



ALL-MATCH INVERTER SERIES_R32

Service Manual

CON09HP230V1R32AH

CON12HP230V1R32AH

CON18HP230V1R32AH





GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

The background features a complex network of thin grey lines connecting circular nodes, creating a web-like structure. Overlaid on this are several semi-transparent geometric shapes: a large blue triangle in the upper right, a teal triangle in the lower left, and a blue triangle in the lower right. At the bottom right, there is a detailed, high-angle photograph of industrial machinery, possibly a compressor or motor assembly, with various pipes and components.

Table of Contents

Part I : Technical Information	1
1. Summary.....	1
2. Specifications.....	2
2.1 Specification Sheet.....	2
3. Outline Dimension Diagram.....	4
3.1 Indoor Unit.....	4
4. Refrigerant System Diagram	5
5. Electrical Part	6
5.1 Wiring Diagram.....	6
5.2 PCB Printed Diagram.....	7
6. Function and Control.....	8
6.1 Remote Controller Introduction.....	8
6.2 Brief Description of Modes and Functions.....	13
6.3 GREE+ App Operation Manual.....	15
6.4 Ewpe Smart App Operation Manual	16
Part II : Installation and Maintenance	17
7. Notes for Installation and Maintenance.....	17
8. Installation	25
8.1 Requirements for Electric Connection.....	25
8.2 Installation of indoor unit.....	25
9. Maintenance	30
9.1 Precautions before Performing Inspection or Repair.....	30
9.2 Confirmation.....	30
9.3 Flashing LED of Indoor Unit and Primary Judgement.....	30
9.4 How to Check Simply The Main Part.....	31
9.5 Troubleshooting for Normal Malfunction.....	36

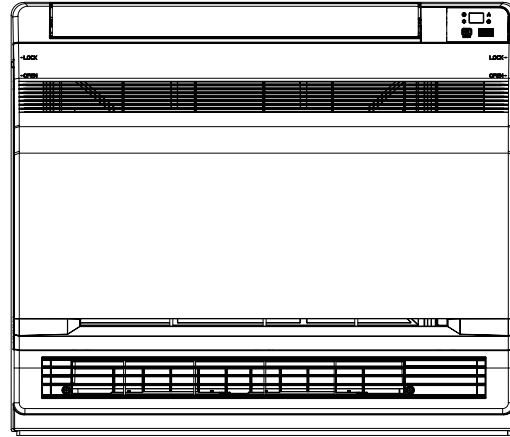
10. Exploded View and Parts List.....	38
10.1 Indoor Unit.....	38
11. Removal Procedure.....	40
11.1 Removal Procedure of Indoor Unit.....	40
Appendix:	44
Appendix 1: Reference Sheet of Celsius and Fahrenheit	44
Appendix 2: Pipe Expanding Method.....	45
Appendix 3: List of Resistance for Temperature Sensor	46

Symbol	Explanation
	<p>This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant is leaked and exposed to an external ignition source, there is a risk of fire.</p> <p>Appliance filled with flammable magas R32</p>
	<p>This symbol shows that the operation manual should be read carefully.</p>
	<p>This symbol shows that information is available such as the operating manual or installation manual.</p>
	<p>This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.</p>

1. Summary

Indoor Unit:

CON09HP230V1R32AH
CON12HP230V1R32AH
CON18HP230V1R32AH



Remote Controller:

YBE1FB5F



Model list:

No.	Indoor model	Indoor product code	Remote Controller
1	CON09HP230V1R32AH	CV010N03600	YBE1FB5F
2	CON12HP230V1R32AH	CV010N03500	
3	CON18HP230V1R32AH	CV010N03400	

2. Specifications

2.1 Specification Sheet

Model			CON09HP230V1R32AH	CON12HP230V1R32AH
Product Code			CV010N03600	CV010N03500
Power Supply	Rated Voltage	V~	208/230	208/230
	Rated Frequency	Hz	60	60
	Phases		1	1
Power Supply Mode			Outdoor	Outdoor
Cooling Capacity		Btu/h	9100	12000
Heating Capacity		Btu/h	10500	12000
Air Flow Volume		m ³ /h	650/560/530/480/430/370/320	750/650/600/550/500/450/350
Dehumidifying Volume		L/h	0.8	1.4
Indoor Unit	Fan Type		Centrifugal	Centrifugal
	Fan Diameter-height	mm	Φ370X80	Φ370X80
	Cooling Speed	r/min	Open the lower air louver for cooling: 650/560/530/480/430/370/320 Close the lower air louver for cooling: 620/530/500/450/400/340/290	Open the lower air louver for cooling: 750/650/600/550/500/450/350 Close the lower air louver for cooling: 720/620/570/520/470/420/320
	Heating Speed	r/min	Open the lower air louver for heating: 650/560/530/480/430/370/320 Close the lower air louver for heating: 620/530/500/450/400/340/290	Open the lower air louver for heating: 750/650/600/550/500/450/350 Close the lower air louver for heating: 720/620/570/520/470/420/320
	Fan Motor Power Output	W	30	30
	Fuse Current	A	3.15	3.15
	Evaporator Material		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7	Φ7
	Evaporator Row-Fin Pitch	mm	2-1.3	2-1.3
	Evaporator Length(L) XHeight(H) X Width(W)	mm	511X400X25.4	511X400X25.4
	Motor Model		FN30A-ZL	FN30A-ZL
	Sound Pressure Level	dB (A)	42/39/37/35/33/30/26	45/42/40/38/37/34/29
	Sound Power Level	dB (A)	52/49/47/45/43/40/36	55/52/50/48/47/44/39
	Dimension (WXHXD)	inch	27 9/16 X 23 5/8 X 8 15/32	27 9/16 X 23 5/8 X 8 15/32
	Dimension of Carton Box (LXWXH)	inch	30 29/32 X 11 1/32 X 26 27/32	30 29/32 X 11 1/32 X 26 27/32
	Dimension of Package (LXWXH)	inch	31 1/32 X 11 9/64 X 27 7/16	31 1/32 X 11 9/64 X 27 7/16
	Net Weight	lb	33.075	33.075
	Gross Weight	lb	39.69	39.69
Connection Pipe	Liquid Pipe	inch	1/4	1/4
	Gas Pipe	inch	3/8	3/8

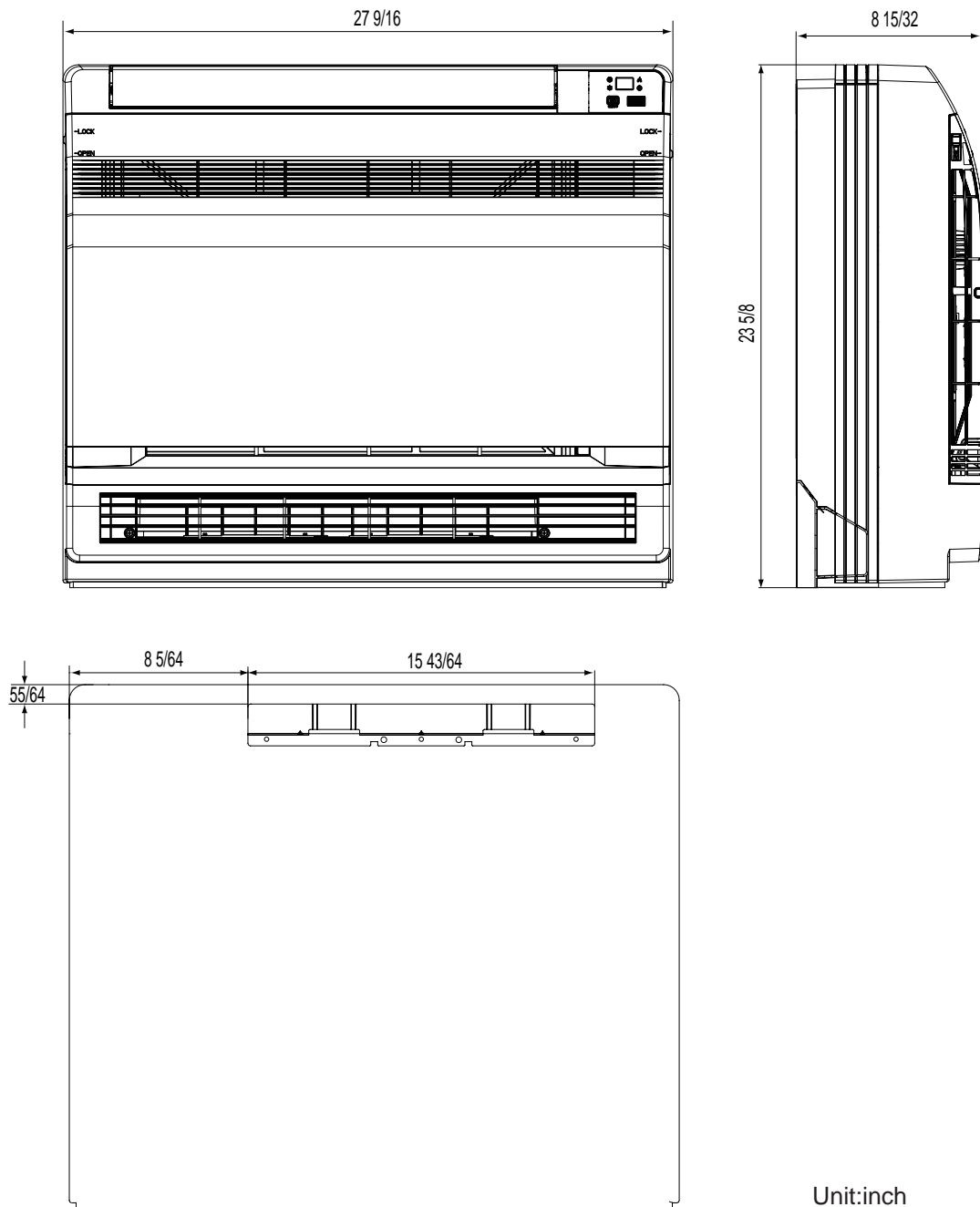
The above data is subject to change without notice; please refer to the nameplate of the unit.

Model			CON18HP230V1R32AH
Product Code			CV010N03400
Power Supply	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Cooling Capacity		Btu/h	18000
Heating Capacity		Btu/h	18000
Air Flow Volume		m ³ /h	840/800/720/650/580/530/410
Dehumidifying Volume		Pint/h	3.8
Indoor Unit	Fan Type		Centrifugal
	Fan Diameter-height	mm	Φ370X80
	Cooling Speed	r/min	Open the lower air louver for cooling: 810/770/720/650/580/530/410 Close the lower air louver for cooling: 780/750/690/620/550/500/380
	Heating Speed	r/min	Open the lower air louver for heating: 810/770/720/690/620/570/450 Close the lower air louver for heating: 780/750/690/650/580/530/410
	Evaporator Material		Aluminum Fin-copper Tube
	Evaporator Pipe Diameter	mm	Φ7
	Evaporator Row-Fin Pitch	mm	2-1.3
	Evaporator Length(L) XHeight(H) X Width(W)	mm	511X400X25.4
	Motor Model		FN30A-ZL
	Fan Motor Power Output	W	30
	Fuse	A	3.15
	Sound Pressure Level	dB (A)	47/45/44/43/40/38/32
	Sound Power Level	dB (A)	57/55/54/53/50/48/42
	Dimension (WXHXD)	inch	27 9/16X23 5/8X8 15/32
	Dimension of Carton Box (LXWXH)	inch	30 29/32 X 11 1/32 X 26 27/32
	Dimension of Package (LXWXH)	inch	31 1/32 X 11 9/64 X 27 7/16
	Net Weight	lb	33.07
Gross Weight	lb	39.69	
Connection Pipe	Liquid Pipe	inch	1/4
	Gas Pipe	inch	1/2

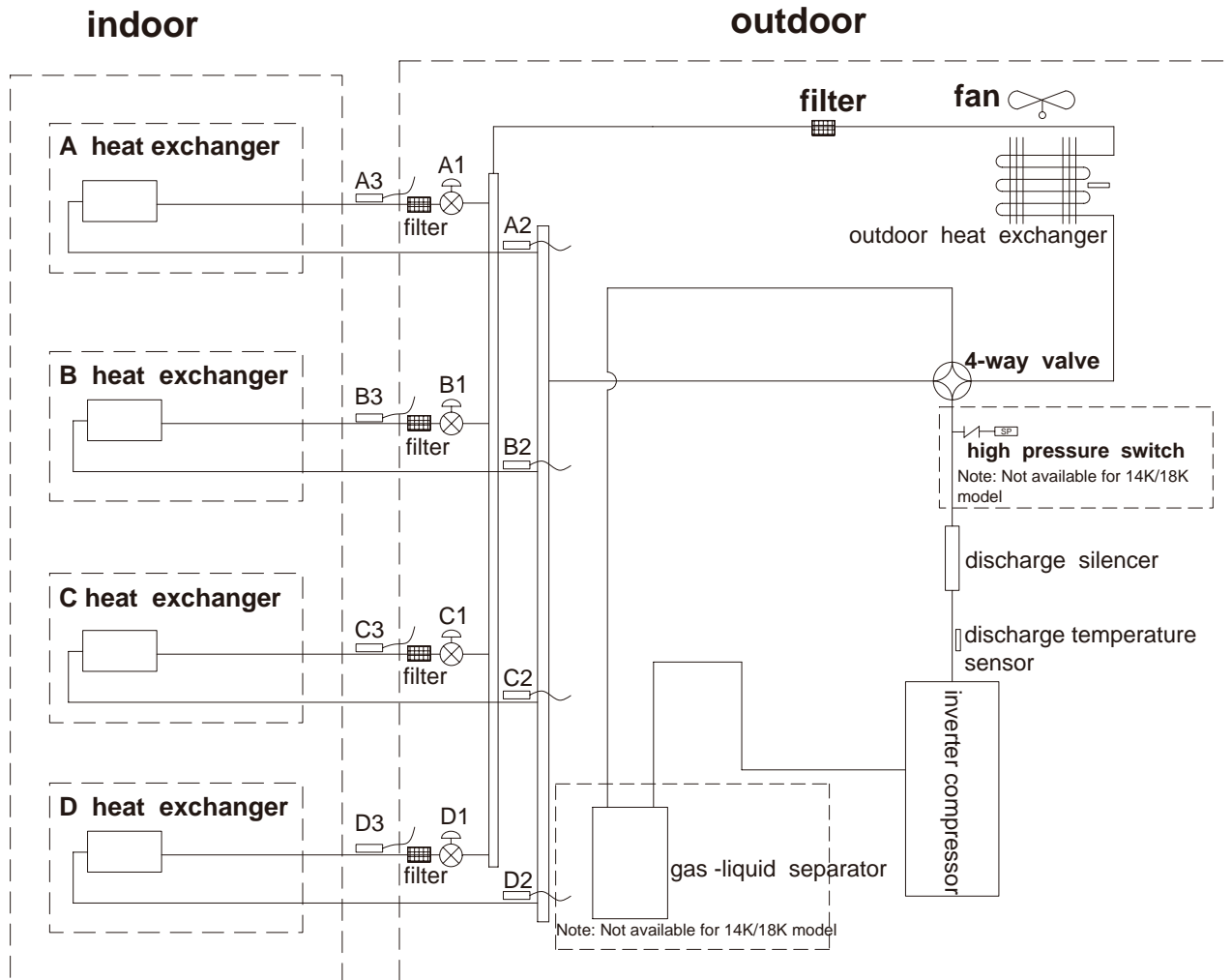
The above data is subject to change without notice; please refer to the nameplate of the unit.

3. Outline Dimension Diagram

3.1 Indoor Unit



4. Refrigerant System Diagram




- A1:A-unit electronic expansion valve B1:B-unit electronic expansion valve**
C1:C-unit electronic expansion valve D1:D-unit electronic expansion valve
A2:A-unit gas pipe temperature sensor B2:B-unit gas pipe temperature sensor
C2:C-unit gas pipe temperature sensor D2:D-unit gas pipe temperature sensor
A3:A-unit liquid pipe temperature sensor B3:B-unit liquid pipe temperature sensor
C3:C-unit liquid pipe temperature sensor D3:D-unit liquid pipe temperature sensor

5. Electrical Part

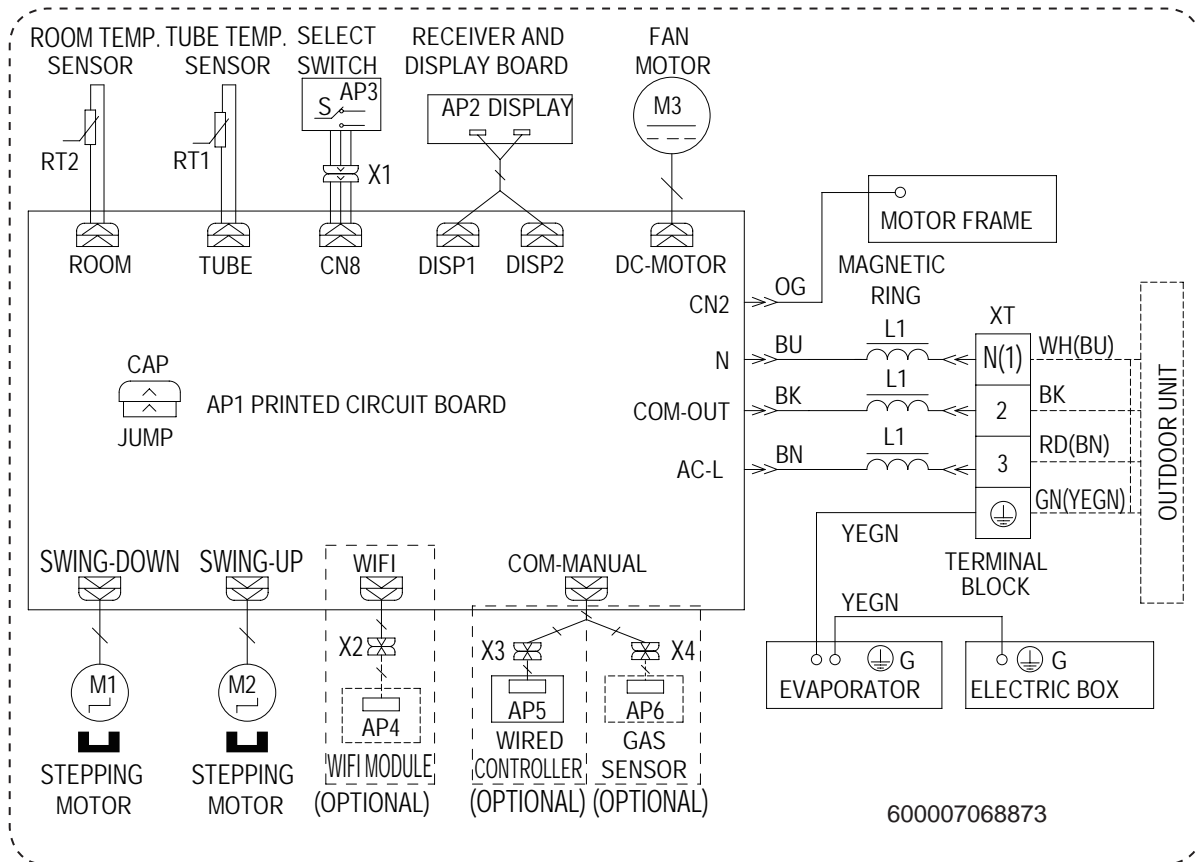
5.1 Wiring Diagram

• Instruction

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue		Grounding wire
YEGN	Yellow/Green	BK	Black	/	/

Note: Jumper cap is used to determine fan speed and the swing angle of horizontal louver for this model.

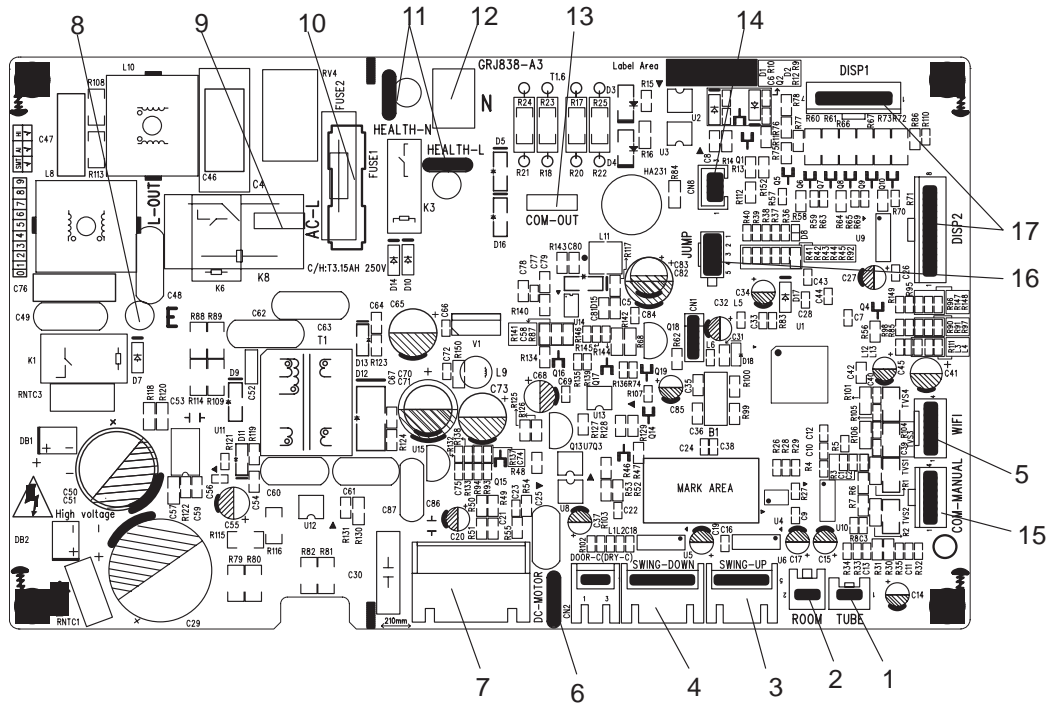
• Indoor Unit



These wiring diagrams are subject to change without notice; please refer to the one supplied with the unit.

5.2 PCB Printed Diagram

• Indoor Unit



No.	Name	No.	Name
1	Interface of tube temperature sensor	10	Fuse
2	Interface of ambient temperature sensor	11	Terminal for health function (only for the mode with this function)
3	Up swing interface	12	Terminal of neutral wire
4	Down swing interface	13	Communication interface between indoor unit and outdoor unit
5	WIFI interface	14	Control interface of Down swing
6	Interface of EMC shielding wire	15	Wired controlled interface
7	DC motor interface	16	Needle stand of jumper cap
8	Earthing wire of main board	17	Interface of display board
9	Terminal of live wire		

6. Function and Control

6.1 Remote Controller Introduction

Introduction for icons on display screen



Introduction for icons on display screen

	Quiet	
	Set fan speed	
	Turbo mode	
	Send signal	
Operation mode		Auto mode
		Cool mode
		Dry mode
		Fan mode
		Heat mode
	X-FAN function	
	Power limiting operation	
	Set temperature	
	Indoor ambient temp.	
ONOFF	TIMER ON / TIMER OFF	
	Set time	
	Left & right swing	
	Up & down swing	
	Child lock	
	Air function	
	Health function	
	WiFi function	
	LED	
	I feel	
	Sleep mode	

Introduction for buttons on remote controller

NOTE:

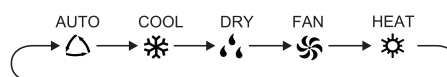
- This is a general use remote controller. It could be used for the air conditioner with multifunction. For the functions which the model doesn't have, if press the corresponding button on the remote controller, the unit will keep the original running status.
- After putting through the power, the air conditioner will give out a sound. Power indicator "⏻" is ON. After that, you can operate the air conditioner by using remote controller.
- Under on status, pressing the button on the remote controller, the signal icon "📶" on the display of remote controller will blink once and the air conditioner will give out a "di" sound, which means the signal has been sent to the air conditioner.

⏻ On/Off button

Press this button to turn on the unit. Press this button again to turn off the unit.

Mode button

Press this button to select your required operation mode.



- When selecting auto mode, air conditioner will operate automatically according to the sensed temperature. Press "Fan" button can adjust fan speed. Press "🌀" / "🌀" button can adjust fan blowing angle.
- After selecting cool mode, air conditioner will operate under cool mode. Press " + " or " - " button to adjust set temperature. Press "Fan" button to adjust fan speed. Press "🌀" / "🌀" button to adjust fan blowing angle.
- When selecting dry mode, the air conditioner operates at low speed under dry mode. Under dry mode, fan speed can't be adjusted. Press "🌀" / "🌀" button to adjust fan blowing angle.
- When selecting fan mode, the air conditioner will only blow fan, no cooling and no heating. Press "Fan" button to adjust fan speed. Press "🌀" / "🌀" button to adjust fan blowing angle.
- When selecting heat mode, the air conditioner operates under heat mode. Press " + " or " - " button to adjust set temperature. Press "Fan" button to adjust fan speed. Press "🌀" / "🌀" button to adjust fan blowing angle.

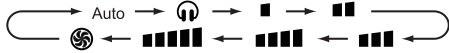
NOTE:








- For preventing cold air, after starting up heat mode, indoor unit will delay 1~5 minutes to blow air (Actual delay time depends on indoor ambient temperature).
- Set temperature range from remote controller: 16~30°C(61-86°F).
- This mode indicator is not available for some models.
- Cooling only unit won't receive heat mode signal. If setting heat mode with remote controller, press " ON/OFF " button can't start up the unit.

Fan button


This button is used for setting Fan Speed in the sequence that goes

from AUTO, , , , , ,  to , then back to Auto.



-  Low speed
-  Low-Medium speed
-  Medium speed
-  Medium-High speed
-  High speed
-  Turbo speed
-  Quiet speed

NOTE:

- It's low fan speed under dry mode.
- X-FAN function Hold fan speed button for 2s in cool or dry mode, the icon "  " is displayed and the indoor fan will continue operation for a few minutes in order to dry the indoor unit even though you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in auto, fan or heat mode. This function indicates that moisture on evaporator of indoor unit will be blown after the unit is stopped to avoid mould.
- Having set X-FAN function on: After turning off the unit by pressing " On/Off " button indoor fan will continue running for a few minutes. at low speed. In this period, hold fan speed button for 2s to stop indoor fan directly.
- Having set X-FAN function off: After turning off the unit by pressing " On/Off " button, the complete unit will be off directly.

+ / - button

Press " + " or " - " button once increase or decrease set temperature 1°C(°F). Holding " + " or " - " button, 2s later, set temperature on remote controller will change quickly. On releasing button after setting is finished, temperature indicator on indoor unit will change accordingly.





Wifi button

Press "Wifi" button to turn on WiFi function, "Wifi" icon will be displayed on the remote controller; Hold "Wifi" button for 5s to turn off WiFi function and "Wifi" icon will disappear.(This function is only available for some models.) Under off status, press "Mode" and "Wifi" buttons simultaneously for 1s, WiFi module will restore factory settings.

NOTE:

- This function is only available for some models.

Health button

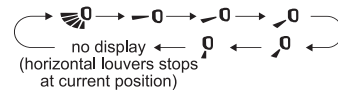
Press this button to turn on or turn off the health and air functions in operation status. Press this button for the first time to start air function; LCD displays "  ". Press the button for the second time to start health and air functions simultaneously; LCD displays "  " and "  ". Press this button for the third time to quit health and air functions simultaneously. Press the button for the fourth time to start health function; LCD display "  ". Press this button again to repeat the operation above.




NOTE:

- This function is only available for some models.



UD-swing button

Press this button can select up & down swing angle. Fan blow angle can be selected circularly as below:



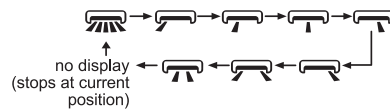
- When selecting "  ", air conditioner is blowing fan automatically. Horizontal louver will automatically swing up & down at maximum angle.
- When selecting "  ", a ir conditioner is blowing fan at fixed position. Horizontal louver will stop at the fixed position.
- Hold "  " button above 2s to set your required swing angle. When reaching your required angle, release the button.

NOTE:



- Press this button continuously more than 2s, the main unit will swing back and forth from up to down, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
- Under swing up and down mode, when the status is switched from off to  , if press this button again 2s later,  status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.

LR-swing button



Press this button can select left & right swing angle. Fan blow angle can be selected circularly as below:



NOTE:

- Press this button continuously more than 2s, the main unit will swing back and forth from left to right, and then loosen the button, the unit will stop swinging and present position of guide louver will be kept immediately.
- Under swing left and right mode, when the status is switched from off to  , if press this button again 2s later,  status will switch to off status directly; if press this button again within 2s, the change of swing status will also depend on the circulation sequence stated above.
- This function only applicable for some models.

Clock button

Press this button to set clock time. "  " icon on remote controller will blink. Press "+" or "-" button within 5s to set clock time. Each pressing of "+" or "-" button, clock time will increase or decrease 1 minute. If hold "+" or "-" button, 2s later, time will change quickly. Release this button when reaching your required time. Press "Clock" button to confirm the time. "  " icon stops blinking.

NOTE

- Clock time adopts 24-hour mode.
- The interval between two operations can't exceed 5s. Otherwise, remote controller will quit setting status. Operation for TIMER ON/TIMER OFF is the same.


Timer on button

- **TIMER ON button**
"TIMER ON" button can set the time for timer on. After pressing

this button, "⌚" icon disappears and the word "ON" on remote controller blinks. Press "+" or "-" button to adjust TIMER ON setting. After each pressing "+" or "-" button, TIMER ON setting will increase or decrease 1min. Holding "+" or "-" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER ON" to confirm it. The word "ON" will stop blinking. "⌚" icon resumes displaying. Cancel TIMER ON: Under the condition that TIMER ON is started up, press "TIMER ON" button to cancel it.

NOTE:

- Under on and off status, you can set TIMER ON simultaneously.
- Before setting TIMER ON please adjust the clock time.
- When turning on TIMER ON function, set this function valid all the time and the air conditioner will be turned on or turned off at set temperature every day. On/Off button has no affect to setting. If this function is not required, use the remote controller to cancel it.

 Timer off button

- TIMER OFF button

"TIMER OFF" button can set the time for timer off. After pressing this button, "⌚" icon disappears and the word "OFF" on remote controller blinks. Press "+" or "-" button to adjust TIMER OFF setting. After each pressing "+" or "-" button, TIMER OFF setting will increase or decrease 1min. Holding "+" or "-" button, 2s later, the time will change quickly until reaching your required time. Press "TIMER OFF" and the word "OFF" will stop blinking. "⌚" icon resumes displaying.

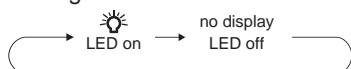
Under the condition that TIMER OFF is started up, press "TIMER OFF" button to cancel it.

NOTE:

- Under on and off status, you can set TIMER OFF simultaneously.
- Before setting TIMER OFF, please adjust the clock time.
- When turning on TIMER OFF function, set this function valid all the time and the air conditioner will be turned on or turned off at set temperature every day. On/Off button has no affect to setting. If this function is not required, use the remote controller to cancel it.

 Light button

Press this button to control the LED status on the display, the circulation change is as follow:



Function introduction for combination buttons

Hold Mode and Clock buttons simultaneously to into the energy-saving function

Under cooling mode, press "Mode" and "Timer" buttons simultaneously to start up or turn off hold Mode and Clock buttons simultaneously to into the energy-saving function. When hold Mode and Clock buttons simultaneously to into the energy-saving function is started up, "SE" will be shown on remote controller, and air conditioner will adjust the set temperature automatically according to ex-factory setting to reach to the best energy-saving effect.

Press "Mode" and "Timer" buttons simultaneously again to exit hold Mode and Clock buttons simultaneously to into the energy-saving function.

NOTE:


- Under hold Mode and Clock buttons simultaneously to into the energy-saving function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under hold Mode and Clock buttons simultaneously to into the energy-saving function, set temperature can't be adjusted.
- Sleep function and hold Mode and Clock buttons simultaneously to into the energy-saving function can't operate at the same time. If hold Mode and Clock buttons simultaneously to into the energy-saving function has been set under cool mode, press "Sleep" button will cancel hold Mode and Clock buttons simultaneously to into the energy-saving function. If sleep function has been set under cool mode, start up the hold Mode and Clock buttons simultaneously to into the energy-saving function will cancel sleep function.


Child lock function

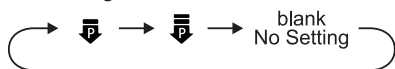
Hold " On/Off " and " - " buttons simultaneously for 3s to turn on or turn off child lock function. When child lock function is on, "🔒" icon is displayed on remote controller. If you operate the remote controller, the "🔒" icon will blink three times without sending signal to the unit.




Temperature display switchover function

Under OFF status, hold "Mode" and " - " buttons simultaneously for 3s to switch temperature display between °C and °F.

 function

 function is for limiting power of the whole unit. Press "Mode" and "Light" buttons simultaneously, the remote controller will circularly display as the following:




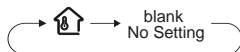
- Maximum power limited under the  mode is lower than that of  mode.
- If you want to cancel the power limiting function, press "Mode" and "Light" buttons simultaneously till the icon in remote controller is not displayed.
- When the remote controller is turned off, power limiting function is cancelled. If you want to activate the function, please repress "Mode" and "Light" buttons simultaneously.
- If the current power is lower than the maximum power of  mode, then the power will not be limited after entering into such mode.
- For the model with one outdoor unit and two indoor units, if any one of indoor units enters into power limiting function, the outdoor unit will enter into the set limiting power mode of indoor unit; when two indoor units enter into power limiting mode, then the power of outdoor unit will be limited according to the lower power of the two indoor units.


NOTE:

- This button is only available for the model with such function.



Indoor ambient temperature

By holding " On/Off " and "  " buttons simultaneously , you can see indoor ambient temperature or indoor ambient humidity on indoor unit's display. The setting on remote controller is selected circularly as below:



- When selecting "  " with remote controller, temperature indicator on indoor unit displays indoor ambient temperature.


Clean reminder function of filter

The reminder function is defaulted to be OFF. Hold " On/Off " and "  " buttons simultaneously for 5s to turn it on. The buzzer will give out sound for 0.5s and the dual-8 nixie tube on the display will be on for 3s; Once the reminder function is turned on, when the air conditioner has reached to the set time, the dual-8 nixie tube will flash about 30s when the unit is turned on each time to remind the user to clean the filter; you can turn off this cycle reminder by holding " On/Off " and "  " buttons simultaneously for 5s and then the air conditioner will count time again.

NOTE:

- Once the reminder function is turned on, only this cycle reminder can be cleared.
- This function is only available for some models.


Volume control of IDU Buzzer

Press "Mode" and "  " buttons simultaneously to reduce the sound level of the indoor unit' buzzer.

NOTE:

- This function is only available for some models.

Auto clean function

Under unit off status, hold "Mode" and "  " buttons simultaneously for 5s to turn on or turn off the auto clean function. When the auto clean function is turned on, indoor unit displays "CL" . During the auto clean process of evaporator, the unit will perform fast cooling or fast heating. There may be some noise, which is the sound of flowing liquid or thermal expansion or cold shrinkage. The air conditioner may blow cool or warm air, which is a normal phenomenon. During cleaning process, please make sure the room is well ventilated to avoid affecting the comfort.

NOTE:

- The auto clean function can only work under normal ambient temperature. If the room is dusty, clean it once a month; if not, clean it once every three months. After the auto clean function is turned on, you can leave the room. When auto clean is finished, the air conditioner will enter standby status.
- This function is only available for some models.

Night mode



Under cooling or heating mode, when turning on sleep mode and turn to low speed or quiet notch, the outdoor unit would enter into

night mode.

NOTE:




- When you feel that the cooling and heating effect is poor, please press "Fan" button to other fan speed or press "Sleep" button to exit the night mode.
- The night mode can only work under normal ambient temperature.
- This function is only available for some models.

Under on status, press "Health" and "+" buttons to turn on the I FEEL function

Press "Health" and " + " buttons simultaneously to start under on status, press "Health" and "+" buttons to turn on the I FEEL function. and "  " will be displayed on the remote controller. After this function is set, the remote controller will send the detected ambient temperature to the controller and the unit will automatically adjust the indoor temperature according to the detected temperature. Press "Health" and " + " buttons simultaneously again to turn off under on status, press "Health" and "+" buttons to turn on the I FEEL function and "  " will disappear.

- Please put the remote controller near user when this function is set. Do not put the remote controller near the object of high temperature or low temperature in order to avoid detecting inaccurate ambient temperature. When under on status, press "Health" and "+" buttons to turn on the I FEEL function is turned on, the remote controller should be put within the area where indoor unit can receive the signal sent by the remote controller.

Sleep function

Press "Clock" and "Light" buttons simultaneously, can select Sleep 1 (), Sleep 2 (), Sleep 3 () and cancel the Sleep, circulate between

these, after electrified, Sleep Cancel is defaulted.

- Sleep 1 is Sleep mode 1, in Cool modes: sleep status after run for one hour, the main unit setting temperature will increase 1 , two hours, setting temperature increased 2 , then the unit will run at this setting temperature; In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1 , two hours, setting temperature will decrease 2 , then the unit will run at this setting temperature.
- Sleep 2 is sleep mode 2, that is air conditioner will run according to the presetting a group of sleep temperature curve.
- Sleep 3 the sleep curve setting under Sleep mode by DIY;
 - (1) Under Sleep 3 mode, press "Health" button for a long time, remote controller enters into user individual sleep setting status, at this time, the time of remote controller will display "1HOUR", the setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink (The first entering will display according to the initial curve setting value of original factory);
 - (2) Adjust " + " and " - " button, could change the corresponding setting temperature, after adjusted, press "Health" button for

confirmation;

(3) At this time, 1hour will be automatically increased at the timer position on the remote control, (that are "2HOUR" or "3HOUR" or "8HOUR"), the place of setting temperature "88" will display the corresponding temperature of last setting sleep curve and blink;

(4) Repeat the above step (2)~(3) operation, until 8 hours temperature setting finished, sleep,curve setting finished, at this time, the remote controller will resume the original timer display; temperature display will resume to original setting temperature.

Sleep 3 the sleep curve setting under Sleep mode by DIY could be inquired: The user could accord to sleep curve setting method to inquire the presetting sleep curve, enter into user individuation sleep setting status, but do not change the temperature, press "Health" button directly for confirmation. Note: In the above presetting or enquiry procedure, if continuously within 10s, there is no button pressed, the sleep curve setting within 10s, there is no button pressed, the sleep curve setting status will be automatically quit and resume to display the original displaying. In the presetting or enquiry procedure, press " On/Off " button, "Mode" button, "Clock" and "Light" buttons simultaneously, the sleep curve setting or enquiry status will quit similarly.

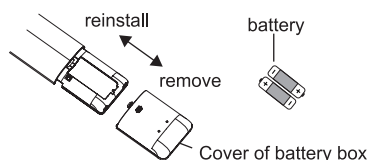
8°C heating function

Under heat mode, press "Mode" and "Clock" buttons simultaneously to start up or turn off 8°C heating function. When this function is started up, "⊕" and "8°C" will be shown on remote controller, and the air conditioner keep the heating status at 8°C. Press "Mode" and "Clock" buttons simultaneously again to exit 8°C heating function.

NOTE

- Under 8°C heating function, fan speed is defaulted at auto speed and it can't be adjusted.
- Under 8°C heating function, set temperature can't be adjusted.
- Sleep function and 8°C heating function can't operate at the same time. If 8°C heating function has been set under heat mode, press "Clock" and "Light" simultaneously will cancel 8°C heating function. If sleep function has been set under heat mode, start up the 8°C heating function will cancel sleep function.
- Under °F temperature display, the remote controller will display 46°F heating.

Replacement of batteries in remote controller



1. Press the back side of remote controller marked with "⊕", as shown in the fig, and then push out the cover of battery box along the arrow direction.

2. Replace two 7# (AAA 1.5V) dry batteries, and make sure the

position of "+" polar and "-" polar are correct.

3. Reinstall the cover of battery box.

NOTICE:

- During operation, point the remote control signal sender at the receiving window on indoor unit.
- The distance between signal sender and receiving window should be no more than 8m, and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you don't use remote controller for a long time, please take out the batteries.
- If the display on remote controller is fuzzy or there's no display, please replace batteries.

6.2 Brief Description of Modes and Functions

1. Cooling mode

(1) Under this mode, the fan and the up swing will operate at setting status. The temperature setting range is 16~30°C.

(2) The unit is stopped because of malfunction of outdoor unit or protection. The indoor unit keeps original operation status and the error code is displayed.

(3) Indoor unit is stopped due to mode shock.

2. Drying mode

(1) Under this mode, the fan operates at low speed and the swing operates at setting status. The temperature setting range is 16~30°C.

(2) The unit is stopped because of malfunction of outdoor unit or protection. The indoor unit keeps original operation status and the error code is displayed.

3. Heating mode

(1) Under this mode, the temperature setting range is 16~30°C.

(2) Working condition and process for heating

When the unit is turned on under heating mode, the indoor unit turns to cold air prevention status. When the unit is turned off and the indoor unit has been started up before, the indoor unit blows the residual heat.

(3) Protection function

When the compressor is stopped due to malfunction under heating mode, the indoor unit blows the residual heat.

(4) Blow residual heat

When the unit stops operation as it reaches the temperature point, indoor unit will continue to run for 60s. The fan speed can't be switched during blowing residual heat period. The upper horizontal louver will turn to the defaulted position in cooling. When the unit operates under heating mode or auto heating mode, compressor will be turned on and the corresponding electric expansion valve is more than 65 and the unit stops operation during the operation status of indoor unit. The upper horizontal louver will turn to the defaulted position in heating mode. The indoor unit operates at low speed for 10s and then the unit stops operation.

(5) Defrosting, oil-returning

As it received the signal of defrosting and oil-returning from outdoor unit, the upper horizontal louver will turn to the minimum angle in cooling. 10s later, the indoor fan stop operation. During defrosting and oil-returning process and they are quitted within 5mins, all malfunctions for indoor tube temperature sensor won't be detected.

4. Working process for AUTO mode (Mode judgment will be performed every 30s)

Under AUTO mode, standard cooling $T_{\text{preset}}=25^{\circ}\text{C}$ (77°F), standard heating $T_{\text{preset}}=20^{\circ}\text{C}$ (68°F), and standard fan $T_{\text{preset}}=25^{\circ}\text{C}$ (77°F).

(1) When $T_{\text{amb}} \geq 26^{\circ}\text{C}$ (79°F), the unit operation in cooling mode;

(2) Heating pump unit: When $T_{\text{amb}} \leq 19^{\circ}\text{C}$ (66°F), the unit operates in heating mode;

(3) Cooling only unit: $T_{\text{amb}} \leq 19^{\circ}\text{C}$ (66°F), the unit operates in fan mode;

(4) When $19^{\circ}\text{C} < T_{\text{indoor amb.}} < 26^{\circ}\text{C}$, if it turns to auto mode as the unit is turned on for the first time the unit will operate at auto fan mode. If it switch to auto mode from other modes, the unit will keep previous operation mode (when it turns to dry mode, the unit operates at auto fan mode).

(5) Protection function

Protection function is the same as that in cooling or heating mode.

5. Fan mode

Under fan mode, only indoor fan and swing operates. When it operates at auto fan speed, it will operate according to auto fan speed condition in cooling.

6. Mode shock

If the mode shock is 1 which is received by indoor unit from outdoor unit, the loads of indoor unit (indoor unit, auxiliary heating, swing) stop operation and the error code is displayed. The mode sent to outdoor unit is still remote control receiving mode. The unit will be turned off during mode shock. If timer ON is reached, and the mode shock is 1 which is received by indoor unit from outdoor unit, the loads of indoor unit (indoor unit, auxiliary heating, swing) stop operation and the error code is displayed. The mode sent to outdoor unit is still remote control receiving mode.

7. Other control

7.1 Buzzer

Upon energization or availablely operating the unit or remote controller, the buzzer will give out a beep.

7.2 Auto button

If this button is pressed, the unit will operate in AUTO mode and indoor fan will operate at auto speed; meanwhile, the swing motor operates. Press this button again to turn off the unit.

7.3 8 °C heating function

Under heating mode, press "Mode" button "Clock" simultaneously. Under this mode, "cold air prevention protection" will be shielded.

7.4 I FEEL function

When I FEEL command is received, the controller will operate according to the ambient temperature sent by the remote controller (For defrosting and cold blow prevention, the unit operates according to the ambient temperature sensed by the air conditioner). The remote controller will send ambient temperature data to the controller every 10min. When the data has not been received after 11mins, the unit will operate according to the temperature sensed by the air conditioner. If I FEEL function is not selected, the ambient temperature will be that sensed by the air conditioner. I FEEL function will not to be memorized.

7.5 Timer function

General timer and clock timer functions are compatible by equipping remote controller with different functions.

General Timer

Timer ON can be set at unit OFF. If selected ON time is reached, the unit will start to operate according to previous setting status.

Time setting range is 0.5-24hr in 30-minute increments.

Timer OFF can be set at unit ON. If selected OFF time is reached, the unit will stop operation. Time setting range is 0.5-24hr in 30-minute increments.

7.6 Sleep function

This mode is only valid in cooling and heating modes. The unit will select proper sleep curve to operate according to different set temperature.

7.7 Switchover function for defrosting mode

If H1 isn't displayed on remote controller under OFF status, the unit will turn to "defrosting mode 1" after the unit is turned on by remote controller. After indoor unit receives remote control signal, it will send "defrosting mode 1" to outdoor unit. If H2 is displayed on

remote controller under OFF status, the unit will turn to “defrosting mode 2” after the unit is turn on by remote controller. After indoor unit receives remote control signal, it will send “defrosting mode 2” to outdoor unit.

Under OFF status, press MODE and AUXILIARY button simultaneously on remote controller to switch “defrosting mode 1” and “defrosting mode 2”.

7.8 Compulsory defrosting function

When the unit is turned on in heating by remote controller and the set temperature is 16°C, press “+,-,+,-,+,-” continuously within 5s, the indoor unit turns to compulsory defrosting setting and it will send compulsory defrosting mode to outdoor unit.

When indoor unit received the compulsory defrosting signal from outdoor unit, the indoor unit will quit from the compulsory defrosting setting and it will cancel to send compulsory defrosting mode to outdoor unit.

7.9 Refrigerant recovery function

Turn to Freon recovery mode: After the unit is energized for 5min, and the unit is turned on at 16°C under cooling mode, press light button on remote controller for 3 times successively within 3s to turn to Freon recovery mode. Fo is displayed and it will send Freon recovery mode to outdoor unit.

Quit from Freon recovery mode: After it turns to Freon mode, if it receives any signal from remote controller or it turns to Freon recovery mode for 25 mins, it will quit from Freon recovery mode.

Turn to the action for Freon recovery mode: indoor unit will be turned on in cooling mode. The fan speed is super-high fan speed and the set temperature is 16°C. The horizontal louver will turn to the minimum operation angle.

Quit the action for Freon recovery mode: The indoor fan operates at the previous set status by remote controller.

7.10 Pilot run function

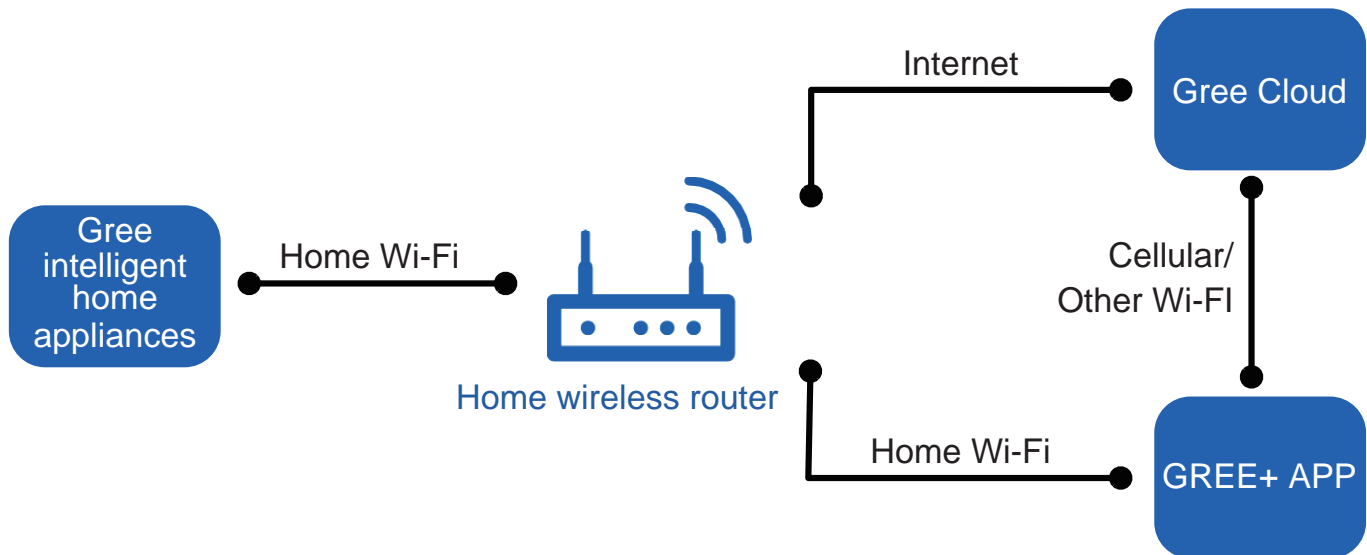
When the set temperature is 30°C under cooling mode, press “+,-,+,-,+,-” continuously within 3s, the indoor unit turns to pilot run setting mode and it will send pilot run mode to outdoor unit.

Pilot run mode: it operates under cooling mode and “dd” is displayed.

Quit the pilot run mode and indoor unit cancels “dd” display. If it receives “wrong wire connection of malfunction of expansion valve” from outdoor unit, “dn” will be displayed.

6.3 GREE+ App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation

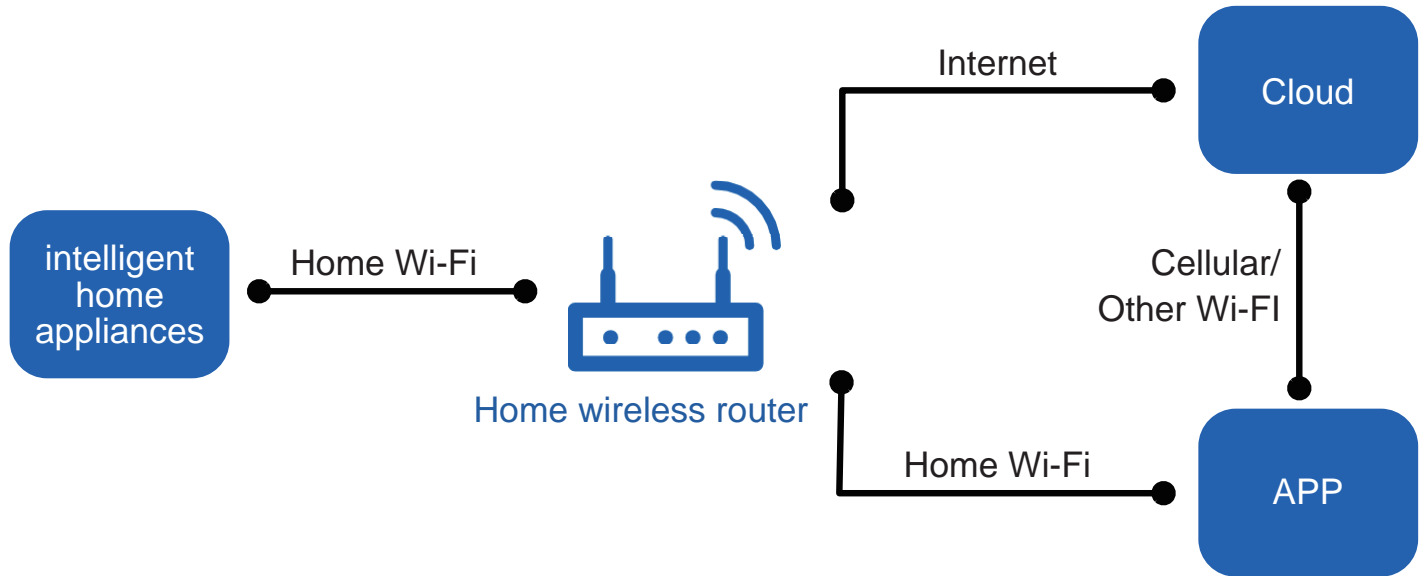


GREE+ App Download Linkage

Scan the QR code or search "GREE+" in the application market to download and install it. When "GREE+" App is installed, register the account and add the device to achieve long-distance control and LAN control of Gree smart home appliances. For more information, please refer to "Help" in App.

6.4 Ewpe Smart App Operation Manual

Control Flow Chart



Operating Systems

Requirement for User's smart phone:



iOS system
Support iOS7.0 and
above version



Android system
Support Android 4.4 and
above version

Download and installation



App Download Linkage

Scan the QR code or search "Ewpe Smart" in the application market to download and install it. When "Ewpe Smart" App is installed, register the account and add the device to achieve long-distance control and LAN control of smart home appliances. For more information, please refer to "Help" in App.

7. Notes for Installation and Maintenance

Safety Precautions: Important!

Please read the safety precautions carefully before installation and maintenance.

The following contents are very important for installation and maintenance.

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

Please follow the instructions below.

- The installation or maintenance must accord with the instructions.
- Comply with all national electrical codes and local electrical codes.
- Pay attention to the warnings and cautions in this manual.
- All installation and maintenance shall be performed by distributor or qualified person.
- All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.
- Be caution during installation and maintenance. Prohibit incorrect operation to prevent electric shock, casualty and other accidents.



WARNINGS

Electrical Safety Precautions:

1. Cut off the power supply of air conditioner before checking and maintenance.
2. The air condition must apply specialized circuit and prohibit share the same circuit with other appliances.
3. The air conditioner should be installed in suitable location and ensure the power plug is touchable.
4. Make sure each wiring terminal is connected firmly during installation and maintenance.
5. Have the unit adequately grounded. The grounding wire can't be used for other purposes.
6. Must apply protective accessories such as protective boards, cable-cross loop and wire clip.
7. The live wire, neutral wire and grounding wire of power supply must be corresponding to the live wire, neutral wire and grounding wire of the air conditioner.
8. The power cord and power connection wires can't be pressed by hard objects.
9. If power cord or connection wire is broken, it must be replaced by a qualified person.
10. If the power cord or connection wire is not long enough, please get the specialized power cord or connection wire from the manufacture or distributor. Prohibit prolong the wire by yourself.
11. For the air conditioner without plug, an air switch must

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

12. Make sure all wires and pipes are connected properly and the valves are opened before energizing.
13. Check if there is electric leakage on the unit body. If yes, please eliminate the electric leakage.
14. Replace the fuse with a new one of the same specification if it is burnt down; Don't replace it with a cooper wire or conducting wire.
15. If the unit is to be installed in a humid place, the circuit breaker must be installed.

Installation Safety Precautions:

1. Select the installation location according to the requirement of this manual.(See the requirements in installation part)
2. Handle unit transportation with care; the unit should not be carried by only one person if it is more than 44.09 lb.
3. When installing the indoor unit and outdoor unit, a sufficient fixing bolt must be installed; make sure the installation support is firm.
4. Ware safety belt if the height of working is above 2m.
5. Use equipped components or appointed components during installation.
6. Make sure no foreign objects are left in the unit after finishing installation.

Refrigerant Safety Precautions:

1. 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.
- 2.Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
3. Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture or other hazards.
4. Make sure no refrigerant gas is leaking out when installation is completed.
5. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
6. Never touch the refrigerant piping or compressor without wearing glove to avoid scald or frostbite.

Improper installation may lead to fire hazard, explosion, electric shock or injury.

Safety Precautions for Installing and Relocating the Unit:

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

WARNINGS

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.



R32 refrigerant warning

- 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 odorless. 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 ozone layer. 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.
- This product uses R32 difluoromethane refrigerant, which is a mildly flammable gas class A2L according to ISO 817 or ANSI/ASHRAE 34.
- "ANSI/ASHRAE 15 (USA) and CSA 852 (Canada)" stipulate that it must be handled by a refrigeration mechanic with an appropriate refrigerant handling licence.
- 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.)
- The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- The appliance shall be stored so as to prevent mechanical damage from occurring.
- Ducts connected to an appliance shall not contain an ignition source.
- Keep any required ventilation openings clear of obstruction.
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- Servicing shall be performed only as recommended by the manufacturer.
- Should repair be necessary, contact your nearest authorized
- Service Centre. Any repairs carried out by unqualified personnel may be dangerous.
- Compliance with national gas regulations shall be observed. Read specialist's manual.



- That pipe-work including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC

International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

Safety Operation of Flammable Refrigerant

Aptitude requirement for maintenance man (repairs should be done only by specialists).

- Any person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorises their competence to handle refrigerants safely in accordance with an industry recognised assessment specification.
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants

Notices for using refrigerant sensor

- The refrigerant sensor can monitor whether R32 refrigerant leaks in real time. When the leakage of R32 refrigerant is detected, the sensor will trigger the alarm and emit a buzzer, and the indoor unit will display "EA" code. Meanwhile, the outdoor unit will stop running.
- In case of refrigerant leakage, please open the window immediately for ventilation to reduce the concentration of refrigerant in the room. Meanwhile, check the room to ensure that there is no fire source. After completing the above operations, please leave the room and go to the safe place, and then contact the after-sales service team for maintenance.
- When the refrigerant sensor reaches its service life or is damaged, the indoor unit will display "FE" code. Please contact the after-sales service team to replace the refrigerant sensor.
- Avoid oil and water splashing into the refrigerant sensor, otherwise it may cause damage to the refrigerant sensor.
- Avoid using it in the environment with electromagnetic interference, chemical substances (such as chemical plants, etc.), flammable gas, combustible and explosive gas and smog, etc.
- Avoid using items containing ethanol (such as perfume, etc.) and smog-producing items (such as cigarettes, etc.) near the refrigerant sensor, otherwise it will lead to abnormal conditions such as false alarms of the refrigerant sensor. If such phenomenon occurs, please contact the after-sales service team for maintenance.
- Only applicable to refrigerant sensor models.

Safety preparation work

This product uses mildly flammable R32 refrigerant. Certain levels of refrigerant require minimum room sizes. Please ensure that these minimum room sizes are adhered to for standard installations. (Note: Please refer to the nameplate for the charging quantity of R32).

Appliance shall be installed, operated and stored in a room with a floor area larger than Xm^2 . (Please refer to table "a")

Table a - Minimum room area (m^2)

Charge amount (kg)	Installation height(m)
	0~2.2
	Minimum room area (m ²)
<1.836	/
1.836~2.7	8.1
2.8	8.4
2.9	8.7

Information on servicing

Checks to the area

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, Safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the REFRIGERATING SYSTEM, the following precautions shall be 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 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.

No ignition sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released

refrigerant and preferably expel it externally into the atmosphere.

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 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.

Repairs to sealed components

Sealed electrical components shall be replaced.

Repair to intrinsically safe components

Intrinsically safe components must be replaced.

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.

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 FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.

Leak detection fluids are 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 "Removal and evacuation".

Removal and evacuation

When breaking into the refrigerant circuit to make repairs -or for any other purpose -conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- Safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using flame to open circuit; and
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing 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 (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be 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 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 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 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 the flammable refrigerant. If in doubt, the manufacturer should be consulted. In addition, a 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 "Removal and evacuation".

Removal and evacuation

When breaking into the refrigerant circuit to make repairs -or for any other purpose -conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

- Safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas (optional for A2L);
- evacuate (optional for A2L);
- continuously flush or purge with inert gas when using flame to open circuit; and
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing 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 (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be 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 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 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 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 the flammable refrigerant. If in doubt,the manufacturer should be consulted. 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.

The recovered refrigerant shall be processed according to local legislation 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 compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system,it Shall be carried out safely.

Main Tools for Installation and Maintenance



Level meter



Measuring tape



Screw driver



Impact drill



Drill head



Electric drill



Electroprobe



Universal meter



Torque wrench



Open-end wrench



Inner hexagon spanner



Electronic leakage detector



Vacuum pump



Pressure meter



Pipe pliers



Pipe pliers



Pipe cutter



Pipe expander



Pipe bender



Soldering appliance



Refrigerant container



Electronic scale

8. Installation

8.1 Requirements for Electric Connection

1. Safety Precaution

- (1) Must follow the electric safety regulations when installing the unit.
- (2) If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to (avoid a hazard).
- (3) According to the local safety regulations, use qualified power supply circuit and air switch.
- (4) A air switch having a contact separation of at least 3mm in all poles should be fixed in fixed wiring.
- (5) The appliance shall be installed in accordance with national wiring regulation.
- (6) The air switch must have the functions of magnetic tripping and heat tripping in order to prevent short circuit or overload. Please install the air switch with suitable capacity according to the sheet below.
- (7) 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.
- (8) Properly connect the live wire, neutral wire and grounding wire of power socket.
- (9) Be sure to cut off the power supply before proceeding any work related to electric safety.
- (10) Do not put through the power before finishing installation.

2. Grounding Requirement

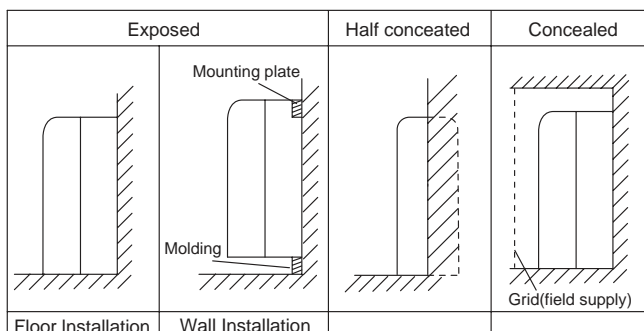
- (1) The air conditioner is first class electric appliance. It must be properly grounded with specialized grounding device by a professional. Please make sure it is always grounded effectively, otherwise it may cause electric shock.
- (2) The yellow-green wire in air conditioner is grounding wire, which can't be used for other purposes.
- (3) The grounding resistance should comply with national electric safety regulations.

Air-Conditioner	Fuse Capacity	Power cord
09/12/18K	3.15A	4xAWG18

8.2 Installation of indoor unit

1. Selection of Installation Location

- (1) Such a place where cool air can be distributed throughout the room.
- (2) Such a place where condensation water is easily drained out.
- (3) Such a place that can handle the weight of indoor unit.
- (4) Such a place which has easy access for maintenance.
- (5) The appliance shall not be installed in the laundry.



There are 2 styles of installation

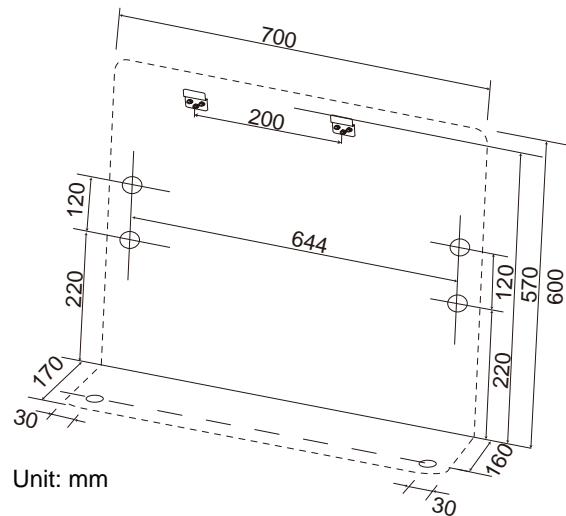
- Wall Type
- Floor type

Each type is similar to the other as follows:

The indoor unit should be sited in a place where:

- (1) The restrictions on installation specified in the indoor unit installation drawings are met.
- (2) Both air intake and exhaust have clear paths met.
- (3) The unit is not in the path of direct sunlight.
- (4) The unit is away from the source of heat or steam.
- (5) There is no source of machine oil vapour (this may shorten indoor unit life).
- (6) Cool(warm) air is circulated throughout the room.
- (7) The unit is away from electronic ignition type fluorescent lamps (inverter or rapid start type) as they may shorten the remote controller range.
- (8) The unit is at least 1 metre away from any television or radio set(unit may cause interference with the picture or sound).

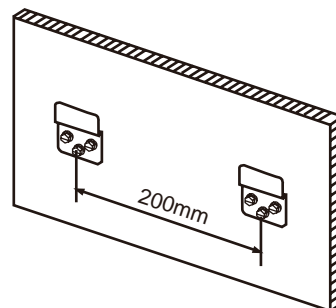
Location for securing the installation panel.



Cautions for installation where air conditioner trouble is liable to occur.

- Where there is too much of oil area.
- Where it is acid base area.
- Where there is irregular electrical supply.

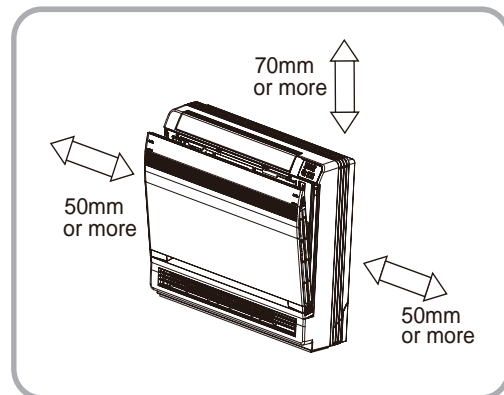
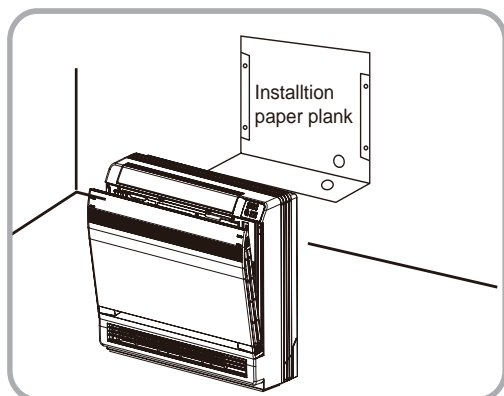
Schematic drawing of hooks:




2. Indoor Unit Installation Drawings

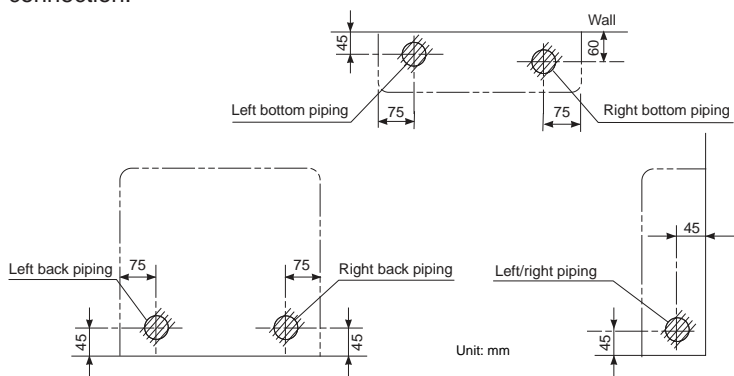
The indoor unit may be mounted in any of the three styles shown here.

Console unit shall be installed on the ground or the position where is 0.3m from the floor.



3. Refrigerant Piping

- (1) Drill a hole (65mm in diameter) in the spot indicated by  the symbol in the illustration ad below .
- (2) The location of the hole is different depending on which side of the pipe is taken out .
- (3) For piping , see 6. Connecting the refrigerant pipe , under Indoor Unit Installation.
- (4) Allow space around the pipe for a easier indoor unit pipe connection.



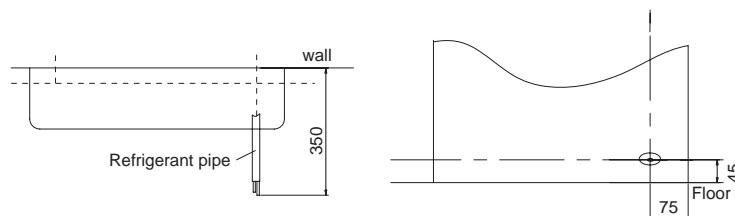
CAUTION

Min. allowable length

- The suggested shortest pipe length is 2.5m, in order to avoid noise from the outdoor unit and vibration. (Mechanical noise and

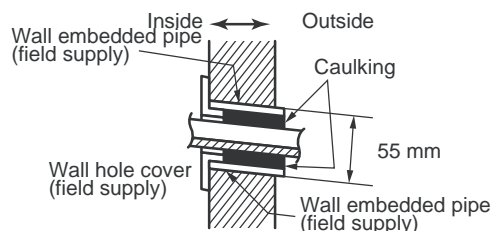
vibration may occur depending on how the unit is installed and the environment in which it is used.)

- See the installation manual for the outdoor unit for the maximum pipe length.
- For multi-connections , see the installation manual for the multi-outdoor unit.



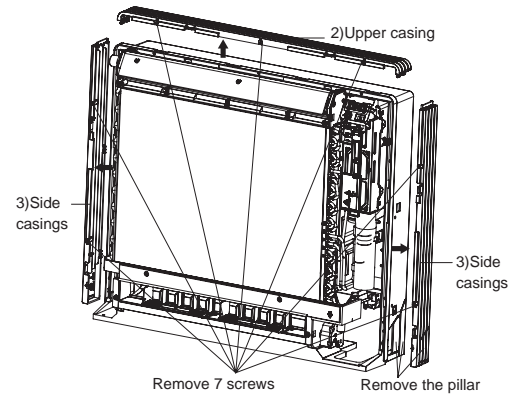
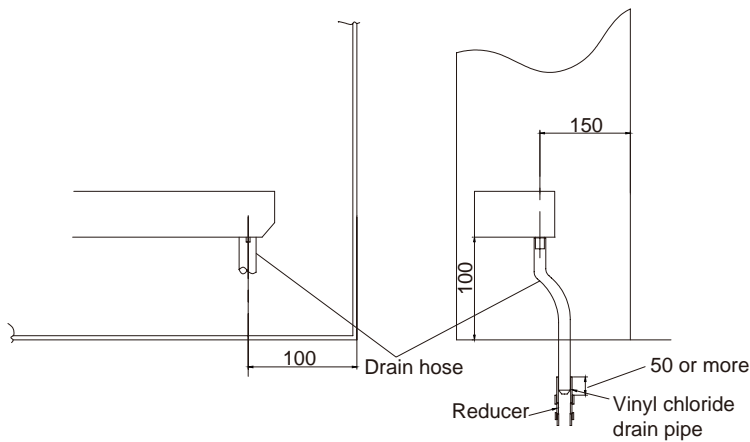
4. Boring a Wall Hole and Installing Wall Embedded Pipe

- For walls containing metal frame or metal board , be sure to use a wall embedded pipe and wall cover in the feed-through hole to prevent water leakage.
 - Be sure to caulk the gaps around the pipes with caulking material to prevent water leakage.
- (1) Bore a feed-through hole of 55mm in the wall so it has a down slope toward the outside.
 - (2) Insert a wall pipe into the hole.
 - (3) Insert a wall cover into wall pipe .
 - (4) After completing refrigerant piping, wiring, and drain piping, caulk pipe hole gap with putty.



5. Drain Piping

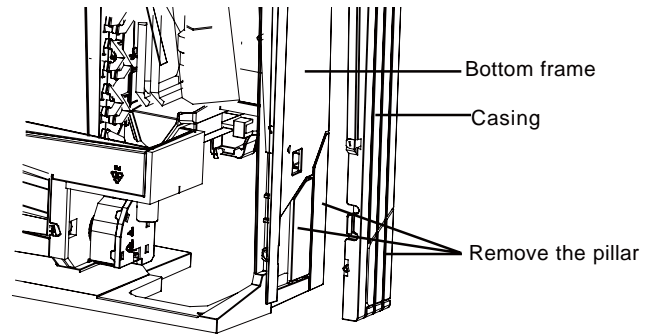
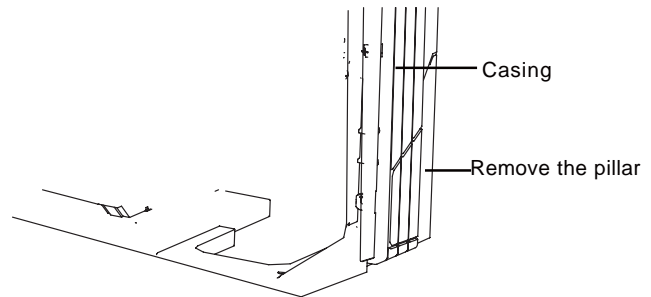
- (1) Use commercial rigid polyvinyl chloride pipe general VP 20 pipe, outer diameter 26mm, inner diameter 20mm for the drain pipe.
- (2) The drain hose (outer diameter 18mm at connecting end, 220mm long) is supplied with the indoor unit. Prepare the drain pipe picture below position.
- (3) The drain pipe should be inclined downward so that water will flow smoothly without any accumulation. (Should not be trap.)
- (4) Insert the drain hose to this depth so it won't be pulled out of the drain pipe.
- (5) Insulate the indoor drain pipe with 10mm or more of insulation material to prevent condensation.
- (6) Remove the air filters and pour some water into the drain pan to check the water flows smoothly.



■ For Side Piping

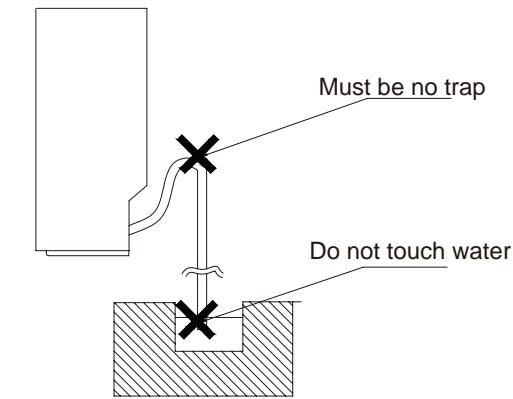
● Remove the pillars.

- (1) Remove the 7 screws.
- (2) Remove the upper casing (2 tabs).
- (3) Remove the left and right casings (2 tabs on each side).
- (4) Remove the slit portions on the bottom frame and casings using nippers.
- (5) Return by following the steps in reverse order (3>2>1).



Installation

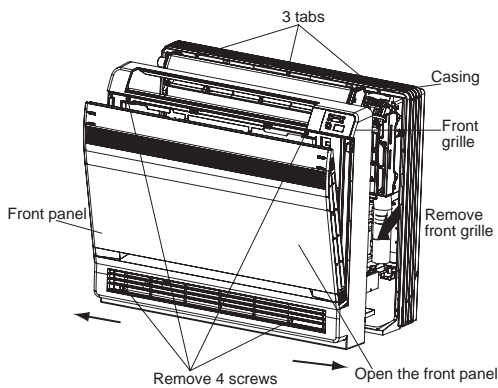
- Secure using 6 screws for floor installations. (Do not forget to secure to the rear wall.)
- For wall installations, secure the mounting plate using 5 screws and the indoor unit using 4 screws. The mounting plate should be installed on a wall which can support the weight of the indoor unit.
 - (1) Temporarily secure the mounting plate to the wall, make sure that the panel is completely level, and mark the boring points on the wall.
 - (2) Secure the mounting plate to the wall with screws.



6. Installing Indoor Unit

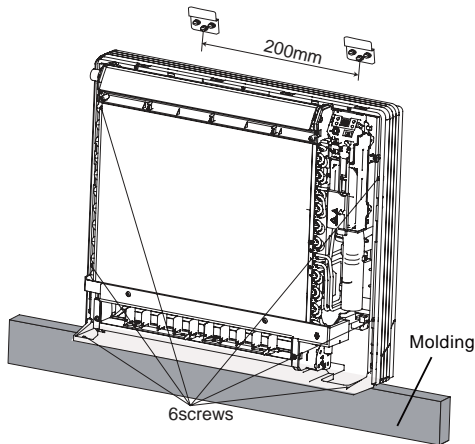
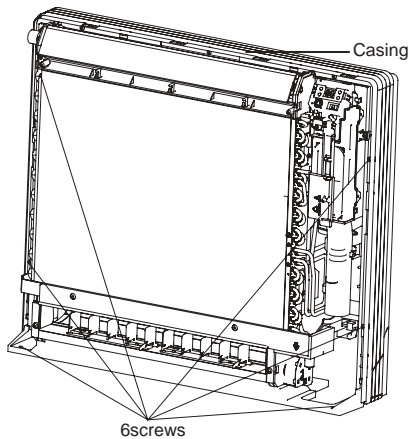
Preparation

- Open the front panel, remove the 4 screws and dismount the front grille while pulling it forward.
- Follow the arrows to disengage the clasps on the front case to remove it.
- Follow the procedure below when removing the slit portions.



■ For Moldings

- Remove the pillars. (Remove the slit portions on the bottom frame using nippers.)



(3) Once refrigerant piping and drain piping connections are complete, fill in the gap of the through hole with putty. A gap can lead to condensation on the refrigerant pipe, and drain pipe, and the entry of insects into the pipes.

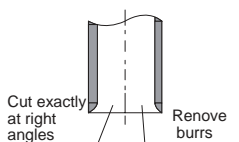
(4) Attach the front panel and front grille in their original positions once all connections are complete.

7. Flaring the Pipe End

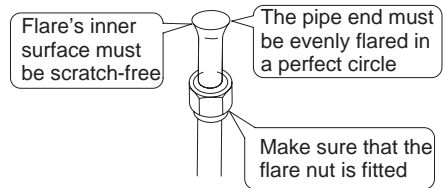
- (1) Cut the pipe end with a pipe cutter.
- (2) Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.
- (3) Fit the flare nut on the pipe.
- (4) Flare the pipe.
- (5) Check that the flaring is properly made.

CAUTION

- (1) DO not use mineral oil on flared part.
- (2) Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- (3) Never use piping which had been used for previous installations. Only use parts which are delivered with the unit.
- (4) Do never install a drier to this R32 unit in order to guarantee its lifetime.
- (5) The drying material may dissolve and damage the system.
- (6) Incomplete flaring may cause refrigerant gas leakage.

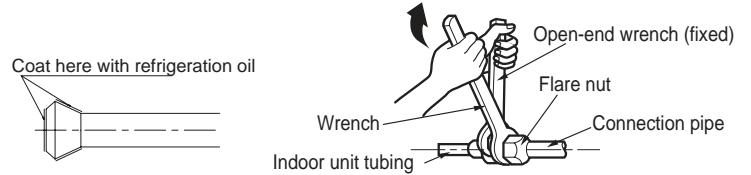


Flaring		
Set exactly at the position shown below		
	Flare tool for R32	Conventional flare tool
	Clutch-type	Clutch-type (Rigid-type) / Wing-nut type (Imperial-type)
A	0-0.5mm	1.0-1.5mm / 1.5-2.0mm



8. Connecting the Refrigerant Pipe

(1) Use torque wrenches when tightening the flare nuts to prevent damage to the flare nuts and gas leaks.



(2) Align the centres of both flares and tighten the flares and tighten the flare nuts 3 or 4 turns by hand.

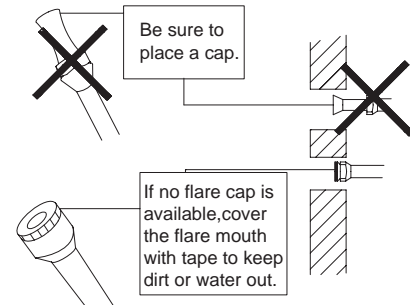
Then tighten them fully with the torque wrenches.

(3) To prevent gas leakage, apply refrigeration oil on both inner and outer surfaces in the flare. (Use refrigeration oil for R32.)

Hex nut diameter(inch)	Tightening torque(N·m)
1/4	15~20
3/8	30~40
1/2	45~55
5/8	60~65
3/4	70~75

Caution on Piping Handling

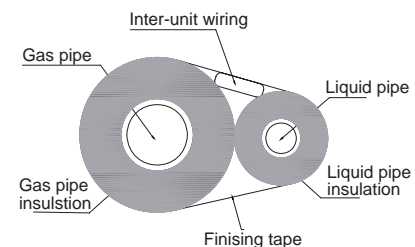
- (1) Protect the open end of the pipe against dust and moisture.
- (2) All pipe bends should be as gentle as possible. Use a pipe bender for bending. (Bending radius should be 30 to 40mm or larger.)



Selection of Copper and Heat Insulation Materials

When using commercial copper pipes and fittings, observe the following:

- (1) Insulation material: Polyethylene foam
Heat transfer rate: 0.041 to 0.052W/mK (0.035 to 0.045kcal/(mh°C)
Refrigerant gas pipes surface temperature reaches 110 max.
Choose heat insulation materials that will withstand this temperature.



(2) Be sure to insulate both the gas and liquid piping and to provide insulation dimensions as below.

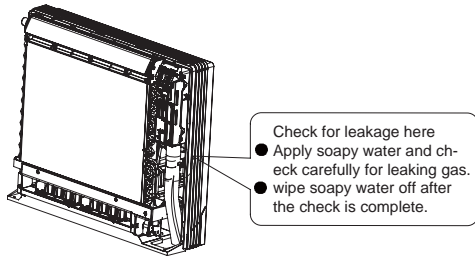
Gas side		Liquid side
09/12K	18K	
O.D. 3/8 inch	O.D. 1/2 inch	O.D. 1/4 inch
Thickness 0.8mm		

Gas pipe thermal insulation		Liquid pipe thermal insulation
09/12K	18K	
I.D. 12-15 mm	I.D. 14-16 mm	I.D. 8-10 mm
Thickness 10mm Min.		

(3) Use separate thermal insulation pipes for gas and liquid refrigerant pipes.

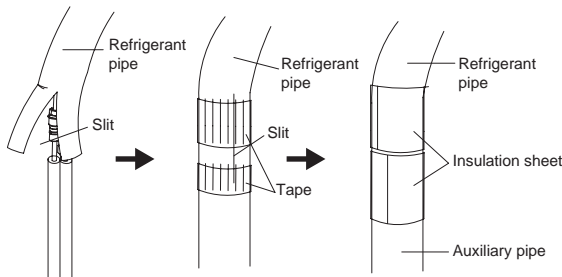
9. Checking for Gas Leakage

- (1) Check for leakage of gas after air purging
- (2) See the sections on air purges and gas leak checks in the installation manual for the outdoor unit.



10. Attaching the Connection Pipe

- Attach the pipe after checking for gas leakage, described above.
- (1) Cut the insulated portion of the on-site piping, matching it up with the connecting portion.
 - (2) Secure the slit on the refrigerant piping side with the butt joint on the auxiliary piping using the tape, making sure there are no gaps.
 - (3) Wrap the slit and butt joint with the included insulation sheet, making sure there are no gaps.

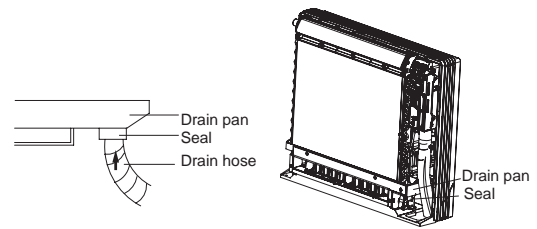


⚠ CAUTION

- (1) Insulate the joint of the pipes securely. Incomplete insulation may lead to water leakage.
- (2) Push the pipe inside so it does not place undue force on the front grille.

11. Connecting the Drain Hose

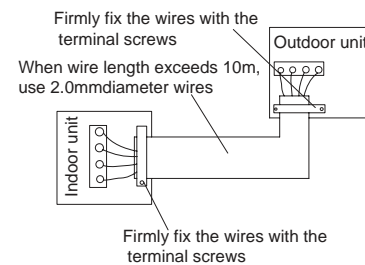
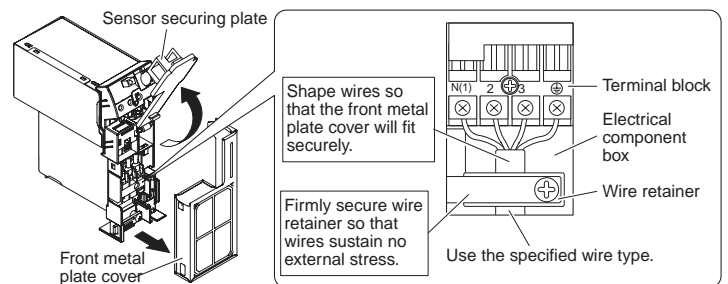
Insert the supplied C drain hose into the socket of the drain pan. Fully insert the drain hose until it adheres to a seat of the socket.



12. Wiring

With a Multi indoor unit, install as described in the installation manual supplied with the Multi outdoor unit.

- Live the sensor securing plate, remove the front metal plate cover, and connect the branch wiring to the terminal block.
- (1) Strip wire ends (15mm)
 - (2) Match wire colours with terminal numbers on indoor and outdoor units terminal blocks and firmly screw wires to the corresponding terminals.
 - (3) Connect the earth wires to the corresponding terminals.
 - (4) Pull wires to make sure that they are securely latched up, then retain wires with wire retainer.
 - (5) In case of connecting to an adapter system, Run the remote controller cable and attach the S21. (Refer to 11. When connecting go on a system.)



Indoor unit wiring terminal			
N(1)	2	3	⊕
white (blue)	black	red (brown)	yellow-green

⚠ CAUTION

- (1) Do not use tapped wires, stranded wires, extensioncords, or starburst connections, as they may cause overheating, electrical shock, or fire.
- (2) Do not use locally purchased electrical parts inside the product. (Do not branch the power for the drain pump, etc, from the terminal block.) Doing so may cause electric shock or fire.)

9. Maintenance

9.1 Precautions before Performing Inspection or Repair

Be cautious during installation and maintenance. Do operation following the regulations to avoid electric shock and casualty or even death due to drop from high altitude.

* Static maintenance is the maintenance during de-energization of the air conditioner. For static maintenance, make sure that the unit is de-energized and the plug is disconnected.

* Dynamic maintenance is the maintenance during energization of the unit. Before dynamic maintenance, check the electricity and ensure that there is ground wire on the site. Check if there is electricity on the housing and connection copper pipe of the air conditioner with voltage tester. After ensure insulation place and the safety, the maintenance can be performed. Take sufficient care to avoid directly touching any of the circuit parts without first turning off the power.

At times such as when the circuit board is to be replaced, place the circuit board assembly in a vertical position.

Normally, diagnose troubles according to the trouble diagnosis procedure as described below. (Refer to the check points in servicing written on the wiring diagrams attached to the indoor/outdoor units.)

NO.	Troubleshooting procedure
1	Confirmation
2	Judgement by Flashing LED of Indoor/Outdoor Unit
3	How to Check simply the main part

9.2 Confirmation

(1) Confirmation of Power Supply

Confirm that the power breaker operates (ON) normally;

(2) Confirmation of Power Voltage

Confirm that power voltage is AC 220-230-240 \pm 10%. If power voltage is not in this range, the unit may not operate normally.

9.3 Flashing LED of Indoor Unit and Primary Judgement

Malfunction, status display table					
Malfunction name	Malfunction type	Dual-8	Display of indicator		
			Operation indicator	Cooling indicator	Heating indicator
Communication malfunction	Hardware malfunction	E6	Blink 6 times		
Malfunction protection of jumper cap	Hardware malfunction	C5	Blink 15 times		
Without feedback of indoor unit's motor	Hardware malfunction	H6	Blink 11 times	Blink once	
Indoor ambient temperature sensor is open/short-circuited	Hardware malfunction	F1		Blink twice	
Indoor evaporator sensor is open/short-circuited	Hardware malfunction	F2			

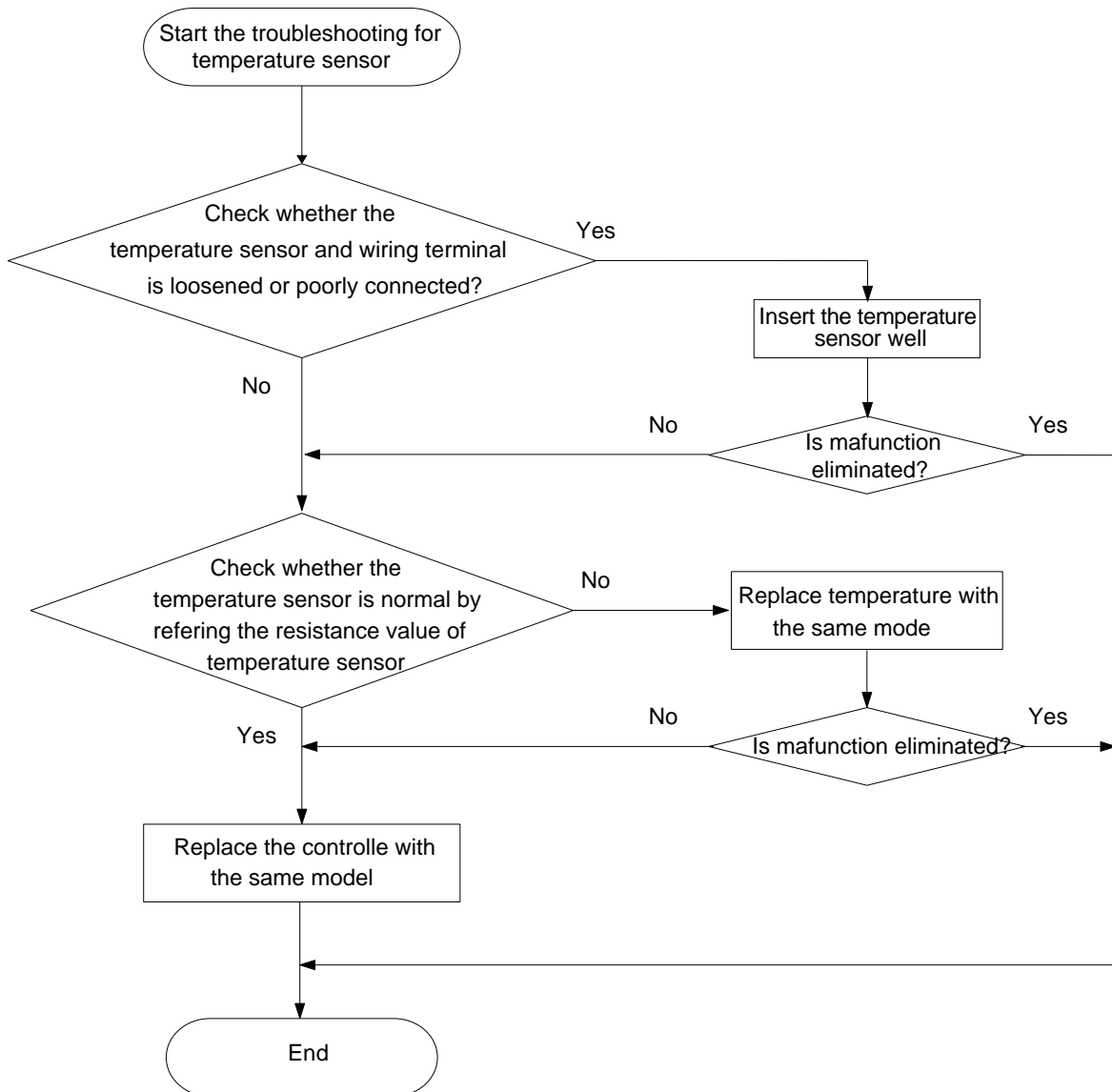
9.4 How to Check Simply The Main Part

(1) Troubleshooting for malfunction of temperature sensor

main check point:

- Whether the temperature sensor is broken or damaged;
- Whether the temperature sensor terminal is loosened or not connected;
- Whether the mainboard is damaged;

Check flow chart:

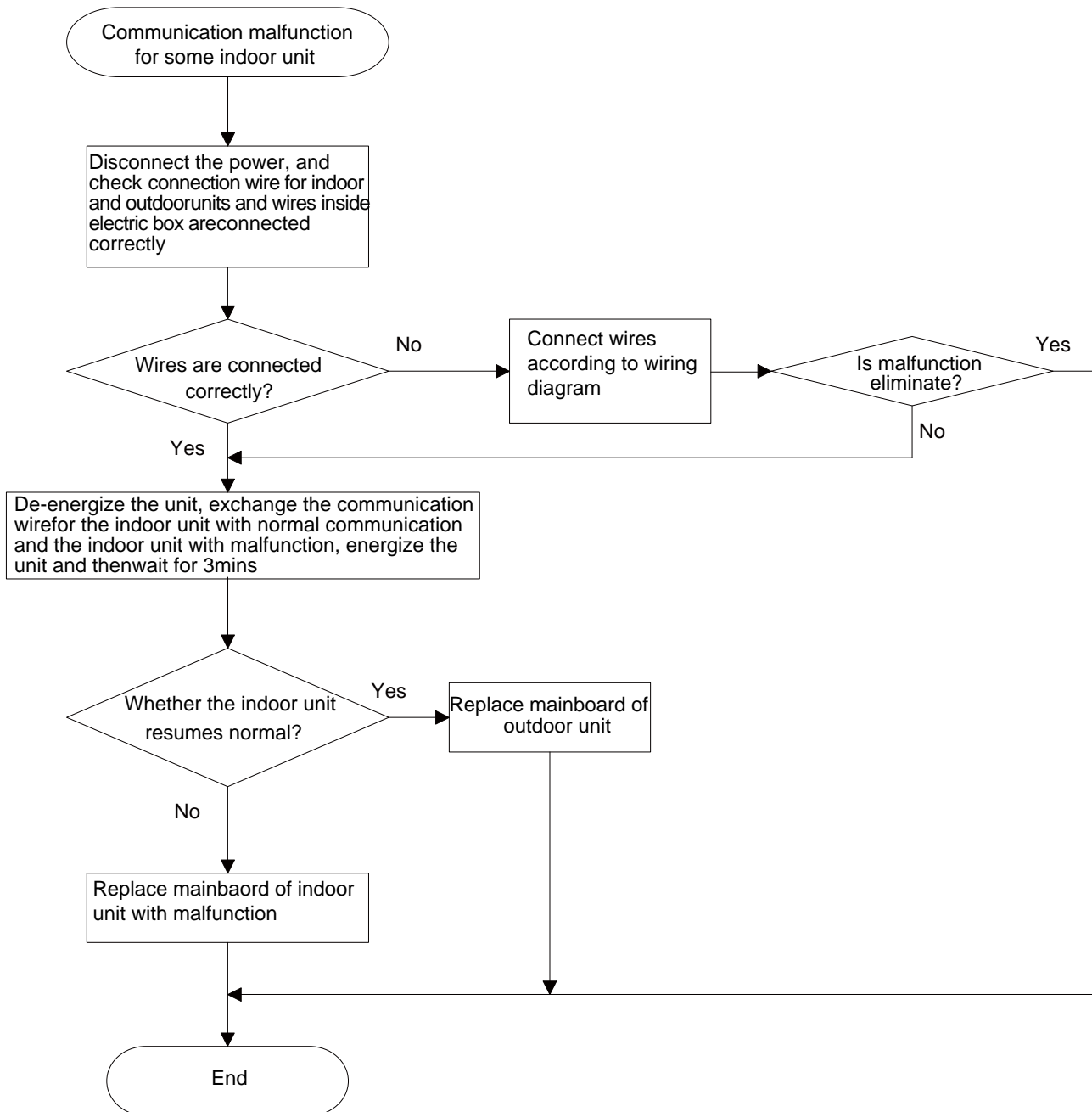


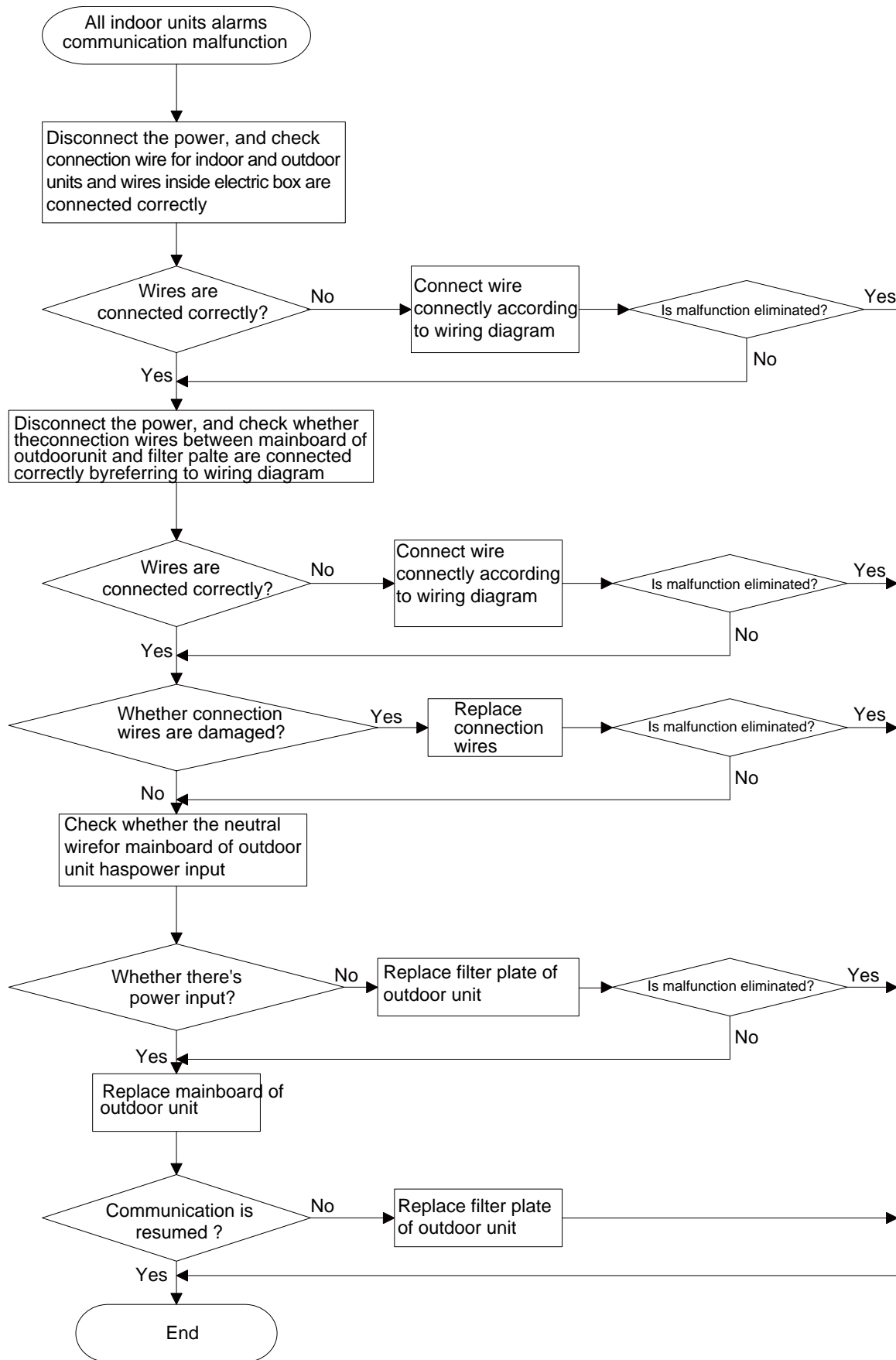
(2) Troubleshooting for communication malfunction

Main check point:

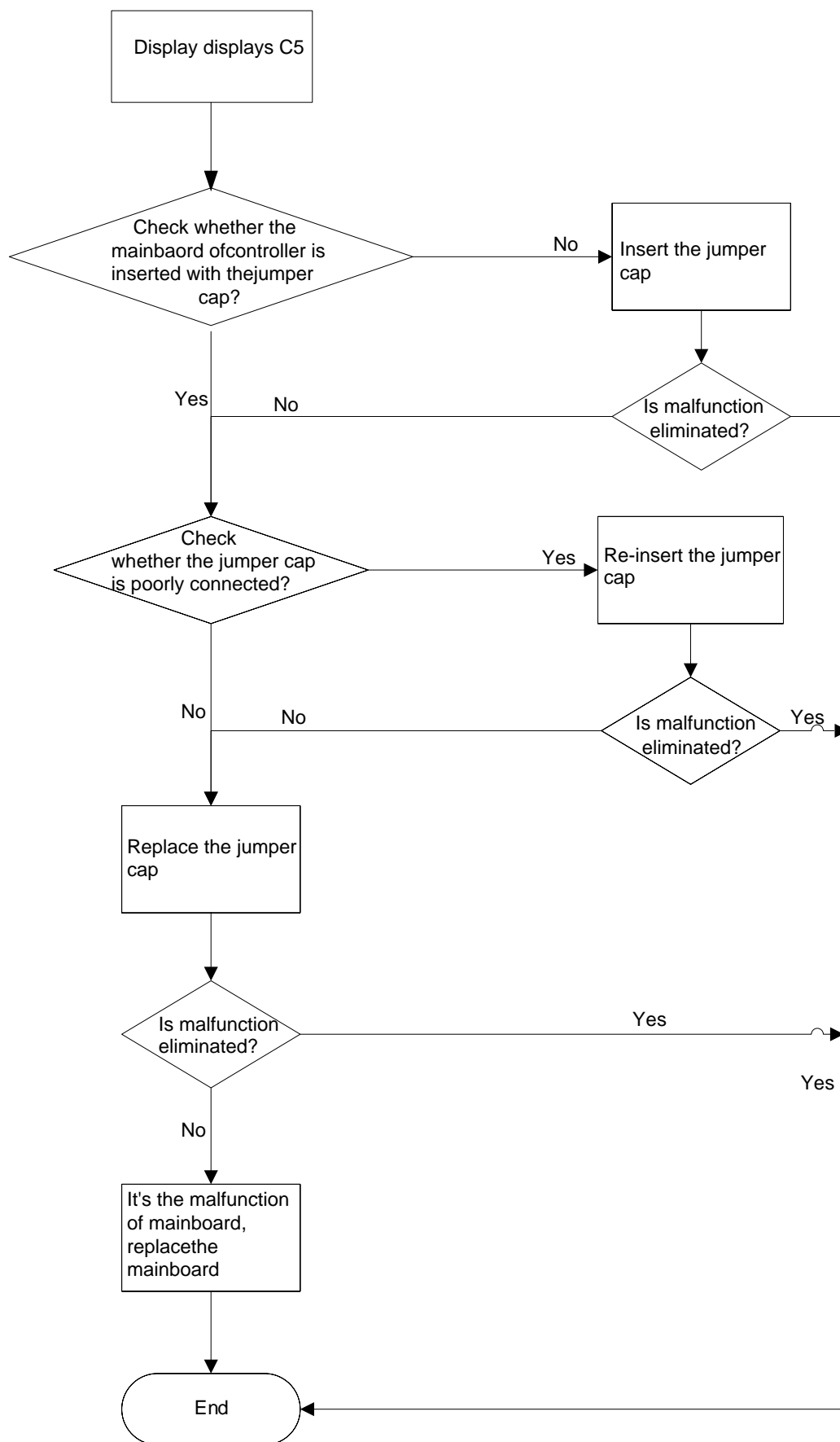
- Check whether the connection wire for indoor and outdoor units and the wires inside the indoor unit is connected well;
- Check whether the mainboards of indoor unit or outdoor unit are damaged;

Check flow chart:

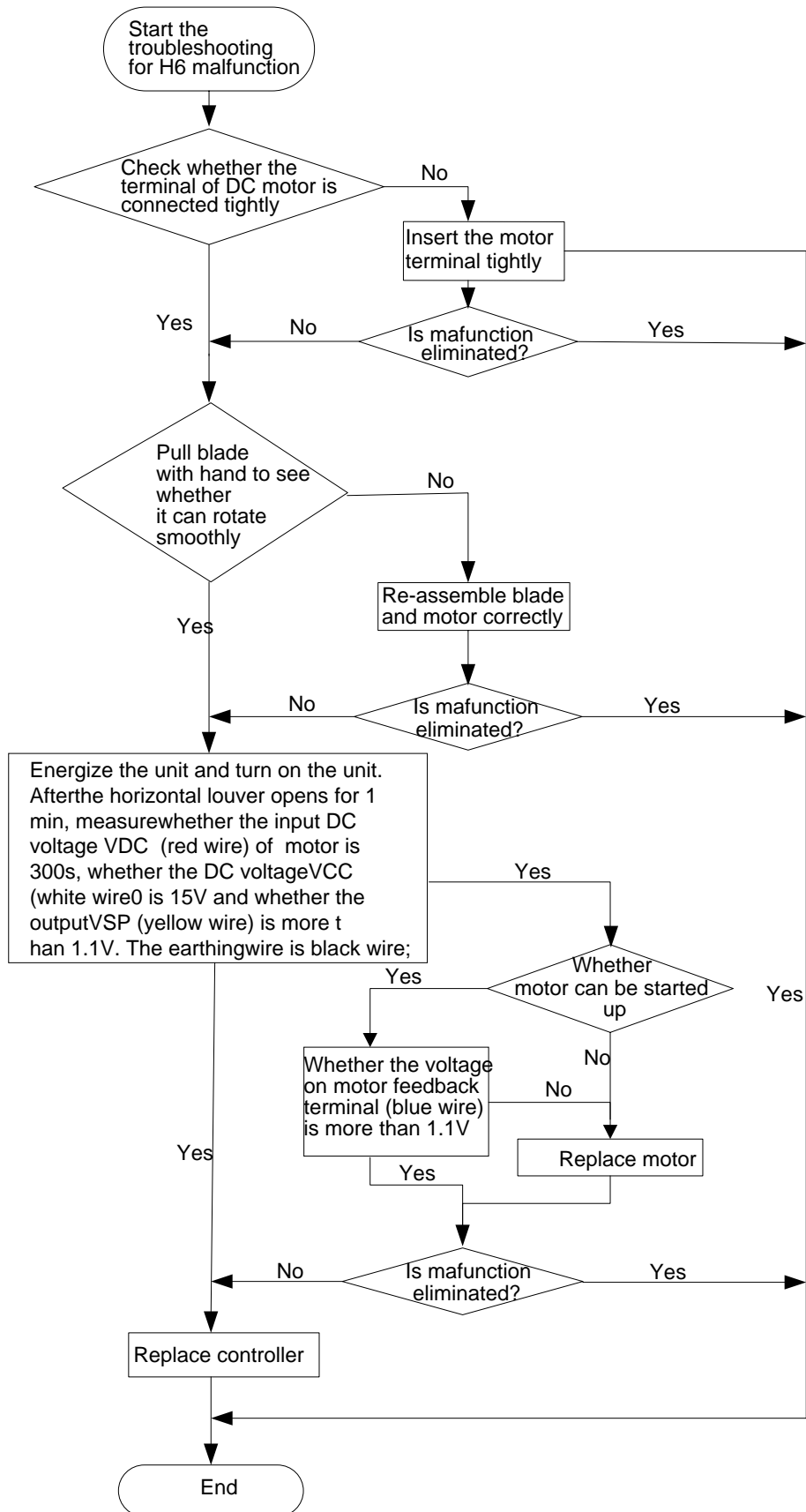




(3) Troubleshooting for C5 malfunction



(4) Troubleshooting for H6 malfunction



9.5 Troubleshooting for Normal Malfunction

1. Air Conditioner can't be Started Up

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
No power supply, or poor connection for power plug	After energization, operation indicator isn't bright and the buzzer can't give out sound	Confirm whether it's due to power failure. If yes, wait for power recovery. If not, check power supply circuit and make sure the power plug is connected well.
Wrong wire connection between indoor unit and outdoor unit, or poor connection for wiring terminals	Under normal power supply circumstances, operation indicator isn't bright after energization	Check the circuit according to circuit diagram and connect wires correctly. Make sure all wiring terminals are connected firmly
Electric leakage for air conditioner	After energization, room circuit breaker trips off at once	Make sure the air conditioner is grounded reliably Make sure wires of air conditioner is connected correctly Check the wiring inside air conditioner. Check whether the insulation layer of power cord is damaged; if yes, place the power cord.
Model selection for air switch is improper	After energization, air switch trips off	Select proper air switch
Malfunction of remote controller	After energization, operation indicator is bright, while no display on remote controller or buttons have no action.	Replace batteries for remote controller Repair or replace remote controller

2. Poor Cooling (Heating) for Air Conditioner

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Set temperature is improper	Observe the set temperature on remote controller	Adjust the set temperature
Rotation speed of the IDU fan motor is set too low	Small wind blow	Set the fan speed at high or medium
Filter of indoor unit is blocked	Check the filter to see its blocked	Clean the filter
Installation position for indoor unit and outdoor unit is improper	Check whether the installation position is proper according to installation requirement for air conditioner	Adjust the installation position, and install the rainproof and sunproof for outdoor unit
Refrigerant is leaking	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Units pressure is much lower than regulated range	Find out the leakage causes and deal with it. Add refrigerant.
Malfunction of 4-way valve	Blow cold wind during heating	Replace the 4-way valve
Malfunction of capillary	Discharged air temperature during cooling is higher than normal discharged wind temperature; Discharged air temperature during heating is lower than normal discharged wind temperature; Unit pressure is much lower than regulated range. If refrigerant isn't leaking, part of capillary is blocked	Replace the capillary
Flow volume of valve is insufficient	The pressure of valves is much lower than that stated in the specification	Open the valve completely
Malfunction of horizontal louver	Horizontal louver can't swing	Refer to point 3 of maintenance method for details
Malfunction of the IDU fan motor	The IDU fan motor can't operate	Refer to troubleshooting for H6 for maintenance method in details
Malfunction of the ODU fan motor	The ODU fan motor can't operate	Refer to point 4 of maintenance method for details
Malfunction of compressor	Compressor can't operate	Refer to point 5 of maintenance method for details

3. Horizontal Louver can't Swing

Possible Causes	Discriminating Method (Air conditioner Status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Stepping motor is damaged	Stepping motor can't operate	Repair or replace stepping motor
Main board is damaged	Others are all normal, while horizontal louver can't operate	Replace the main board with the same model

4. ODU Fan Motor can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of the ODU fan motor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the capacity of fan
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Motor of outdoor unit is damaged	When unit is on, cooling/heating performance is bad and ODU compressor generates a lot of noise and heat.	Change compressor oil and refrigerant. If no better, replace the compressor with a new one

5. Compressor can't Operate

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Wrong wire connection, or poor connection	Check the wiring status according to circuit diagram	Connect wires according to wiring diagram to make sure all wiring terminals are connected firmly
Capacity of compressor is damaged	Measure the capacity of fan capacitor with an universal meter and find that the capacity is out of the deviation range indicated on the nameplate of fan capacitor.	Replace the compressor capacitor
Power voltage is a little low or high	Use universal meter to measure the power supply voltage. The voltage is a little high or low	Suggest to equip with voltage regulator
Coil of compressor is burnt out	Use universal meter to measure the resistance between compressor terminals and it's 0	Repair or replace compressor
Cylinder of compressor is blocked	Compressor can't operate	Repair or replace compressor

6. Air Conditioner is Leaking

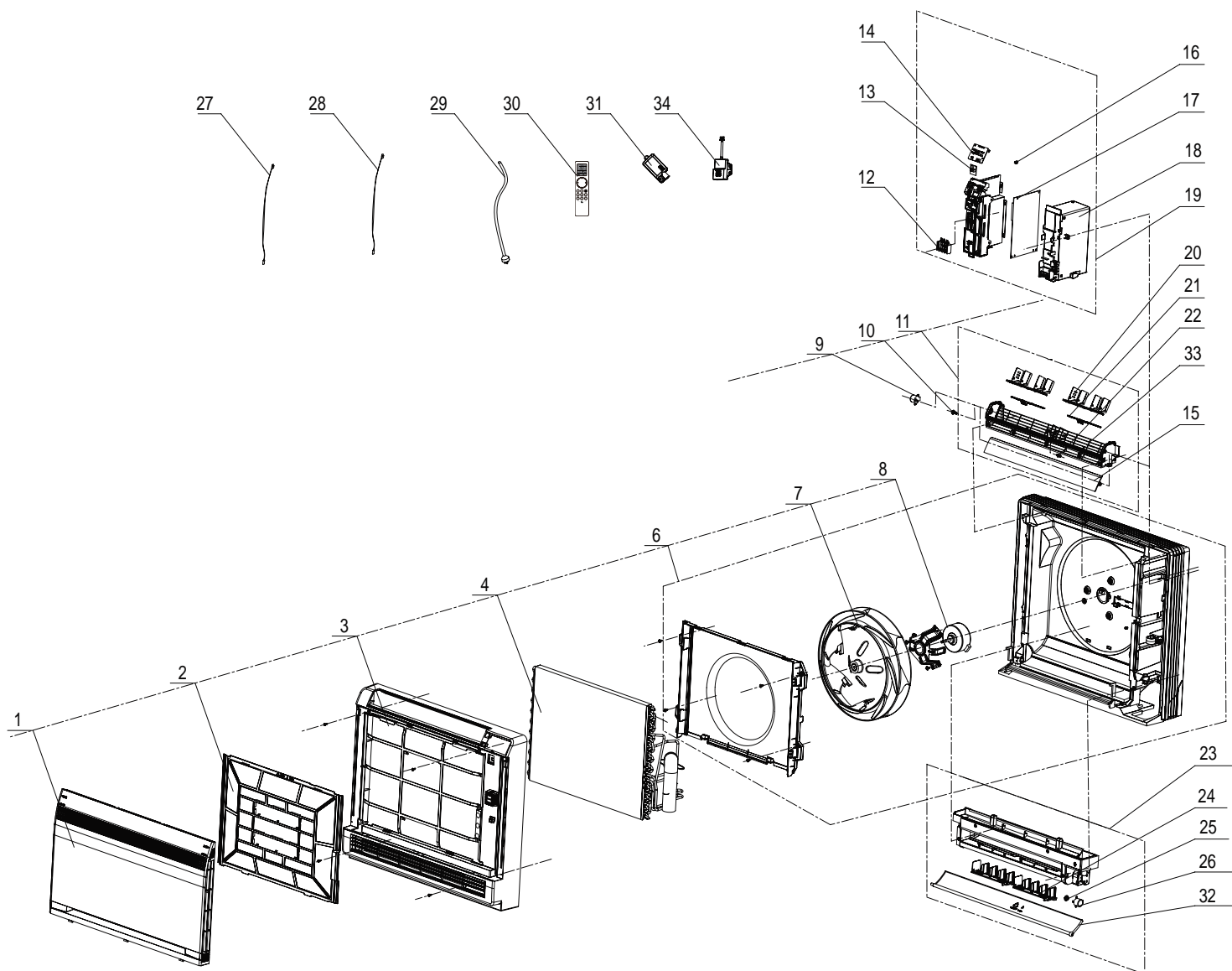
Possible causes	Discriminating method (air conditioner status)	Troubleshooting
Drain pipe is blocked	Water leaking from indoor unit	Eliminate the foreign objects inside the drain pipe
Drain pipe is broken	Water leaking from drain pipe	Replace drain pipe
Wrapping is not tight	Water leaking from the pipe connection place of indoor unit	Wrap it again and bundle it tightly

7. Abnormal Sound and Vibration

Possible causes	Discriminating method (air conditioner status)	Troubleshooting
When turn on or turn off the unit, the panel and other parts will expand and theres abnormal sound	Theres the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, theres abnormal sound due to flow of refrigerant inside air conditioner	Water-running sound can be heard	Normal phenomenon. Abnormal sound will disappear after a few minutes.
Foreign objects inside the indoor unit or therere parts touching together inside the indoor unit	Theres abnormal sound fro indoor unit	Remove foreign objects. Adjust all parts position of indoor unit, tighten screws and stick damping plaster between connected parts
Foreign objects inside the outdoor unit or therere parts touching together inside the outdoor unit	Theres abnormal sound fro outdoor unit	Remove foreign objects. Adjust all parts position of outdoor unit, tighten screws and stick damping plaster between connected parts
Short circuit inside the magnetic coil	During heating, the way valve has abnormal electromagnetic sound	Replace magnetic coil
Abnormal shake of compressor	Outdoor unit gives out abnormal sound	Adjust the support foot mat of compressor, tighten the bolts
Abnormal sound inside the compressor	Abnormal sound inside the compressor	If add too much refrigerant during maintenance, please reduce refrigerant properly. Replace compressor for other circumstances.

10. Exploded View and Parts List

10.1 Indoor Unit



The component picture is only for reference; please refer to the actual product.

NO.	Description
1	Front Panel Assy
2	Filter Sub-Assy
3	Front Case Assy
4	Evaporator Assy
6	Rear Case assy
7	Centrifugal fan
8	Fan Motor
9	Stepping Motor
10	Crank
11	Louver Motor Sub-assy
12	Terminal Board
13	Switch Board
14	Display Board
15	Guide Louver (upper)
16	Jumper
17	Main Board
18	Electric Box

NO.	Description
19	Electric Box Assy
20	Air Louver (upper)
21	Swing lever
22	Shaft of guide louver
23	Water Tray Assy
24	Air Louver (lower)
25	Axis (lower step motor)
26	Stepping Motor
27	Temperature Sensor
28	Temperature Sensor
29	Power Cord
30	Remote Controller
31	Test Board Assy
32	Guide Louver (lower)
33	Rear Grill
34	Gas Sensor

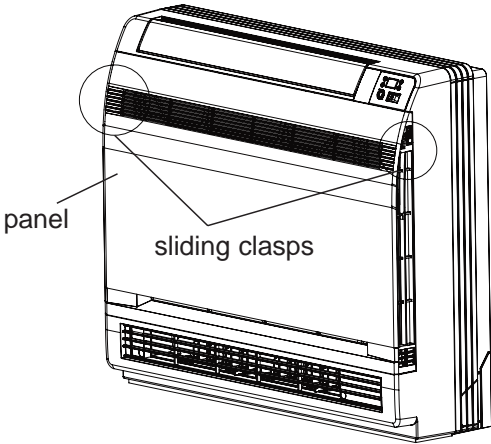
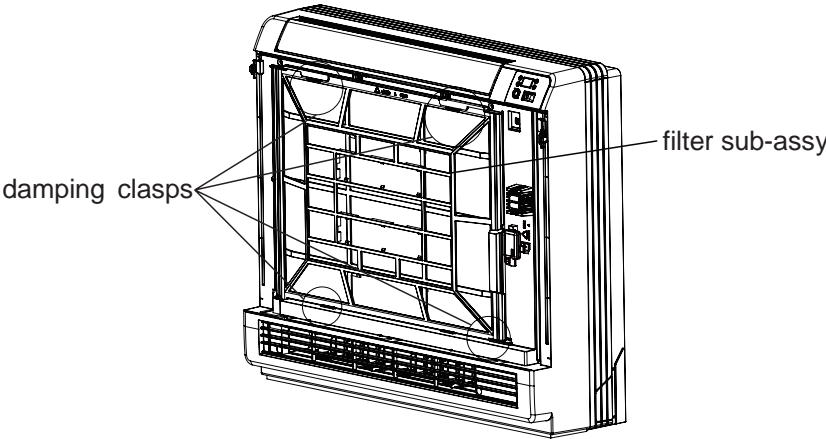
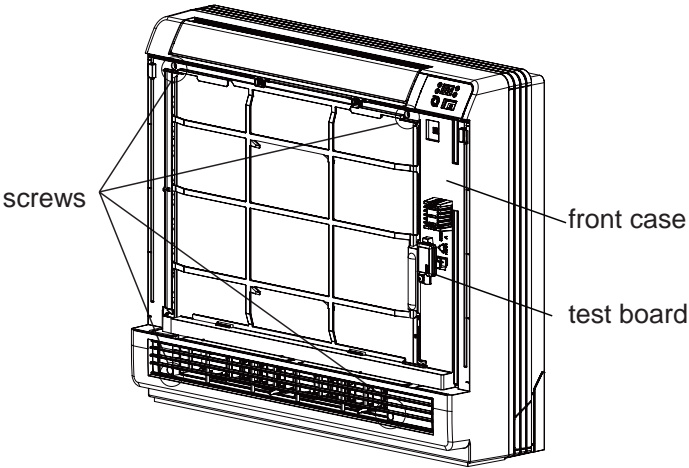
Some models may not contain some parts, please refer to the actual product.

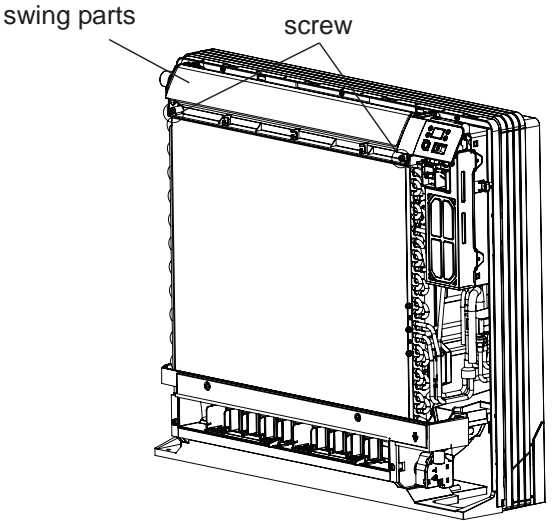
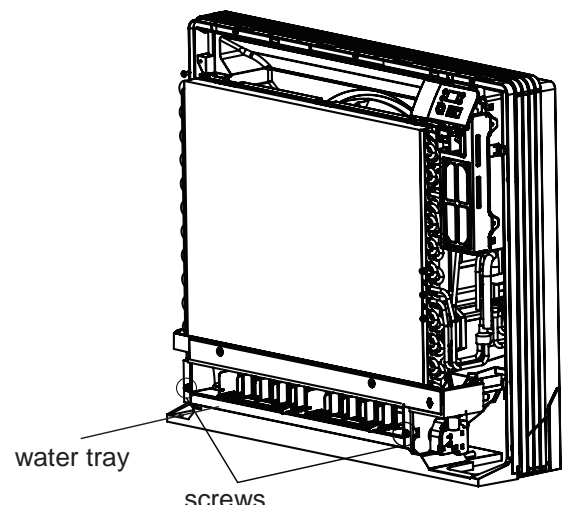
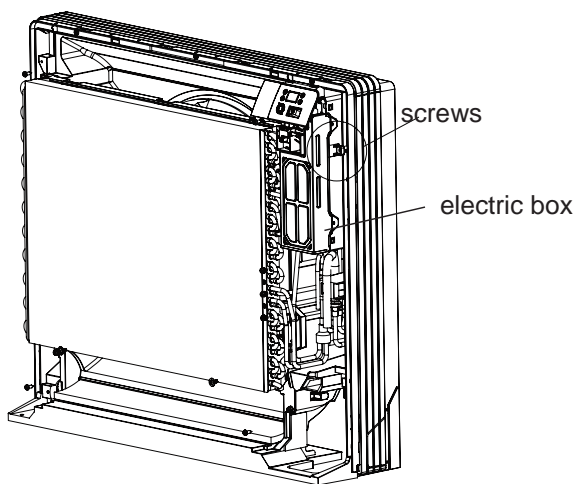
11. Removal Procedure

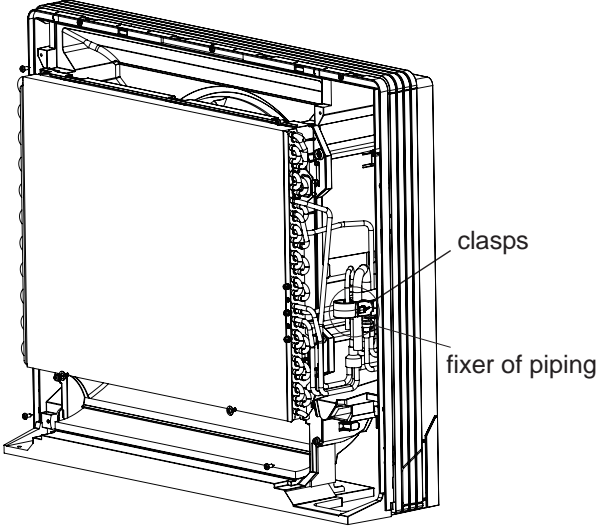
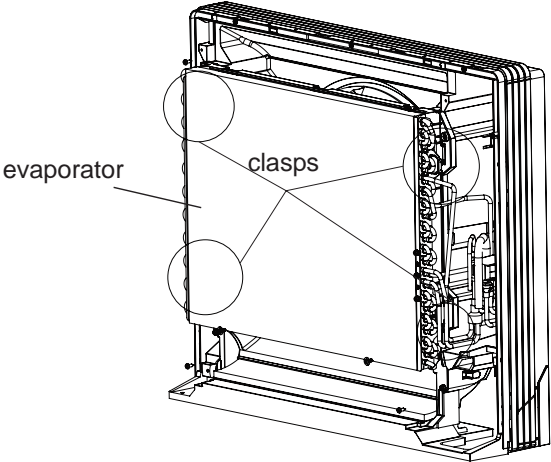
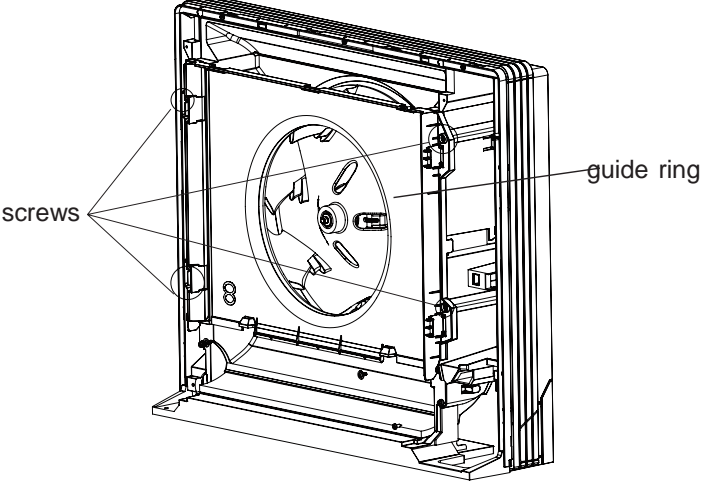
11.1 Removal Procedure of Indoor Unit

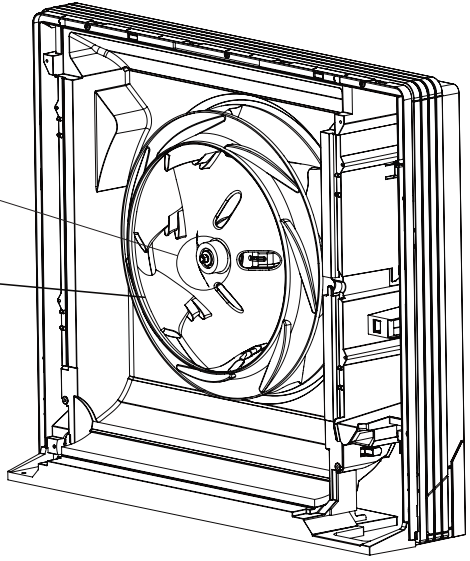
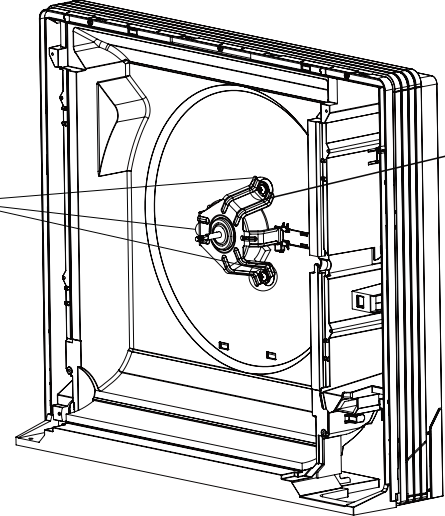
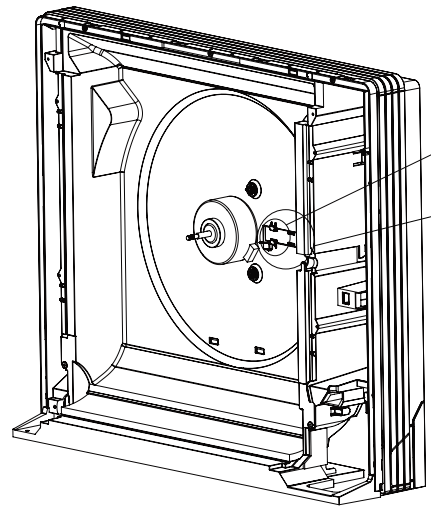


Caution: discharge the refrigerant completely before removal.

Step	Procedure
1. Remove panel	<p>Pull sliding clasps at both sides of panel, pull out the panel outwards and then move the panel upwards to remove it.</p> 
2. Remove filter sub-assy	<p>Pull the damping clasps at upper/lower side of filter sub-assy, and then move the filter sub-assy outwards to remove it.</p> 
3. Remove test board and front case	<p>Remove one screws fixing the test board, and then pull the test board outwards to remove it.</p> <p>Remove 4 screws fixing the front case, and then pull the front case outwards to remove it.</p> 

Step	Procedure
<p>4.Remove swing parts</p>	<p>Remove 2 screws fixing the swing parts, and then pull the swing parts outwards to remove it.</p> 
<p>5. Remove water tray</p>	<p>Remove 2 screws fixing water tray, and then pull the water tray outwards to remove it.</p> 
<p>6. Remove electric box</p>	<p>Remove one screw fixing the electric box, and then pull the electric box outwards to remove it.</p> 

Step	Procedure
<p>7. Remove fixer of piping</p> <p>Pry out the clasps connecting fixer of piping and bottom case, and then pull the fixer of piping outwards to remove it.</p>	
<p>8. Remove evaporator</p> <p>Pry out the clasps connecting evaporator and bottom case, and then pull the evaporator outwards to remove it.</p>	
<p>9. Remove guide ring</p> <p>Remove 4 screws fixing guide ring, and then pull the guide ring outwards to remove it.</p>	

Step	Procedure
<p>10. Remove centrifugal blade</p>	<p>Remove one nut fixing the centrifugal blade, and then pull the centrifugal blade outwards to remove it.</p>  <p>The diagram shows a centrifugal blade assembly within a frame. A line points to a nut on the blade, and another line points to the blade itself. The labels are 'nut' and 'centrifugal blade'.</p>
<p>11. Remove fixing bracket of motor</p>	<p>Remove 3 nuts on fixing bracket of motor, and then pull the fixing bracket of motor outwards to remove it.</p>  <p>The diagram shows a motor fixing bracket mounted on a frame. Three lines point to the nuts securing the bracket. The labels are 'nuts' and 'fixing bracket of motor'.</p>
<p>12. Remove press plate of motor wire</p>	<p>Loosen clasps between press plate of motor wire and bottom case, and then pull the press plate of motor wire outwards to remove it.</p>  <p>The diagram shows a motor wire press plate assembly. Two lines point to the clasps connecting the plate to the frame. The labels are 'clasps' and 'press plate of motor wire'.</p>

Appendix:

Appendix 1: Reference Sheet of Celsius and Fahrenheit

Conversion formula for Fahrenheit degree and Celsius degree: $T_f = T_c \times 1.8 + 32$

Set temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
61	60.8	16	69/70	69.8	21	78/79	78.8	26
62/63	62.6	17	71/72	71.6	22	80/81	80.6	27
64/65	64.4	18	73/74	73.4	23	82/83	82.4	28
66/67	66.2	19	75/76	75.2	24	84/85	84.2	29
68	68	20	77	77	25	86	86	30

Ambient temperature

Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)	Fahrenheit display temperature (°F)	Fahrenheit (°F)	Celsius (°C)
32/33	32	0	55/56	55.4	13	79/80	78.8	26
34/35	33.8	1	57/58	57.2	14	81	80.6	27
36	35.6	2	59/60	59	15	82/83	82.4	28
37/38	37.4	3	61/62	60.8	16	84/85	84.2	29
39/40	39.2	4	63	62.6	17	86/87	86	30
41/42	41	5	64/65	64.4	18	88/89	87.8	31
43/44	42.8	6	66/67	66.2	19	90	89.6	32
45	44.6	7	68/69	68	20	91/92	91.4	33
46/47	46.4	8	70/71	69.8	21	93/94	93.2	34
48/49	48.2	9	72	71.6	22	95/96	95	35
50/51	50	10	73/74	73.4	23	97/98	96.8	36
52/53	51.8	11	75/76	75.2	24	99	98.6	37
54	53.6	12	77/78	77	25			

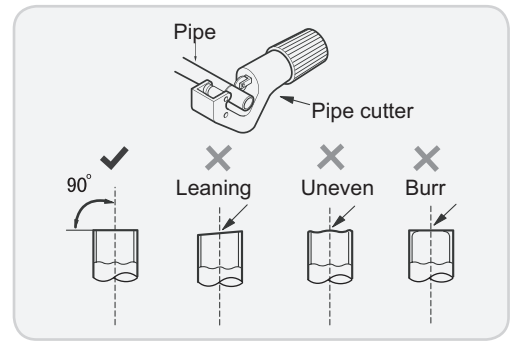
Appendix 2: Pipe Expanding Method

⚠ Note:

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

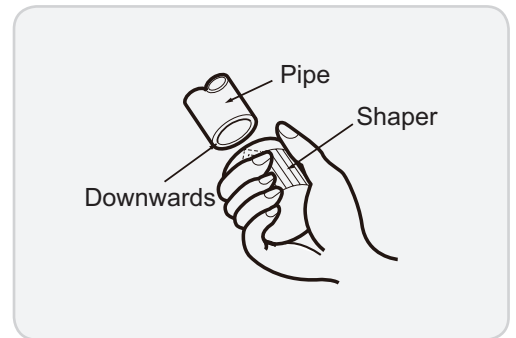
A: Cut the pipe

- 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

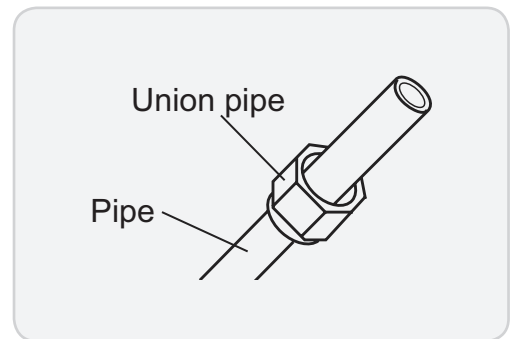
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



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.



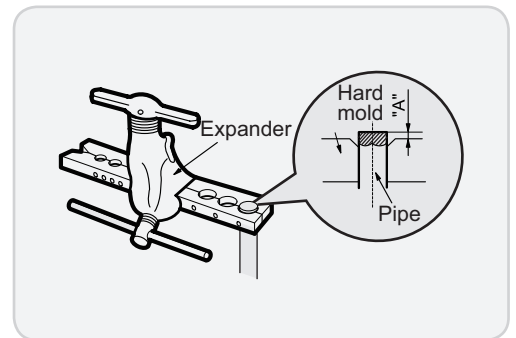
E: Expand the port

- Expand the port with expander.

⚠ Note:

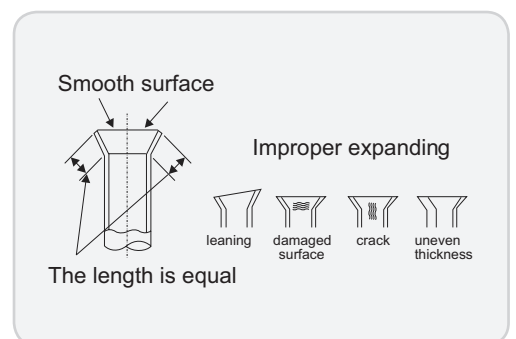
- "A" is different according to the diameter, please refer to the sheet below:

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 - 12.70 (1/2")	1.8	1.0
Φ16 - 15.88 (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.



Appendix 3: List of Resistance for Temperature Sensor

Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units (15K)

Temp(°C)	Resistance(kΩ)
-19	138.10
-18	128.60
-16	115.00
-14	102.90
-12	92.22
-10	82.75
-8	74.35
-6	66.88
-4	60.23
-2	54.31

Temp(°C)	Resistance(kΩ)
0	49.02
2	44.31
4	40.09
6	36.32
8	32.94
10	29.90
12	27.18
14	24.73
16	22.53
18	20.54

Temp(°C)	Resistance(kΩ)
20	18.75
22	17.14
24	15.68
26	14.36
28	13.16
30	12.07
32	11.09
34	10.20
36	9.38
38	8.64

Temp(°C)	Resistance(kΩ)
40	7.97
42	7.35
44	6.79
46	6.28
48	5.81
50	5.38
52	4.99
54	4.63
56	4.29
58	3.99

Resistance Table of Tube Temperature Sensors for Indoor and Outdoor (20K)

Temp(°C)	Resistance(kΩ)
-19	181.40
-15	145.00
-10	110.30
-5	84.61
0	65.37
5	50.87
10	39.87
15	31.47

Temp(°C)	Resistance(kΩ)
20	25.01
25	20.00
30	16.10
35	13.04
40	10.62
45	8.71
50	7.17
55	5.94

Temp(°C)	Resistance(kΩ)
60	4.95
65	4.14
70	3.48
75	2.94
80	2.50
85	2.13
90	1.82
95	1.56

Temp(°C)	Resistance(kΩ)
100	1.35
105	1.16
110	1.01
115	0.88
120	0.77
125	0.67
130	0.59
135	0.52

Resistance Table of Discharge Temperature Sensor for Outdoor (50K)

Temp(°C)	Resistance(kΩ)
-30	911.400
-25	660.8
-20	486.5
-15	362.9
-10	274
-5	209
0	161
5	125.1

Temp(°C)	Resistance(kΩ)
10	98
15	77.35
20	61.48
25	49.19
30	39.61
35	32.09
40	26.15
45	21.43

Temp(°C)	Resistance(kΩ)
50	17.65
55	14.62
60	12.17
65	10.18
70	8.555
75	7.224
80	6.129
85	5.222

Temp(°C)	Resistance(kΩ)
90	4.469
95	3.841
100	3.315
105	2.872
110	2.498
115	2.182
120	1.912
125	1.682



JF00305637



GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Add: West Jinji Rd, Qianshan, Zhuhai, Guangdong, China, 519070

Tel: (+86-756) 8522219

Fax: (+86-756) 8669426

E-mail: global@cn.gree.com www.gree.com

For product improvement, specifications and appearance in this manual are subject to change without prior notice.