



INSTALLATION MANUAL

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INSTALLATION MANUAL

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2. SAFETY INSTRUCTIONS

The precautions described in this manual are classified as **WARNING** and **CAUTION**.

Both contain important safety information. Be sure to observe all precautions.

Meaning of notifications **WARNING** and **CAUTION**.

	WARNING	Read the precautions in this manual carefully before using the unit.
	CAUTION	This appliance is filled with R32 refrigerant
	CAUTION	Failure to follow these instructions may result in injury or loss of life.
	CAUTION	Failure to follow these instructions may cause material damage or injury, which may be severe, as the case may be.

	WARNING	
Ask your dealer or a specialist to perform the installation task. Do not attempt to install the air conditioner by yourself. Inappropriate installation may cause refrigerant leakage, electric shock or fire.		
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.		
Children should be supervised to ensure that they do not play with the appliance.		
Install the air conditioner according to the instructions in this manual. Inappropriate installation may cause water leakage, electric shock or fire.		
Make sure you only use the specified components and accessories for installation works. Failure to use these components may result in appliance fall, water leakage, electric shock or fire.		
Fix the air conditioner on a surface strong enough to withstand the weight of the unit. Insufficient strength surface can cause equipment to fall and cause injury.		
The electrical works must be carried out in accordance with relevant local and national regulations and in accordance with the instructions in this installation manual. Use an exclusive power supply circuit. Insufficient power and defect can cause electric shock or fire.		
Use an exclusive power supply circuit. Never use an adapter that is shared with another appliance.		
Use a cable of suitable length. Do not use an exposed or extension cable, as it may cause overheating, electric shock or fire.		
Make sure all cables are secure, the specified cables are used, and that the terminal connections or cables are not pressed. Improper connections or poor fixing of cables can cause heat buildup or fire.		

2. SAFETY INSTRUCTIONS

 WARNING 	
When connecting the power supply and the wiring between the indoor and outdoor units, install the cables so that the cap of the control box can be securely fastened. Improper mounting of the control box cap may cause electric shock, fire or overheating of the terminals.	
After connecting the power interconnections and cabling, fit the cables so that they do not apply force to the electrical covers or at frame. Place the covers on the cables. Incorrect installation of the cover can cause terminal overheating, electric shock or fire.	
When installing or moving the air conditioner, unscrew the refrigerant circuit to make sure it has no air and use the specified refrigerant only (R32). The presence of air or impurities in the refrigerant circuit causes an abnormal increase in pressure, which can damage equipment and even cause injury.	
	If refrigerant gas leaks during installation, ventilate the area immediately. Toxic gas can be produced if the refrigerant comes in contact with a flame
	After completing the installation, check for coolant gas leakage. Toxic gas can be produced if the refrigerant gas leaks into the room and comes in contact with a flame source, such as a fan heater, stove or kitchen.
During pumping, stop the compressor before removing the refrigerant piping. If the compressor is still operating and the shutoff valve is open during pumping, air will be sucked when the refrigerant piping is removed, causing abnormal pressure on the cooling cycle, which may damage equipment and even cause injury.	
During installation, connect the refrigerant piping properly before operating the compressor. If refrigerant pipes are not connected and the shutoff valve is open while the compressor is operating, air will be sucked, causing abnormal pressure on the cooling cycle, which may damage equipment and even cause injury.	
	Make sure that you have ground the air conditioner. Do not ground the unit to a water pipe, lightning conductor or telephone ground cable. Improper grounding may cause electric shock.
Make sure you have a grounding leakage switch installed. Failure to install a grounding leakage switch can cause electric shock or fire.	
All electrical cables should not touch the water pipes or the moving parts of the fan motors.	
Make sure the unit is switched off before installation or maintenance.	
Disconnect it from the main power supply before servicing the air conditioner.	
DO NOT unplug the power cable when the power supply is ON. It can cause severe electric shock, which can cause a fire hazard.	
Keep indoor and outdoor units, power cable and transmission cabling at least 1 m away from televisions and radios to avoid image distortion and static image. Depending on the type and source of electric waves, static noise can be heard even when the distance is greater than 1 m.	
Do not use other means to accelerate the defrosting process (if any) or for cleaning other than as recommended by the manufacturer.	
The appliance must be stored in a room without ignition sources in operation (for example: open flames, gas appliance or electric heater). Do not puncture or burn it.	
Note that refrigerants may not emit odors.	

2. SAFETY INSTRUCTIONS

CAUTION	
Do not install the air conditioner at any point where there is a risk of flammable gases leaking. In the event of a gas leak, the accumulation of gas near the air conditioner can cause a fire.	
When following the instructions in this installation manual, install the drainage pipes to ensure proper drainage and insulate the pipes to avoid the presence of moisture. Improper drainage piping can cause water leakage indoors and damage to property.	
Tighten the nut accordingly using a wrench. If the nut is too tight, it may break after prolonged use, causing coolant leakage.	
Do not overload the unit. The unit has a default load value. Overloading can cause excessive electrical load or damage to the compressor.	
The sharp edges and surfaces of the coils are potential areas that can cause injury. Avoid contact with these points.	
Before turning off the power supply, set the remote control on/off switch to OFF to avoid interrupting the operation of the appliance. Otherwise, the unit's fans will automatically start when the power is restored, jeopardizing the service personnel or the user.	
Make sure the outdoor unit is not used as a small animal shelter. Small animals that come into contact with electrical components can cause malfunction, smoke or fire. Advise the customer to keep the area around the unit clean.	
The temperature of the coolant circuit is high. Keep indoor unit wiring away from non-heat insulated copper pipes.	
The temperature of the coolant circuit is high. Keep indoor unit wiring away from non-heat insulated copper pipes.	
NOTE	
	Rejection requirements Your air conditioning product is marked with this symbol. This means that electrical and electronic products must not be mixed with household waste. Do not attempt to disassemble the system by yourself: disassembly of the air conditioning system, assembly of refrigerant, oil and other components must be performed by a qualified installation technician in accordance with relevant local and national law. Air conditioners must be transported to a specialized treatment facility for reuse, recycling and recovery. Proper disposal of this product can prevent potential negative consequences for the environment and human health. Contact your installer or local authority for more information. Batteries must be removed from the remote control and disposed of separately in accordance with relevant local and national law.

3. INSTALLATION POSITION SPECIFICATIONS

Installation location specifications

- * Avoid points of inflammable or explosive gas leakage or where there are strongly aggressive gases.
- * Avoid places subject to strong artificial electric/magnetic fields.
- * Avoid places subject to noise and resonance.
- * Avoid harsh environmental conditions (e.g. heavy tobacco smoke, intense sandstorm, direct sunshine or high temperature heat sources).
- * Avoid areas that children have access to.
- * Shorten the connection length between indoor and outdoor units.
- * Choose the point where maintenance and repair are convenient, and ventilation is good.
- * The outdoor unit must be installed in such a way so that it does not occupy any of the following: corridor, staircase, exit, fire exit, runway or any other public place.
- * The outdoor unit must be installed as far as possible from adjacent doors and windows of the neighbors as well as green plants.

Installation environment inspection

- * Check the outdoor unit label to make sure the refrigerant is R32.
- * Check the floor surface of the room. The area should not be smaller than the area required by the specification (5m²). The outdoor unit must be installed in a well-ventilated area.
- * Check the environment around the installation site. The R32 should not be installed in the building indoor area.
- * When using an electric drill to drill holes in the wall, first check if there is a built-in conduit for water, electricity or gas. It is suggested to use a hole in the ceiling of the wall intended for this purpose.

4. COMPONENTS

PACKAGING LISTS

Indoor unit

Name	Quantity	Measurement Unit (M.U.)
Indoor unit	1	set
Wireless remote controller	1	piece
Batteries	2	piece
Manufacturer's manual	1	set

Outdoor unit

Name	Quantity	Measurement Unit (M.U.)
Outdoor unit	1	set
Connection coupling	2	piece
Plastic film	1	roll
Pipeline protection ring	1	piece
Sealant (putty)	1	packet

NOTE:

All accessories are listed in the above packing list.

5. ELECTRICAL REQUIREMENTS

Electric safety inspection

- * Make sure you use the appropriate rated voltage and power line exclusively for the air conditioner and that the diameter of the power cord meets the national requirements.
- * When the maximum current of air conditioner is $\geq 16\text{A}$, the air switch or leakage protection switch equipped with protection appliances must be used.
- * The normal operating range is 90%-110% of the local nominal voltage. However, supply inadequacy may cause electric shock or fire. If voltage instability is observed, it is recommended to use a voltage regulator.
- * The interface cable connects the indoor and outdoor units. You must first choose the right cable size, before preparing them for connection.
- * Cable Types: Power supply cable: H07RN-F or H05RN-F / Interconnection cable: H07RN-F or H05RN-F.
- * Minimum cross section of power cord and interconnection cable.
- * The size of the interconnection cable, power cord, fuse and switch cable needed is determined by the maximum current of the unit. The maximum current is indicated on the nameplate located on the side of the unit. Refer to this nameplate to choose the right cable, fuse, or switch.

NOTE:

The basic number of cables is referred in the detailed wiring diagram adhered on the unit which you purchased.

NORTH AMERICA

Current of Appliance (A)	AWG
10	18
13	16
18	14
25	12
30	10
40	8

REMAINING AREAS

Nominal Current of Appliance (A)	Nominal diameter
>3 and ≤ 6	0.75
>6 and ≤ 10	1
>10 and ≤ 16	1.5
>16 and ≤ 25	2.5
>25 and <32	4
>32 and <40	6

5. ELECTRICAL REQUIREMENTS

Grounding requirements.

- * The air conditioner is a type I electrical appliance and must ensure a reliable grounding.
- * Do not connect the grounding wire to a gas pipe, water pipe, lightning rod, telephone line, or a circuit that is poorly grounded to the earth.
- * The grounding wire is specially designed and shall not be used for other purpose, nor shall it be fastened with a common screw.
- * The diameter of the interconnection cable must be in accordance with the instructions manual and with the type O terminal that meets local standards (the internal diameter of the type O terminal must match the screw size of the unit and not exceed 4,2 mm). After installation, check the screws for fixing them effectively and eliminate the risk of loosening.

Grounding requirements.

- * The method of connecting the air conditioner, the power cable and the method of interconnecting each individual element must be in accordance with the wiring diagram attached to the machine.
- * The model and the nominal value of the fuse shall be in accordance with the screen printing table on the respective controller or fuse box.

Installation position selection

Indoor unit: The indoor unit should be in a position where:

- * Both air inlet and exhaust have separate routes.
- * The unit is not exposed to direct sunlight.
- * The unit is away from heat or steam sources.
- * There is no source of engine oil vapors (this may reduce indoor unit lifespan).
- * Cool air circulates throughout the room.
- * The unit must be away from electronically illuminated fluorescent lamps (inverter or fast start). As these may reduce the range of the remote control.
- * The device must be at least 1 meter away from any television or radio device (may interfere with the image or sound).
- * Position it at the recommended height (more than 2.3 meters).
- * Do not place the units above a door or near the door.
- * Do not use any heating device too close to the air conditioner and do not use it in areas where there is mineral oil, fuel vapor or oil vapor. This may cause the plastic part to melt or deform due to excessive heat or chemical reaction.
- * This unit is not suitable for factories where there is oil, fog or iron powder or where there is significant voltage fluctuations.
- * Do not install units in an area such as a petroleum refinery where there is sulfur gas.
- * Make sure the color of the outdoor unit cables and the terminal markings match the indoor unit respectively.

IMPORTANT:

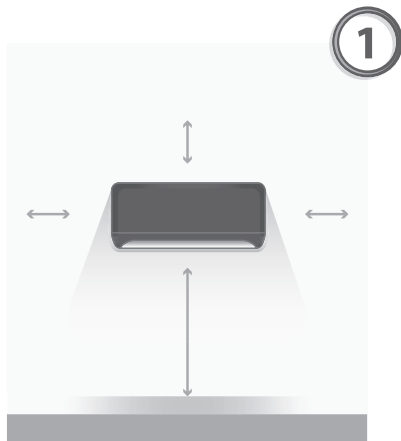
DO NOT INSTALL AND DO NOT USE THE AIR CONDITIONING UNIT IN HAZARDOUS ATMOSPHERES.

Do not use coupled and twisted cables to supply power. The equipment is not intended for use in a potentially explosive atmosphere.

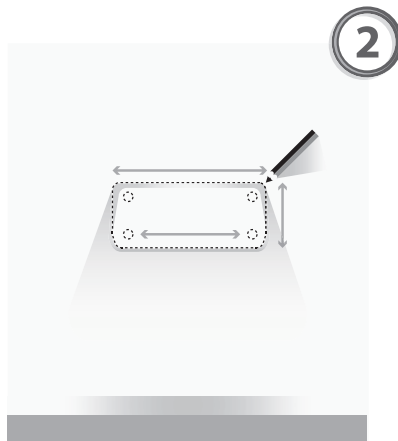
Wireless remote controller

- * Do not expose the remote control to direct sunlight (this will affect the reception signals from the indoor unit).
- * Turn on all the fluorescent lamps in the room, if any, and find the area where the remote control signals are correctly received by the indoor unit (within 7 meters).

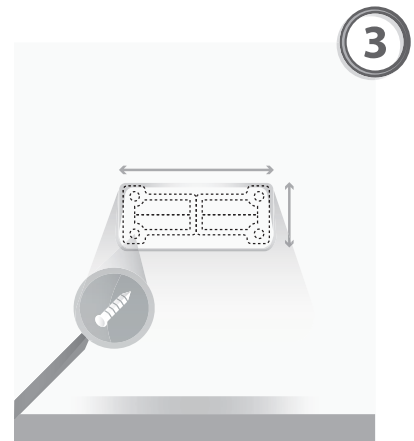
INDOOR UNIT



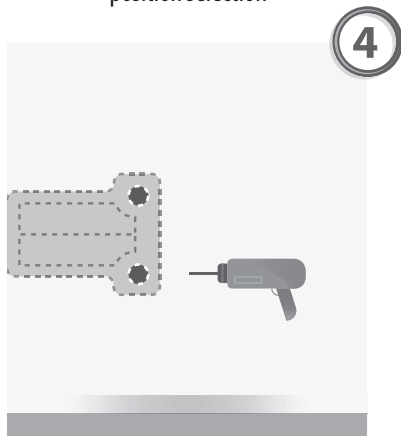
1. Installation position selection



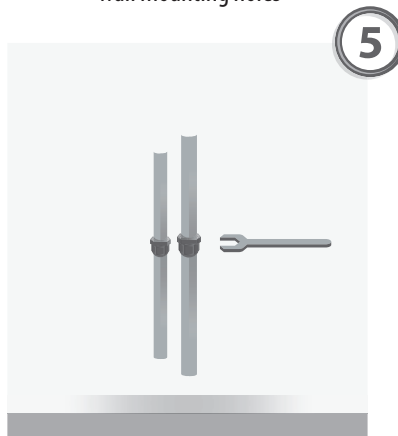
2. Definition of wall mounting holes



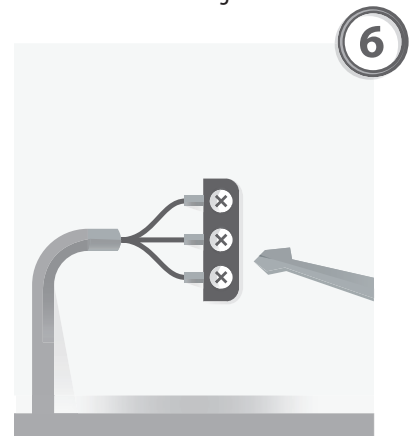
3. Fitting of drainage mounting base



4. Drilling mounting holes



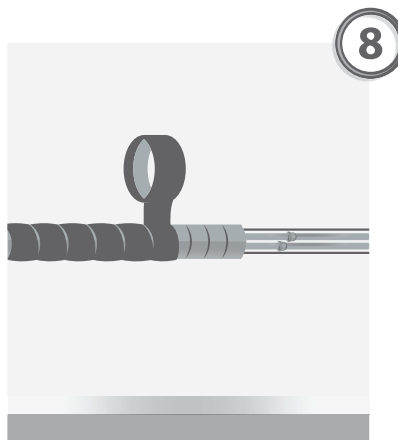
5. Piping connection



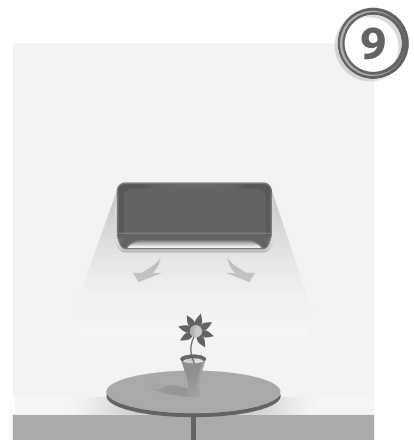
6. Cabling connection



7. Preparation of drainage pipe

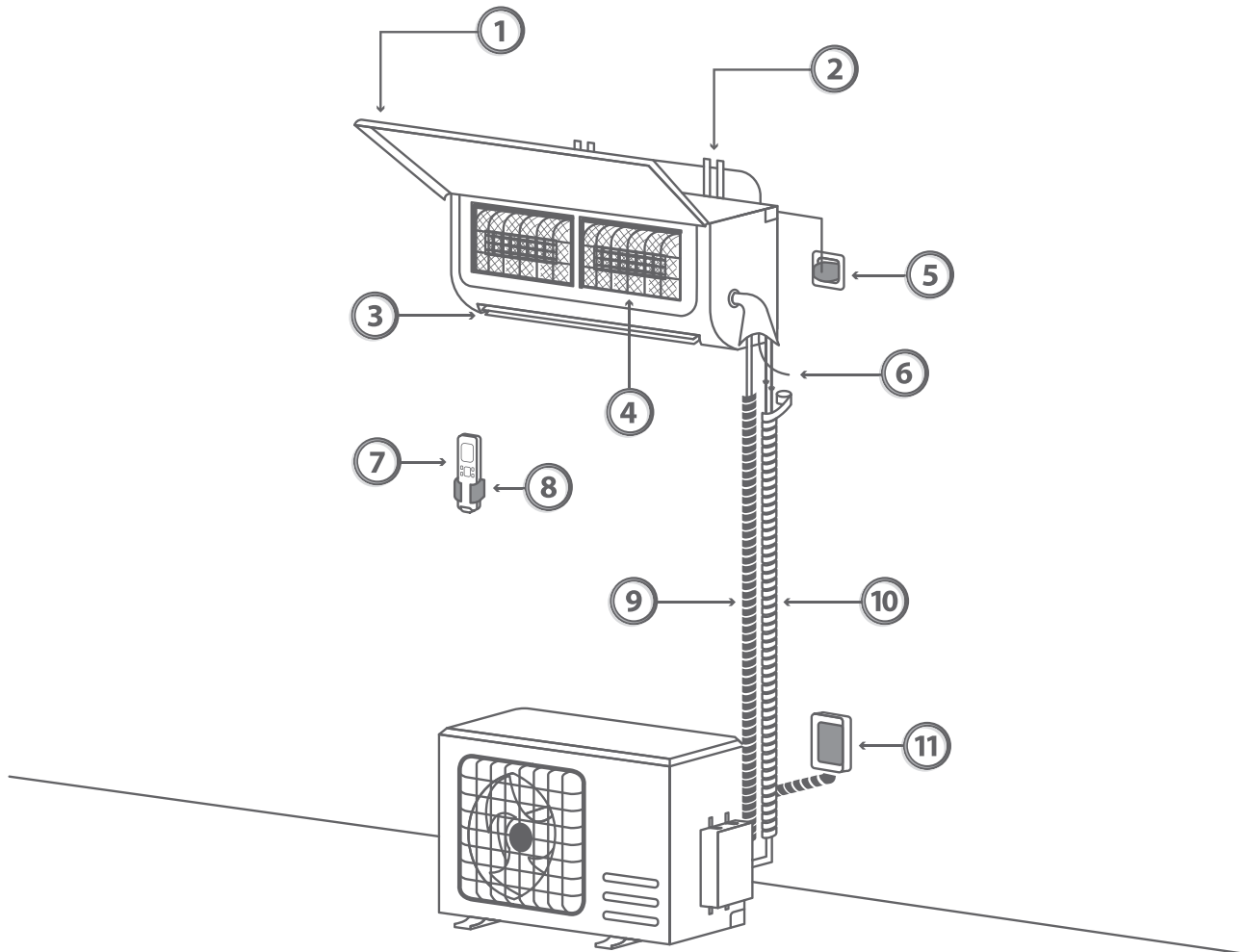


8. Winding of pipes & cables.



9. Mounting of air conditioner

UNIT PARTS



- | | | |
|------------------|-----------------------------|-------------------------------|
| 1. Front panel | 5. Power supply | 9. Signal cable |
| 2. Mounting base | 6. Drainage pipe | 10. Refrigerant pipe |
| 3. Blinds | 7. Remote controller | 11. Outdoor Unit power supply |
| 4. Air filters | 8. Remote controller holder | |

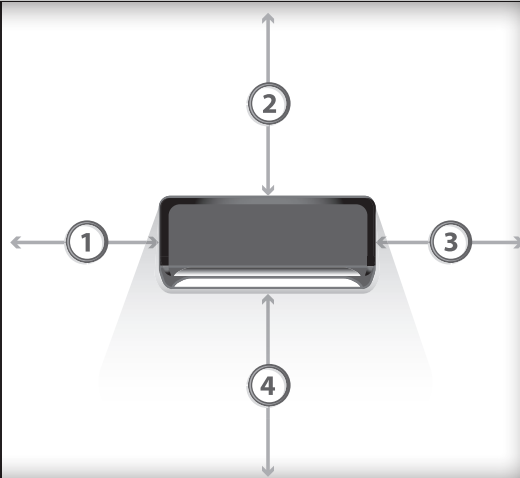
NOTES

- The air conditioner should always be installed in accordance with local rules and national regulations. The installation method may vary slightly depending on the installation area.
- The illustrations in this manual are for illustrative purposes only and the actual shape of the indoor unit of your air conditioner may vary slightly. The real shape will prevail.

8. OUTDOOR UNIT INSTALLATION

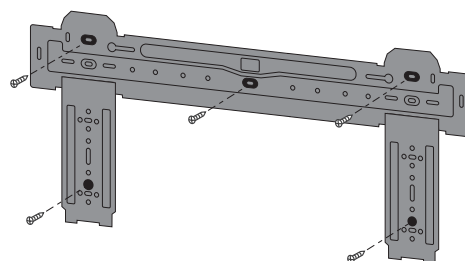
Dimensions drawing of indoor unit installation

1. Distance from the ceiling **MORE** than **15cm**
2. Distance from wall (right) **MORE** than **20cm**
3. Distance from wall (left) **MORE** than **20cm**
4. Distance from the floor **MORE** than **200cm**



Mounting base

- The wall for the indoor unit installation must be solid and firm so as to avoid vibrations.
- Use the “+” screw to fix the mounting base. Fit horizontally the mounting base to the wall and ensure its flatness and verticality.
- After installation, pull the mounting base manually to confirm that it is firm.

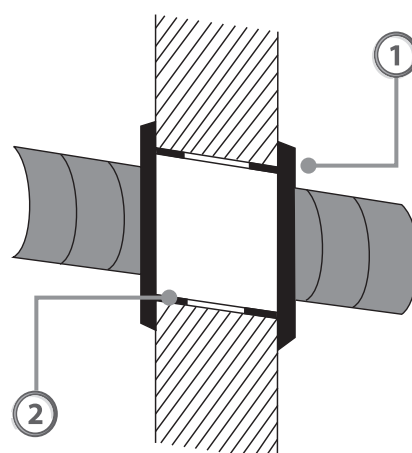


Wall drilling

Make a hole with an electric hammer or water drill in the predetermined position on the wall for piping, which should have an outward inclination 5° - 10° .
To protect the piping and cables from damage due to crossing through the wall and rodents that may reside in the hollow wall, a protective ring must be fitted and sealed with putty.

Note:

Usually, the wall hole is 060mm - 080mm.
Avoid pre-installed wall power cable and hard wall when drilling the hole.



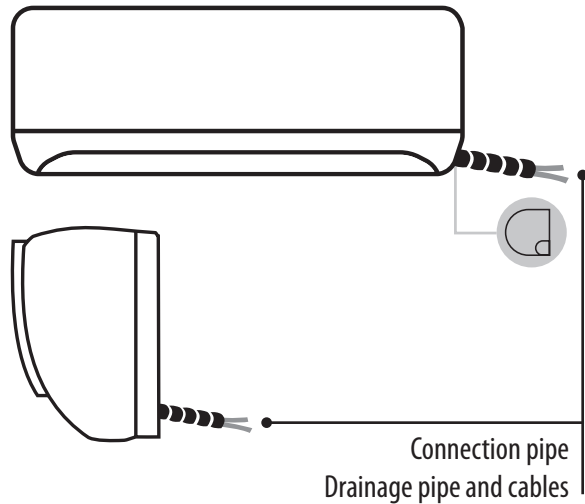
1. Pipeline protection ring
2. Putty

Piping route

- The minimum pipe length from indoor to outdoor unit is 2m. If the pipe length is $> 2\text{m}$, the product may create increased noise and have a disastrous effect.

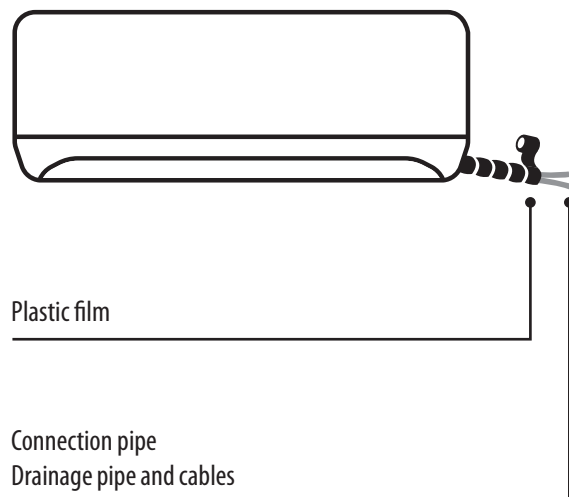
Depending on the location of the unit, the piping can be directed laterally to the left or right (**pic. 1**) or perpendicular to the back (**pic. 2**) (depending on the length of the indoor unit piping).

- When directing sideways, cut out the outlet section on the opposite side.

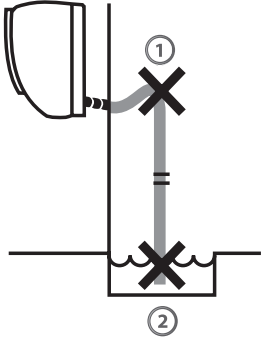
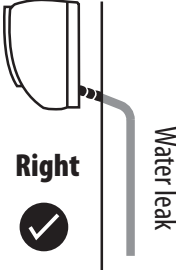
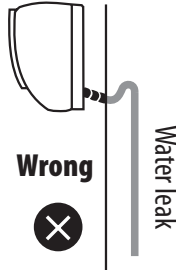
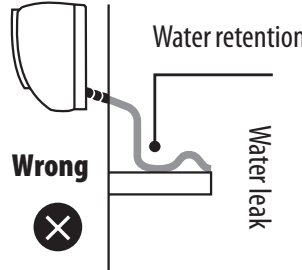
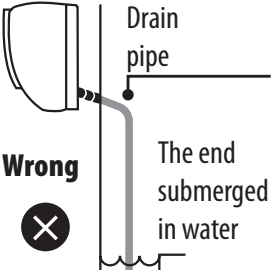
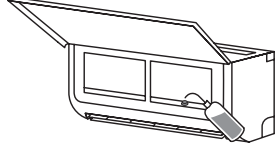
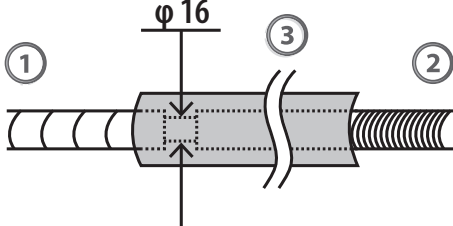
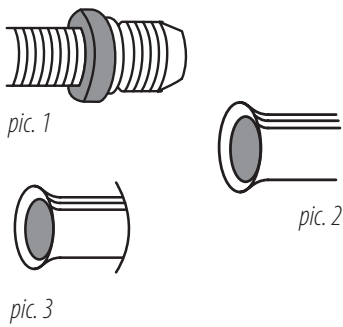


Wrap the pipings

- Use the insulation coating to wrap the connection section of the indoor unit and the connection pipe, and then use insulation material to wrap and seal the insulation pipe so as to avoid condensation on the connection section.
- Connect the water outlet to the drain pipes and align the connection pipe, the cables and the drain hose.
- Use plastic cable ties to wrap the connecting pipes, cables, and drain pipe. Tilt the pipe downwards.



8. OUTDOOR UNIT INSTALLATION

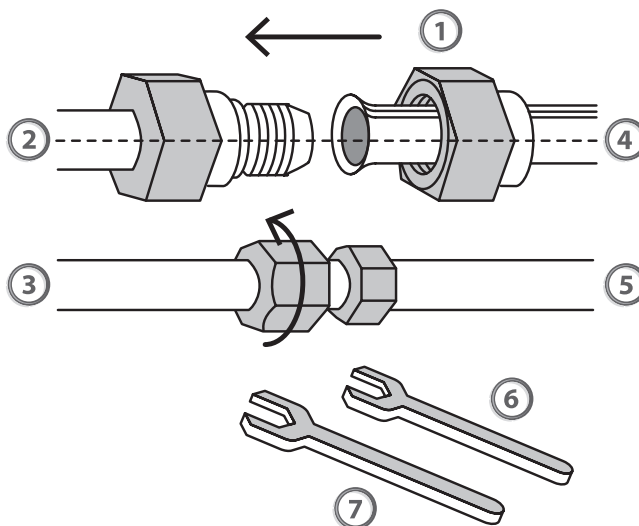
Drainage pipe	
* Connect the drain pipe as described in the figure: - The drain pipe should be tilted downwards. Do not create traps. - Do not place the end of the pipe in the water.	* Water drainage    
* Remove the air filters and pour some water into the drain pan to check that the water is flowing smoothly.	
 - Indoor unit drainage pipe - Pipe extension - Drainage pipe insulation (field supply)	* When the drain hose needs an extension, buy an extension available in the market. Make sure you have applied heat insulation to the inside of the extension hose.
* When connecting a polyvinyl chloride pipe (nominal diameter 16mm) directly to the drain hose connected to the indoor unit, as in the case of work with wall pipes, use a common drain socket (nominal diameter 16mm) as connection. (pic. 1) Drain pipe supplied with the indoor unit (pic. 2) Socket (nominal diameter 16mm) (pic. 3) PVC pipe (16mm diameter)	 pic. 1 pic. 2 pic. 3

Refrigerant pipeline connection

- Remove the fixed part to pull out the indoor unit pipe from the enclosure. Screw the hexagon nut to the left of the joint at the end with your hand.
- Connect the connection pipe to the indoor unit. Turn the center of the pipe, tighten the conical nut with your fingers, then tighten it with a wrench, while the relative direction is shown in the diagram to the right. The torque used is shown in the following table.

Note:

Carefully check if the joints are damaged before installation. The joints must not be reused unless the pipe is re-extracted.



Tightening torque table.

Pipe size (mm)	Torque(N-m)
Φ6/Φ6.35	15 ~ 25
Φ9/Φ9.52	35 ~ 40
Φ9/Φ9.52	45 ~ 60
Φ15.88	73 ~ 78
Φ15.88	75 ~ 80

- Conical nut
- Indoor unit pipe
- Indoor unit pipe
- Connection pipe
- Connection pipe
- Wrench
- Torque wrench

8. OUTDOOR UNIT INSTALLATION

Refrigerant pipeline connection

INDOOR
unit terminal unit

OUTDOOR
unit terminal unit

Power cord

All poles must be disconnected in the supply network, with a contact distance of at least 3mm.

Btu / hr.	9000 / 12000	18000 / 24000
	9000 / 12000	18000 / 24000
Voltage range**	220-240V/~/50HZ +	
Power cable size* mm ²	1.5	2.5
Number of pipes	3	3
Interconnection cable size* mm ²	1.5	1.5
Number of pipes	5	5
Recommended fuse nominal value / interruption**	16	20

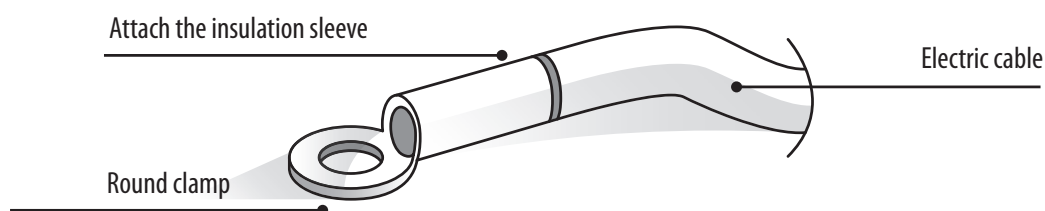
IMPORTANT

* The items shown in the table are for information only, they should be checked to make sure they comply with local/national regulations. It also depends on the type of installation and the pipes used.

** The appropriate voltage range must be checked with the label values on the unit.

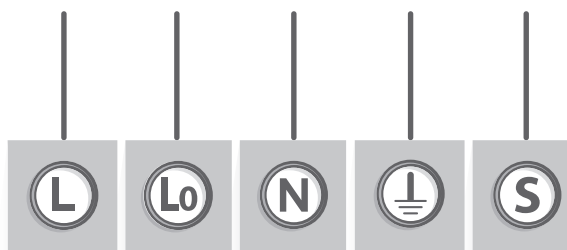
8. OUTDOOR UNIT INSTALLATION

- All cables must be securely connected.
- Make sure that the cables do not come into contact with the refrigerant piping, the compressor, or the moving parts.
- The connection cable between the indoor unit and the outdoor unit must be tightened using the hook provided.
- The power cord must be equivalent to H07RN-F which is the minimum requirement.
- Make sure no external pressures are applied to the connectors and the cables on the terminals.
- Make sure that all covers are securely fastened to avoid any gaps.
- Use a round terminal to connect the cables to the power terminal. Connect the cables by matching them to the terminals markings. (Refer to the wiring diagram that accompanies the unit).



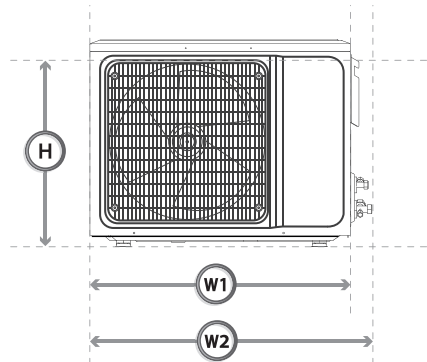
- Use the correct screwdriver to tighten the terminal screws. Wrong screwdrivers can damage the screw head.
- Excessive tightening can damage the terminal screws.
- Do not connect a different meter cable to the same terminal.
- Keep the wiring neat. Make sure that the wiring does not block other parts and the terminals box cover.
- According to the lower terminal strip, indoor unit will connect to the outdoor unit with a 5 x 1.5 mm communication cord².

**Cable connecting
to the outdoor unit.**



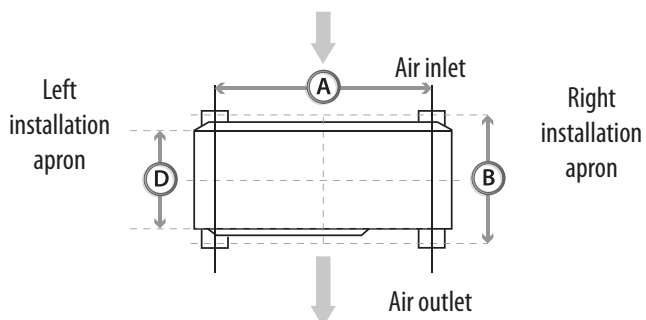
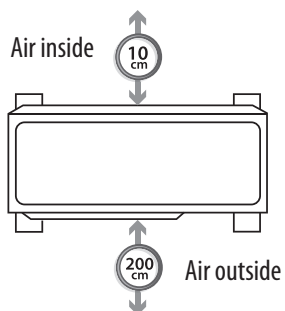
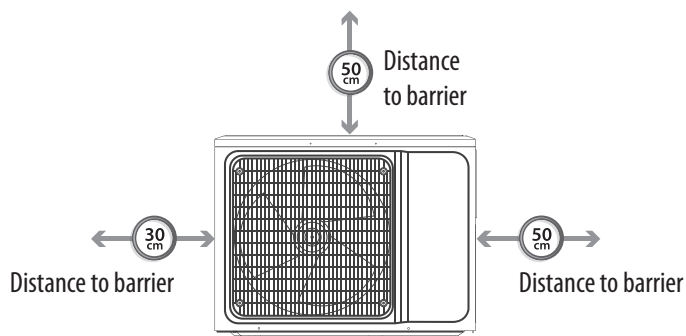
9. OUTDOOR UNIT INSTALLATION

Outdoor unit installation location & design



Outdoor unit installation screw

Outdoor Unit Shape Size W1(W2)*H*D(mm)	A (mm)	B (mm)
665(710)x420x280	430	280
600(645)*485*260	400	290
660(710)*500*240	500	260
700(745)*500*255	460	260
730(780)*545*285	540	280
760(810)*545*285	540	280
790(840)*550*290	545	300
800(860)*545*315	545	315
800(850)x590(690)x310	540	325
825(880)*655*310	540	335
900(950)*700*350	630	350
900(950)*795*330	535	350
970(1044)*803*395	675	409

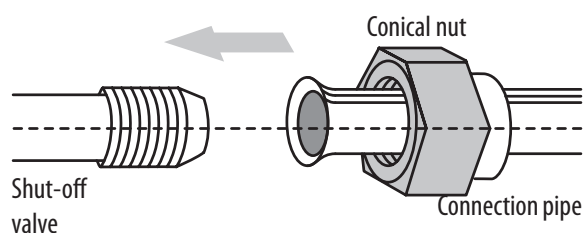
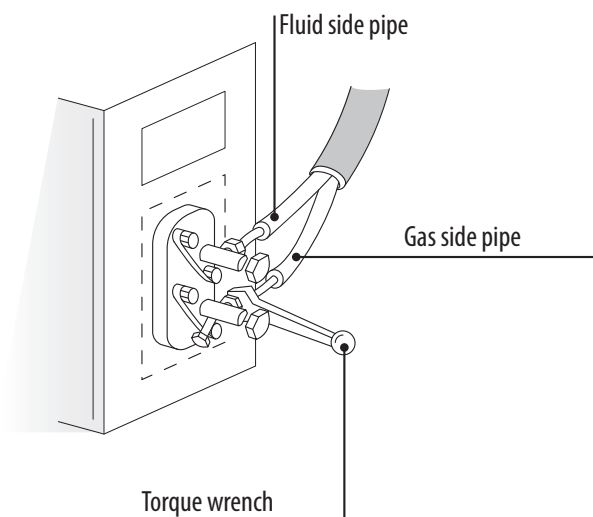


Pipe connection and refrigerant addition

- Connect the outdoor unit to the connection pipe:
Turn the connecting pipe nut to the shut-off valve and tighten the nut with finger. Then tighten the nut with a wrench.
- When extending the pipes, an additional amount of refrigerant must be added so as not to limit the operation and performance of the air conditioner

Note:

1. This table is for reference only
2. The joints must not be reused unless the pipe is re-extracted.
3. After installation, check that the shut-off valve cover is securely fastened.



Size of pipes

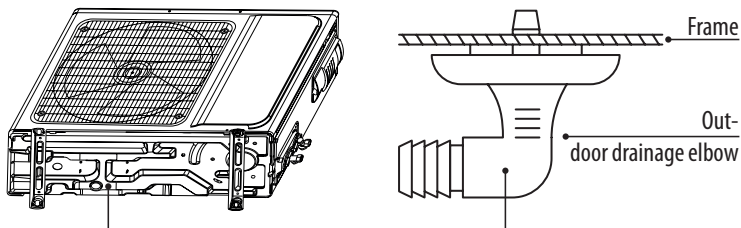
Performance	Btu/hr	9000	12000	18000	24000
Liquid indication	mm (inch)	1/4"	1/4"	1/4"	1/4"
Gas indication	mm (inch)	3/8"	3/8"	1/2"	5/8"
Maximum piping length	m	10	10	15	15
Maximum piping height	m	7	7	10	10
Maximum piping length without coolant addition	m	3	3	3	3
Coolant quantity that must be added	gr/m	20	25	30	40

9. OUTDOOR UNIT INSTALLATION

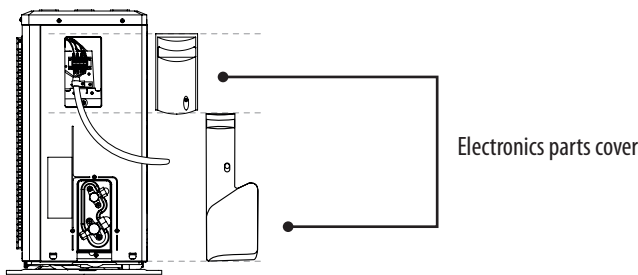
Drainage pipe

Outdoor unit condensates drainage (heat pump type only). When the unit is heating, the condensing water and defrosting water can be reliably removed through the drain pipe.

Installation: Install the outdoor unit drain hose elbow in Ø25 hole on the base and connect the drain hose to this elbow, so that the water formed in the outdoor unit can be drained out to a proper plate.



Cable connection

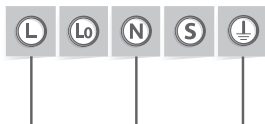


Wiring Connection

- 1. Loosen the screws and remove the electronic components cover from the unit.
 - 2. Connect the cables to the corresponding terminals on the outdoor unit board (see wiring diagram) and if there are any signals connected to the plug, simply make the corresponding connection.
 - 3. Grounding cable: remove the grounding screw from the electricity part, cover the end of the grounding wire to the grounding screw, and screw it into the grounding hole.
 - 4. Fasten the cable securely with clamps.
 - 5. Place the electronic components cover in its original position and secure it with screws.
- According to the lower terminal strip, the unit will be connected to a 3 x 1.5 mm² or 3 x 2.5 mm² power cord.

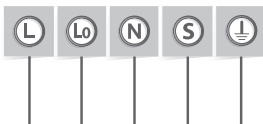
Power supply cord to the whole unit.

According to the lower terminal strip, the unit will be connected to a 3 x 1.5 mm² or 3 x 2.5 mm² power cord.



Power supply cord to indoor unit.

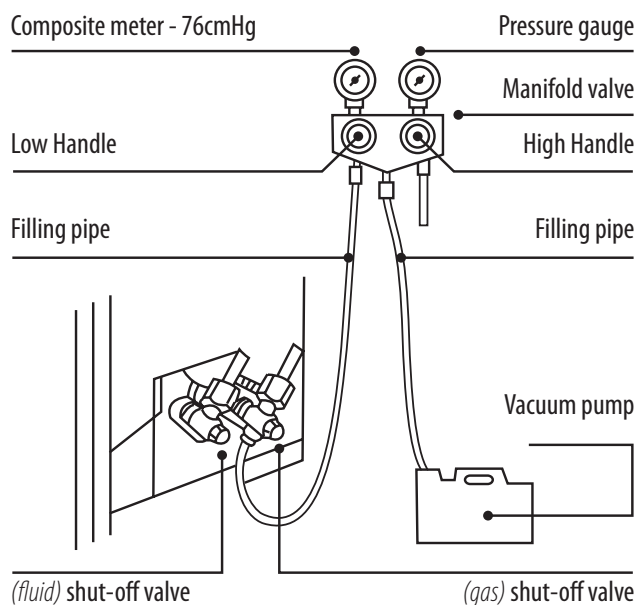
According to the lower terminal strip, indoor unit will connect to the outdoor unit with a 5 x 1.5 mm² communication cord.



Point of attention:

- We supply power to the outdoor unit, and then pass the communication cable to the indoor unit
- Note the command letters in case the command S and the grounding signal are in different order.

Creation of vacuum



* Exclusive R32 type vacuum pump should be used to create vacuum in air conditioners with R32 refrigerant. Before working on the air conditioner, remove the cover of the shut-off valve (gas and fluid valves) and be sure that you have tightened it afterwards (to prevent potential air leakage)

- To prevent air and fluid leakage, tighten all the connecting nuts of all pipes.
- Connect the shut-off valve, the hose, the manifold valve, and the vacuum pump.
- Fully open the handle Low of the manifold valve and apply vacuum for at least 15 minutes and check that the composite vacuum meter reads -0.1 MPa (-76cmHg).
- After applying a vacuum, fully open the shut-off valve with a hexagon wrench.
- Check that both indoor and outdoor connections are free of air leakage.

11. WARNING FOR R32 UNIT OPERATION



WARNING

Before installation, make sure there is a minimal risk of ignition and avoid working in a confined space.
Make sure there is adequate ventilation by opening the windows and doors.

- * When re-welding indoors, the welds should be remanufactured.
- * Avoid installing the air conditioner in an area where there is a risk of exposure to open flames (e.g. operation of electric heaters).
- * Any person involved in the operation or disassembly of a refrigerant circuit should have a valid certificate from a recognized assessment authority that verifies its ability to handle refrigerants safely in accordance with recognized site specifications.

Checking for presence of refrigerant

You should check the area with a suitable refrigerant detector before and during operation to make sure there is no refrigerant leakage. Ensure that the leak detection equipment used is suitable for use with flammable refrigerants, eg it does not produce sparks, is properly sealed and secure.

Presence of fire extinguisher

If cooling equipment or any related parts need to be worked on, appropriate fire extinguishing equipment should be available. Have a dry powder or CO2 fire extinguisher next to the fill area.

No sources of ignition

All potential sources of ignition, including cigarette smoking, must remain away from the installation, repair, removal and disposal site during which flammable refrigerant may be released into the surrounding area. "No smoking" should be displayed.

The following checks apply to the installations:

- * marking of the equipment must be visible and legible. Markings and signs that are illegible must be corrected,
- * the refrigerant pipe or fittings must be positioned in a point where they are unlikely to be exposed to any substance which may corrode the refrigerant-containing components unless they are made of corrosion-resistant materials or provide corrosion protection.

Initial safety checks shall include:

- * There should be no live electrical components and cables during system filling, recovery or cleaning.

Repair of intrinsically safe components

Do not apply permanent induction or capacitance loads to the circuit without ensuring that they do not exceed the permissible voltage and current for the equipment used. Replace only with accessories specified by the manufacturer.

Leak detection method

Make sure that the detector is not a potential source of ignition (for example a halide lens) and that it is suitable for the refrigerant used. The leak detection equipment is defined as the LFL percentage of the refrigerant (for R32, the LFL is 13%) and calibrated with the refrigerant used and the corresponding gas percentage (maximum 25%). Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine must be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak

11. WARNING FOR R32 UNIT OPERATION

is detected, all naked flames must be removed / extinguished. If a refrigerant leak is found that requires welding, all refrigerant must be removed from the system or isolated (from the shut-off valves) in a leak-free part of the system. The oxygen-free nitrogen (OFN) must then be pumped through the system, both before and during the welding process.

Removal and discharge

When you access the refrigerant circuit for repairs - or for any other purpose - use standard procedures. However, it is important to follow best practice as there is a flammability issue. The following procedure should be followed:

- * **refrigerant removal,**
- * **clean the circuit with inert gas,**
- * **carry out discharge,**
- * **clean again with inert gas,**
- * **open the circuit by cutting or welding.**

Refrigerant must be filled in the correct recovery cylinders. The system must be "rinsed" with OFN to make the unit safe. This process may need to be repeated several times. Do not use compressed air or oxygen for this operation. The rinsing should be done by removing the vacuum in the system with OFN and continuing filling until working pressure is achieved, ventilation in the atmosphere then and finally vacuum pumping down. This process is repeated until there is no refrigerant in the system. When the final use with OFN is made, the system must be adjusted to atmospheric pressure to get the job done. This function is necessary if the pipes are to be welded. Make sure that the vacuum pump device is not near ignition sources and that there is adequate ventilation.

Labelling

This unit must be marked "out of service and refrigerant to be removed". This label will be dated and signed. Ensure that there are labels on the equipment stating that the equipment contains flammable refrigerant.

Filling procedures

In addition to the conventional filling process, the following requirements must be met.

- * Make sure there is no contamination of different refrigerants when using filling equipment. The hoses and pipes should be as small as possible in order to minimize the amount of refrigerant inside them.
- * The cylinders must remain upright.
- * Ensure that the refrigeration system is grounded prior of filling the system with refrigerant.
- * Note the system when filling is completed (if you have not already done so).
- * Be careful not to overfill the cooling system.

Before filling the system, check the pressure with OFN. When the system is full, check for leak before turning it on. Do another leak test before leaving the site.

Decommissioning

Before performing this procedure, it is necessary for the technician to be fully familiar with the equipment and all its details. The following details are good practice for safe recovery. Before performing the task, a sample of oil and coolant should be taken if analysis is required before using the refrigerant again. It is necessary that the power supply to be available before starting work.

- Become familiar with the equipment and its operation.
- Isolate the system electrically.
- Before attempting the procedure ensure that:
 - * mechanical handling equipment is available, if required, for handling refrigerant cylinders,
 - * all personal protective equipment is available and used correctly,
 - * the recovery process is supervised at all times by a competent person,
 - * recovery equipment and cylinders comply with the appropriate standards.
- Empty the cooling system if possible.
- If emptying is not possible, create a multiple-outlet pipe so that the refrigerant can be removed from various parts of the system.

11. WARNING FOR R32 UNIT OPERATION

- f. Make sure that the cylinder is horizontal before recovering.
- g. Start the recovery machine and operate according to the manufacturer's instructions.
- h. Do not overload the cylinders. (Do not fill more than 80% liquid).
- i. Do not exceed the maximum operating pressure of the cylinder, even for a short time.
- j. When the cylinders have been filled correctly and the process is completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed.
- k. The recovered refrigerant must not be placed in another cooling system unless it has been cleaned and tested.

Reset

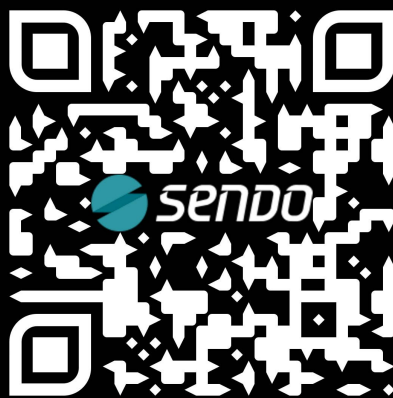
When removing refrigerant from a system, either for maintenance or decommissioning, it is recommended that all refrigerants to be safely removed. When transporting refrigerant in cylinders, make sure that only the appropriate refrigerant recovery cylinders are used. Make sure you have the correct number of cylinders for the total system load. All cylinders intended for the recovered refrigerant are labeled for that refrigerant (e.g special cylinders for refrigerant

recovery). The cylinders must be equipped with a pressure relief valve and shut-off valves in good working order. The air is removed from the recovery cylinders and, if possible, the cylinders are cooled before recovery. Recovery equipment must be in good working order. There should be a set of instructions on the equipment available, which should be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated scales must be available and in good working order. The hoses must be complete with leak-free disconnection connectors and in good condition. Before using the recovery machine, check that it is in good working order, make sure it is properly serviced and that all related electrical components are sealed, to avoid ignition in case of refrigerant release. Consult the manufacturer in case of doubt.

The recovered refrigerant must be returned to the refrigerant supplier in the correct recovery cylinder, with the relevant waste transport note. Do not mix refrigerants in recovery units and especially in cylinders. If you intend to remove compressors or compressor oils, make sure they are emptied to an acceptable level to ensure that the flammable refrigerant does not remain in the lubricant. The evacuation process shall be carried out prior of returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed in order to accelerate this process. When oil is drained from a system, it must be carried out safely.

European conformity directives	
This appliance contains refrigerant fluid and other potentially hazardous materials. When you want to dispose this device, it is required by the law specific collecting and handling. DO NOT dispose this product as household or municipal waste. When disposing this device, do the following: • Dispose of the appliance in specially designed electronics waste bins. • When you buy a new appliance, the merchant will get the old appliance free of charge. • The manufacturer will take back the old appliance free of charge. • Sell the old appliance to a certified scrap metals dealer. Special Note Disposal of this appliance in forests or other natural environments	

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