GREE
Change for life

Owner's Manual

Original Instructions

Split Air Conditioner

INVERTER

Thank you for choosing our product.
Please read this Owner's Manual carefully before operation and retain it for future reference.
If you have lost the Owner's Manual, please contact the local agent or visit www.gree.com or send an email to global@gree.com.cn for the electronic version.

GWH09AKC-K6DNA1A/I
GWH12AKC-K6DNA1A/I
GWH18AKC-K6DNA1A/I

Content

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.

Frequency band(s) in which the radio equipment operates: 2400MHz-2483.5MHz
Maximum radio-frequency power transmitted in the frequency band(s) in which the radio equipment operates: 20dBm

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

R32: 675

Explanation of Symbols

⚠ 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.

Exception Clauses

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, defects are due to improper operation during transportation of product;

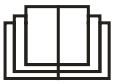
5.Operate, repair, maintain the unit without abiding by instruction manual or related regulations;

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.

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.

Appliance filled with 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 Refrigerant

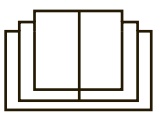
- To realize the function of the air conditioner unit, a special refrigerant circulates in the system. The used refrigerant is the fluoride R32, which is specially cleaned. The refrigerant is flammable and inodorous. Furthermore, it can leads to explosion under certain conditions. But the flammability 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.

Appliance shall be installed, operated and stored in a room with a floor area larger than X m^2. (Please refer to table "a" in section of " Safety operation of flammable refrigerant " for Space X.)

Appliance filled with flammable gas R32. For repairs, strictly follow manufacturer's instructions only. Be aware that refrigerants may not contain an odour. Read specialist's manual.



Precautions

WARNING

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.

Precautions

WARNING

- 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.

Precautions

WARNING

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.

Precautions

WARNING

- 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.

Precautions

WARNING

- 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.
- Instructions for installation and use of this product are provided by the manufacturer.

Working temperature range

	Indoor side DB/WB(℃)	Outdoor side DB/WB(℃)
Maximum cooling	32/23	52/31
Maximum heating	27/-	24/18

NOTICE:

- The operating temperature range (outdoor temperature) for Low-temperature cooling only unit is -15℃ ~ 52℃; for Low-temperature heat pump unit is -25℃ ~ 52℃.

Special function and specification

Anti-freezing function

When the unit is conducting cooling under low temperature, the surface of indoor heat exchanger will be frosted; when the temperature of indoor heat exchanger is decreased to below 0°C for a period of time, the outdoor unit will stop operation.

Defrosting function

When outdoor temperature is low and humidity is high, after operating for a period of time, the heat exchanger of outdoor unit will be defrosted, which will lower heating effect. At this time, the unit will start defrosting mode automatically.

1. During defrosting, there might be steam in outdoor unit. It is caused by quick defrosting and is normal.
2. After defrosting, heating mode will be resumed.

Anti cold air function

Under “Heating” mode, if indoor heat exchanger doesn’t reach certain temperature in the following 3 kinds of status, the indoor fan will not be started to prevent cold air from blowing (about 2 minutes):

1. Heating operation is just started;
2. After auto defrosting operation;
3. Heating under low temperature.

Waste heat blow function

When operating under heating mode or auto heating mode, shut down the unit if compressor and indoor fan is working, the compressor and outdoor fan will stop, air guide louver will be rotated to the horizontal location and indoor fan will be off after operating for a period of time in low speed.

Photosensitive function

When it is set “auto light” by remote controller, the air conditioner will automatically adjust the brightness of display and beeper according to the ambient light intensity. When the air conditioner detects the ambient light intensity is weak, it will automatically turn off the display, if it is operated by remote controller, the display will display in low brightness for a short time, and the beeper beeps slightly; when the air conditioner detects the ambient light intensity is strong for a period of time, the above mentioned control will be quitted.

Special function and specification

Detection of people sensing device

- Under cooling or heating mode, press “I Sense” button in the remote controller or use APP in mobile phone to enter into “I Sense air supply”, after setting I sense, follow, avoid, surround mode, people sensing device is automatically activated to detect. The air conditioner will automatically detect the body sense temperature and enter into comfortable temperature quickly. The air conditioner will automatically adjust the angle of guide louver and angle of air supply.
- After setting “absence energy-saving” via mobile APP, people sensing device will automatically turn on to detect, when it detects that there is no people in the room, the air conditioner will automatically operate at energy-saving mode.
- Under the following cases, people sensing device may have wrong detection, which belongs to normal phenomenon:
  1. People sensing device detects the location of people and then controls the air supply direction, there is certain time difference from detecting to changing the air direction (it cannot instantly detect the moving of people).
  2. Under the following cases may influence the detection of people sensing device and impact the actual using experience.
- The following situations may be detected as absence:
  ①Indoor temperature is higher than 30℃, or the temperature difference between the people and the environment is relatively small.
  ②When the people is immobile or barely move.
  ③When the people is having his back to the people sensing device.
  ④When the people exposes very few skin to the air.
  ⑤When the people is shielded by a higher furniture.
  ⑥When the people covers with thick quilt or wears thick clothes, the device is not able to detect.
  ⑦When the indoor unit cannot detect the people below or in the side of indoor unit.
- Under the following cases the device may detect that there is people in the room:
  ①During the operation when it turns on or switches mode, the room temperature is not stable and temperature difference is relatively large in a short time.
  ②There are lamp, TV, computer, pet or related heating elements in the room.
  ③The door or window is not well closed, and heating or high-temperature objects can be detected through the door or window.

Special function and specification

Auto clean function of indoor heat exchanger

Realize auto clean by utilizing sweating, frosting, defrosting and evaporator high temperature.

1. Under the remote controller is off, press “MODE” and “FAN” button at the same time for 5 seconds to start auto clean function, then the unit will display “CL”. Operation time for cleaning is about 30 minutes; repeat the operation of exit auto clean (if exiting auto clean in the midway, the unit will be dried in low speed for a period of time).
2. The auto clean process of evaporator will conduct quick cooling or heating, there might be big noise which is the sound of liquid flow and injection molding expansion and contraction; the air conditioner might blow cold air or hot wind and it is normal. Keep the room ventilated during cleaning process to avoid affecting comfort.

Tip:

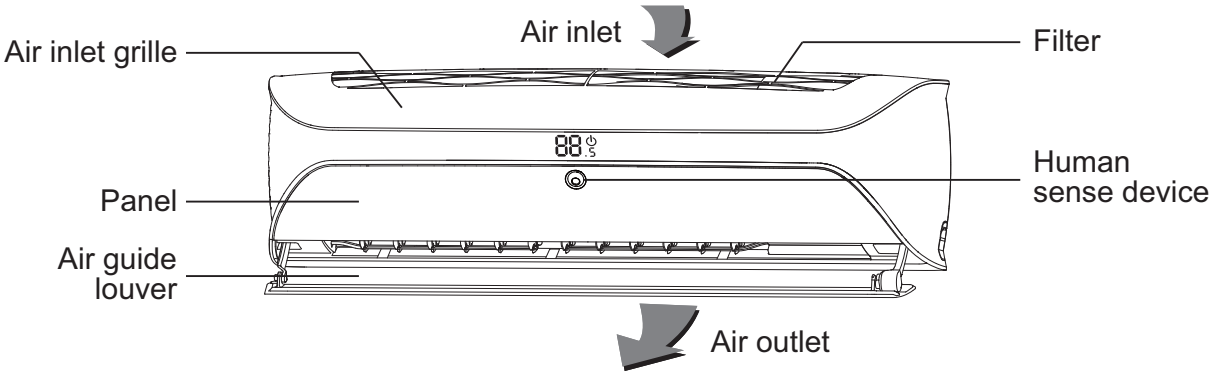
Auto clean function can only be started for operation normally under routine environment temperature. If the dust at home is heavy, we suggest cleaning it once in a month; if not, just clean it once in 3 months. After starting auto clean, the user can leave the room; after auto clean, the unit will enter standby mode automatically.

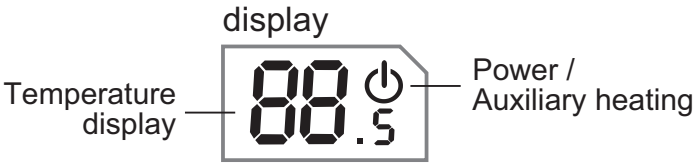
Close of air louver

In order to prevent user from adjusting the air louver manually, when turning off the air conditioner or after power failure and re-energization, the air louver will reset (fully open and fully close), it will spends about 50 seconds, which is normal phenomenon, please do not cut off the power supply when the air louver has not fully closed.

Parts' Name

Indoor Unit





(Display content or position may be different from above graphics, please refer to actual products)

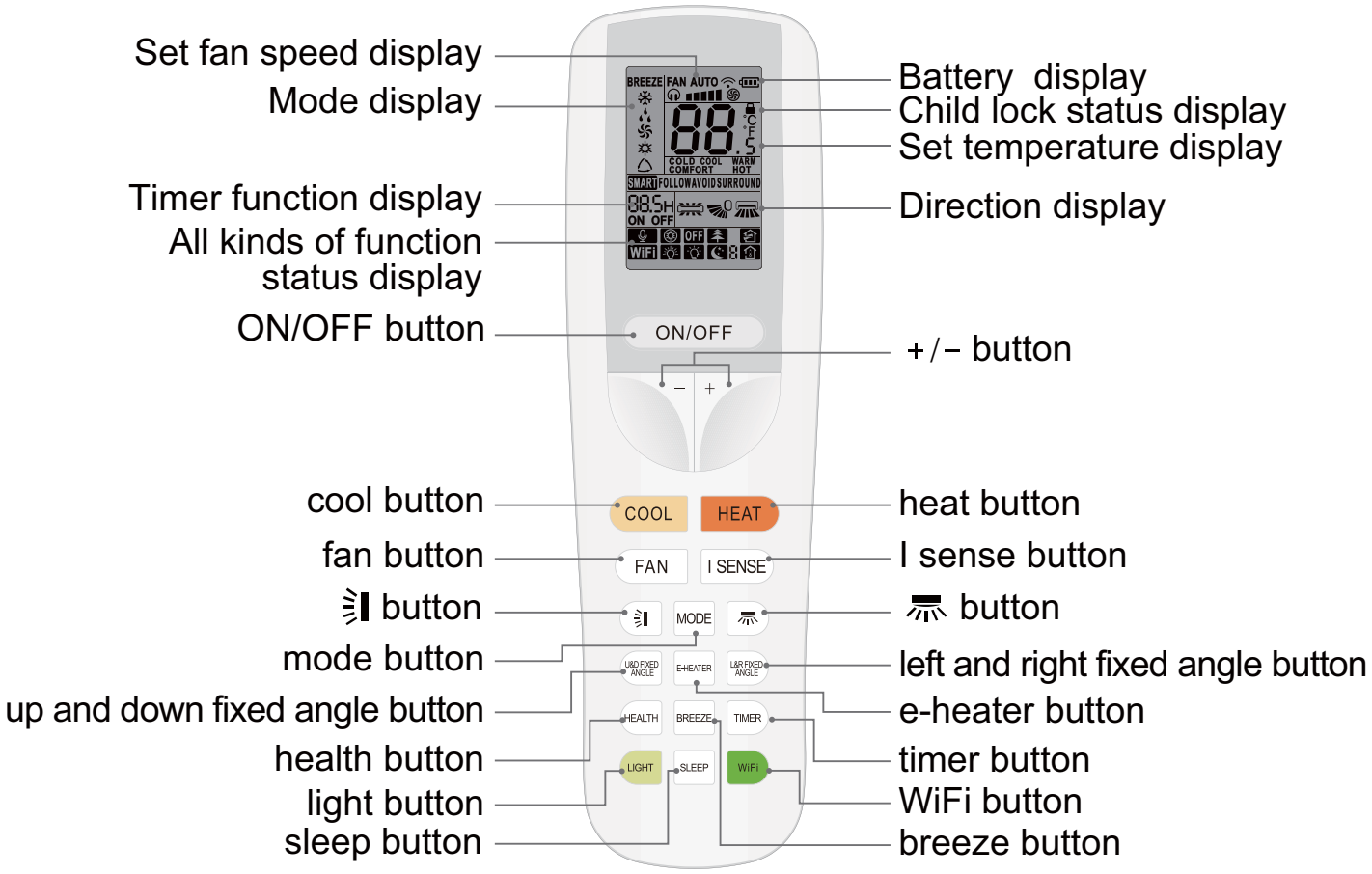
remote controller

NOTICE:

Actual product may be different from above graphics, please refer to actual products.

Buttons on remote controller

Tip: this series has no health and breeze functions.



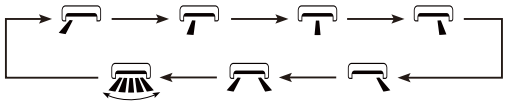
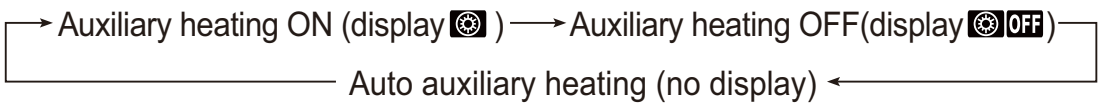
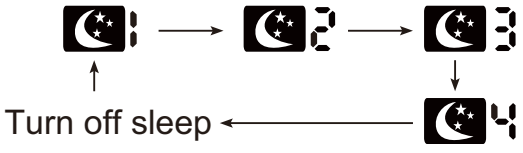
Introduction for buttons on remote controller

ON/OFF button	• Press this button to turn on/off the air conditioner. • When turning on/off, clear off the original timer and sleep setting.
MODE button	• Press this button, the circulation mode will change as the fig is shown: Auto → Cool → Dry → Fan → Heat → Auto Tip: cooling only type does not receive heating mode signal.
WiFi button	• When WiFi function is turned on, " WiFi " icon will be displayed on the remote controller; when WiFi function is turned off, " WiFi " icon will disappear. How to turn on WiFi: Press " WiFi " button to turn on WiFi function. How to turn off WiFi: Hold " WiFi " button for 5s to turn off WiFi function. Under off status, press "MODE" and " WiFi " buttons simultaneously for 1s, WiFi module will restore factory settings. • This function is only available for some models.

Introduction for buttons on remote controller

+/– button	• For every press of "-" or "+" button, the set temperature will decrease or increase 0.5℃. Press "-" or "+" button for over 1 second, the temperature value will be changed quickly and the information will be sent until the button is loose. • Press "-" and "+" button at the same time for 3 seconds to lock or unlock the keyboard, after locking, the remote controller will display the lock icon "🔒", at this moment, touch either button, the lock icon will blink three times and the status is unchanged. After unlocking the keyboard, the lock icon of displayer will disappear.
LIGHT button	• Press this button to control the LED status on the displayer, the circulation change is as follow: LED on(display) → LED off(no display) → Auto LED(display) → LED off(no display) → LED on(display)
COOL button	• Press this button, the air conditioner will conduct cooling mode.
HEAT button	• Press this button, the air conditioner will conduct heating mode.
button	• Press this button to start (display " " icon) or shut down (no display " " icon) left and right swing function. Remark: according to the comfort demand of air supply, the swing range under different modes is different.
button	• Press this button to start (display " " icon) or shut down (no display " " icon) up and down swing function. Remark: according to the comfort demand of air supply, the swing range under different modes is different.
TIMER button	• Press this button to set timer ON/OFF. • Press this button, the character of H and OFF (ON) will blink. At this time, press "+" or "-" button to adjust timer (long press "+" or "-" button, time value will change quickly), the setting range is 0.5～24 hour(s); press this button again to confirm timer, the character of H and OFF (ON) will not blink any more.
Up and down fixed angle button	• Press this button to set up and down swing status, the circulation change is as follow:

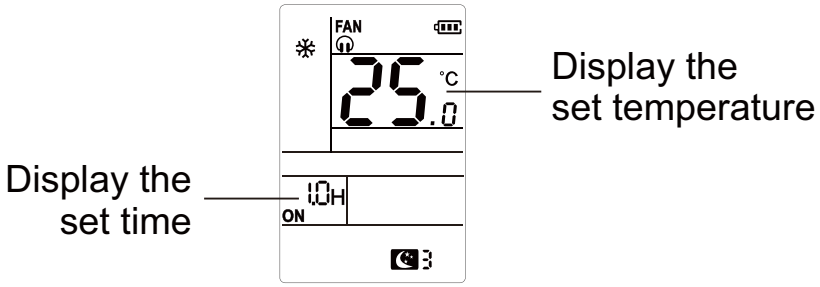
Introduction for buttons on remote controller

Left and right fixed angle button	• Press this button to set left and right swing status, the circulation change is as follow:  • This is a general remote controller, when receiving “ ”, the swing status is the same as “ ”; when receiving “ ”, the swing status is the same as left and right swing.
E-HEATER button	• Under heating mode, press this button, circulation change of auxiliary heating status is as follow:  • After starting heating mode, the remote controller will automatically restore to the auxiliary heating status set previously. • The function is only available for some models.
FAN button	• Press this button, circulation change of fan speed is as follow:  • Under dry mode, it can only be operated under the fan speed of ▪. • Quiet function can only be started under cooling and heating mode. Turbo can be started under cooling and heating mode. Under air supply mode, health function (this model has no health function) shall be started at the same time. • Under cooling mode, start the breeze function, circulation change of fan speed is as follow:  Remark: when pressing the button of remote controller to adjust the fan speed to “ ▪ ” (speed 1) or “ ▪▪ ”(speed 2), IDU panel will display “Low” fan speed; when adjusting to “ ▪▪▪ ” (speed 3) or “▪▪▪▪” (speed 4), the panel will display “Medium”; when adjusting to “ ▪▪▪▪▪ ” (speed 5), the panel will display “High”.
SLEEP button	• Press this button, the sleeping status will be circulated in the following sequence: 

Introduction for buttons on remote controller

SLEEP button

- Sleep 1 Cooling mode: under sleep status and after operation for 1h, the temperature of the master unit will increase 1℃, then 2℃ after 2h, after that, the unit will be operated at the set temperature. Heating mode: under sleep status and after operation for 1h, the set temperature will decrease, then decrease 2℃ after 2h, after that, the unit will be operated at the set temperature.
  Sleep 2 is the sleep temperature curve preset based on the system.
  Sleep 3 is the sleep curve setting under DIY sleep mode:
  (1) Under Sleep 3 mode, long press “U&D FIXED ANGLE” button to enter personalized sleep setting status, as the fig shown:



  (2) Adjust “-” or “+” button to change the corresponding set temperature, after that, press “U&D FIXED ANGLE” button for confirmation to set temperature for the next hour, until temperature setting for the next 8h is finished. If sleep curve setting is completed, at this time, the remote controller will display again.
  (3) If not pressing any buttons in 10 seconds, the remote controller will exit sleep curve setting status automatically and restore the original display. During setting process, if pressing “ON/OFF”, “Timer”, “Sleep” or other modes, it will exit the sleep curve setting as well.
- Sleep 4 is the afternoon nap mode. The temperature will be changed automatically according to afternoon nap status.
- If re-energizing the unit after power off, sleep mode will be cancelled acquiescently; if micro sense function is not activated, when starting the sleep function, quiet fan speed will be started automatically.

I SENSE button

- In Cool or Heat mode, press this button and the unit will work in the following sequence:

- **SMART**: the unit will judge based on the body sensing device, body temperature, indoor temperature and the operation data to enter different air supply modes including airflow blowing to

Replacement of batteries in remote controller

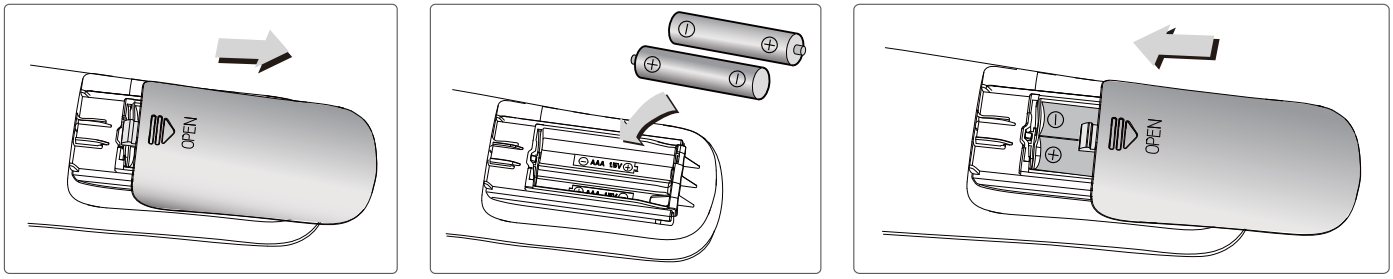
I SENSE button	people, airflow avoiding people, and circular airflow. • **FOLLOW**: the unit will control the vertical and horizontal swing louvers automatically according to the body sensing device so as to blow air toward people. • **AVOID**: the unit will control the vertical and horizontal swing louvers automatically according to the body sensing device so as to avoid direct airflow to people. • **SURROUND**: the unit will control the vertical and horizontal swing louvers automatically according to the body sensing device so as to supply air around the people. If the air is directly blown to people, it will pass the people very quickly.
Auto clean function	• When the remote controller is OFF, press “MODE” and “FAN” button at the same time for about 5 seconds to start auto clean function, after that, the air conditioner will display “CL”. Repeat the operation to exit auto clean (if exiting auto clean through button operation, the unit will be operated in low speed for drying for a period of time compulsorily). • Operation time for cleaning is about 30 minutes.

Replacement of batteries in remote controller

NOTICE:

1. Don't mix the new battery with the old one and batteries of different types shall not be mixed. The remote controller shall be kept well; Liquid shall not flow into the remote controller; the remote controller shall avoid direct sunshine or not be put in places with high temperature.
2. If not using the remote controller for a long time, please take out the battery.
3. When the remote controller is sending message, " " icon will blink for about 1 second. When receiving effective remote message, the air conditioner will give out a sound.

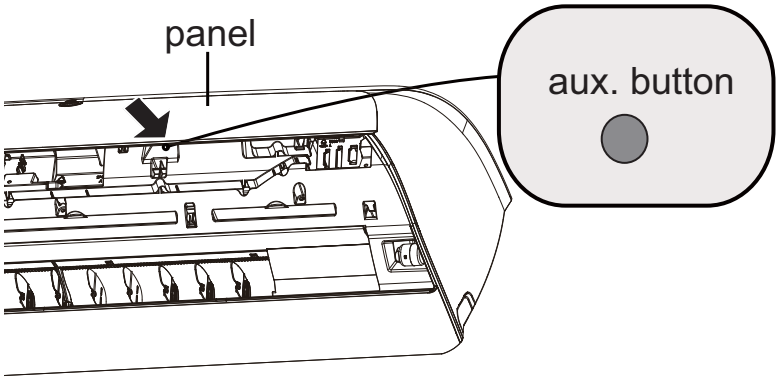
1. Slightly press the " OPEN " mark, then push the battery cover of remote controller towards the arrows direction.
2. Install two new No.7 (1.5V) dry batteries and ensure "⊕" and "⊖" is correctly placed.
3. Close the battery cover of remote controller.



Remark: the remote controller will display the remaining battery life, when it displays " ", please replace the battery immediately.

Emergency operation

If remote controller is lost or damaged, please use aux. button to turn on or turn off the air conditioner. The operation in details is as below:
As shown in the fig. Open panel, press aux. button to turn on or turn off the air conditioner. When the air conditioner is turned on, it will operate under auto mode.



⚠WARNING:

Use insulated object to press the auto button

Clean and Maintenance

⚠ Read before cleaning

- When cleaning the air conditioner, please turn off the unit and remove the power plug, otherwise, there might be electric shock. The air conditioner shall be kept dry and please ensure that no water is used to wash the unit under any situations, otherwise, there might be electric shock.
- Volatilized liquid will damage the appearance of air conditioner, e.g: diluent or gasoline. (please clean the outer casing of air conditioner with soft and dry cloth or wet cloth with neutral diluents only)
- Clean the filter periodically during operation to avoid dust accumulation, which will affect user experience. If it is used in the environment with heavy dust, cleaning frequency shall be increased accordingly. After taking down the filter, don't touch the fin of indoor unit with finger to avoid scratching it.

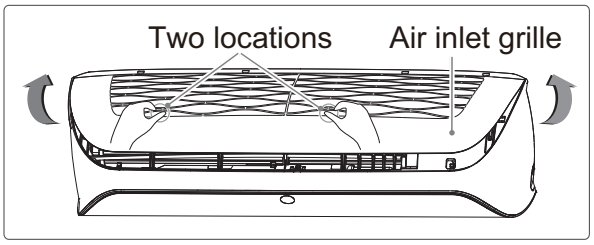
Clean panel and air inlet grille

If indoor panel and air inlet grille is dirty, please soak the cloth with warm water which the temperature is below 45°C, twist it and wipe the dirty part. Don't take down the panel during cleaning.
If the air inlet grille is dirty, please dismantle it for washing with water. Dismantling operation of air inlet grille shall refer to the following content.

Clean filter (clean it every 3 months)

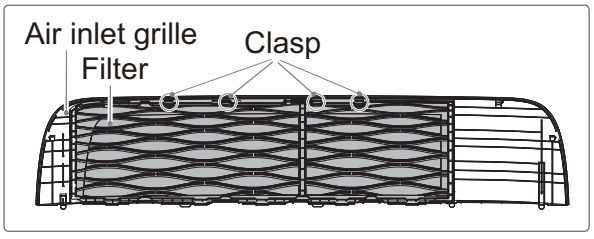
1.Take out air inlet grille

Open the air inlet grille backward and upward, as the arrows stated, with both hands in two locations as the right fig shown, so that it is separated from the clasp, then pull it forward to take it out.



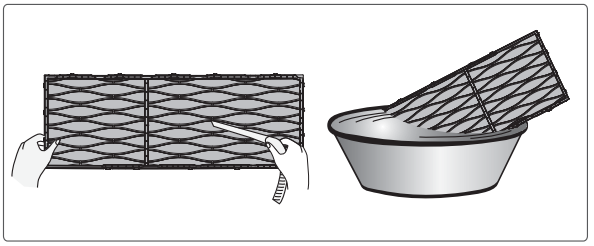
2.Take out filter

Press the air inlet grille with one hand, lift the edge of filter with the other hand, so that it is separated from the ambient clasp of air inlet grille, then take it out.



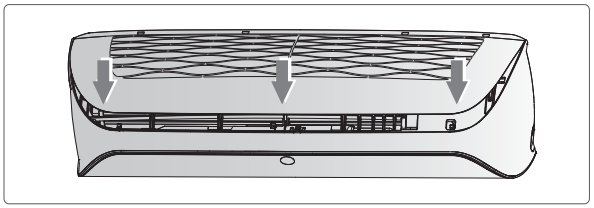
3.Clean filter

Wash the filter with dust collector or water, if the filter is too dirty (with greasy dirt), wash it with warm water (below 45°C) which contains neutral detergent, then place it in a shade place.



4.Install filter

After cleaning, install the filter to the air inlet grille according to the step which is opposite to taking down, then buckle the air inlet grille as the arrows shown.



Clean and Maintenance

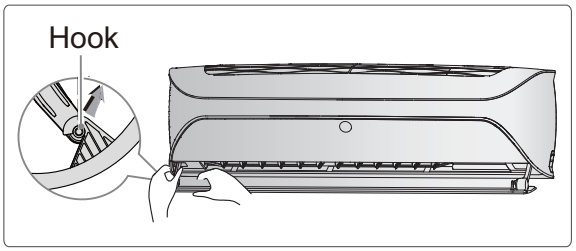
Cleaning and maintenance of air guide louver

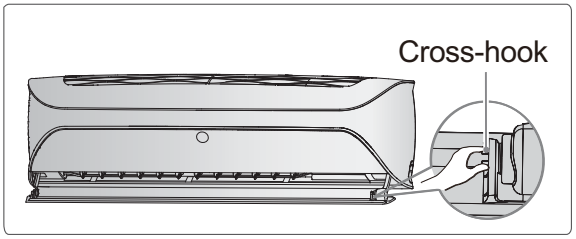
1.Dismantle air guide louver

Pull out the air guide louver forward with both hands.

(1)Dismantle the left side, hold the connecting rod with the left hand and hold the left side of air guide louver with the right hand, pull it out in the direction as the fig shown (opposite direction of hook opening), to separate the connecting rod with the left side of air guide louver.

(2)Dismantle the right side, hold the air guide louver with one hand, then pinch the cross-hook slightly with the other hand, pull it out downward from the left horizontally.





2.Clean air guide louver

Please soak the cloth with warm water with temperature below 45°C, twist it to wipe the dirty part, then dry and install it according to the steps opposite to the above; after installation, re-energize the unit until the air guide louver is reset automatically, then you can use it.

Inspection before and after usage

Checking before use-season

1. Check whether air inlets and air outlets are blocked.
2. Check whether air switch, plug and socket are in good condition.
3. Check whether filter is clean.
4. Check whether mounting bracket for outdoor unit is damaged or corroded. If yes, please contact dealer.
5. Check whether drainage pipe is damaged.

Checking after use-season

1. Disconnect power supply.
2. Clean filter and indoor unit's panel.
3. Check whether mounting bracket for outdoor unit is damaged or corroded. If yes, please contact dealer.

Notice for recovery

1. Many packing materials are recyclable materials. Please dispose them in appropriate recycling unit.
2. If you want to dispose the air conditioner, please contact local dealer or consultant service center for the correct disposal method.

Malfunction analysis

General phenomenon analysis

Please check below items before asking for maintenance. If the malfunction still can't be eliminated, please contact local dealer or qualified professionals.

Phenomenon	Check items	Solution
Indoor unit can't receive remote controller's signal or remote controller has no action.	• Whether it's interfered severely (such as static electricity, stable voltage)?	• Pull out the plug. Reinsert the plug after about 3min, and then turn on the unit again.
	• Whether remote controller is within the signal receiving range?	• Signal receiving range is 8m.
	• Whether there are obstacles?	• Remove obstacles.
	• Whether remote controller is pointing at the receiving window?	• Select proper angle and point the remote controller at the receiving window on indoor unit.
	• Is sensitivity of remote controller low; fuzzy display and no display?	• Check the batteries. If the power of batteries is too low, please replace them.
	• No display when operating remote controller?	• Check whether remote controller appears to be damaged. If yes, replace it.
	• Fluorescent lamp in room?	• Take the remote controller close to indoor unit. • Turn off the fluorescent lamp and then try it again.
No air emitted from indoor unit	• Air inlet or air outlet of indoor unit is blocked?	• Eliminate obstacles.
	• Under heating mode, indoor temperature is reached to set temperature?	• After reaching to set temperature, indoor unit will stop blowing out air.
	• Heating mode is turned on just now?	• In order to prevent blowing out cold air, indoor unit will be started after delaying for several minutes, which is a normal phenomenon.

Malfunction analysis

Phenomenon	Check items	Solution
Air conditioner can't operate	● Power failure?	● Wait until power recovery.
	● Is plug loose?	● Reinsert the plug.
	● Air switch trips off or fuse is burnt out?	● Ask professional to replace air switch or fuse.
	● Wiring has malfunction?	● Ask professional to replace it.
	● Unit has restarted immediately after stopping operation?	● Wait for 3min, and then turn on the unit again.
	● Whether the function setting for remote controller is correct?	● Reset the function.
Mist is emitted from indoor unit's air outlet	● Indoor temperature and humidity is high?	● Because indoor air is cooled rapidly. After a while, indoor temperature and humidity will be decrease and mist will disappear.
Set temperature can't be adjusted	● Your required temperature exceeds the set temperature range?	● Set temperature range: 16°C~30°C ● Set temperature range in HEAT mode: 8°C~30°C
Cooling (heating) effect is not good.	● Voltage is too low?	● Wait until the voltage resumes normal.
	● Filter is dirty?	● Clean the filter.
	● Set temperature is in proper range?	● Adjust temperature to proper range.
	● Door and window are open?	● Close door and window.

Malfunction analysis

Phenomenon	Check items	Solution
Odours are emitted	● Whether there's odour source, such as furniture and cigarette, etc.	● Eliminate the odour source. ● Clean the filter.
Air conditio-ner operates abnormally	● Whether there's interference, such as thunder, wireless devices, etc.	● Disconnect power, put back power, and then turn on the unit again.
"Water flowing" noise	● Air conditioner is turned on or turned off just now?	● The noise is the sound of refrigerant flowing inside the unit, which is a normal phenomenon.
Cracking noise	● Air conditioner is turned on or turned off just now?	● This is the sound of friction caused by expansion and/or contraction of panel or other parts due to the change of temperature.

Malfunction analysis

Error Code

- When air conditioner status is abnormal, temperature indicator on indoor unit will blink to display corresponding error code. Please refer to below list for identification of error code.

Error code	Troubleshooting
E5	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.
E8	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.
H6	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.
C5	Please contact qualified professionals for service.
F0	Please contact qualified professionals for service.
F1	Please contact qualified professionals for service.
F2	Please contact qualified professionals for service.
H3	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.
E1	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.
E6	It can be eliminated after restarting the unit. If not, please contact qualified professionals for service.

Note: If there're other error codes, please contact qualified professionals for service.

⚠ WARNING

- 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.
  - Air switch trips off frequently.
  - Air conditioner gives off burning smell.
  - Indoor unit is leaking.
- Do not repair or refit the air conditioner by yourself.
- If the air conditioner operates under abnormal conditions, it may cause malfunction, electric shock or fire hazard.

Safety operation of flammable 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 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 (m^2)

Minimum room area(m^2)	Charge amount (kg)	≤1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5
	floor location	/	14.5	16.8	19.3	22	24.8	27.8	31	34.3	37.8	41.5	45.4	49.4	53.6
	window mounted	/	5.2	6.1	7	7.9	8.9	10	11.2	12.4	13.6	15	16.3	17.8	19.3
	wall mounted	/	1.6	1.9	2.1	2.4	2.8	3.1	3.4	3.8	4.2	4.6	5	5.5	6
	ceiling mounted	/	1.1	1.3	1.4	1.6	1.8	2.1	2.3	2.6	2.8	3.1	3.4	3.7	4

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:

Safety operation of flammable refrigerant

a. Shut down the unit and cut power supply
b. Eliminate the refrigerant
c. Vacuuming
d. Clean it with N_2 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.

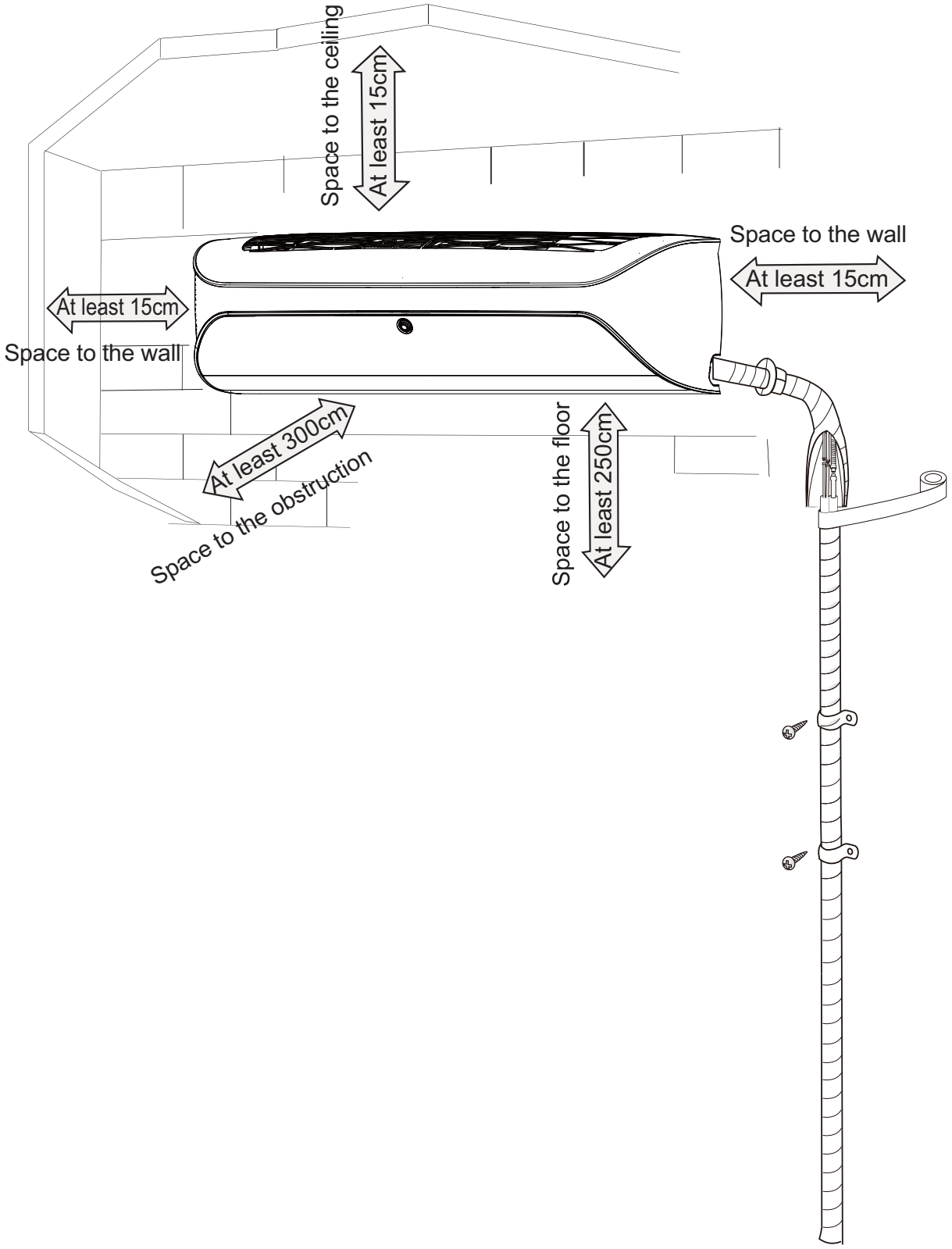
Filling the refrigerant

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

Installation dimension diagram



Safety precautions for installing and relocating the unit

To ensure safety, please be mindful of the following precautions.

⚠ Warning

- **When installing or relocating the unit, be sure to keep the refrigerant circuit free from air or substances other than the specified refrigerant.**
  Any presence of air or other foreign substance in the refrigerant circuit will cause system pressure rise or compressor rupture, resulting in injury.
- **When installing or moving this unit, do not charge the refrigerant which is not comply with that on the nameplate or unqualified refrigerant.**
  Otherwise, it may cause abnormal operation, wrong action, mechanical malfunction or even series safety accident.
- **When refrigerant needs to be recovered during relocating or repairing the unit, be sure that the unit is running in cooling mode.Then, fully close the valve at high pressure side (liquid valve).About 30-40 seconds later, fully close the valve at low pressure side (gas valve), immediately stop the unit and disconnect power. Please note that the time for refrigerant recovery should not exceed 1 minute.**
  If refrigerant recovery takes too much time, air may be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **During refrigerant recovery, make sure that liquid valve and gas valve are fully closed and power is disconnected before detaching the connection pipe.**
  If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **When installing the unit, make sure that connection pipe is securely connected before the compressor starts running.**
  If compressor starts running when stop valve is open and connection pipe is not yet connected, air will be sucked in and cause pressure rise or compressor rupture, resulting in injury.
- **Prohibit installing the unit at the place where there may be leaked corrosive gas or flammable gas.**
  If there leaked gas around the unit, it may cause explosion and other accidents.
- **Do not use extension cords for electrical connections. If the electric wire is not long enough, please contact a local service center authorized and ask for a proper electric wire.**
  Poor connections may lead to electric shock or fire.
- **Use the specified types of wires for electrical connections between the indoor and outdoor units. Firmly clamp the wires so that their terminals receive no external stresses.**
  Electric wires with insufficient capacity, wrong wire connections and insecure wire terminals may cause electric shock or fire.

Tools for installation

1 Level meter	2 Screw driver	3 Impact drill
4 Drill head	5 Pipe expander	6 Torque wrench
7 Open-end wrench	8 Pipe cutter	9 Leakage detector
10 Vacuum pump	11 Pressure meter	12 Universal meter
13 Inner hexagon spanner		14 Measuring tape

Note:

- Please contact the local agent for installation.
- Don't use unqualified power cord.

Selection of installation location

Basic requirement

Installing the unit in the following places may cause malfunction. If it is unavoidable, please consult the local dealer:

1. The place with strong heat sources, vapors, flammable or explosive gas, or volatile objects spread in the air.
2. The place with high-frequency devices (such as welding machine, medical equipment).
3. The place near coast area.
4. The place with oil or fumes in the air.
5. The place with sulfureted gas.
6. Other places with special circumstances.
7. The appliance shall not be installed in the laundry.
8. It’s not allowed to be installed on the unstable or motive base structure (such as truck) or in the corrosive environment (such as chemical factory).

Indoor unit

1. There should be no obstruction near air inlet .
2. Select a location where the condensation water can be dispersed easily and won't affect other people.
3. Select a location which is convenient to connect the outdoor unit and near the power socket.
4. Select a location which is out of reach for children.
5. The location should be able to withstand the weight of indoor unit and won't increase noise and vibration.
6. The appliance must be installed 2.5m above floor.
7. Don't install the indoor unit right above the electric appliance.
8. Please try your best to keep way from fluorescent lamp.

Requirements for electric connection

Safety precaution

1. Must follow the electric safety regulations when installing the unit.
2. According to the local safety regulations, use qualified power supply circuit and air switch.
3. Make sure the power supply matches with the requirement of air conditioner. Unstable power supply or incorrect wiring or malfunction. Please install proper power supply cables before using the air conditioner.
4. Properly connect the live wire, neutral wire and grounding wire of power socket.
5. Be sure to cut off the power supply before proceeding any work related to electricity and safety. For models with a power plug, make sure the plug is within reach after installation.
6. Do not put through the power before finishing installation.
7. 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.
8. The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
9. The appliance shall be installed in accordance with national wiring regulations.
10. Appliance shall be installed, operated and stored in a room with a floor area larger than Xm^2 .(Please refer to table "a" in section of " Safety operation of flammable refrigerant " for Space X.)

Please notice that the unit is filled with flammable gas R32. Inappropriate treatment of the unit involves the risk of severe damages of people and material. Details to this refrigerant are found in chapter “refrigerant”.

Grounding requirement

1. 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.
2. The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
3. The grounding resistance should comply with national electric safety regulations.
4. The appliance must be positioned so that the plug is accessible.
5. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Installation of indoor unit

Step one: choosing installation location

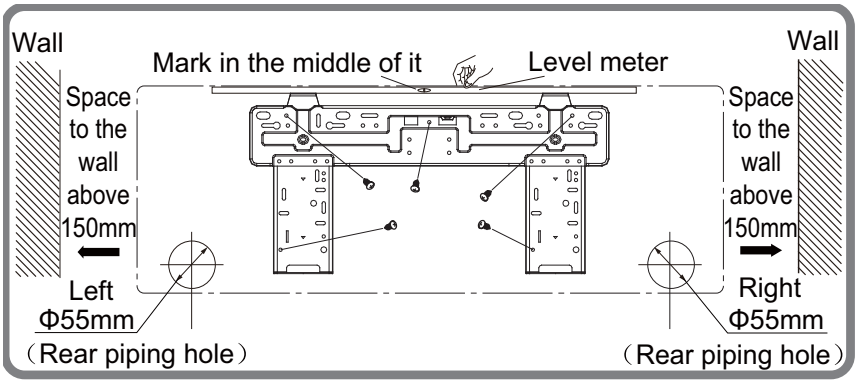
Recommend the installation location to the client and then confirm it with the client.

Step two: install wall-mounting frame

1. Hang the wall-mounting frame on the wall; adjust it in horizontal position with the level meter and then point out the screw fixing holes on the wall.
2. Drill the screw fixing holes on the wall with impact drill (the specification of drill head should be the same as the plastic expansion particle) and then fill the plastic expansion particles in the holes.
3. Fix the wall-mounting frame on the wall with tapping screws and then check if the frame is firmly installed by pulling the frame.If the plastic expansion particle is loose, please drill another fixing hole nearby.

Step three: open piping hole

1. Choose the position of piping hole according to the direction of outlet pipe. The position of piping hole should be a little lower than the wall-mounted frame, shown as below.

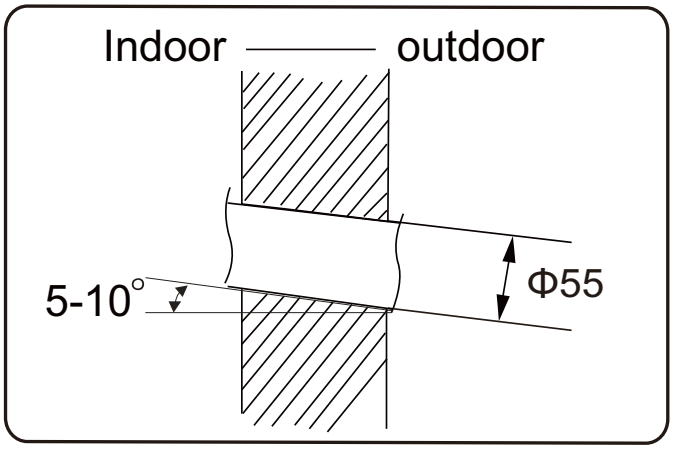


2. Open a piping hole with the diameter of Φ55 on the selected outlet pipe position.In order to drain smoothly, slant the piping hole on the wall slightly downward to the outdoor side with the gradient of 5-10°.

Installation of indoor unit

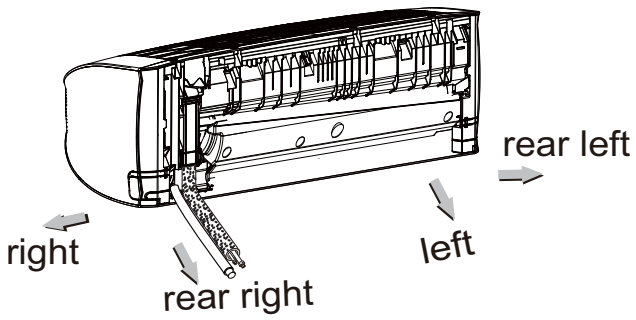
Note:

- Pay attention to dust prevention and take relevant safety measures when opening the hole.

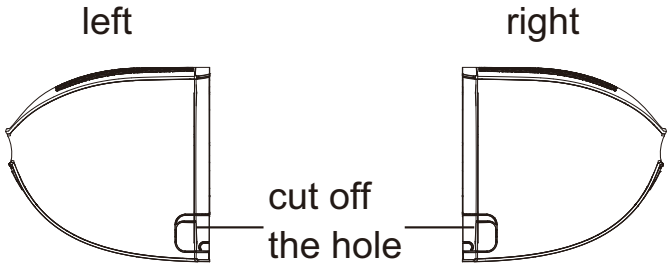


Step four: outlet pipe

1. The pipe can be led out in the direction of right, rear right, left or rear left.



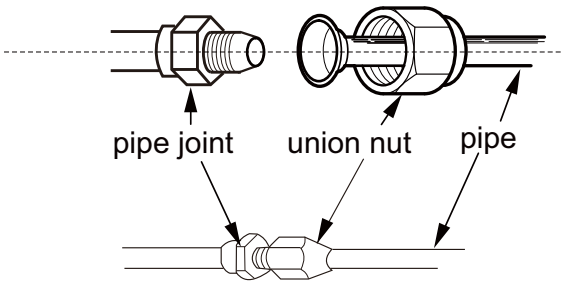
2. When select leading out the pipe from left or right, please cut off the corresponding hole on the bottom case.



Step five: connect the pipe of indoor unit

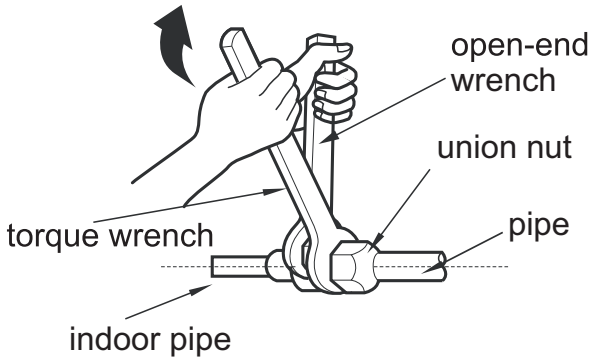
1. Aim the pipe joint at the corresponding bellmouth.

2. Pretighten the union nut with hand.



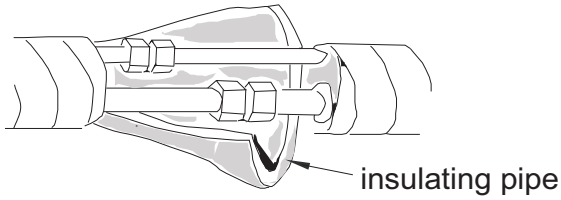
3. Adjust the torque force by referring to the following sheet. Place the open-end wrench on the pipe joint and place the torque wrench on the union nut. Tighten the union nut with torque wrench.

Installation of indoor unit



Hex nut diameter	Tightening torque (N·m)
Φ 6	15~20
Φ 9.52	30~40
Φ 12	45~55
Φ 16	60~65
Φ 19	70~75

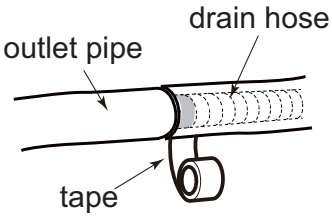
4. Wrap the indoor pipe and joint of connection pipe with insulating pipe, and then wrap it with tape.

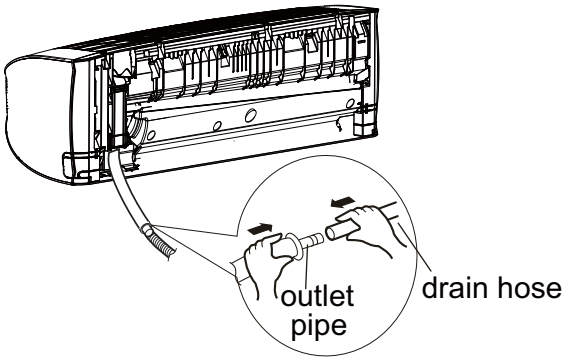


Step six: install drain hose

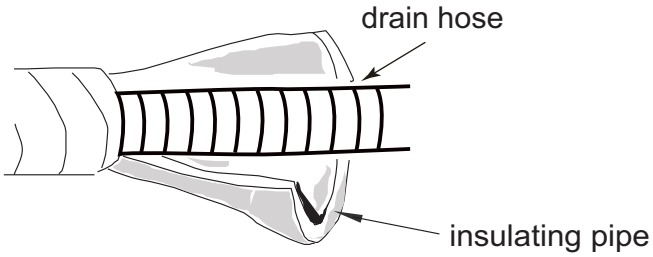
1. Connect the drain hose to the outlet pipe of indoor unit.

2. Bind the joint with tape.



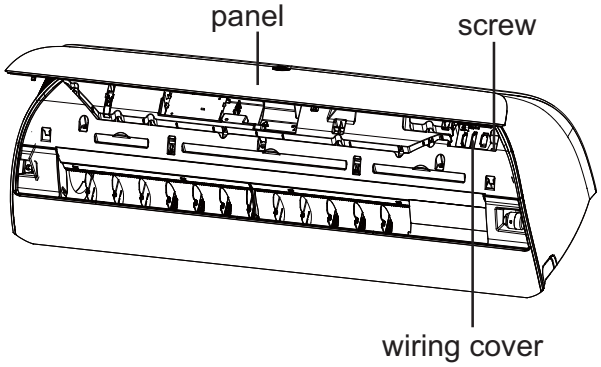


Note:
- Add insulating pipe in the indoor drain hose in order to prevent condensation.
- The plastic expansion particles are not provided.



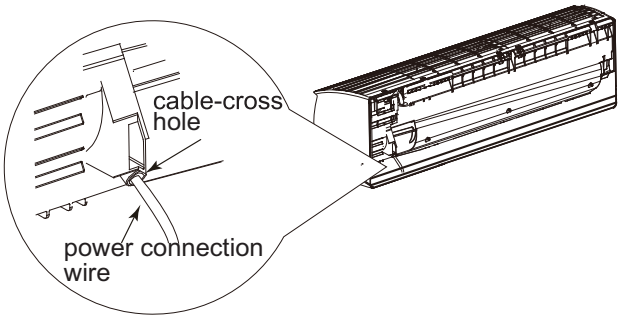
Step seven: connect wire of indoor unit

1. Open the panel, remove the screw on the wiring cover and then take down the cover.

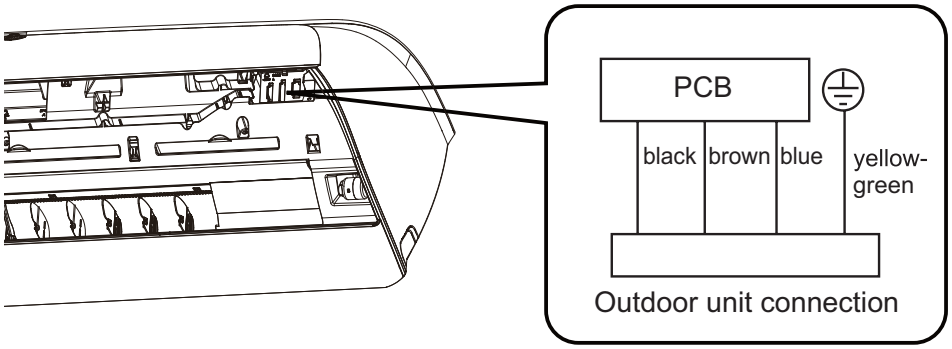


Installation of indoor unit

2. Make the power connection wire go through the cable-cross hole at the back of indoor unit and then pull it out from the front side.



3. Remove the wire clip; connect the power connection wire to the wiring terminal according to the color; tighten the screw and then fix the power connection wire with wire clip.



Note: the wiring board is for reference only, please refer to the actual one.

4. Put wiring cover back and then tighten the screw.
5. Close the panel.

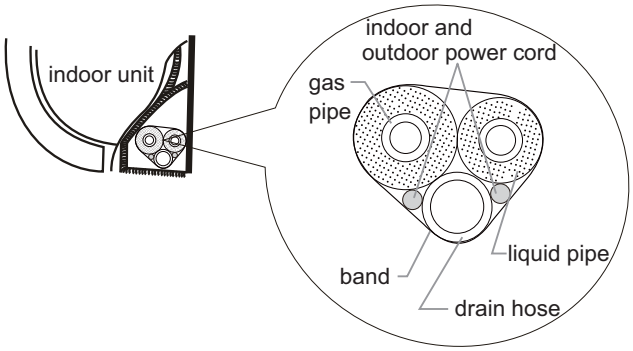
Note:

- 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 air switch must be installed in the line. The air switch should be all-pole parting and the contact parting distance should be more than 3mm.

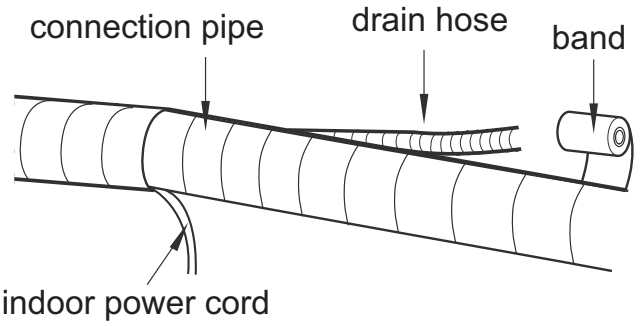
Installation of indoor unit

Step eight: bind up pipe

1. Bind up the connection pipe, power cord and drain hose with the band.



2. Reserve a certain length of drain hose and power cord for installation when binding them. When binding to a certain degree, separate the indoor power and then separate the drain hose.

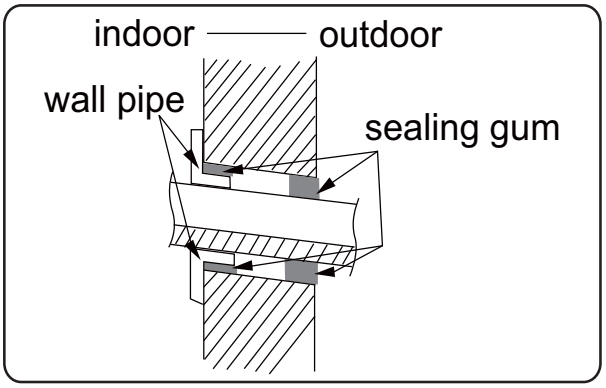


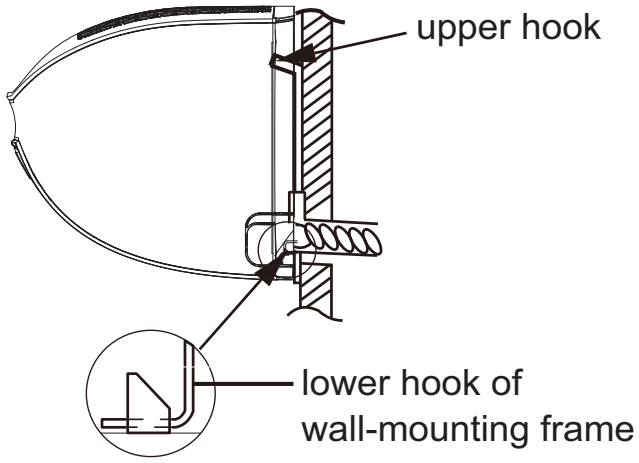
3. Bind them evenly.
4. The liquid pipe and gas pipe should be bound separately at the end.

Note:
- The power cord and control wire can't be crossed or winding.
- The drain hose should be bound at the bottom.

Step nine: hang the indoor unit

1. Put the bound pipes in the wall pipe and then make them pass through the wall hole.
2. Hang the indoor unit on the wall-mounting frame.
3. Stuff the gap between pipes and wall hole with sealing gum.
4. Fix the wall pipe.
5. Check if the indoor unit is installed firmly and closed to the wall.





Note:
- Do not bend the drain hose too excessively in order to prevent blocking.

Check after installation

● Check according to the following requirement after finishing installation.

Items to be checked	Possible malfunction
Has the unit been installed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating) capacity.
Is heat insulation of pipeline sufficient?	It may cause condensation and water dripping.
Is water drained well?	It may cause condensation and water dripping.
Is the voltage of power supply according to the voltage marked on the nameplate?	It may cause malfunction or damaging the parts.
Is electric wiring and pipeline installed correctly?	It may cause malfunction or damaging the parts.
Is the unit grounded securely?	It may cause electric leakage.
Does the power cord follow the specification?	It may cause malfunction or damaging the parts.
Is there any obstruction in the air inlet and outlet?	It may cause insufficient cooling (heating) capacity.
The dust and sundries caused during installation are removed?	It may cause malfunction or damaging the parts.
The gas valve and liquid valve of connection pipe are open completely?	It may cause insufficient cooling (heating) capacity.
Is the inlet and outlet of piping hole been covered?	It may cause insufficient cooling (heating) capacity or waster eletricity.

Test operation

1. Preparation of test operation

- The client approves the air conditioner.
- Specify the important notes for air conditioner to the client.

2. Method of test operation

- Put through the power, press ON/OFF button on the remote controller to start operation.
- Press MODE button to select AUTO, COOL, DRY, FAN and HEAT to check whether the operation is normal or not.
- If the ambient temperature is lower than 16℃ , the air conditioner can't start cooling.

Configuration of connection pipe

1. Standard length of connection pipe
   - 5m、7.5m、8m
2. Min. length of connection pipe
   For the unit with standard connection pipe of 5m, there is no limitation for the min. length of connection pipe. For the unit with standard connection pipe of 7.5m and 8m, the min. length of connection pipe is 3m.
3. Max. length of connection pipe

Sheet 1 Max. length of connection pipe Unit: m

capacity	Max. length of connection pipe	capacity	Max. length of connection pipe
5000Btu/h (1465W)	15	24000Btu/h (7032W)	25
7000Btu/h (2051W)	15	28000Btu/h (8204W)	30
9000Btu/h (2637W)	15	36000Btu/h (10548W)	30
12000Btu/h (3516W)	20	42000Btu/h (12306W)	30
18000Btu/h (5274W)	25	48000Btu/h (14064W)	30

4. The calculation method of additional refrigerant oil and refrigerant charging amount after prolonging connection pipe
   After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
   The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):
   (1) Additional refrigerant charging amount= prolonged length of liquid pipe × additional refrigerant charging amount per meter
   (2) Basing on the length of standard pipe, add refrigerant according to the requirement as shown in the table. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See Sheet 2.

Configuration of connection pipe

Sheet 2. Additional refrigerant charging amount for R32

Diameter of connection pipe mm		Indoor unit throttle	Outdoor unit throttle	
Liquid pipe	Gas pipe	Cooling only, cooling and heating (g / m)	Cooling only (g / m)	cooling and heating (g / m)
Φ6	Φ9.5 or Φ12	16	12	16
Φ6 or Φ9.5	Φ16 or Φ19	40	12	40
Φ12	Φ19 or Φ22.2	80	24	96
Φ16	Φ25.4 or Φ31.8	136	48	96
Φ19	–	200	200	200
Φ22.2	–	280	280	280

Note: The additional refrigerant charging amount in Sheet 2 is recommended value, not compulsory.

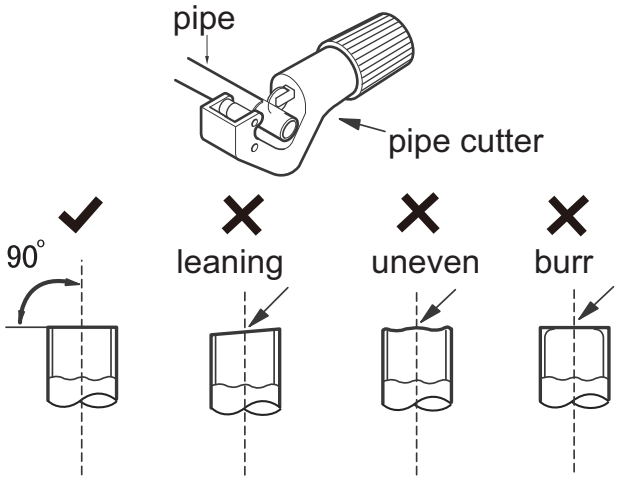
Pipe expanding method

Note:

Improper pipe expanding is the main cause of refrigerant leakage. Please expand the pipe according to the following steps:

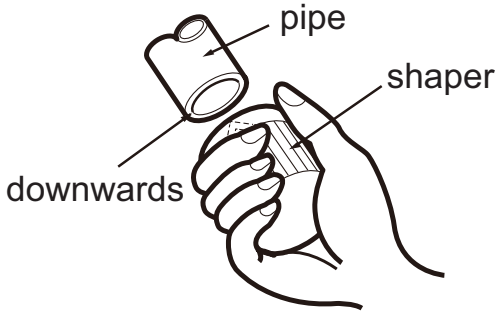
A: Cut the pipe

- Confirm the pipe length according to the distance of indoor unit and outdoor unit.
- Cut the required pipe with pipe cutter.



B: Remove the burrs

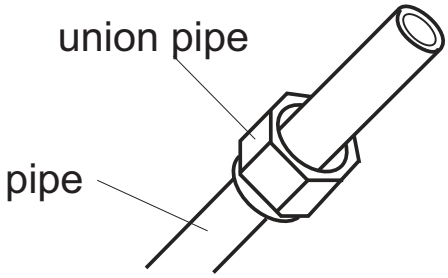
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



C: Put on suitable insulating pipe

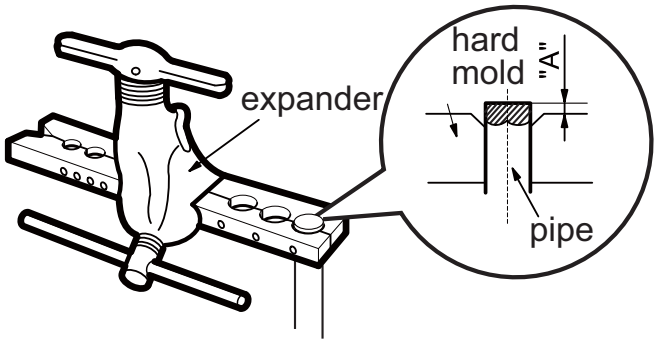
D: Put on the union nut

- Remove the union nut on the indoor connection pipe and outdoor valve; install the union nut on the pipe.



E: Expand the port

- Expand the port with expander.



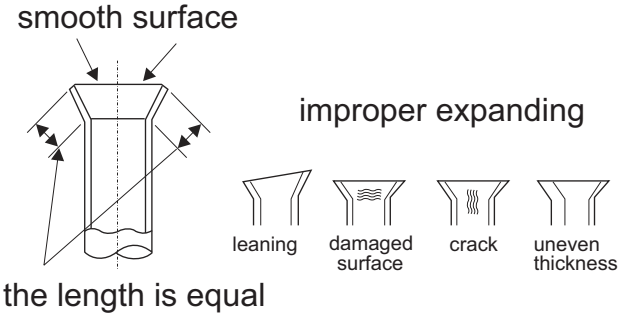
Note:

- "A" is different according to the diameter, please refer to the sheet below:

Outer diameter (mm)	A(mm)	
	Max	Min
Φ6 - 6.35(1/4")	1.3	0.7
Φ9.52(3/8")	1.6	1.0
Φ12-12.7(1/2")	1.8	1.0
Φ15.8-16(5/8")	2.4	2.2

F: Inspection

- Check the quality of expanding port. If there is any blemish, expand the port again according to the steps above.



- **The following checks shall be applied to installations using 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;
  – refrigeration 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.

- **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 refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 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.

- **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.

- **Checks to the refrigeration 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.

- **Checks to electrical devices**
  – 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.

- **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.

- **Detection of 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.

- **Decommissioning**

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

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

- **Labelling**

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

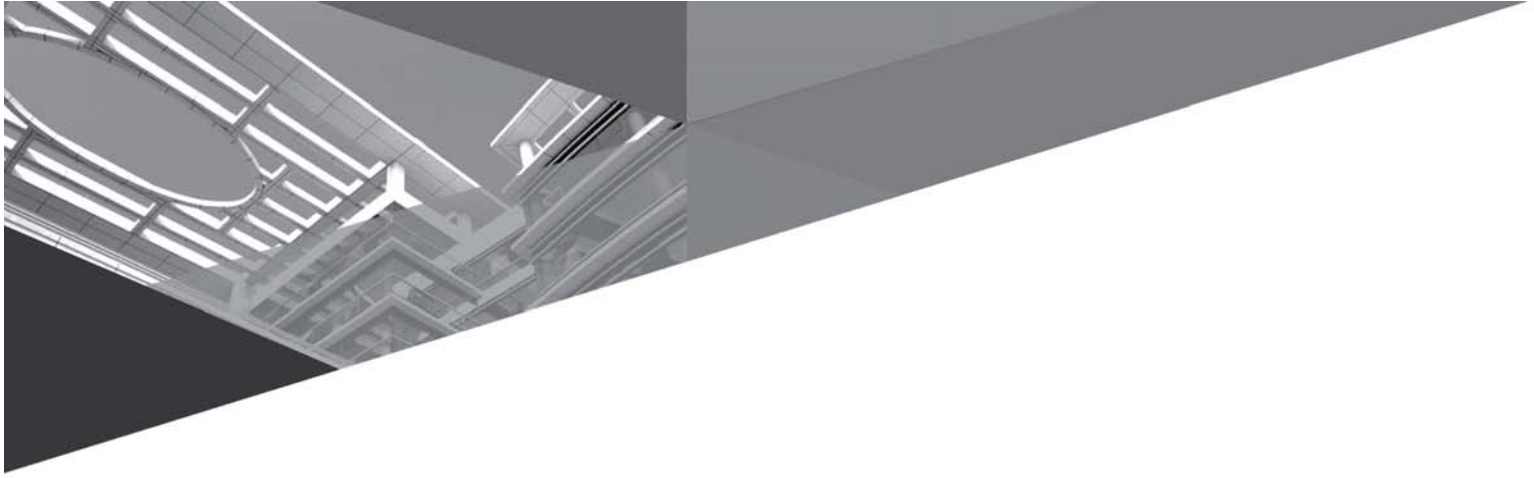
- **Recovery**

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

order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to re- turning 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.



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