website http://www.lgservice.com

LG

LG Room Air Conditioner

SERVICE MANUAL

MODELS: LA090CP
LA120CP

CAUTION

- **BEFORE SERVICING THE UNIT, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.**
- **ONLY FOR AUTHORIZED SERVICE PERSONNEL.**

TABLE OF CONTENTS

LG Model Name

2003~

1	2	-	3	4	5	6	7	8	9	10

Code	Type	Code of Model	Meaning
1	Producing Center, Refrigerant	A~Z	L: Chang-won R22 N: India A: Chang-won R410A Z: Brazil C: Chang-won R407C D: Indonesia T: China X: Mexico U: China R410A K: Turkey R22 V: Vietnam E: Turkey R410A S: Out Sourcing H: Thailand
2	Product Type	A~Z	S: Split Type Air Conditioner
3	Cooling/Heating/Inverter	A~Z	C: Cooling only V: AC Inverter C/O H: Heat pump N: AC Inverter H/P X: C/O + E/Heater Q: DC Inverter C/O Z: H/P + E/Heater W: DC Inverter H/P
4, 5	Capacity	0~9	Cooling/Heating Capacity Ex. "09" → 9,000 Btu/h
6	Electric Range	1~9 A~Z	1: 115V/60Hz, A: 220V, 50Hz, 3Phase 2: 220V/60Hz B: 208~230V, 60Hz, 3Phase 3: 208-230V/60Hz C: 575V, 50Hz, 3Phase 5: 200-220V/50Hz D: 440~460, 60Hz, 3Phase 6: 220-240V/50Hz E: 265V, 60Hz 7: 110V, 50/60Hz F: 200V, 50/60Hz 8: 380-415V/50Hz 9: 380-415V/60Hz
7	Chassis	A~Z	Name of Chassis of Unit Ex. LSP → SP Chassis
8	Look	A~Z	Look, Color (Artcool Model)
9	Function	A~Z	
10	Serial No.	1~9	LG Model Development Serial No.

CHASSIS	Look	Division
S4/S5	D	Panel Type(Deluxe)
S6	K	Fighting 'Look'
SQ	L	(LG1)
SR	G	(LG2)-SEMI PANEL
ST	M	OEM1
	N	OEM2
	D	Panel Type(Deluxe)
	P	LG3

Basic	A
Basic+4Way	B
Plasma Filter	C
Plasma Filter+4 Way	D
Tele+LCD	E
Tele+LCD+Nano plasma+4Way	F
Nano Plasma F+(A/changeove)+A/clean+Low A	G
Nano Plasma F+(A/changeove)+A/clean+4way+Low A	H
Tele+LED+4way	I
Internet	J
Plasma F+4Way+Oxy generator	K
Nano Plasma F+(A/changeove)+A/clean	L
Nano Plasma F+(A/changeove)+A/clean+4way	M
Nano Plasma F+(A/changeove)+A/clean+PTC	N
Nano Plasma F+(A/changeove)+Autoclean+4way+PTC	P
Nano Plasma F+(A/changeove)+A/clean+4way+Low A+PTC	Q
Negative ION+A/Clean	R
(Nano)Plasma+Negative ION+A/Clean	S
4way+(Nano)Plasma F+Negative ION+Healthy dehumidification+A/Clean	T
Nano Plasma F+4Way+(A/changeove)+A/clean+Oxy generator	U
4way+(Nano)Plasma F+Negative ION+Healthy dehumidification+A/Clean+Oxy generator	V
Dry Contact	W
Wired Remocon	8

* ARTCOOL COLOR

R	Mirror
W	White
B	Blue
D	Wood
M	Metal
C	Cherry

N	Walnut
A	Gogh
S	Sisley
Q	Quran
K	Mecca

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 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 properties only.

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

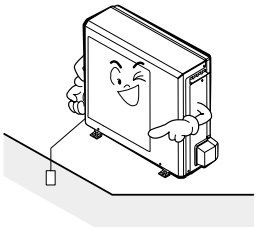
⃠	**Be sure not to do.**
❗	**Be sure to follow the instruction.**

⚠WARNING

■ Installation

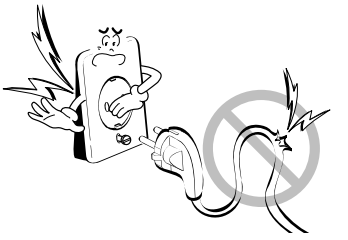
Always perform grounding.

• Otherwise, it may cause electrical shock.



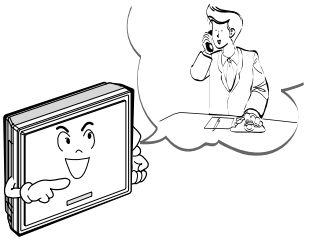
Don't use a power cord, a plug or a loose socket which is damaged.

• Otherwise, it may cause a fire or electrical shock.



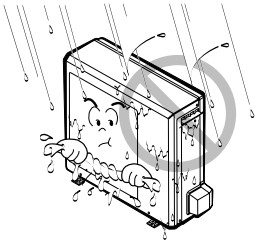
For installation of the product, always contact the service center or a professional installation agency.

• Otherwise, it may cause a fire, electrical shock, explosion or injury.



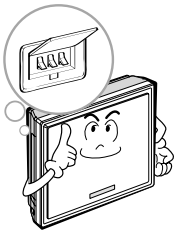
Securely attach the electrical part cover to the indoor unit and the service panel to the outdoor unit.

• If the electrical part cover of the indoor unit and the service panel of the outdoor unit are not attached securely, it could result in a fire or electric shock due to dust, water, etc.



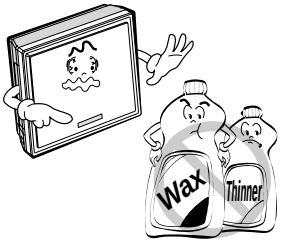
Always install an air leakage breaker and a dedicated switching board.

• No installation may cause a fire and electrical shock.



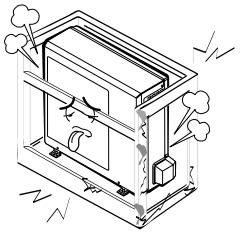
Do not keep or use flammable gases or combustibles near the air conditioner.

• Otherwise, it may cause a fire or the failure of product.



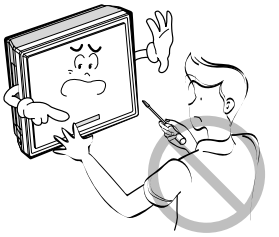
Ensure that an installation frame of the outdoor unit is not damaged due to use for a long time.

• It may cause injury or an accident.



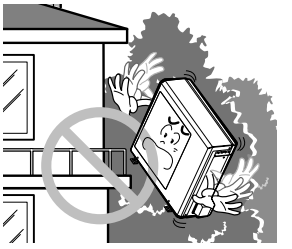
Do not disassemble or repair the product randomly.

• It will cause a fire or electrical shock.



Do not install the product at a place that ther is concern of falling down.

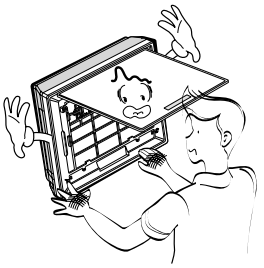
• Otherwise, it may result in personal injury.



■ Operation

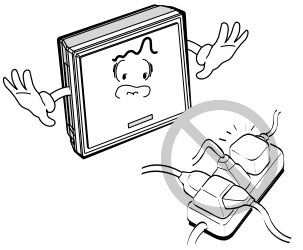
Use caution when unpacking and installing.

• Sharp edges may cause injury.



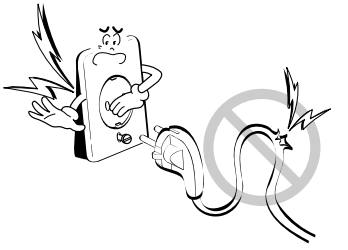
Do not share the outlet with other appliances.

• It will cause an electric shock or a fire due to heat generation.



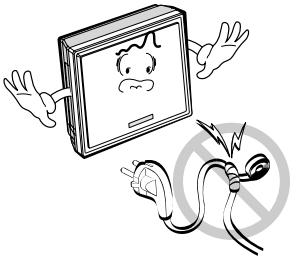
Do not use the damaged power cord.

• Otherwise, it may cause a fire or electrical shock.



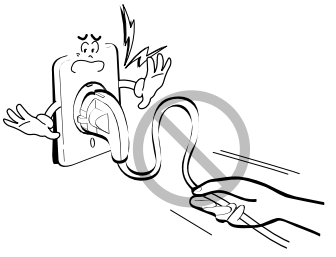
Do not modify or extend the power cord randomly.

• Otherwise, it may cause a fire or electrical shock.



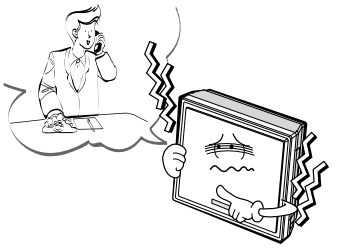
Take care so that the power cord may not be pulled during operation.

• Otherwise, it may cause a fire or electrical shock.



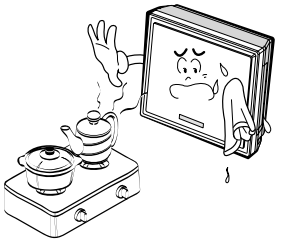
Unplug the unit if strange sounds, smell, or smoke comes from it.

• Otherwise, it may cause electrical shock or a fire.



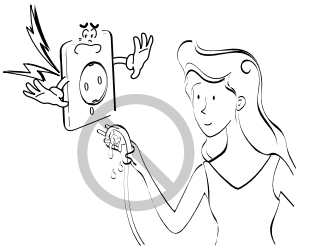
Keep the flames away.

• Otherwise, it may cause a fire.



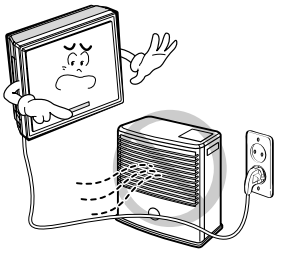
Take the power plug out if necessary, holding the head of the plug and do not touch it with wet hands.

• Otherwise, it may cause a fire or electrical shock.



Do not use the power cord near the heating tools.

• Otherwise, it may cause a fire and electrical shock.

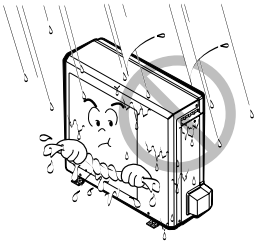


Do not open the suction inlet of the indoor/outdoor unit during operation.

• Otherwise, it may electrical shock and failure.

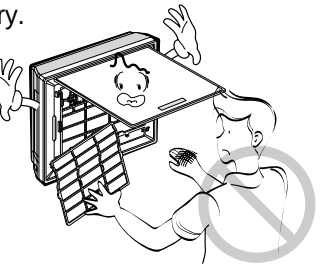
Do not allow water to run into electrical parts.

• Otherwise, it may cause the failure of machine or electrical shock.



Never touch the metal parts of the unit when removing the filter.

• They are sharp and may cause injury.

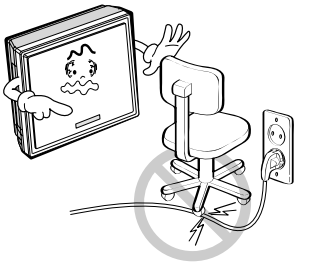


Do not step on the indoor/outdoor unit and do not put anything on it.

• It may cause an injury through dropping of the unit or falling down.

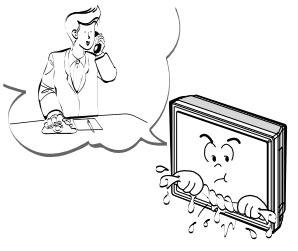
Do not place a heavy object on the power cord.

• Otherwise, it may cause a fire or electrical shock.



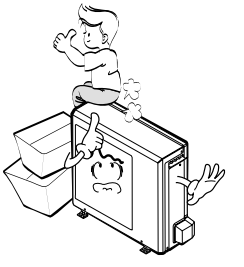
When the product is submerged into water, always contact the service center.

• Otherwise, it may cause a fire or electrical shock.



Take care so that children may not step on the outdoor unit.

• Otherwise, children may be seriously injured due to falling down.

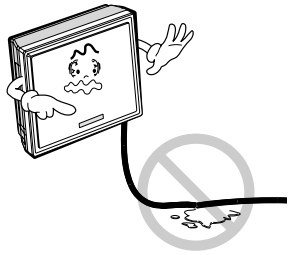


⚠CAUTION

■ Installation

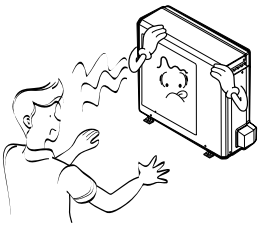
Install the drain hose to ensure that drain can be securely done.

• Otherwise, it may cause water leakage.



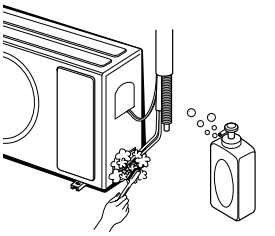
Install the product so that the noise or hot wind from the outdoor unit may not cause any damage to the neighbors.

• Otherwise, it may cause dispute with the neighbors.



Always inspect gas leakage after the installation and repair of product.

• Otherwise, it may cause the failure of product.



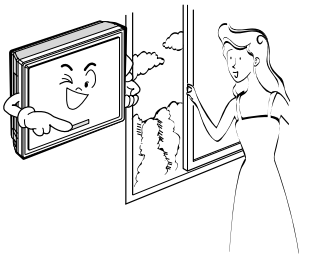
■ Operation

Keep level parallel in installing the product.

• Otherwise, it may cause vibration or water leakage.

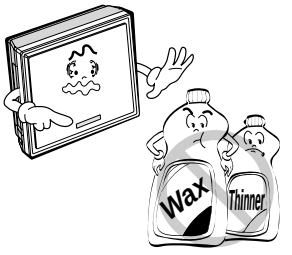
Avoid excessive cooling and perform ventilation sometimes.

• Otherwise, it may do harm to your health.



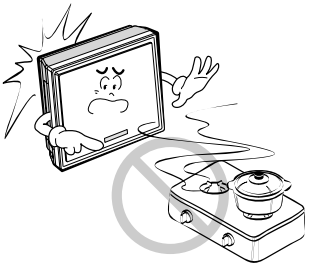
Use a soft cloth to clean. Do not use wax, thinner, or a strong detergent.

• The appearance of the air conditioner may deteriorate, change color, or develop surface flaws.



When gas leaks, open the window for ventilation before operating the unit.

• Otherwise, it may cause explosion, and a fire.



Dimensions

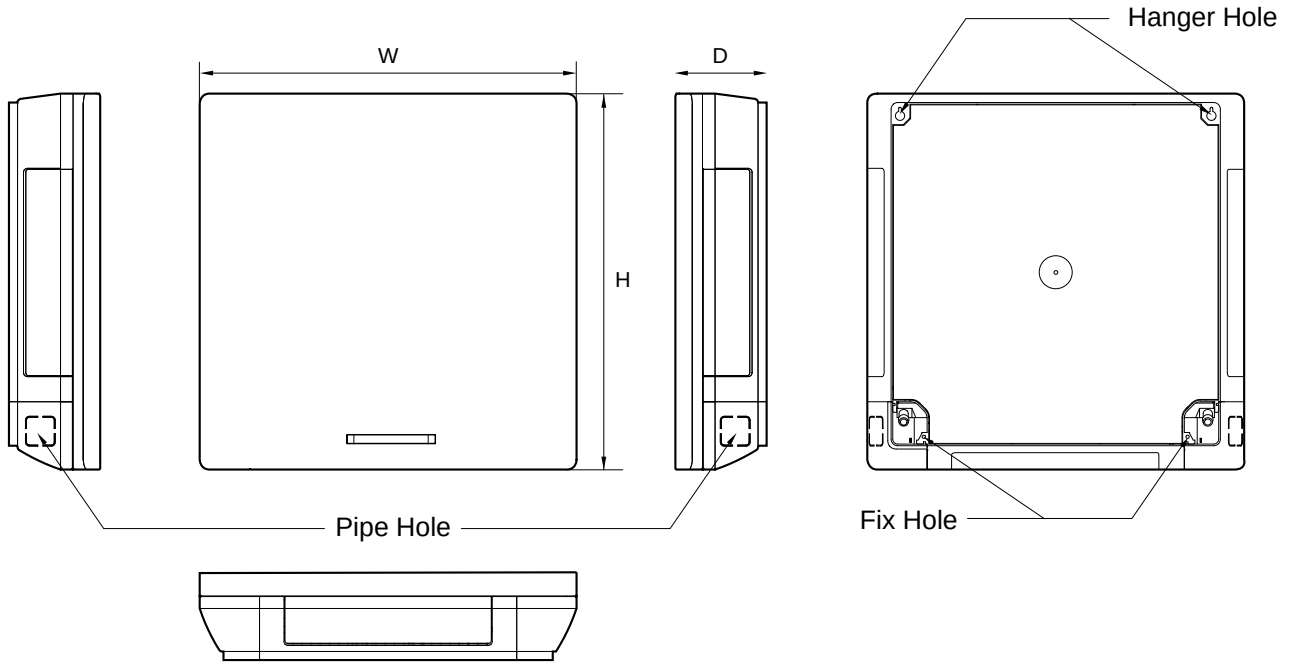
Symbols used in this Manual

This symbol alerts you to the risk of electric shock.

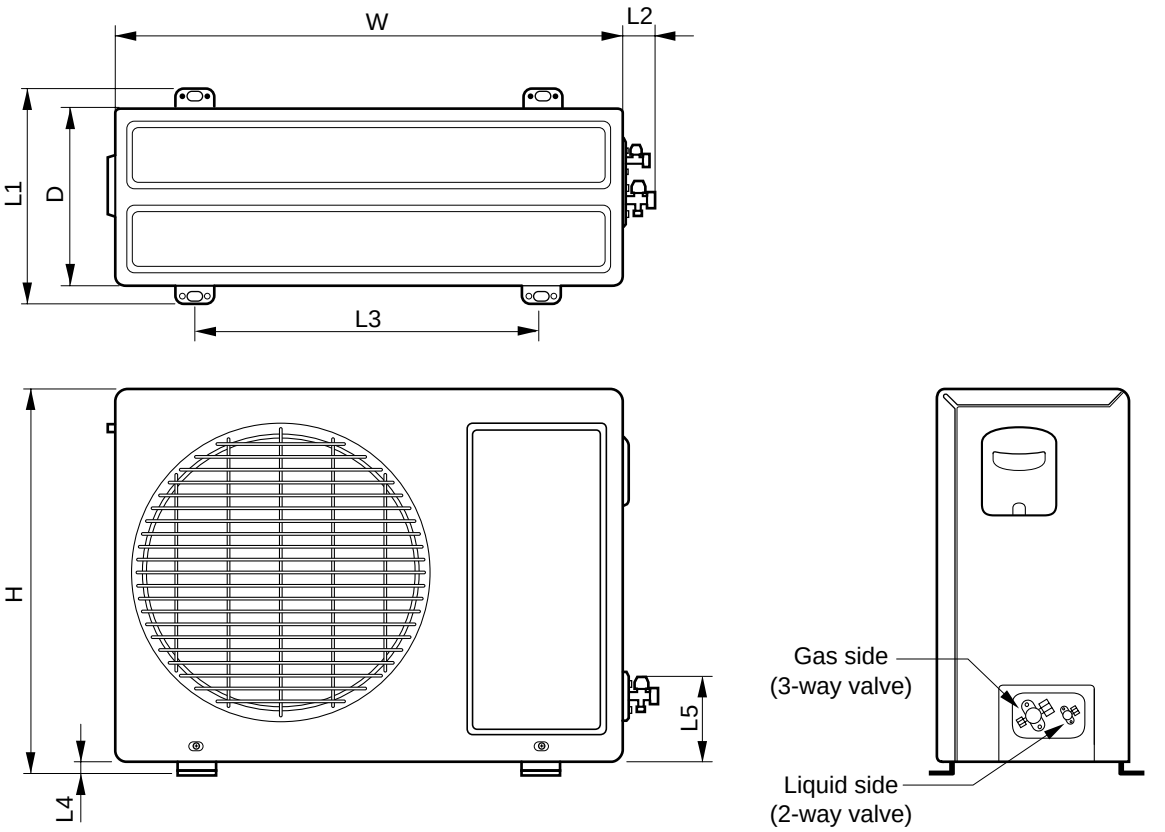
This symbol alerts you to hazards that may cause harm to the air conditioner.

NOTICE **This symbol indicates special notes.**

Indoor Unit



Dimension \ Model		INDOOR UNIT
W	mm	570
H	mm	568
D	mm	137



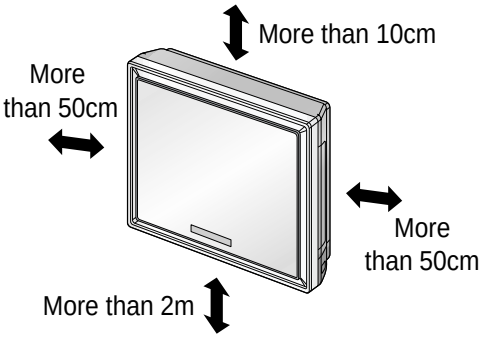
DIM \ MODEL	unit	**9K, 12K Models**
W	mm	770
H	mm	540
D	mm	245
L1	mm	285
L2	mm	64
L3	mm	518
L4	mm	10
L5	mm	100

Installation

Selection of the Best Location

Indoor unit

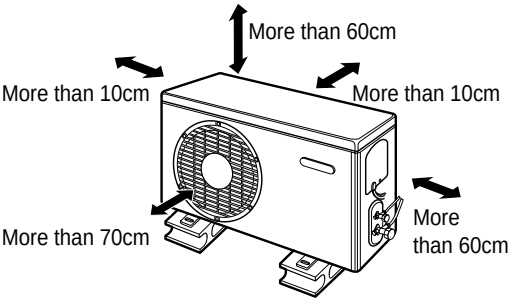
- Do not have any heat or steam near the unit.
- Select a place where there are no obstacles in front of the unit.
- Make sure that condensation drainage can be conveniently routed away.
  Do not install near a doorway.
- Ensure that the space around the left and right of the unit is more than 50cm. The unit should be installed as high on the wall as possible, allowing a minimum of 10cm from ceiling.
- Use a stud finder to locate studs to prevent unnecessary damage to the wall.



CAUTION: Install the indoor unit on the wall where the height from the floor is more than 2 meter.

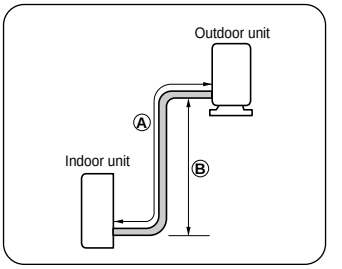
Outdoor unit

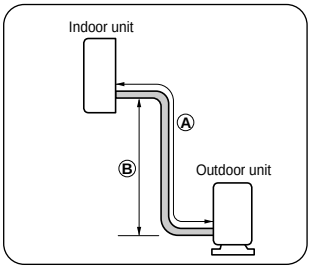
- If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
- Ensure that the space around the back and sides is more than 10cm. The front of the unit should have more than 70cm of space.
- Do not place animals and plants in the path of the warm air.
- Take the air conditioner weight into account and select a place where noise and vibration are minimum.
- Select a place so that the warm air and noise from the air conditioner do not disturb neighbors.

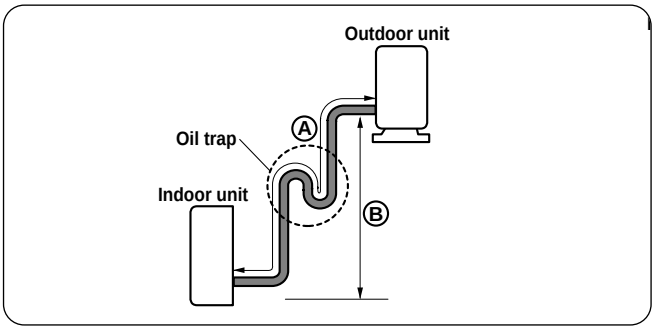


Piping Length and Elevation

Capacity (Btu/h)	Pipe Size		Standard Length (m)	Max. Elevation B (m)	Max. Length A (m)	Additional Refrigerant (g/m)
	GAS	LIQUID				
5k~14k	3/8"(Ø9.52)	1/4"(Ø6.35)	4 or 7.5	7	15	20
	1/2"(Ø12.7)	1/4"(Ø6.35)	4 or 7.5	7	15	20
18k~28k	1/2"(Ø12.7)	1/4"(Ø6.35)	4 or 7.5	15	30	20
	5/8"(Ø15.88)	1/4"(Ø6.35)	4 or 7.5	15	30	20
	5/8"(Ø15.88)	3/8"(Ø9.52)	4 or 7.5	15	30	30
30k~38k	5/8"(Ø15.88)	3/8"(Ø9.52)	7.5	15	30	30
	3/4"(Ø19.05)	3/8"(Ø9.52)	7.5	15	30	50







If the piping length is more than 5m

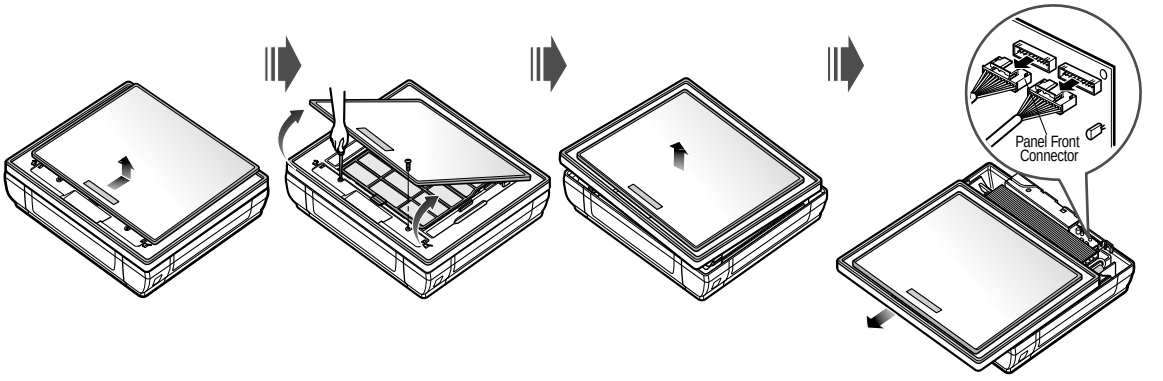
CAUTION:

- **Capacity is based on standard length and maximum allowance length is on the basis of reliability.**
- **Oil trap should be installed every 5~7 meters.**

Preparing Work for Installation

Open front panel

1. Push the front panel backward and lift it up to remove the two screws.
2. As soon as you lift the both lower parts of panel front, you can hear the sound from panel front. At this moment panel front is separated
3. After pulling down this panel a bit, separate connecting wire from the product.

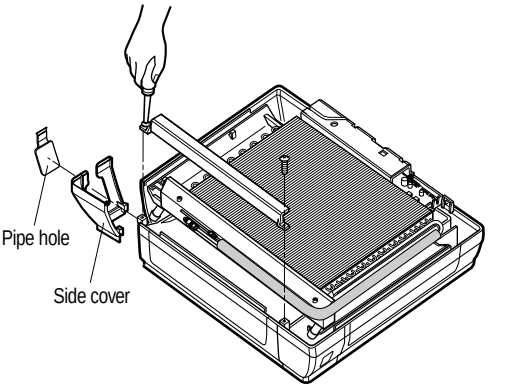


Remove pipe cover and side cover

1. Remove two screws(for fixing pipe cover)
2. Pull up the side cover of desired connecting direction, and then side cover is separated.
3. Pick the pipe hole of the side cover.

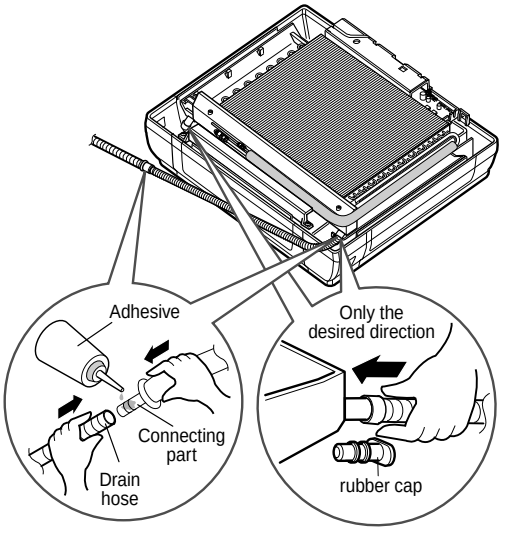
CAUTION: After removing the pipe hole, cut the burr for safety.

NOTICE When making pipe path through rear wall, you don't need to pick the pipe hole.



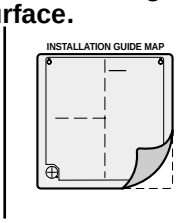
Drain hose junction

1. Remove the rubber stopple in the desired drain direction.
2. Insert drain hose into the handle of drain pan, and join drain hose and connecting hose according to the figure by.

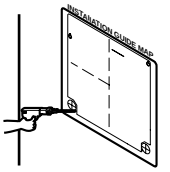


Fixing the Indoor Unit

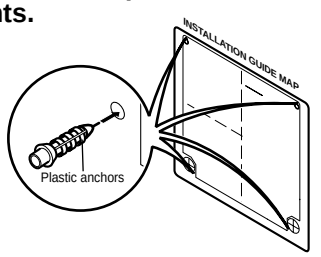
1. Attach an Installation guide map on the desired surface.



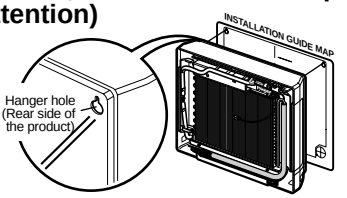
2. Make a hole with a diameter of 6mm and depth of 30-35mm by piercing a screw point.



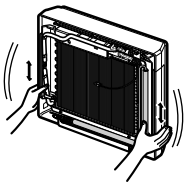
3. Drive the fore plastic anchors into drilled points.



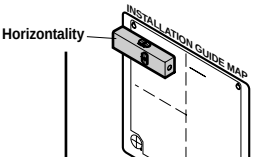
4. Hang the hole of product at the upper screws, and remove the map. (Falling attention)



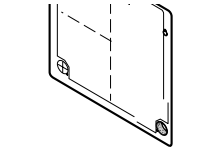
5. Check the fixed product with light power.



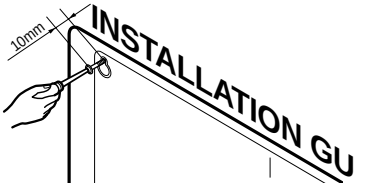
6. Look at suited horizon by horizontal meter on the horizontal setting line, and fix lightly the map by adhesive tape.



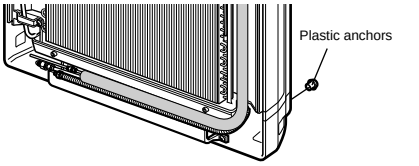
7. Drill the pierted part as a diameter of 50mm for connecting piping. (In case of piercing rear surface)



8. First, Drive the two points of the upper parts by screws. (Leave 10mm for hanging the product)



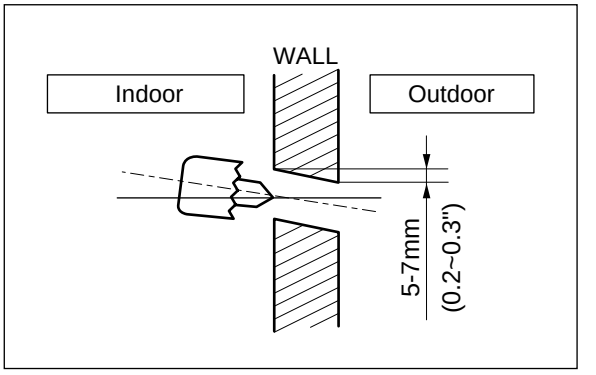
9. Drive the lower parts after facing the hole of product with plastic anchors, and fix completely the upper screws.



10. In case of nothing wrong, connect the pipe and the wire. (Refer to installation manual)

Drill a Hole in the Wall

• Drill the piping hole with a ø50mm hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.

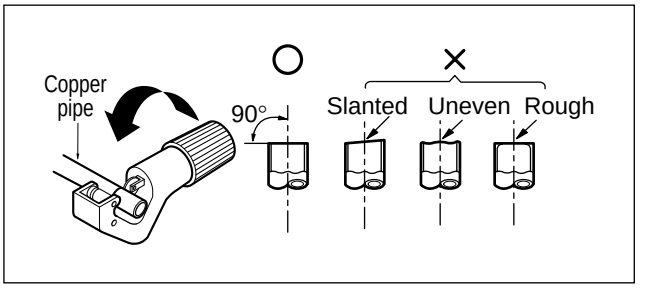


Flaring Work

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

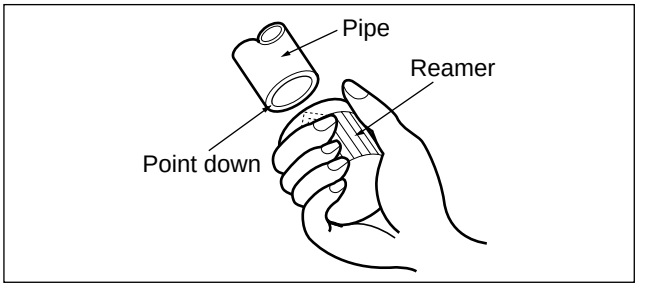
Cutting the pipes and the cable.

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



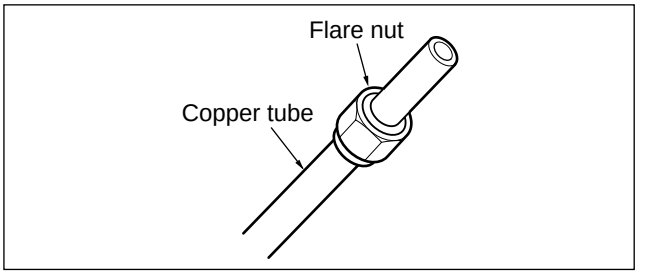
Removing burrs

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.



Putting nut on

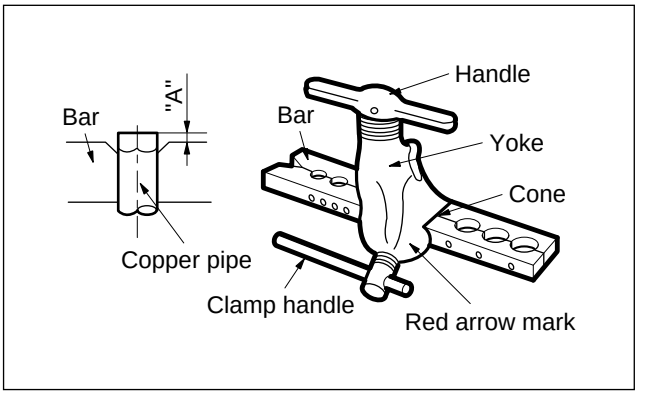
- Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal.
  (not possible to put them on after flaring work)



Flaring work

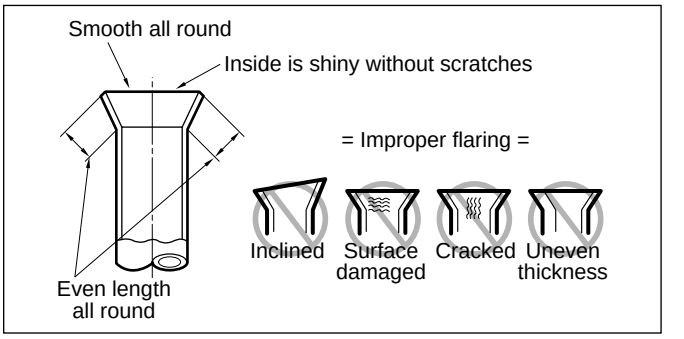
1. Firmly hold copper pipe in a die in the dimension shown in the table below.
2. Carry out flaring work with the flaring tool.

Outside diameter		A
mm	inch	mm
Ø6.35	1/4	0~0.5
Ø9.52	3/8	0~0.5
Ø12.7	1/2	0~0.5
Ø15.88	5/8	0~1.0
Ø19.05	3/4	1.0~1.3



Check

1. Compare the flared work with the figure by.
2. If a flared section is defective, cut it off and do flaring work again.

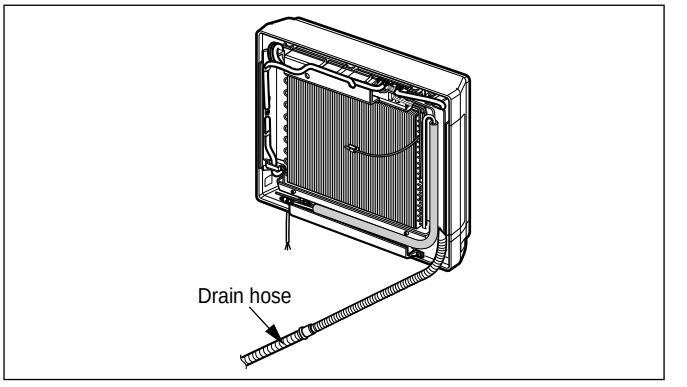


Connecting the Pipings

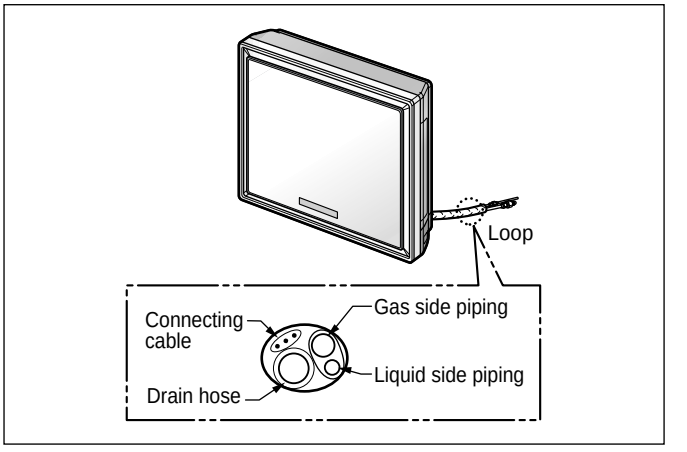
Indoor

Preparing the indoor unit's piping and drain hose for installation through the wall.

Route the indoor tubing and the drain hose in the direction of rear left or right



Tape the tubing, drain hose and the connecting cable. 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.

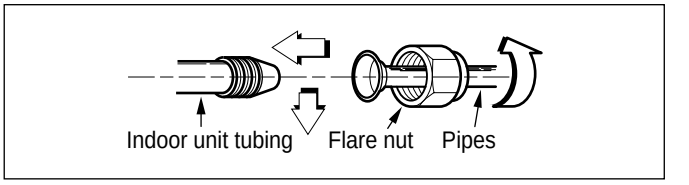


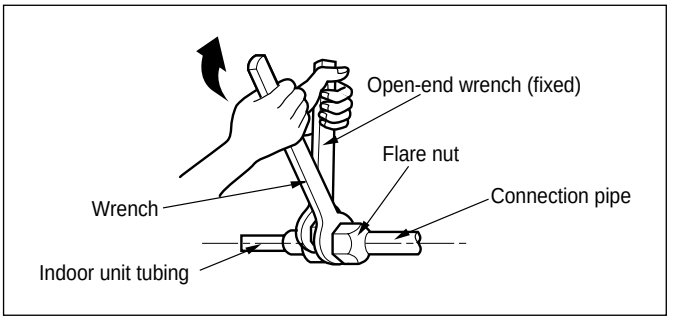
NOTICE If the drain hose is routed inside the room, insulate the hose with an insulation material* so that dripping from "sweating"(condensation) will not damage furniture or floors.
*Foamed polyethylene or equivalent is recommended.

Connecting the pipings with the indoor unit and drain hose with drain pipe

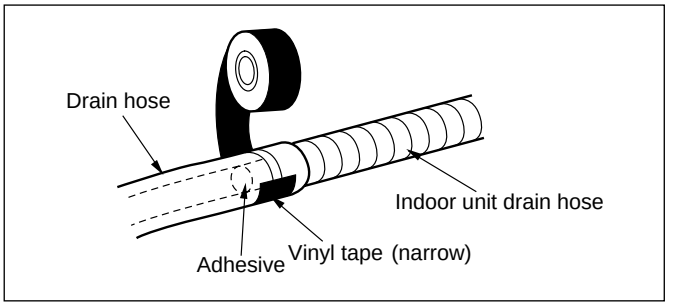
1. Align the center of the pipings and sufficiently tighten the flare nut by hand.
2. Tighten the flare nut with a wrench.

Outside diameter		Torque
mm	inch	kg.m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6



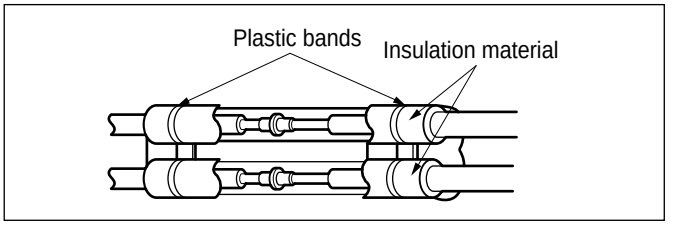


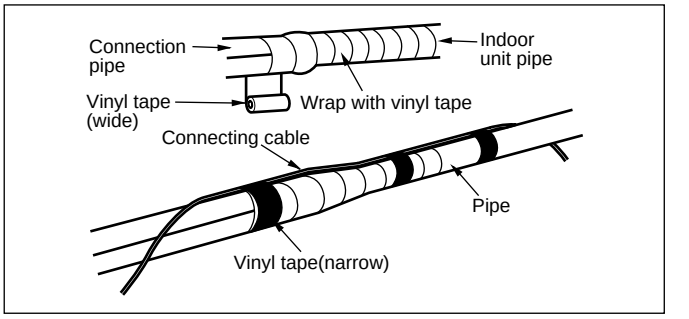
3. When extending the drain hose at the indoor unit, install the drain pipe.



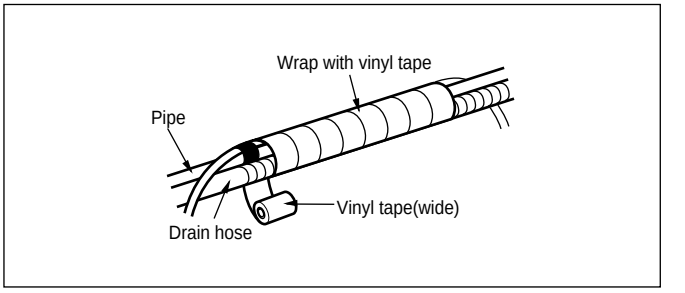
Wrap the insulation material around the connecting portion.

1. Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there may be no gap.
2. Wrap the area which accommodates the rear piping housing section with vinyl tape.



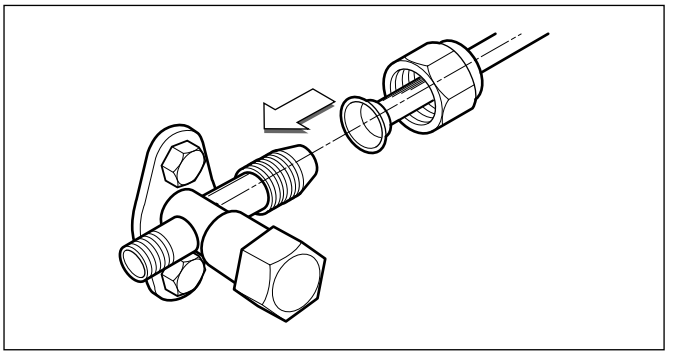


3. Bundle the piping and drain hose together by wrapping them with vinyl tape over the range within which they fit into the rear piping housing section.



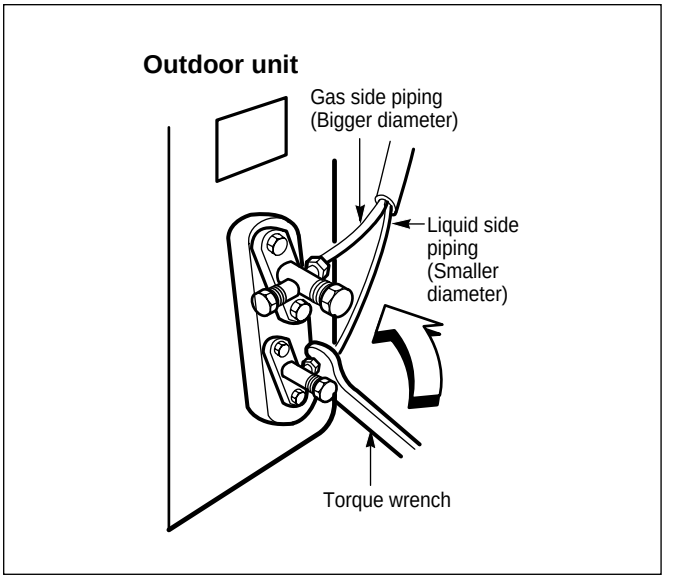
Outdoor

Align the center of the pipings and sufficiently tighten the flare nut by hand.



Finally, tighten the flare nut with torque wrench until the wrench clicks.

- When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.



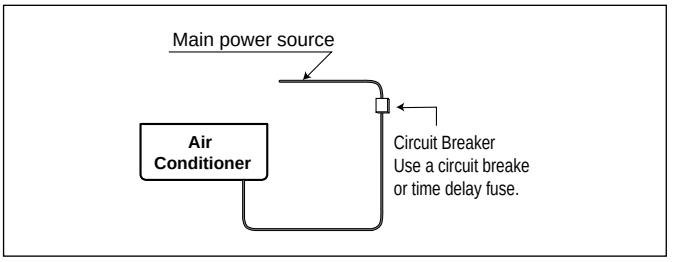
Outside diameter		Torque
mm	inch	kg.m
Ø6.35	1/4	1.8
Ø9.52	3/8	4.2
Ø12.7	1/2	5.5
Ø15.88	5/8	6.6
Ø19.05	3/4	6.6

Connecting the Cables to the Indoor Unit.

- **Connect the cables to the indoor unit by connecting the wires to the terminals on the control board dividually according to the outdoor unit connection.** (Ensure that the color of the wires of the outdoor unit and the terminal No. are the same as those of the indoor unit.)
- **Before connecting the cables to the terminal block, remove the cables in the holder of the control cover and do it.**

CAUTION:
- **The above circuit diagram is subject to change without notice.**
- **The earth wire should be longer than the common wires.**
- **When installing, refer to the circuit diagram behind the panel front of the indoor unit.**
- **Connect the wires firmly so that they may not be pulled out easily.**
- **Connect the wires according to color codes, referring to the wiring diagram.**

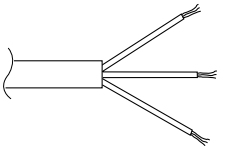
CAUTION: If a power plug is not used, provide a circuit breaker between power source and the unit as shown by.



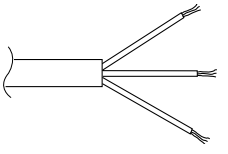
CAUTION: The power cord connected to the "A" unit should be selected according to the following specifications(Type "B" approved by HAR or SAA).

(mm²)

NORMAL CROSS -SECTIONAL AREA	Grade					
	5k~9k	12k	14k~18k	24k~28k	30k, 32k	36k, 38k
	0.75	1.0	1.5	2.5	2.5	5.5
Unit(A)	Indoor	Indoor	Indoor	Indoor	Outdoor	Outdoor
Cable Type(B)	H05VV-F	H05VV-F	H05VV-F	H05VV-F	H05RN-F	H05RN-F

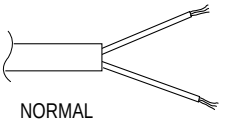


The power connecting cable connecting the indoor and outdoor unit should be selected according to the following specifications (Type "B" approved by HAR or SAA).

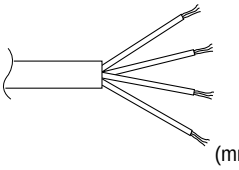


(mm²)

NORMAL CROSS -SECTIONAL AREA	Grade		
	5k~12K	14k~18k	24k~28k
	1.0	1.5	2.5
Cable Type(B)	H07RN-F	H07RN-F	H07RN-F



NORMAL CROSS-SECTIONAL AREA 0.75mm²



(mm²)

NORMAL CROSS -SECTIONAL AREA	Grade	
	30k, 32k	36k, 38k
	0.75	0.75
Cable Type(B)	H07RN-F	H07RN-F

Connecting the Cables to the Outdoor Unit

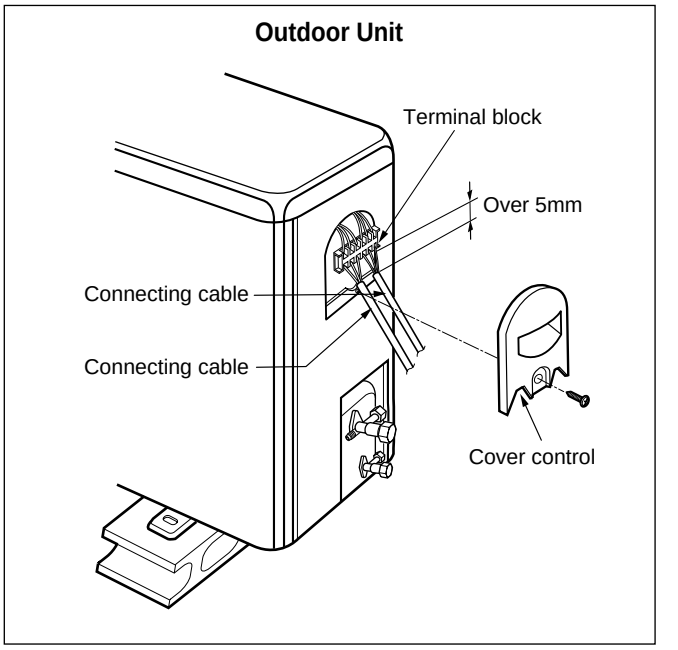
1. Remove the control cover from the unit by loosening the screw.
Connect the wires to the terminals on the control board individually.

2. Secure the cable onto the control board with the cord clamp.

3. Refix the control cover to the original position with the screw.

4. Use a recognized circuit breaker "A" between the power source and the unit.
A disconnecting device to adequately disconnect all supply lines must be fitted.

Circuit Breaker (A)	Grade				
	5K~14K	18K	24k~28K	30k,32K	36k,38k
	15	20	30	30	40



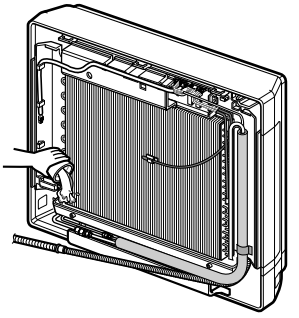
CAUTION: After the confirmation of the above conditions, prepare the wiring as follows:

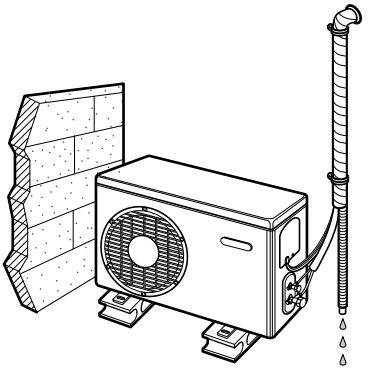
1) Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.
2) The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations 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.
(Particularly note the relation between cable length and thickness. (Refer to page 17)
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.

Checking the Drainage

1. Checking the drainage.

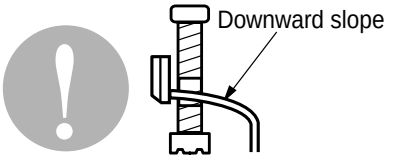
- Pour a glass of water on the evaporator.
- Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.



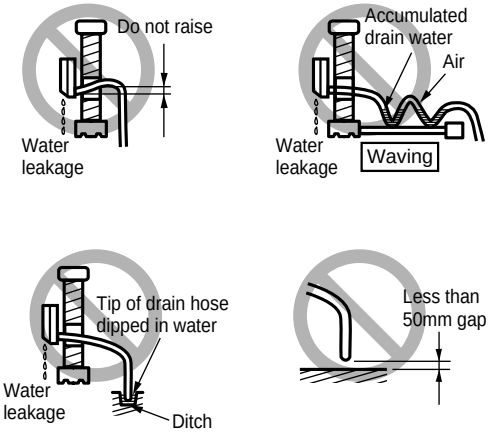


2. Drain piping

- The drain hose should point downward for easy drain flow.



- Do not make drain piping like the following.



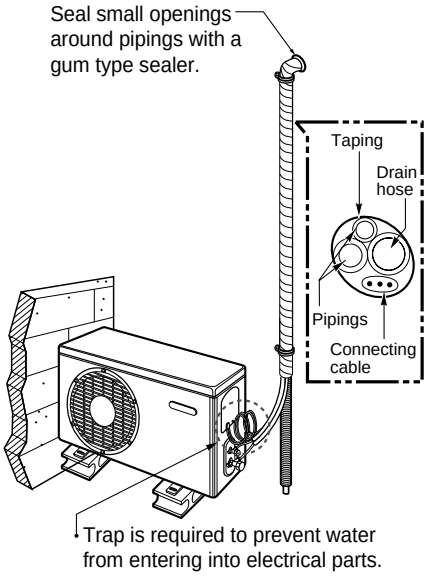
Forming the Piping

1. Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tapes.

- If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

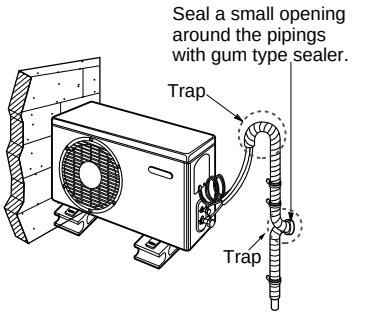
2. In cases where the outdoor unit is installed below the indoor unit perform the following.

- Tape the piping, drain hose and connecting cable from down to up.
- Secure the tapped piping along the exterior wall using saddle or equivalent.



3. In cases where the Outdoor unit is installed above the Indoor unit perform the following.

- Tape the piping and connecting cable from down to up.
- Secure the taped piping along the exterior wall. Form a trap to prevent water entering the room.
- Fix the piping onto the wall by saddle or equivalent.



Air Purging

Air and moisture remaining 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 refrigerant system must be leak tested and evacuated to remove any noncondensables and moisture from the system.

Air Purging with Vacuum Pump

1. 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.

2. Leak test

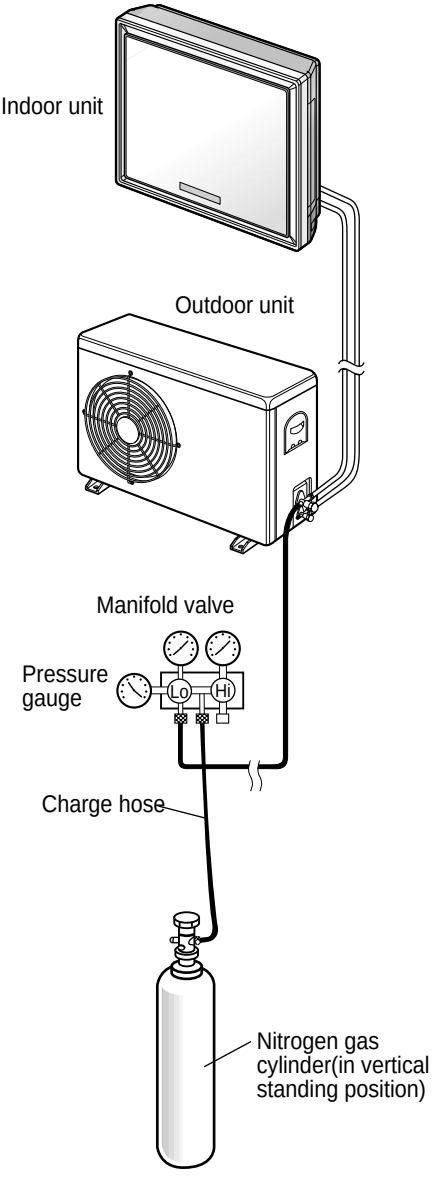
- Connect the manifold valve(with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

CAUTION: Be sure to use a manifold valve for air purging. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.

- Pressurize the system to no more than 150 P.S.I.G. with dry nitrogen gas and close the cylinder valve when the gauge reading reached 150 P.S.I.G. Next, test for leaks with liquid soap.

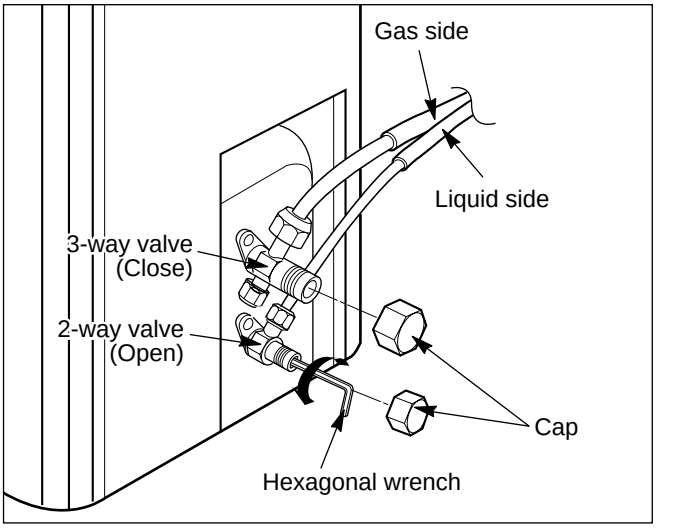
CAUTION: To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

- Do a leak test of all joints of the tubing(both indoor and outdoor) and both gas and liquid side service valves.
  Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
- After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



Soap water method

(1) Remove the caps from the 2-way and 3-way valves.
(2) Remove the service-port cap from the 3-way valve.
(3) To open the 2-way valve turn the valve stem counterclockwise approximately 90°, wait for about 2~3 sec, and close it.
(4) 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.
(5) If bubbles come out, the pipes have leakage.

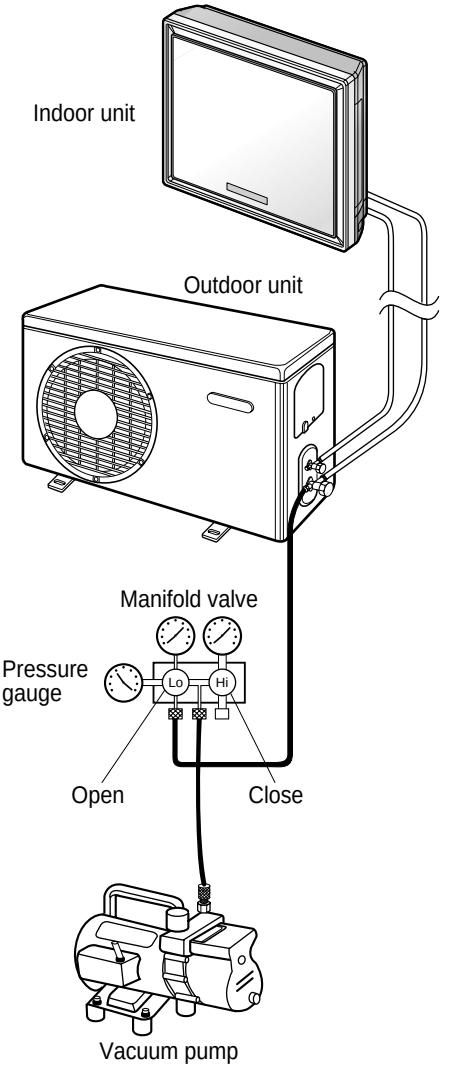


3. Evacuation

- Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit.
  Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump.
  The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10m (33 ft)	if tubing length is longer than 10m (33 ft)
10 min. or more	15 min. or more

- When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.



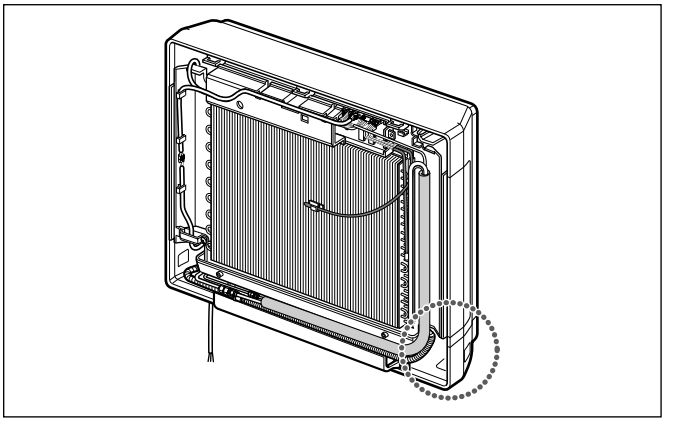
4. Finishing the job

- With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
- Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
- Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
- Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
- Replace the valve caps at both gas and liquid side service valves and fasten them tight.

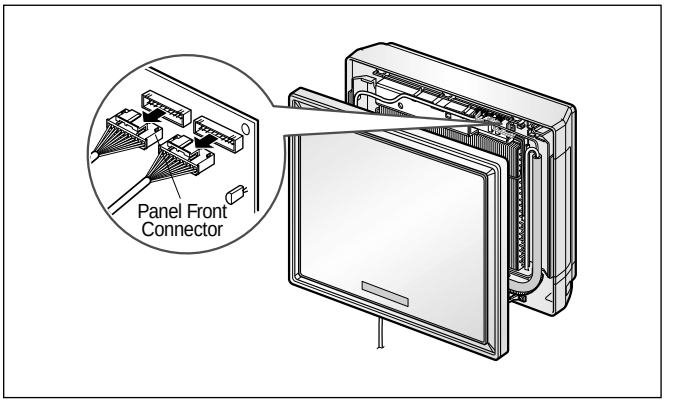
This completes air purging with a vacuum pump.
The air conditioner is now ready to test run.

Front Panel Assembly

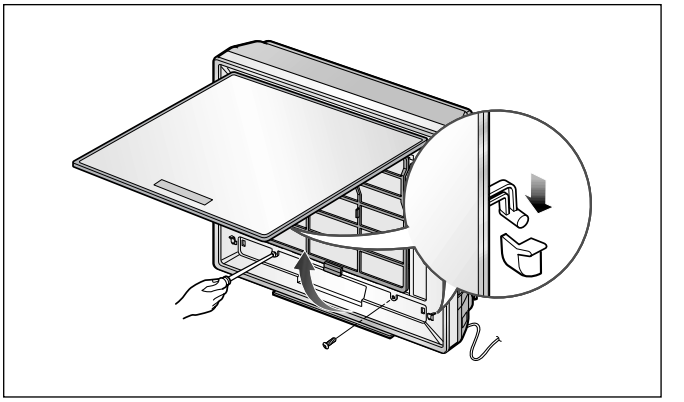
1. First, Check the side cover assembly exactly, and fix the power cord in the bottom groove of cover side left.



2. Assemble connecting lead wire with controller, fix the upper part of the front panel, and match the lower part of the front panel.



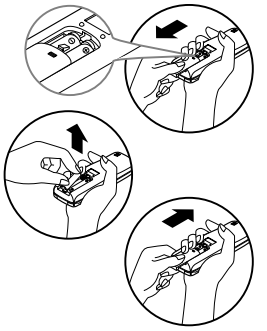
3. Screw up the front panel, and suspend the hook of the front panel in the groove.



Test Running

1. Check that all tubing and wiring have been properly connected.
2. Check that the gas and liquid side service valves are fully open.

Prepare remote controller

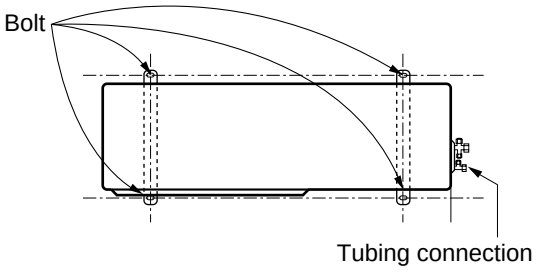


1. Remove the battery cover by pulling it according to the arrow direction.
2. Insert new batteries making sure that the (+) and (–) of battery are installed correctly.
3. Reattach the cover by pushing it back into position.

NOTICE
- Use 2 AAA(1.5volt) batteries. Do not use rechargeable batteries.
- Remove the batteries from the remote control if the system is not going to be used for a long time.

Settlement of outdoor unit

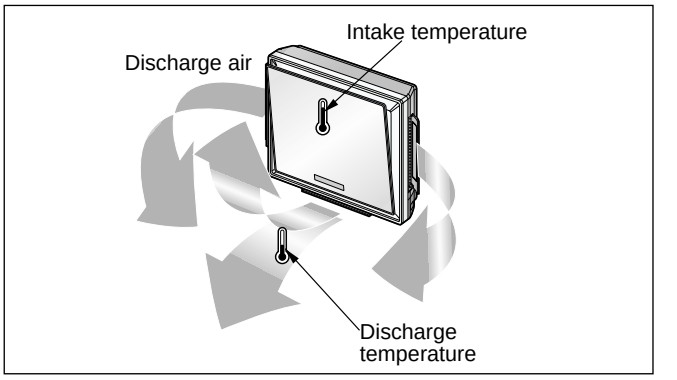
- Anchor the outdoor unit with a bolt and nut(ø10mm) tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the hose, secure the unit with an anti-vibration bushing.



Evaluation of the performance

Operate unit for 15~20 minutes, then check the system refrigerant charge:

1. Measure the pressure of the gas side service valve.
2. Measure the temperature of the intake and discharge of air.
3. Ensure the difference between the intake temperature and the discharge is more than 8°C(46°F) (Cooling) or (Heating).



4. For reference; the gas side pressure of optimum condition is as below.(Cooling)

Refrigerant	Outside ambient TEMP.	The pressure of the gas side service valve.
R-22	35°C (95°F)	4~5kg/cm²G(56.8~71.0 P.S.I.G.)
R-410A	35°C (95°F)	8.5~9.5kg/cm²G(120~135 P.S.I.G.)

NOTICE If the actual pressure is higher than shown, the system is most likely over-charged, and charge should be removed. If the actual pressure are lower than shown, the system is most likely undercharged, and charge should be added.

The air conditioner is now ready for use.

PUMP DOWN

This is performed when the unit is to be relocated or the refrigerant circuit is serviced.

Pump Down means collecting all refrigerant in the outdoor unit without loss in refrigerant gas.

CAUTION:

Be sure to perform Pump Down procedure with the unit cooling mode.

Pump Down Procedure

1. Connect a low-pressure gauge manifold hose to the charge port on the gas side service valve.
2. Open the gas side service valve halfway and purge the air from the manifold hose using the refrigerant gas.
3. Close the liquid side service valve(all the way in).
4. Turn on the unit's operating switch and start the cooling operation.
5. When the low-pressure gauge reading becomes 1 to 0.5kg/cm2 G(14.2 to 7.1 P.S.I.G.), fully close the gas side valve stem and then quickly turn off the unit. At that time, Pump Down has been completed and all refrigerant gas will have been collected in the outdoor unit.

Operation

Function of Controls

DISPLAY

1) C/O Model (high quality LCD remote controller supplied)

Operation Indicator
- On while in appliance operation, off while in appliance pause

Timer Indicator
- On while in timer mode (on/off) and in sleep timer mode, off when timer mode is completed or canceled.

Comp. Running Indicator
- While in appliance operation, on while in outdoor unit compressor running, off while in compressor off

Plasma Indicator
- On while in plasma mode, off while plasma mode is canceled.

Auto restart Indicator
- On while auto restart mode, off while auto restart mode is canceled.

Auto restart
- In case the power comes on again after a power failure, Auto Restarting Operation is the function to operate procedures automatically to the previous operating conditions.
  If your want to use this operation, press the Auto Restart Button.

Power(Forced Operation)
- Operation starts, when this button is pressed and stops when you press the button again.

2) H/P Model (high quality LCD remote controller supplied)

Operation Indicator
- On while in appliance operation, off while in appliance pause

Timer Indicator
- On while in timer mode (on/off) and in sleep timer mode, off when timer mode is completed or canceled

Defrost Indicator
- Off except when hot start during heating mode operation or while in defrost control.

Plasma Indicator
- On while in plasma mode, off while plasma mode is canceled.

Auto restart Indicator
- On while auto restart mode, off while auto restart mode is canceled.

Auto restart
- In case the power comes on again after a power failure, Auto Restarting Operation is the function to operate procedures automatically to the previous operating conditions.
  If your want to use this operation, press the Auto Restart Button.

Power(Forced Operation)
- Operation starts, when this button is pressed and stops when you press the button again.

■ Cooling Mode Operation

- When the intake air temperature reaches 0.5°C below the setting temp, the compressor and the outdoor fan stop.
- When it reaches 0.5°C above the setting temp, they start to operate again.

  Compressor ON Temp=> Setting Temp+0.5°C

  Compressor OFF Temp => Setting Temp-0.5°C
- While in compressor running, operating with the airflow speed set by the remote controller. While in compressor not running, operating with the low airflow speed regardless of the setting.

Display Function

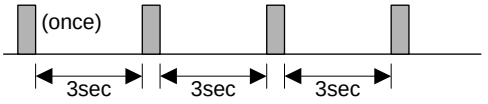
1. Heating Model

- **Operation Indicator**
  - Cooling, Soft Dry, Fan, Heating
- **Sleep Timer Indicator**
  - Sleep Mode
- **Timer Indicator**
  - Timer Mode
- **Defrost Indicator**
  - Hot-start, Defrost
- **PLASMA Indicator**
  - PLASMA Mode

2. Cooling Model

- **Operation Indicator**
  - Cooling, Soft Dry, Fan
- **Sleep Timer Indicator**
  - Sleep Mode
- **Timer Indicator**
  - Timer Mode
- **Outdoor Unit Operation**
- **PLASMA Indicator**
  - PLASMA Mode

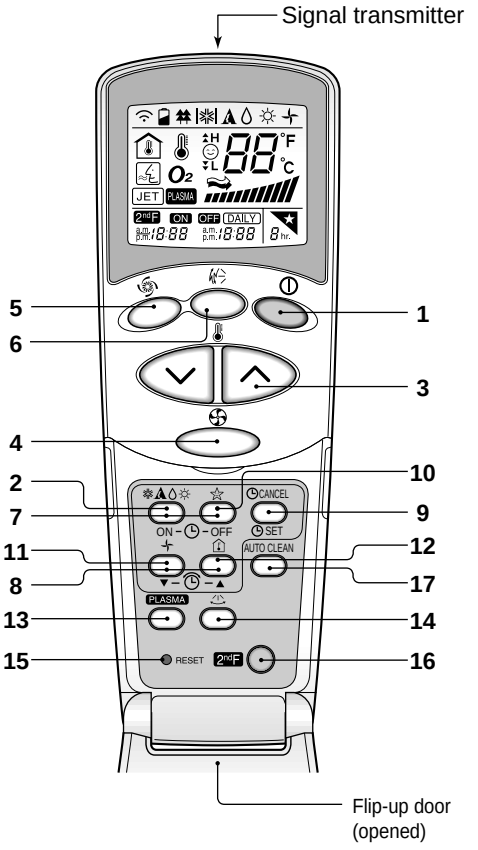
Self-diagnosis Function

Error Code	Error Display LED (Indoor body operation LED)	Error contents	SVC check point
1		• Indoor room temperature thermistor open/short • Indoor pipe temperature thermistor open/short.	• Indoor Thermistor assembly check

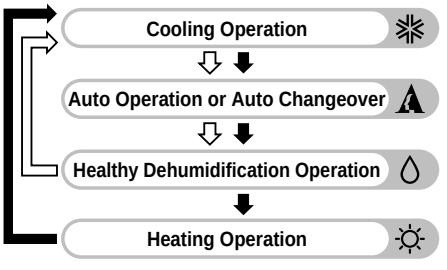
Remote Control Operations

The controls will look like the following.

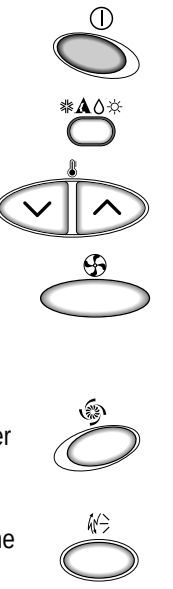
Controls



Operation Mode



• Cooling Model(⇩), Heat Pump Model(⬇)



1. START/STOP BUTTON
Operation starts when this button is pressed and stops when the button is pressed again.

2. OPERATION MODE SELECTION BUTTON
Used to select the operation mode.

3. ROOM TEMPERATURE SETTING BUTTONS
Used to select the room temperature.

4. INDOOR FAN SPEED SELECTOR
Used to select fan speed in four steps low, medium, high and CHAOS.

5. JET COOL/HEATING(OPTIONAL)
Used to start or stop the speed cooling. (Speed cooling/heating operates at super high fan speed in cooling/heating mode.)

6. CHAOS SWING BUTTON
Used to stop or start louver movement and set the desired up/down airflow direction.

7. ON/OFF TIMER BUTTONS
Used to set the time of starting and stopping operation.

8. TIME SETTING BUTTONS
Used to adjust the time.

9. TIMER SET/CANCEL BUTTON
Used to set the timer when the desired time is obtained and to cancel the Timer operation.

10. SLEEP MODE AUTO BUTTON
Used to set Sleep Mode Auto operation.

11. AIR CIRCULATION BUTTON
Used to circulate the room air without cooling or heating.

12. ROOM TEMPERATURE CHECKING BUTTON
Used to check the room temperature.

13. NANO PLASMA(OPTIONAL)
Used to start or stop the plasma-purification function.

14. HORIZONTAL AIRFLOW DIRECTION CONTROL BUTTON (OPTIONAL)
Used to set the desired horizontal airflow direction.

15. RESET BUTTON
Used prior to resetting time or after replacing batteries.

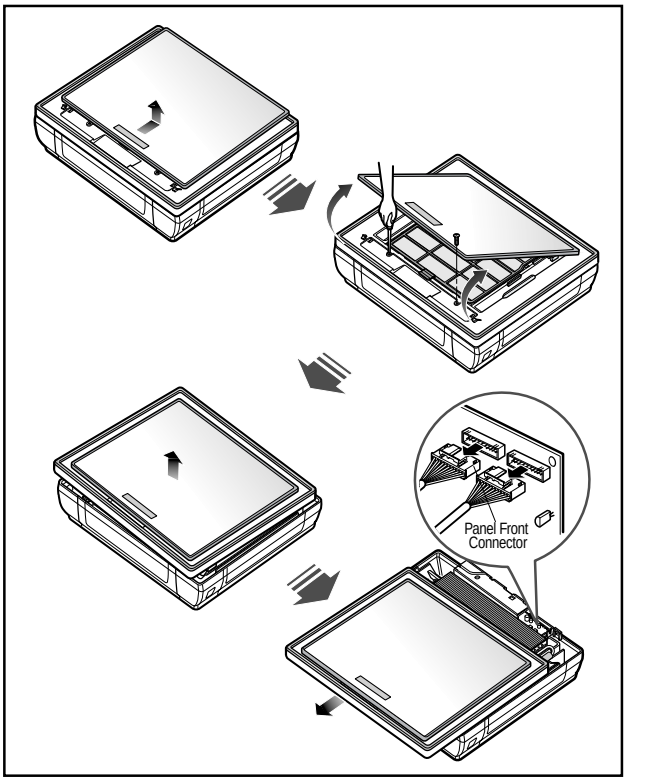
16. 2nd F Button
Used prior to using modes printed in blue at the bottom of buttons.

17. AUTO CLEAN(OPTIONAL)
Used to set Auto Clean mode.

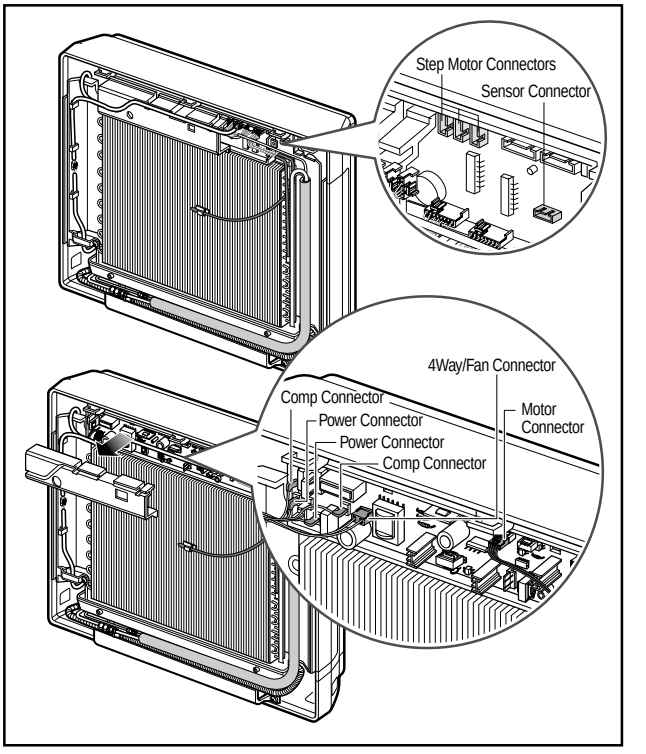
Disassembly

Indoor Unit

WARNING: Disconnect the unit from power supply before making any checks. Be sure the power switch is set to "OFF"

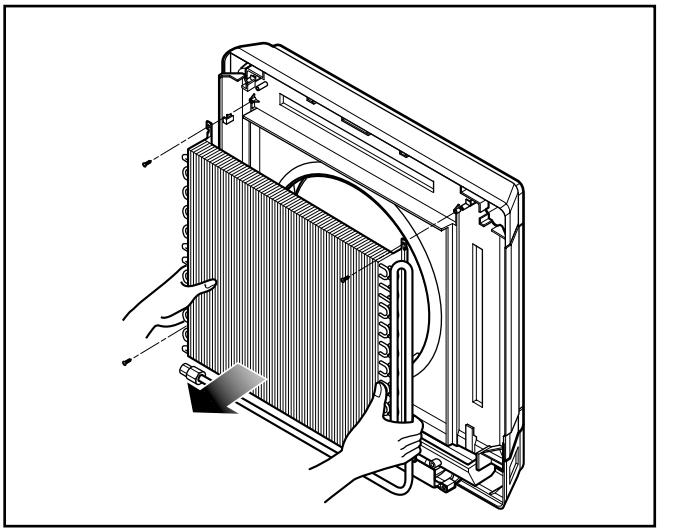


1. To remove the Grille from the Chassis.
- Pull the grille bottom, the remove 2 securing screws.
- Lift the both lower parts of panel front.
- After pull down this panel a bit, separate connecting wire with product.

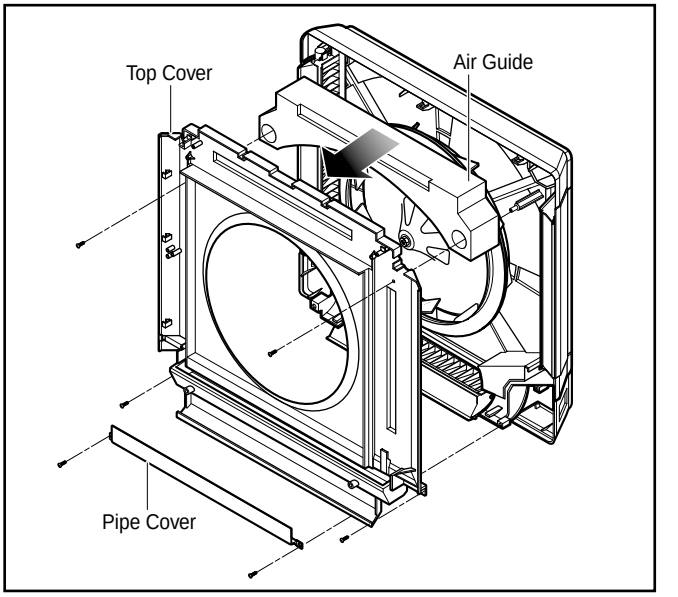


2. To remove the Control Box.
- Before removing the control box, be sure to disconnect the wires from PWB.
- Pull the cover control out from the control box and disconnect other wires.
- Remove securing screws.
- Pull the control box out from the chassis carefully.

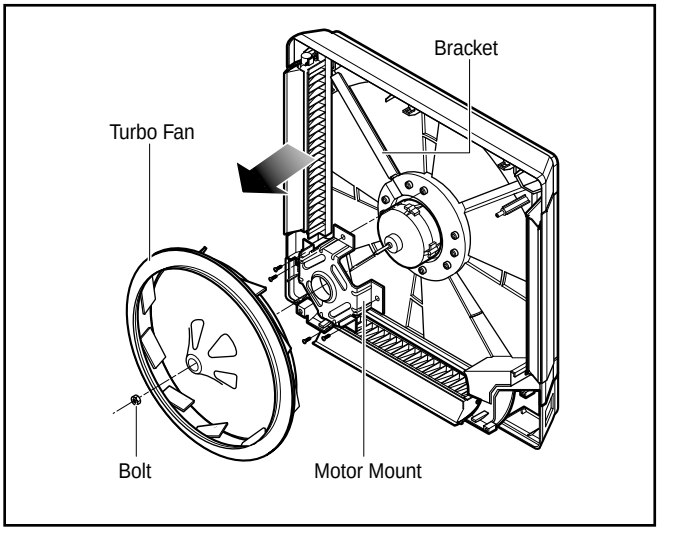
3. To remove the Evaporator.
- Remove 4 screws securing the evaporator.
- Pull the evaporator out from the chassis carefully.



4. Before removing the Turbo Fan.
- Remove the securing screws from the chassis.
- Pull the pipe cover, top cover and the air guide.



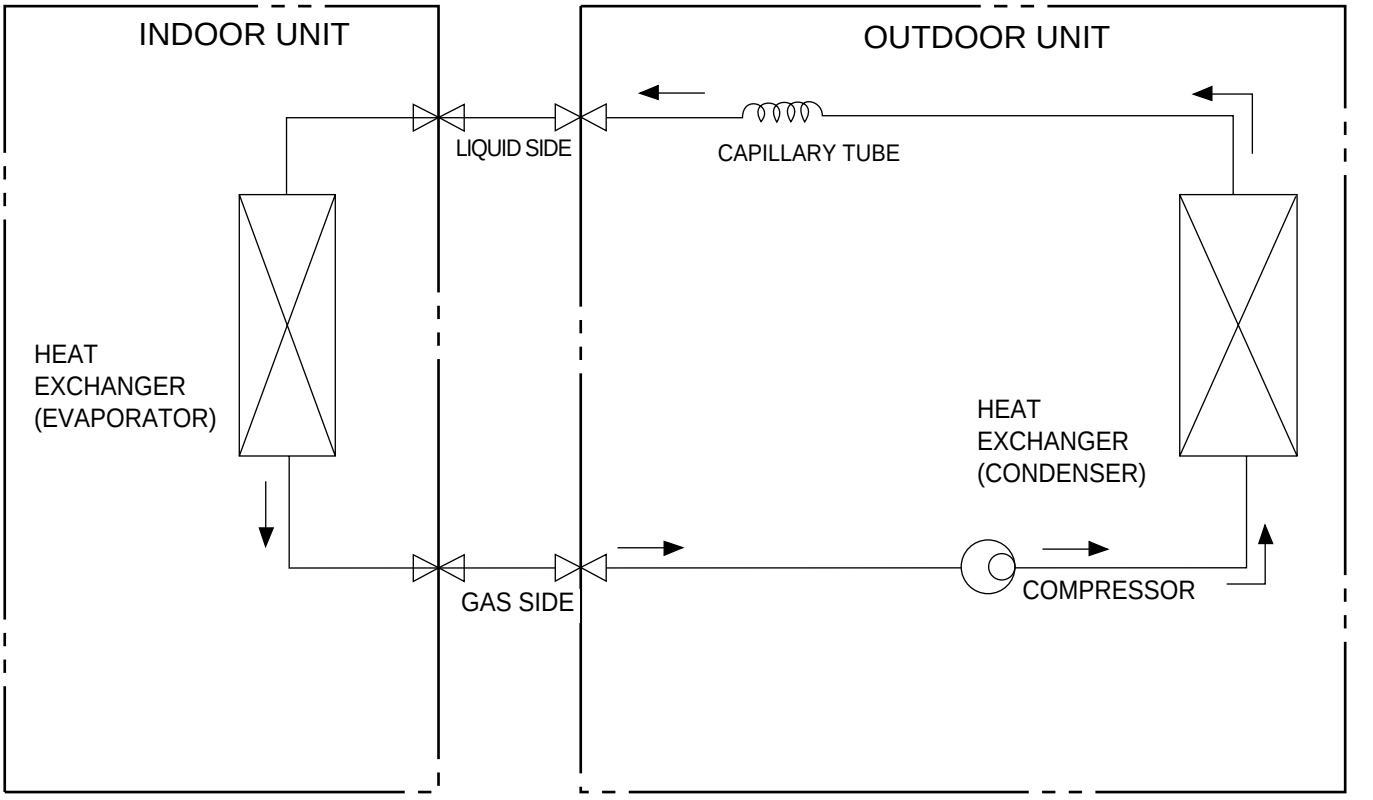
5. To remove the Motor.
- Remove the securing bolt from the motor shaft.
- Pull the fan out from the motor shaft.
- Remove 4 screws securing motor mount from the chassis and lift up the motor mount and the bracket.



Troubleshooting Guide

Refrigeration Cycle Diagram

• Cooling Only Models



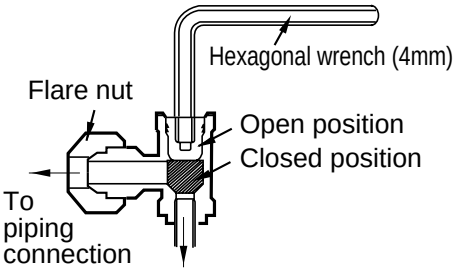
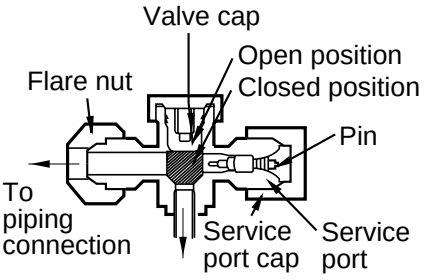
MODEL	Pipe size(Diameter:ø)		Piping length		Elevation	
	Gas	Liquid	Rated	Max	Rated	Max
9K, 12K (Cooling Only)	1/2"	1/4"	7.62m(25ft)	15m(50ft)	5m(16ft)	7m(23ft)

For installation over rated, *a proper quantity of refrigerant should be added for each meter.

a proper quantity of refrigerant	
9K, 12K	20g

Ex) 9K: When installed at a distance of 15m, 148g of refrigerant should be added.
(15-7.62) x 20g = 148g

2-way, 3-way Valve

		2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
		 To outdoor unit	 To outdoor unit	
	Works	Shaft position	Shaft position	Service port
	Shipping	Closed (with valve cap)	Closed (with valve cap)	Closed (with cap)
1.	Air purging (Installation)	Open (counter-clockwise)	Closed (clockwise)	Open (push-pin or with vacumm pump)
	Operation	Open (with valve cap)	Open (with valve cap)	Closed (with cap)
2.	Pumping down (Transfering)	Closed (clockwise)	Open (counter-clockwise)	Open (connected manifold gauge)
3.	Evacuation (Servicing)	Open	Open	Open (with charging cylinder)
4.	Gas charging (Servicing)	Open	Open	Open (with charging cylinder)
5.	Pressure check (Servicing)	Open	Open	Open (with charging cylinder)
6.	Gas releasing (Servicing)	Open	Open	Open (with charging cylinder)

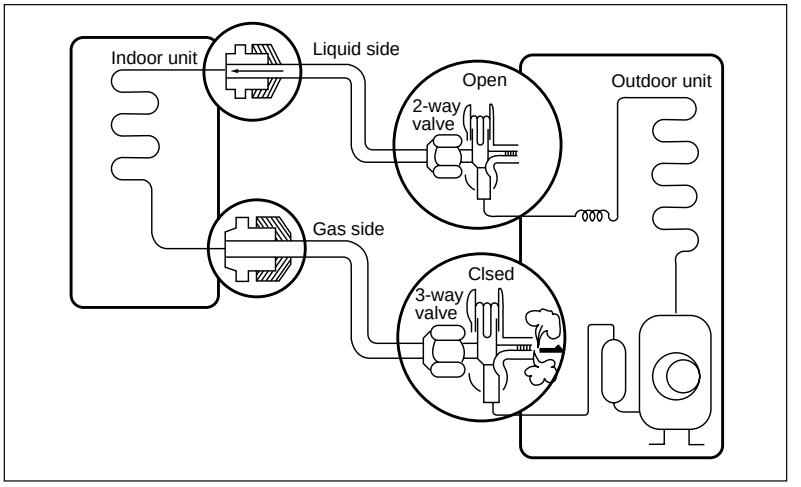
1. Air purging

Required tools : hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, and gas leak detector.

The additional gas for air purging has been charged in the outdoor unit.
However, if the flare connections have not be done correctly and there gas leaks, a gas cylinder and the charge set will be needed.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.

Service port nut:



Be sure, using a torque wrench to tighten the service port nut (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

*** CAUTION : Do not leak the gas in the air during Air purging.**

• Procedure

(1) Recheck the piping connections.

(2) Open the valve stem of the 2-way valve counterclockwise approximately 90°, wait 10 seconds, and then set it to closed position.
- Be sure to use a hexagonal wrench to operate the valve stem.

(3) Check for gas leakage.
- Check the flare connections for gas leakage.

(4) Purge the air from the system.
- Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port.
- Using the hexagonal wrench to press the valve core pin, discharge for three seconds and then wait for one minute. Repeat this three times.

(5) Use torque wrench to tighten the service port nut to a torque of 1.8kg.cm.

(6) Set the 3-way valve to the back seat.

(7) Mount the valve stem nuts to the 2-way and 3-way valves.

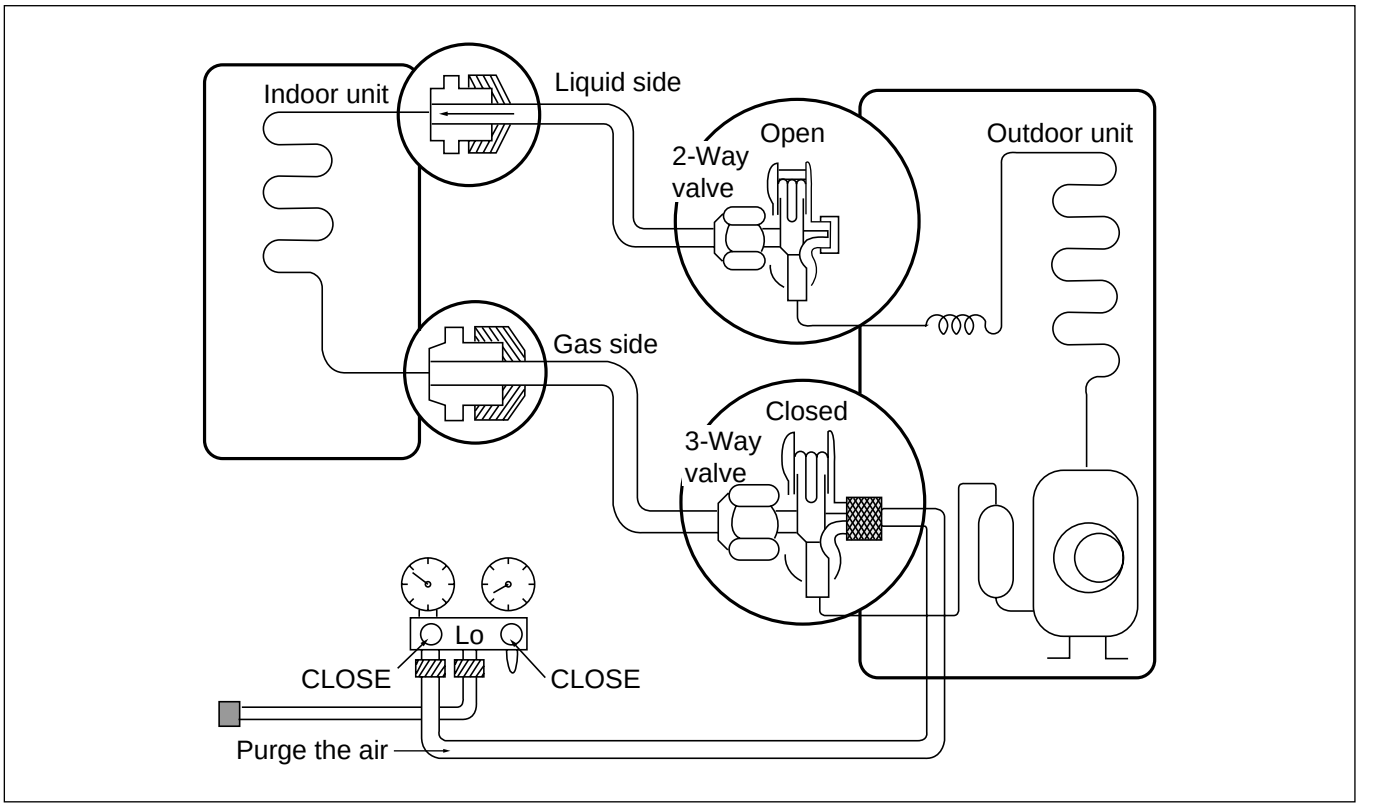
(8) Check for gas leakage.
- At this time, especially check for gas leakage from the 2-way and 3-way valve's stem nuts, and from the service port nut.

⚠ Caution

If gas leakage are discovered in step (3) above, take the following mesures :

If the gas leaks stop when the piping connections are tightened further, continue working from step (4).
If the gas leaks do not stop when the connections are retightened, repair the location of the leak, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

2. Pumping down



• Procedure

(1) Confirm that both the 2-way and 3-way valves are set to the open position.
- – Remove the valve stem caps and confirm that the valve stems are in the raised position.
- – Be sure to use a hexagonal wrench to operate the valve stems.

(2) Operate the unit for 10 to 15 minutes.

(3) Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
- – Connect the charge hose with the push pin to the service port.

(4) Air purging of the charge hose.
- – Open the low-pressure valve on the charge set slightly to air purge from the charge hose.

(5) Set the 2-way valve to the closed position.

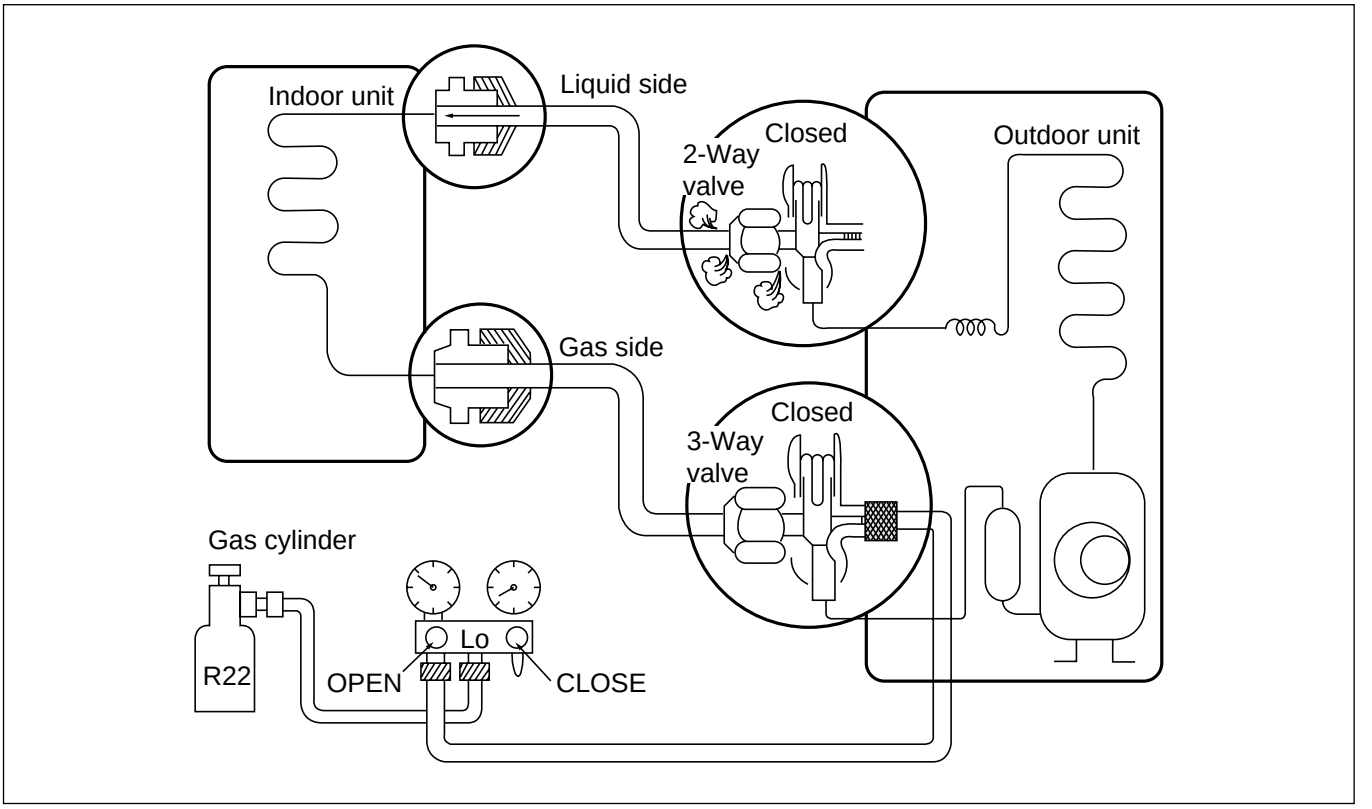
(6) Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1kg/cm²g.

(7) Immediately set the 3-way valve to the closed position.
- – Do this quickly so that the gauge ends up indicating 3 to 5kg/cm²g.

(8) Disconnect the charge set, and mount the 2-way and 3-way valve's stem nuts and the service port nut.
- – Use torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
- – Be sure to check for gas leakage.

1) Re-air purging

(Re-installation)



• Procedure

(1) Confirm that both the 2-way valve and the 3-way valve are set to the closed position.

(2) Connect the charge set and a gas cylinder to the service port of the 3-way valve.
- Leave the valve on the gas cylinder closed.

(3) Air purging.
- Open the valves on the gas cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.
- After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

(4) Check for gas leakage.
- Check the flare connections for gas leakage.

(5) Discharge the refrigerant.
- Close the valve on the gas cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm^{2}g.

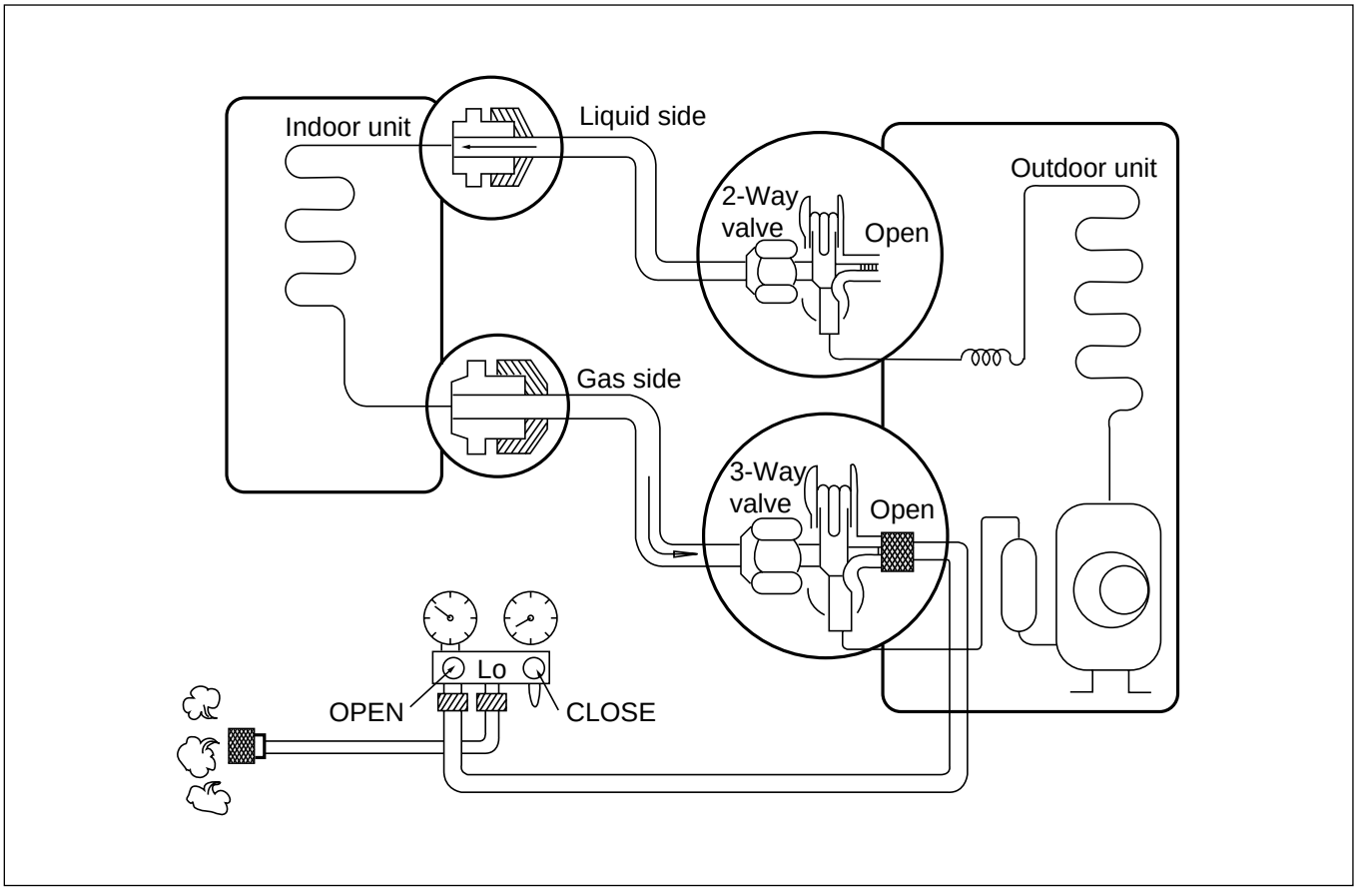
(6) Disconnect the charge set and the gas cylinder, and set the 2-way and 3-way valves to the open position.
- Be sure to use a hexagonal wrench to operate the valve stems.

(7) Mount the valve stem nuts and the service port nut.
- Use torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
- Be sure to check for gas leakage.

*** ⚠ CAUTION:**
Do not leak the gas in the air during Air Purging.

2) Balance refrigerant of the 2-way, 3-way valves

(Gas leakage)



• Procedure

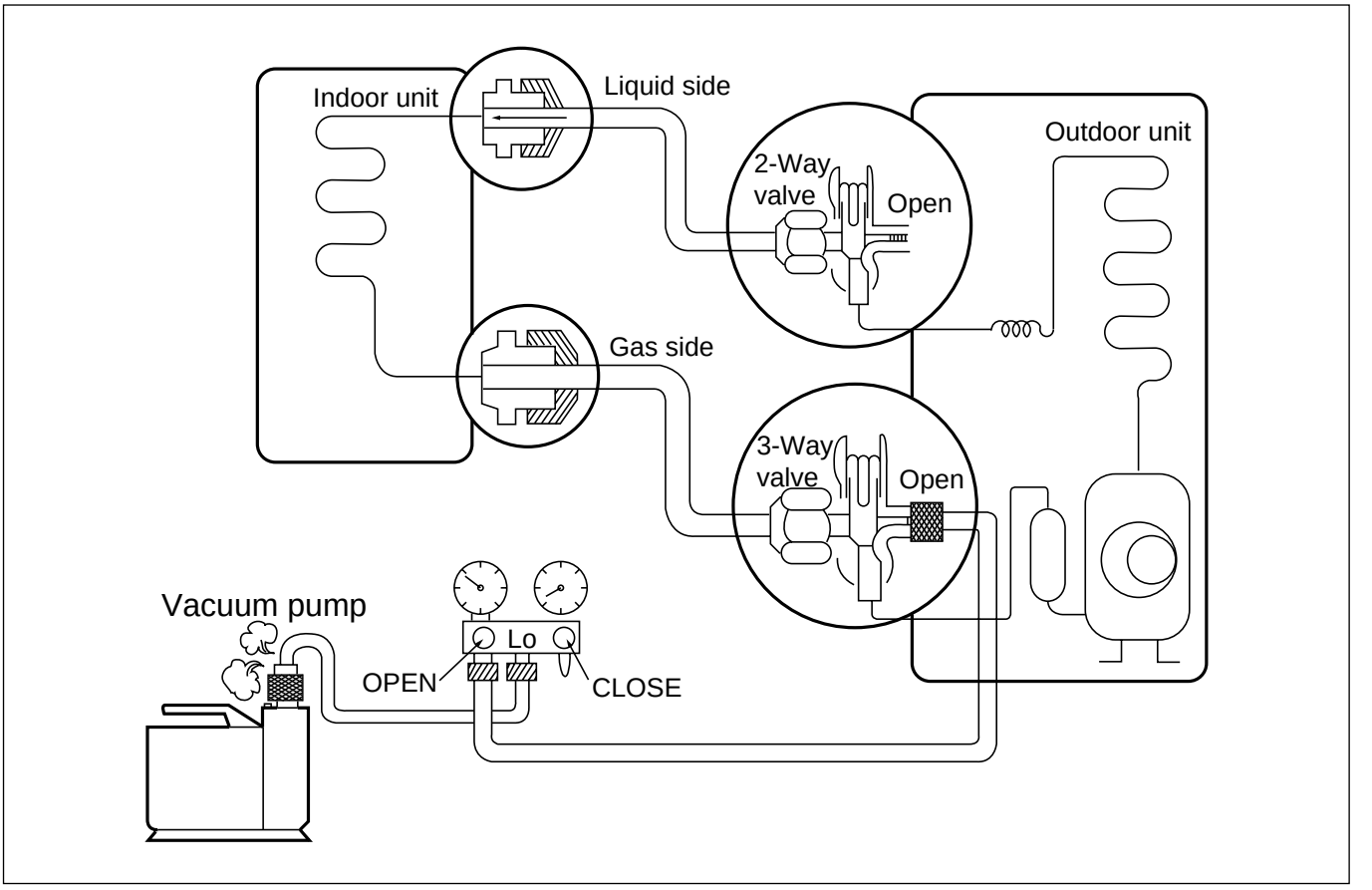
(1) Confirm that both the 2-way and 3-way valves are set to the back seat.

(2) Connect the charge set to the 3-way valve's port.
- Leave the valve on the charge set closed.
- Connect the charge hose with the push pin to the service port.

(3) Open the valve (Lo side) on the charge set and discharge the refrigerant until the gauge indicates 0 kg/cm²G.
- If there is no air in the refrigerant cycle (the pressure when the air conditioner is not running is higher than 1 kg/cm²G), discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm²G. if this is the case, it will not be necessary to apply a evacuatin.
- Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

3. Evacuation

(All amount of refrigerant leaked)



• Procedure

(1) Connect the vacuum pump to the charge set's center hose

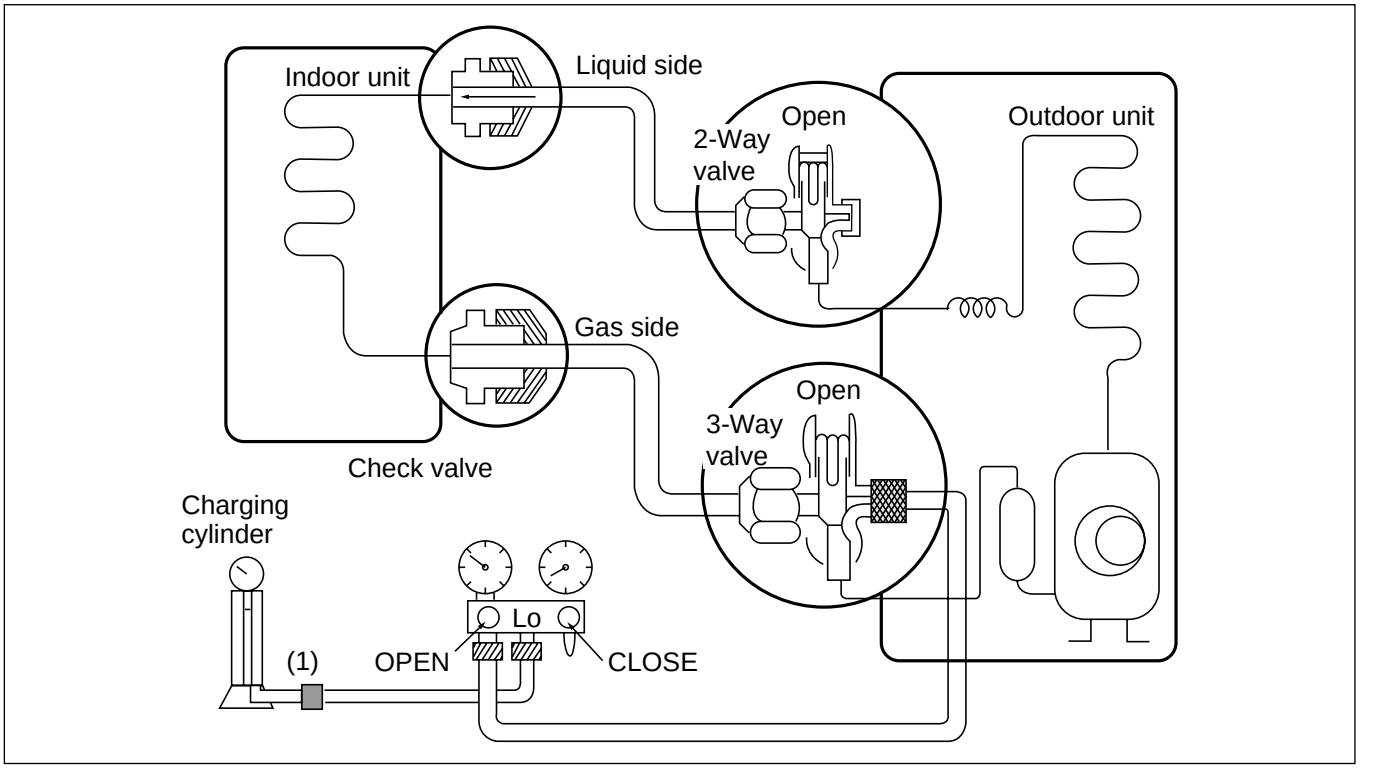
(2) Evacuation for approximately one hour.
– Confirm that the gauge needle has moved toward -76 cmHg (vacuum of 4 mmHg or less).

(3) Close the valve (Lo side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

(4) Disconnect the charge hose from the vacuum pump.
– Vacuum pump oil.
If the vacuum pump oil becomes dirty or depleted, replenish as needed.

4. Gas Charging

(After Evacuation)



• Procedure

(1) Connect the charge hose to the charging cylinder.
- Connect the charge hose which you dis-connected from the vacuum pump to the valve at the bottom of the cylinder.
- If you are using a gas cylinder, also use a scale and revers the cylinder so that the system can be charged with liquid.

(2) Purge the air from the charge hose.
- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant). The procedure is the same if using a gas cylinder.

(3) Open the valve (Lo side on the charge set and charge the system with liquid refrigerant.
- If the system can not be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure (pumping down-pin).

This is different from previous procedures.
Because you are charging with liquid refrigerant from the gas side, absolutely do not attempt to charge with larger amounts of liquid refrigerant while operating the air conditioner.

(4) Immediately disconnect the charge hose from the 3-way valve's service port.
- Stopping partway will allow the gas to be discharged.
- If the system has been charged with liquid refrigerant while operating the air conditioner turn off the air conditioner before disconnecting the hose.

(5) Mount the valve stem nuts and the service port nut.
- Use torque wrench to tighten the service port nut to a torque of 1.8 kg.m.
- Be sure to check for gas leakage.

Cycle Parts

1. Trouble analysis

1. Check temperature difference between intake and discharge air and operating current.

Temp. Difference / Operating Current	Temp. difference :approx. 0°F Current :less than 80% of rated current	All amount of refrigerant leaked out. Check refrigeration cycle.
	Temp. difference :approx. 8°C(14°F) Current :less than 80% of rated current	Refrigerant leakage Clog of refrigeration cycle Defective compressor
	Temp. difference :less than 8°C(14°F) Current :less than 80% of rated current	Excessive amount of refrigerant
	Temp. difference :over 8°C(14°F)	Normal

Notice:
Temperature difference between intake and discharge air depends on room air humidity. When the room air humidity is relatively higher, temperature difference is smaller. When the room air humidity is relatively lower temperature difference is larger.

2. Check temperature and pressure of refrigeration cycle.

Suction pressure (Compared with the normal value)	Temperature (Compared with the normal value)	Cause of Trouble	Description
Higher	High	Defective compressor Defective 4-way reversing valve	Current is low.
	Normal	Excessive amount of refrigerant	High pressure does not quickly rise at the beginning of operation.
Lower	Higher	Insufficient amount of refrigerant(Leakage) Clogging	Current is low. Current is low.

Notice:
1. The suction pressure is usually 4.5~5.0 kg/cm^{2}G at normal condition.
2. The temperature can be measured by attaching the thermometer to the low pressure tubing and wrap it with putty.

Electronic Parts

2. Product does not operate at all.
(* Refer to Electronic Control Device drawing and Schematic diagram.)

Turn off Main Power

⇩ (After 10 seconds)

Turn on Main Power

⇩

Does "beeping" sound is made from the Indoor Unit?

NO ⇩

Check the voltage of power(About AC 208V/AC230V, 60Hz)

- Main power's voltage
- Voltage applied to the unit
- Connecting method of Indoor/Outdoor connecting cable
- Check PWB Ass'y(Outdoor unit)
  - Fuse
  - Pattern damage
  - Varistor(ZNRI)

⇩

Check the connection housing for contacting

- Connector related to CN-POWER
- Connector related to CN-FAN
- Connector contacting of Outdoor Fan/Compressor
- Display PWB Ass'y Check
- Connector related to CN-DC/DC

⇩

YES ⇩

Primarily, the operating condition of Micom is OK.

⇩

Check each load(Indoor/Outdoor Fan Motor, Compressor, Stepping Motor) and contacting condition of related connector(including connecting cable of Indoor/Outdoor Unit)

PCB Board Operation Check		
Items	Content	Remedy
• Power Transformer (Outdoor unit) - Input Voltage - Output Voltage	- About AC208V/230V±10% - Check the power voltage - About AC17±3V	• Replace Trans
⇩ • IC2(7812) Output (Indoor/Outdoor unit)	• DC +12V	• Replace IC2
⇩ • IC3(7805) Output (Indoor/Outdoor unit)	• DC +5V	• Replace IC3
⇩ • IC4(KIA7036, Reset IC) OSC01B(4MHz) (Indoor/Outdoor unit)	• Voltage of Outdoor unit Micom No. 8, Voltage of Indoor unit Micom No. 43 and soldering condition	• Replace faulty parts

3. The product is not operate with the remote controller.

Turn on Main Power

While the compressor has been stopped, the compressor does not operate owing to the delaying function for 3 minutes after stopped.

When the compressor stopped Indoor Fan is driven by a low speed. At this point the wind speed is not controlled by the remote controller. (When operated in the Sleeping Mode, the wind speed is set to the low speed by force.)

Cause by the remote controller

When the mark( ) is displayed in LCD screen, replace battery.

When the detect switch(double key) inside the remote controller door is fault, it is impossible to operate temperature regulating(▲/▼) and wind speed selecting.

Check the connecting circuit between the remote controller MICOM (No. ㉚) - R17(2Ω) - IR LED - Q1 - R16(2.2KΩ).

Caused by other parts except the remote controller

Check the contact of CN-DISP connector.

Check DISP PWB Ass'y
- Voltage between CN DISP ① - ⑦ : DC +5V

Check point

- Check the connecting circuit between PIN ② - R75(1K) - C71(1000PF) - MICOM PIN
- Check Receiver Ass'y

4. Compressor/Outdoor Fan are unable to drive.

Turn on Main Power

Operate "Cooling Mode(❋)" by setting the desired temperature of the remote controller is less than one of the indoor temperature by 2°F at least.

When in Fan Mode, Compressor/Outdoor Fan is stopped.

Check the sensor for indoor temperature is attached as close as to be effected by the temperature of Heat Exchanger(EVA).

When the sensor circuit for indoor temperature and connector are in bad connection or are not engaged, Compressor/Outdoor Fan is stopped.

- Check the related circuit of R02(12.1K), R04(6.2K), Micom (No.27) (Indoor unit).
- Check the indoor temperature sensor is disconnected or not(About 10kΩ / at 25°C).

When the temperature around Outdoor PWB Ass'y is above 163°F the compressor is stop and only Outdoor Fan is operating.

Check Relay(RY - COMP) for driving compressor.

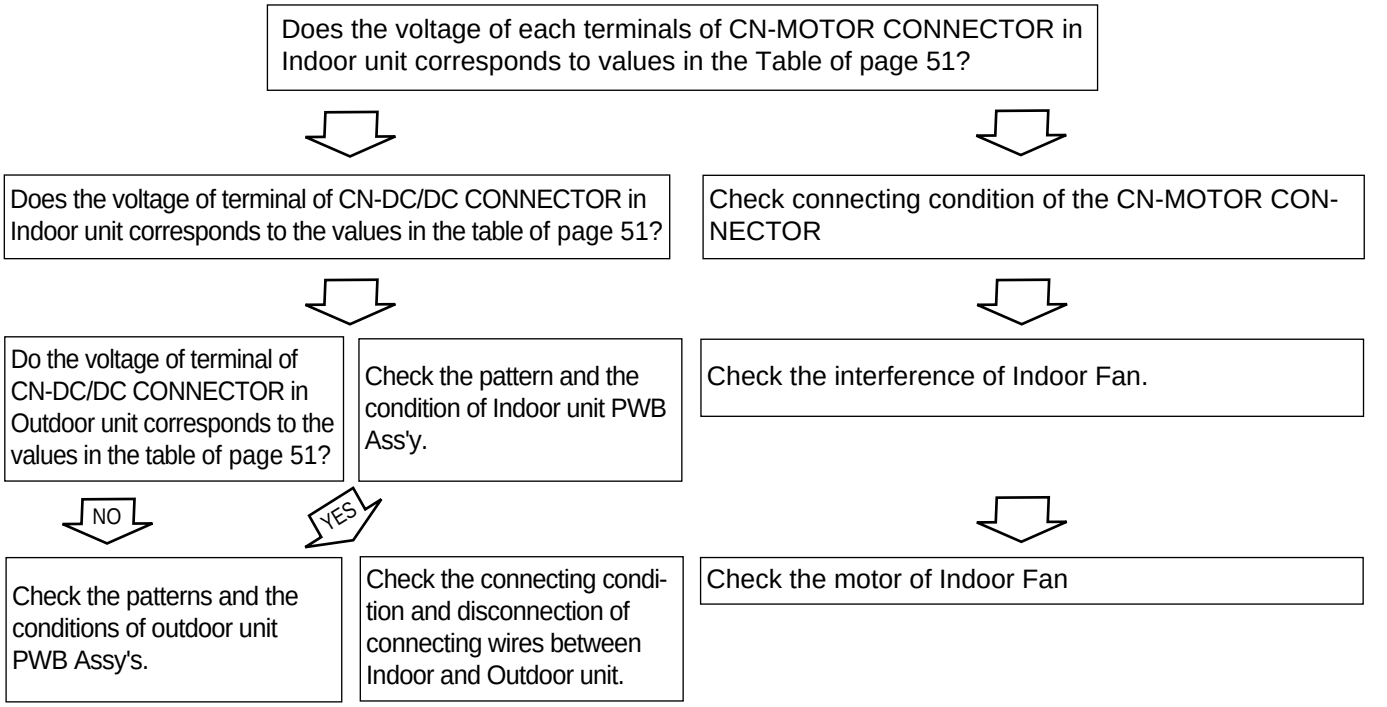
- When the power(About AC200V) is applied to the connecting wire terminal support transferred to compressor, PWB Ass'y is normal.
- Check the circuit related to the relay(Outdoor unit).

Check point	COMP ON	COMP OFF
Between Micom(No. 15) and GND	DC5V	DC0V
Between IC8(No. 16) and GND IC0M(No.16)	Below DC 1V (app)	About DC12V

Turn off Main Power

- Check the electrical wiring diagram of outdoor side.
- Check the abnormal condition for the component of Compressor/Outdoor Fan Motor.

5. When Indoor Fan does not operate.



※ Indoor Fan may be stopped in the Soft Dry Mode(change to the Cooling Operation Mode).

※ Indoor Fan is to be stopped when Indoor pipe(coil) termperature is lower than 79°F.
(At that times, Defrost indicator is turned on)

6. When Vertical Louver does not operate.

- Confirm that the Vertical Louver is normally geared with the shaft of Stepping Motor.
- If the regular torque is detected when rotating the Vertical Louver with hands ⇒ Normal

⇩

- Check the connecting condition of CN-U/D, CN-L/R Connector
- Check the soldering condition(on PWB) of CN-U/D, CN-L/R Connector

⇩

Check the operating circuit of the Vertical Louver

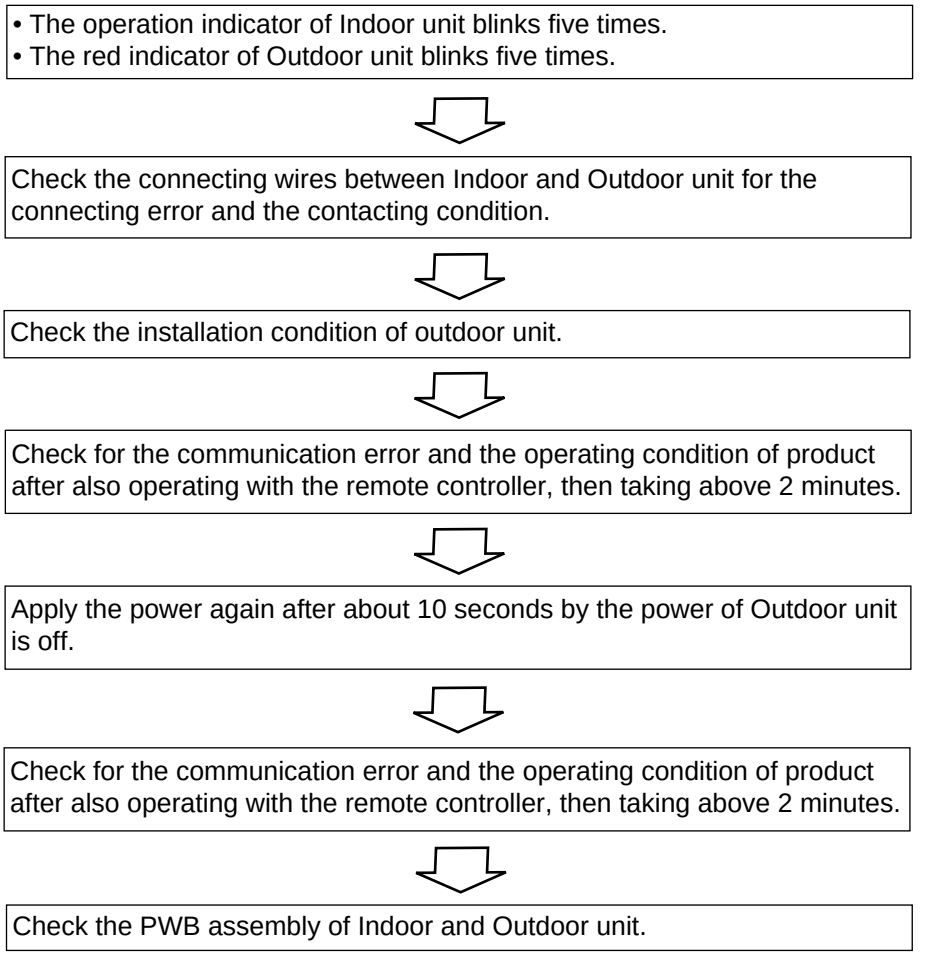
- Confirm that there is DC +12V between pin②(RED) of CN-U/D, CN-L/R and GND.
- Confirm that there is a soldering short at following terminals.
  - Between ⑫, ⑪, ⑩ and ⑨ of MICOM
  - Between ⑦, ⑥, ⑤ and ④ of MICOM
  - Between ①, ⑩, ⑨ and ⑧ of MICOM
  - Between ①, ②, ③, ④ and ⑤ of CN-U/D, CN-L/R

⇩

If there are no problems after above checks

- Confirm the assembly conditions that are catching and interfering parts in the rotation radial of the Vertical Louver

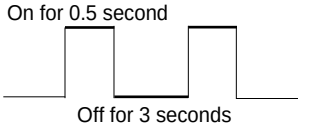
7. When a comunication error occurs.



Caution: If the connecting wires of Indoor and Outdoor unit are not connected within 2 minutes after the power of Outdoor unit is applied, a communication error will occur. Therefore, the power should be applied after connecting them.

8. The phenomena in case of connecting error

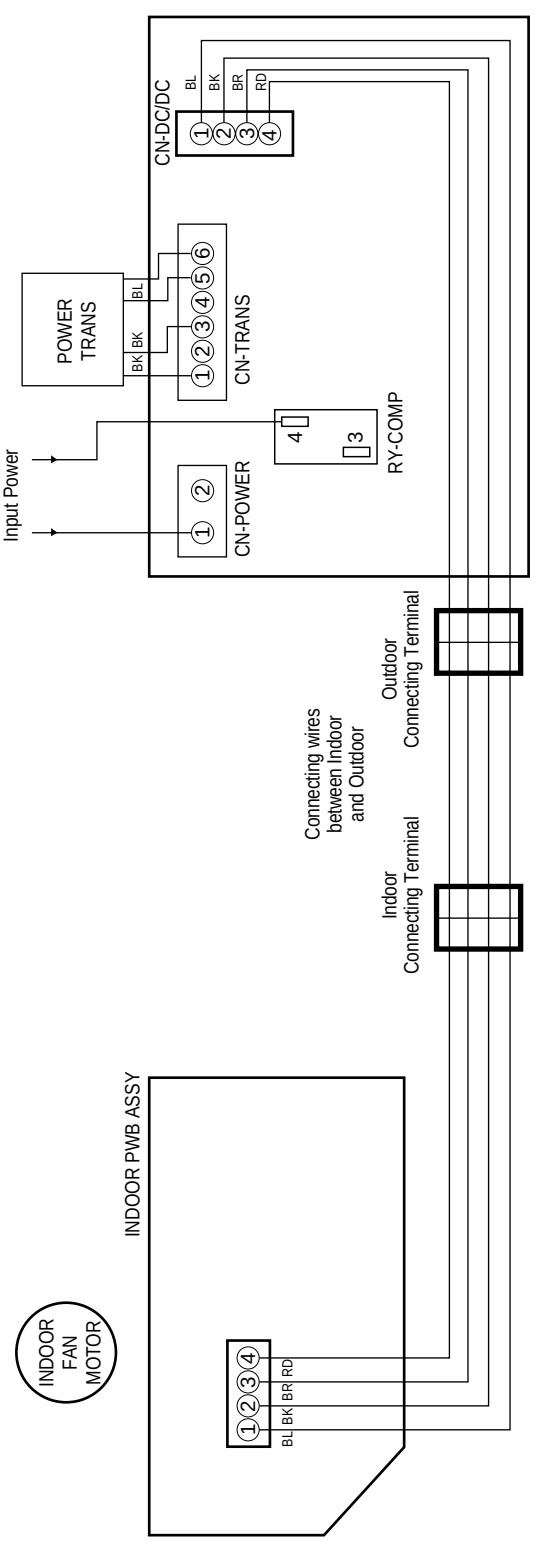
INDOOR UNIT

Connector Type	Condition	Phenomena
CN-DC/DC ① ② ③ ④ ① Blue ② Black ③ Brown ④ Red	Open and connecting error	• The same as the phenomenon of Outdoor Unit.
CN-MOTOR	Open	• The indoor fan does not operate. • The operation indicator of Indoor unit blinks 8 times.
CN-UD	Open	• The up/down vane does not operate.
	Short between terminals	• The up/down vane does not smoothly operate.
CN-D1/D2	Open	• It does not operate with a remote controller.
CN-TH	Open	• The operation indicator blinks once.  • The compressor and the outdoor fan stop. • The indoor fan speed is low.
	Short between terminals (③ and ④) of ROOM-TH.	• The operation indicator blinks once (on for 0.5 second, off for 3 seconds). • The compressor operates continuously regardless of the setting temperature and the variation of room temperature.
	Short between terminals (① and ②) of PIPE-TH.	• The operation indicator blinks once (on for 0.5 second, off for 3 seconds) • Continuous operation

OUTDOOR UNIT

Connector Type	Condition	Phenomena
CN-POWER	OPEN	• All functions stop. • The operation with the remote controller, forced and test one do not operate.
	Connecting reversely	• PWB pattern is damaged when applying the power.
RY-COMP terminal	OPEN	• All functions stop or the compressor does not operate. • The operation with the remote controller, forced and test one do not operate.
	Connecting reversely	• All functions stop. • The operation with the remote controller, forced and test one do not operate.
CN-TRANS	OPEN	• All functions stop. • The operation with the remote controller, forced and test one do not operate.
CN-FAN	OPEN	• The Indoor Fan does not operate.
The connecting wire of CN-DC/DC, and Indoor and Outdoor Unit ④ ③ ② ① ① Blue ② Black ③ Brown ④ Red	OPEN	• All functions stop. • The operation with the remote controller, forced and test one do not operate.
	Connecting error (① ↔ ②)	• The only signal of remote controller operation/stop is inputted, but the product does not operate. • The RED indicator of outdoor unit blinks 5 times after 2 minutes with applying the power.
	Connecting error (① ↔ ③)	• The beep sound, such as "beep, beep, beep, beep, beep", occurs periodically in Indoor unit. • The signal input of a remote controller and operation of product is impossible. • The RED indicator blinks 5 times after 2 minutes with applying the power.
	Connecting error (① ↔ ④)	• The signal of remote controller is inputted, but the product does not operate. • The RED indicator of outdoor unit and the operation indicator of indoor one blinks 5 times after 2 minutes with applying the power.
	Connecting error (② ↔ ③)	• No power for Indoor unit. • The signal input of the remote controller and operation of product is impossible. • The thermal protector of the Power Trans operates when let it alone for long time.
	Connecting error (② ↔ ④)	• The signal of the remote controller is inputted. • The fuse and Q61 in the Outdoor unit are damaged when the indoor fan is operated.
	Connecting error (③ ↔ ④)	• No power for Indoor unit. • The signal input of the remote controller and operation of product is impossible. • The RED indicator of the Outdoor unit blinks 5 times after 2 minutes with applying the power.

9. Voltage of Connectors according to Indoor Fan Speed

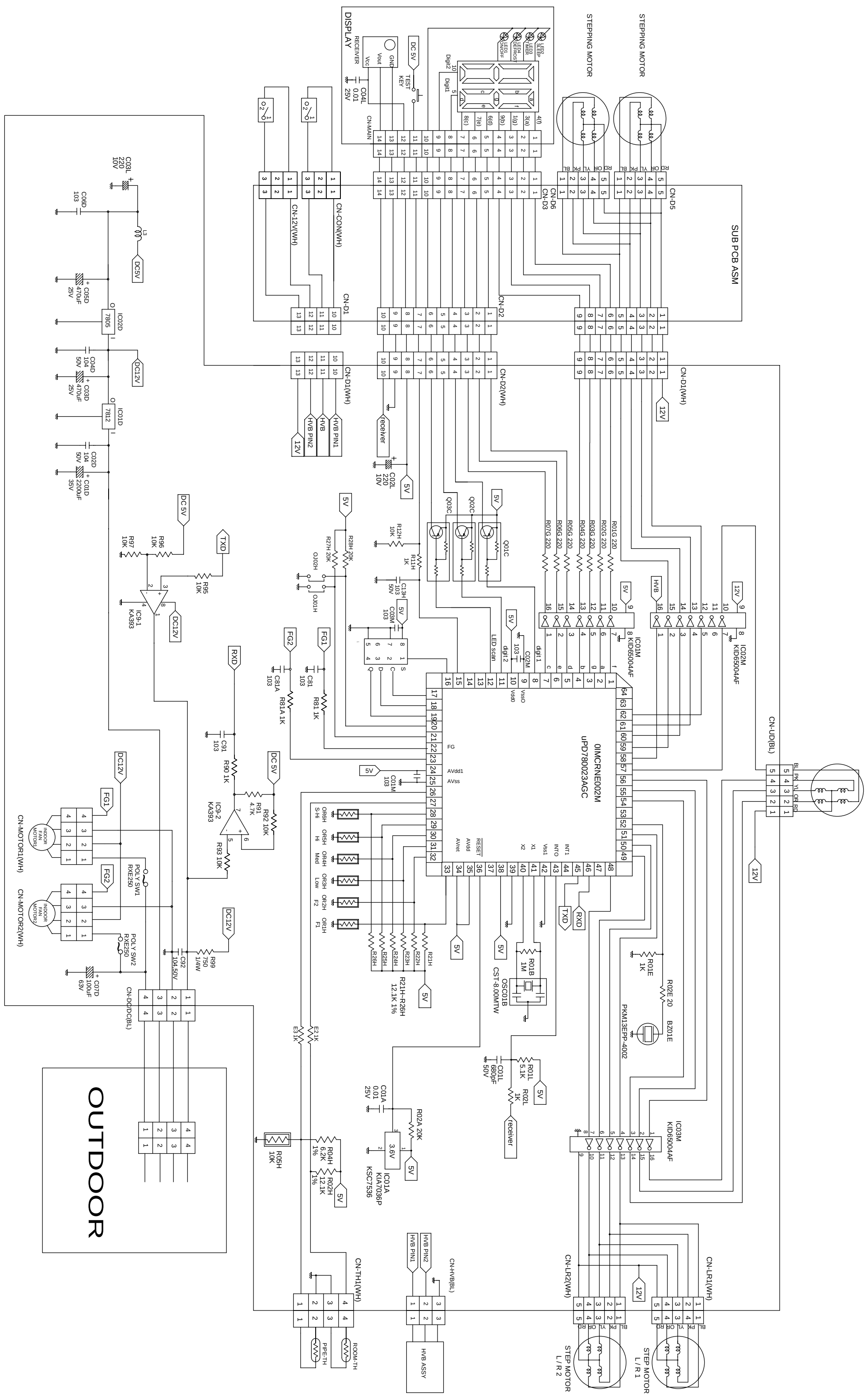


MODELS / CONNETORS	No. of pins		9K					12K					18K					24K				
			DC Voltage(±10%)					DC Voltage(±10%)					DC Voltage(±10%)					DC Voltage(±10%)				
	+	–	S-Hi	Hi	Med	Low	Off	S-Hi	Hi	Med	Low	Off	S-Hi	Hi	Med	Low	Off	S-Hi	Hi	Med	Low	Off
INDOOR CN-MOTOR	1	2	28.6	25.6	22.2	20.0	0.0	35.7	30.7	25.1	21.2	0.0	32.0	27.8	24.1	21.2	0.0	35.7	33.3	29.4	24.2	0.0
	3	2	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
	4	2	0~5	0~5	0~5	0~5	5.0	0~5	0~5	0~5	0~5	5.0	0~5	0~5	0~5	0~5	5.0	0~5	0~5	0~5	0~5	5.0
INDOOR CN-DC/DC	1	2	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12
	3	2	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	4	2	28.6	25.6	22.2	20.0	0.0	35.7	30.7	25.1	21.2	0.0	32.0	27.8	24.1	21.2	0.0	35.7	33.3	29.4	24.2	0.0
OUTDOOR CN-DC/DC	1	2	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12	0~12
	3	2	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
	4	2	29.0	25.9	22.4	20.2	0.0	36.0	30.9	25.3	21.3	0.0	32.3	28.1	24.4	21.3	0.0	36.0	33.7	29.6	24.4	0.0

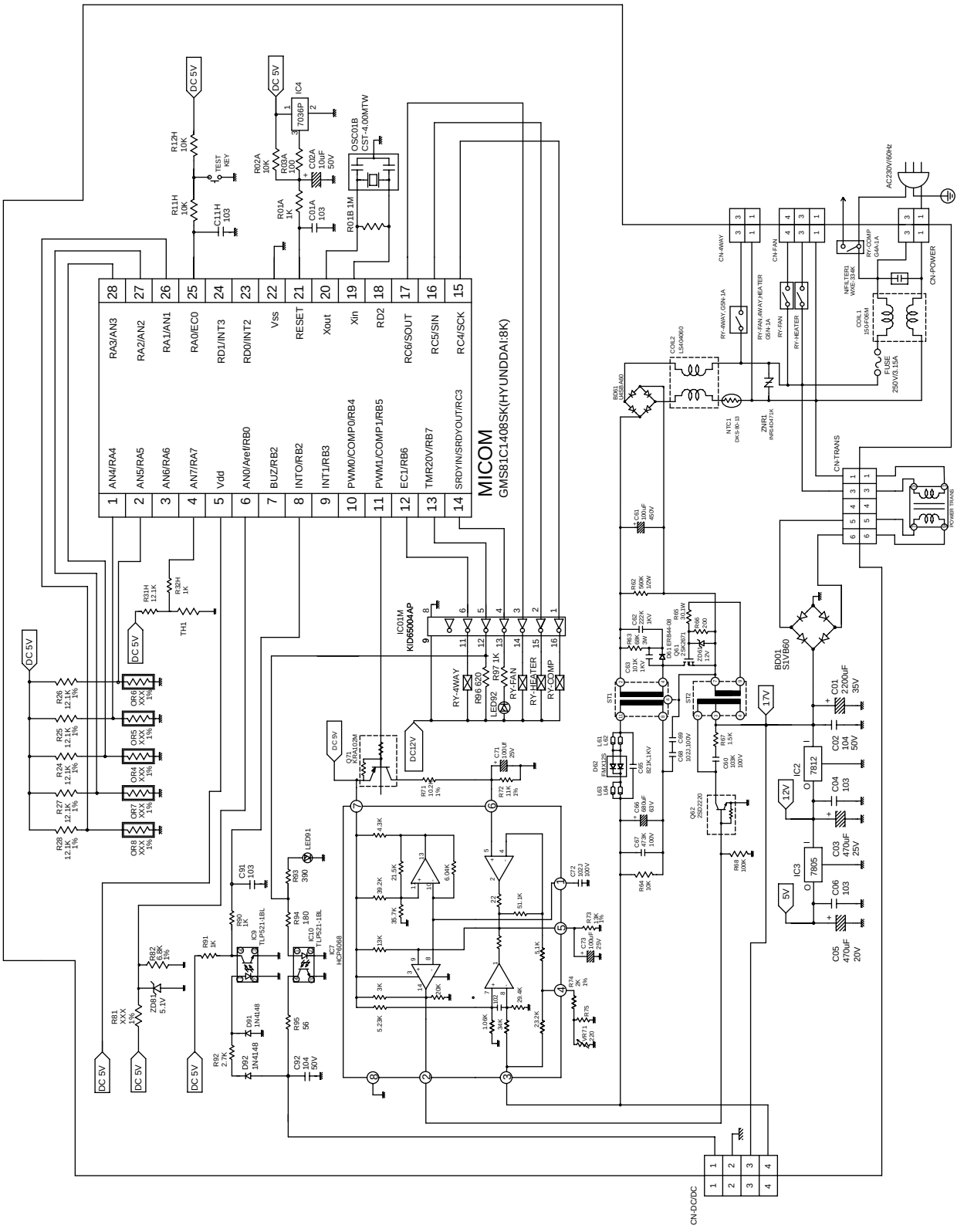
Schematic Diagram

Electric Control Device

Indoor Unit



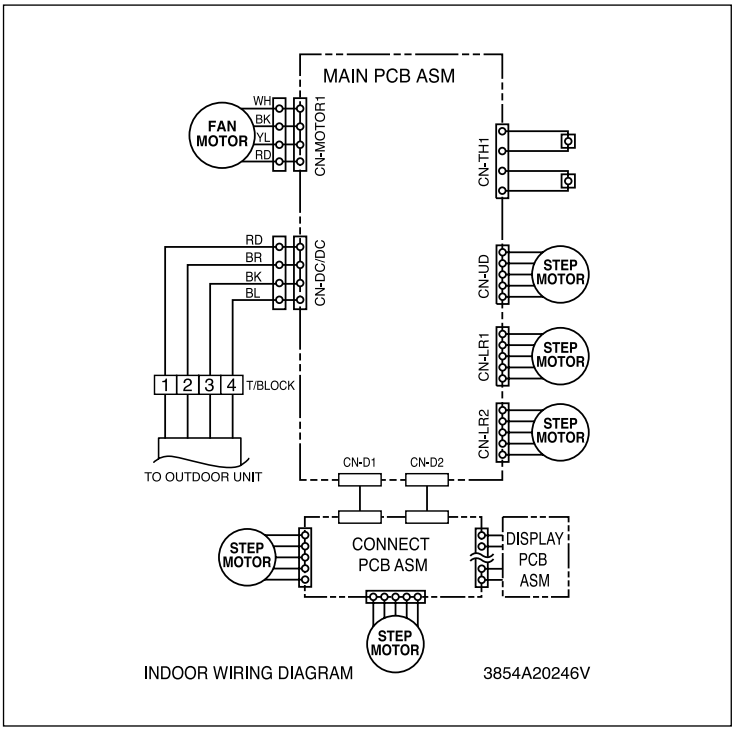
Outdoor Unit



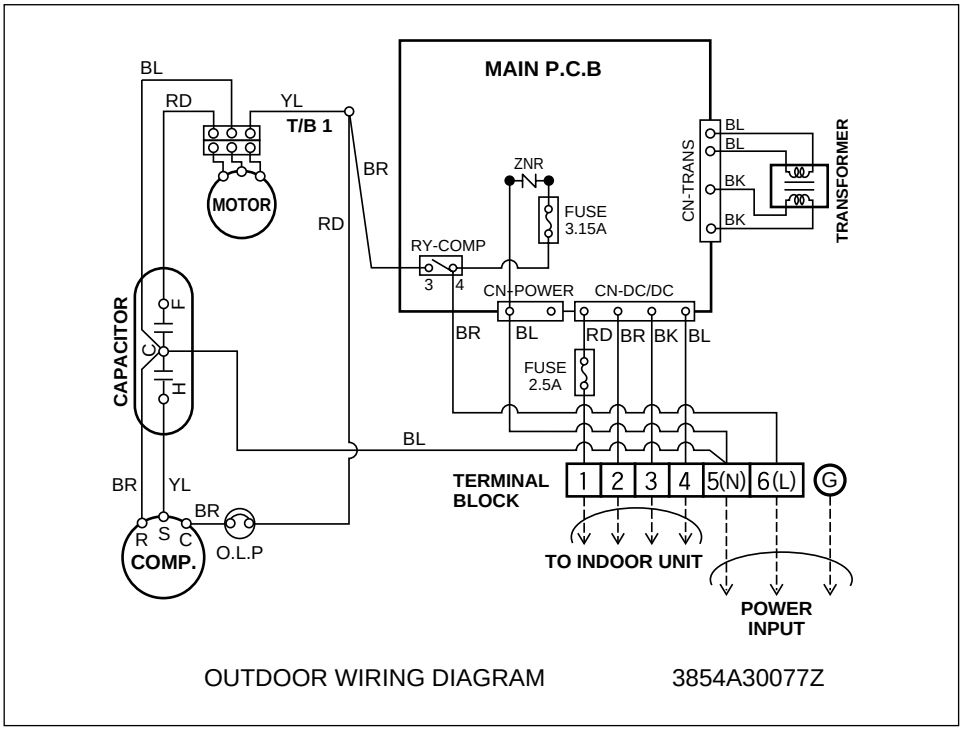
Wiring Diagram

Indoor Unit

9K, 12K (Cooling Only Models, Cooling & Heating Models)



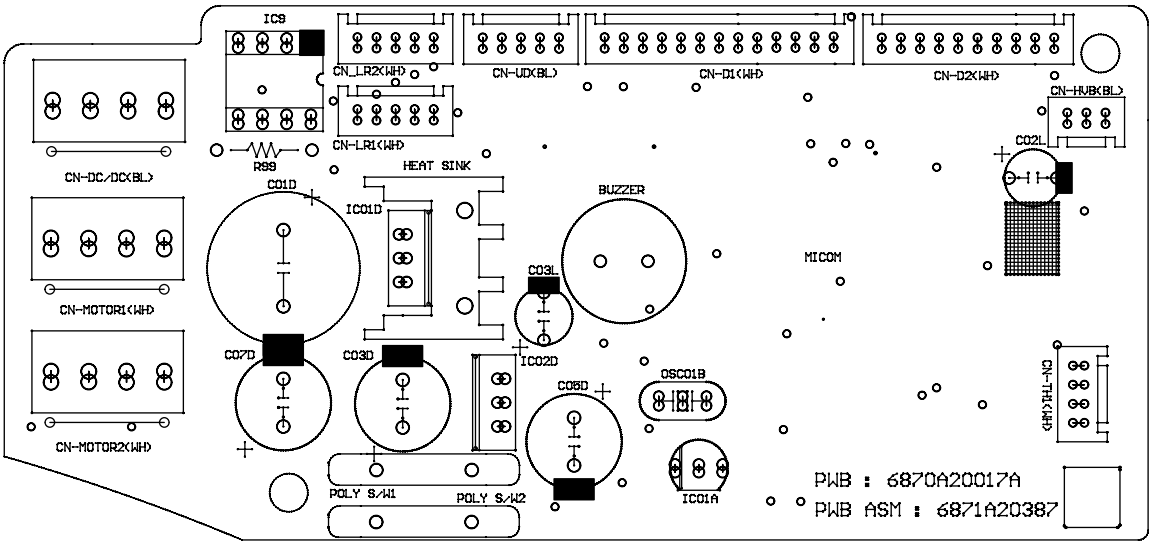
Outdoor Unit (9K, 12K)



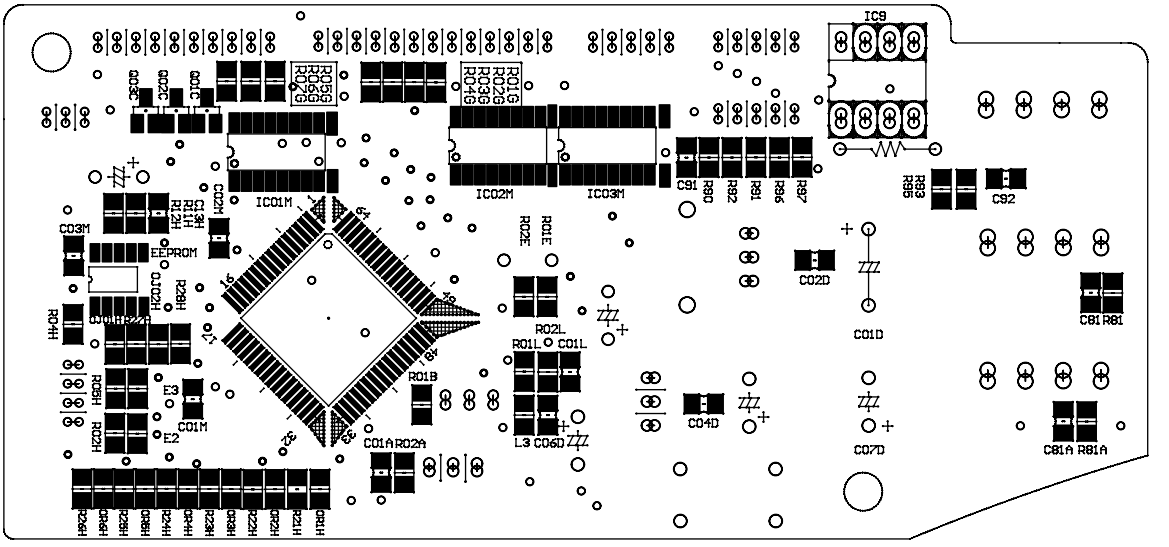
Components Location

MAIN PWB ASSY(Indoor Unit)

• TOP VIEW



• BOTTOM VIEW



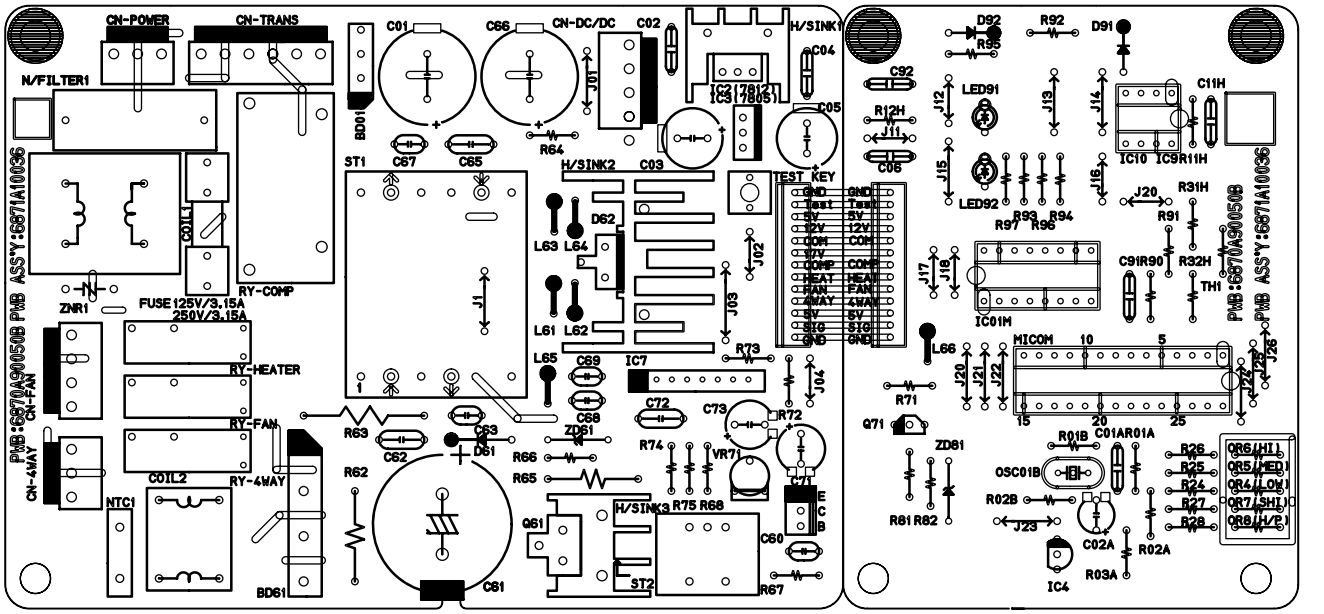
• PWB ASSY SVC PART LIST

NO	MODEL	P/No.	OPTIONAL FUNCTION					
			OR1H	OR2H	OR3H	OR4H	OR5H	OR6H
1	12K Cooling Model	6871A20387G	OPEN	15K	OPEN	OPEN	OPEN	OPEN
2	9K Cooling Model	6871A20387G	OPEN	15K	OPEN	OPEN	OPEN	OPEN

OJ1H : Short

OJ2H, OJ3H, OJ4H : OPEN

MAIN PWB ASSY(Outdoor Unit)



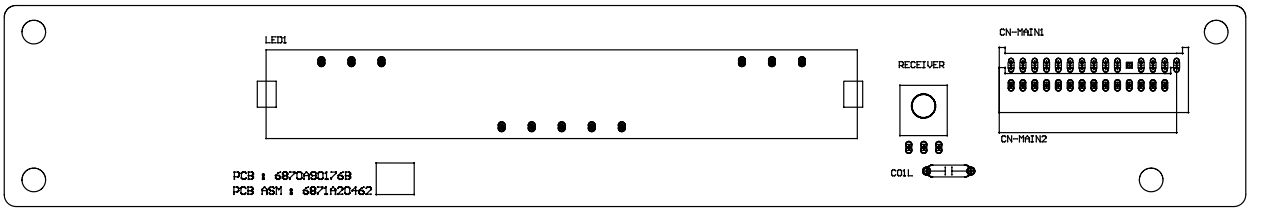
• PWB ASSY SVC PART LIST

NO	MODEL	P/No.	OPTIONAL FUNCTION											
			OR4H	OR5H	OR6H	OR7H	OR 8H	FUSE	RY-HEATER	RY-4WAY	RY-FAN	CN-4WAY	CN-FAN	CN-TH
1	12K Cooling Model	6871A10036S	27K	10K	39K	56K	39K	125V 3.15A	X	X	X	X	X	X
2	9K Cooling Model	6871A10036R	5.1K	12K	56K	56K	OPEN		X	X	X	X	X	X

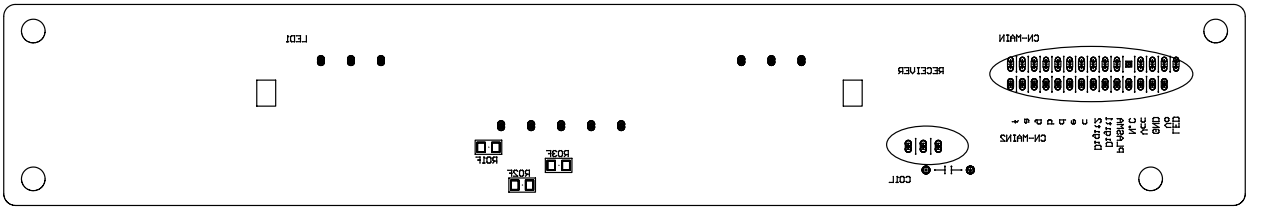
DISPLAY PWB ASSEMBLY

– 6871A20462

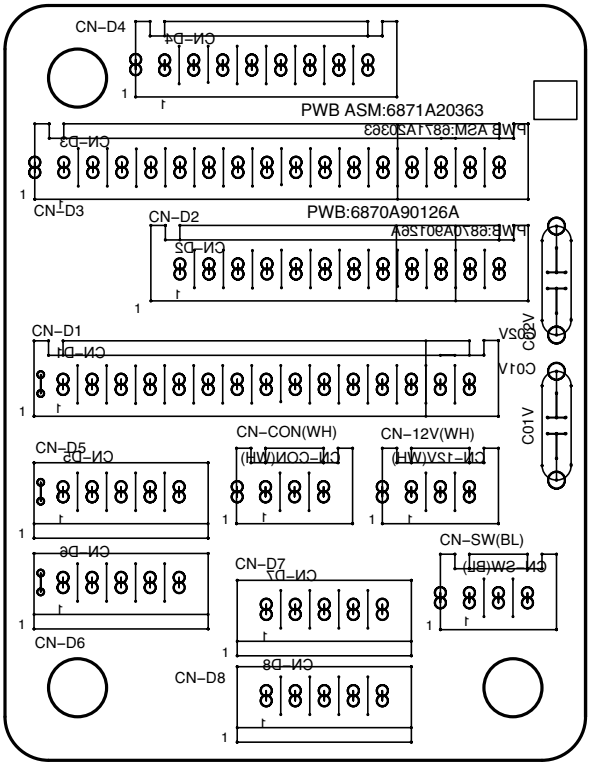
TOP VIEW



BOTTOM VIEW



SUB P.W.B ASSEMBLY



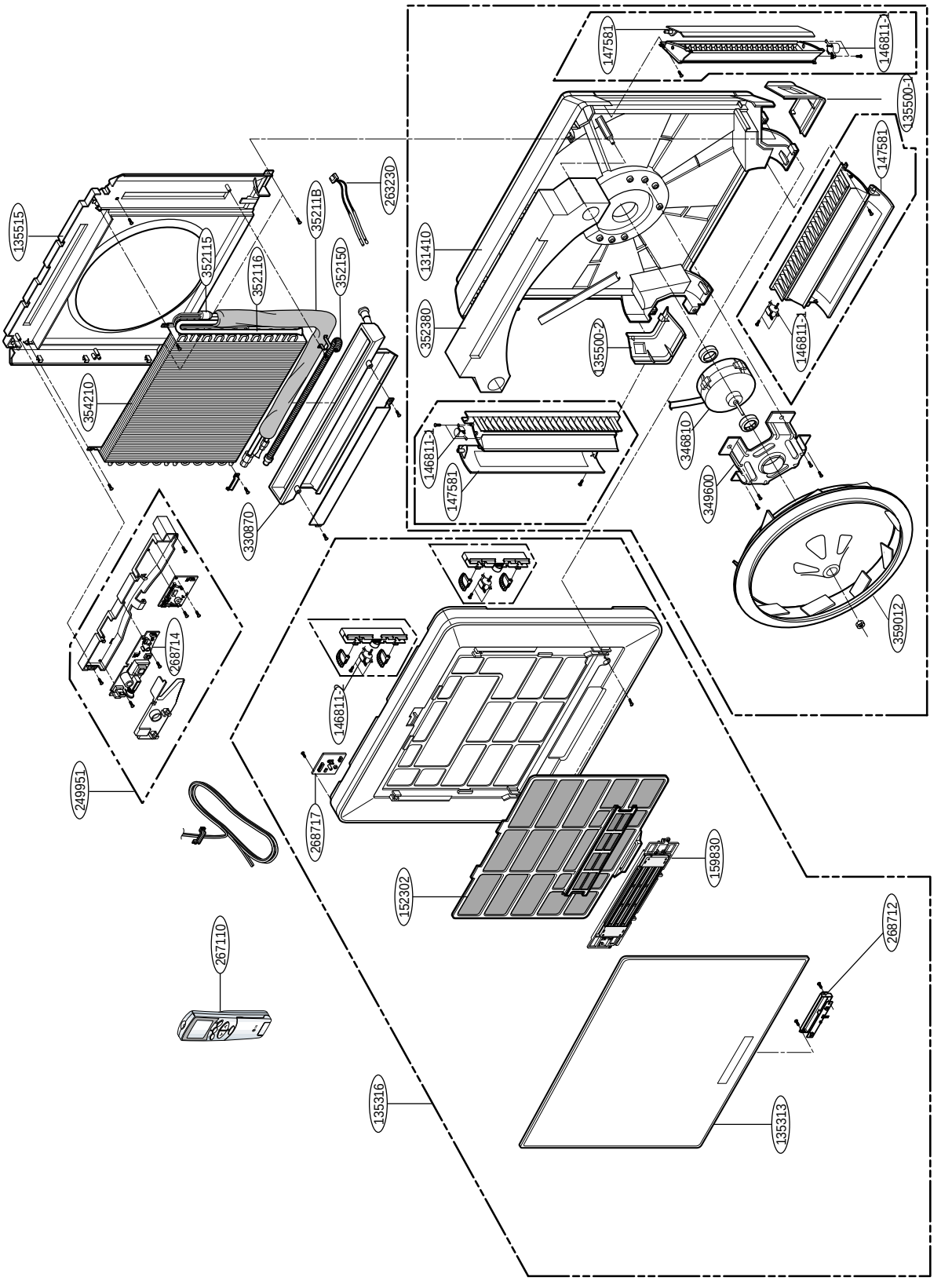
Product Specifications

Items			Unit	LA090CP	LA120CP
Power Supply			ø, V, Hz	1, 115V, 60	1, 115, 60
Cooling Capacity			BTU/h	9,000	12,000
Input			W	940	1,290
Running Current			A	8.5	11.7
COMP. Locked Rotor AMP.				A	46
E.E.R			BTU/hW	9.6	9.3
Air Circulation			m^3/min(cfm)	7.1(250)	8.8(330)
Moisture Removal			l/h(pts/hr)	1.2(2.6)	1.4(3)
Noise Level (Sound Pressure, 1m)	Indoor, High		dB(A)±3	39	43
	Med		dB(A)±3	34	37
	Low		dB(A)±3	30	34
	Outdoor, Max		dB(A)±3	46	46
Features	Temperature Control			Thermistor	Thermistor
	Air Deflection			4-way	4-way
	Steps, Fan/Cool			3/4	3/4
	Airflow Direction Control(up&down)			Auto	Auto
	Airflow Direction Control(left&right)			Manual	Manual
	Remocon Type			Wireless LCD	Wireless LCD
	Setting Temperature Range, Cooling Mode			64~86°F	64~86°F
	Temperature Increment			2°F	2°F
	Auto Operation(electronic control)			Yes	Yes
	Self Diagnosis			Yes	Yes
	Timer			24hr, On/Off	24hr, On/Off
	Sleep Operation			Yes	Yes
	Healthy Dehumidification Mode			Yes	Yes
	Restart Delay		minutes	3	3
Refrigerant(R-22) Charge			g(oz)	740(26.1)	630(22.2)
Power cord			AWG #: P*mm^2	14:3*2.5	14:3*2.5
Fuse or breaker Capacity			A	15A	20A
Connecting Cable			AWG #: P*mm^2	16:4*0.75	18:4*0.75
Connecting Tube (ø. Socket Flare)	Liquid Side		mm(in)	6.35(1/4)	6.35(1/4)
	Gas Side		mm(in)	12.7(1/2)	12.7(1/2)
	Length, std		m(ft)	7.62(25)	7.62(25)
Additional Drain Hose(Outer Dia.)			mm(in)	19(6/8)	19(6/8)
Dimensions (WxHxD)	Indoor		mm	570*568*137	570*568*137
			in	22.4*22.3*5.4	22.4*22.3*5.4
	Outdoor		mm	770*540*245	770*540*245
			in	30.3*21.3*9.6	30.3*21.3*9.6
Net Weight	Indoor		kg(lbs)	8.5(18.7)	8.5(18.7)
	Outdoor		kg(lbs)	33(72.8)	33(72.8)

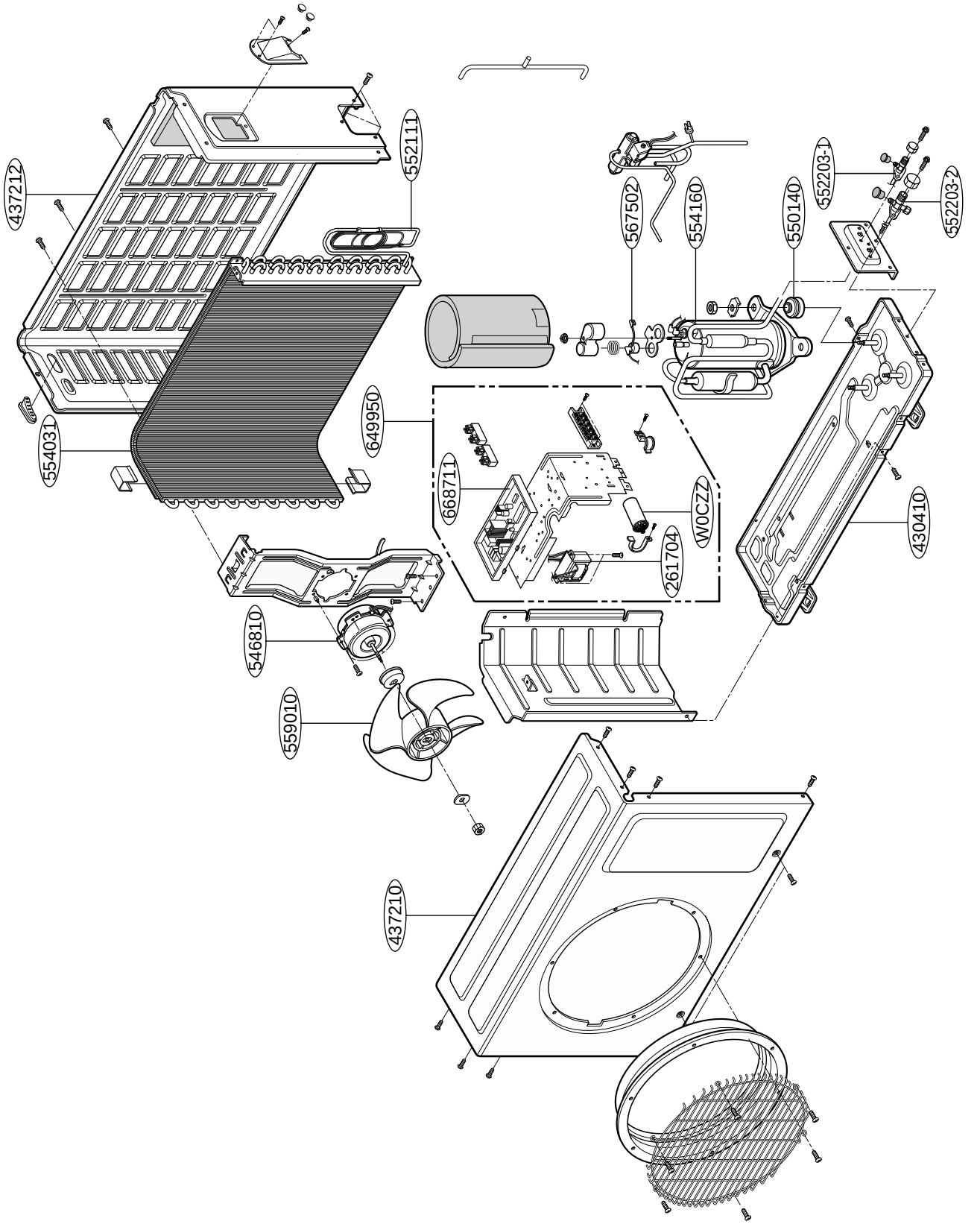
NOTE: Please refer to Label Quality on the product since this specification may be changed for improving performance

Exploded View

Indoor Unit



Outdoor unit



Replacement Parts List

Indoor Unit

LOCATION No.	DESCRIPTION	PART No.		REMARKS
		LA090CP	LA120CP	
131410	CHASSIS ASSEMBLY	3141A20030C	3141A20030C	R
135313	GRILLE ASSEMBLY,FRONT(INDOOR)	3531A20277V	3531A20277V	R
135316	GRILLE ASSEMBLY,INLET	3531A20278A	3531A20278A	R
135500-1	COVER	3550A20123C	3550A20123C	R
135500-2	COVER	3550A20124B	3550A20124B	R
135500-3	COVER	3550A20060A	3550A20060A	-
135515	COVER ASSEMBLY,TOP(INDOOR)	3551A20031F	3551A20031F	R
146811	MOTOR ASSEMBLY,STEP	4681A20055A	4681A20055A	R
147581	LOUVER,HORIZONTAL	4758A20014B	4758A20014B	R
152302	FILTER(MECH),A/C	5230A20032A	5230A20032A	R
159830	AIR CLEANER ASSEMBLY	5983A20007T	5983A20007T	R
249951	CONTROL BOX ASSEMBLY,INDOOR	4995A20291R	4995A20291R	R
263230	THERMISTOR ASSEMBLY	6323A20004N	6323A20004N	R
267110	REMOTE CONTROLLER ASSEMBLY	6711A20083R	6711A20083R	R
268712	PWB(PCB) ASSEMBLY,DISPLAY	6871A20462B	6871A20462B	R
268714	PWB(PCB) ASSEMBLY,MAIN	6871A20387G	6871A20387G	R
330870	DRAIN PAN ASSEMBLY	3087A30004A	3087A30004A	R
346810	MOTOR ASSEMBLY,INDOOR	4681A20047E	4681A20047E	R
349600	MOUNT,MOTOR	4960A20016A	4960A20016A	R
35211B	TUBE ASSEMBLY,TUBING	5211AR7066D	5211AR7066D	R
352150	HOSE ASSEMBLY,DRAIN	5251AR1222R	5251AR1222R	R
352380	AIR GUIDE	5238A20034A	5238A20034A	R
354210	EVAPORATOR ASSEMBLY,FIRST	5421A20072A	5421A20072A	R
359012	FAN,TURBO	5900A00003A	5900A00003A	R
268714	PWB(PCB) ASSEMBLY,SUB	6871A20363F	6871A20363F	R

NOTE) ∗Please ensure GCSC since these parts may be changed depending upon the buyer's request.
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Outdoor Unit

LOCATION No.	DESCRIPTION	PART No.		REMARKS
		LA090CP	LA120CP	
261704	TRANSFORMER,POWER	6171AQ3198G	6171AQ3198G	R
430410	BASE ASSEMBLY,OUTDOOR	3041A20008J	3041A20008J	R
435301	GRILLE,DISCHARGE	3530A20006G	3530A20006G	R
435511	COVER ASSY,CONTROL(OUTDOOR)	3551AR7184R	3551AR7184R	R
437210	PANEL ASSEMBLY,FRONT(OUTDOOR)	3721A20027T	3721A20027T	R
437212	PANEL ASSEMBLY,REAR(OUTDOOR)	3721A20026K	3721A20026K	R
447910	BARRIER ASSEMBLY,OUTDOOR	4791A30002F	4791A30002F	R
546810	MOTOR ASSEMBLY,OUTDOOR	4681A20004R	4681A20004R	R
550140	ISOLATOR,COMP	4H00982E	4H00982E	R
552111	TUBE ASSEMBLY,CAPILLARY	5211A20133X	5211A20095J	R
552203-1	VALVE,SERVICE	5220A20005B	5220A20005B	R
552203-2	VALVE,SERVICE	2H01890L	5220A20003B	R
554031	CONDENSER ASSEMBLY,BENT	5403A20026D	5403A20019B	R
554160	COMPRESSOR SET	2520UKAC2HA	2520UKWC2HA	R
559010	FAN ASSEMBLY,PROPELLER	5901A10055A	5901A10055A	R
567502	O.L.P	6750U-L031A	6750U-L029A	R
649950	CONTROL BOX ASSEMBLY,OUTDOOR	4995A10038H	4995A10038J	R
668711	PWB(PCB) ASSEMBLY,MAIN(OUTDOOR)	6871A10036R	6871A10036S	R
W0CZZ	CAPACITOR,DRAWING	6120AR2194F	0CZZA20001N	R

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