel frame
2. Rear air intake grille
3. Front panel
4. Air Purifying filter & Air filter(behind)
5. Horizontal louver
6. LCD display window
7. Vertical louver
8. Manual control button(behind)
9. Remote controller holder

Outdoor unit

10. Drain hose, refrigerant connecting pipe
11. Connective cable
12. Stop valve
13. Fan hood

OPERATING INSTRUCTIONS



OPERATION display

Displayed when the air conditioner is in operation.



AUTO operation display

Displayed during Auto operation.



DEFROST operation display

(For Heating & Cooling model only):

Displayed when the air conditioner starts defrosting automatically or when the warm air control feature is activated in heating operation.



TIMER display

Displayed during Timer operation.



TURBO operation display

Displayed when select TURBO function on cooling operation or on heating operation.



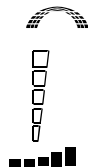
DIGITAL DISPLAY

Displays the current setting temperature when the air conditioner is in operation.



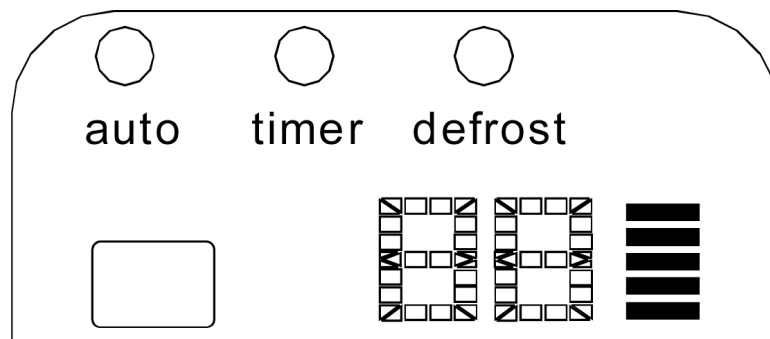
FAN SPEED display

Displayed the selected fan speed: LOW(), MED() and HIGH().



Frequency indication lamp

This display is separated into five zones. The zones illuminate based on the compressor current frequency. For example, higher frequency will illuminate more zones.



OPERATING INSTRUCTIONS

NOTE: This manual does not include Remote Controller Operations, see the <<Remote Controller Instruction>> packed with the unit for details.

Operating temperature

Mode	Cooling operation	Heating operation	Drying operation
Room temperature	$\geq 17^{\circ}\text{C}$ (62°F)	$\leq 30^{\circ}\text{C}$ (88°F)	$> 10^{\circ}\text{C}$ (50°F)
Outdoor temperature	0°C~50°C (32°F~122°F)	-15°C~34°C (5 °F ~ 92 °F)	0°C~50°C (32°F~122°F)
	(-15°C~ 50°C/ 5°F~ 122°F: For the models with low temperature cooling system)		

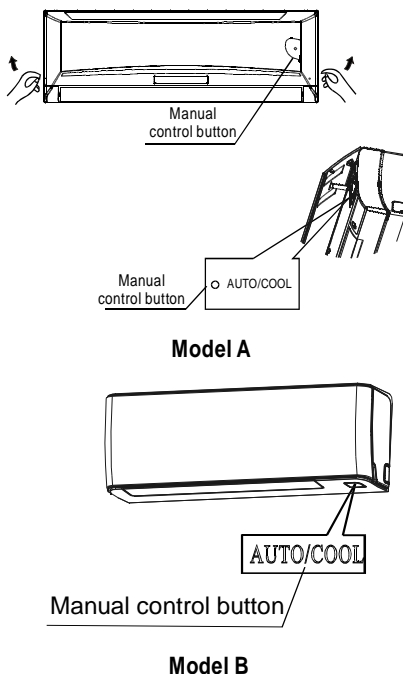
NOTE:

1. Optimum performance will be achieved within these operating temperatures. If air conditioner is used outside of the above conditions, certain safety protection features might come into operation and cause the unit to function abnormally.
2. If the air conditioner operates in a room whose relative humidity is less than 80% the surface of the air conditioner may attract condensation. Please sets the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.

Suggestion: For the unit adopts an Electric Heater, when the outside ambient temperature is below 0°C(32°F), we strongly recommend you to keep the machine plugged in order to guarantee it running smoothly.

Manual operation

Manul operation can be used temporarily in case you can not find the remote controller or test running purpose or maintenance necessary.



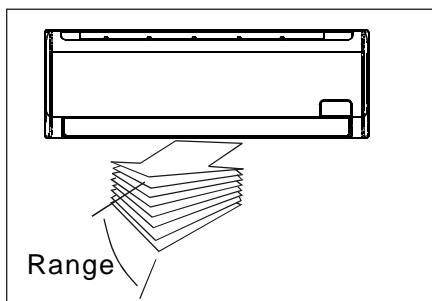
NOTE: The unit must be turned off before operating the manual control button. If the unit is operational, continue pressing the manual control button until the unit is off.

- ① Open and lift the front panel up to an angle until it remains fixed with a clicking sound. For some models, the manual control button is located at the bottom of the unit.
- ② One press of the manual control button will lead to the forced AUTO operation. If press the button twice within five seconds, the unit will operate under forced COOL operation.
- ③ Close the panel firmly to its original position.

NOTE: For DUCT and CEILING type, CASSETTE type, CEILING and FLOOR type and FLOOR and STANDING type, please refer to the previous pages to operate the Manual button.

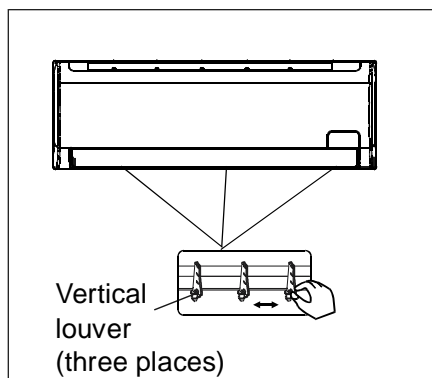
OPERATING INSTRUCTIONS

Airflow direction control



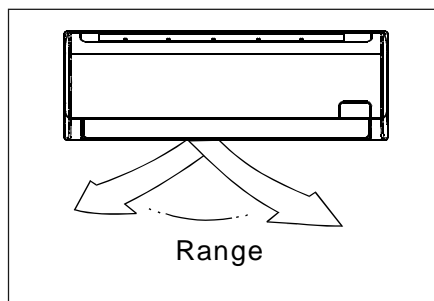
- Adjust the air flow direction properly otherwise, it might cause discomfort or cause uneven room temperatures.
- Adjust the horizontal louver using the remote controller.
- Adjust the vertical louver manually.

To set the vertical air flow(Up--Down) direction
Perform this function while the unit is in operation.
Use the remote controller to adjust the air flow direction. The horizontal louver can be moved at a range of 60° for each press, or swing up and down automatically. Please refer to the "REMOTE CONTROLLER OPERATION MANUAL" for details.



To set the horizontal air flow direction (left - right)
• Move the vertical louver manually to adjust the air flow in the direction you prefer.

- IMPORTANT:** Before adjusting the vertical louvers, the supply power must be disconnected.
- For some models, the vertical louver can be adjusted by using the remote controller. Please refer to the "REMOTE CONTROLLER OPERATION MANUAL" for details.

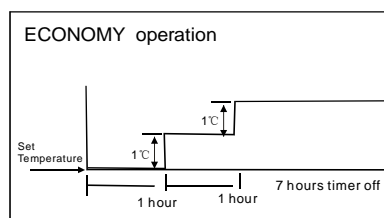


CAUTION

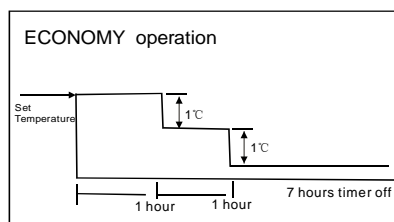
- Do not operate the air conditioner for long periods with the air flow direction set downward in cooling or dehumidifying mode. Otherwise, condensation may occur on the surface of the horizontal louver causing moisture to drop on to the floor or on furnishings.
- Do not move the horizontal louver manually unless it is necessary. Always use the remote controller.
- When the air conditioner is started immediately after it was stopped, the horizontal louver might not move for approximately 10 seconds.
- Open angle of the horizontal louver should not be set too small, as COOLING or HEATING performance may be impaired due to too restricted air flow area.
- Do not operate unit with horizontal louver in closed position.
- When the air conditioner is connected to power (initial power), the horizontal louver may generate a sound for 10 seconds, this is a normal operation.

OPERATING INSTRUCTIONS

How the air conditioner works



Cooling



Heating

AUTO operation

- When you set the air conditioner in AUTO mode, it will automatically select cooling, heating (cooling/heating models only), or fan only operation depending on what temperature you have selected and the room temperature.
- The air conditioner will control room temperature automatically round the temperature point set by you.
- If the AUTO mode is uncomfortable, you can select desired conditions manually.

ECONOMY operation

- When you push ECONOMY button on remote controller during cooling, heating (cooling only type without), or AUTO operation, the air conditioner will automatically increase (cooling) or decrease (heating) 1°C per hour.
- The set temperature will be steady 2 hours later. And the air conditioner will be timer off in 7 hours.
- The fan speed will be automatically controlled.
- This feature can maintain the most comfortable temperature and save more energy for you.

DRYING operation

- The fan speed will be automatically controlled under dry operation.
- During the dry operation, if the room temperature is lower than 10°C, the compressor stops operation and restarts until the room temperature is above 12°C.

Operation mode selection

While simultaneously operating two indoor units or more, make sure the operation modes will not conflict with each other. The heat mode claims precedence over all other modes. If the unit initially started operates under heat mode, the other units can operate under heat mode only. For example: If the unit initially started operates under cool(or fan) mode, the other units can operate under any mode except heat. If one of the unit selects heat mode, the other operating units will stop operation and display "P5" (For the units with display window only) or the Auto and Operation indication light flash rapidly, the Defrost indication light turn off, the Timer indication light remain on (For the units without display window), or the Defrost and Alarm indication light (if applicable) illuminate, the Operation indication light flashes rapidly and the Timer indication light turns off (For the Floor and standing type).

Optimal operation

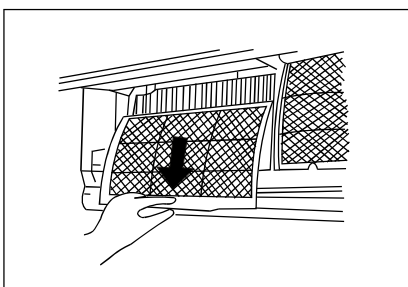
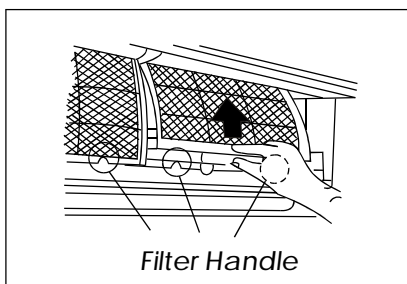
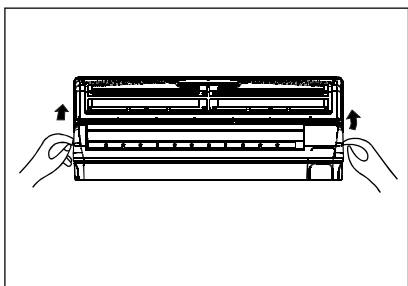
To achieve optimal performance, please note the following:

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

Suggestion: For the unit adopts an Electric Heater, when the outside ambient temperature is below 0°C, we strongly recommend you to keep the machine plugged in order to guarantee it running smoothly.

CARE AND MAINTENANCE

Care and maintenance



Cleaning the Grille, Case and Remote Controller

- Turn the system off before cleaning. To clean, wipe with a soft, dry cloth. Do not use bleach or abrasives.

NOTE: Supply power must be disconnected before cleaning the indoor unit.

⚠ CAUTIONS

- A cloth dampened with cold water may be used on the indoor unit if it is very dirty. Then wipe it with a dry cloth.
- Do not use a chemically treated cloth or duster to clean the unit.
- Do not use benzine, thinner, polishing powder, or similar solvents for cleaning. These may cause the plastic surface to crack or deform.
- Never use water hotter than 40 °C to clean the front panel, it could cause deformation or discoloration.

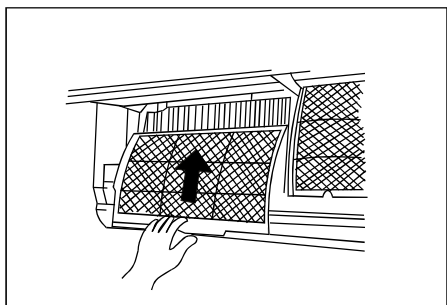
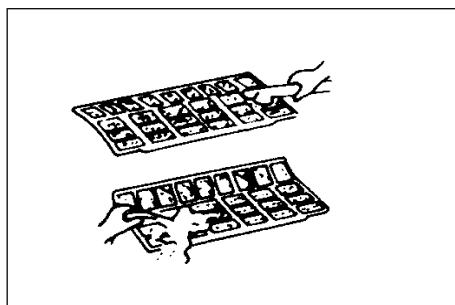
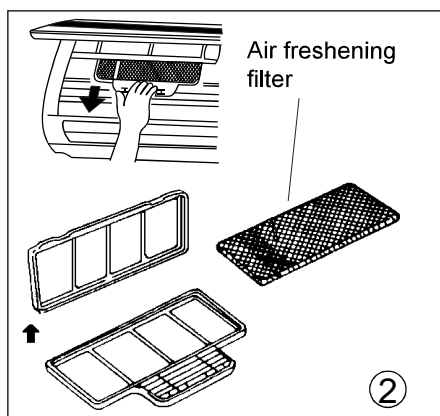
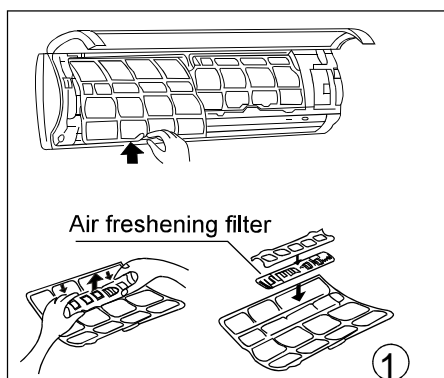
■ WALL-MOUNTED TYPE

Cleaning the air filter

A clogged air filter reduces the cooling efficiency of this unit. Please clean the filter once every 2 weeks.

1. Lift the indoor unit panel up to an angle until it stops with a clicking sound.
2. Take hold of the handle of the air filter and lift it up slightly to take it out from the filter holder, then pull it downwards.
3. Remove the **Active Carbon & Dust Filter** from the indoor unit.
 - Clean the it once two weeks.
 - Clean the it with a vacuum cleaner or water, then dry it up in cool place.

CARE AND MAINTENANCE



4. Remove the **Air Freshening Filter**(Optional filter: Plasma Dust collector/Silver Ion filter /Bio filter / Vitamin C filter) from its support frame.

(The installation and removing method of the air freshening filter is different depending on the models, see the pictures marked ① and ② on the left.

- Clean the air freshening filter at least once a month, and replace it every 4-5 months.
- Clean it with vacuum cleaner, then dry it in cool place.

5. Install the air freshening filter back into position.

6. Insert the upper portion of air filter back into the unit taking care that the left and right edges line up correctly and place filter into position.

Maintenance

If you plan to idle the unit for a long time, perform the following:

- (1) Operate the fan for about half a day to dry the inside of the unit.
- (2) Stop the air conditioner and disconnect power. Remove the batteries from the remote controller.
- (3) The outdoor unit requires periodic maintenance and cleaning. Do not attempt to do this yourself. Contact your dealer or servicer.

Checks before operation

- Check that the wiring is not broken off or disconnected.
- Check that the air filter is installed.
- Check if the air outlet or inlet is blocked after the air conditioner has not been used for a long time.

⚠ Caution

- Do not touch the metal parts of the unit when removing the filter. Injuries can occur when handling sharp metal edges.
- Do not use water to clean inside the air conditioner. Exposure to water can destroy the insulation, leading to possible electric shock.
- When cleaning the unit, first make sure that the power and circuit breaker are turned off.

OPERATION TIPS

Maintenance

If you plan to idle the unit for a long time, perform the following:

1. Clean the indoor unit and air filter.
2. Select FAN only mode, let the indoor fan run for a while to dry the inside of the unit.
3. Disconnect the power supply and remove battery from the remote control.
4. Check components of the outdoor unit periodically. Contact a local dealer or a customer service centre if the unit requires servicing.

Note: Before you clean the air conditioner, be sure to switch the unit off and disconnect the power supply plug.

When the air conditioner is to be used again:

- Use a dry cloth to wipe off the dust accumulated on rear air intake grille, in order to avoid the dust blowing out from the indoor unit.
- Check that the wiring is not broken off or disconnected.
- Check that the air filter is installed.
- Check if the air outlet or inlet is blocked after the air conditioner has not been used for a long time.

Operation Tips

The following events may occur during normal operation.

1. **Protection of the air conditioner.**

Compressor protection

- The compressor can't restart for 3 minutes after it stops.

Anti-cold air (Cooling and heating models only)

- The unit is designed not to blow cold air on HEAT mode, when the indoor heat exchanger is in one of the following three situations and the set temperature has not been reached.
 - A) When heating has just starting.
 - B) Defrosting.
 - C) Low temperature heating.
- The indoor or outdoor fan stop running when defrosting (Cooling and heating models only).

Defrosting (Cooling and heating models only)

- Frost may be generated on the outdoor unit during heat cycle when outdoor temperature is low and humidity is high resulting in lower heating efficiency of the air conditioner.
- During this condition air conditioner will stop heating operation and start defrosting automatically.
- The time to defrost may vary from 4 to 10 minutes according to the outdoor temperature and the amount of frost buildup on the outdoor unit.

2. **A white mist coming out from the indoor unit**

- A white mist may generate due to a large temperature difference between air inlet and air outlet on COOL mode in an indoor environment that has a high relative humidity.
- A white mist may generate due to moisture generated from defrosting process when the air conditioner restarts in HEAT mode operation after defrosting.

3. **Low noise of the air conditioner**

- You may hear a low hissing sound when the compressor is running or has just stopped running. This sound is the sound of the refrigerant flowing or coming to a stop.
- You can also hear a low "squeak" sound when the compressor is running or has just stopped running. This is caused by heat expansion and cold contraction of the plastic parts in the unit when the temperature is changing.
- A noise may be heard due to louver restoring to its original position when power is first turned on.

4. Dust is blown out from the indoor unit.

This is a normal condition when the air conditioner has not been used for a long time or during first use of the unit.

5. A peculiar smell comes out from the indoor unit.

This is caused by the indoor unit giving off smells permeated from building material, from furniture, or smoke.

6. The air conditioner turns to FAN only mode from COOL or HEAT (For cooling and heating models only) mode.

When indoor temperature reaches the temperature setting on air conditioner, the compressor will stop automatically, and the air conditioner turns to FAN only mode. The compressor will start again when the indoor temperature rises on COOL mode or falls on HEAT mode (For cooling and heating models only) to the set point.

7. Dripping water may generate on the surface of the indoor unit when cooling in a high relative humidity (relative humidity higher than 80%). Adjust the horizontal louver to the maximum air outlet position and select HIGH fan speed.

8. Heating mode (For cooling and heating models only)

The air conditioner draws in heat from the outdoor unit and releases it via the indoor unit during heating operation. When the outdoor temperature falls, heat drawn in by the air conditioner decreases accordingly. At the same time, heat loading of the air conditioner increases due to larger difference between indoor and outdoor temperature. If a comfortable temperature can't be achieved by the air conditioner, we suggest you use a supplementary heating device.

9. Auto-restart function

Power failure during operation will stop the unit completely.

For the unit without Auto-restart feature, when the power restores, the OPERATION indicator on the indoor unit starts flashing. To restart the operation, push the ON/OFF button on the remote controller. For the unit with Auto-restart feature, when the power restores, the unit restarts automatically with all the previous settings preserved by the memory function.

10. Lightning or a car wireless telephone operating nearby may cause the unit to malfunction.

Disconnect the unit with power and then re-connect the unit with power again. Push the ON/OFF button on the remote controller to restart operation.

TROUBLESHOOTING TIPS

Stop the air conditioner immediately if one of the following faults occur. Disconnect the power and contact the nearest customer service center.

Trouble	If the E(0,1.....) or P(0, 1) code appears on the LED(LCD)window, disconnect the power and contact the service people.
	Fuse blows frequently or circuit breaker trips frequently.
	Other objects or water penetrate the air conditioner.
	The remote controller won't work or works abnormally.
	Other abnormal situations.

Malfunctions	Cause	What should be done?
Unit does not start	Power cut	Wait for power to be restored.
	Unit may have become unplugged.	Check that plug is securely in wall receptacle.
	Fuse may have blown.	Replace the fuse.
	Battery in Remote controller may have been exhausted.	Replace the battery.
	The time you have set with timer is incorrect.	Wait or cancel timer setting.
Unit not cooling or heating (Cooling/ heating models only) room very well while air flowing out from the air conditioner	Inappropriate temperature setting.	Set temperature correctly. For detailed method please refer to "Remote controller instruction" section.
	Air filter is blocked.	Clean the air filter.
	Doors or Windows are open.	Close the doors or windows.
	Air inlet or outlet of indoor or outdoor unit has been blocked.	Clear obstructions away first, then restart the unit.
	Compressor 3 minutes protection has been activated.	Wait.

If the trouble has not been corrected, please contact a local dealer or the nearest customer service center. Be sure to inform them of the detailed malfunctions and unit model.

**Notes: Do not attempt to repair the unit yourself.
Always consult an authorised service provider.**



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