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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.

Standard inverter
Original instruction

[Representative] LG Electronics Inc. EU Representative :
LG Electronics European Shared Service Center B.V.
Krijgsman 1, 1186 DM Amstelveen, The Netherlands
[Manufacturer] LG Electronics Inc. Changwon 2nd factory 84, Wanam-ro,
Seongsan-gu, Changwon-si, Gyeongsangnam-do, KOREA

P/NO : MFL68645302

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 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 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.
- 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.
- 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.
- 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.
- Do not turn on the breaker or power under condition that front panel, cabinet, top cover, control box cover are removed or opened.
  - Otherwise, it may cause fire, electric shock, explosion or death.

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 and insulate the drain hose to ensure that water is drained away properly based on the installation manual.
  - 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.
- If it is installed at a place with a lot of snowfall, install with the frame and base height higher than the most extreme snowfall amount standard, and mount the snowfall hood (separately sold).

ENGLISH

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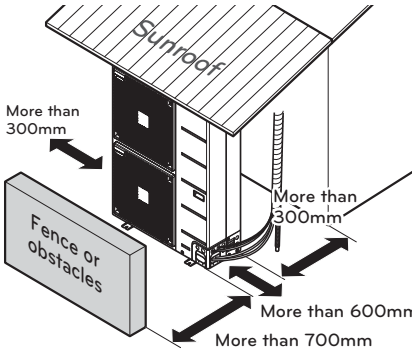
INSTALLATION OF OUTDOOR UNIT

You need to select adequate installation location considering the following conditions, and make sure to acquire the consent of the user.

Installation Places

- 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 spaces indicated by arrows around front, back and side of the unit.
- 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.



Unit : mm

- Place that can sufficiently endure the weight and vibration of the outdoor unit and where even installation is possible.
- Place that has no direct influence of snow or rain
- Place with no danger of snowfall or icicle drop
- Place without weak floor or base such as decrepit part of the building or with a lot of snow accumulation
- Install at a place with fluent water draining to prevent damage from localized heavy rain and avoid frequent flooded area.

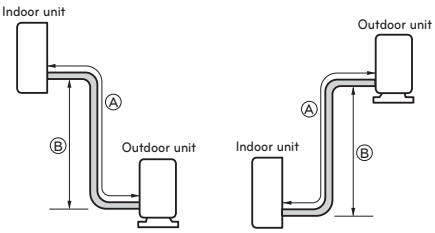
Piping length and the elevation

• Single Operation

Model	Pipe Size mm(inch)		Length A(m)		Elevation B(m)		Additional refrigerant (g/m)
	Gas	Liquid	Standard	Max.	Standard	Max.	
UU70W	Ø25.4(1)	9.52(3/8)	25	75	5	30	70

If installed tube is shorter than 25 m, additional charging is not necessary.

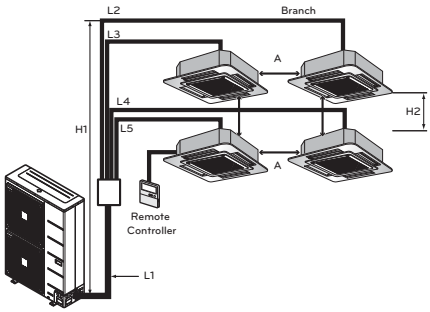
Additional Refrigerant
= (A-25) x Additional refrigerant (g)



• Synchro Operation

Install the branch pipe so that pipe length and difference between high and low will not exceed below Spec.

[Unit : m]



Pipe Length & Height	Spec(MAX.)
Total(L1+L2+L3+L4+L5)	80
Main Pipe(L1)	40
Branch Pipe (L2+L3+L4+L5)	40
Each	10
Indoor-Outdoor (H1)	30
Indoor-Indoor (H2)	1
(L1+L2),(L1+L3),(L1+L4),(L1+L5)	70
A	10

- When installing the branch pipe, direction and angle of installation is not limited.
- Take care so that burrs and foreign material may not enter into the cutting surface when connecting.
- Connect remaining those by cutting or direct insertion to the diameter of pipe.

• Refrigerant Additional Charging Method

For additional charging method, see below table.

Indoor Unit	Refrigerant Additional charging (g)
Duo	Refrigerant = (L1-b) x B + (L2 + L3) x C
Trio	Refrigerant = (L1-b) x B + (L2 + L3 + L4) x C
Quartet	Refrigerant = (L1-b) x B + (L2 + L3 + L4 + L5) x C

Pipe Diameter. (mm)	C (g/m)
Ø 6.35	35
Ø 9.52	40

Model	b (mm)	B(g/m)
UU70W	25	70

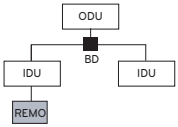
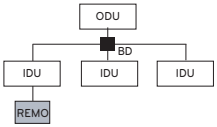
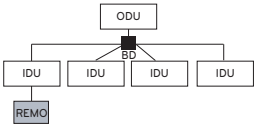
NOTE

b : Rated performance for refrigerant line length.
C : Additional charging Refrigerant of Branch Liquid Pipe.
B : Additional charging Refrigerant of Main Liquid Pipe.

CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.

Synchro Combination table

		Possible combination of indoor units								
		Synchro								
		Duo			Trio			Quartet		
IDU : INDOOR UNIT ODU : OUTDOOR UNIT BD : BRANACH DISTRIB-UTOR UNIT REMO : WIRED REMOTE CONTROLLER										
MODEL		Cassette	Duct	Convertible	Cassette	Duct	Convertible	Cassette	Duct	Convertible
UU85W		UT36 NN2*2	UM36 N24*2	UV36 NK2*2	CT24 NP2*3	CM24 N14*3 CB24L N32*3	CV24 NJ2*3	CT18 NQ2*4	CM18 N14*4 CB18L N22*4	CV18 NJ2*4
Applied Acces-siries	BD unit	PMUB11A			PMUB111A			PMUB1111A		
	Simple central controller**	PQCSZ250S0								

NOTE

** When using synchro operation,

- Do not use wireless remote controller.
- Use only one wired remote controller in the indoor units.
- Use central controller and function controller "PQCSZ250S0" only.

Outdoor Unit PCB Setting Procedure For Simultaneous Operation System

1 DIP_SW Setting
Set the DIP_SW as below Table (Ⓐ)

2 Auto Addressing Method
Addressing work assigns address to each indoor unit. When firstly installing product or replacing the indoor unit PCB. Auto Addressing work should be done for simultaneous operation.

* Work procedure

1) Set DIP_SW correctly.

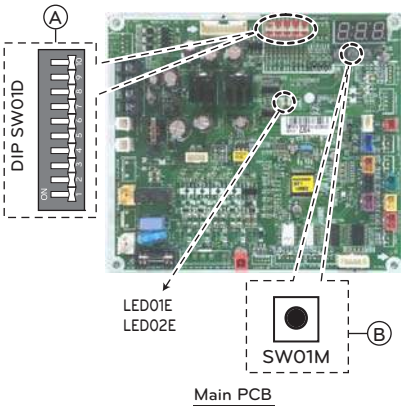
2) Turn on main power.

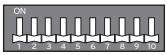
3) Press the SW01M for about 3 seconds within 3 minutes After main power on.(Ⓑ)

4) After step 3), the LED01E(red LED) and LED02E(green LED) rapidly flickers. When Addressing work is done, green LED is off, else LED (LED01E) stops flickering and lights continuously. Address of indoor unit is indicated on the wired remote control display window. (CH01, CH02, CH03, CH04)

5) Press ⏻ button to turn on the indoor.

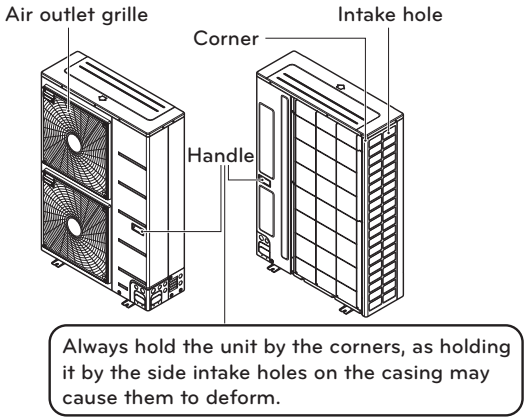
6) If you fail to perform the Addressing work, repeat step 2)~5).

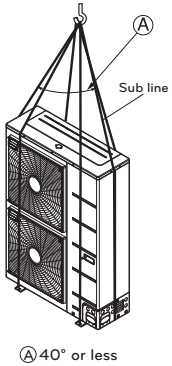


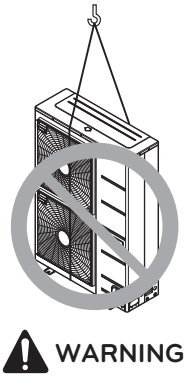
DIP SW01D	Indoor Unit No.
	1(Single) : Default
	2(Duo)
	3(Trio)
	4(Quartet)

LIFTING METHOD

- When carrying the suspended, unit pass the ropes between legs of base panel under the unit.
- Always lift the unit with ropes attached at four points so that impact is not applied to the unit.
- Attach the ropes to the unit at an angle of 40° or less.
- Use only accessories and parts which are of the designated specification when installing.







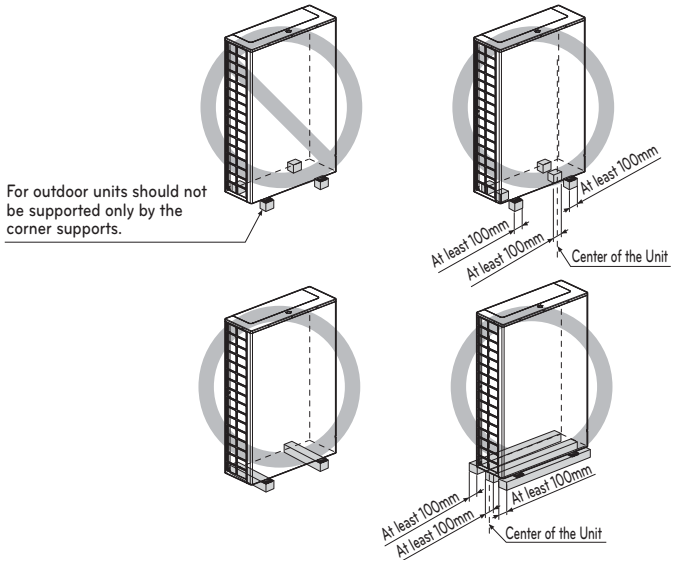
CAUTION

Be very careful while carrying the product.

- Do not have only one person carry product if it is more than 20 kg.
- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut in your hands.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in Outdoor Unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make Outdoor Unit unstable, resulting in a fall.
- Use 2 belts of at least 8 m long.
- Place extra cloth or boards in the locations where the casing comes in contact with the sling to prevent damage.
- Hoist the unit making sure it is being lifted at its center of gravity.

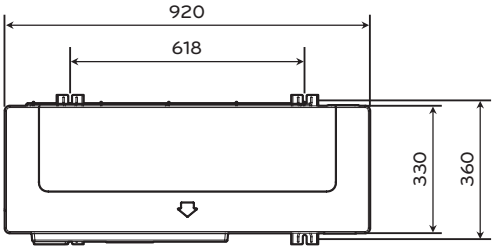
INSTALLATION

- Install at places where it can endure the weight and vibration/noise of the outdoor unit.
- The outdoor unit supports at the bottom shall have width of at least 100mm under the Unit's legs before being fixed.
- The outdoor unit supports should have minimum height of 200mm.
- Anchor bolts must be inserted at least 75mm.



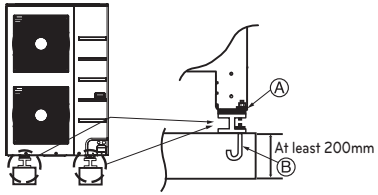
The location of the Anchor bolts

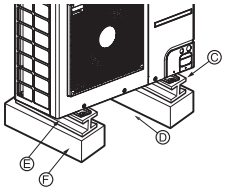
[Unit : mm]

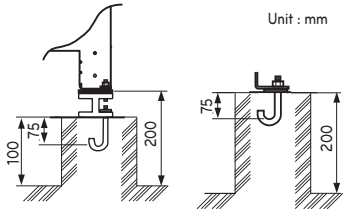


Foundation for Installation

- Fix the unit tightly with bolts as shown below so that unit will not fall down due to earthquake or gust.
- Use the H-beam support as a base support
- Noise and vibration may occur from the floor or wall since vibration is transferred through the installation part depending on installation status. Thus, use anti-vibration materials (cushion pad) fully (The base pad shall be more than 200mm).







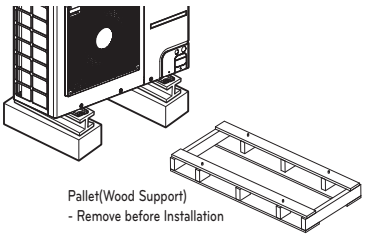
Ⓐ The corner part must be fixed firmly. Otherwise, the support for the installation may be bent.
Ⓑ Get and use M10 Anchor bolt.
Ⓒ Put Cushion Pad between the outdoor unit and ground support for the vibration protection in wide area.
Ⓓ Space for pipes and wiring (Pipes and wirings for bottom side)
Ⓔ H-beam support
Ⓕ Concrete support

⚠ WARNING

- Install where it can sufficiently support the weight of the outdoor unit.
  If the support strength is not enough, the outdoor unit may drop and hurt people.
- Install where the outdoor unit may not fall in strong wind or earthquake.
  If there is a fault in the supporting conditions, the outdoor unit may fall and hurt people.
- Please take extra cautions on the supporting strength of the ground, water outlet treatment(treatment of the water flowing out of the outdoor unit in operation), and the passages of the pipe and wiring, when making the ground support.
- Do not use tube or pipe for water outlet in the Base pan. Use drainage instead for water outlet. The tube or pipe may freeze and the water may not be drained.
- If it is installed at a place with a lot of snowfall, install with the frame and base height higher than the most extreme snowfall amount standard, and mount the snowfall hood (separately sold).

⚠ CAUTION

- Be sure to remove the Pallet(Wood Support) of the bottom side of the outdoor unit Base Pan before fixing the bolt. It may cause the unstable state of the outdoor settlement, and may cause freezing of the heat exchanger resulting in abnormal operations.
- Be sure to remove the Pallet(Wood Support) of the bottom side of the outdoor unit before welding.
  Not removing Pallet(Wood Support) causes hazard of fire during welding.



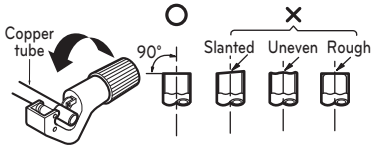
CONNECTING PIPES

Preparation of Piping

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

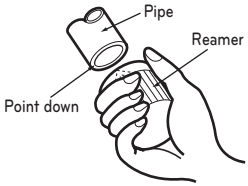
Cut the pipes and the cable.

- 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 1.5m longer than the pipe length.



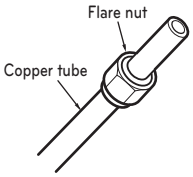
Burrs removal

- 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)

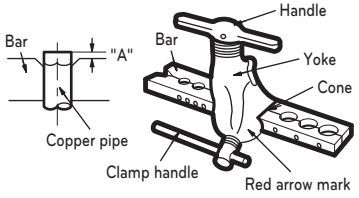


Flaring work

- Carry out flaring work using dedicated flaring tool for R-410A as shown below.

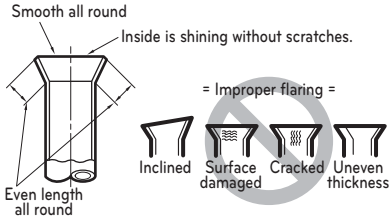
Outside diameter		"A"
mm	inch	mm
Ø6.35	1/4	1.1~1.3
Ø9.52	3/8	1.5~1.7
Ø12.7	1/2	1.6~1.8
Ø15.88	5/8	1.6~1.8

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



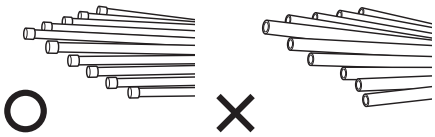
Check

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

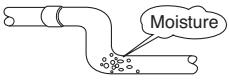
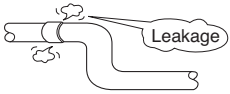


Plumbing materials and storage methods

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
Countermeasure	- 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

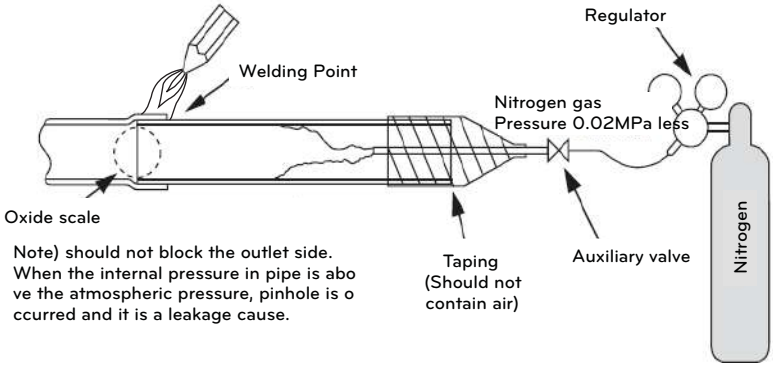
Welding, as when heating without nitrogen substitution a large amount of the oxide film is formed on the internal piping.

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.



⚠ 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.

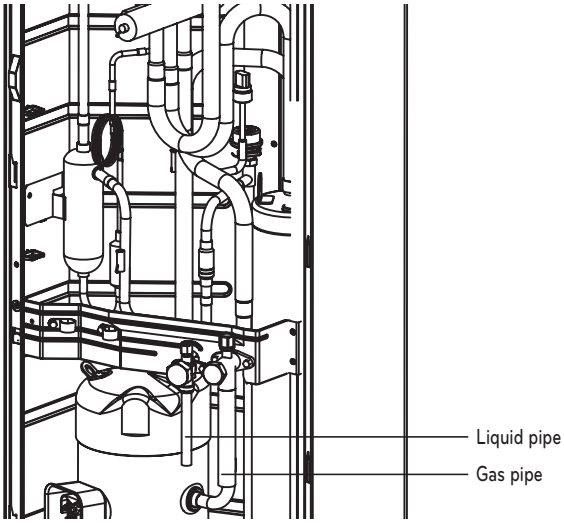
3 Please do not use commercially available antioxidant.
The residual material seems to be the oxide scale is observed.
In fact, due to the organic acids generated by oxidation of the alcohol contained in the anti-oxidants, ants nest corrosion occurs. (causes of organic acid ⟶ alcohol + copper + water + temperature)

REFRIGERANT PIPING INSTALLATION

Precautions on Pipe connection / Valve operation

Pipe connection is done by connecting from the end of the pipe to the branching pipes, and the refrigerant pipe coming out of the outdoor unit is divided at the end to connect to each indoor unit. Flare connection for the indoor unit, and welding connection for the outdoor pipe and the branching parts.

- Use hexagonal wrench to open/close the valve.



※ Pictures may differ depending on the model.

⚠ WARNING

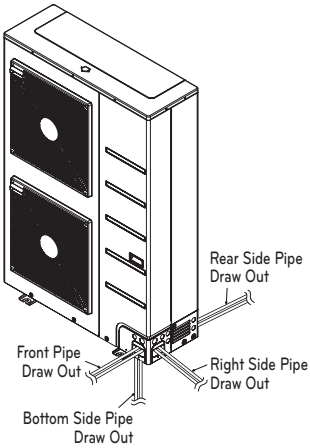
- Always careful not to leak the refrigerant during welding.
- The refrigerant generates poisonous gas harmful to human body if combusted.
- Do not perform welding in a closed space.
- Be sure to close the cap of the service port to prevent gas leakage after the work.

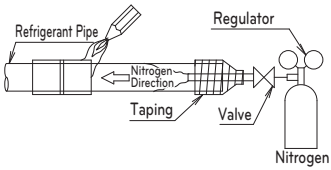
⚠ CAUTION

Please block the pipe knock outs of the front and side panels after installing the pipes.
(Animals or foreign objects may be brought in to damage wires.)

PIPE CONNECTIONS BETWEEN INDOOR AND OUTDOOR UNIT

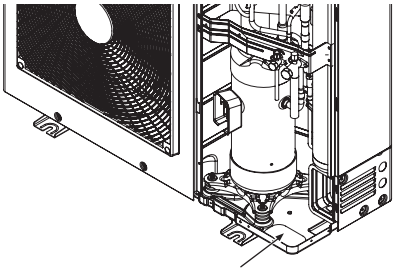
- Pipe connections can be done on the front side or on the side according to the installation
- Be sure to let 0.2kgf/cm^2 Nitrogen flow in the pipe when welding.
- If Nitrogen was not flown during welding, many oxidized membranes may form inside the pipe and disturb the normal operations of valves and condensers.

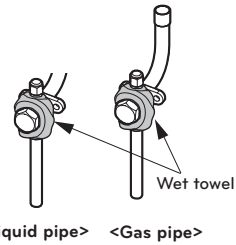




Preparation Work

- Use Knock Outs of Base Pan of the outdoor unit for Left/Right or Bottom pipe drawing outs.





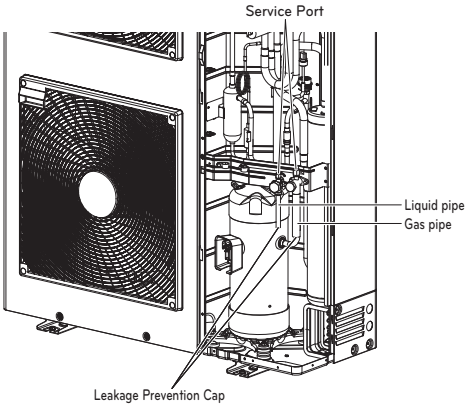
※ Pictures may differ depending on the model.

CAUTION

- Do not give damage to the pipe/base during the Knock Out work.
- Proceed to pipe work after removing burr after Knock Out work.
- Perform sleeve work to prevent damage to the wire when connecting wires using knock Outs.
- Take care so that there is no thermal damage on the service valves of the outdoor unit. (Especially packing part of service port.) Wrap the service valve with a wet towel when brazing it as shown figure above.

Remove leakage prevention cap

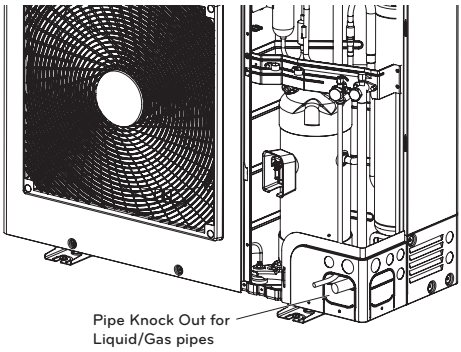
- Remove the leakage prevention cap attached to the outdoor unit service valve before pipe work.
- Proceed the leakage prevention cap removal as follows:
  - Verify whether the liquid/gas pipes are locked.
  - Extract remaining refrigerant or air inside using the service port.
  - Remove the leakage prevention cap



Pipe Drawing Out

Method of drawing out pipes on the front side and right side

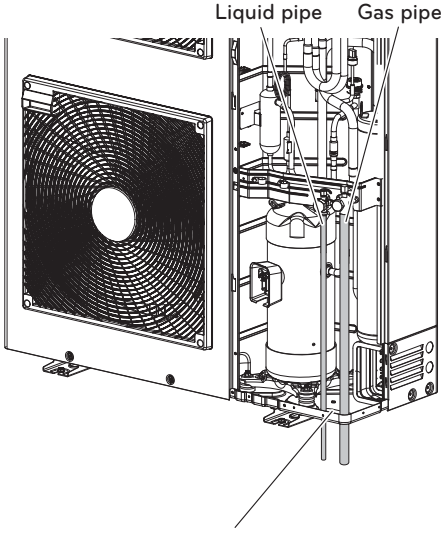
- Proceed with the pipe work as shown in the below figure for front side and right side pipe drawing out.



※ Pictures may differ depending on the model.

Method of drawing out pipes on the bottom side

- Drawing out common pipe through base panel



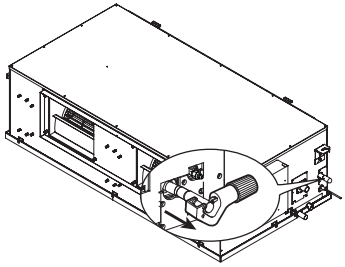
Method of drawing out pipes on the rear side

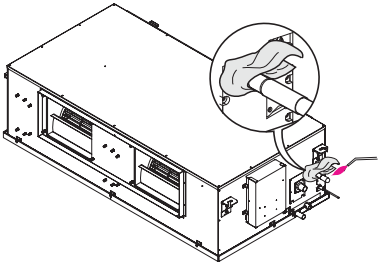
- Proceed with the pipe work as shown in the below figure for rear side pie drawing out.

※ Pictures may differ depending on the model.

Welding

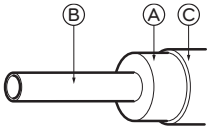
- Pipe connections can be done on the front side or on the side according to the installation environments.
- Be sure to let 0.2kgf/cm^2 Nitrogen flow in the pipe when welding.
- If Nitrogen was not flown during welding, many oxidized membranes may form inside the pipe and disturb the normal operations of valves and condensers.





Thermal insulation of refrigerant pipe

Be sure to give insulation work to refrigerant pipe by covering liquid pipe and gas pipe separately with enough thickness heat-resistant polyethylene, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation drip, etc. Pay special attention to insulation work to ceiling plenum.



Ⓐ Heat insulation material

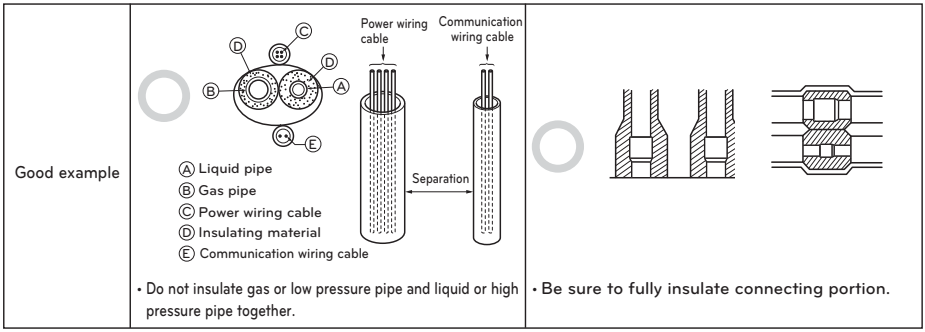
Ⓑ Pipe

Ⓒ Outer covering(Wind the connection part and cutting part of heat insulation material with a finishing tape.)

Heat insulation material	Adhesive + Heat - resistant polyethylene foam + Adhesive tape	
Outer covering	Indoor	Vinyl tape
	Floor exposed	Water-proof hemp cloth + Bronze asphalt
	Outdoor	Water-proof hemp cloth + Zinc plate + Oily paint

NOTE

When using polyethylene cover as covering material, asphalt roofing shall not be required.



CAUTION

Cutting line of insulation must look upper direction. Thickness of insulation is 15mm(Gas pipe) and 19mm(Liquid pipe) or over.

NOTE

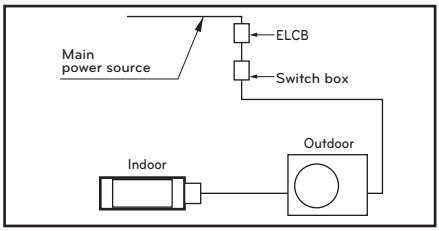
Recommended Insulation material
Material : EPDM
Thickness : 15mm(Gas pipe) and 19mm(Liquid pipe) or over.
Density : less than 0.032 ±0.005(g/cm^2)
Thermal conductivity : less than 0.03(kcal/m.hr.°C)

WIRING CONNECTION

Electrical Wiring

Perform the electrical wiring work according to the electrical wiring connection.

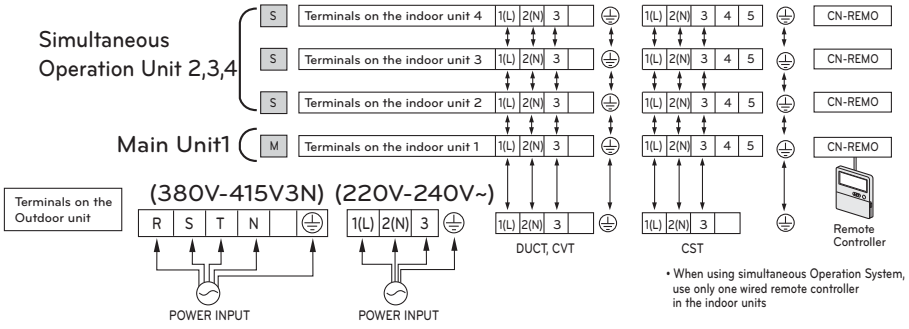
- All wiring must comply with local requirements.
- Select a power source that is capable of supplying the current required by the air conditioner.
- Use a recognized ELCB(Electric Leakage Circuit Breaker) between the power source and the unit. A disconnection device to adequately disconnect all supply lines must be fitted.
- Model of circuit breaker recommended by authorized personnel only



Model	Phase(Ø)	ELCB
UU70W	3	20A

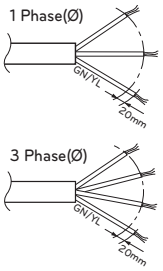
Connecting Cables between Indoor Unit and Outdoor Unit

- Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
- Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively



⚠ CAUTION

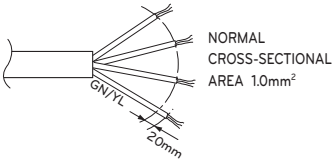
The power cord connected to the outdoor unit should be complied withIEC 60245 or HD 22.4 S4 (This equipment shall be provided with a cord set complying with the national regulation.



NORMAL CROSS-SECTIONAL AREA

Model	Phase(Ø)	Area(mm^2)
UU70W	3	2.5

The connecting cable connected to the outdoor unit should be complied with IEC 60245 or HD 22.4 S4 (This equipment shall be provided with a cord set complying with the national regulation.)

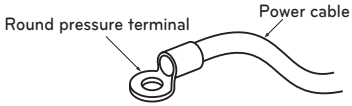


When the connection line between the indoor unit and outdooor unit is over 40m, connect the telecommunication line and power line separately.

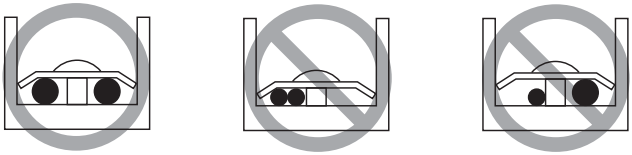
If the supply cord is damaged, it must be replaced by a special cord or assembly availible from the manufacturer of its service agent.

Precautions when laying power wiring

Use round pressure terminals for connections to the power terminal block.



When none are available, follow the instructions below.
- Do not connect wiring of different thicknesses to the power terminal block. (Slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, do as shown in the figure below.



WARNING

Make sure that the screws of the terminal are free from looseness.

Point for attention regarding quality of the public electric power supply

This equipment complies with respectively:

- EN/IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equal to the minimum Ssc value at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with respectively: Ssc greater than or equal to the minimum Ssc value.

Model	Minimum Ssc Value (kVA)
UU70W	3,351

- European / International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low voltage systems with input current >16 A and ≤75 A per phase.

Connecting the cable to Outdoor Unit

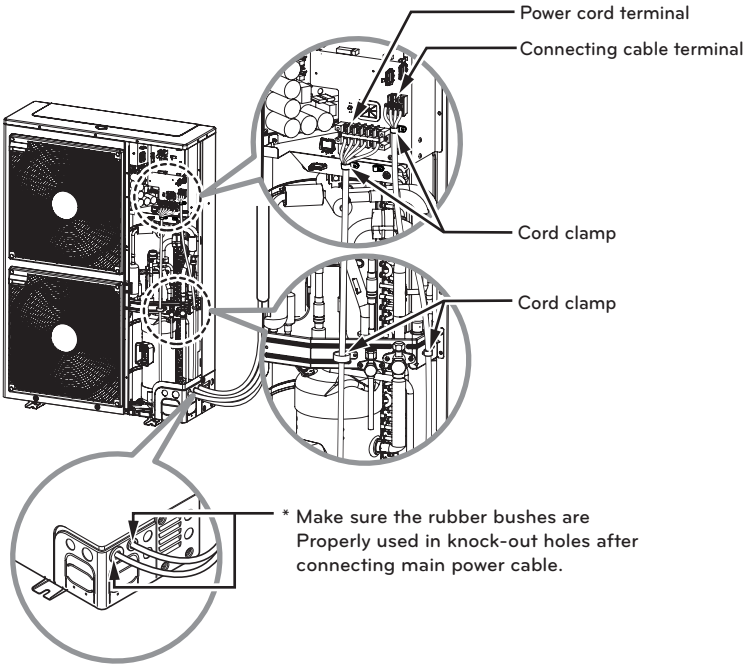
Remove the side panel for wiring connection.

Use the cord clamp to fix the cord.

Earthing work

- Case 1 : Terminal block of Outdoor Unit have ⏚ mark.
  Connect the cable of diameter 1.6mm^2 or more to the earthing terminal provided in the control box and do earthing.

- Case 2 : Terminal block of Outdoor Unit don't have ⏚ mark.
  Connect the cable of diameter 1.6mm^2 or more, to the panel of control box, marked as ⏚ and fasten with earth screw

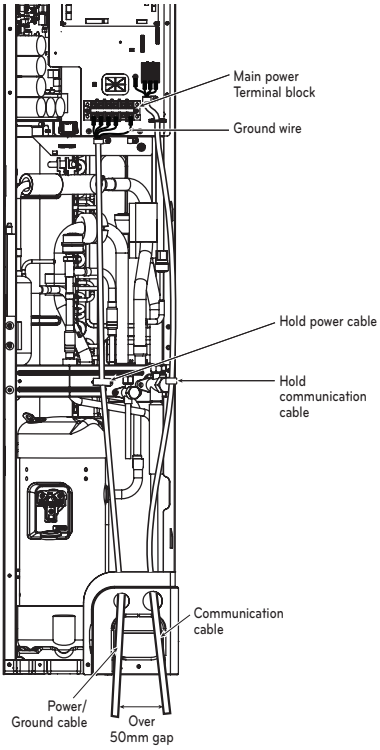


⚠ CAUTION

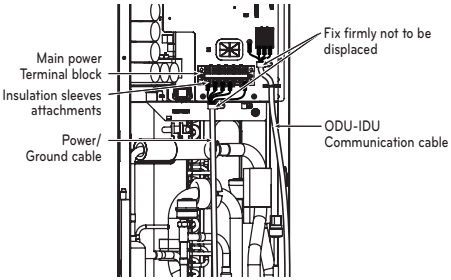
- The circuit diagram is not subject to change without notice.
- Be sure to connect wires according to the wiring diagram.
- Connect the wires firmly, so that not to be pulled out easily.
- Connect the wires according to color codes by referring the wiring diagram.
- The Power cord connected to the unit should be selected according to the following specifications.

Example) Connection of power and communication cable

Front side



Main Power and Communication Connection



CAUTION

It should be wiring power cables or communication cables to avoid interference with the oil level sensor. Otherwise, That oil level sensor would be operated abnormally.

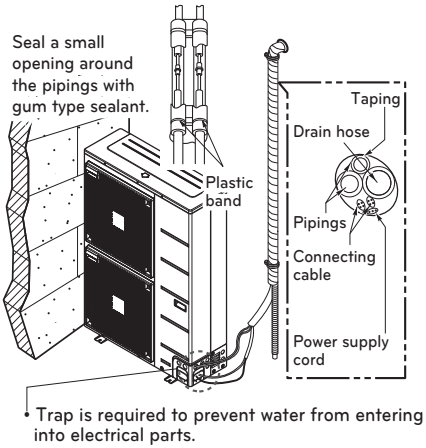
Forming the piping

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

- 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.

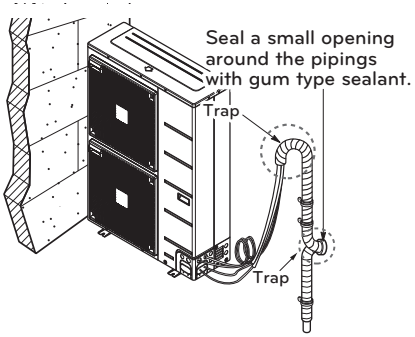
In cases where the outdoor unit is installed below the indoor unit perform the following.

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



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.



LEAKAGE TEST AND EVACUATION

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 indoor/outdoor unit and connecting tube must be checked for leak tight, and vacuumed to remove incondensible gas and moisture in the system.

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. Check that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

Leakage 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 leakage test. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.

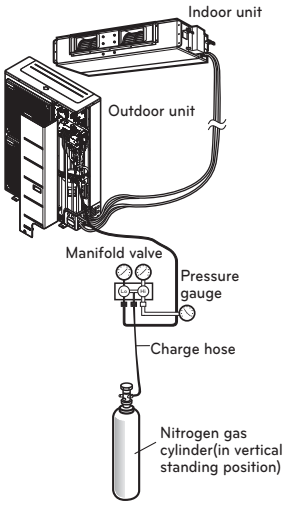
- Pressurize the system to no more than 3.8 Mpa with dry nitrogen gas and close the cylinder valve when the gauge reading reached 3.8 MPa Next, test for leaks with liquid soap.

⚠ 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.

1 Do a leakage test of all joints of the tubing(both Indoor unit and outdoor unit) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.

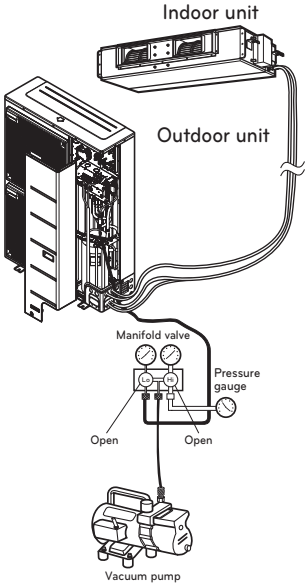
2 After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



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

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10 m(33 ft)	If tubing length is longer than 10 m(33 ft)
30 min. or more	60 min. or more
0.07 kPa or less	



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.

TEST RUNNING

1 Precautions In Test Running

- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner should not be operated.

CAUTION

- For test run, carry out the cooling operation firstly even during heating season. If heating operation is carried out firstly, it leads to the trouble of compressor. Then attention must be paid.
- Carry out the test run more than 5 minutes without fail. (Test run will be cancelled 18 minutes later automatically)

- The test run is started by pressing the room temperature checking button and down timer button for 3 seconds at the same time.
- To cancel the test run, press any button.

CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measured data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure.
- As to the structure and appearance, check following items.

- ▫ Is the circulation of air adequate?
- ▫ Is the draining smooth?
- ▫ Is the heat insulation complete (refrigerant and drain piping)?
- ▫ Is there any leakage of refrigerant?
- ▫ Is the remote controller switch operated?
- ▫ Is there any faulty wiring?
- ▫ Are not terminal screws loosened?

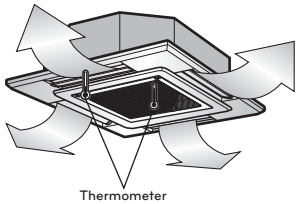
M4.....118N.cm{12kgf.cm}
M5.....196N.cm{20kgf.cm}
M6.....245N.cm{25kgf.cm}
M8.....588N.cm{60kgf.cm}

2 Connection of power supply

- Connect the power supply cord to the independent power supply. Circuit breaker is required.
- Operate the unit for fifteen minutes or more.

3 Evaluation of the performance

- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge one is more than 8°C (Cooling) or reversely (Heating).

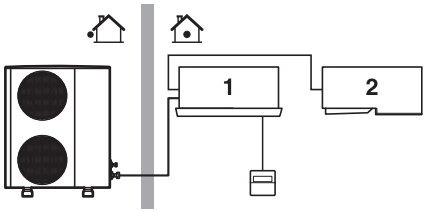


⚠ CAUTION

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

1 Never fail to have an individual power specialized for the air conditioner. As for the method of wiring, be guided by the circuit diagram pasted on the inside of control box cover.
2 Provide a circuit breaker switch between power source and the unit.
3 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 give rise to burn-out of the wires.)
4 Specification of power source
5 Confirm that electrical capacity is sufficient.
6 Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
7 Confirm that the cable thickness is as specified in the power sources specification. (Particularly note the relation between cable length and thickness.)
8 Never fail to equip a leakage breaker where it is wet or moist.
9 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.
- Proper starting power is not given to the compressor.

10 Use only 1 remote-controller contained in indoor unit, when using simultaneous operation system as shown below.
After setting the ESP value in the Ceiling Concealed Duct Type Indoor Unit, the main power turns off and then remove the remote controller.



HAND OVER

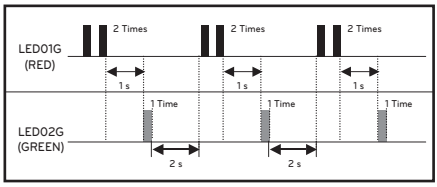
Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.).

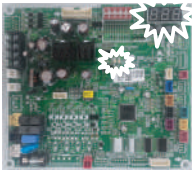
SELF-DIAGNOSIS FUNCTION

Error Indicator (Outdoor)

Outdoor Error

Ex) Error 21 (DC Peack)

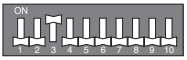
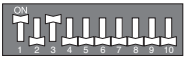
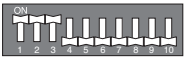




Error Code	Description	LED 1 (Red)	LED 2 (Green)	Indoor status
21	DC Peak(IPM Fault)	2times ◑	1time ◑	OFF
22	Max. CT(CT2)	2times ◑	2times ◑	OFF
23	DC Link Low Volt.	2times ◑	3times ◑	OFF
24	Pressure switch/Heater Sink.	2times ◑	4times ◑	OFF
26	DC Comp Position Error	2times ◑	6times ◑	OFF
29	Comp Over Current	2times ◑	9times ◑	OFF
32	D-Pipe High(Inv.)	3times ◑	2times ◑	OFF
35	Low pressure Error	3times ◑	5times ◑	OFF
41	Inv. D-Pipe Th Error(Open/Short)	4times ◑	1time ◑	OFF
43	Pressure Sensor Error	4times ◑	3times ◑	OFF
44	Outdoor air Th Error(Open/Short)	4times ◑	4times ◑	OFF
45	Cond. Middle Pipe Th Error(Open/Short)	4times ◑	5times ◑	OFF
46	Suction Pipe Th Error(Open/Short)	4times ◑	6times ◑	OFF
48	Cond. Out-Pipe Th Error(Open/Short)	4times ◑	8times ◑	OFF
51	Capacity over	5times ◑	1time ◑	OFF
53	Communication Error(Indoor ↔ Outdoor)	5times ◑	3times ◑	OFF
54	Open and Reverse Phase Error	5times ◑	4times ◑	OFF
60	EEPROM Error(Outdoor)	6times ◑	0	OFF
61	Cond. Middle Pipe High	6times ◑	1time ◑	OFF
62	Heatsink Error(High)	6times ◑	2times ◑	OFF
65	Heatsink Th Error(Open/Short)	6times ◑	5times ◑	OFF
67	BLDC motor fan lock(Outdoor)	6times ◑	7times ◑	OFF

Dip S/W Setting

If you set the Dip Switch when power is on, the change in setting is not applicable. The changing setting is enabled only when Power is reset.

Dip Switch 1 2 3 4 5 6 7 8 9 10	Function
	Normal Operation (No Function)
	Forced Cooling Operation
	Saving Power Consumption (Step 1)
	Saving Power Consumption (Step 2)
	Mode Lock (Cooling)
	Mode Lock (Heating)
	Night Quiet Mode (Step 1)
	Night Quiet Mode (Step 2)
	Mode Lock (Cooling) + Night Quiet Mode (Step 1)
	Mode Lock (Cooling) + Night Quiet Mode (Step 2)
	Mode Lock (Cooling) + Saving Power Consumption (Step 1)
	Mode Lock (Cooling) + Saving Power Consumption (Step 2)
	Mode Lock (Heating) + Saving Power Consumption (Step 1)
	Mode Lock (Heating) + Saving Power Consumption (Step 2)

Dip Switch 1 2 3 4 5 6 7 8 9 10	Function
	Synchro_Duo
	Synchro_Trio
	Synchro_Quartet

WARNING

When you set the dip switch, you should turn off the circuit breaker or shut the power source of the product down.

CAUTION

- Unless the applicable dip switch is set properly, the product may not work.
- If you want to set a specific function, request that the installer sets the dip switch appropriately during installation.

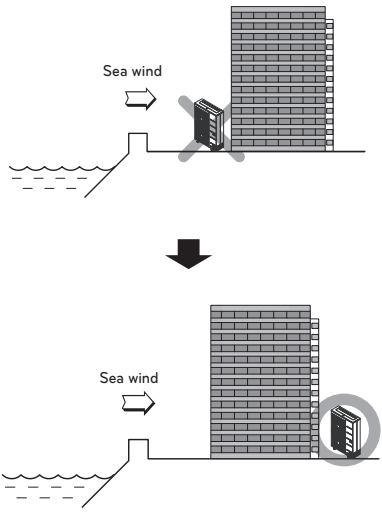
INSTALLATION GUIDE AT THE SEASIDE

CAUTION

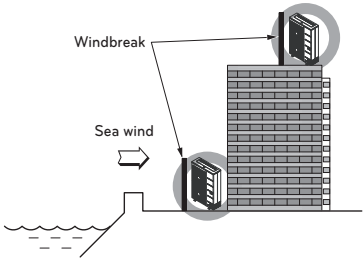
- Air conditioners should not be installed in areas where corrosive gases, such as acid or alkaline gas, are produced.
- Do not install the product where it could be exposed to sea wind (salty wind) directly. It can result corrosion on the product. Corrosion, particularly on the condenser and evaporator 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.

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.



In case, to install the outdoor unit on the seaside, set up a windbreak not to be exposed to the sea wind.



- It should be strong enough like concrete to prevent the sea wind from the sea.
- 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.

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 treatment.
- Periodic (more than once/year) cleaning of the dust or salt particles stuck on the heat exchanger by using water

[Representative] LG Electronics Inc. EU Representative
Krijgsman 1, 1186 DM Amstelveen, The Netherlands
[Manufacturer] LG Electronics Inc. Changwon 2nd factory
84, Wanam-ro, Seongsan-gu, Changwon-si, Gyeongsangnam-do, KOREA