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ENGLISH

INSTALLATION MANUAL

AIR CONDITIONER

- Please read this installation manual completely before installing the product.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
- Please retain this installation manual for future reference after reading it thoroughly.

TYPE : FLOOR STANDING

P/NO : MFL68588801

www.lg.com

TIPS FOR SAVING ENERGY

Here are some tips that will help you minimize the power consumption when you use the air conditioner. You can use your air conditioner more efficiently by referring to the instructions below:

- Do not cool excessively indoors. This may be harmful for your health and may consume more electricity.
- Block sunlight with blinds or curtains while you are operating the air conditioner.
- Keep doors or windows closed tightly while you are operating the air conditioner.
- Adjust the direction of the air flow vertically or horizontally to circulate indoor air.
- Speed up the fan to cool or warm indoor air quickly, in a short period of time.
- Open windows regularly for ventilation as the indoor air quality may deteriorate if the air conditioner is used for many hours.
- Clean the air filter once every 2 weeks. Dust and impurities collected in the air filter may block the air flow or weaken the cooling / dehumidifying functions.

For your records

Staple your receipt to this page in case you need it to prove the date of purchase or for warranty purposes. Write the model number and the serial number here:

Model number : _____

Serial number : _____

You can find them on a label on the side of each unit.

Dealer's name : _____

Date of purchase : _____

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THE APPLIANCE.

Always comply with the following precautions to avoid dangerous situations and ensure peak performance of your product

WARNING

It can result in serious injury or death when the directions are ignored

CAUTION

It can result in minor injury or product damage when the directions are ignored

WARNING

- Installation or repairs made by unqualified persons can result in hazards to you and others.
- The product shall be installed according to the wiring regulations of the corresponding country.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

Installation

- Do not turn on the breaker or power under condition that front panel, cabinet, top cover, control box cover are removed or opened.
  - it may cause fire, electric shock, explosion or death.
- Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.
  - There is risk of fire or electric shock.
- For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.
  - Do not disassemble or repair the product. There is risk of fire or electric shock.
- Always ground the product.
  - There is risk of fire or electric shock.
- Install the panel and the cover of control box securely.
  - There is risk of fire or electric shock.
- Always install a dedicated circuit and breaker.
  - Improper wiring or installation may cause fire or electric shock
- Use the correctly rated breaker or fuse.
  - There is risk of fire or electric shock.
- Do not modify or extend the power cable.
  - There is risk of fire or electric shock.
- Be cautious when unpacking and installing the product.
  - Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.
- For installation, always contact the dealer or an Authorized Service Center.
  - There is risk of fire, electric shock, explosion, or injury.
- Do not install the product on a defective installation stand.
  - It may cause injury, accident, or damage to the product.
- Be sure the installation area does not deteriorate with age.
  - If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

- Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.
  - Moisture may condense and wet or damage furniture.
- Use a vacuum pump or Inert (nitrogen) gas when doing leakage test or air purge. Do not compress air or Oxygen and Do not use Flammable gases. Otherwise, it may cause fire or explosion.
  - There is the risk of death, injury, fire or explosion.

Operation

- Do not store or use flammable gas or combustibles near the product.
  - There is risk of fire or failure of product.

⚠ CAUTION

Installation

- Always check for gas (refrigerant) leakage after installation or repair of product.
  - Low refrigerant levels may cause failure of product.
- Install the drain hose to ensure that water is drained away properly.
  - A bad connection may cause water leakage.
- Keep level even when installing the product.
  - To avoid vibration or water leakage.
- Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.
  - It may cause a problem for your neighbors.
- Use two or more people to lift and transport the product.
  - Avoid personal injury.
- Do not install the product where it will be exposed to sea wind (salt spray) directly.
  - It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

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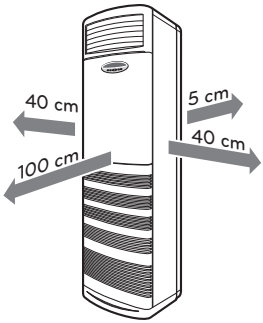
INSTALLATION OF UNIT

Selection of the best location

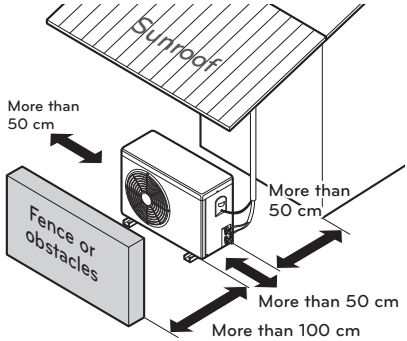
Indoor unit

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to prevent the air circulation.
- A place where air circulation in the room will be good.
- A place where drainage can be easily obtained.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, or other obstacles.
- The indoor unit must keep the maintenance space.



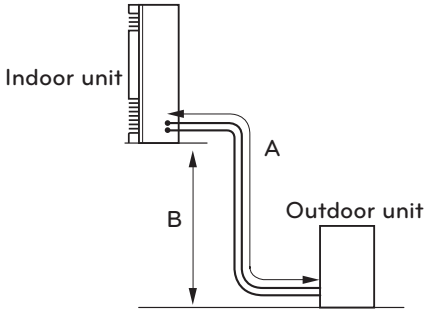
Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could be affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Place with fluent water draining
  Install at a place with fluent water draining to prevent damage from localized heavy rain and avoid frequent flooded area.



Piping length and the elevation

MODEL	mm (inch)		Max. Length A (m)	Max. Elevation B (m)
	GAS SIDE	LIQUID SIDE		
AP-C(H)246KLA0	Ø 15.88 (5/8)	Ø 9.52 (3/8)	30	20
AP-C286KLA0 AP-C308KLA0	Ø 15.88 (5/8)	Ø 9.52 (3/8)	50	30



CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.

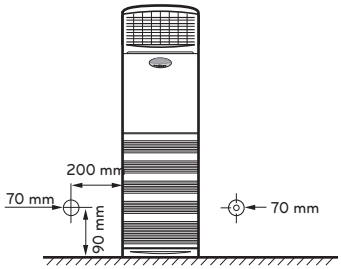
The Indoor Unit Installation

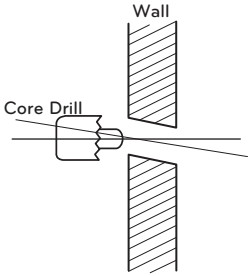
1 The mounting floor should be strong and solid enough to prevent it from vibration.

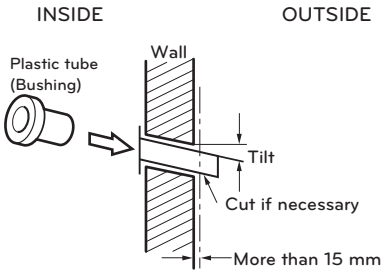
2 Drill the piping hole with 70 mm diameter hole-core drill at either the right or the left of indoor unit. The hole should be sightly slant to the outdoor side.

3 Insert the plastic tube through the hole.

4 Cut the extruded outside part of the plastic tube, if necessary.







Outdoor unit Installation

1 Install the outdoor unit on the concrete or any solid base securely and horizontally by securing it with bolts (Ø12 mm) and nuts.

2 If there is any vibration transmitted to the building, mount the rubber underneath the outdoor unit.

Refrigerant amount

Before shipment, this air conditioner is filled with the rated amount of refrigerant including additional amount required for air-purging, subject to 7.5 m piping length. (The rated amount of refrigerant is indicated on the name plate.) But when the piping length exceeds 7.5 meters, additional charge is required according to the following table.

(Unit: g)

MODEL	REFRIGERANT CHARGE
AP-C246KLA0 AP-H246KLA0 AP-C286KLA0 AP-C308KLA0	25 per 1 m

Example)
In case of 10 m long pipe(one-way), the amount of refrigerant to be replenished is:
(10 - 7.5) x 25 = 62.5 g

Installation Method

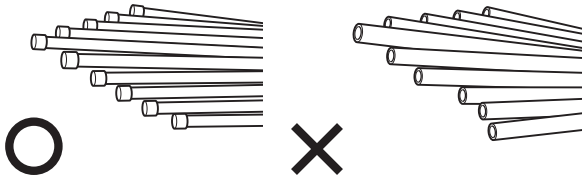
No.	Installation works	Descriptions
1	Preparation of tools and installation parts	Preparation of installation
2	Flaring the pipes	To insert the flare nuts, mounted on the connection parts of both indoor and outdoor unit, onto the copper pipes.
3	Pipe bending	To insert the flare nuts, mounted on the connection parts of both indoor and outdoor unit, onto the copper pipes.
4	Connection of installation parts (elbows, socket etc)	To reduce the flow resistance of refrigerant.
5	Tighten the flare nut (outdoor)	Connection of long piping
6	Blowing the pipings	Connecting the pipings of the outdoor unit.
7	Tighten the flare nut (indoor)	To remove dust and scale in working.
8	Check a gas-leakage of the connecting part of the pipings.	Connecting the pipings of the indoor unit.
9	Vacuum drying of the piping and indoor unit	
10	Open the 3-way (liquid side) and 3-way (gas side) valves.	The air which contains moisture and which remains in the refrigeration cycle may cause a malfunction on the compressor
11	Form the pipings	
12	Checking the drainage (indoor unit)	To prevent heat loss and sweat
13	Connecting the cable between outdoor and indoor unit	To ensure if water flow drain hose of indoor unit.
14	Connecting the main cable to outdoor unit	Preparation of the operating
15	Supply the power to the crankcase heater (Before the operating the unit)	
16	Cooling operation (Use the remote control or display of the indoor unit)	To prevent the liquid back to the compressor. (Heat pump only)

Preparation of installation parts and tools

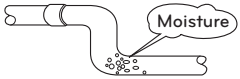
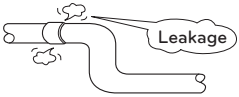
No.	Installation Parts, Tools	Use
1	Flaring tool (Ø 9.52 - Ø 15.88)	Flaring the pipes
2	Remear	Remove burrs from cut edges of pipes.
3	Pipe cutter (MAX 35 mm Copper pipe)	Cutting the pipings
4	Wrench (H5, H4 hexagonal wrench)	To open the service valve
5	Pipe bender	Bending the pipings
6	Leak detector	Check a gas-leakage of connecting part of the pipings
7	Manifold gauge	To measure the pressure, to charge the refrigerant
8	Charge-nipple	To connect the bombe
9	Vacuum pump	To remove the air in the pipe.
10	Charge cylinder balance	To measure the refrigerant amount
11	Bombe (R410A)	Gas charge Cleaning the pipe
12	Spanner	To tighten the connecting parts of the pipings
13	Monkey spanner	
14	Driver(⊕ , ⊖)	Cutting the wires
15	Benchi (150 mm)	To measure the length
16	Tapeline	To make holes through the concrete wall and blocks
17	Core drill	
18	Voltmeter, Amperemeter, Clampmeter	To measure the current and voltage
19	Insulation resistance tester	To measure the insulation resistance
20	Glass thermometer	To measure the intake and outlet air temperature of the indoor unit
21	Copper tubes	To use the connecting pipings
22	Insulation material	To cover the connecting pipings
23	Tape	To finish the connecting pipings
24	Electrical Leakage Breaker	To shut off the main power
25	Cable	To connect the cable from outdoor unit to indoor unit
26	Drain hose sockets, elbows	To remote the condensing water

Plumbing materials and storage methods

Pipe must be able to obtain the specified thickness and should be used with low impurities. Also when handling storage, pipe must be careful to prevent a fracture, deformity and wound. Should not be mixed with contaminations such as dust, moisture.



Refrigerant piping on three principles

	Drying	Cleanliness	Airtight
	Should be no moisture inside	No dust inside.	There is no refrigerant leakage
Items			
Cause failure	- Significant hydrolysis of refrigerant oil - Degradation of refrigerant oil - Poor insulation of the compressor - Do not cold and warm - Clogging of EEV, Capillary	- Degradation of refrigerant oil - Poor insulation of the compressor - Do not cold and warm - Clogging of EEV, Capillary	- Gas shortages - Degradation of refrigerant oil - Poor insulation of the compressor - Do not cold and warm
Counter-measure	- No moisture in the pipe - Until the connection is completed, the plumbing pipe entrance should be strictly controlled. - Stop plumbing at rainy day. - Pipe entrance should be taken side or bottom. - When removal burr after cutting pipe, pipe entrance should be taken down. - Pipe entrance should be fitted cap when pass through the walls.	- No dust in the pipe. - Until the connection is completed, the plumbing pipe entrance should be strictly controlled. - Pipe entrance should be taken side or bottom. - When removal burr after cutting pipe, pipe entrance should be taken down. - Pipe entrance should be fitted cap when pass through the walls.	- Airtightness test should be. - Brazing operations to comply with standards. - Flare to comply with standards. - Flange connections to comply with standards.

Nitrogen substitution method

Welding, as when heating without nitrogen substitution a large amount of the oxide film is formed on the internal piping.

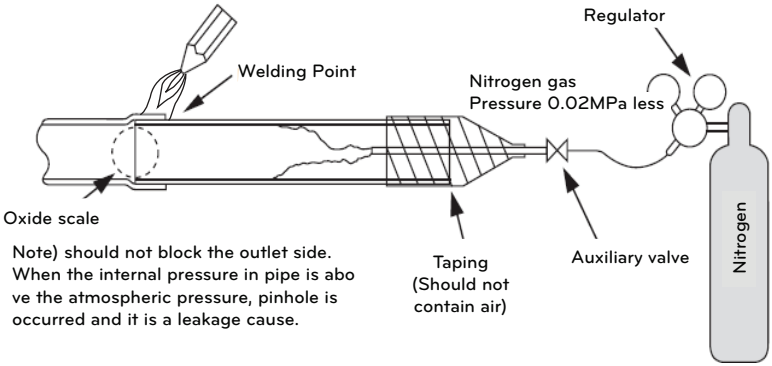
The oxide film is a caused by clogging EEV, Capillary, oil hole of accumulator and suction hole of oil pump in compressor.

It prevents normal operation of the compressor.

In order to avoid this problem, Welding should be done after replacing air by nitrogen gas.

When welding plumbing pipe, the work is required.

How to work



⚠ CAUTION

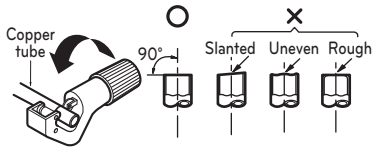
1. Always use the nitrogen.(not use oxygen, carbon dioxide, and a Chevron gas):
   Please use the following nitrogen pressure 0.02MPa
   Oxygen -------- Promotes oxidative degradation of refrigerant oil.
   Because it is flammable, it is strictly prohibited to use
   Carbon dioxide --- Degrade the drying characteristics of gas
   Chevron Gas ---- Toxic gas occurs when exposed to direct flame.
2. Always use a pressure reducing valve.
3. Please do not use commercially available antioxidant.
   The residual material seems to be the oxide scale is observed.
   In fact, due to the organic acids generated by oxidation of the alcohol contained in the anti-oxidants, ants nest corrosion occurs. (causes of organic acid → alcohol + copper + water + temperature)

Preparation of Piping

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

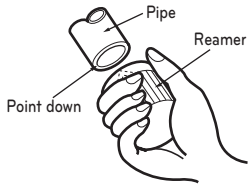
Cut the pipes and the cable.

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



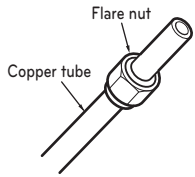
Burrs removal

- Completely remove all burrs from the cut cross section of pipe/tube.
- Put the end of the copper tube/pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the tubing.



Putting nut on

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

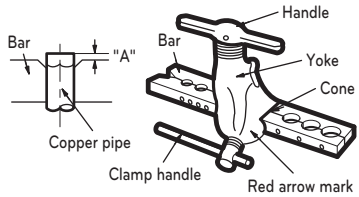


Flaring work

- Carry out flaring work using dedicated flaring tool for R410A as shown below.

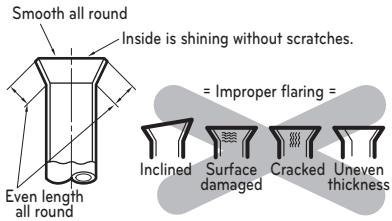
Outside diameter		A
mm	inch	mm
Ø6.35	1/4	1.1~1.3
Ø9.52	3/8	1.5~1.7
Ø12.7	1/2	1.6~1.8
Ø15.88	5/8	1.6~1.8
Ø19.05	3/4	1.9~2.1

Firmly hold copper tube in a bar(or die) as indicated dimension in the table above.



Check

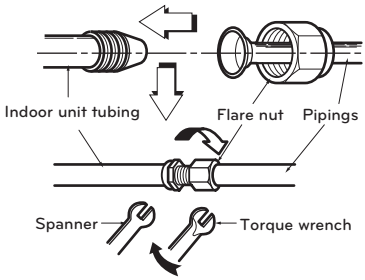
- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and do flaring work again.

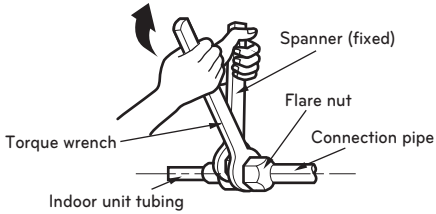


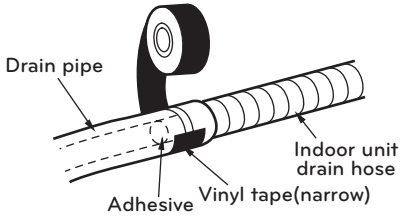
Connection of piping

1 Move the indoor tubing and drain hose to the hole
   - Remove tubing holder and pull the tubing out of the chassis.
2 Replace the tubing holder into original position
3 Route the tubing and the drain hose staight backwards.
4 Insert the connecting cable into the indoor unit through the hole.
   - Do not connect the cable to the indoor unit
   - Make a small loop with the cable for easy connection later.
5 Tape the tubing and the connecting cable.
6 Indoor unit installation.
7 Connecting the pipings to the indoor unit.
   - Align the center of the pipings and sufficiently tighten the flare nut with fingers.
   - Finally, tighten the flare nut with troque wrench until the wrench clicks.
     When tightening the flare nut with troque wrench, ensure the direction for tightening follows the arrow on the wrench.

Outside diameter		Torque
mm	inch	N·m
Ø6.35	1/4	16±2
Ø9.52	3/8	38±4
Ø12.7	1/2	55±6
Ø15.88	5/8	75±7
Ø19.05	3/4	110±10

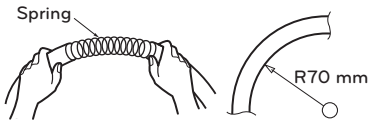






Precautions in bending

1 If it is necessary to bend or stretch the tubing, use the spring which is attached to the tubing in stead of pipe bender.
   - Please make a careful notice to make a smooth line.
   - Hold the tubing with your two hands closely and then bend or stretch it slowly not to make any crack.
   - Remember that the radius (R) should not exceed 70 mm (Refer to Fig. 1)
2 Do not repeat the bending process to prevent the tubing from cracking or crushing.
3 Keep in mind that the bending part should not be cracked and make the radius (R) as long as possible (Refer to Fig. 2)



(Fig. 1)

(Fig. 2)

Form the Piping

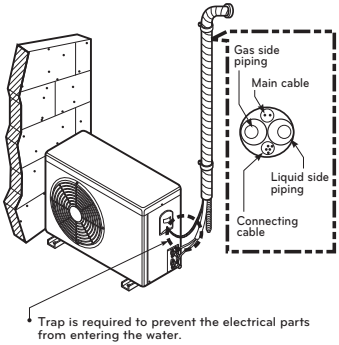
1 Wrap the connecting portion of indoor unit with the insulation material and secure it with two Plastic Bands. (for the right piping)

- If you connect an additional drain hose, the end of the drain-outlet should be kept distance from the ground. (Do not dip it into water, and fix it on the wall to avoid swinging in the wind.)

* In case of the outdoor unit is installed below position of the indoor unit.

2 Tape the Piping, and Connecting Cable from down to up.

3 Form the piping gathered by taping along the exterior wall and fix it onto the wall by saddle or equivalent.

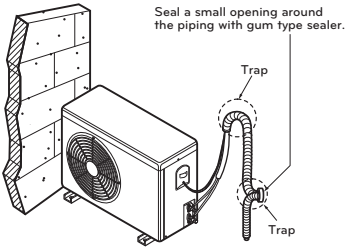


* In case of the outdoor unit is installed upper position of the indoor unit.

1 Tape the piping and connecting cable from down to up.

2 In order to prevent water from entering the room, form a trap and tape the piping.

3 Fix the piping onto the wall with saddle or bracket.



Connecting the Cable to Indoor Unit

- In order to protect cable, it should be inserted "Bushing Rubber".
- The inside and outside connecting cable can be connected after opening the inlet grille.

1 Open the inlet grille manually. (Fig 1)

2 Open the control cover with Driver(⊕).

3 Connect the cables (LG does not supply) to the terminal block in the control box.

4 Secure the control cover to the original position with the screw.

5 Close the inlet grille. (Fig 3)

Fig 1

Fig 2

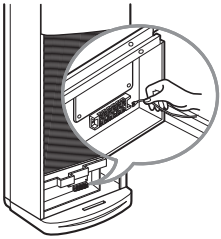
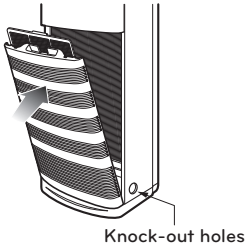
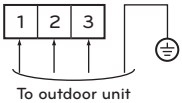


Fig 3

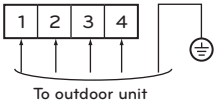


Detail of Fig 2

- Cooling Model



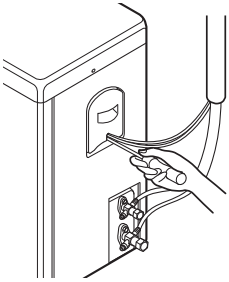
- Heat Pump Model



Connecting the cables to the outdoor unit

1 Open the control board cover from the outdoor unit by removing the screws.

2 Connect wires to the terminals on the control board individually and secure the cables onto the control board with clamp.



3 Secure the control board cover to the original position with the screws.

CAUTION

Perform grounding

- This product should be grounded.
- Defective grounding could cause an electric shock.

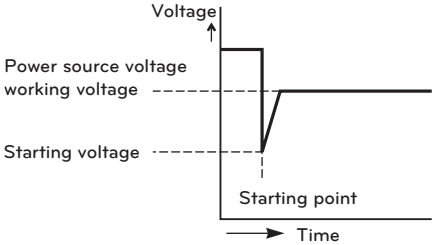
Power Supply and Wiring

The unit is completely wired internally at the factory according to general rule of electrical technology, but local rules, if they are required, should be complied with.

1 Power supply

Power source must fulfill the following conditions:

- The working voltage should be higher than 90 % and lower than 110 % of the rated voltage marked on the name plate.
- The starting voltage should be higher than 85 % of the rated voltage marked on the name plate.



2 Wiring

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

- Use the power supply cord(Rubber insulation, type Ho7RNF approved by HAR or SAA) suitable for the product's electriccal capacity.

UNIT	VOLTS	Conductor cross-sectional area
AP-C246KLA0 AP-H246KLA0 AP-C286KLA0 AP-C308KLA0	450/750 V	2.5 mm^2

- Provide a recognized circuit breaker as below between power source and unit. A disconnection device to adequately disconnect all supply lines must be fitted. (for service operations)

UNIT		Circuit breaker capacity
H/P		30 A
C/O	1 Phase	30 A
	3 Phase	20 A

- The screws 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 give rise to burn-out of the wires.)
- See to it that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
- The following troubles would be caused by voltage drop-down. Vibration of a magnetic switch, damage on the contact point there of, fuse breaking, disturbance to the normal function of a overload protection device.

Vacuum Drying of the Connecting Pipes and the Indoor Unit

The air which contains moisture remaining in the refrigeration cycle may cause a malfunction on the compressor.

1 Confirm that both the liquid side valve and the gas side valve are set to the closed position.

2 After connecting the piping, check the joints for gas leakage with gas leak detector.

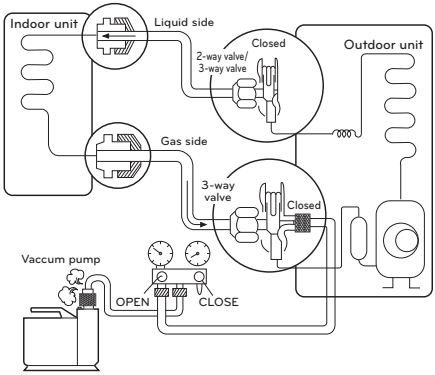
3 Remove the service port nut, and connect the gauge manifold and the vacuum pump to the service port by the charge hose.

4 Vacuum the indoor unit and the connecting pipes until the pressure in them lowers to below - 76 cmHg.

5 Remove the valve stem nuts, and fully open the stems of the 2-way and 3-way valves with a hexagon wrench.

6 Tighten the valve stem nuts of the 2-way valve and 3-way valve.

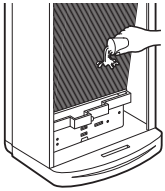
7 Disconnect the charge hose and fit the nut to the service port. (Tightening torque: 1.8 kg·m)

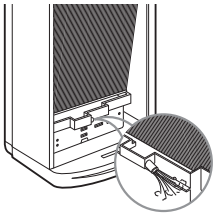


Checking the Drainage

1 Remove the inlet grille with your hands as shown (right and left) and pull in the direction indicated by the arrow.

2 Check the drainage
- Pour a glass of water into the drain pan.
- Ensure if water flows drain hose of indoor unit.





FINAL CHECK AND TEST RUN

After installing the unit, perform the final check and running test as follows:

Final check points

① Is the unit securely mounted?

② Is the installation location adequate?

③ Is the water piping work adequately and without leakage?

④ Are trapped drain lines installed at condensate drain connections?

⑤ Has the refrigeration cooling cycle been kept sealed?

⑥ Is the electrical wiring adequate and are the screws tightened on terminals?

After the above final checkings, prepare the running test as follows:

① Connect compound gauges to the check joints at discharge and suction sides of the compressor.

② Turn all switches "OFF".

③ Turn the main switch "ON".

Running test should be accomplished as follows:

① Set operation switch at "FAN" and the fan will start. Check to ensure that the fan sounds normal.

② Next, set it at "COOL" and the compressor will start. Check to ensure that the compressor sounds normal.

③ Check discharge and suction pressure on the compound gauges.

④ Check working voltage, phase balance and running current.

⑤ Check to ensure that the thermistor functions properly.

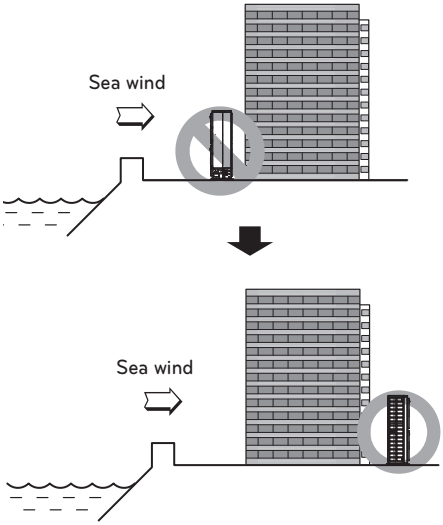
⑥ Check to ensure that the high pressure control switch functions correctly.

INSTALLATION GUIDE AT THE SEASIDE

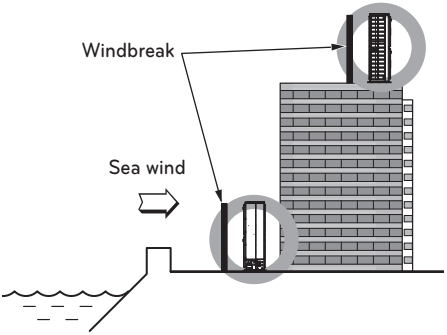
CAUTION

- Air conditioners should not be installed in areas where corrosive gases, such as acid or alkaline gas, are produced.
- Do not install the product where it could be exposed to sea wind (salty wind) directly. It can result corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient performance.
- If outdoor unit is installed close to the seaside, it should avoid direct exposure to the sea wind. Otherwise it needs additional anticorrosion treatment on the heat exchanger.

1 Selecting the location(Outdoor Unit)
If the outdoor unit is to be installed close to the seaside, direct exposure to the sea wind should be avoided. Install the outdoor unit on the opposite side of the sea wind direction.



2 In case, to install the outdoor unit on the seaside, set up a windbreak to prevent oudoor unit from the sea wind.



- It should be strong enough like concrete to prevent the outdoor unit from the sea wind.
- The height and width should be more than 150% of the outdoor unit.
- It should be keep more than 70 cm of space between outdoor unit and the windbreak for easy air flow.

3 Place with fluent water draining
- Install at a place with fluent water draining to prevent damage from localized heavy rain and avoid frequent flooded area.
- If you can't meet above guide line in the seaside installation, please contact LG Electronics for the additional anticorrosion.
- Periodic (more than once/year) cleaning of the dust or salt particles stuck on the heat exchanger by using water