

SHARP

Split Type Air Conditioner
OPERATION MANUAL
分體式冷氣機
使用說明書

MODELS: OUTDOOR UNIT
型 號: AU-XM18CCA

About the installation of the indoor unit,
please refer to the manual
accompanying the indoor unit.
室內機安裝請參閱室內機隨附手冊。



香港電器安全規格

(國際電工委員會規格適合)

Thank you for choosing SHARP R32 Split type air conditioner. Please read this manual thoroughly before using your air conditioner and keep it carefully for future reference.

多謝您購買SHARP R32分體式冷氣機。安裝及操作之前，請仔細閱讀本說明書，以便正確使用冷氣機。閱讀後，請妥善保存此說明書，以便日後翻閱。

In line with the company's policy of continual product improvement, the aesthetic and dimensional characteristics, technical data and accessories of this appliance may be changed without notice.

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The products in this manual may be different with the real one, according to different models, some models have displayer and some models without displayer, the position and shape of the displayer please refer to the real one.

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.

If it needs to install, move or maintain the air conditioner, please contact dealer or local service center to conduct it at first. Air conditioner must be installed, moved or maintained by appointed unit. Otherwise, it may cause serious damage or personal injury or death.

When refrigerant leaks or requires discharge during installation, maintenance, or disassembly, it should be handled by certified professionals or otherwise in compliance with local laws and regulations.

**DANGER**

Indicates a hazardous situation that, if not avoided, will result in death or serious injury.

**WARNING**

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

**CAUTION**

Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

**NOTICE**

Indicates important but not hazard-related information, used to indicate risk of property damage.



Indicates a hazard that would be assigned a signal word WARNING or CAUTION.

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons.

1. Damage the product due to improper use or misuse of the product;
2. Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer;
3. After verification, the defect of product is directly caused by corrosive gas;
4. After verification, the defects are due to improper operation during transportation of product;
5. Operate, repair, maintain the unit without abiding by instruction manual or related regulations;
6. After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers;
7. The damage is caused by natural calamities, bad using environment or force majeure.



Please read this owner's manual carefully before operating the unit and keep it carefully for consultation.



Only use the air conditioner as instructed in this booklet. These instructions are not intended to cover every possible condition and situation. As with any electrical household appliance, common sense and caution are therefore always recommended for installation, operation and maintenance.

Please read this operating manual carefully before operating the unit.



Appliance filled with mildly flammable gas R32.



Before use the appliance, read the owner's manual first.



Before install the appliance, read the installation manual first.



Before repair the appliance, read the service manual first.

The figures in this manual may be different with the material objects, please refer to the material objects for reference.

● The Refrigerant

- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the R32, which is specially cleaned. The refrigerant is mildly flammable and inodorous. Furthermore, it can lead to explosion under certain conditions. But the flammability of the refrigerant is very low. It can be ignited only by fire.
- Compared to common refrigerants, R32 is a nonpolluting refrigerant with no harm to the ozonosphere. The influence upon the greenhouse effect is also lower. R32 has got very good thermodynamic features which lead to a really high energy efficiency. The units therefore need a less filling.

WARNING:

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacture. Should repair be necessary, contact your nearest authorized Service Centre.

Any repairs carried out by unqualified personnel may be dangerous.

The appliance shall be stored in a room without continuously operating ignition sources. (for example: open flames , an operating gas appliance or an operating electric heater.)

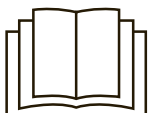
Do not pierce or burn.

The appliance is using mildly flammable refrigerant R32 and tested to comply with IEC 60335-2-40. There is no minimum room area requirement for the appliance.

Appliance filled with mildly flammable gas R32. For repairs, strictly follow manufacturer's instructions only.

Be aware that refrigerants may not contain an odour.

Read specialist's manual.





Operation and Maintenance

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance.
- Cleaning and user maintenance shall not be made by children without supervision.
- Do not connect air conditioner to multi-purpose socket. Otherwise, it may cause fire hazard.
- Do disconnect power supply when cleaning air conditioner. Otherwise, it may cause electric shock.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Do not wash the air conditioner with water to avoid electric shock.
- Do not spray water on indoor unit. It may cause electric shock or malfunction.
- After removing the filter, do not touch fins to avoid injury.
- Do not use fire or hair dryer to dry the filter to avoid deformation or fire hazard.
- Maintenance must be performed by qualified professionals. Otherwise, it may cause personal injury or damage.
- Do not repair air conditioner by yourself. It may cause electric shock or damage. Please contact dealer when you need to repair air conditioner.
- Do not extend fingers or objects into air inlet or air outlet. It may cause personal injury or damage.
- Do not block air outlet or air inlet. It may cause malfunction.
- Do not spill water on the remote controller, otherwise the remote controller may be broken.
- When below phenomenon occurs, please turn off air conditioner and disconnect power immediately, and then contact the dealer or qualified professionals for service.
 - Power cord is overheating or damaged.
 - There's abnormal sound during operation.
 - Circuit break trips off frequently.
 - Air conditioner gives off burning smell.
 - Indoor unit is leaking.



- If the air conditioner operates under abnormal conditions, it may cause malfunction, electric shock or fire hazard.
- When turning on or turning off the unit by emergency operation switch, please press this switch with an insulating object other than metal.
- Do not step on top panel of outdoor unit, or put heavy objects. It may cause damage or personal injury.

Attachment

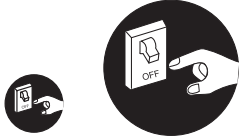
- Installation must be performed by qualified professionals. Otherwise, it may cause personal injury or damage.
- Must follow the electric safety regulations when installing the unit.
- According to the local safety regulations, use qualified power supply circuit and circuit break.
- Do install the circuit break. If not, it may cause malfunction.
- An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
- Including an circuit break with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload.
- Air Conditioner should be properly grounded. Incorrect grounding may cause electric shock.
- Don't use unqualified power cord.
- Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring may result in electric shock, fire hazard or malfunction. Please install proper power supply cables before using the air conditioner.
- Properly connect the live wire, neutral wire and grounding wire of power socket.
- Be sure to cut off the power supply before proceeding any work related to electricity and safety.
- Do not put through the power before finishing installation.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
- The appliance shall be installed in accordance with national wiring regulations.
- Installation must be performed in accordance with the requirement of NEC and CEC by authorized personnel only.



- The air conditioner is the first class electric appliance. It must be properly grounding with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- The grounding resistance should comply with national electric safety regulations.
- The appliance must be positioned so that the plug is accessible.
- All wires of indoor unit and outdoor unit should be connected by a professional.
- If the length of power connection wire is insufficient, please contact the supplier for a new one. Avoid extending the wire by yourself.
- For the air conditioner with plug, the plug should be reachable after finishing installation.
- For the air conditioner without plug, an circuit break must be installed in the line.
- If you need to relocate the air conditioner to another place, only the qualified person can perform the work. Otherwise, it may cause personal injury or damage.
- Select a location which is out of reach for children and far away from animals or plants. If it is unavoidable, please add the fence for safety purpose.
- The indoor unit should be installed close to the wall.

WARNING

★ When having a burning smell or smoke, please turn off the power supply and contact with the service center.



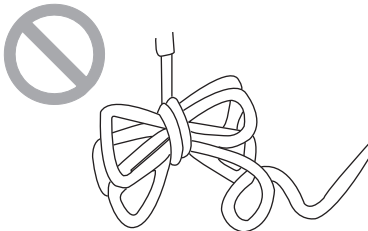
If the abnormality still exists, the unit may be damaged, and may cause electric shock or fire.

★ The power supply must adopt the special circuit that with air switch protection and assure it has enough capacity. The unit will be turned on or off according to your requirement automatically, please do not turn on or turn off the unit frequently, otherwise disadvantage effect may be caused to the unit.

★ Never cut off or damage power cables and control wires. If the power cable and signal control wire were damaged, change them by professional.



★ Power must adopt the special circuit to prevent fire.



Otherwise, it can cause electric shock or fire.

★ Disconnect the power supply if long putting the air conditioner out of use.



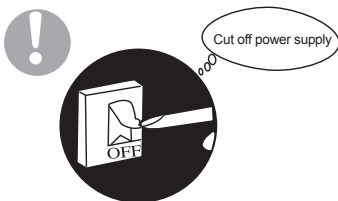
Otherwise, the accumulated dusts may cause overheating or fire.

★ Never damage the electric wire or use the electric wire which is not appointed.



Otherwise, it will cause overheating or fire.

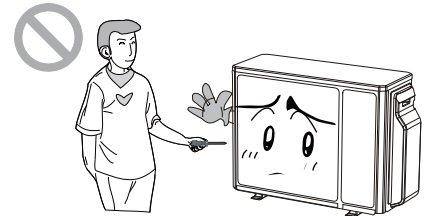
★ When cleaning, it is necessary to stop driving and turn off the power supply.



Otherwise, it may cause electric shock or damage.

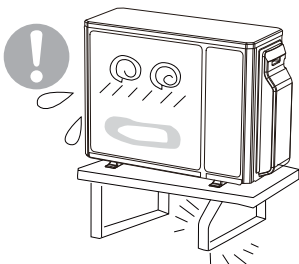
★ Rated voltage of this air conditioner 220V, 50Hz, The compressor will vibrate sharply if the voltage is too low, resappointed. Damage to refrigerating system. Electrical component are easy to damage if the voltage is too high.

★ Don't attempt to repair the air conditioner by yourself.



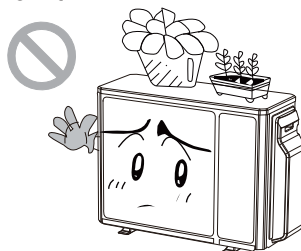
The wrong repair will lead to an electric shock or fire, so you should contact the service center to repair.

★ Please note whether the installed stand is firm enough or not.



If it is damaged, it may lead to the fall of the unit and cause the injury.

★ Don't step on the top of the outdoor unit or place something on it.



As falling off the outdoor unit can be dangerous.

★ Earthing: The unit must be reliably earthed. The earthing cable shall be connected to the special earthing device in the construction.

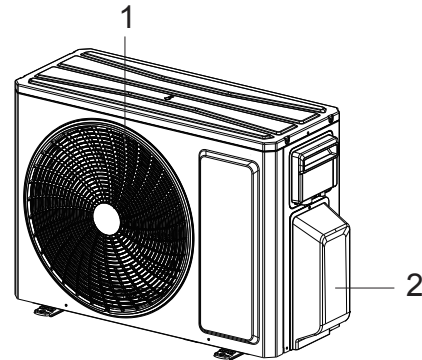


WARNING

- Be sure to cut off the power supply before cleaning the air conditioner; otherwise electric shock might happen.
- Wetting of air conditioner may cause the risk of electric shock. Make sure not to wash your air conditioner in any case.
- Volatile liquids such as thinner or gasoline will cause damage to the appearance of air conditioner. (Only use soft dry cloth moist cloth clean the air conditioner cabinet).
- This product must not be disposed together with the domestic waste. This product has to be disposed at an authorized place for recycling of electrical and electronic appliances.
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

OUTDOOR UNIT	
No.	Description
1	Air outlet grille
2	Valve

Note: The above figures are only intended to a simple diagram of the appliance and may not correspond to the appearance of the units that have been purchased.




	Indoor side DB/WB(°C)	Outdoor side DB/WB(°C)
Maximum cooling	32/23	43/26





- The operating temperature range (outdoor temperature) for cooling only unit is 18°C ~43°C.

AU-XM18CCA

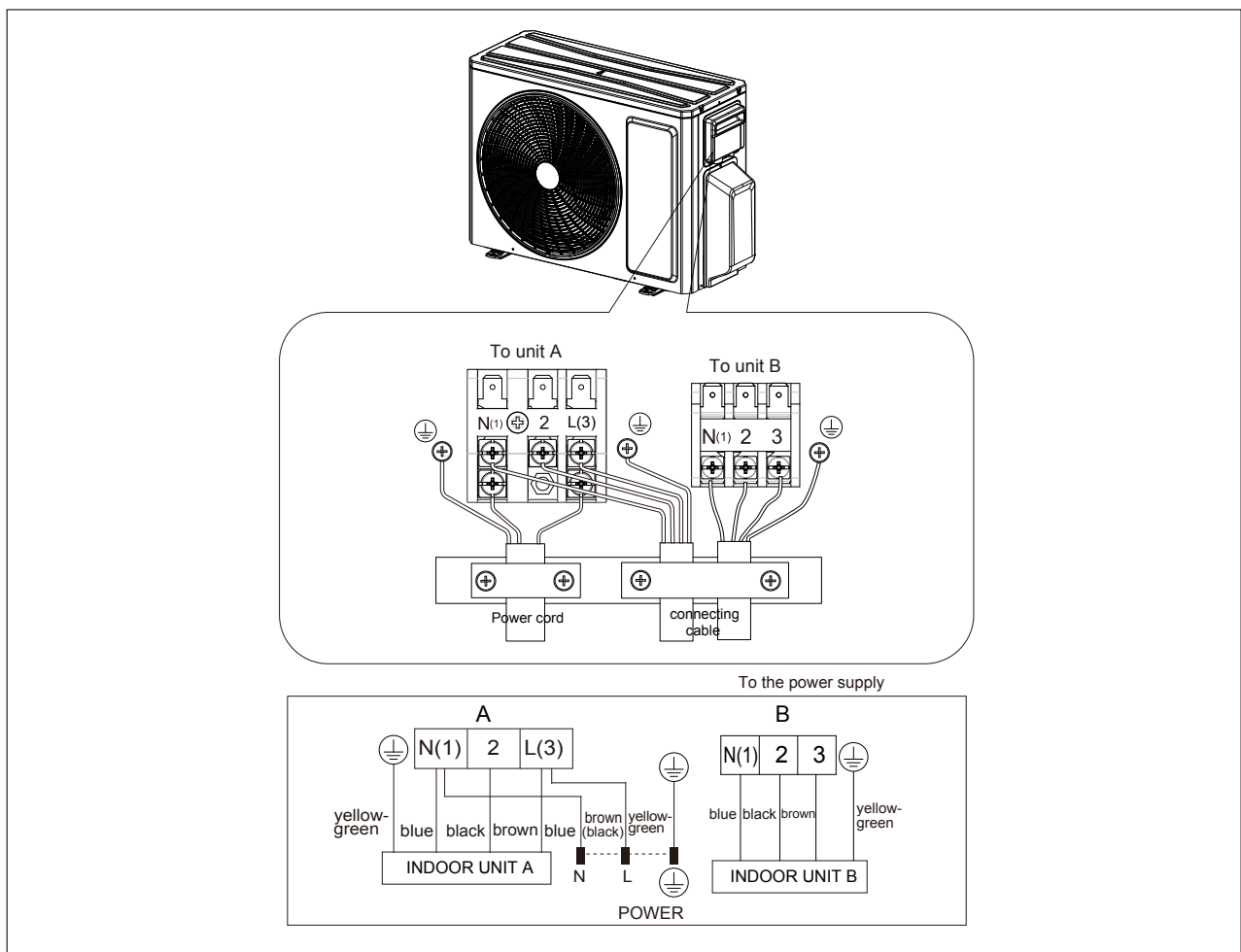
1. Remove the handle at the right side plate of the outdoor unit (one screw).
2. Remove the cable clamp, connect the power connection cable with the terminal at the row of connection and fix the connection. The fitting line distributing must be consistent with the indoor unit. terminal of line bank. Wiring should meet that of indoor unit.
3. Fix power connection wire by wire clamp.
4. Ensure wire has been fixed well.
5. Install the handle.

 Including an air switch with suitable capacity, please note the following table. Air switch should be included magnet buckle and heating buckle function, it can protect the circuit-short and overload. (Caution: please do not use the fuse only for protect the circuit)

Air-conditioner	Air switch capacity
AU-XM18CCA	16A



-  An all-pole disconnection switch having a contact separation of at least 3mm in all pole should be connected in fixed wiring.
-  Wrong wire connection may cause malfunction of some electric components. After fixing cable, ensure that leads between connection to fixed point have some space.
-  The connection pipes and the connection wirings of the unit A, unit B must be corresponding to each other respective.
-  The appliance shall be installed in accordance with national wiring regulations.


Note: The above figures are only intended to be a simple diagram of the appliance and may not correspond to the appearance of the units that have been purchased.



HANDLING

USER

-  After having removed the packaging, check that the contents are intact and complete.
-  The outdoor unit must always be kept upright.

 Handling must be done by suitably equipped qualified technical personnel using equipment that is for suitable the weight of the appliance.

Location

! Use bolts to secure the unit to a flat, solid floor. When mounting the unit on a wall or the roof, make sure the support is firmly secured so that it cannot move in the event of intense vibrations or a strong wind.

! Do not install the outdoor unit in pits or air vents

Installing the pipes

! Use suitable connecting pipes and equipment for the refrigerant R32.

!	Chargeless pipe Length	10m
	Max. pipe length (One indoor unit)	20m
	Max. pipe length (Two indoor units)	40m
	Additional refrigerant	20g/m
	Pipe max. height distance(indoor and indoor)	15m
	Pipe max. height distance (indoor and outdoor and indoor up)	15m
	Pipe max. height distance (indoor and outdoor and outdoor up)	15m

! The refrigerant pipes must not exceed the maximum heights 15m.

! Wrap all the refrigerant pipes and joints.

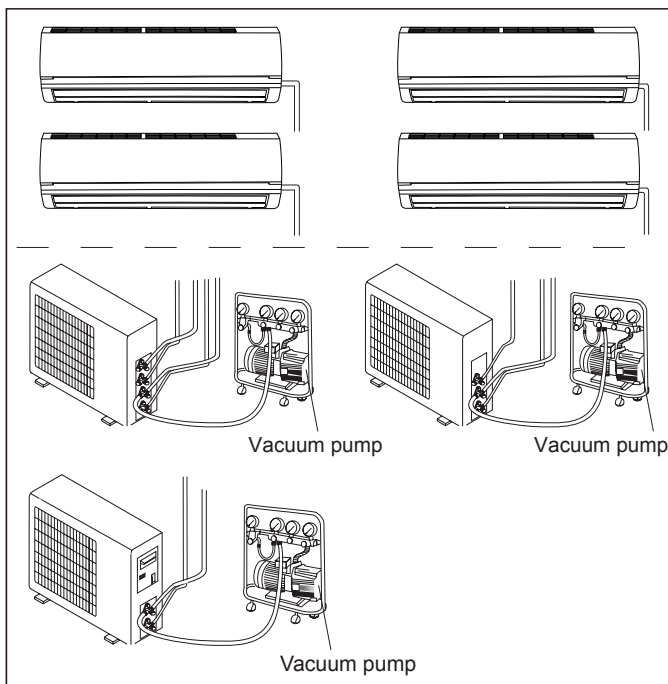
! Tighten the connections using two wrenches working in opposite directions.

Caution: Installation Must be Performed in Accordance with the NEC/CEC by Authorized Personnel Only.

BLEEDING

Humid air left inside the refrigerant circuit can cause compressor malfunction. After having connected the indoor and outdoor units, bleed the air and humidity from the refrigerant circuit using a vacuum pump.

- (1) Unscrew and remove the caps from the 2-way and 3-way valves.
- (2) Unscrew and remove the cap from the service valve.
- (3) Connect the vacuum pump hose to the service valve.
- (4) Operate the vacuum pump for 10-15 minutes until an



Connectable indoor unit combinations

The sum of the capacity codes of the indoor units should be among 50%-150% of that of the outdoor unit.

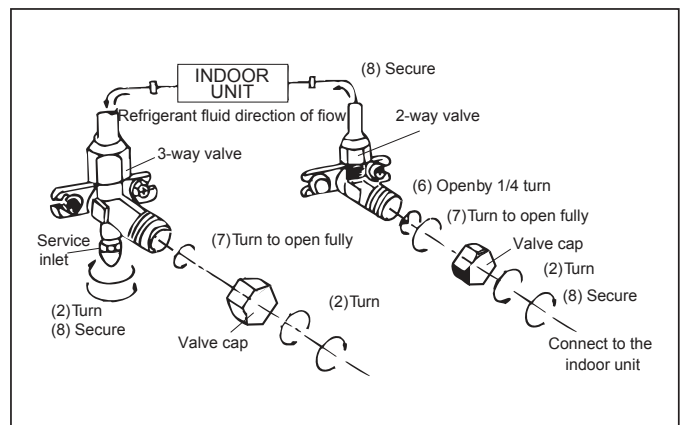
Port	Port size		Connectable indoor			
A	Liquid	1/4" (ø 6.35 mm)	12K	9K	12K	9K
	Gas	3/8" (ø 9.52 mm)				
B	Liquid	1/4" (ø 6.35 mm)	12K	12K	9K	9K
	Gas	3/8" (ø 9.52 mm)				

Note ; Be sure to install 2 indoor unit.

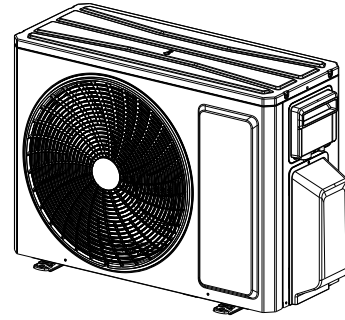
INSTALLER

- absolute vacuum of 10 mm Hg has been reached.
- (5) With the vacuum pump still in operation, close the low-pressure knob on the vacuum pump coupling. Stop the vacuum pump.
 - (6) Open the 2-way valve by 1/4 turn and then close it after 10 seconds. Check all the joints for leaks using liquid soap or an electronic leak device.
 - (7) Turn the body of the 2-way and 3-way valves. Disconnect the vacuum pump hose.
 - (8) Replace and tighten all the caps on the valves.

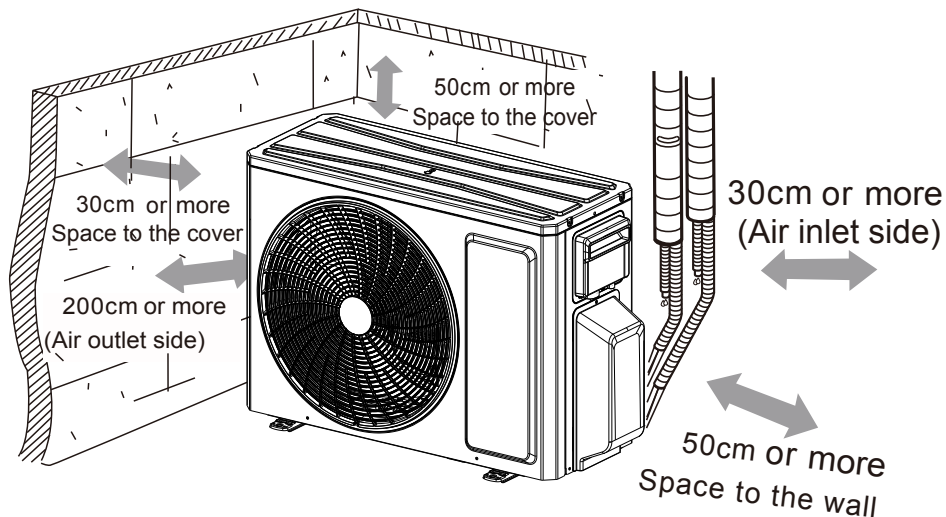
Diameter (mm)	Twisting moment (N.m)
1/4"	15-20
3/8"	35-40
1/2"	45-50
5/8"	60-65
3/4"	70-75



- ⚠ Use suitable instruments for the refrigerant R32.
- ⚠ Do not use any other refrigerant than R32.
- ⚠ Do not use mineral oils to clean the unit.



- ⚠ The installation must be done by trained and qualified service personnel with reliability according to this manual.
- ⚠ Contact service center before installation to avoid the malfunction due to unprofessional installation.
- ⚠ When picking up and moving the units, you must be guided by trained and qualified person.
- ⚠ Ensure that the recommended space is left around the appliance.

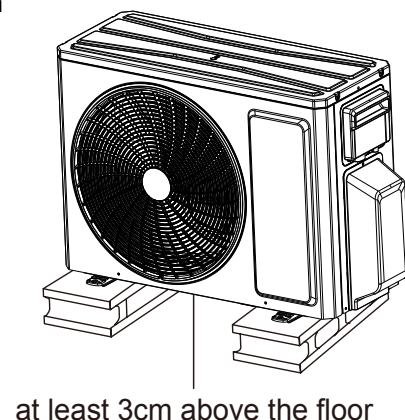


Fix the support of outdoor unit (select it according to the actual installation situation)

1. Select installation location according to the house structure.
2. Fix the support of outdoor unit on the selected location with expansion screws.

NOTICE:

- Take sufficient protective measures when installing the outdoor unit.
- Make sure the support can withstand at least four times of the unit weight.
- The outdoor unit should be installed at least 3cm above the floor in order to install drain joint. (for the model with heating tube, the installation height should be no less than 20cm.)
- For the unit with cooling capacity of 2300W ~ 5000W, 6 expansion screws are needed; for the unit with cooling capacity of 6000W~8000W, 8 expansion screws are needed; for the unit with cooling capacity of 10000W~16000W, 10 expansion screws are needed.
- As for the shape of drainage joint, please refer to the current product. Do not install the drainage joint in the severe cold area. Otherwise, it will be frosted and then cause malfunction.



at least 3cm above the floor

Check items	Problems owing to improper installation
Is the installation reliable?	The unit may drop, vibrate or make noises
Has the gas leakage been checked?	May cause unsatisfactory cooling (heating) effect
Is the thermal insulation of the unit sufficient?	May cause condensation and water dropping
Is the drainage smooth?	May cause condensation and water dropping
Does the power supply voltage accord with the rated voltage specified on the nameplate?	The unit may bread down or the components may be burned out
Are the lines and pipelines correctly installed?	The unit may bread down or the components may be burned out
Has the unit been safely grounded?	Risk of electrical leakage
Are the models of lines in conformity with requirements?	The unit may bread down or the components may be burned out
Are there any obstacles near the air inlet and outlet of the indoor and outdoor units?	The unit may bread down or the components may be burned out
Have the length of refrigerating pipe and refrigerant charge amount been recorded?	It is not easy to decide the charge amount of refrigerant.

Qualification requirement for installation and maintenance man

- All the work men who are engaging in the refrigeration system should bear the valid certification awarded by the authoritative organization and the qualification for dealing with the refrigeration system recognized by this industry. If it needs other technician to maintain and repair the appliance, they should be supervised by the person who bears the qualification for using the mildly flammable refrigerant.
- It can only be repaired by the method suggested by the equipment's manufacturer.

Installation notes

- The air conditioner is not allowed to use in a room that has running fire (such as fire source, working coal gas ware, operating heater).
- It is not allowed to drill hole or burn the connection pipe.
- The air conditioner must be installed in a room that is larger than the minimum room area. The minimum room area is shown on the nameplate or following table a.
- Leak test is a must after installation.

table a- Minimum room area (m²)

	Charge amount (kg)	floor location	window mounted	wall mounted	ceiling mounted
Minimum room area(m ²)	≤1.2	/	/	/	/
	1.3	14.5	5.2	1.6	2.6
	1.4	16.8	6.1	1.9	2.8
	1.5	19.3	7	2.1	3
	1.6	22	7.9	2.4	3.2
	1.7	24.8	8.9	2.8	3.4
	1.8	27.8	10	3.1	3.6
	1.9	31	11.2	3.4	3.8
	2.0	34.3	12.4	3.8	4
	2.1	37.8	13.6	4.2	4.2
	2.2	41.5	15	4.6	4.4
	2.3	45.4	16.3	5	4.6
	2.4	49.4	17.8	5.5	4.8
	2.5	53.6	19.3	6	5
	2.6	58.1	20.9	6.5	5.2
	2.7	62.6	22.6	7	5.4
	2.8	67.4	24.3	7.5	5.6
	2.9	72.3	26	8.1	5.8
	3.0	77.3	27.9	8.6	6
	3.1	82.6	29.8	9.2	6.2
3.2	88	31.7	9.8	6.6	
3.3	93.6	33.7	10.4	7	
3.4	99.3	35.8	11.1	7.4	
3.5	105.2	37.9	11.7	7.9	
3.6	111.3	40.1	12.4	8.3	
3.7	117.6	42.4	13.1	8.8	
3.8	124	44.7	13.8	9.3	
3.9	130.7	47.1	14.6	9.8	
4.0	137.4	49.5	15.3	10.3	

Maintenance notes

- Check whether the maintenance area or the room area meet the requirement of the nameplate.
 - It's only allowed to be operated in the rooms that meet the requirement of the nameplate.
- Check whether the maintenance area is well-ventilated.
 - The continuous ventilation status should be kept during the operation process.
- Check whether there is fire source or potential fire source in the maintenance area.
 - The naked flame is prohibited in the maintenance area; and the "no smoking" warning board should be hanged.
- Check whether the appliance mark is in good condition.
 - Replace the vague or damaged warning mark.

Welding

- If you should cut or weld the refrigerant system pipes in the process of maintaining, please follow the steps as below:
 - a. Shut down the unit and cut power supply
 - b. Eliminate the refrigerant
 - c. Vacuuming
 - d. Clean it with N₂ gas
 - e. Cutting or welding
 - f. Carry back to the service spot for welding

- The refrigerant should be recycled into the specialized storage tank.
- Make sure that there isn't any naked flame near the outlet of the vacuum pump and it's well-ventilated.

Filling the refrigerant

- Use the refrigerant filling appliances specialized for R32. Make sure that different kinds of refrigerant won't contaminate with each other.
- The refrigerant tank should be kept upright at the time of filling refrigerant.
- Stick the label on the system after filling is finished (or haven't finished).
- Don't overfilling.
- After filling is finished, please do the leakage detection before test running; another time of leak detection should be done when it's removed.

Safety instructions for transportation and storage

- Please use the mildly flammable gas detector to check before unload and open the container.
- No fire source and smoking.
- According to the local rules and laws.

- The following checks shall be applied to installations using mildly flammable refrigerants:
 - the charge size is in accordance with the room size within which the refrigerant containing parts are installed;
 - the ventilation machinery and outlets are operating adequately and are not obstructed;
 - if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
 - marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
 - refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.
- Initial safety checks shall include:
 - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
 - that no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - that there is continuity of earth bonding.
- Checks to the area

Prior to beginning work on systems containing mildly flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, DD.4.3 to DD.4.7 shall be completed 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 mildly 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 toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable 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.
- 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.
- Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using mildly flammable refrigerants:

 - the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;
 - the ventilation machinery and outlets are operating adequately and are not obstructed;
 - if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;
 - marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
 - refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components

are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

- Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

- 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.

- Repairs to sealed components

During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals,

incorrect fitting of glands, etc.

- Ensure that the apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE: The use of silicon sealant can inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

- Repair to intrinsically safe components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

- Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

- Leak detection methods

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.

- Detection of mildly flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of mildly flammable refrigerants, the sensitivity may not be adequate, or may need recalibration. (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 also 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.

NOTE: Examples of leak detection fluids are

- bubble method,
- fluorescent method agents.

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. Removal of refrigerant shall be according to clause DD.9.

• Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose - conventional procedures shall be used. However, for mildly flammable refrigerants 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 with inert gas;
- open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing mildly flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for mildly flammable refrigerants.

This process may need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing mildly flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen 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 oxygen-free nitrogen 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 potential ignition sources and that ventilation is available.

• 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 in an appropriate position according to the instructions.

- Ensure that the refrigerating 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 refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. 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.

• 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 recovered 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 refrigerating 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. For appliances containing mildly flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains mildly 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 is 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 all appropriate refrigerants including, when applicable, mildly 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 mildly 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.

- **General**

That the installation of pipe-work shall be kept to a minimum.

That compliance with national gas regulations shall be observed.

That mechanical connections made in accordance with 22.118 shall be accessible for maintenance purposes.

根據公司不斷改進產品的政策，本設備的美學和尺寸特性、技術數據和附件如有更改，恕不另行通知。

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本手冊中的產品可能與真品不同，根據型號不同，有些型號有顯示幕，有些型號沒有顯示幕，顯示幕的位置和形狀請以真品為準。

本設備不適合身體、感官或精神能力有缺陷或缺乏經驗和知識的人（包括兒童）使用，除非負責其安全的人員對他們使用本設備進行監督或指導。應監督兒童以確保他們不會玩耍本產品。

如需安裝、移動或維護冷氣機，請先聯繫經銷商或當地服務中心進行。冷氣機必須由指定部門安裝、移動或維護。否則，可能會導致嚴重損壞或人身傷害或死亡。

當製冷劑在安裝、維護或拆卸過程中洩漏或需要排放時，應由經過認證的專業人員處理或遵守當地法律法規。



表示危險情況，如果不避免，將導致死亡或重傷。



表示危險情況，如果不避免，可能會導致死亡或重傷。



表示危險情況，如果不避免，可能會導致輕微或中度傷害。

注意

表示重要但與危險無關的資訊，用於表示財產損失風險。



表示將分配訊號詞警告或小心的危險。

當因以下原因造成人身傷害或財產損失時，製造商不承擔任何責任。

1. 因產品使用不當或誤用而損壞產品；
2. 不遵守製造商的使用說明書，變改、更改、維護或將產品與其他設備一起使用；
3. 經驗證，產品的缺陷是腐蝕性氣體直接引起的；
4. 經核實，缺陷是由於產品運輸過程中操作不當造成的；
5. 在不遵守使用說明書或相關規定的情況下操作、修理、維護設備；
6. 經核實，問題或爭議是由其他製造商生產的零部件的品質規格或效能引起的；
7. 損壞是由於自然災害、惡劣的使用環境或不可抗力造成的。



請在操作設備前仔細閱讀本用戶手冊，並妥善保管以備查閱。



只能按照本手冊中的說明使用冷氣機。這些說明並非旨在涵蓋所有可能的條件和情況。因此，與任何家用電器一樣，在安裝、操作和維護時，始終建議遵循常識並小心。

操作設備前請仔細閱讀本操作手冊。



充滿輕度易燃氣體 R32 的設備。



使用設備前，請先閱讀用戶手冊。



在安裝設備之前，請先閱讀安裝手冊。



在維修設備之前，請先閱讀服務手冊。

本手冊中的圖形可能與實物有所不同，請參考實物。

● 製冷劑

- 一種特殊的製冷劑在系統中循環，以實現冷氣機機組的功能。使用的製冷劑是經過專門清潔的 R32。

製冷劑輕度易燃且無臭。此外，在某些條件下還可能導致爆炸。但製冷劑的可燃性很低。它只能被火點燃。

- 與普通製冷劑相比，R32 是一種無污染製冷劑，對臭氧層無害。對溫室效應的影響也較小。R32 具有非常好的熱力學特性，可實現非常高的能源效率。因此，這些機組需要較少的充注。

警告：

請勿使用製造商推薦以外的方法來加速除霜過程或清潔。如果需要維修，請聯繫離您最近的授權服務中心。

由不合格的人員進行的任何維修都可能存在危險。

設備應存放在沒有連續運行火源的房間內。（例如：明火、正在運行的燃氣器具或正在運行的電加熱器。）

請勿刺穿或灼燒。

該設備使用輕度易燃製冷劑 R32，並經過測試符合 IEC 60335-2-40。

充滿輕度易燃氣體 R32 的設備。維修時，請嚴格遵循製造商的說明。

請注意，製冷劑可能不含異味。

閱讀專家手冊。





操作和維護

- 本設備可供 8 歲及以上的兒童以及身體、感官或精神能力有缺陷或缺乏經驗和知識的人使用，前提是他們已接受有關以安全方式使用本設備的監督或指導並瞭解所涉及的危險。
- 兒童不得玩耍本設備。
- 兒童不得在沒有監督的情況下進行清潔和用戶維護。
- 切勿將冷氣機接駁至多用途插座。否則，可能會引起火災危險。
- 清潔冷氣機時請斷開電源。否則可能會導致觸電。
- 如果電源線損壞，必須由製造商、其服務代理或類似的合格人員更換，以避免發生危險。
- 請勿用水清洗冷氣機，以免觸電。
- 請勿在室內機上噴水。可能會導致觸電或故障。
- 取下過濾器后，請勿觸摸翅片，以免受傷。
- 請勿使用火或風筒吹乾過濾器，以免變形或火災危險。
- 維護必須由合格的專業人員進行。否則，可能會導致人身傷害或損壞。
- 不要自行修理冷氣機。可能會導致觸電或損壞。當您需要修理冷氣機時，請聯繫經銷商。
- 請勿將手指或物體伸入進風口或出風口。可能會導致人身傷害或損害。
- 不要堵塞出風口或進風口。可能會導致故障。
- 請勿將水灑在遙控器上，否則可能會損壞遙控器。
- 當出現以下現象時，請立即關閉冷氣機並斷開電源，然後聯繫經銷商或合格的專業人員進行維修。
 - 電源線過熱或損壞。
 - 操作過程中有異常聲音。
 - 斷路器經常跳閘。
 - 冷氣機散發出燒焦的氣味。
 - 室內機漏水。



- 如果冷氣機在異常情況下運行，可能會導致故障、觸電或火災危險。
- 透過緊急操作開關打開或關閉本機時，請用金屬以外的絕緣物體按下此開關。
- 請勿踩踏室外機的頂板或放置重物。可能會導致損壞或人身傷害。

附件

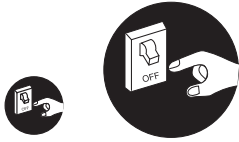
- 安裝必須由合格的專業人員進行。否則，可能會導致人身傷害或損壞。
- 安裝本機時必須遵守電氣安全規定。
- 根據當地安全規例，使用合格的電源電路和斷路器。
- 確保安裝斷路器。否則，可能會導致故障。
- 應在固定接線中連接一個全極斷路開關，該開關的所有極的接點間距至少為 3mm。
- 包括具有合適容量的斷路器，請注意下表。空氣開關應包括磁脫扣和熱脫扣功能，它可以保護電路短路和過載。
- 冷氣機應正確接地。不正確的接地可能會導致觸電。
- 不要使用不合格的電源線。
- 確保電源與冷氣機的要求相匹配。不穩定的電源或接線錯誤可能會導致觸電、火災危險或故障。使用冷氣機前請安裝合適的電源線。
- 正確連接電源插座的火線、零線和接地線。
- 在進行任何與電力和安全相關的工作之前，請務必切斷電源。
- 安裝完成前請勿通電。
- 如果電源線損壞，必須由製造商、其服務代理或類似的合格人員更換，以避免發生危險。
- 製冷劑迴路溫度會很高，請將互連電線遠離銅管。
- 設備應按照政府佈線規定進行安裝。
- 安裝必須由授權人員按照 NEC 和 CEC 的要求進行。



- 冷氣機是第一類電器。必須由專業人員使用專門的接地裝置正確接地。請確保始終有效接地，否則可能導致觸電。
- 冷氣機中的黃綠線是接地線，不能用於其他用途。
- 接地電阻應符合政府電氣安全規定。
- 設備的位置必須使插頭易於觸及。
- 室內機和室外機的所有電線均應由專業人員連接。
- 如果電源連接線的長度不足，請聯繫供應商更換新的。避免自行延長電線。
- 對於帶插頭的冷氣機，安裝完成後插頭應可觸及。
- 對於不帶插頭的冷氣機，必須在線路上安裝斷路器。
- 如果您需要將冷氣機搬遷到另一個地方，只有合格的人員才能執行這項工作。否則，可能會導致人身傷害或損壞。
- 請選擇兒童接觸不到且遠離動物或植物的位置。如果不可避免，請為安全起見加設圍欄。
- 室內機應靠近牆壁安裝。

警告

★ 當有燃燒的氣味或煙霧時，請關閉電源並與服務中心聯繫。



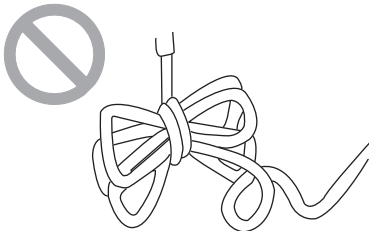
如果異常仍然存在，則可能會損壞本機，並可能導致觸電或火災。

★ 電源必須採用具有空氣開關保護的特殊電路，並確保其有足夠的容量。本機將根據您的要求自動開啟或關閉，請勿頻繁開啟或關閉本機，否則可能會對本機造成不利影響。

★ 切勿切斷或損壞電源線和控制線。如果電源線和訊號控制線損壞，請專業人員更換。



★ 電源必須採用專用電路，防止火災。



否則，可能會導致觸電或火災。

★ 如果長時間停止使用冷氣機，請斷開電源。



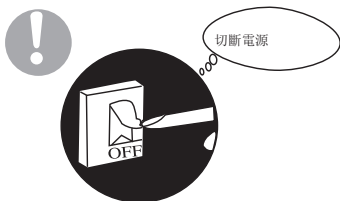
否則，積聚的灰塵可能會導致過熱或火災。

★ 切勿損壞電線或使用未指定的電線。



否則會導致過熱或火災。

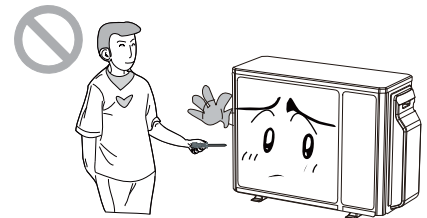
★ 清潔時，必須停止操作並關閉電源。



否則，可能會導致觸電或損壞。

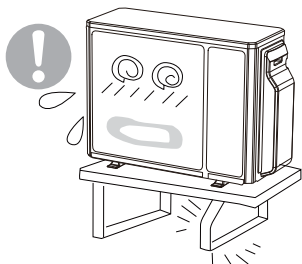
★ 該冷氣機的額定電壓 220V, 50Hz，如果電壓過低，壓縮機會急劇振動。這會傷害製冷系統。如果電壓過高，很容易損壞電氣元件。

★ 不要嘗試自己修理冷氣機。



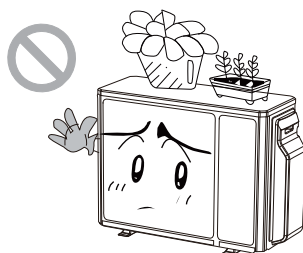
錯誤的維修會導致觸電或火災，因此您應該聯繫服務中心進行維修。

★ 請注意安裝的支架是否足夠堅固。



如果損壞，可能會導致設備掉落並造成傷害。

★ 請勿踩踏室外機的頂部或在其上放置物品。



因為從室外機上掉下來可能很危險。

★ 接地：設備必須可靠接地。接地電線應連接到施工中的專用接地裝置。

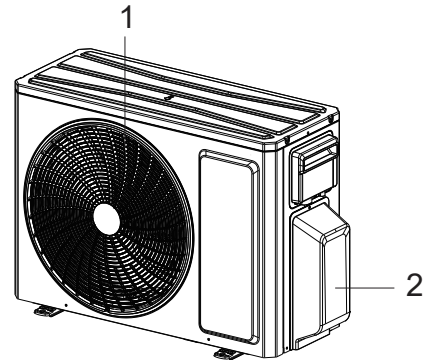


警告

- 清潔冷氣機前請務必切斷電源;否則可能會發生觸電。
- 弄濕冷氣機可能會導致觸電危險。確保在任何情況下都不要清洗冷氣機。
- 稀釋劑或汽油等揮發性液體會對冷氣機的外觀造成損害。(只能使用柔軟的乾布濕布清潔冷氣機櫃)。
- 本產品不得與生活垃圾一起處理。
本產品必須在授權的電氣和電子設備回收地點進行丟棄。
- 製冷劑迴路溫度會很高,請將互連電線遠離銅管。

室外機	
編號	說明
1	出風口格柵
2	閥門

提示: 以上圖形僅用於設備的簡圖,可能與已購買設備的外觀不符。



室外機工作溫度範圍

	室內側 DB/WB (°C)	室外側 DB/WB (°C)
最大製冷效果	32/23	43/26

- 僅冷卻裝置的工作溫度範圍(室外溫度)為 18°C ~43°C。

AU-XM18CCA

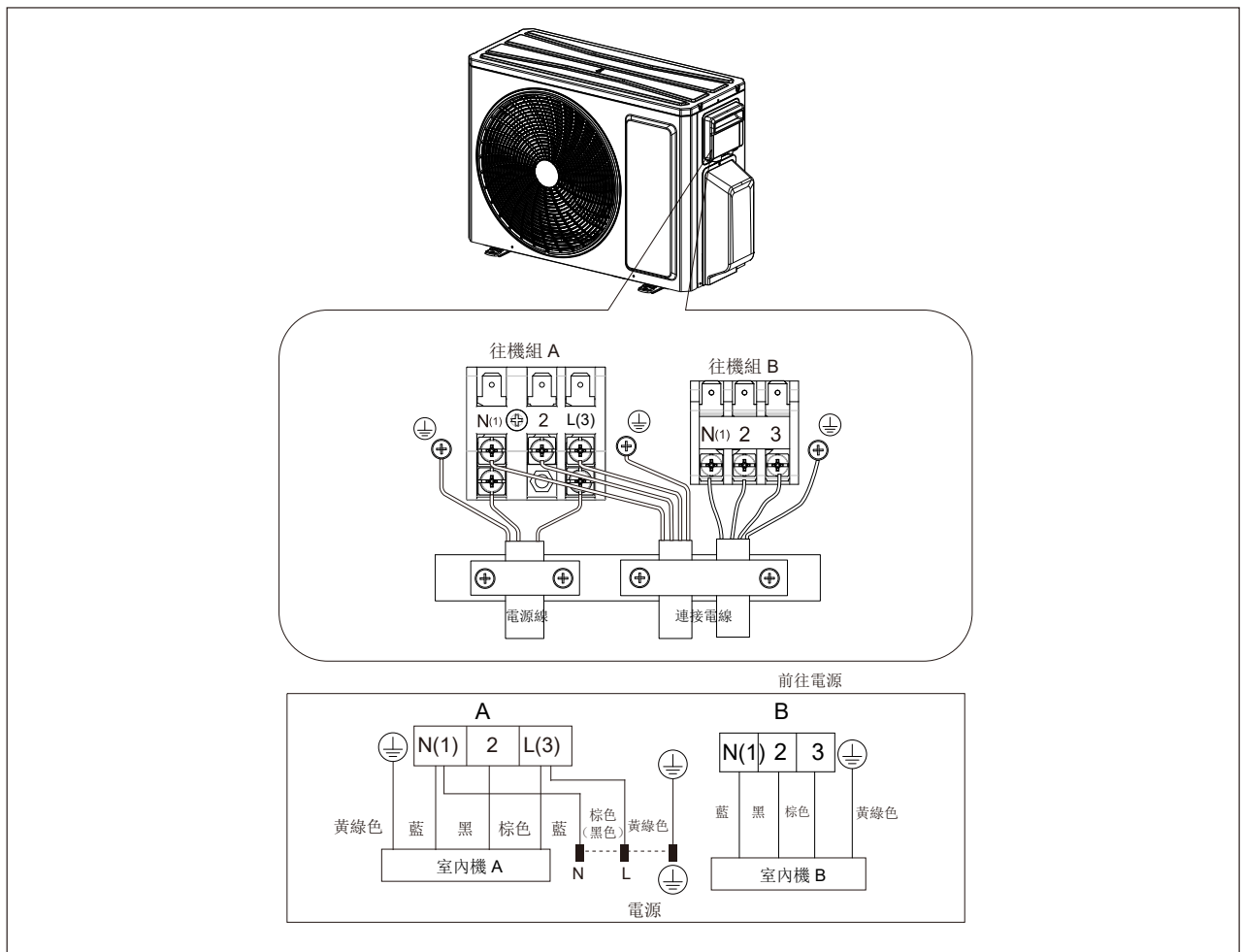
1. 拆下室外機右側板的手柄（一顆螺絲）。
2. 取下線夾，將電源連接線與接線排的端子連接並固定連接。管路分佈必須與室內機線槽末端一致。布線應吻合室內機。
3. 用線夾固定電源連接線。
4. 確保電線固定好。
5. 安裝手柄。

! 包括具有合適容量的空氣開關，請注意下表。空氣開關應包括磁脫扣和熱脫扣功能，它可以保護電路短路和過載。
（小心：請不要僅將保險絲用於保護電路）

冷氣機	空氣開關容量
AU-XM18CCA	16A

- !** 所有極觸點間隔至少為 3mm 的全極隔離開關應採用固定接線連接。
- !** 錯誤的電線連接可能會導致某些電氣元件發生故障。固定電線后，確保連接到固定點之間的引線有一定的空間。
- !** 機組 A、機組 B 的连接管和连接線必須彼此對應。
- !** 設備應按照政府佈線規定進行安裝。

注意：以上圖形僅作為設備的簡圖，可能與已購買設備的外觀不符。



處理

用戶

- !** 取出包裝后，檢查內容物是否完整。
- !** 搬運必須由配備適當、合格的技术人員使用適合設備重量的裝置進行。
- !** 室外機必須始終保持直立。

位置

⚠ 使用螺栓將設備固定到平坦、堅固的地板上。將裝置安裝在牆壁或屋頂上時，請確保支架牢固固定，使其在強烈振動或強風的情況下不會被晃動。

⚠ 請勿將室外機安裝在坑或通風口中

安裝管道

⚠ 使用適合製冷劑 R32 的連接管和設備。

⚠ 免追加製冷劑管道長度	10m
最大管道長度（一個室內機）	20m
最大管道長度（兩個室內機）	40m
額外的製冷劑	20g/m
管道最大高度距離（內機與內機）	15m
管道最大高度距離 （內機與外機且內機在上）	15m
連接管最大落差 （內機與外機且外機在上）	15m

⚠ 製冷劑管的最大高度不得超過 15 m。

⚠ 包裹所有製冷劑管道和接頭。

⚠ 使用兩個相反方向工作的士巴拿擰緊連接。

小心： 安裝必須由授權人員按照 NEC/CEC 進行。

可連接的室內機組合

室內機容量代碼之和應在室外機容量代碼之和的 50%-150% 之間。

端口	端口大小		可連接室內			
	A	液體管	1/4" (ø 6.35 mm)	12K	9K	12K
氣體管		3/8" (ø 9.52 mm)				
B	液體管	1/4" (ø 6.35 mm)	12K	12K	9K	9K
	氣體管	3/8" (ø 9.52 mm)				

注意：請務必安裝 2 個室內機。

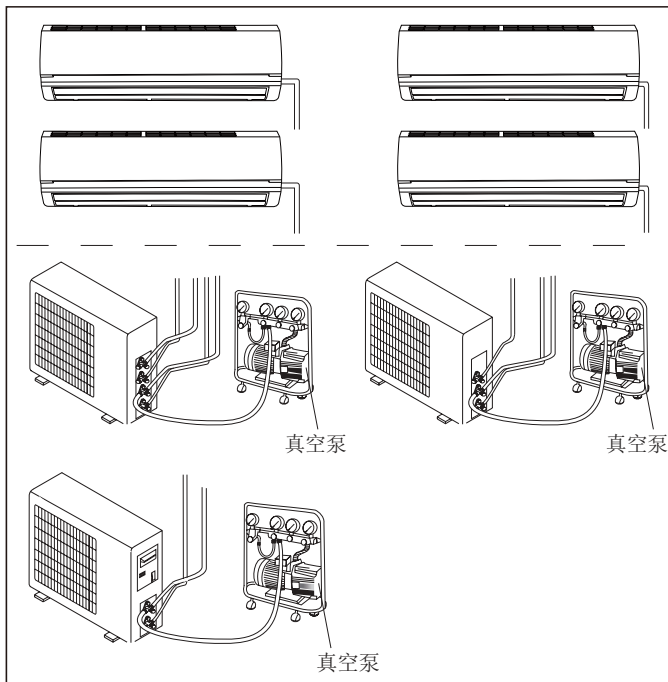
排氣

安裝

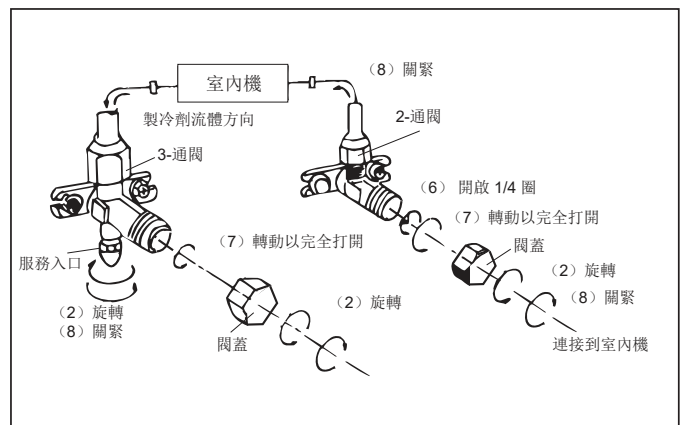
留在製冷劑迴路內的潮濕空氣會導致壓縮機故障。連接室內機和室外機后，使用真空泵從製冷劑迴路中排出空氣和濕氣。

- (1) 擰下並取下 2-通和 3-通閥門的蓋子。
- (2) 擰下檢修閥的蓋子並取下。
- (3) 將真空泵軟管连接到維修閥。
- (4) 運行真空泵 10-15 分鐘，直到達到 10 mm Hg 絕對真空。

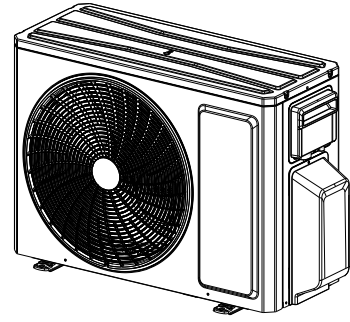
- (5) 在真空泵仍在運行的情況下，關閉真空泵聯軸器上的低壓旋鈕。停止真空泵。
- (6) 將 2-通閥門打開 1/4 圈，然後在 10 秒後關閉。使用液體肥皂或電子洩漏裝置檢查所有接頭是否洩漏。
- (7) 轉動 2-通和 3-通閥的主體。斷開真空泵軟管。
- (8) 裝回並擰緊閥門上的所有蓋子。



直徑 (mm)	扭力矩 (N.m)
1/4"	15-20
3/8"	35-40
1/2"	45-50
5/8"	60-65
3/4"	70-75

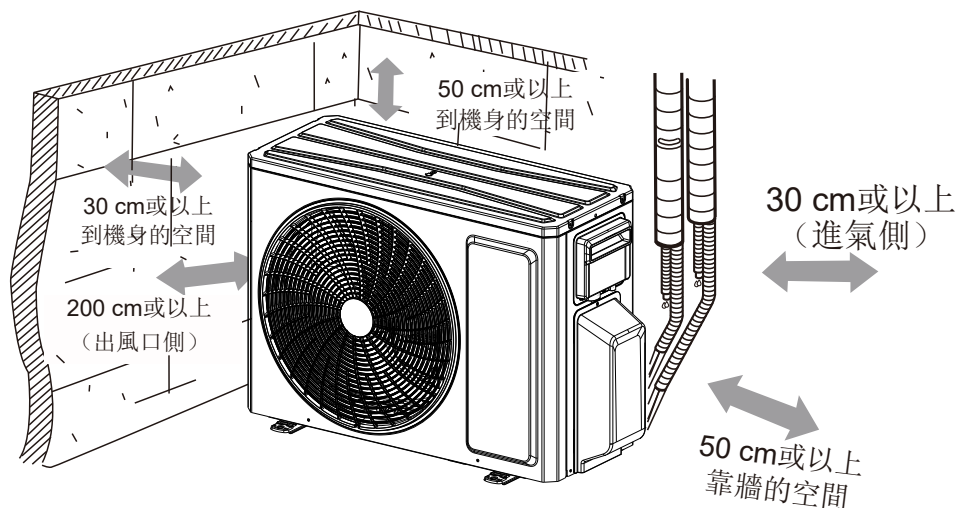


- ⚠ 使用適合製冷劑 R32 的儀器。
- ⚠ 請勿使用 R32 以外的任何其他製冷劑。
- ⚠ 請勿使用礦物油清潔設備。



安裝尺寸圖

- ⚠ 安裝必須由經過培訓且可靠的合格維修人員根據本手冊進行。
- ⚠ 安裝前請聯繫服務中心，以免因安裝不專業而發生故障。
- ⚠ 搬運和移動設備時，您必須由經過培訓的合格人員指導。
- ⚠ 確保在設備周圍留出建議的空間。

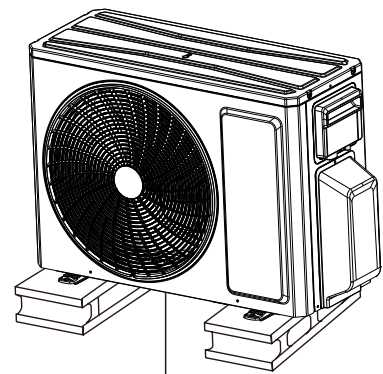


固定室外機支架（根據實際安裝情況選擇）

1. 根據房屋結構選擇安裝位置。
2. 用膨脹螺釘將室外機的支架固定在選定位置。

注意：

- 安裝室外機時請採取足夠的保護措施。
- 確保支架至少可以承受機組重量的四倍。
- 室外機應安裝在離地面至少 3 cm 處，以便安裝排水接頭。（對於帶加熱管的型號，安裝高度應不小於 20cm。）
- 對於製冷量為 2300W ~ 5000W 的機組，需要 6 個膨脹螺絲；對於製冷量為 6000W ~ 8000W 的機組，需要 8 個膨脹螺絲；對於製冷量為 10000W ~ 16000W 的機組，需要 10 個膨脹螺釘。
- 關於排水接頭的形狀，請參考當前產品。不要在嚴寒地區安裝排水接頭。否則，它會結霜，然後導致故障。



至少離地面3公分

檢查項	由於安裝不當而導致的問題
此安裝可靠嗎？	此機組可能會掉落、振動或發出噪音
是否檢查了氣體洩漏？	可能導致冷卻（加熱）效果不滿意
機組的隔熱性是否足夠？	可能導致冷凝和水滴落
排水順暢嗎？	可能導致冷凝和水滴落
電源電壓是否與銘牌上指定的額定電壓一致？	設備可能會磨損或元件可能燒壞
線路和管道是否安裝正確？	設備可能會磨損或元件可能燒壞
設備是否已安全接地？	漏電風險
線路型號是否符合要求？	設備可能會磨損或元件可能燒壞
室內機和室外機的進風口和出風口附近是否有障礙物？	設備可能會磨損或元件可能燒壞
是否已記錄製冷管的長度和製冷劑充注量？	決定製冷劑的充注量並不容易。

安裝維修員資格要求

- 凡從事製冷系統的工人，應持有權威機構頒發的有效合格證和本行業認可的經營製冷系統的資格。如果需要其他技術人員對設備進行維護和維修，應由具有輕度易燃製冷劑使用資格的人員監督。
- 它只能透過設備製造商建議的方法進行修復。

安裝說明

- 冷氣機不得在有火源（如火源、工作煤氣裝置、運行加熱器）的空間內使用。
- 不允許鑽孔或燃燒連接管。
- 冷氣機必須安裝在大於最小空間面積的房間內。最小空間面積顯示在銘牌或下表 a 上。
- 安裝後必須進行洩漏測試。
- 如果沒有額外充注製冷劑，則沒有最小空間面積要求。

表 a- 最小空間面積 (m²)

最小空間面積 (m ²)	充注量 (kg)	樓層位置	窗式	壁掛式	天花板式
		≤1.2	/	/	/
	1.3	14.5	5.2	1.6	2.6
	1.4	16.8	6.1	1.9	2.8
	1.5	19.3	7	2.1	3
	1.6	22	7.9	2.4	3.2
	1.7	24.8	8.9	2.8	3.4
	1.8	27.8	10	3.1	3.6
	1.9	31	11.2	3.4	3.8
	2.0	34.3	12.4	3.8	4
	2.1	37.8	13.6	4.2	4.2
	2.2	41.5	15	4.6	4.4
	2.3	45.4	16.3	5	4.6
	2.4	49.4	17.8	5.5	4.8
	2.5	53.6	19.3	6	5
	2.6	58.1	20.9	6.5	5.2
	2.7	62.6	22.6	7	5.4
	2.8	67.4	24.3	7.5	5.6
	2.9	72.3	26	8.1	5.8
	3.0	77.3	27.9	8.6	6
	3.1	82.6	29.8	9.2	6.2
	3.2	88	31.7	9.8	6.6
	3.3	93.6	33.7	10.4	7
	3.4	99.3	35.8	11.1	7.4
	3.5	105.2	37.9	11.7	7.9
	3.6	111.3	40.1	12.4	8.3
	3.7	117.6	42.4	13.1	8.8
	3.8	124	44.7	13.8	9.3
	3.9	130.7	47.1	14.6	9.8
	4.0	137.4	49.5	15.3	10.3

維護說明

- 檢查維護區或房間區是否符合銘牌的要求。
 - 它只允許在符合銘牌要求的空間內操作。
- 檢查維修區是否通風良好。
 - 在操作過程中應保持持續通風狀態。
- 檢查維修區域是否有火源或潛在的火源。
 - 維護區域禁止明火;並應懸掛禁止吸煙警告牌。
- 檢查設備標記是否狀況良好。
 - 更換模糊或損壞的警告標記。

焊接

- 如果您在維護過程中需要切割或焊接製冷劑系統管道，請按照以下步驟作：
 - a. 關閉設備並切斷電源
 - b. 清除製冷劑
 - c. 抽真空
 - d. 用 N₂ 氣體清潔
 - e. 切割或焊接
 - f. 帶回維修地點進行焊接

- 製冷劑應回收到專用儲罐中。
- 確保真空泵出口附近沒有任何明火，並且通風良好。

加注製冷劑

- 使用專用於 R32 的製冷劑充注設備。確保不同種類的製冷劑不會相互污染。
- 加注製冷劑時，製冷劑罐應保持直立。
- 充注完成（或尚未完成）后將標籤貼在系統上。
- 不可過充。
- 充注完畢後，試運轉前請進行洩漏檢測；拆除後應再進行一次洩漏檢測。

運輸和儲存安全說明

- 請在卸貨和打開集裝箱前使用輕度易燃氣體探測器進行檢查。
- 禁止火源和吸煙。
- 遵守當地規例和法律。

- 以下檢查適用於使用輕度易燃製冷劑的裝置：
 - 充注量與安裝含有製冷劑部件的房間大小一致；
 - 通風機械和出口運行良好且未受阻塞；
 - 如果使用間接製冷迴路，應檢查二次迴路是否存在製冷劑；
 - 設備上的標記仍然清晰可見。難以辨認的標記和標誌應予以更正；
 - 製冷管或元件安裝在不太可能暴露於任何可能腐蝕含製冷劑元件的物質的位置，除非這些元件是由本身耐腐蝕或受到適當保護以防止腐蝕的材料製成的。
- 電氣元件的維修和保養應包括初始安全檢查和元件檢查程序。如果存在可能危及安全的故障，則在得到令人滿意的處理之前，不得將電源連接到電路。如果不能立即糾正故障但需要繼續運行，則應使用適當的臨時解決方案。這應報告給設備擁有者，以便通知各方。
- 初步安全檢查應包括：
 - 電容器放電：這應以安全的方式進行，以避免產生火花的可能性；
 - 在系統充注、恢復或吹掃系統時，不會暴露帶電的電氣元件和電線；
 - 接地的連續性。
- 檢查區域
在開始對含有輕度易燃製冷劑的系統進行工作之前，有必要進行安全檢查，以確保將着火風險降至最低。對於製冷系統的維修，應在對系統進行工作之前完成DD.4.3至DD.4.7。
- 工作流程
工作應在受控程序下進行，以盡量減少在執行工作時存在輕度易燃氣體或蒸氣的風險。
- 一般工作區域

所有維護人員和在當地工作的其他人員都應接受有關所執行工作性質的指導。應避免在密閉空間內工作。

- 檢查是否存在製冷劑

在工作之前和工作期間，應使用適當的製冷劑探測器檢查該區域，以確保技術人員了解潛在的有毒或易燃環境。確保所使用的洩漏檢測設備適合與所有適用的製冷劑一起使用，即無火花、充分密封或本質安全。

- 有滅火器

如果要對製冷設備或任何相關部件進行任何動火作業，應準備好適當的滅火設備。在充注區域附近放置乾粉或CO₂滅火器。

- 通風區域

在進入系統或進行任何高溫作業之前，請確保該區域處於空曠狀態或通風良好。在工作進行期間，應持續一定程度的通風。通風應安全地分散任何釋放的製冷劑，最好將其從外部排放到大氣中。

- 檢查製冷設備

在更換電氣元件時，它們應適合用途並符合正確的規格。應始終遵循製造商的維護和服務指南。如有疑問，請諮詢製造商的技術部門尋求說明。

以下檢查適用於使用輕度易燃製冷劑的裝置：

- 實際製冷劑充注量與安裝含製冷劑部件的空間大小一致；
- 通風機械及出風口運作良好，沒有阻塞；
- 如果使用間接製冷迴路，應檢查二次迴路中是否存在製冷劑；
- 設備上的標記仍然清晰可見。難以辨認的標記和標誌應予以更正；
- 製冷管或元件安裝在不太可能暴露於任何可能腐蝕含製冷劑元件的物質的位置，除非這些元件是由本身耐腐蝕或受到適當保護以防止腐蝕的材料製成的。

• 檢查電氣設備

電氣元件的維修和保養應包括初始安全檢查和元件檢查程序。如果存在可能危及安全的故障，則在得到令人滿意的處理之前，不得將電源連接到電路。如果不能立即糾正故障但需要繼續運行，則應使用適當的臨時解決方案。這應報告給設備擁有者，以便通知各方。

初步安全檢查應包括：

- 電容器已放電：應以安全的方式進行，以避免產生火花的可能性；
- 在為系統充注、恢復或吹掃系統時，不會有帶電的電氣元件和電線暴露在外；
- 接地是連續的。

• 無火源

任何人在進行與製冷系統有關的工作時，如涉及暴露任何管道工程，則不得以可能導致火災或爆炸危險的方式使用任何火源。所有可能的火源，包括吸煙，都應遠離安裝、維修、拆除和處置的地點，在此期間製冷劑可能會釋放到周圍空間。在開始工作之前，應調查設備周圍的區域，以確保沒有易燃危險或着火風險。應張貼“禁止吸煙”標誌。

• 修復密封元件

在維修密封元件期間，在拆除密封蓋等之前，應斷開所有電源與正在維修的設備的連接。如果在維修期間絕對需要為設備供電，則應在最關鍵的點放置永久運行的洩漏檢測裝置，以警告潛在的危險情況。應特別注意以下事項，以確保在電氣元件上工作時，外殼不會發生變化，從而影響保護水準。這包括電纜損壞、連接數量過多、端子未按原始規格製造、密封件損壞、密封套安裝不正確等。

- 確保設備安裝牢固。
- 確保密封件或密封材料沒有老化到不再能起到防止易燃氣體進入的作用。更換零件應符合製造商的規格。

提示：使用矽密封膠會抑制某些類型的洩漏檢測設備的有效性。本質安全元件在處理之前不必隔離。

• 修復本質安全元件

不要在電路上施加任何永久性的電感或電容負載，除非確保這不會超過所用設備允許的允許電壓和電流。

本質安全元件是唯一可以在易燃環境中工作的類型。測試設備應處於正確的額定值。

僅將零部件更換為製造商指定的零件。其他部件可能會因洩漏而點燃大氣中的製冷劑。

• 佈線

檢查布線不會受到磨損、腐蝕、過壓、振動、夏普邊緣或任何其他不利環境影響。檢查還應考慮壓縮機或風扇等來源的老化或持續振動的影響。

• 洩漏檢測方法

檢漏液適用於大多數製冷劑，但應避免使用含氯清潔劑，因為氯可能會與製冷劑發生反應並腐蝕銅管。

• 檢測輕度易燃製冷劑

在任何情況下，均不得使用潛在的點火源來搜索或檢測製冷劑洩漏。不得使用鹵化物焊炬（或任何其他使用明火的探測器）。

以下洩漏檢測方法適用於所有製冷劑系統。

電子檢漏儀可用於檢測製冷劑洩漏，但在輕度易燃製冷劑的情況下，靈敏度可能不夠，或者可能需要重新校準。（檢測設備應在無製冷劑區域校準。確保探測器不是潛在的點火源，並且適合所使用的製冷劑。洩漏檢測設備應設定為製冷劑 *LFL* 的百分比，並應根據所使用的製冷劑進行校準，並確認適當的氣體百分比（最大 25%）。

檢漏液也適用於大多數製冷劑，但應避免使用含氯的清潔劑，因為氯可能會與製冷劑發生反應並腐蝕銅管。

提示：檢漏液的示例包括

- 氣泡法，
- 螢光法試劑。

如果懷疑有洩漏，應重新移動/熄滅所有明火。

如果發現製冷劑洩漏需要釵焊，則應從系統中回收所有製冷劑，或（透過截止閥）隔離在系統遠離洩漏的部分。製冷劑的去除應根據第 DD.9 條進行。

• 移除和排空

當進入製冷劑迴路進行維修或出於任何其他目的時，應使用常規程序。然而，對於輕度易燃的製冷劑，重要的是要遵循最佳實踐，因為可燃性是一個考慮因素。應遵守以下程序：

- 去除製冷劑；
- 用惰性氣體吹掃迴路；
- 排空；
- 用惰性氣體吹掃；
- 透過切割或釵焊打開電路。

充注的製冷劑應回收到正確的回收鋼瓶中。對於含有輕度易燃製冷劑的設備，系統應使用無氧氮氣吹掃，以使設備對輕度易燃製冷劑安全。

此過程可能需要重複多次。不得使用壓縮空氣或氧氣吹掃製冷劑系統。

對於含有輕度易燃製冷劑的設備，應透過用無氧氮氣打破系統中的真空並繼續充注直到達到工作壓力，然後排放到大氣中，最後抽至真空來實現製冷劑吹掃。

應重複此過程，直到系統內沒有製冷劑。當使用最終的無氧氮氣充注時，系統應將排放至大氣壓，以便進行工作。如果要對管道進行釵焊操作，此操作絕對至關重要。

確保真空泵的出口不靠近任何潛在的點火源，並且通風良好。

• 充注程序

除常規充注程序外，還應遵循以下要求。

- 確保在使用充注設備時不會發生不同製冷劑的污染。軟管或管路應盡可能短，以盡量減少其中所含的製冷劑量。
- 氣瓶應按說明保持在適當的位置。
- 在向系統充注製冷劑之前，確保製冷系統接地。
- 充注完成後（如果尚未完成）為系統貼上標籤。
- 應格外小心，不要使製冷系統充得太滿。

在為系統加註之前，應使用適當的吹掃氣體對其進行壓力測試。系統應在充注完成時但在調試之前進行洩漏測試。在離開現場之前，應進行後續洩漏測試。

• 停用

在執行此程序之前，技術人員必須完全熟悉設備及其所有細節。建議安全回收所有製冷劑的良好做法。在執行任務之前，應採集油和製冷劑樣本，以便在重新使用回收的製冷劑之前進行分析。在任務開始之前，必須有電力可用。

- a) 熟悉設備及其操作。
- b) 電氣隔離系統。
- c) 在嘗試該程序之前，請確保：
 - 如果需要，可提供機械處理設備來處理製冷劑鋼瓶；
 - 所有個人防護設備均可用並得到正確使用；
 - 回收過程始終由合格人員監督；
 - 回收設備和氣瓶符合適當的標準。
- d) 如果可能，抽空製冷劑系統。
- e) 如果無法實現真空，請製作一個歧管，以便可以從系統各個部分去除製冷劑。

- f) 在進行回收之前，確保氣瓶位於秤上。
- g) 啟動恢復機並按照製造商的說明進行操作。
- h) 不要將氣瓶裝得太滿。（不超過 80% 體積的液體電荷）。
- i) 不要超過氣缸的最大工作壓力，即使是暫時的。
- j) 當氣瓶正確填充並完成過程後，確保及時將氣瓶和設備從現場移走，並關閉設備上的所有隔離閥。
- k) 除非經過清潔和檢查，否則不得將回收的製冷劑充入另一個製冷系統。

• 標籤

設備應貼上標籤，說明其已停用並清空製冷劑。標籤應註明日期並簽名。對於含有輕度易燃製冷劑的設備，請確保設備上有標籤，說明設備含有輕度易燃製冷劑。

• 回收

從系統中去除製冷劑時，無論是用於維修還是停用，建議安全去除所有製冷劑的良好做法。

將製冷劑輸送到鋼瓶中時，確保僅使用合適的製冷劑回收鋼瓶。確保有正確數量的氣瓶可用於容納系統總裝料。所有要使用的鋼瓶都指定用於回收的製冷劑，並貼有該製冷劑的標籤（即用於回收製冷劑的特殊鋼瓶）。氣瓶應配有泄壓閥和相關的截止閥，工作狀態良好。在回收之前，將空的回收鋼瓶抽空，並在可能的情況下進行製冷。

回收設備應處於良好的工作狀態，並附有一套關於手頭設備的說明，並應適用於回收所有適當的製冷劑，包括輕度易燃製冷劑（如適用）。此外，應提供一套經過校準的秤，並處於良好的工作狀態。軟管應配有無洩漏的斷開接頭，並且狀況良好。在使用回收機之前，請檢查它是否處於令

人滿意的工作狀態，是否得到適當的維護，以及任何相關的電氣元件是否密封，以防止在製冷劑釋放時着火。如有疑問，請諮詢製造商。

回收的製冷劑應裝在正確的回收鋼瓶中返回製冷劑供應商，並安排相關的廢物轉運單。不要在回收裝置中混合製冷劑，尤其是不要在鋼瓶中混合製冷劑。

如果要去除壓縮機或壓縮機油，請確保它們已排空到可接受的水準，以確保輕度易燃製冷劑不會殘留在潤滑劑中。

在將壓縮機退還給供應商之前，應進行抽真空過程。只能對壓縮機本體進行電加熱，以加速這一過程。當油從系統中排出時，應安全地進行。

• 常規

管道的安裝應保持在最低限度。

應遵守國家燃氣規例。

根據22.118進行的機械連接應便於維護。



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