INSTALLATION MANUAL

AIR CONDITIONER



Before beginning installation, read these instructions carefully. This will simplify installation and ensure that the product is installed correctly and safely. Leave these instructions near the product after installation for future reference.

TYPE: Fixed Speed Duct

ENGLISH

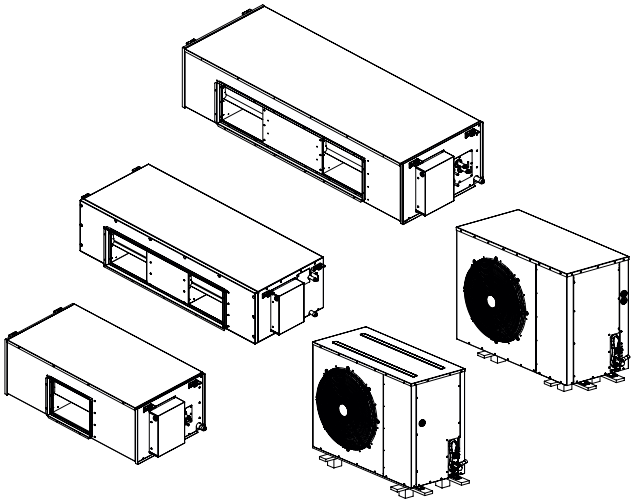
CAD66PR03201
Rev. 02_280725

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Installation Instructions

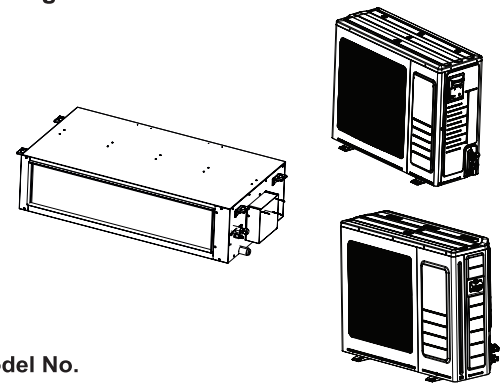
A. HIGH STATIC PRESSURE DUCTED TYPE
For Refrigerant R-410A

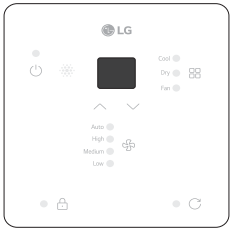




Model No.	
Indoor Unit	**Outdoor Unit**
ABNC66LA	ABUC66LA
ABNC102LA	ABUC102LA
ABNC132LA	ABUC132LA x 2

B. MID STATIC PRESSURE DUCTED TYPE
For Refrigerant R-32





Model No.	
Indoor Unit	**Outdoor Unit**
ZBNC36GA	ZBUC36GA
ZBNC48LA	ZBUC48LA

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1.1 SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USE

The following safety guidelines are intended to prevent unforeseen risks or damage from unsafe or incorrect operation of the appliance.

The guidelines are separated into 'WARNING' and 'CAUTION' as described below.

Safety Messages

⚠ This symbol is displayed to indicate matters and operations that can cause risk.
Read the text with this symbol carefully and follow the instructions in order to avoid risk.

⚠ **WARNING**

This indicates that the failure to follow the instructions can cause serious injuries or death.

⚠ **CAUTION**

This indicates that the failure to follow the instructions can cause minor injury or damage to the appliance.

Notes for Flammable Refrigerant

The following symbols are displayed on units.

This symbol indicates that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.

This symbol indicates that the Owner's Manual should be read carefully.

This symbol indicates that service personnel should be handling this equipment with reference to the Installation Manual.

This symbol indicates that information is available in the Owner's Manual or Installation Manual.

WARNING

⚠ **WARNING**

- To reduce the risk of explosion, fire, death, electric shock, injury or scalding to persons when installing this product, follow basic precautions, including the following:

Installation

- Do not install it yourself (customer).
  - Incomplete installation could cause injury due to fire, electric shock, the unit falling or a leakage of water. Consult the dealer from whom you purchased the unit or special installer.
- Perform the installation securely referring to the installation manual.
  - Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or a leakage of water.
- Install the unit securely in a place which can bear the weight of the unit.
  - When installed in an insufficient strong place, the unit could fall causing injured.

• Perform electrical work according to the installation manual and be sure to use an exclusive circuit.

- If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.

• Use the specified wires to connect the indoor and the outdoor units securely and attach the wires firmly to the terminal board connecting sections so the stress of the wire is not applied to the sections.

- Incomplete connecting and fixing could cause fire.

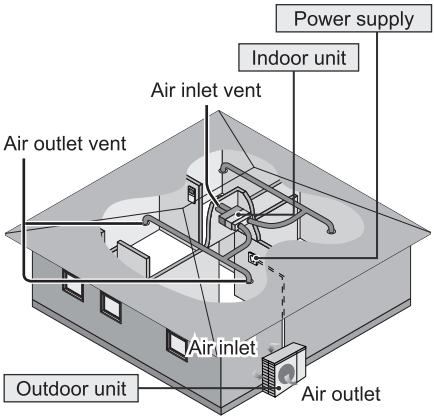
• Attach the electrical part cover to the indoor unit and the service panel to the outdoor unit securely.

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

• Check that the refrigerant gas do not leak after installation is completed.

• Be sure to use the part provided or specified parts for the installation work.

- The use of defective parts could cause an injury or leakage of water due to a fire, electric shock, the unit falling, etc.



• The non-fixed appiance shall be stored in an area where the room size corresponds to the room area as specified for operation. (for R32)

• The non-fixed appliance shall be stored in a room without continuously operating open flames (for example an operating gas appliance) or other potential ignition sources (for example an operating electric heater, hot surfaces).

• Compliance with national gas regulations shall be observed.

• Refrigerant tubing shall be protected or enclosed to avoid damage.

• Flexible refrigerant connectors (such as connecting lines between the indoor and outdoor unit) that may be displaced during normal operations shall be protected against mechanical damage.

• Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

• Do not pierce or burn.

• Be aware that refrigerants may not contain an odour.

• Keep any required ventilation openings clear of obstruction.

• Ducts connected to an appliance shall not contain a potential ignition source. (for R32)

- Checks to the area
- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.

- Work procedure
  - Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.
- General work area
  - All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- Checking for presence of refrigerant
  - The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- Presence of fire extinguisher
  - If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- No ignition sources
  - No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
  - All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space.
  - Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.
- Ventilated area
  - Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out.The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- Detection of flammable refrigerants
  - Under no circumstances shall potential sources of ignition beused in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.
- Leak detection methods
  - The following leak detection methods are deemed acceptable for systems containing flammable refrigerants. Electronic leak detectors shall be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
  - Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
  - Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. Oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process

• Removal and evacuation

- When breaking into the refrigerant circuit to make repairs - or for any other purpose - conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration.The following procedure shall be adhered to :
- Remove refrigerant
- Purge the circuit with inert gas
- Evacuate
- Purge again with inert gas
- Open the circuit by cutting or brazing.
- The refrigerant charge shall be recovered into the correct recovery cylinders.The system shall be "flushed" with OFN to render the unit safe.This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task. Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.This process shall be repeated until no refrigerant is within the system.
- When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.This operation is absolutely vital if brazing operations on the pipe-work are to take place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

• Decommissioning

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant.
- It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.
b) Isolate system electrically.
c) Before attempting the procedure ensure that:
• mechanical handling equipment is available, if required, for handling refrigerant cylinders;
• all personal protective equipment is available and being used correctly;
• the recovery process is supervised at all times by a competent person;
• recovery equipment and cylinders conform to the appropriate standards.
d) Pump down refrigerant system, if possible.
e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
f) Make sure that cylinder is situated on the scales before recovery takes place.
g) Start the recovery machine and operate in accordance with manufacturer's instructions.
h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

• Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

• Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs. The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good

working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt. The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

- Mechanical connections (mechanical connectors or flared joints) shall be accessible for maintenance purposes.
- The appliance shall be installed in accordance with national wiring regulations.
- The plug accessible have to be accessible for disconnection of the appliance. or means for disconnection must be incorporated in the fixed wiring in accordancewith the wiring rules.
- Remote located within 2 m horizontal distance in line of sight of the unit and on a wall within the room in which the unit is installed; and
  – 100 mm above the floor where h0 is not more than 300 mm from the floor; or
  – 300 mm above the floor where h0 is greater than 300 mm from the floor.
- The supply and return air shall be directly ducted to the space.
- Open areas such as false ceilings shall not be used asa return air duct.
- Auxiliary devices which may be a potential ignition source shall not be installed in the duct work. Examples of such potential ignition sources are hot surfaces with a temperature exceeding 700°C and electric switching devices.
- Only auxiliary devices approved by the appliance manufacturer or declared suitable with the refrigerant shall be installed in connecting ductwork.
- Qualification of workers
  The manual shall contain specific information about the required qualification of the working personnel for maintenance, service and repair operations. Every working procedure that affects safety means shall only be carried out by competent persons according to Annex HH. Examples for such working procedures are:
  • breaking into the refrigerating circuit;
  • opening of sealed components;
  • opening of ventilated enclosures.
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants. (for R32)
- Removal and evacuation
  When breaking into the refrigerant circuit to make repairs – or for any other purpose - conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration.The following procedure shall be adhered to:
  - Remove refrigerant
  - Purge the circuit with inert gas
  - Evacuate
  - Purge again with inert gas
  - Open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task. Flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place. Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.

- Field-made refrigerant joints indoors shall be tightness tested according to the following requirements: The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure. No leak shall be detected.
- Charging procedures
  - In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
  - Cylinders shall be kept upright.
  - Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to overfill the refrigeration system. Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

CAUTION

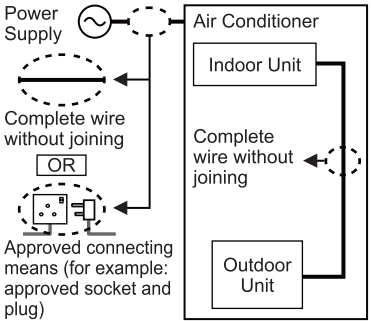
⚠ CAUTION

- To reduce the risk of minor injury to persons, malfunction, or damage to the product or property when installing this product, follow basic precautions, including the following:

Installation

- Perform the drainage/piping work securely according to the installation manual.
  - If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.
- Do not install the unit in a place where an inflammable gas leaks.
  - If gas leaks and accumulates in the area surrounding the unit, it could cause an explosion.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- The installation of pipe-work shall be kept to a minimum.
- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification. (for R32)
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants. (for R32)
- Pipe-work shall be securely mounted and guarded from physical damage.
  - When mechanical connectors are reused indoors, sealing parts shall be renewed. (for R32)
  - When flared joints are reused indoors, the flare part shall be re-fabricated. (for R32)
- Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- Do not install the unit in potentially explosive atmospheres.
- Use complete power supply cord without joining. In unavoidable circumstances that complete power supply cord without joining is impossible, use an approved connection means (for example: socket and plug).
- If the supply cord is damaged, it must be replaced by the manufacturer, service agent or similarly qualified persons in order to avoid a hazard.

• It is strongly recommended to be installed with Earth Leakage Circuit Breaker(ELCB) or Residual Current Device (RCD) to prevent electric shock or fire.



• To prevent overheating, fire or electric shock:
  - Insert the power plug properly.
  - Dust on the power plug should be periodically wiped with a dry cloth.
• Stop using the product if any abnormality/ failure occurs and disconnect the power plug or turn off the power switch and breaker. (Risk of smoke/ fire/electric shock)

Examples of abnormality/failure
- The ELCB trips frequently.
- Burning smell is observed.
- Abnormal noise or vibration of the unit is observed.
- Water leaks from the indoor unit.
- Power cord or plug becomes abnormally hot.
- Fan speed cannot be controlled.
- The unit stops running immediately even if it is switched on for operation.
- The fan does not stop even if the operation is stopped.

Power Supply

• Do not use a modified cord, joint cord, extension cord or unspecified cord to prevent overheating and fire.

To prevent overheating, fire or electric shock:
- Do not share the same power outlet with other equipment.
- Do not operate with wet hands.
- Do not over bend the power supply cord.
- Do not operate or stop the unit by inserting or pulling out the power plug.



- A brazed, welded, or mechanical connection shall be made before opening the valves to permit refrigerant to flow between the refrigerating system parts.
- This unit is equipped with a leak detection system for safety. For leak detection to be effective, the unit must be electrically powered at all times after installation, other than when servicing.
- Servicing shall be performed only as recommended by the manufacturer.
- The manufacturer may provide other suitable examp les or may provide additional information about the refrigerant odour.
- The manufacturer should specify other potential continuously operating sources known to cause ignition of the refrigerant used.

2.0 IMPORTANT

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- ❑ Carefully read this instruction booklet before beginning.
- ❑ Follow each installation or repair step exactly as shown.
- ❑ Observe all local, state and national electrical codes.
- ❑ Pay close attention to all warning and caution notices given in this manual.



WARNING This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING



ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Use complete power supply cord without any joints.
  Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Provide a power outlet to be used exclusively for each unit and a power supply disconnect, circuit breaker and earth leakage breaker for over current protection should be provided in the exclusive line.
- Provide a power outlet exclusively for each unit, and full disconnection means contact separation in all poles must be incorporated in the fixed wiring in accordance with the wiring rules.
- To prevent possible hazards from insulation failure, the unit must be grounded.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help and bend your knees while lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing

…In a Room

Properly insulate any tubing inside a room to prevent “sweating” that can cause dripping and water damage to walls floors.

CAUTION Keep the fire alarm and the air outlet at least 1.5 m away from the unit.

…In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems) Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- While performing piping work do not mix air except for specified refrigerant (**R32, R410A**) in refrigerant cycle. It causes capacity down and risk of explosion and injury due to high tension inside the refrigerant cycle. Refrigerant gas leakage may cause fire.

WARNING

- Ventilate the room well, in the event that is refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts. Handle liquid refrigerant carefully as it may cause frostbite.

When Installing or Servicing







- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps of bits of wiring have been left inside the unit being serviced.

WARNING

- Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this appliance, do not repair by yourself. Contact the sales dealer or service dealer for repair.



- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.

CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

Others



CAUTION

- Do not sit or step on the unit, you may fall down accidently
- Do not stick any object into the fan discharge grill. You may be injured and the unit may be damaged.

3.0 SELECTING THE INSTALLATION SITE

3.1 INDOOR UNIT

AVOID:

- Areas where leakage of flammable gas may be expected.
- Places where large amounts of oil mist exist.
- Direct sunlight.
- Locations near heat sources which may affect the performance of the unit.
- Locations where external air may enter the room directly. This may cause "condensation" on the air discharge ports, causing them to spray or drip water.
- Locations where the remote controller will be splashed with water or affected by dampness or humidity.
- Installing the remote controller behind curtains or furniture.
- Locations where high-frequency emissions are generated.

DO:

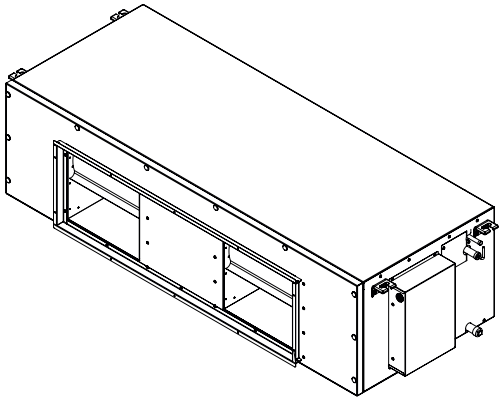
- Select an appropriate position from which every corner of the room can be uniformly cooled.
- Select a location where the ceiling is strong enough to support the weight of the unit.
- Select a location where tubing and drain pipe have the shortest run to the outdoor unit.
- Allow room for operation and maintenance as well as unrestricted air flow around the unit. Install the unit within the maximum elevation difference above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in the installation manual packed with the outdoor unit.
- Allow room for mounting the remote controller about 1m off the floor, in an area that is not in direct sunlight or in the flow of cool air from the indoor unit.

3.2 HIGH STATIC PRESSURE DUCTED TYPE

Required Minimum Space for Installation and Service of ductable unit.

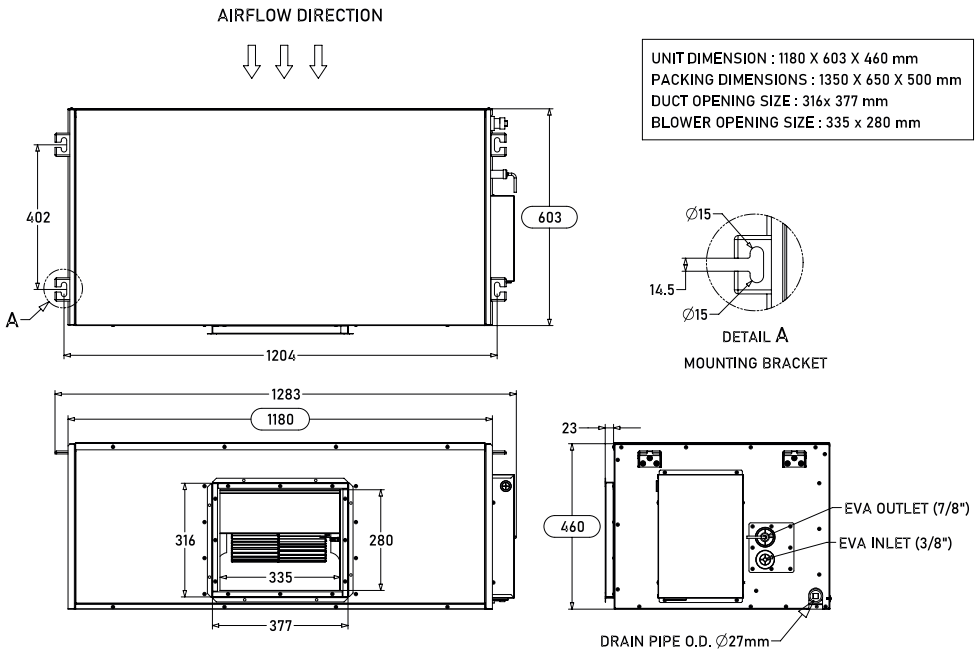
This air conditioner is usually installed above the ceiling so that the indoor unit and ducts are not visible. Only the air intake and air outlet ports are visible from below.

It is recommended that minimum space needed is (600mm x 700mm) for checking and servicing the electrical system.

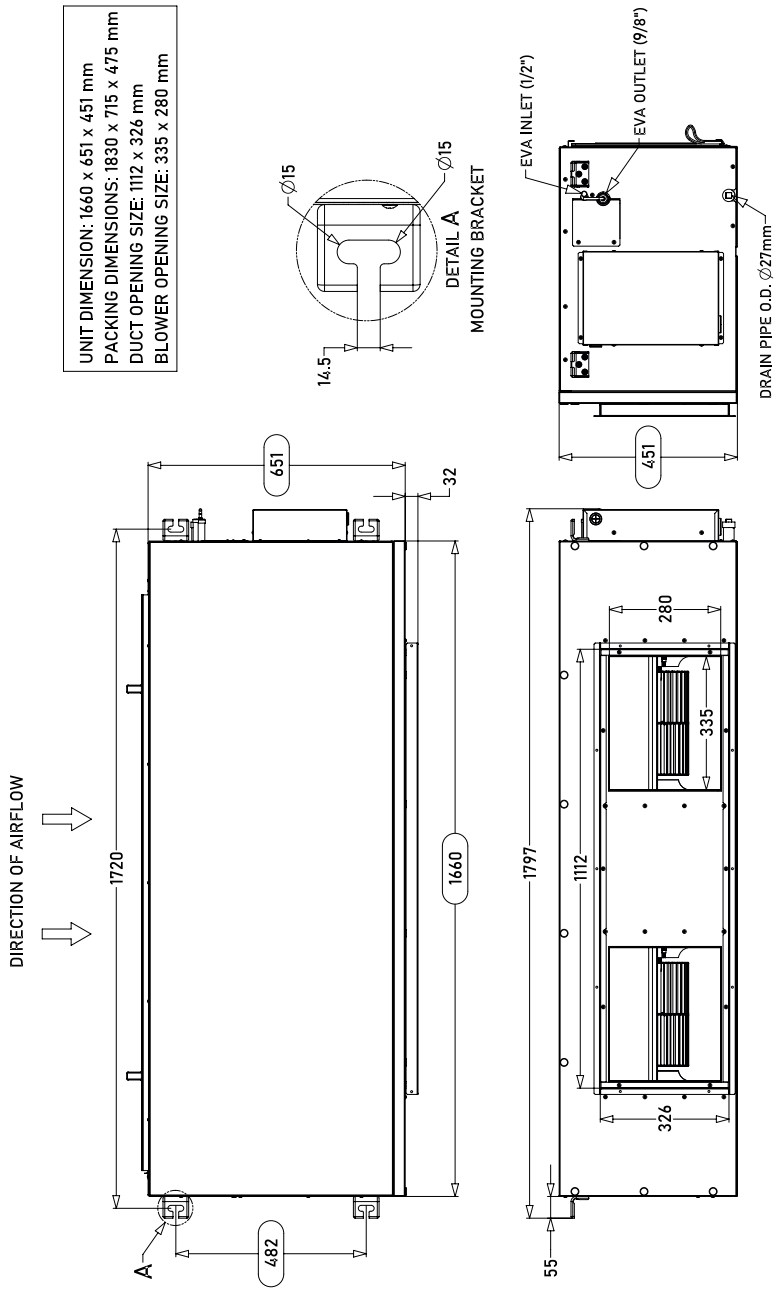


3.3 LINE DIAGRAM OF HIGH PRESSURE DUCTED TYPE

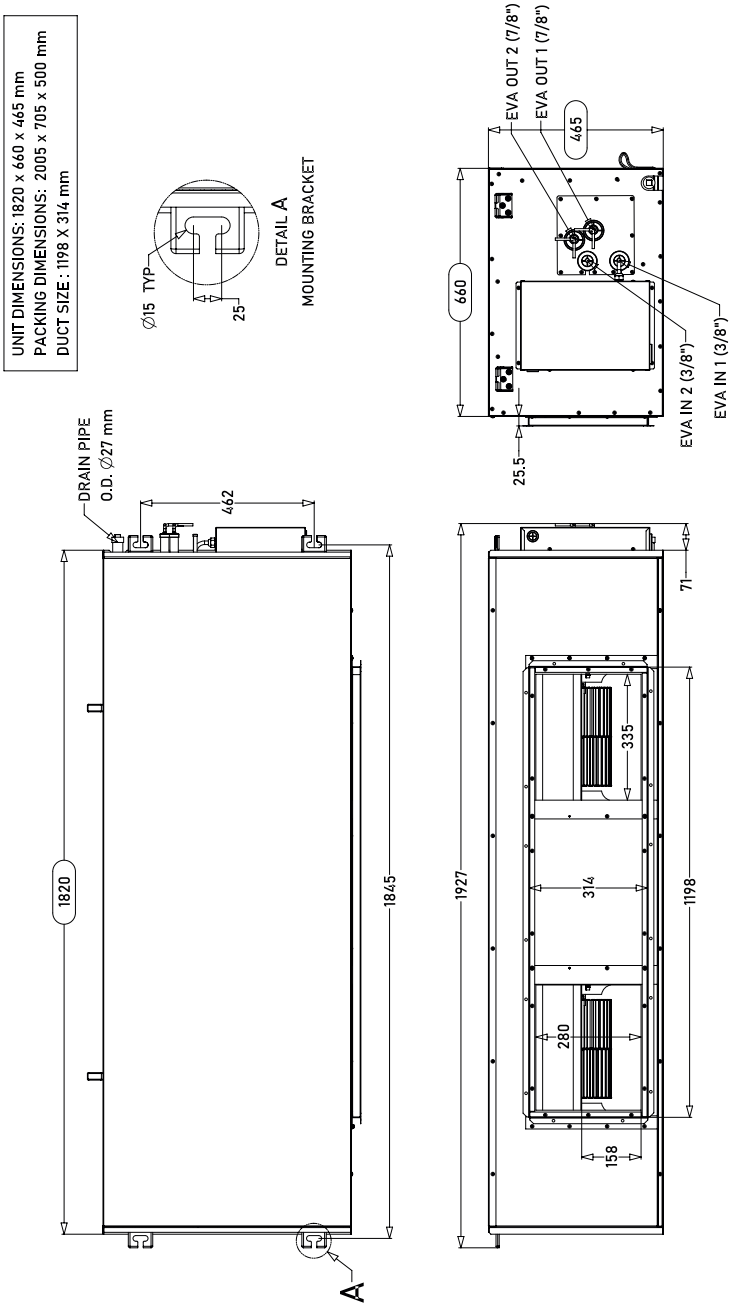
(A) 5.5 TR IDU LINE DIAGRAM :



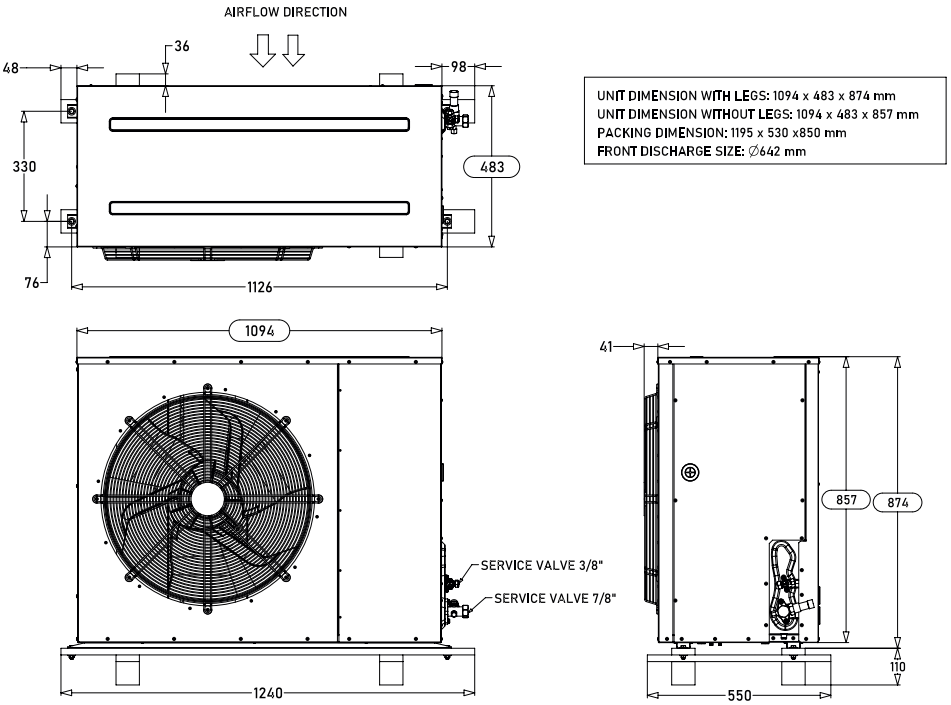
(B) 8.5 TR IDU LINE DIAGRAM :



(C) 11.0 TR TWIN CIRCUIT IDU LINE DIAGRAM

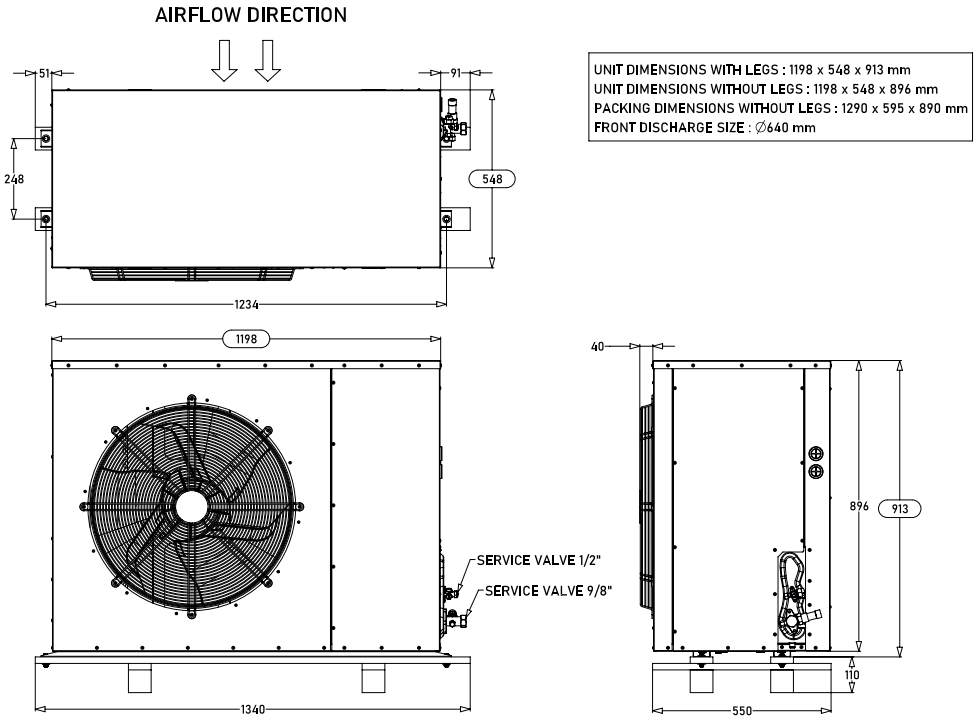


(D) 5.5 TR ODU LINE DIAGRAM



UNIT DIMENSION WITH LEGS: 1094 x 483 x 874 mm
UNIT DIMENSION WITHOUT LEGS: 1094 x 483 x 857 mm
PACKING DIMENSION: 1195 x 530 x850 mm
FRONT DISCHARGE SIZE: ∅642 mm

(E) 8.5 TR ODU LINE DIAGRAM :



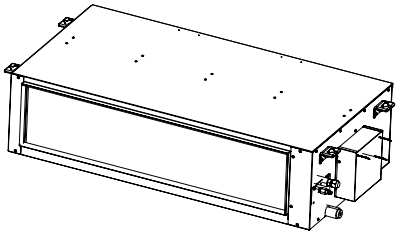
UNIT DIMENSIONS WITH LEGS : 1198 x 548 x 913 mm
UNIT DIMENSIONS WITHOUT LEGS : 1198 x 548 x 896 mm
PACKING DIMENSIONS WITHOUT LEGS : 1290 x 595 x 890 mm
FRONT DISCHARGE SIZE : ∅640 mm

3.4 MID STATIC PRESSURE DUCTED TYPE

Required Minimum Space for Installation and Service of ductable unit.

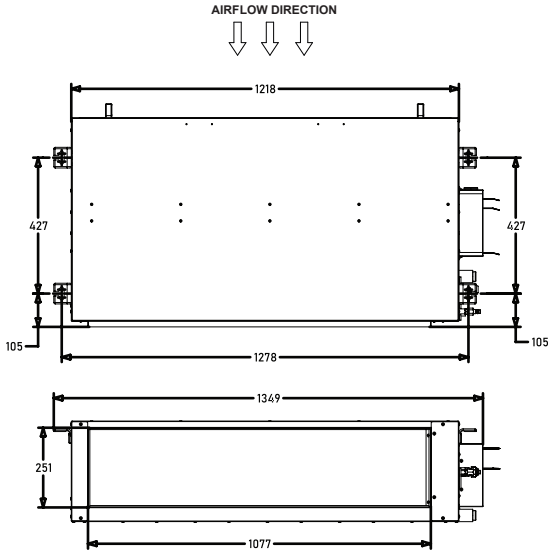
This air conditioner is usually installed above the ceiling so that the indoor unit and ducts are not visible. Only the air intake and air outlet ports are visible from below.

It is recommended that minimum space needed is (600mm x 600mm) for checking and servicing the electrical system.



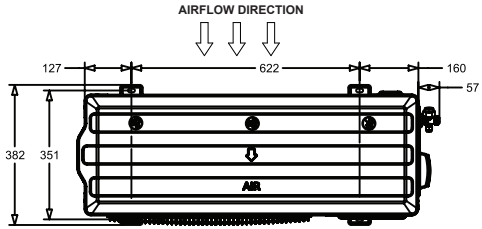
3.5 LINE DIAGRAM OF MID STATIC PRESSURE DUCTABLE TYPE

(A) 3 TR & 4TR IDU LINE DIAGRAM :

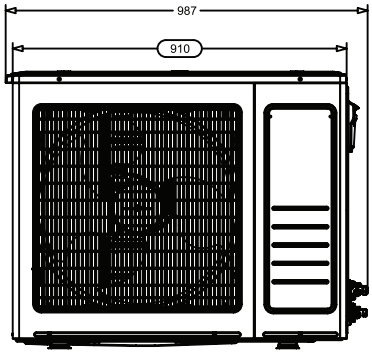


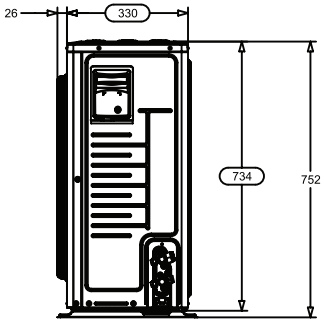
UNIT DIMENSIONS (NET) - 1218x629x316
UNIT DIMENSIONS (OVERALL) - 1349x657x316
PACKING DIMENSIONS - 1470x750x373

(B) 3TR ODU LINE DIAGRAM :

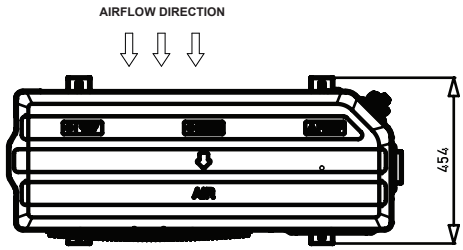


UNIT DIM. - 910 x 734 x 330 mm
PACKING DIM. - 1075 X 822 X 450 mm

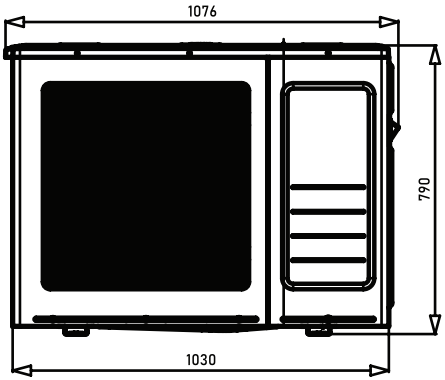


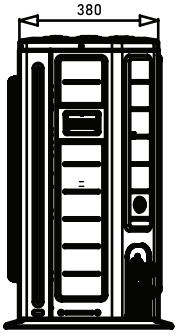


(C) 4TR ODU LINE DIAGRAM :



UNIT DIM. - 1076 x 790 x 380 mm
PACKING DIM. - 1100 X 800 X 445 mm



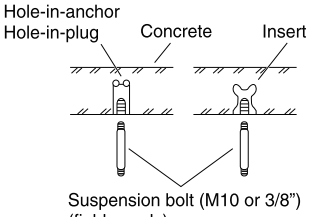


4.0 HOW TO INSTALL INDOOR UNIT

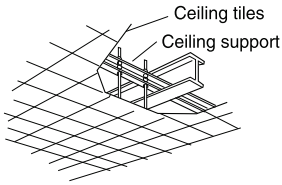
4.1 SUSPENDING THE INDOOR UNIT DEPENDING ON THE CEILINGTYPE:

Depending on the ceiling type:.

a) Insert suspension bolts or



b) Use existing ceiling supports or construct a suitable support

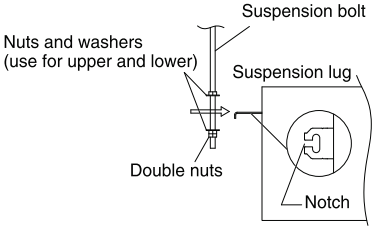


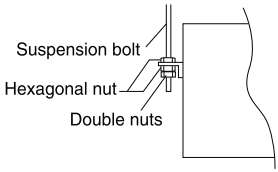
⚠ WARNING	It is important that you use extreme care in supporting the indoor unit inside the ceiling. Ensure that the ceiling is strong enough to support the weight of the unit. Before hanging the unit, test the strength of each attached suspension bolt.

(1) When placing the unit inside the ceiling, determine the pitch of the suspension bolts referring to the dimensional data as shown in the tables and diagrams under the section Required Minimum Space for Installation and Maintenance Services.
Tubing must be laid and connected inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.

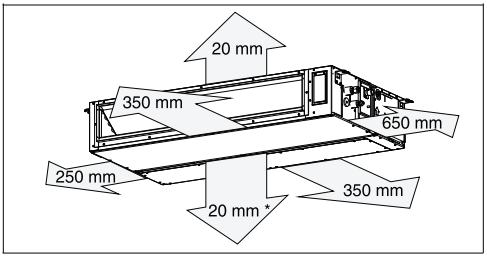
(2) Screw in the suspension bolts allowing them to protrude from the ceiling. (Cut the ceiling material, if necessary.)

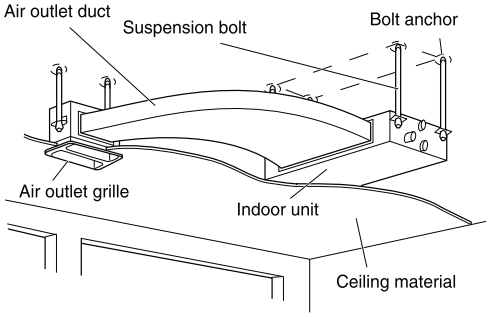
(3) Thread the 3 hexagonal nuts and 2 washers (field supply) onto each of the 4 suspension bolts. Use 1 nut and 1 washer for the upper part, and 2 nuts (double nuts) and 1 washer for the lower part, so that the unit will not fall off the suspension lugs.





- This shows an example of installation.





4.2 INSTALLING THE REFRIGERANT TUBING:

The size of the refrigerant tubing is as shown in the table below:

MODEL NAME	3.0TR (R32)	4.0TR (R32)
GAS TUBE	Ø5/8 inch	Ø5/8 inch
	(Ø 15.88 mm)	(Ø 15.88 mm)
LIQUID TUBE	Ø 3/8 inch	Ø 3/8 inch
	(Ø 9.525 mm)	(Ø 9.525 mm)

MODEL NAME	5.5 TR (R410)	8.5 TR (R410)	11.0 TR TWIN CIRCUIT (R410)
GAS TUBE	Ø7/8 inch	Ø 9/8 inch	Ø7/8 inch
	(Ø 22.225 mm)	(Ø 28.575mm)	(Ø 22.225 mm)
LIQUID TUBE	Ø 3/8 inch	Ø 1/2 inch	Ø 3/8 inch
	(Ø 9.525 mm)	(Ø 12.7 mm)	(Ø 9.525 mm)

NOTE:

(A) 3TR & 4TR

Indoor Unit: Gas Tube and Liquid Tube Flaring Connection
Outdoor Unit: Gas Tube and Liquid Tube Flaring Connection

(B) 5.5TR, 8.5TR & 11TR

Indoor Unit: Brazing connection
Outdoor Unit: Gas Tube Brazing and Liquid Tube Flaring Connection

- When brazing the gas tubing, cool the tubing with dampened shop cloth as you work, to protect the unit's thermistor from the heat generated by brazing.
- Be sure to insulate both the gas tubing and liquid tubing. In addition, wrap the supplied insulation material around the tubing joints, and fasten in place with vinyl tape or other means. Failure to insulate the tubing may result in water leakage in the from of condensation.
- Plug all gaps at tube through-holes in the unit with insulation or a similar substance to prevent air leakage.

4.3 INSTALLING THE DRAIN PIPING :

(1) Prepare standard hard PVC pipe (OD – 27 mm) for the drain and use the supplied drain socket to prevent water leaks. The PVC pipe must be purchased separately. When doing this, apply adhesive for the PVC pipe at the connection point. Both side drain connection.

(2) If connecting a drain joint (field supply) to the threaded drain port, first wrap the drain port threads with sealing tape, then connect the joint. (Figure -7)

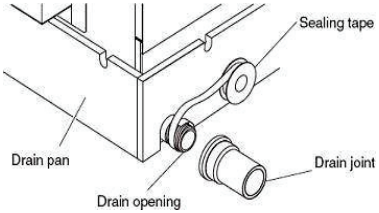


Figure -7

(3) After connecting the drain pipe securely, wrap insulator (field supply) around the pipe.

(4) Ensure the drain pipe has a downward gradient (1/100 or more) and prepare traps as indicated in Figure -8.

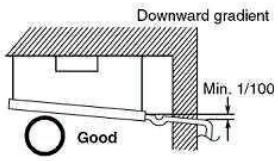


Figure -8

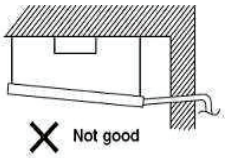


Figure -9

(5) Also, in another part of the pipe arrangement, prepare traps with an inspection plug to clean dust or debris that may cause leaking of water. (Figure -10)

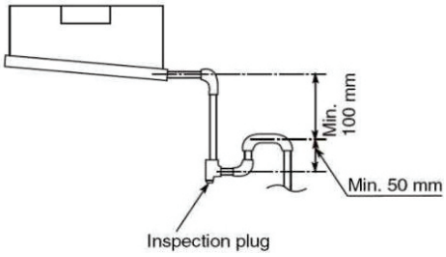


Figure -10

(6) After connecting the drain piping, slowly pour water into the drain pan to check that the water drains smoothly.

4.4 CAUTION FOR DUCTING WORK :

- This unit has **mid (3TR, 4TR) & high (5.5TR, 8.5TR, 11TR)** static pressure. In the case of small pressure resistance (for instance, a short duct), install a damper for adjusting air flow volume as air flow volume / air flow noise increases.
- If the air conditioner is to be installed in a room such as an office or meeting room which needs a low sound level, provide a supply and return noise absorption chamber with an acoustic liner.
- Include an air filter (supplied) at the return duct.

4.5 CHECKPOINT AFTER INSTALLATION :

After installation of indoor and outdoor units, panels and electrical wiring, check the following items.

	CHECKPOINT	SYMPTOM	CHECK	REMARK
1	Make sure whether indoor and outdoor units are correctly installed.	Fall, vibration, noise		
2	Make sure whether gas leakage is tested.	No cooling		
3	Make sure whether insulation is completed. (Refrigerant piping and drain piping)	Water leakage		
4	Make sure whether drain water is running smoothly.	Water leakage		
5	Make sure whether the power voltage matches the nameplate.	Inoperative, burnout		
6	Make sure whether there is miswiring or incorrect connection.	Inoperative, burnout		
7	Make sure whether the ground construction is completed.	Ground leakage		
8	Make sure whether the wire gauge is followed by the recommended specifications.	Inoperative, burnout		
9	Make sure whether the air intake and air outlet of the indoor and outdoor units are sealed by obstacles.	No cooling		

5.0 ELECTRICAL WIRING

5.1 GENERAL PRECAUTIONS ON WIRING :

(1) Before wiring, confirm the rated voltage of the unit as shown on its nameplate, then carry out the wiring closely following the wiring diagram.
(2) Provide a power outlet to be used exclusively and a circuit breaker.
(3) To prevent possible hazards from insulation failure, the unit must be grounded.
(4) Each wiring connection must be done in accordance with the wiring system diagram. Wrong wiring may cause the unit to malfunction or become damaged.
(5) Do not allow wiring to touch the refrigerant tubing, compressor or any moving parts of the fan.
(6) Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage that occurs as a result of such unauthorized changes.
(7) Regulations on wire diameters differ from locality to locality. For field wiring rules, please refer to your Local Electrical Codes before beginning. You must ensure that installation complies with all relevant rules and regulations.
(8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows:

- The remote control wiring and the inter-unit control wiring should be wired apart from inter-unit power wiring.
- Use shielded wires for inter-unit control wiring between units and ground the shield on both sides.

(9) If the power supply cord of this appliance is damaged, it must be replaced by the manufacturer, Service agent or simillar qualified person in order to avoid hazard

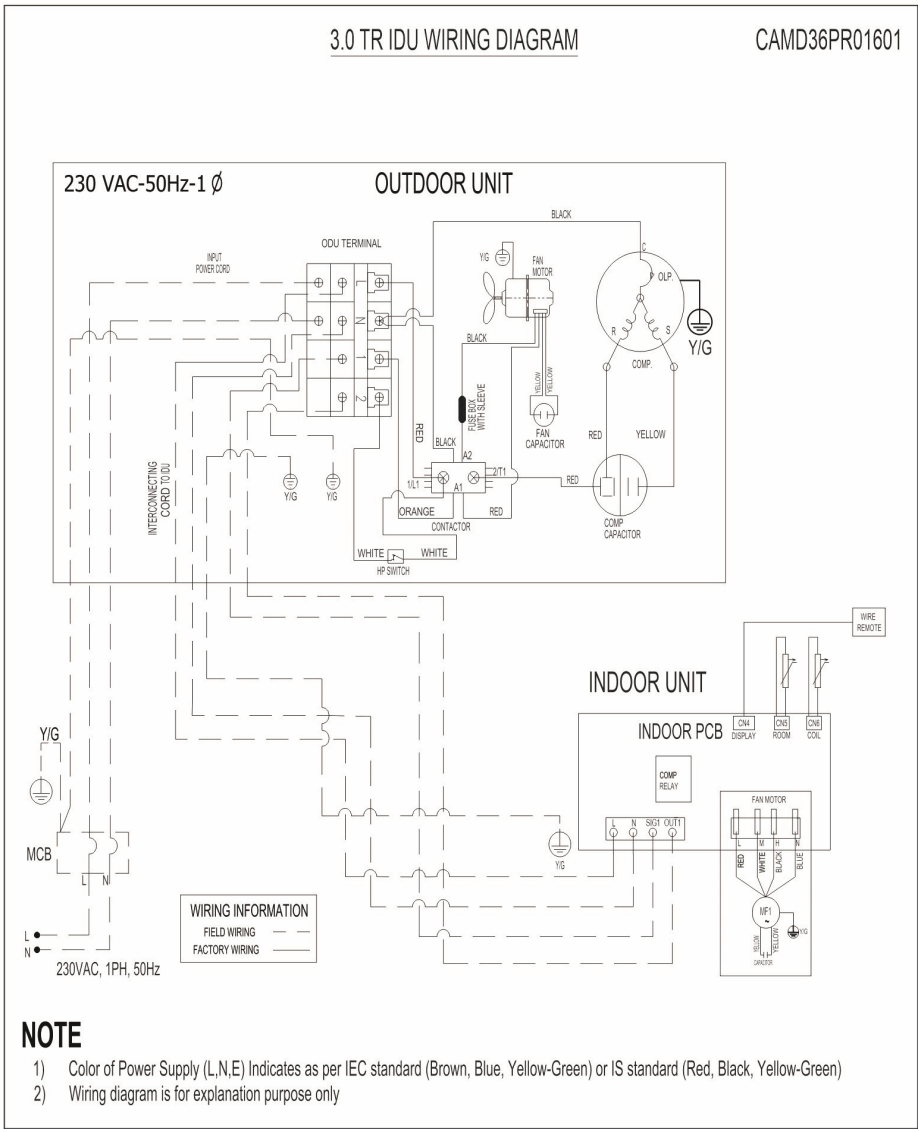
5.2 RECOMMENDED WIRE FOR POWER SUPPLY:

MODEL NAME	POWER SUPPLY
3.0 TR	230 Volts, 1N Phase, 50 Hz
4.0 TR	415 Volts, 3N Phase, 50 Hz
5.5 TR	415 Volts, 3N Phase, 50 Hz
8.5 TR	415 Volts, 3N Phase, 50 Hz
11.0 TR TWIN CIRCUIT	415 Volts, 3N Phase, 50 Hz

MODEL NAME	POWER SUPPLY CABLE SIZE	NO. OF CORES	INTER-UNIT (BETWEEN OUTDOOR AND INDOOR UNITS) POWER SUPPLY CABLE SIZE	NO. OF CORES	INTER-UNIT (BETWEEN OUTDOOR AND INDOOR UNITS) CONTROL WIRING SIZE	NO. OF CORES	MCB RATING
3.0 TR	4.0 mm²	3	1.5 mm²	3	1.0 mm²	2	32A (1Ph)
4.0 TR	4.0 mm²	5	1.5 mm²	3	1.0 mm²	2	25A (3Ph)
5.5 TR	4.0 mm²	5	2.5 mm²	3	1.0 mm²	2	32A
8.5 TR	6.0 mm²	5	2.5 mm²	3	1.0 mm²	2	45A
11.0 TR TWIN CIRCUIT	4.0 mm²	5	2.5 mm²	3	1.0 mm²	(2.0) X 2	64A

5.3 WIRING DIAGRAMS:

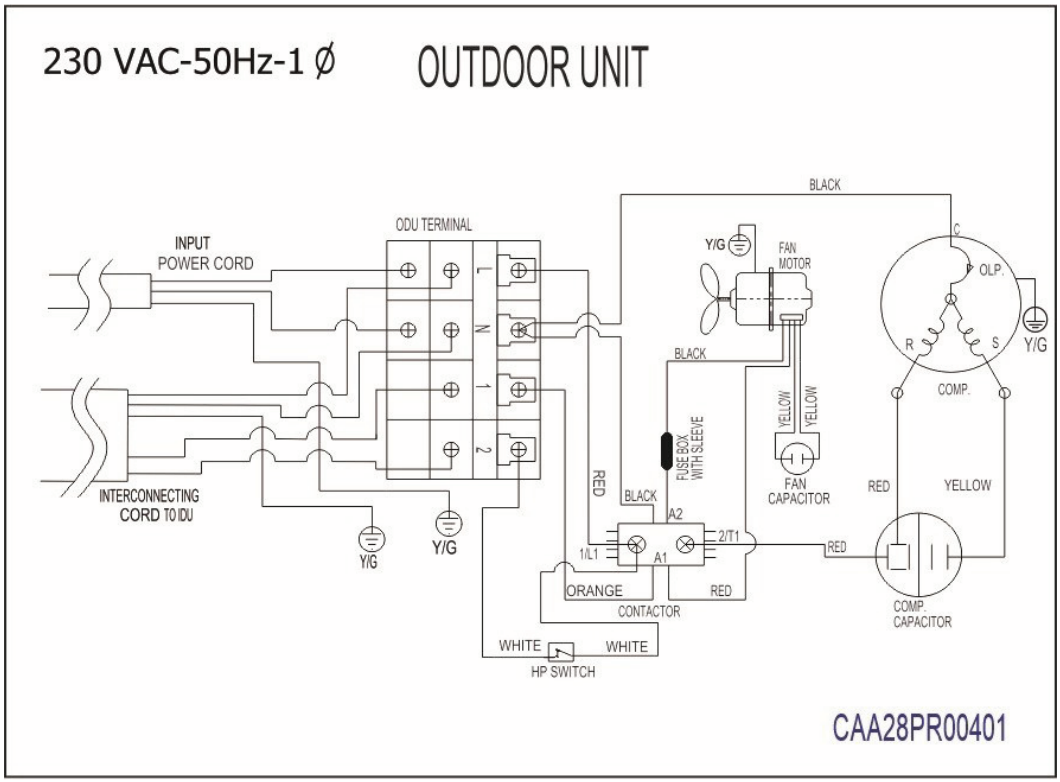
A. 3TR IDU WIRING DIAGRAM



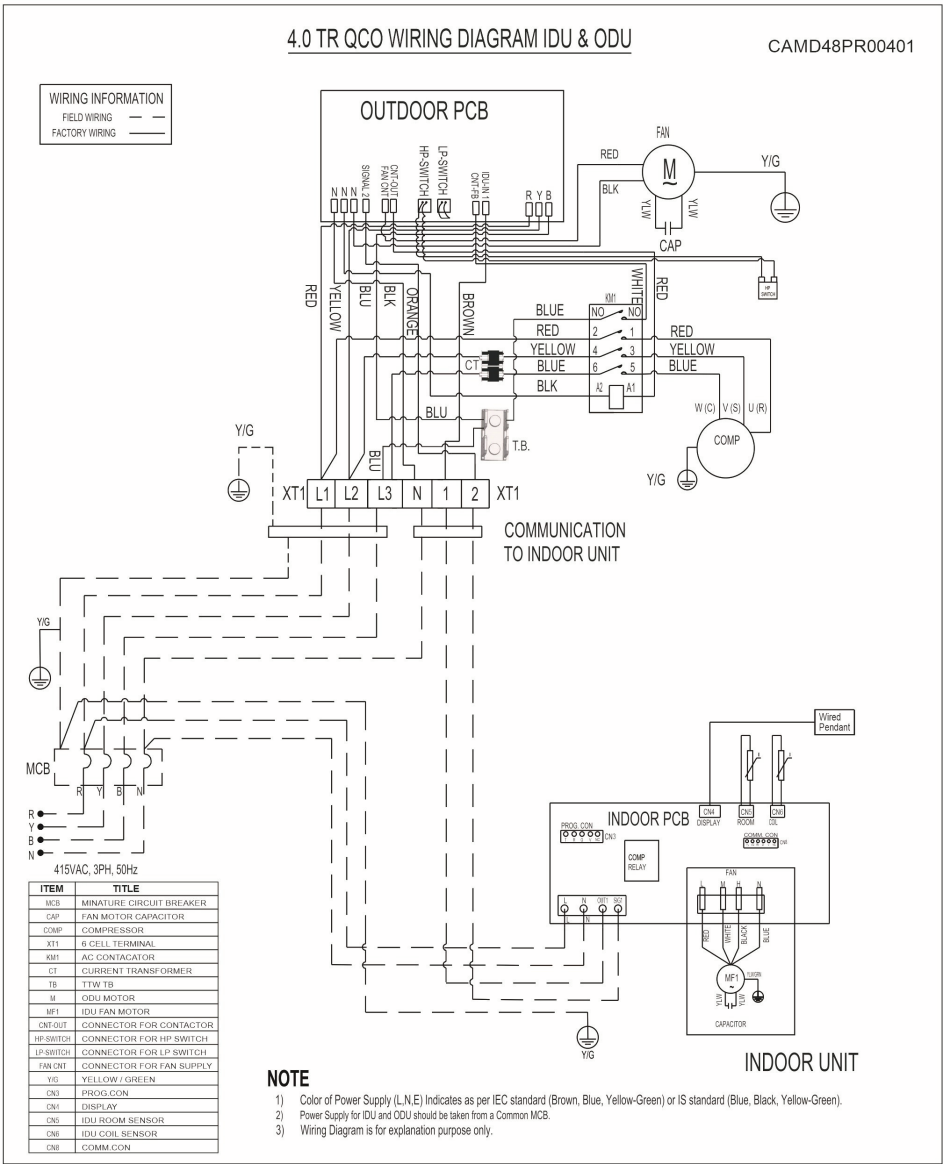
NOTE

1) Color of Power Supply (L,N,E) Indicates as per IEC standard (Brown, Blue, Yellow-Green) or IS standard (Red, Black, Yellow-Green)
2) Wiring diagram is for explanation purpose only

B. 3 TR ODU WIRING DIAGRAM



C. 4TR IDU & ODU WIRING DIAGRAM

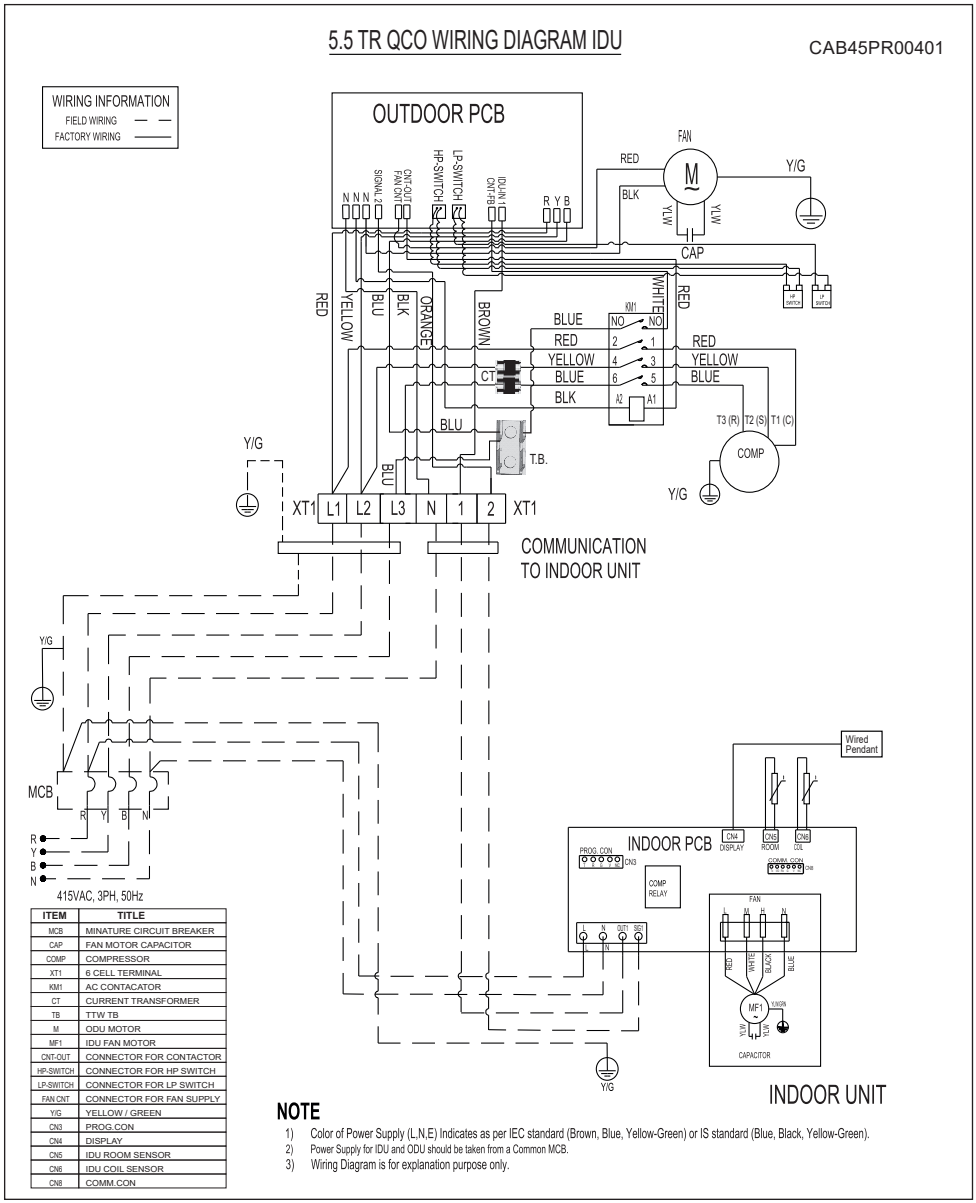


ITEM	TITLE
MCB	MINATURE CIRCUIT BREAKER
CAP	FAN MOTOR CAPACITOR
COMP	COMPRESSOR
XT1	6 CELL TERMINAL
KM1	AC CONTACATOR
CT	CURRENT TRANSFORMER
TB	TTW TB
M	ODU MOTOR
MF1	IDU FAN MOTOR
CNT-OUT	CONNECTOR FOR CONTACTOR
HP SWITCH	CONNECTOR FOR HP SWITCH
LP SWITCH	CONNECTOR FOR LP SWITCH
FAN CNT	CONNECTOR FOR FAN SUPPLY
Y/G	YELLOW / GREEN
CN3	PROG.CON
CN4	DISPLAY
CN5	IDU ROOM SENSOR
CN6	IDU COIL SENSOR
CN8	COMM.CON

NOTE

1) Color of Power Supply (L,N,E) Indicates as per IEC standard (Brown, Blue, Yellow-Green) or IS standard (Blue, Black, Yellow-Green).
2) Power Supply for IDU and ODU should be taken from a Common MCB.
3) Wiring Diagram is for explanation purpose only.

D. 5.5 TR IDU WIRING DIAGRAM

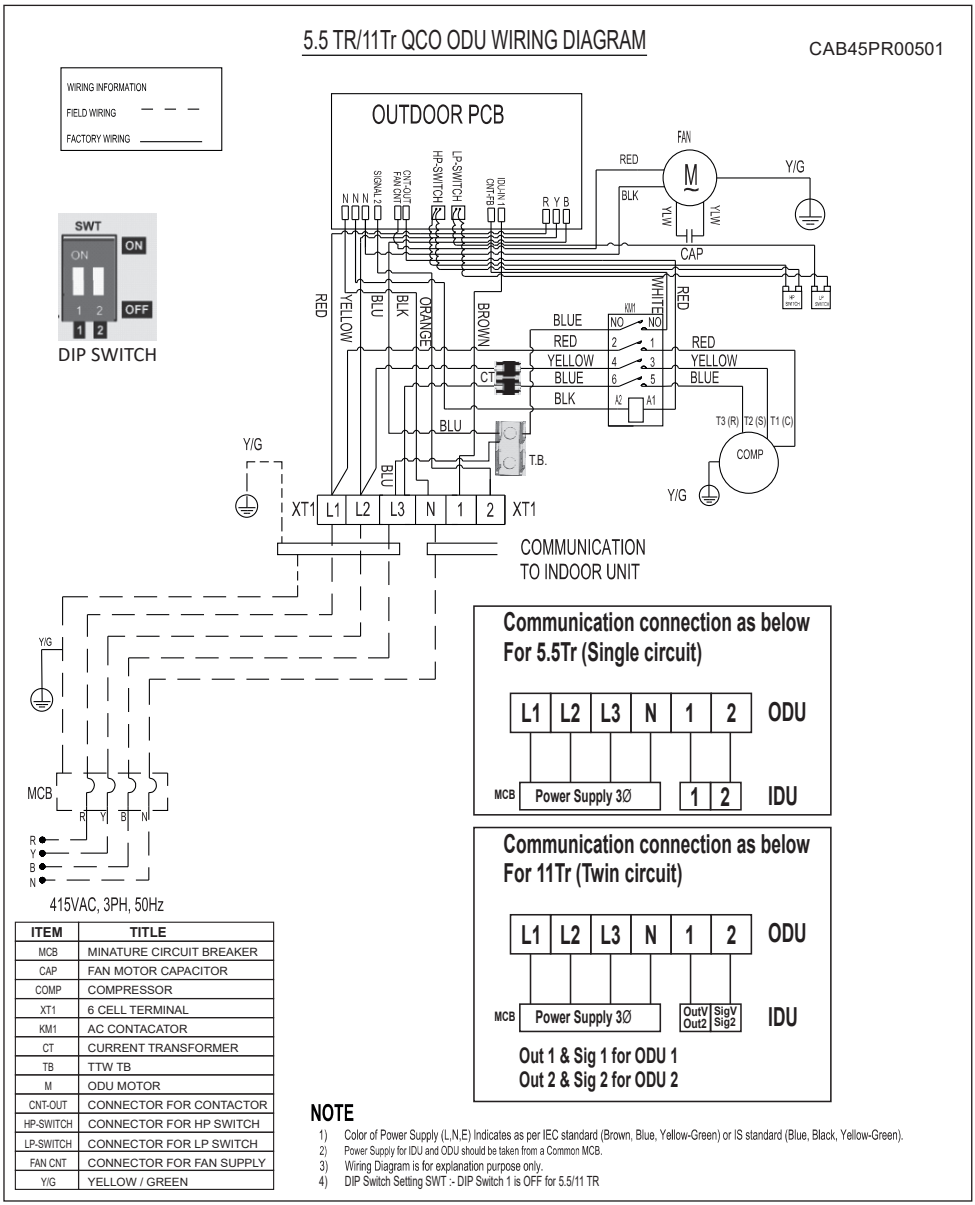


ITEM	TITLE
MCB	MINATURE CIRCUIT BREAKER
CAP	FAN MOTOR CAPACITOR
COMP	COMPRESSOR
XT1	6 CELL TERMINAL
KM1	AC CONTACATOR
CT	CURRENT TRANSFORMER
TB	TTW TB
M	ODU MOTOR
MF1	IDU FAN MOTOR
CNT-OUT	CONNECTOR FOR CONTACTOR
HP-SWITCH	CONNECTOR FOR HP SWITCH
LP-SWITCH	CONNECTOR FOR LP SWITCH
FAN CNT	CONNECTOR FOR FAN SUPPLY
Y/G	YELLOW / GREEN
CN3	PROG.CON
CN4	DISPLAY
CN5	IDU ROOM SENSOR
CN6	IDU COIL SENSOR
CN8	COMM.CON

NOTE

1) Color of Power Supply (L,N,E) Indicates as per IEC standard (Brown, Blue, Yellow-Green) or IS standard (Blue, Black, Yellow-Green).
2) Power Supply for IDU and ODU should be taken from a Common MCB.
3) Wiring Diagram is for explanation purpose only.

E. 5.5 TR ODU WIRING DIAGRAM

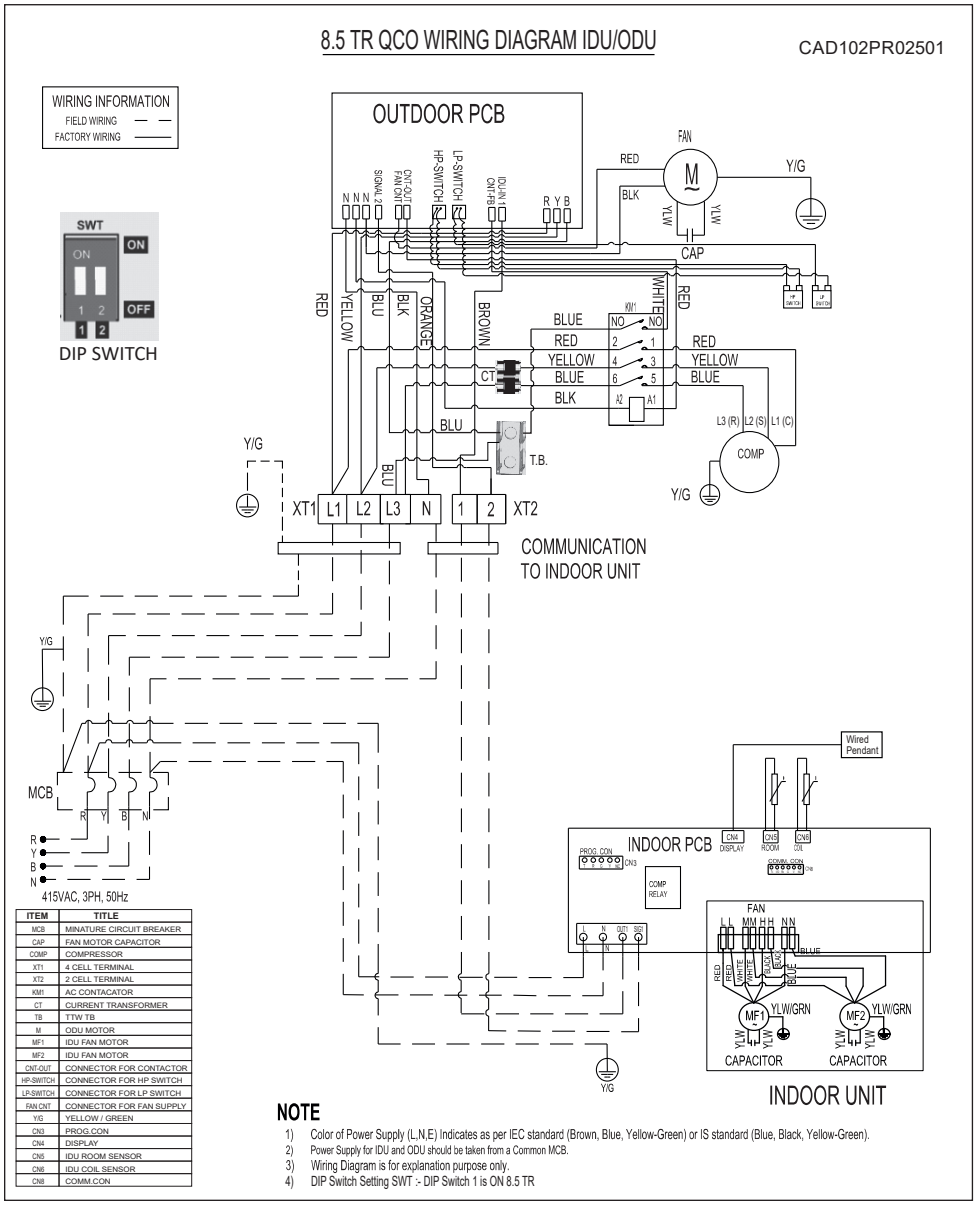


ITEM	TITLE
MCB	MINATURE CIRCUIT BREAKER
CAP	FAN MOTOR CAPACITOR
COMP	COMPRESSOR
XT1	6 CELL TERMINAL
KM1	AC CONTACATOR
CT	CURRENT TRANSFORMER
TB	TTW TB
M	ODU MOTOR
CNT-OUT	CONNECTOR FOR CONTACTOR
HP-SWITCH	CONNECTOR FOR HP SWITCH
LP-SWITCH	CONNECTOR FOR LP SWITCH
FAN CNT	CONNECTOR FOR FAN SUPPLY
Y/G	YELLOW / GREEN

NOTE

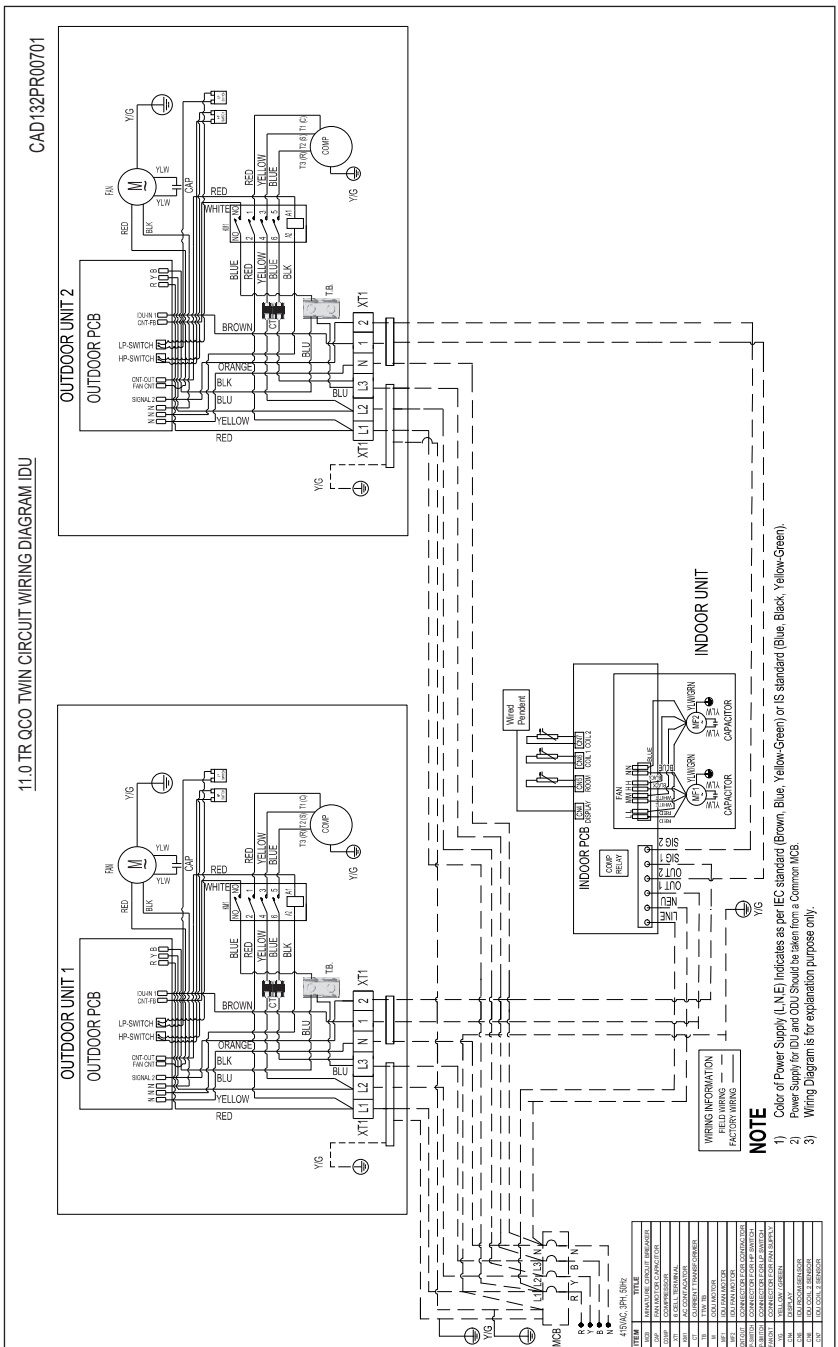
1) Color of Power Supply (L,N,E) Indicates as per IEC standard (Brown, Blue, Yellow-Green) or IS standard (Blue, Black, Yellow-Green).
2) Power Supply for IDU and ODU should be taken from a Common MCB.
3) Wiring Diagram is for explanation purpose only.
4) DIP Switch Setting SWT :- DIP Switch 1 is OFF for 5.5/11 TR

F. 8.5 TR IDU & ODU WIRING DIAGRAM



ITEM	TITLE
MCB	MINATURE CIRCUIT BREAKER
CAP	FAN MOTOR CAPACITOR
COMP	COMPRESSOR
XT1	4 CELL TERMINAL
XT2	2 CELL TERMINAL
KM1	AC CONTACATOR
CT	CURRENT TRANSFORMER
TB	TTW TB
M	ODU MOTOR
MF1	IDU FAN MOTOR
MF2	IDU FAN MOTOR
CNT-OUT	CONNECTOR FOR CONTACTOR
HP-SWITCH	CONNECTOR FOR HP SWITCH
LP-SWITCH	CONNECTOR FOR LP SWITCH
FAN CNT	CONNECTOR FOR FAN SUPPLY
Y/G	YELLOW / GREEN
CN3	PROG.CON
CN4	DISPLAY
CN5	IDU ROOM SENSOR
CN6	IDU COIL SENSOR
CN8	COMM.CON

G. 11 TR TWIN CIRCUIT WIRING DIAGRAM



6.0 HOW TO PROCESS TUBING

The liquid and gas tubing side is connected by a flare nut at Outdoor unit and the Liquid and gas tubing side is connected by brazing at Indoor side.

6.1 CONNECTING THE REFRIGERANT TUBING BY USING THE FLARING METHOD:

Many of conventional split system air conditioners employ the flaring method to connect refrigerant tubes that run between indoor and outdoor units. In this method, the copper tubes are flared at each end and connected with flare nuts.

Flaring Procedure with a Flare Tool

- Cut the copper tube to the required length with a tube cutter. It is recommended to cut approx. 30–50 cm longer than the tubing length you estimate.
- Remove burrs at each end of the copper tubing with a tube reamer or file. This process is important and should be done carefully to make a good flare. Be sure to keep any contaminants (moisture, dirt, metal filings, etc.) from entering the tubing.

NOTE:

A good flare should have the following characteristics:

- Inside surface is glossy and smooth
- Edge is smooth
- Tapered sides are of uniform length
- Adjust the shape of the liquid tube using a tube bender at the installation site and connect it to the liquid tubing side valve using a flare.

Cautions During Brazing

- Replace air inside the tube with nitrogen gas to prevent the formation of copper oxide film. during the brazing process. (Oxygen, carbon dioxide and Freon are not acceptable.)
- Do not allow the tubing to get too hot during brazing. The nitrogen gas inside the tubing may overheat, causing refrigerant system valves to become damaged. Therefore allow the tubing to cool while brazing.
- Use a reducing valve for the nitrogen cylinder.
- Do not use agents intended to prevent the formation of oxide film. These agents adversely affect the refrigerant and refrigerant oil, and may cause damage or malfunctions.

6.2 CONNECTING TUBING BETWEEN INDOOR AND OUTDOOR UNITS:

(1) Tightly connect the Outdoor-side refrigerant tubing.

MODEL NAME	3TR / 4TR (R32)	5.5 TR (R410A)	8.5 TR (R410A)	11.0 TR TWIN CIRCUIT(R410A)
GAS TUBE	Ø5/8 inch	Ø7/8 inch	Ø 9/8 inch	Ø7/8 inch
	(Ø 15.88 mm)	(Ø 22.225 mm)	(Ø 28.575mm)	(Ø 22.225 mm)
LIQUID TUBE	Ø 3/8 inch	Ø 3/8 inch	Ø 1/2 inch	Ø 3/8 inch
	(Ø 9.525 mm)	(Ø 9.525 mm)	(Ø 12.7 mm)	(Ø 9.525 mm)

(2) To fasten the flare nuts, apply specified torque given in table (a).

When removing the flare nuts from the tubing connections, or when tightening them after connecting the tubing, be sure to use 02 adjustable wrenches or spanners. If the flare nuts are over-tightened, the flare may be damaged, which could result in refrigerant leakage and cause injury or asphyxiation to room occupants.

For the flare nuts at tubing connections be sure to use the flare nuts that were supplied with the unit, or else flare nuts for **R32,R410A**. The refrigerant tubing that is used must be of the correct wall thickness as shown in the table below.

6.3 CAUTION BEFORE CONNECTING TUBES TIGHTLY:

1) Apply a sealing cap or water-proof tape to prevent dust or water from entering the tubes before they are used.
2) Be sure to apply refrigerant lubricant (ether oil) to the inside of the flare nut before making piping connections. This is effective for reducing gas leaks.
3) For proper connection, align the union tube and flare tube straight with each other, then screw on the flare nut lightly at first to obtain a smooth match.

TUBE DIAMETER	TIGHTENING TORQUE (APPROXIMATE)	TUBE THICKNESS
ø1-1/8"	20.6 - 28.4 N.m	1.2 mm
(ø28.575 mm)	(206 - 284 kgf.cm)	
ø7/8"	20.6 - 28.4 N.m	1.0 mm
(ø22.22 mm)	(206-284 kgf.cm)	
ø5/8"	68 - 82 N,m	1.0 mm
(ø15.88 mm)	(680 - 820 kgf.cm)	
ø3/8"	32.7 - 39.9 N,m	0.8-1.0 mm
(ø9.525 mm)	(327 - 399 kgf.cm)	

Table(a)

- In order to prevent damage to the flare caused by over tightening of the flare nuts, use the table above as a guide when tightening.
- When tightening the flare nut on the liquid tube, use an adjustable wrench with a nominal handle length of 200 mm.

6.4 MAXIMUM ALLOWABLE PIPE LENGTH:

Model	MAX. TOTAL LENGTH	MAX. VERTICAL LENGTH
3TR & 4TR	30 meter	15 meter
5.5TR,8.5TR & 11TR	50 meter	20 meter

NOTE:

Please provide the U- trap bend in Suction line at Indoor unit side to ensure proper Oil return to the Outdoor unit.

In case the pipe length is exceeding, please contact to LG representative.

EXAMPLE:

U-Trap bend 

6.5 PRECAUTIONS FOR BRAZING :

- Be sure to replace the air inside the tube with nitrogen to prevent the oxidation during the brazing process.
- Be sure to use a damp cloth or other means to cool the valve unit during brazing.

CAUTION

Work method

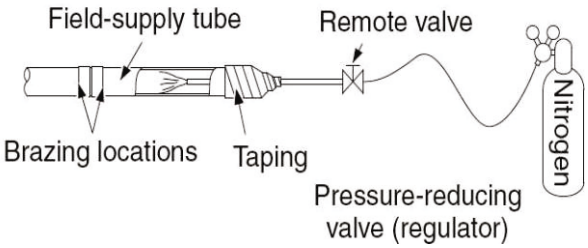


Figure -11

- Be sure to use nitrogen (Oxygen, CO2, and CFC must not be used.)
- Use a pressure-reducing valve on the nitrogen tank.
- Do not use agents intended to prevent the formation of oxide film. They will adversely affect the refrigeration oil, and may cause equipment failure.

6.6 INSTRUCTIONS FOR BRAZING SERVICE VALVE

1. Cover the service valve with damp cloth, except the brazing end, in order to avoid damage to heat sensitive parts inside service valve because of brazing flame.
2. Use thick cloth having maximum water retaining capability, and ensure it stays wet throughout the brazing process. Pour water over cloth frequently while brazing.
3. Always make sure that the brazing flame should not be directly facing the service valve. Hold the torch in such a manner that flame direction is towards the joint and away from the service valve.
4. While brazing make sure to cover nearby sheet metal parts of the unit so that painted parts do not get damaged by the flame.

7.0 HOW TO INSTALL OUTDOOR UNIT

7.1 TRANSPORTATION :

When transporting the unit, have it delivered as close to the installation site as possible without unpacking.
Use a hook for suspending the unit respectively according to the type of model. (Figures-12)

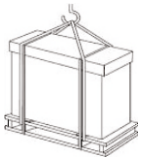


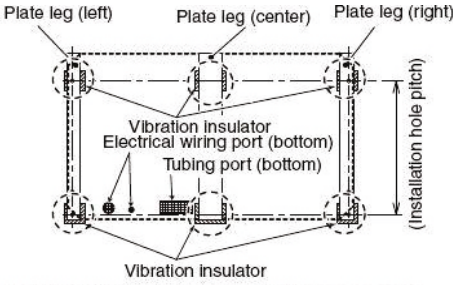
FIGURE 12

CAUTION

- When hoisting the outdoor unit, pass lifting belts through the left and right holes of the bottom plate as shown in the Figures. The angle between the lifting belt and top panel must be 70° or more so that the lifting belt does not come into contact with the fan guard. Use two lengths of lifting belt 7.5 meters long or longer.
- Hang the lifting belt at an oblique angle of the four corners of the bottom plate. If it is hung at other areas, the lifting belt becomes loose and the outdoor unit will be damaged or you may be injured.
- Use protective panels or padding at all locations where the lifting belt contacts the outer casing or other parts to prevent scratching. In particular, use protective material (such as cloth or cardboard) to prevent the edges of the top panel from being scratched.

7.2 INSTALLING THE OUTDOOR UNIT :

Use four anchor bolts (M12 or similar) to securely anchor the unit. Regarding the positioning anchor bolts of the depth direction, select one of three types. according to the installation site.



* Need the vibration insulator under the plate leg at the central location for the installation site.

Figure-13

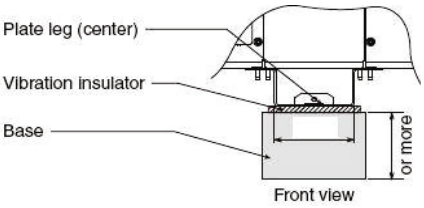


Figure-14

7.3 INSTALLATION SPACE :

(A) High Static Pressure Duct:

Install the outdoor unit where there is enough space for ventilation. Otherwise the unit may not operate properly. Figure show the minimum space requirement around the outdoor units when 3 sides are open and only 1 side is shuttered, with open space above the unit. The mounting base should be concrete or a similar material that allows for adequate drainage. Make provisions for anchor bolts, platform height,and other site-specific installation requirements. Leave spaces open above the unit.

Construct louvers or other openings in the wall, if necessary, to ensure adequate ventilation.

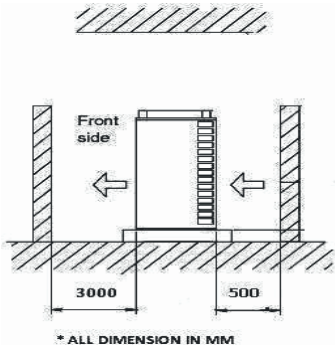


Figure-15

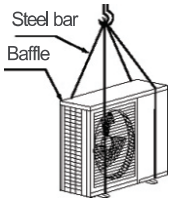
(B) MID Static Pressure Duct:

Move outdoor unit in

1.Please use 4 pieces of 6mm steel wire hanging the outdoor unit up and move in.

2.To avoid the outdoor unit from out of shape please add the baffles at the surface of outdoor unit where the steel wire rope may touch.

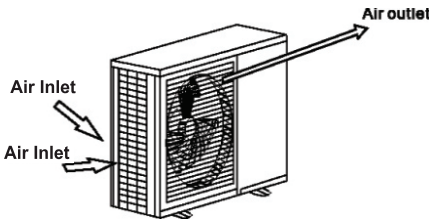
3. After moving, please remove the tray wood on the bottom.

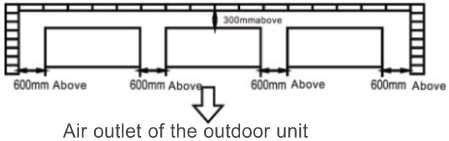


Installation space

1.After leaving repair space as illustrated below, install the outdoor unit with power supply equipment installed at the side of the outdoor unit.

2.Please make sure necessary space for installation and repair.



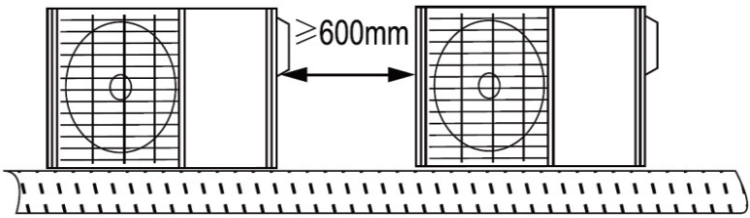


Air outlet of the outdoor unit

Overview of the outdoor unit

⚠ No obstruction from the air outlet of outdoor unit

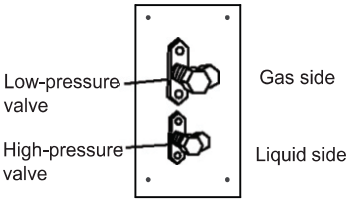
At least 600mm space must be left between outdoor units as the sketch indicated.



Refrigerant pipe

1.The junction is on the right panel.

2.The right picture is the sketch map of valve installation board of outdoor. Gas-side(low pressure)is the one upward, liquid side is the one downward.



7.4 INSULATING THE REFRIGERANT TUBING INSULATION:

Thermal insulation must be applied to all units tubing.
For gas tubing, the insulation material must be heat resistant to 120°C or above. For other tubing, it must be heat resistant to 80°C or above. Insulation material thickness must be 10 mm or greater. If the conditions inside the ceiling exceed DB 30°C and RH 70%, increase the thickness of the gas tubing insulation material by 1 step.

7.5 TAPING THE TUBES :

(1) At this time, the refrigerant tubes (and electrical wiring if local codes permit) should be taped together with armoring tape in 1 bundle. To prevent the condensation from overflowing the drain pan, keep the drain hose separate from the refrigerant tubing.

(2) Wrap the armoring tape from the bottom of the outdoor unit to the top of the tubing where it enters the wall. As you wrap the tubing, overlap half of each previous tape turn.

(3) Clamp the tubing bundle to the wall, using 1 clamp approx. each meter. (Figure-17)

NOTE

Do not wind the armoring tape too tightly since this will decrease the heat insulation effect. Also ensure that the condensation drain hose splits away from the bundle and drips clear of the unit and the tubing.

7.6 FINISHING THE INSTALLATION :

After finishing insulating and taping over the tubing, use sealing putty to seal off the hole in the wall to prevent rain and draft from entering. (Figure-17)

Two tubes arranged together

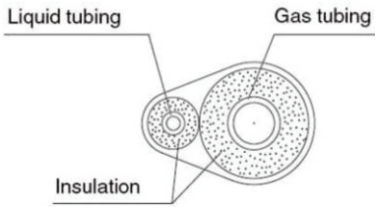


Figure -16

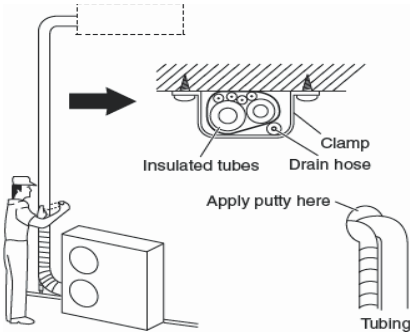
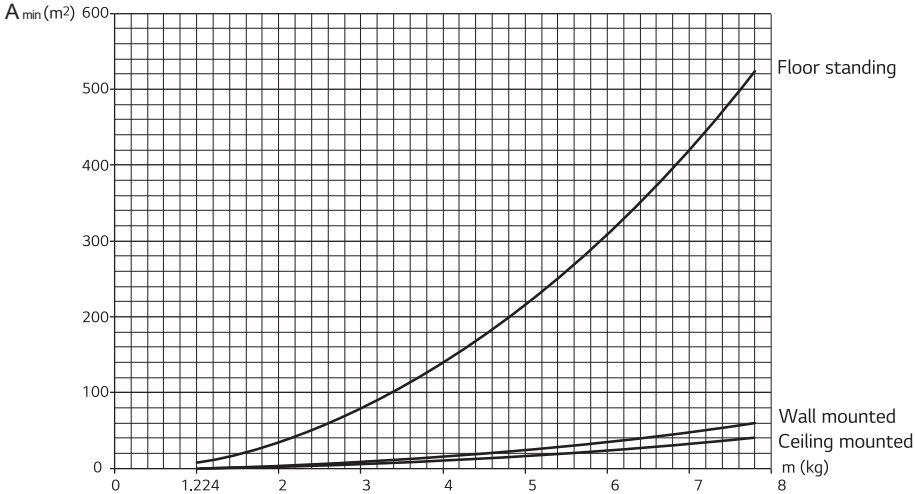


Figure -17

7.7 Minimum Floor Area

Required Floor Area for R32Unit

- The appliance must be installed, operated and stored in a room with a floor area larger than the minimum area.
- Use the graph and table to determine the minimum area.



- m : Total refrigerant amount in the system
- Total refrigerant amount : Factory refrigerant charge + Additional refrigerant amount
- A_{min} : Minimum area for installation

Floor Standing		Wall Mounted		Ceiling Mounted	
m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)
<1.224	-	<1.224	-	<1.224	-
1.224	12.9	1.224	1.43	1.224	0.956
1.4	16.82	1.4	1.87	1.4	1.25
1.6	21.97	1.6	2.44	1.6	1.63
1.8	27.80	1.8	3.09	1.8	2.07
2	34.32	2	3.81	2	2.55
2.2	41.53	2.2	4.61	2.2	3.09
2.4	49.42	2.4	5.49	2.4	3.68
2.6	58.00	2.6	6.44	2.6	4.31

Floor Standing		Wall Mounted		Ceiling Mounted	
m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)	m (kg)	A_{min} (m^2)
2.8	67.27	2.8	7.47	2.8	5.00
3	77.22	3	8.58	3	5.74
3.2	87.86	3.2	9.76	3.2	6.54
3.4	99.19	3.4	11.02	3.4	7.38
3.6	111.20	3.6	12.36	3.6	8.27
3.8	123.90	3.8	13.77	3.8	9.22
4	137.29	4	15.25	4	10.21
4.2	151.36	4.2	16.82	4.2	11.26
4.4	166.12	4.4	18.46	4.4	12.36
4.6	181.56	4.6	20.17	4.6	13.50
4.8	197.70	4.8	21.97	4.8	14.70
5	214.51	5	23.83	5	15.96
5.2	232.02	5.2	25.78	5.2	17.26
5.4	250.21	5.4	27.80	5.4	18.61
5.6	269.09	5.6	29.90	5.6	20.01
5.8	288.65	5.8	32.07	5.8	21.47
6	308.90	6	34.32	6	22.98
6.2	329.84	6.2	36.65	6.2	24.53
6.4	351.46	6.4	39.05	6.4	26.14
6.6	373.77	6.6	41.53	6.6	27.80
6.8	396.76	6.8	44.08	6.8	29.51
7	420.45	7	46.72	7	31.27
7.2	444.81	7.2	49.42	7.2	33.09
7.4	469.87	7.4	52.21	7.4	34.95
7.6	495.61	7.6	55.07	7.6	36.86
7.8	522.04	7.8	58.00	7.8	38.83

8.0 AIR PURGING :

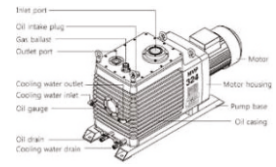


Figure 18

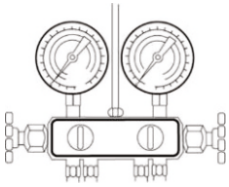


Figure 19

8.1 AIR AND MOISTURE IN THE REFRIGERANT SYSTEM:

It may have undesirable effects as indicated below.

- pressure in the system rises
- operating current rises
- cooling efficiency drops
- Moisture in the refrigerant circuit may freeze and blockcapillary tubing and TXV.
- Water may lead to corrosion of parts in the refrigerantsystem

Therefore, the indoor unit and tubing between the indoorand outdoor unit must be leak tested and evacuated to remove any moisture left in the system

8.2 AIR PURGING WITH A VACUUM PUMP (FOR TEST RUN):

Preparation:

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

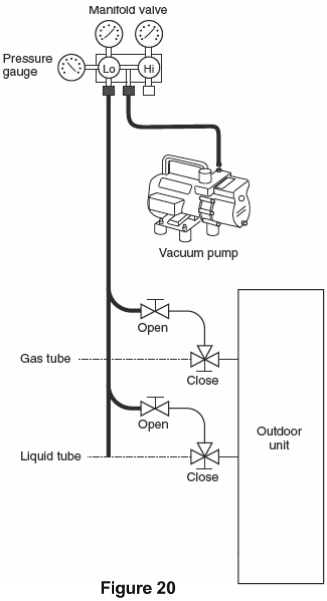


Figure 20

8.3 LEAK TEST :

(1) With the service valves on the outdoor unit closed, remove the flare nut and its bonnet on the gas tube service valve. (Save for reuse.)

(2) Attach a manifold valve (with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

CAUTION

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 closed.

(3) Pressurize the system to no more than 3.80 MPa with dry nitrogen gas and close the cylinder valve when the gauge reading reaches 3.80 MPa. Then, 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 the bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

(4) Do a leak test of all joints of the tubing (both indoor and outdoor) and both gas and liquid service valves. Bubbles indicate a leak. Wipe off the soap with a clean cloth after a leak test.

(5) 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.

9.0 EVACUATION :

(1) Attach the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm that the “Lo” knob of the manifold valve is open. Then, run the vacuum pump. The operation time for evacuation varies with the tubing length and capacity of the pump. The following table shows the amount of time for evacuation:

Required time for evacuation when 30 gal/h vacuum pump is used

If tubing length is less than 15 m
45 min. or more

If tubing length is longer than 15 m
45 min. or more

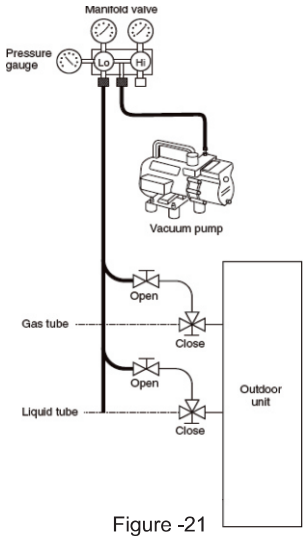


Figure -21

NOTE-

(1) The required time in the above table is calculated based on the assumption that ideal (or target) vacuum condition is less than
-101 kPa (-755 mmHg, 5Torr).

(2) When the desired vacuum is reached, close the “Lo” knob of the manifold valve and turn off the vacuum pump. Please confirm that the gauge pressure is under -101 kPa (-755 mmHg, 5Torr) after 4 to 5 minutes of vacuum pump operation.

9.1 ADDITIONAL REFRIGERANT CHARGING :

- At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent pipe length of 7.5m. (Refer the following table)

Model No.	3 TR	4 TR	5.5 TR	8.5 TR	11.0 TR TWIN CIRCUIT
Gas Qty.	1.64 kg	2.05 kg	3 kg	4.2 kg	3kg PER ODU

- But when the piping length exceeds 7.5m, additional charges is required as mentioned below:

MODEL NO.	ADDITIONAL REFRIGERANT REQUIRED
3.0 TR	20g/m
4.0 TR	20g/m
5.5 TR	68g/m
8.5 TR	100g/m
11.0 TR TWIN CIRCUIT	68g/m (EACH)

- Use a digital weighing scale to measure the refrigerant accurately.
- If the additional refrigerant charge amount cannot be charged at once, charging the remaining refrigerant in liquid form by using the gas tube service valve with the system in cooling operation mode at the time of test run. (Figure)

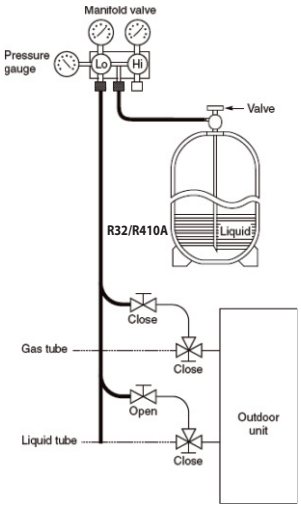


Figure 22

9.2 FINISHING THE JOB :

1) With a hex wrench, turn the liquid tube service valve stem counter-clockwise to fully open the valve.
2) Turn the gas tube service valve stem counter-clockwise to fully open the valve.

CAUTION **To avoid gas from leaking when removing the charge hose, make sure the stem of the gas tube is turned all the way out ("BACK SEAT" position).**

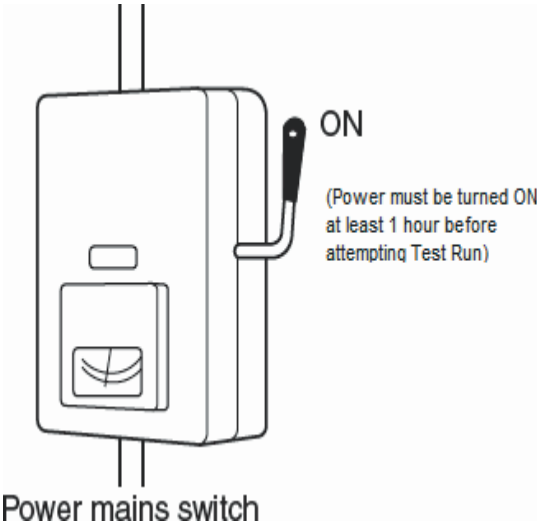
3) Loosen the charge hose connected to the gas tube service port slightly to release the pressure, then remove the hose.
4) The gas and liquid tube service port fasten the flare nut securely with an adjustable wrench or box wrench. This process is very important to prevent gas from leaking from the system.
5) Replace the valve caps at both gas and liquid service valves and fasten them securely. This completes air purging with a vacuum pump. The air conditioner is now ready for a test run.

10.0 TEST RUN :

10.1 PREPARING FOR TEST RUN

Before attempting to start the air conditioner, check the following.

(1) All loose matter is removed from the cabinet especially steel filings, bits of wire, and clips.
(2) The control wiring is correctly connected and all electrical connections are tight.
(3) Both the gas and liquid tube service valves are open. If not, open them now. (Figure)
(4)Request that the customer be present for the trial run. Explain the contents of the operating instructions, then have the customer actually operate the system.
(5) Ensure to give the operating instructions and warranty certificate to the customer.



(A) OPERATING CONDITION

Use this air conditioner in the temperature range indicated in the table.

Temperature (℃)		Indoor	Outdoor
COOL	Max.	35	50
	Min.	16	16

11.0 CARE AND CLEANING :

WARNING

- For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.
- Do not pour water on the indoor unit to clean it. This will damage the internal components and cause an electric shock hazard. Clean the air intake and outlet side of the indoor unit with a vacuum cleaner brush, or wipe them with a clean, soft cloth. If these parts are stained, use a clean cloth moistened with water. When cleaning the air outlet side, be careful not to force the vanes out of place.

CAUTION

- Never use solvents or harsh chemicals when cleaning the indoor unit. Do not wipe plastic parts using very hot water.
- Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.
- The internal coil and other components of outdoor unit must be cleaned regularly. Consult your dealer or service center.

11.1 AIR FILTER:

The air filter collects dust and other particles from the air and should be cleaned at regular interval. If the filter gets blocked, the efficiency of the air conditioner drops greatly.
To get clean air and to extend the service life of the air conditioner, an air filter must be installed in the air intake. For installation and cleaning the air filter, consult your dealer or service center.

NOTE

The frequency with which the filter should be cleaned depends on the environment in which the unit is used.

11.2 HOW TO CLEAN THE FILTER:

1. Remove the air filter from the air intake grill.
2. Use a vacuum cleaner to remove light dust. If there is sticky dust on the filter, wash the filter in lukewarm, soapy water, rinse it in clean water,and dry it.
3. Certain metal edges and the condenser fins are sharp and may cause injury if handled improperly; special care should be taken when you clean these parts.
4. Periodically check the outdoor unit to see if the air outlet or air intake is clogged with dirt or soot.
5. The internal coil and other components must also be cleaned periodically. Consult your dealer or service center.

Care: After a prolonged idle period

Check the indoor and outdoor unit air intakes and outlets for blockage; if there is a blockage, remove it.

Care: Before a prolonged idle period

- Operate the fan for half a day to dry out the inside.
- Disconnect the power supply and also turn off the circuit breaker.
- Clean the air filter and replace it in its original position.
- Outdoor unit internal components must be checked and cleaned periodically. Contact your local dealer for this service.

12.0 TROUBLESHOOTING

(A) MID Static Pressure Duct (3TR, 4TR)

The following symptoms do not indicate malfunction.

Symptom	Cause
The system is not turn on or respond to remote controller immediately after power on. *Please wait a moment (5min/15sec) after power on the system.	• For new product first time power on after installation, the system requires approximately 5 minutes for “System Auto con figuration Process”. • For subsequent operation start up by power switch, the system requires 15secs for “Program Initialization”.
Operation is delayed a few minutes after restarting.	• The delay is a protection to the unit’s compressor.
Indoor fan stops occasionally during automatic fan speed setting.	• This is to help remove the surrounding odour.
The room has a peculiar odour.	• This may be due to damp smell emitted by the wall, carpet, furniture or clothing.
Cracking sound during operation.	• Changes in temperature caused the unit to expand and contract.
Water flowing sound during operation.	• Refrigerant flow inside the unit.
Mist emerges from indoor unit.	• During cooling operation, the discharged cold air may condense to water vapour.
Outdoor unit emits water or steam.	• During cooling operation, condensation occurs on cold pipes and the condensed water may drip from the outdoor unit.
Discoloration of some plastic parts.	• Discoloration is subjected to the types of materials used in plastic parts. It is accelerated when exposed to heat, sun light, UV light or environmental factors.

Check the following before calling for servicing.

Symptom	Check
Operation in COOL mode is not working ef ficiently.	• Set the temperature correctly. • Close all doors and windows. • Clear any obstruction at the air inlet and air outlet vents.
Noisy during operation.	• Check if the unit has been installed at an incline.
The unit does not work.	• Check if the circuit breaker is tripped. • Check if timers have been set.

(B) High Static Pressure Duct (5.5TR, 8.5TR, 11TR)

If the air conditioner does not work properly, contact your dealer or an authorized service center.

SYMPTOM	CAUSE	REMEDIES
Unit will not run	Power off or loose electrical connection	Check for correct voltage at contactor in condensing unit and Tighten loose connection if any.
	Thermostat out of calibration- set too high	Reset
	Magnetic Relay Defective	Check for 240 V at Relay coil - replace if contacts are open Replace fuses
	Blown fuses /Tripped breaker	Reset breaker/Check - wiring
	Transformer defective	Replace Transformer
	HP/LP control opened	Measure Discharge and Suction Pressure.
Outdoor fan runs, compressor doesn't start	Loose connection	Check for correct voltage at compressor-check and tighten all connections
	Start relay defective	Replace
	Compressor stuck, grounded or open motor winding, open internal over load	Check at least 2 hours for over load to reset. If still open replace the compressor
Insufficient cooling	Excess Heat Load	Recalculate heat load
	Improper indoor airflow	Check and clean the Air Filter & Check airflow should be approximately 400 CFM/Ton
	Insufficient refrigerant charged	Charge sufficient refrigerant as perattached details on unit panel
Compressor short cycles	Air, non-condensable or moisture in system	Release charged refrigerant, evacuate and recharge refrigerant.
	Incorrect voltage	At compressor terminals voltage must be 10% ± of name plate marking when unit is operating
Sweat formation	Defective over load protector Refrigerant under charge	Replace - check for correct voltage Add Refrigerant
	Low indoor air flow	Increase speed of blower or reduce restriction - Replace air filter
High head low vapour pressure	Restriction in liquid line, expansion device or filter drier	Remove or replace defective component
	Dirty outdoor coil	Clean coil
High head -high or normal vapour pressure -cooling mode Low head - high vapour pressures	Refrigerant overcharge	Correct system charge
	Outdoor fan not running	Check Motor winding resistance or replace
	Air or non-condensable in system	Release charged refrigerant, evacuate and recharge refrigerant.
Low vapour -cool compressor -iced indoor coil	Low indoor air flow	Increase speed of blower or reduce restriction - Replace air filter
	Operating below 18ºC ambient conditions/ Moisture in system	Release charged refrigerant, evacuate and recharge refrigerant.
High vapour pressure Fluctuating head & vapour pressures	Excessive load	Recalculate Heat Load
	Compressor defective	Check and replace the compressor
	Thermostatic Expansion Valve hunting	Check TXV bulb clamp & Check Air Distribution on Coil Replace TXV
Gurgle or pulsing noise at expansion device or liquid line	Air or non-condensable in system	Release charged refrigerant, evacuate and recharge refrigerant

13.0 APPENDIX

CARING FOR THE ENVIRONMENT

Disposal of Your Old Appliance (as per e-waste Rules)



1) When this crossed out wheeled bin symbol is depicted on the product and its operator's manual, it means the product is covered by E-Waste Management Rules India published by MoEF & CC , Govt. of India and are meant to be recycled, dismantled, refurbished or disposed off.

2) Do's

   a. The product is required to be handed over only to the authorized recycler for disposal.

   b. Keep the product in isolated area, after it becomes non-functional/unrepairable so as to prevent its accidental breakage.

   Don'ts

   a. The product should not be opened by the user himself/herself, but only by authorized service personnel.

   b. The product is not meant for re-sale to any unauthorized agencies/scrap dealer/ kabariwalah.

   c. The product is not meant for mixing into household waste stream.

   d. Do not keep any replaced spare part(s) from the product in exposed area.

3) Any disposal through unauthorized agencies/person will attract action under Environment (Protection) Act 1986.

4) Hazards of improper handling or accidental breakage.

   a. The refrigerant used can be combustible at low pressure. The potential health effect of over exposure is dizziness, headache and heart irregularities.

5) This product is complied with the requirement of Hazardous Substances as specified under E-Waste Management Rules India published by MoEF & CC , Govt. of India.

6) To locate a nearest collection centre or call for pick-up (limited area only) for disposal of this appliance, please contact No. 08069379999, Toll Free No. 1800-315-9999 for details. All collection centre and pick up facilities are done by third parties with LG Electronics India Ltd. Merely as a facilitator. For more detailed information, please visit : http://www.lg.com

Brand Owner (LG Electronics India Ltd.) & Packaging Type Details as per PWM Rules

Packaging Type	Company Name	Registration Number	Thickness
Plastic Sheet	LG Electronics India Ltd	BO-13-000-07-AAACL1745Q-22	0.05mm & Above
Multilayered Bag	LG Electronics India Ltd		N/A

अपने पुराने उपकरण का निपटान (ई- अपशिष्ट नियमों के अनुसार)



1. जब इस काटे गए पहिये वाले बिन का चिह्न किसी उपकरण और इसके ऑपरेटर और उसके ऑपरेटर की पुस्तिका के साथ संलग्न होता है, तो इसका मतलब है कि इसे "ई-अपशिष्ट" (प्रबंधन और हथालन) नियम के अंतर्गत सम्मलित किया गया है और इसके पुनर्नवीनीकरण, नवीनीकरण, विघटन और निपटान के लिए बनाया गया है।
MoEF & CC भारत सरकार द्वारा प्रकाशित (भारतीय "ई- अपशिष्ट" (प्रबंधन और हथालन))

2. करें

क. उपकरण को सिर्फ अधिकृत पुनः नवीनीकरणकर्ता को ही निपटारन करने हेतु हस्तांतरित करें।

ख. जब उपकरण कार्यरत ना हो, इसे अलग क्षेत्र में रखें ताकि उपकरण से होने वाली दुर्घटनाओं से बचा जा सके।

ना करें

क. इस उपकरण को स्वयं उपयोगकर्ता द्वारा नहीं खोला जाना चाहिए, बल्कि केवल अधिकृत सेवा कर्मियों द्वारा ही खोला जाना चाहिए।

ख. इस उपकरण को पुन: बिक्री के लिए किसी भी अनधिकृत संस्था /भंगार वाला /कबाड़ीवाला को ना दे।

ग. इस उपकरण को किसी घरेलू अपशिष्ट सामान के साथ मिलाकर ना रखें।

घ. उपकरण के बदले हुए या आंतरिक पुरजो को खुले क्षेत्र में न रखें।

3. यदि किसी अनधिकृत विभाग या व्यक्ति के द्वारा निपटारन किया जाता है तो यह पर्यावरण (सुरक्षा) अधिनियम १९८६ के अंतर्गत आता है।

4. दुर्घटना टूट/ फूट अव्यवस्थित रख-रखाव से बचें ।

- क. रेफ्रिजरेंट कम दबाव पर दहनशील हो सकती है तथा इससे स्वास्थ्य पर दुष्प्रभाव पड़ सकता है जैसे चक्कर आना, सर दर्द और हृदय गति रुकना।

5. यह उत्पाद ई- अपशिष्ट (प्रबंधन और हथालन) नियम के तहत निर्दिष्ट खतरनाक पदार्थो की आवश्यकता का पालन करता है।
MoEF & CC, भारत सरकार द्वारा प्रकाशित (भारतीय "ई- अपशिष्ट" (प्रबंधन और हथालन))

6. उपरोक्त पदार्थो के निपटारन के लिए नजदीकी निपटारन संसथान (संकीर्ण क्षेत्र) में कॉल करे। अधिक जानकारी के लिए हमारे नंबर **08069379999**, टोल फ्री नंबर **1800-315-9999** पर पर कॉल करें।सभी संग्रहण केंद्र व पिक-अप की सुविधाएं किसी थर्ड -पार्टी जो "**LG Electronics India Ltd.**" को अपनी सेवाएं प्रदान कर रही हो से करवाए।
अधिक जानकारी के लिए, कृपया देखें वेब साइट : **http://www.lg.com**

BWM (Battery Waste Management)

Company Name	LG Electronics India Limited
EPR Registration Number	1.1595375254588E+20

QR Code for E-Waste, PWM and BWM	

 WARNING	This symbol shown that this equipment uses a flammable refrigerant. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.		This symbol shown that the Operation Instruction should be read carefully.
	This symbol shown that a service personnel should be handling this equipment with reference to the installation Instruction.		This symbol shown that there is information included in the Operation instruction and/or installation Instruction.

LG Electronics India Ltd.

Phone	1800 180 3575 (Toll Free) 9 x 7 (09:00AM to 06:00PM)
Address	Regd. Office: LG Electronics India Ltd., A-24/6 Mohan Cooperative Industrial Estate, Mathura Road, New Delhi-110044 CIN No. U32107DL1997PLC220109

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