

CONSOLE MULTI H3M

Service manual

MUCNR-H3M



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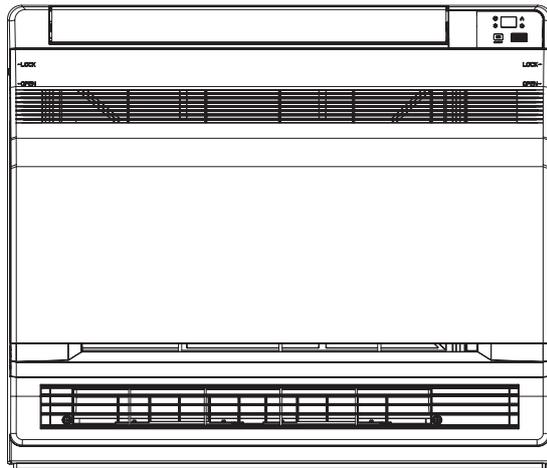
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Part I : Technical Information

1.Summary

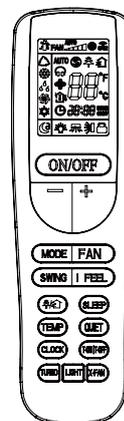
Indoor Unit:

MUCNR-09-H3M
MUCNR-12-H3M
MUCNR-18-H3M



Remote Controller:

YAA1FB1
(CL96174)



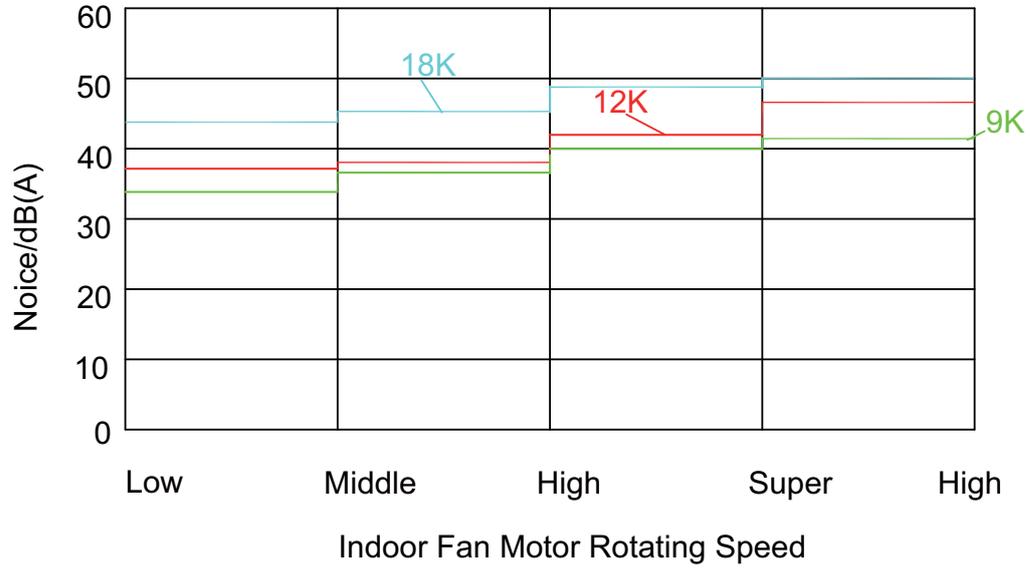
2. Specifications

2.1 Specification Sheet

Model		Console		
		MUCNR-09-H3M	MUCNR-12-H3M	MUCNR-18-H3M
Product Code		CL20827	CL20828	CL20829
Rated Voltage	V~	220-240	220-240	220-240
Rated Frequency	Hz	50	50	50
Phases		1	1	1
Cooling Capacity	W	2600	3500	5300
Heating Capacity	W	2800	3800	5800
Air Flow Volume (SH/H/M/L)	m ³ /h	650/560/480/370	750/650/550/450	840/800/650/530
Dehumidifying Volume	L/h	0.8	1.4	1.8
Fan Type		Centrifugal	Centrifugal	Centrifugal
Fan Diameter-height	mm	Φ370X80	Φ370X80	Φ370X80
Fan Motor Speed (SH/H/M/L)(Cool)	rpm	650/560/530/480	750/650/600/550	840/800/720/650
Fan Motor Speed (SH/H/M/L)(Heat)	rpm	650/560/530/480	750/650/600/550	900/840/760/690
Fan Motor Power Output	W	30	30	30
Fan motor running current	A	0.14	0.14	0.14
Evaporator Material		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
Evaporator Pipe Diameter	mm	6.35	6.35	6.35
Evaporator Number of Rows		2	2	2
Evaporator Fin Pitch	mm	1.2	1.2	1.2
Evaporator Length(L) X Height(H) X Width(W)	mm	511X396X24	511X396X24	511X396X24
Motor Model		FN30A-ZL	FN30A-ZL	FN30A-ZL
Overload Protector		3.15	3.15	3.15
Motor Full Load Amp(FLA)	A	0.14	0.14	0.14
Sound Pressure Level (SH/H/M/L)	dB(A)	40/38/33/26	42/40/37/32	48/46/41/35
Sound Power Level (SH/H/M/L)	dB(A)	50/48/43/36	52/50/47/42	58/56/51/45
Outline Dimension (WXHXD)	mm	700X600X215	700X600X215	700X600X215
Package Carton Dimension (LXWXH)	mm	788X283X695	788X283X695	788X283X695
Package Dimension (LXWXH)	mm	791X286X710	791X286X710	791X286X710
Net Weight	kg	15	15	15
Gross Weight	kg	18	18	18
Liquid pipe	mm	Φ6	Φ6	Φ6
Gas Pipe(to indoor unit)	mm	Φ9.52	Φ9.52	Φ12

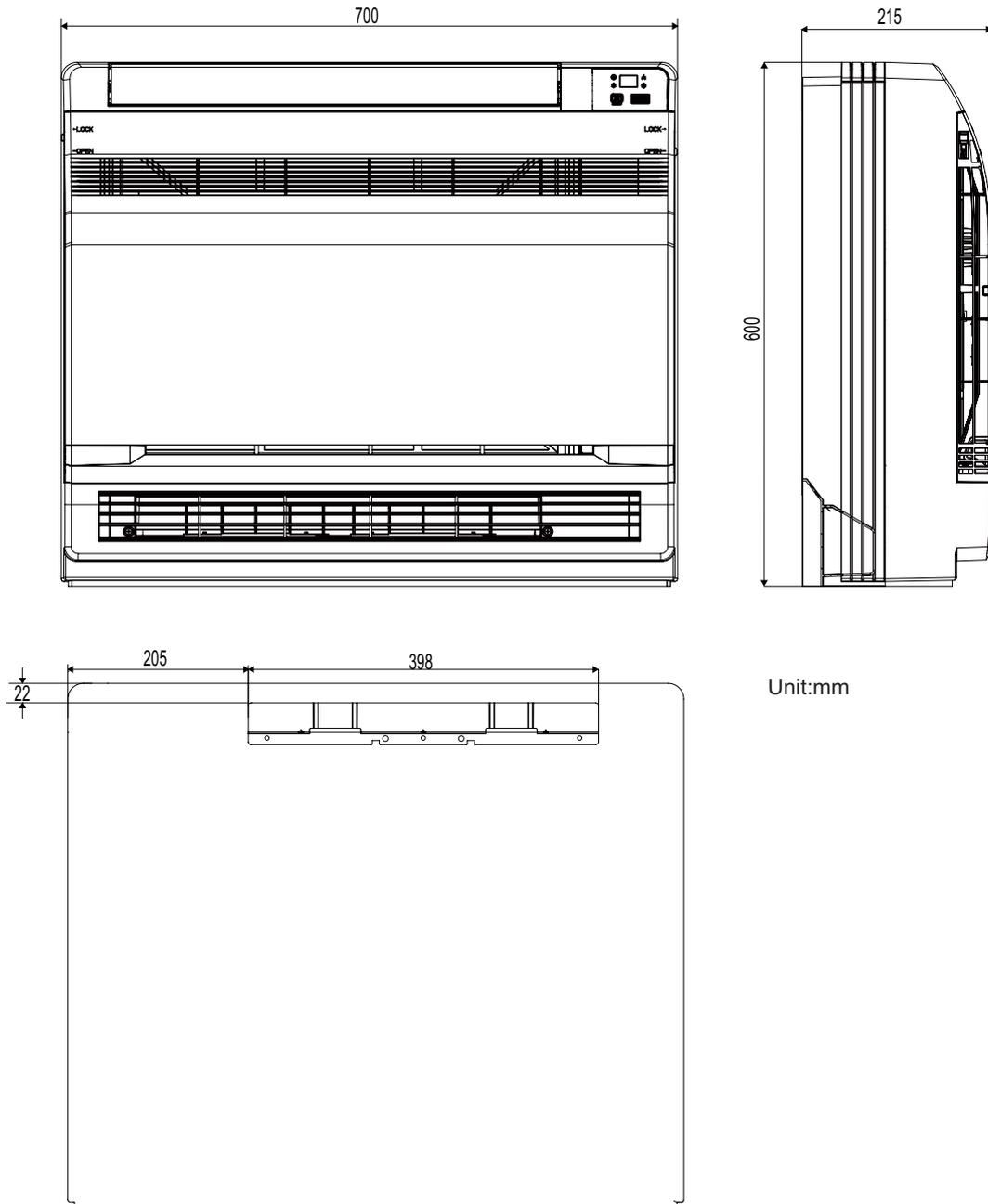
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Noise Criteria Curve Tables for Both Models

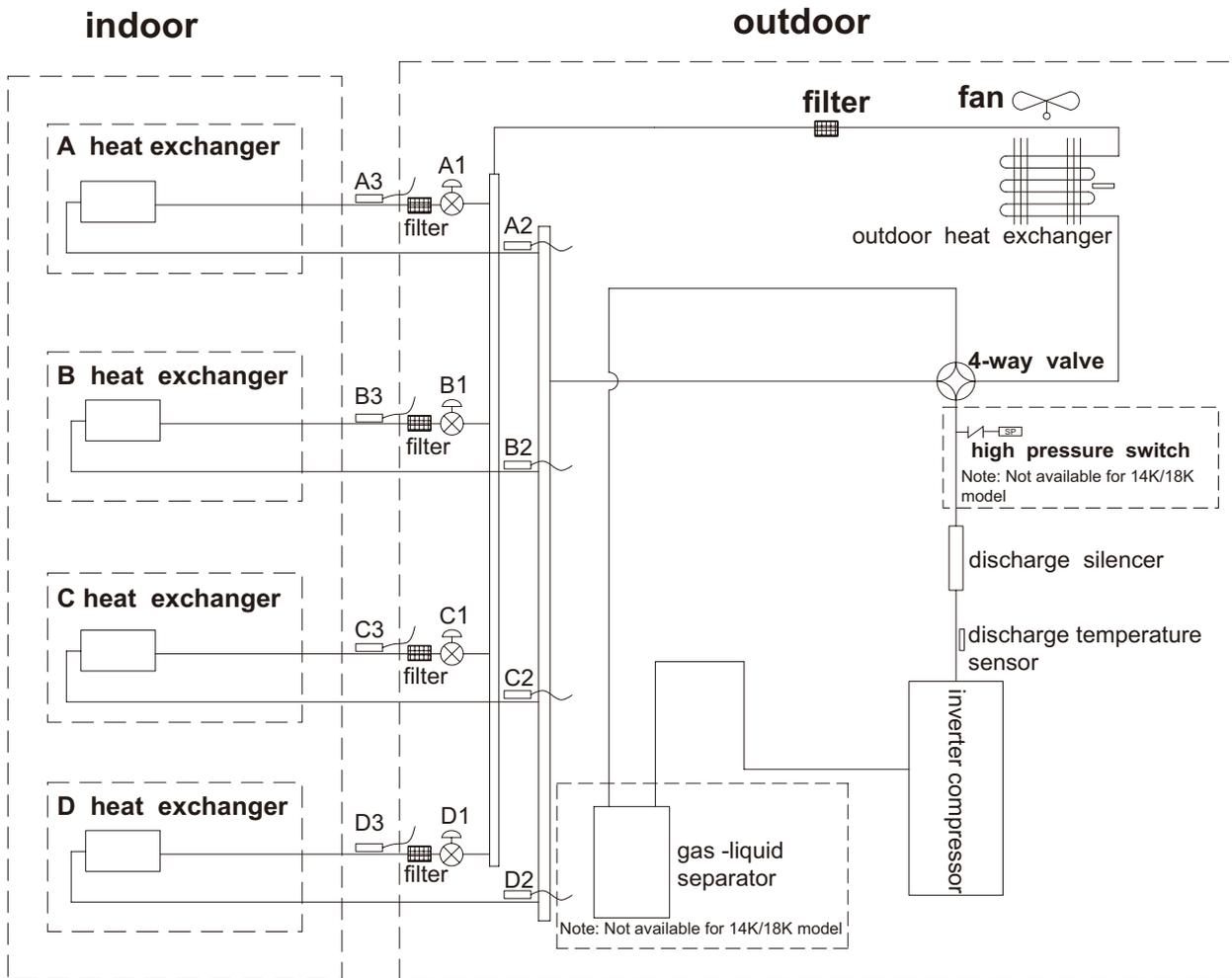


3. Outline Dimension Diagram

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

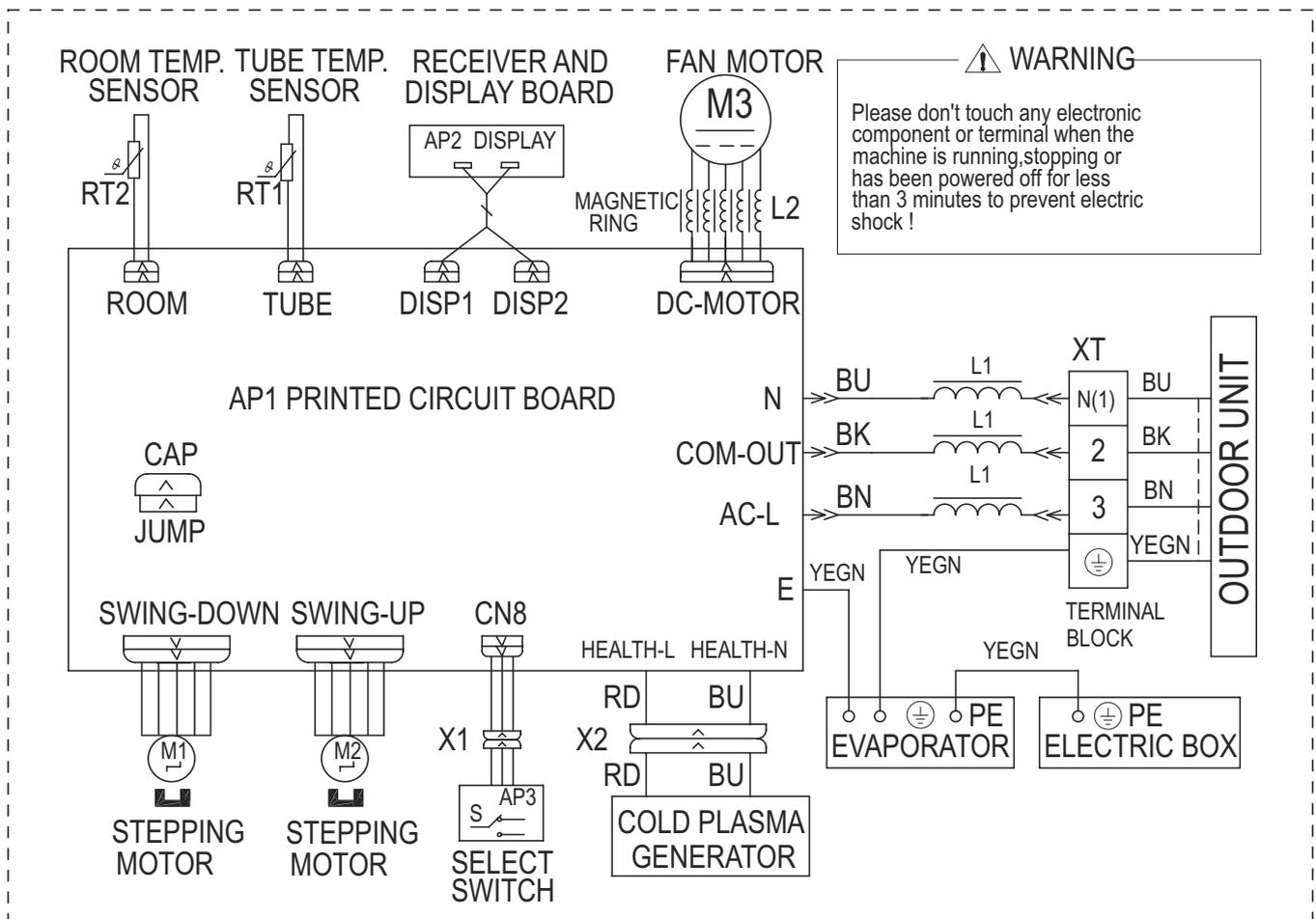
5.1 Wiring Diagram

● **Instruction**

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	CAP	Jumper cap
YE	Yellow	BN	Brown	COMP	Compressor
RD	Red	BU	Blue	⊕	Grounding wire
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

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

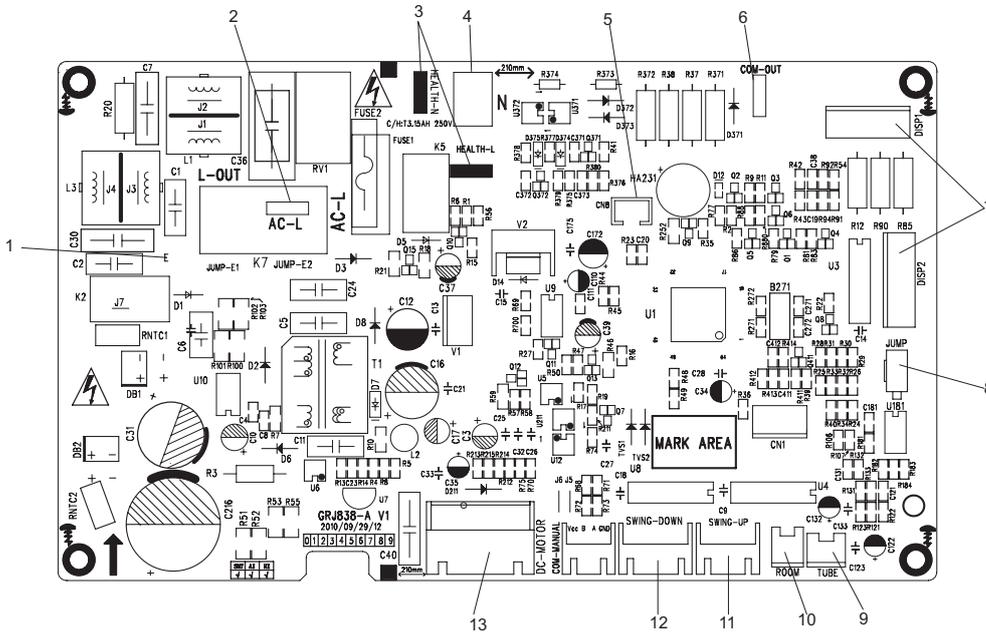
● **Indoor Unit**



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

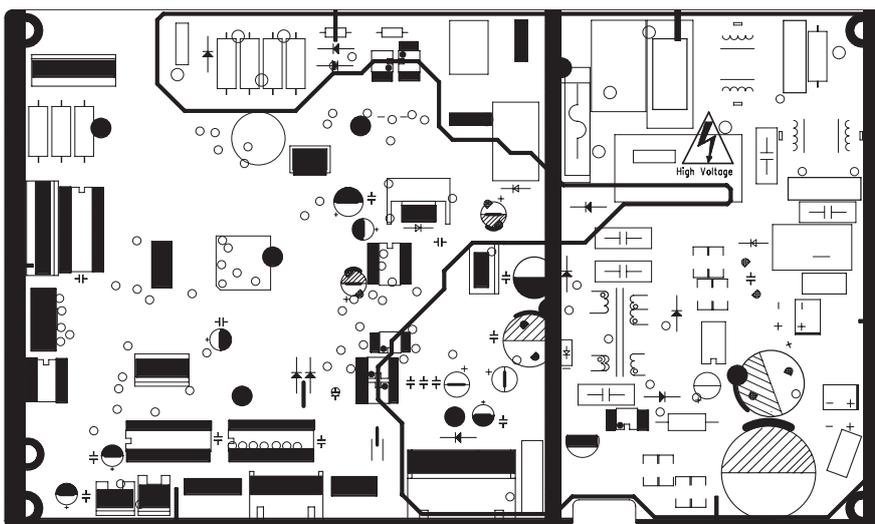
5.2 PCB Printed Diagram

• Top view



No.	Name
1	Connect earthing wire
2	Input of live wire
3	Wiring terminal for health function (optional)
4	Input of neutral wire
5	Control the wiring terminal of down swing
6	Communication interface for indoor unit and outdoor unit
7	Terminal of display interface
8	Needle stand of jumper cap
9	Wiring terminal of indoor tube temperature sensor
10	Wiring terminal of indoor ambient temperature sensor
11	Wiring terminal of up swing
12	Wiring terminal of down swing
13	Wiring terminal of DC motor

• Bottom view



6. Function and Control

6.1 Remote Controller Introduction



- 1 ON/OFF**
Press it to start or stop operation.
- 2 -**
Press it to decrease temperature setting.
- 3 +**
Press it to increase temperature setting.
- 4 MODE**
Press it to select operation mode(AUTO/COOL/DRY/FAN/HEAT).
- 5 FAN**
Press it to set fan speed.
- 6 SWING**
Press it set swing angle.
- 7 I FEEL**
- 8 扇 / 窗**
Press it to set HEALTH or AIR function.
- 9 SLEEP**
- 10 TEMP**
- 11 QUIET**
Pressitto set QUIET function.
- 12 CLOCK**
Press it set clock.
- 13 T-ONIT-OFF**
Press it to set auto-off/auto-on timer.
- 14 TURBO**
- 15 LIGHT**
Press it to turn on/off the light.
- 16 X-FAN**

1 ON/OFF

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

2 -

Press this button to decrease set temperature. Holding it down above 2 seconds rapidly decreases set temperature. In AUTO mode, set temperature is not adjustable.

3 +

Press this button to increase set temperature.Holding it down above 2 seconds rapidly increases set temperature. In AUTO mode, set temperature is not adjustable.

4 MODE

Each time you press this button, a mode is selected in a sequence that goes from AUTO, COOL, DRY, FAN, and HEAT *, as the following:

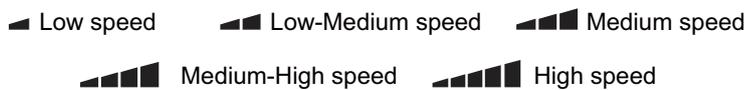


*Note: Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

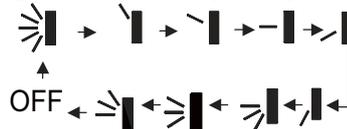
5 FAN

This button is used for setting Fan Speed in the sequence that goes from AUTO, [Low speed], [Low-Medium speed], [Medium speed], [Medium-High speed], [High speed], to then back to Auto.

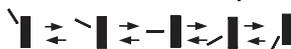


6 SWING

Press this button to set up & down swing angle, which circularly changes as below:



This remote controller is universal. If any command [symbol], [symbol] or [symbol] is sent out, the unit will carry out the command as [symbol]. [symbol] indicates the guide louver swings as:



7 I FEEL

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel I FEEL function.

8 [Healthy/Scavenging icon]

Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays "[Scavenging icon]". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays "[Scavenging icon]" and "[Healthy icon]". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display "[Healthy icon]". Press this button again to repeat the operation above.

9 SLEEP

- Press this button, can select Sleep 1 ([Sleep 1 icon]), Sleep 2 ([Sleep 2 icon]), Sleep 3 ([Sleep 3 icon]) and cancel the Sleep, circulate between these, after electrified, Sleep Cancel is defaulted.
- Sleep 1 is Sleep mode 1, in Cool, Dehumidify modes: sleep status after run for one hour, the main unit setting temperature will increase 1 °C, setting temperature increased 2 °C, the unit will run at this setting temperature; In Heat mode: sleep status after run for one hour, the setting temperature will decrease 1 °C, 2 hours, setting temperature will decrease 2 °C, 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 "Turbo" button for a long time, remote control enters into user individuation sleep setting status, at this time, the time of remote control 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 "Turbo" button for confirmation;
 - (3) At this time, 1hour will be automatically increased at the timer position on the remote control, (that are "2hours" or "3hours" or "8hours"), 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 8hours temperature setting finished, sleep, curve setting finished, at this time, the remote control will resume the original timer display; temperature display will resume to original setting temperature.
- Sleep3- 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 "Turbo" 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, "Timer" button or "Sleep" button, the sleep curve setting or enquiry status will quit similarly.

10 TEMP

Press this button, could select displaying the indoor setting temperature or indoor ambient temperature. When the indoor unit firstly power on it will display the setting temperature, if the temperature's displaying status is changed from other status to " ", displays the ambient temperature, 5s later or within 5s, it receives other remote control signal that will return to display the setting temperature. if the users haven't set up the temperature displaying status, that will display the setting temperature.

11 QUIET

Press this button, the Quiet status is under the Auto Quiet mode (display "🔇" signal) and Quiet mode (display "🔇" signal) and Quiet OFF (there is no signal of "🔇" displayed), after powered on, the Quiet OFF is defaulted. Note: the Quiet function cannot be set up in Fan and Dry mode; Under the Quiet mode (Display "🔇" Under the Quiet mode (Display "🔇" signal), the fan speed is not available.

12 CLOCK

Press CLOCK button, blinking ⌚ . Within 5 seconds, pressing + or - button adjusts the present time. Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting, and then ⌚ will be constantly displayed.

13 T-ONIT-OFF

Press T-ON button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again. After press of this button, ⌚ disappears and "ON" blink s. 00:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 Seconds after setting, press TIMER ON button to confirm. Press T-OFF button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again. TIMER OFF setting is the same as TIMER ON.

14 TURBO

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

15 LIGHT

Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on, 💡 is displayed. If the light is turned off, 💡 disappears.

16 X-FAN

Pressing X-FAN button in COOL or DRY mode, the icon 🌀 is displayed and the indoor fan will continue operation for 10 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.

17 Combination of "+" and "-" buttons: About lock

Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked, 🔒 is displayed. In this case, pressing any button, 🔒 blinks three times.

18 Combination of "MODE" and "-" buttons : About switch between Fahrenheit and centigrade At unit OFF, press "MODE" and "-" buttons simultaneously to switch between ℃ and ℉ .**19 Combination of "TEMP" and "CLOCK" buttons : About Energy-saving Function**

Press "TEMP" and "CLOCK" simultaneously in COOL mode to start energy-saving function. Nixie tube on the remote controller displays "SE". Repeat the operation to quit the function.

20 Combination of "TEMP" and "CLOCK" buttons : About 8℃ Heating Function

Press "TEMP" and "CLOCK" simultaneously in HEAT mode to start 8℃ Heating Function Nixie tube on the remote controller displays "8" and a selected temperature of "8℃". (46 ℉ if Fahrenheit is adopted). Repeat the operation to quit the function.

21 About Back-lighting Function

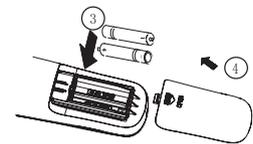
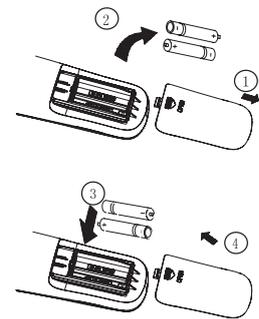
The unit lights for 4s when energizing for the first time, and 3s for later press.

Replacement of Batteries

- 1.Remove the battery cover plate from the rear of the remote controller.
(As shown in the figure)
- 2.Take out the old batteries.
- 3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.
4. Reinstall the battery cover plate.

★Notes:

- When replacing the batteries, do not use old or different types of batteries,
- If the remote controller will not be used for a long time, please otherwise, it may cause malfunction. remove batteries to prevent batteries from leaking.
- The operation should be performed in its receiving range.
- It should be kept 1m away from the TV set or stereo sound sets.
- If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds.If it still can't operate properly, replace the batteries.



Sketch map for replacing 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℃ .
- (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℃ .
- (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℃ .
- (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 fanmode;
- (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 operates 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

1. Buzzer

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

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. 3. 8 °C heating function Under heating mode, press TEMP+CLOCK buttons simultaneously. Under this mode, "cold air prevention protection" will be shielded.

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.

5. Clock timer

Timer ON

If timer ON is set during operation of the unit, the unit will continue to operate. If timer ON is set at unit OFF, upon ON time reaches the unit will start to operate according to previous setting status.

Timer OFF

If timer OFF is set at unit OFF, the system will keep standby status. If timer OFF is set at unit ON, upon OFF time reaches the unit will stop operation.

Timer Change

Although timer has been set, the unit still can be turned on/off by pressing ON/OFF button of the remote controller. You can also set the timer once again, and then the unit will operate according to the last setting.

If timer ON and timer OFF are set at the same time during operation of the unit, the unit will keep operating at current status till OFF time reaches.

If timer ON and timer OFF are set at the same time at unit OFF, the unit will keep off status till ON time reaches.

Each day in future, the system will operate according to preset mode till OFF time reaches and stop operation till ON time reaches. If ON time and OFF time are the same, OFF command will prevail.

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. 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.

8. 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.

9. 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.

Part II : Installation and Maintenance

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.

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 20kg.
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. Avoid contact between refrigerant and fire as it generates poisonous gas; Prohibit prolong the connection pipe by welding.
2. 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.
3. Make sure no refrigerant gas is leaking out when installation is completed.
4. If there is refrigerant leakage, please take sufficient measure to minimize the density of refrigerant.
5. 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.

Main Tools for Installation and Maintenance

<p>1. Level meter, measuring tape</p> 	<p>2. Screw driver</p> 	<p>3. Impact drill, drill head, electric drill</p> 
<p>4. Electroprobe</p> 	<p>5. Universal meter</p> 	<p>6. Torque wrench, open-end wrench, inner hexagon spanner</p> 
<p>7. Electronic leakage detector</p> 	<p>8. Vacuum pump</p> 	<p>9. Pressure meter</p> 
<p>10. Pipe pliers, pipe cutter</p> 	<p>11. Pipe expander, pipe bender</p> 	<p>12. Soldering appliance, refrigerant container</p> 

8. Installation

8.1 Choosing an Installation Site

Before choosing the installation site, obtain user approval.

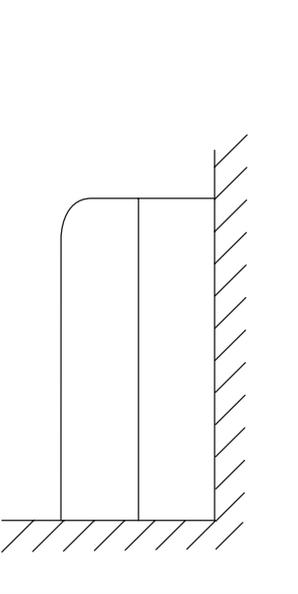
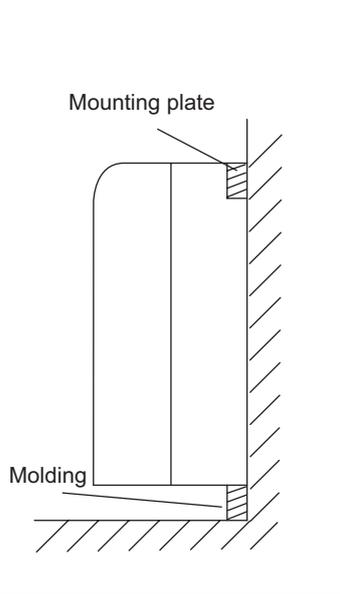
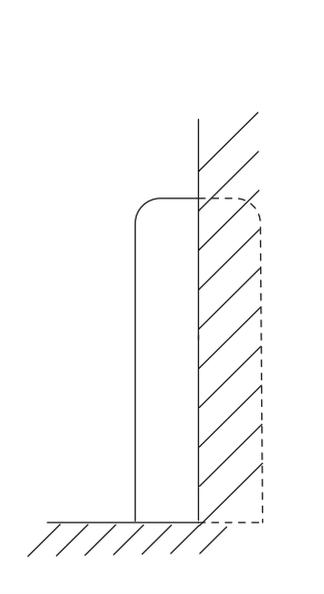
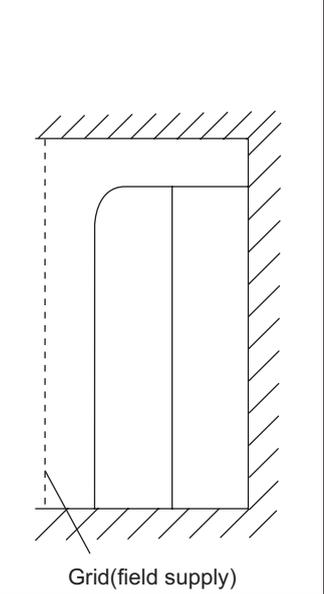
Indoor unit

The indoor unit should be sited in a place where:

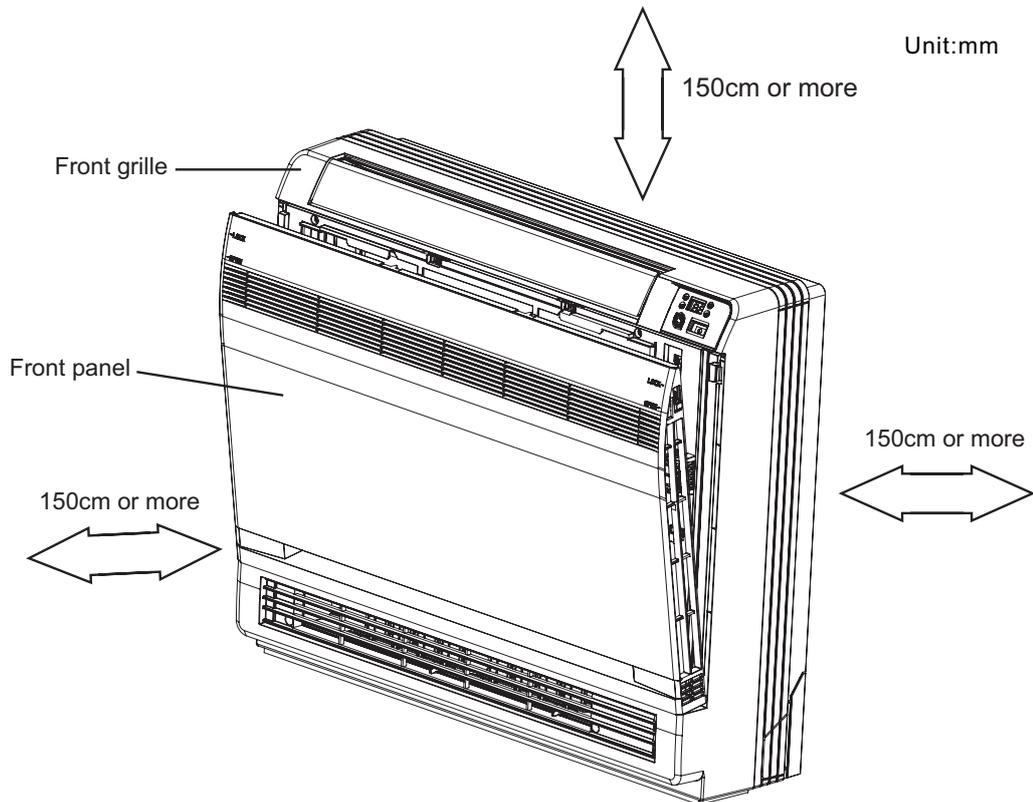
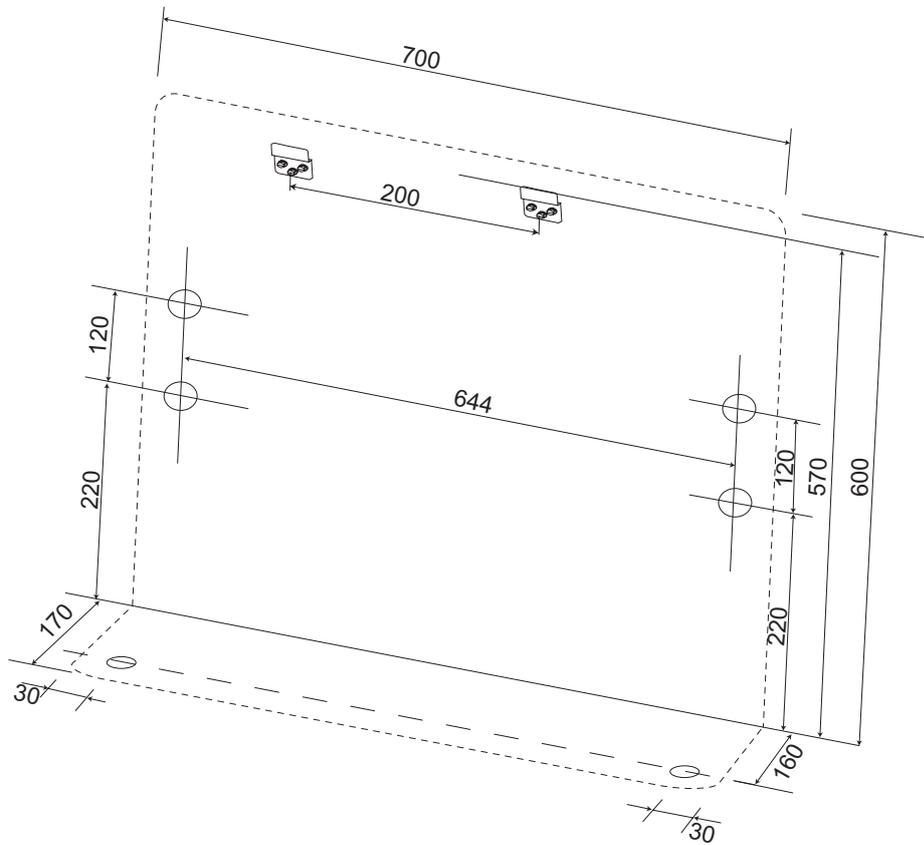
- 1) the restrictions on installation specified in the indoor unit installation drawings are met.
- 2) both air intake and exhaust have clear paths met.
- 3) the unit is not in the path of direct sunlight.
- 4) the unit is away from the source of heat or steam.
- 5) there is no source of machine oil 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).

8.2 Indoor Unit Installation Drawings

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

Exposed		Half concealed	Concealed
			
Floor Installation	Wall Installation		

Location for securing the installation panel.

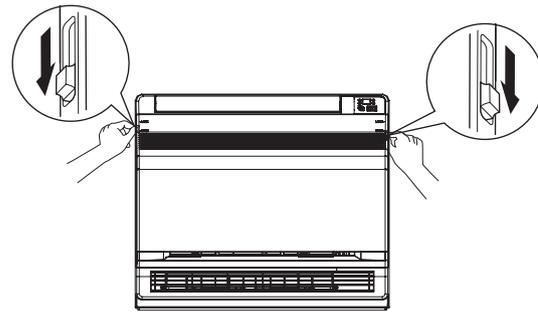


8.3 Installation Tips

1.Removing and installing front pane

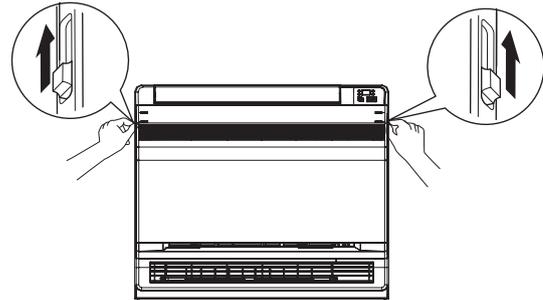
● Removal method

- 1)Slide until the 2 stoppers click into place
- 2)Open the front panel forward and undo the string
- 3)Remove the front panel



● Installation method

- 1)Attach the front grille and front panel after pulling the string around them.
- 2)Close the front panel and slide until the stoppers click outside.



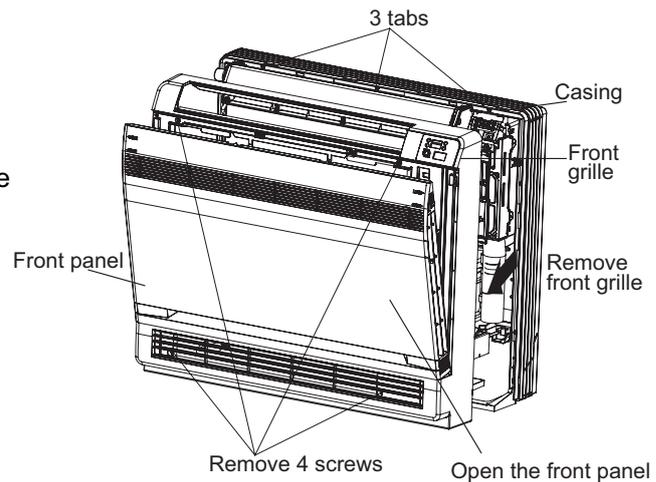
2.Removing and installing front grille

● Removal method

- 1).Open the front panel.
- 2)Remove the 4 screws and remove the front grille while pulling it forward(3 tabs).

● Installation method

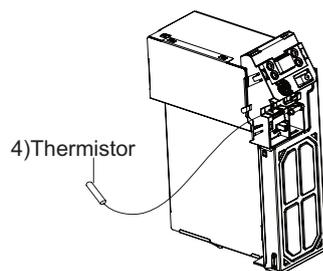
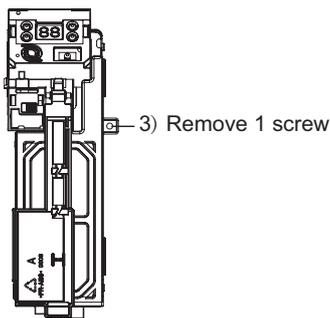
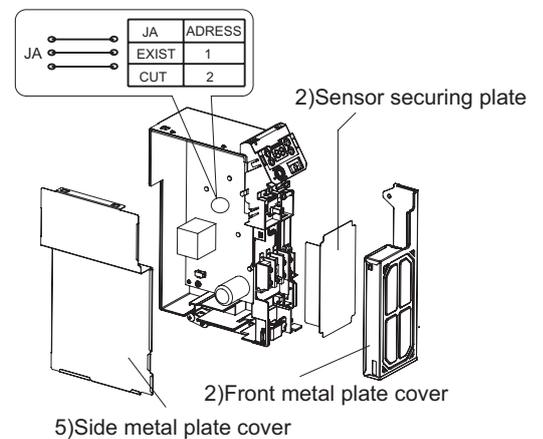
- 1)Secure the front grille with the 4 installation screws (3 tabs)
- 2)Return the front panel to the original position.



3.How to set the different addresses

When two indoor units are installed in one room, the two wireless remote controllers can be set for different addresses.

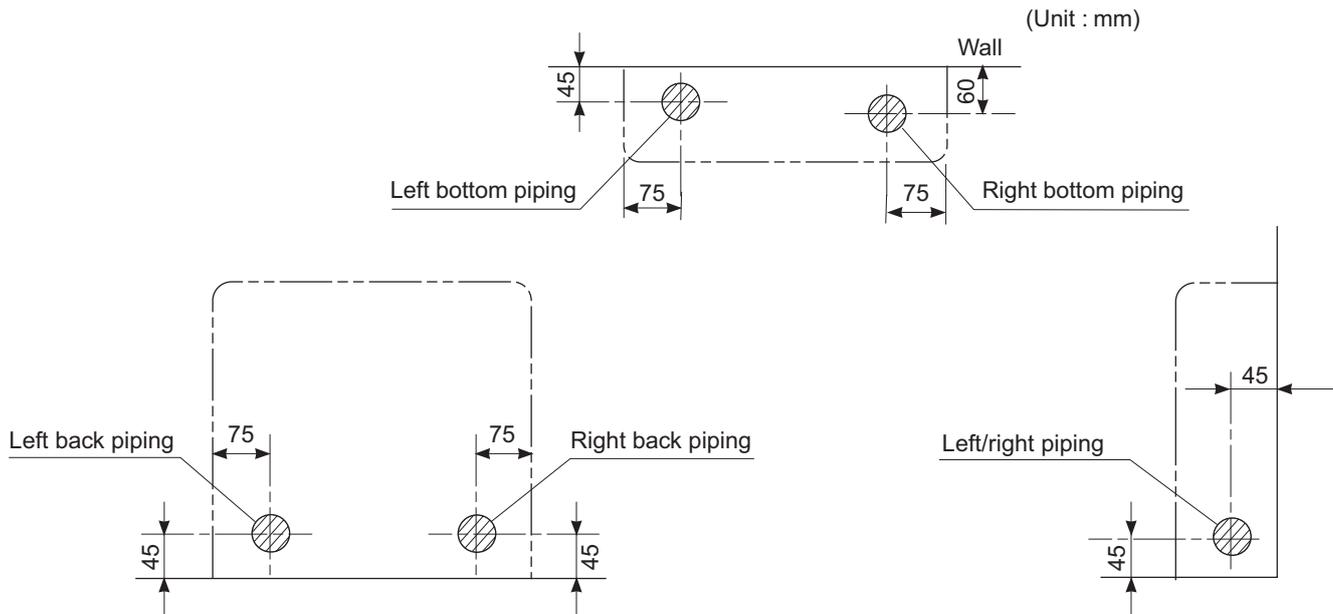
- 1)Remove the front grille.
- 2)Live the sensor securing plate and remove the front metal plate cover.
- 3)Remove the electric box(1 screw).
- 4)Remove the thermistor.
- 5)Remove the side metal plate cover(7 tabs).
- 6)Cut the address jumper(JA)on the printed circuit board.



8.4 Indoor Unit Installation

1.Refrigerant piping

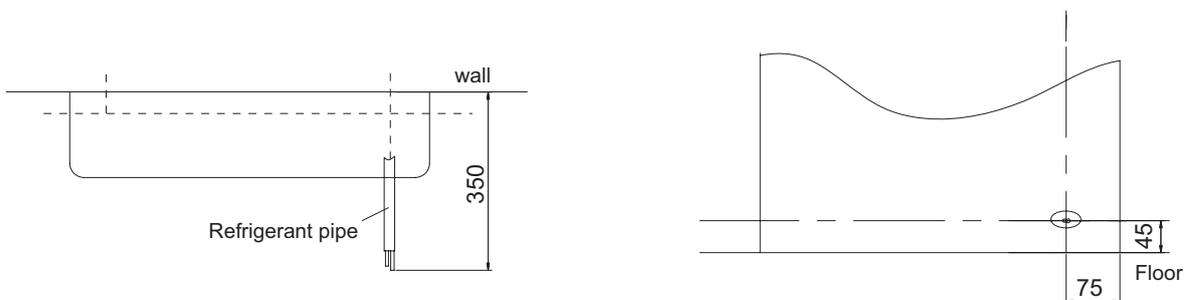
- 1)Drill a hole (65mm in diameter) in the spot indicated by the⊗ symbol in the illustration ad below.
- 2)The location of the hole is different depending on which side of the pipe is taken out .
- 3)For piping ,see**6.Connecting the refrigerant pipe** ,under Indoor Unit Installation(1).
- 4)Allow space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



⚠ CAUTION

Min.allowable length

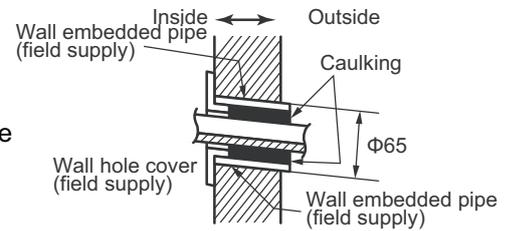
- The suggested shortest pipe length is 2.5m,in order to avoid noise from the outdoor unit and vibration. (Mechanical noise and vibration may occur depending on how the unit is installed and the environment in which it is used.)
- See the installation manual for the outdoor unit for the maximum pipe length.
- For multi-connections ,see the installation manual for the multi-outdoor unit.



2. Boring a wall hole and installing wall embedded pipe

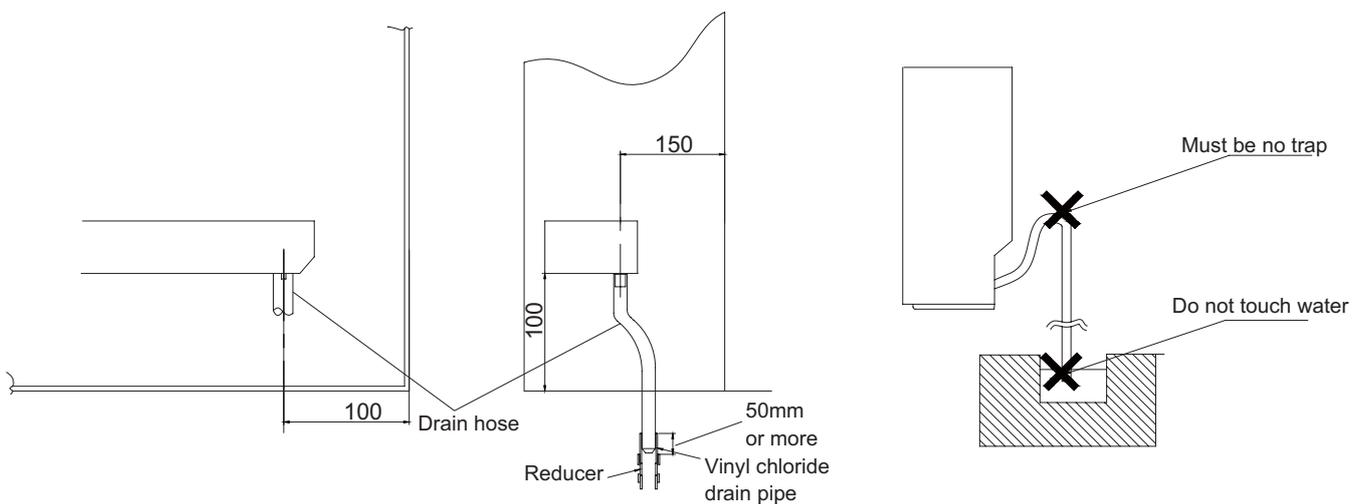
- For walls containing metal frame or metal board ,be sure to use a wall embedded pipe and wall cover in the feed-through hole to
- Be sure to caulk the gaps around the pipes with caulking material to prevent water leakage.

- 1)Bore a feed-through hole of 65mm 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.



3. 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.



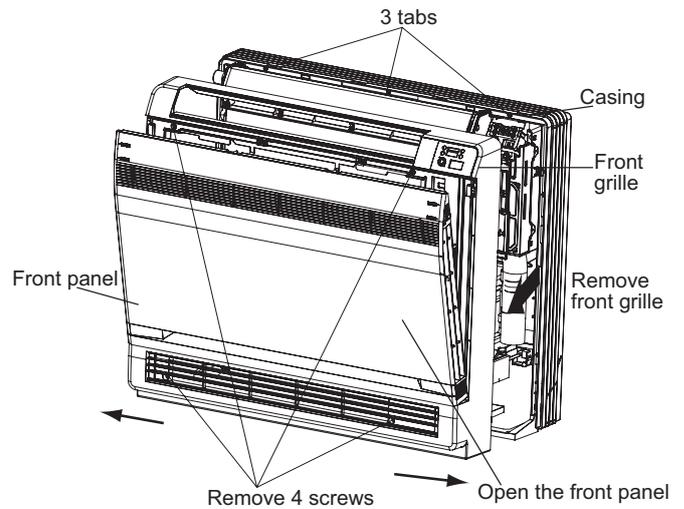
! CAUTION

Use polyvinyl chloride adhesive agent for gluing. Failure to do so may cause water leakage.

4. Installing indoor unit

4-1.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.

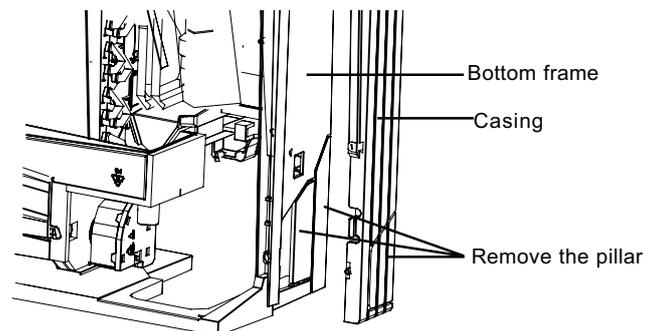
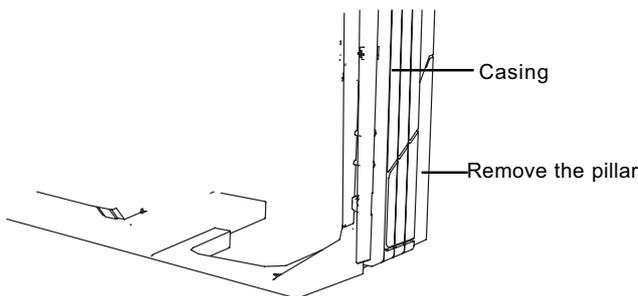
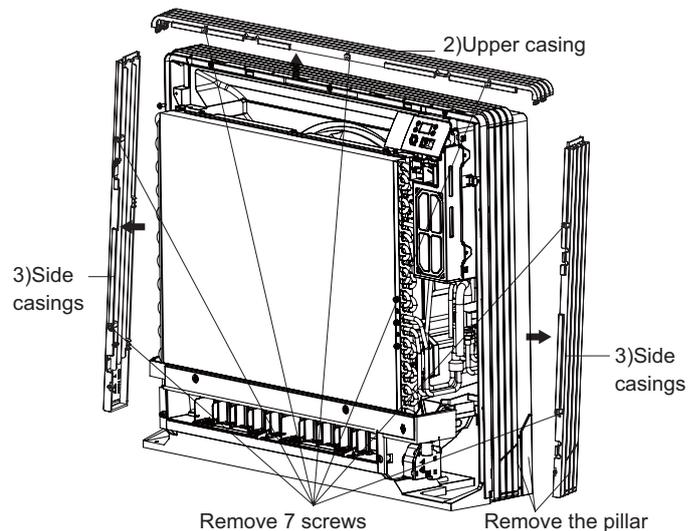


■ For Moldings

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

■ For Side Piping

- Remove the pillars.
 - 1)Remove the 7screws.
 - 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).



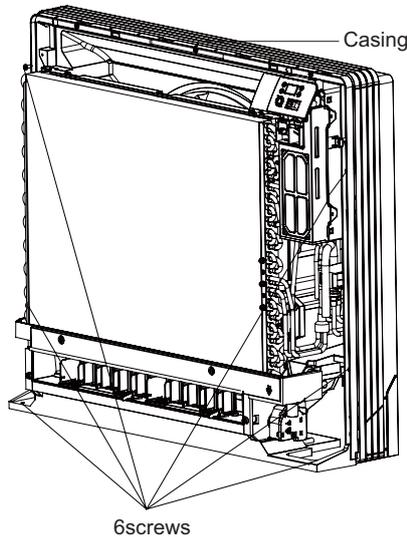
4-2.Installation

- 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.

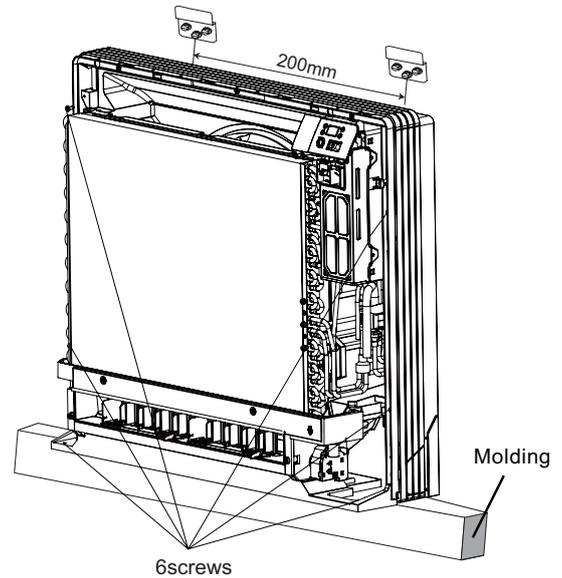
The mounting plate should be installed on a wall which can support the weight of the indoor unit.

- 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.

Floor Installation



Wall Installation



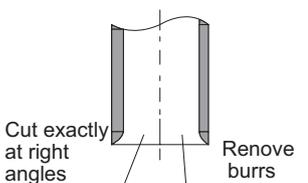
- 3) Once refrigerant piping and drain piping connections are complete, fill in the gap of the through hole with putty. A gap can lead to condensation on the refrigerant pipe, and drain pipe, and the entry of insects into the pipes.
- 4) Attach the front panel and front grille in their original positions once all connections are complete.

5. 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.

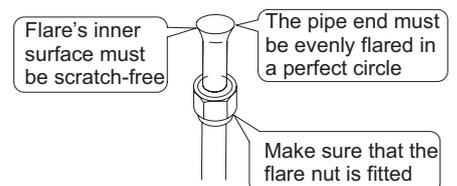
⚠ WARNING

- 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 R410A 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 R410A	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



6.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.

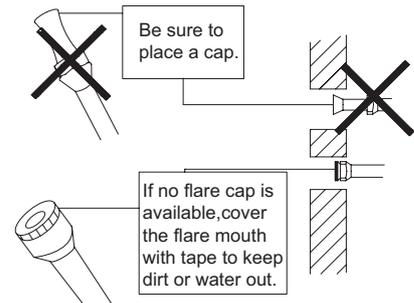
Then tighten them fully with the torque wrenches.

3)To prevent gas leakage, apply refrigeration oil on both inner and outer surfaces in the flare. (Use refrigeration oil for R410A.)

Flare nut tightening torque		
Gas side		Liquid side
25/35 class	50 class	25/35/50 class
3/8 inch	1/2 inch	1/4 inch
32.7-39.9 N.m (333-407kgf.cm)	49.5-60.3 N.m (505-615kgf.cm)	14.2-17.2 N.m (144-175kgf.cm)

6-1.Caution on piping handling

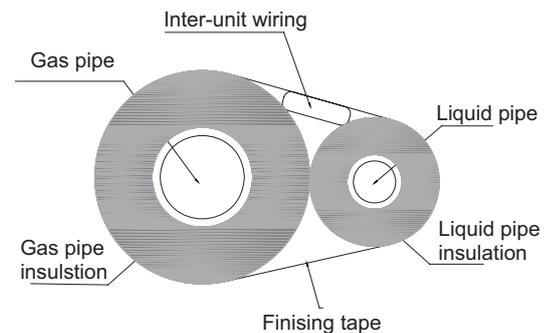
- 1)Protect the open end of the pipe against dust and moisture.
- 2)All pipe bends should be as gentle as possible. Use a pipe bender for bending.
(Bending radius should be 30 to 40mm or larger.)



6-2. 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 0.045kca/(mh°C)
Refrigerant gas pipe's surface temperature reaches 110 °C max.
Choose heat insulation materials that will withstand this temperature.



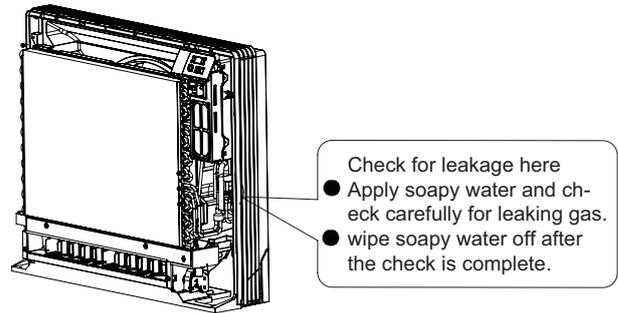
2)Be sure to insulate both the gas and liquid piping and to provide insulation dimensions as below.

Gas side		Liquid side	Gas pipe thermal insulation		Liquid pipe thermal insulation
25/35 class	50class		25/35 class	50class	
O.D. 9.55mm	O.D. 12.7mm	O.D. 6.4mm	I.D. 12-15mm	I.D. 14-16mm	I.D. 8-10mm
Thickness 0.8mm			Thickness 10mm Min.		

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

7. Checking for gas leakage

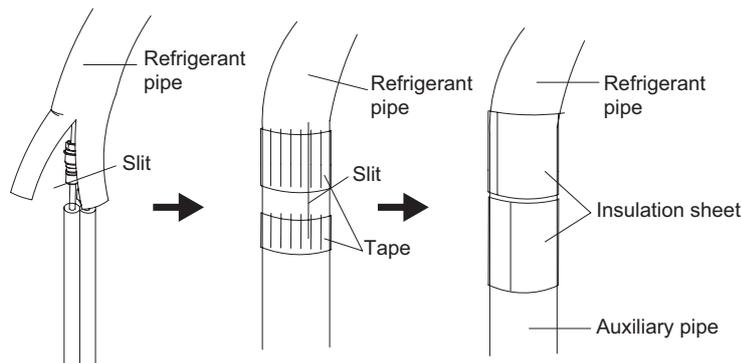
- 1) Check for leakage of gas after air purging
- 2) See the sections on air purges and gas leak checks in the installation manual for the outdoor unit.



8. 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.

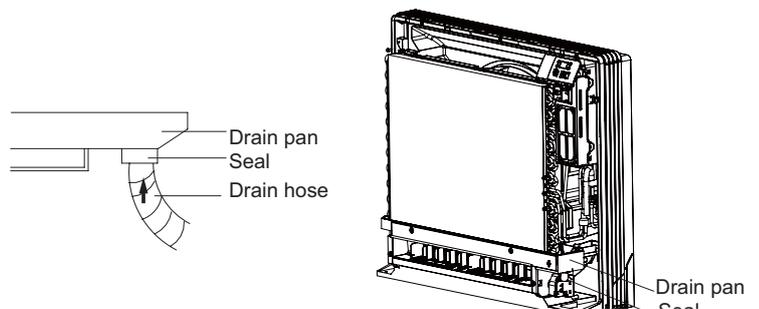


⚠ CAUTION

- 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.

9. Connecting the drain hose

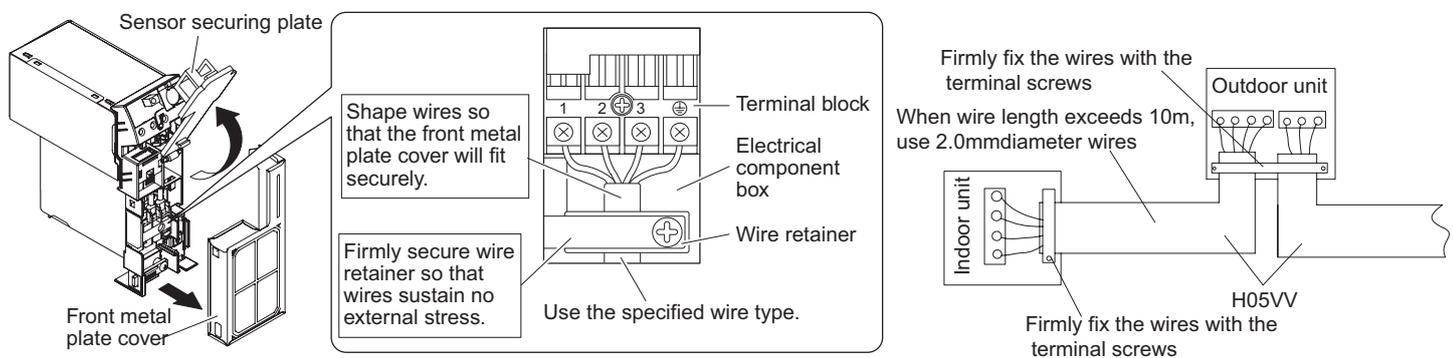
Insert the supplied C drain hose into the socket of the drain pan.
Fully insert the drain hose until it adheres to a seat of the socket.



10. 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 unit's 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 an system.)



⚠ CAUTION

- 1) Do not use tapped wires, stranded wires, extension cords, 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 Malfunction Display of Indoor Unit

1. Malfunction display requirement

When there are several malfunctions, they will be displayed circularly.

2. Malfunction display method

(1) Hardware malfunction: immediate display; refer to “malfunction display table”;

(2) Operation state: immediate display; refer to “malfunction display table”;

(3) Other malfunctions: it is displayed after the compressor stops for 200s; refer to “malfunction display table”.

Note: when the compressor is restarted, the malfunction display delay time (200s) is cleared.

(4) When the unit is under limit frequency or frequency drop state, the display can be controlled via remote controller.

3. Malfunction display control

The indicator lamp and dual 8 nixie tube displays shall be synchronized. That is when the indicator lamp blinks, the dual 8 nixie tube displays the corresponding malfunction code.

4. Display control via remote controller

Enter display control: press light button successively for 4 times within 3s to display the corresponding malfunction code;

Exit display control: pressing light button successively for 4 times within 3s or after display is shown for 5min, the display will terminate.

Display under test state

Dual 8 nixie tube display: minimum cooling (heating)-P0; middle cooling (heating)-P3

Nominal cooling (heating) -P1; maximum cooling (heating) -P2;

Corresponding indicator lamp will be on for 0.3s and off for 0.3s

Error Code List:

Malfunction Name	Dual-8 Nixie Tube	Indicator Display		
		Operation indicator	Cooling indicator	Heating indicator
Malfunction of jumper cap	C5	blink 15 times		
No feedback from indoor unit's motor	H6	blink 11 times		
Circuit malfunction of zero crossing detection	U8	blink 17 times		
Indoor ambient temperature sensor is open/short-circuited	F1		blink once	
Indoor evaporator temperature sensor is open/short-circuited	F2		blink twice	
Liquid valve temperature sensor is open/short-circuited	b5		blink 19 times	
Gas valve temperature sensor is open/short-circuited	b7		blink 22 times	
module temperature sensor is open/short-circuited	P7			blink 18 times
Outdoor ambient temperature sensor is open/short-circuited	F3		blink 3 times	
Outdoor condenser tube temperature sensor is open/short-circuited	F4		blink 4 times	
Outdoor discharge temperature sensor is open/short-circuited	F5		blink 5 times	
Communication malfunction between indoor and outdoor units	E6	blink 6 times		
Malfunction of phase current circuit detection for compressor	U1			blink 12 times

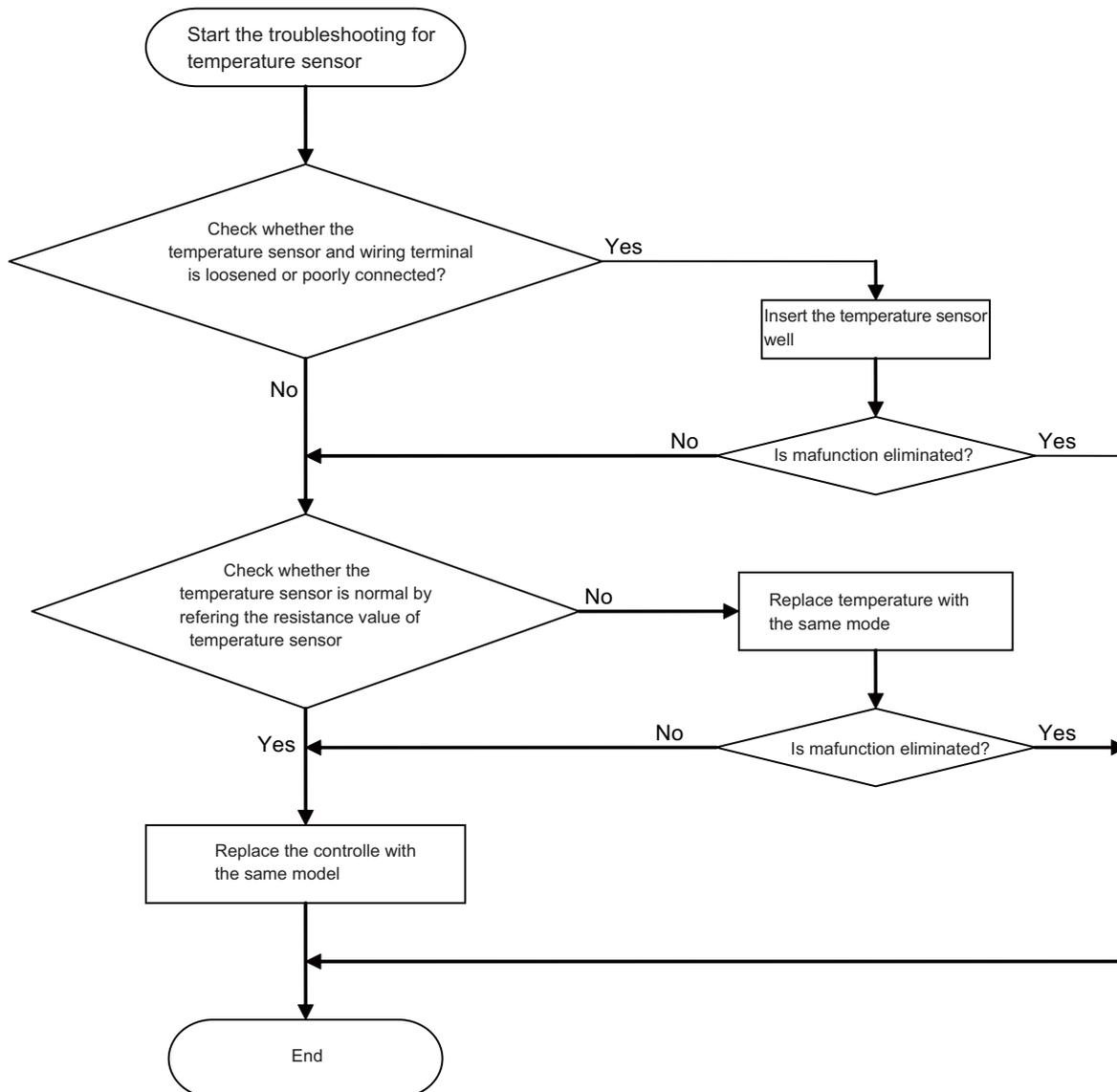
Module temperature protection	P8			blink 19 times
Charging malfunction of capacitor	PU			blink 17 times
High pressure protection of system	E1	blink once		
Overload protection of compressor	H3			blink 3 times
Wrong connection for communication wire or malfunction of expansion valve (free match)	dn	/	/	/
Wrong connection for communication wire or malfunction detection status of expansion valve (free match)	dd	/	/	/
Mode shock	E7	blink 7 times		
Freon recovery mode	Fo	blink once	blink once	
Defrosting and oil return under heating	H1			blink once
Failure start-up of compressor	Lc			blink 11 times
Discharge high-temperature protection of compressor	E4	blink 4 times		
Overload protection	E8	blink 8 times		
Overcurrent protection of the complete unit	E5	blink 5 times		
Overcurrent protection of phase current	P5			blink 15 times
Desynchronizing of compressor	H7			blink 7 times
Loss phase/inverse phase protection for compressor	Ld	/	/	/
Module current protection (IPM protection)	H5			blink 5 times
Low voltage protection of DC bus bar	PL			blink 21 times
High voltage protection of DC bus bar	PH		blink 11 times	
PFC protection	HC			blink 6 times
Limit/decrease frequency due to current protection of the complete unit	F8		blink 8 times	
Limit/decrease frequency due to module current protection (phase current)	En	/	/	/
Limit/decrease frequency due to discharge	F9		blink 9 times	
Limit/decrease frequency due to freeze protection	FH		blink twice	blink twice
Limit/decrease frequency due to overload	F6		blink 6 times	
Limit/decrease frequency due to module temperature protection	EU		blink 6 times	blink 6 times
Oil return under cooling	F7		blink 7 times	
Cold air prevention protection	E9	blink 9 times		
Freeze protection	E2	blink twice		

9.2 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:

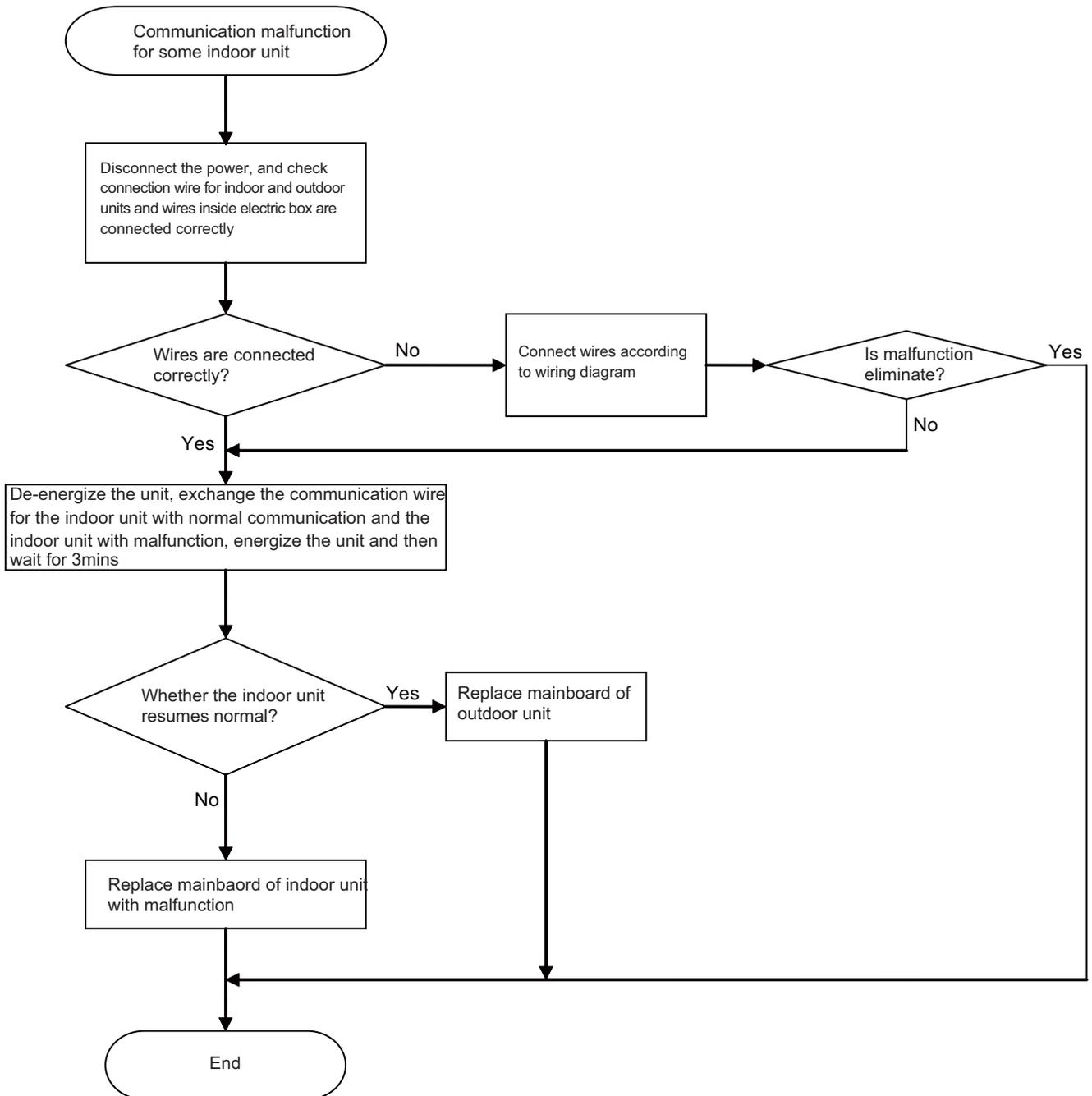


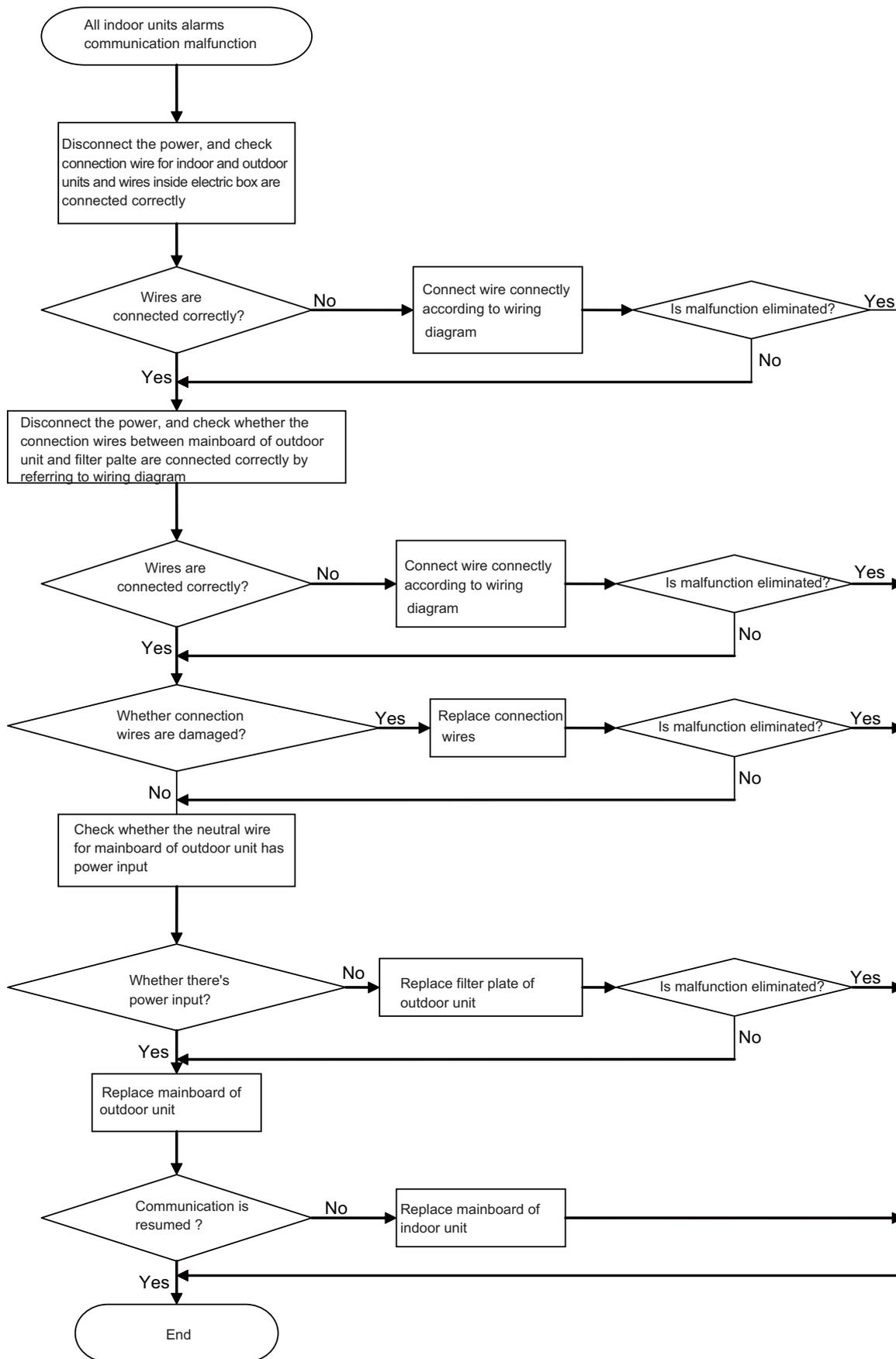
(2) Troubleshooting for communication malfunction

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;

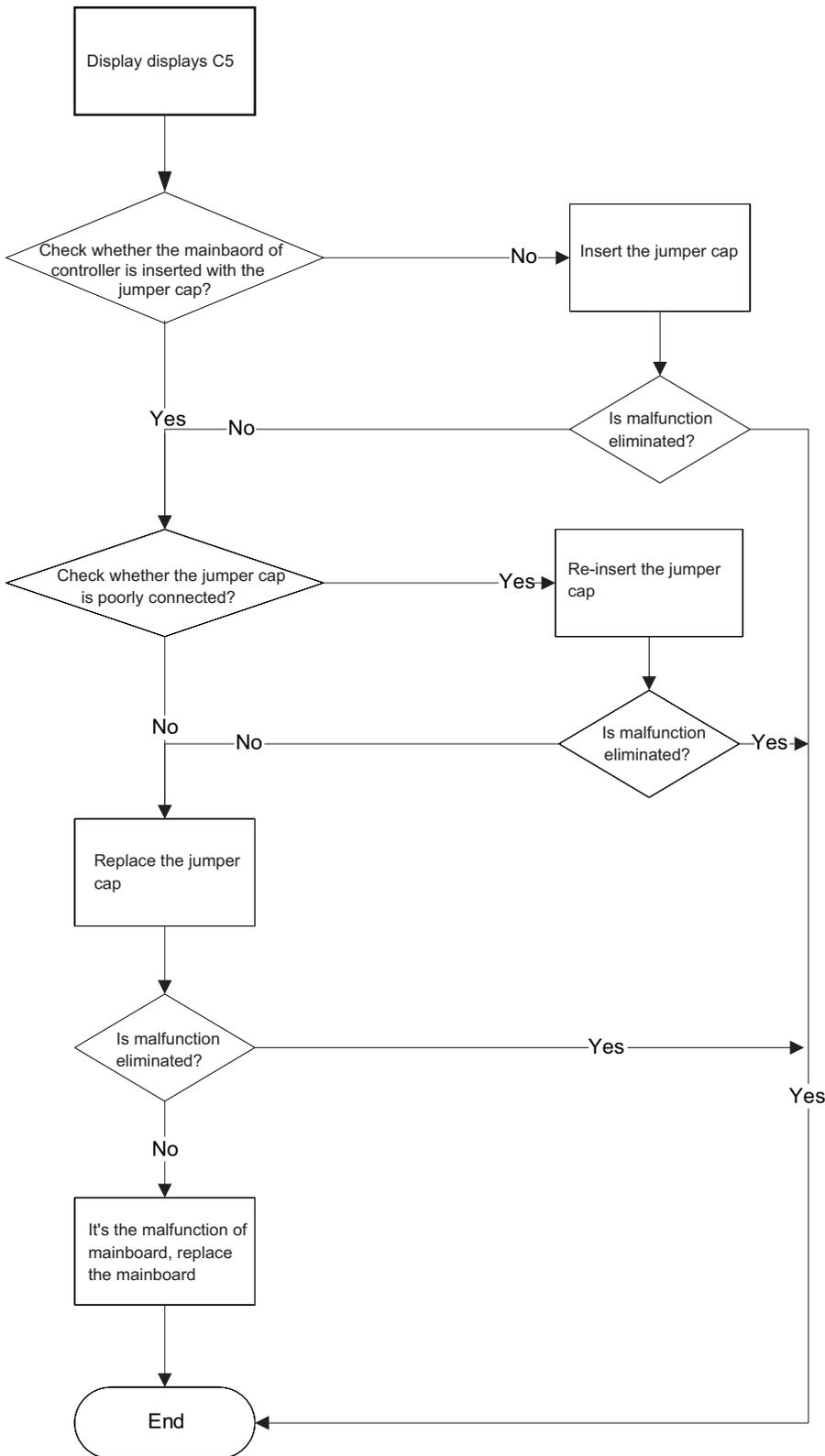
Check flow chart:



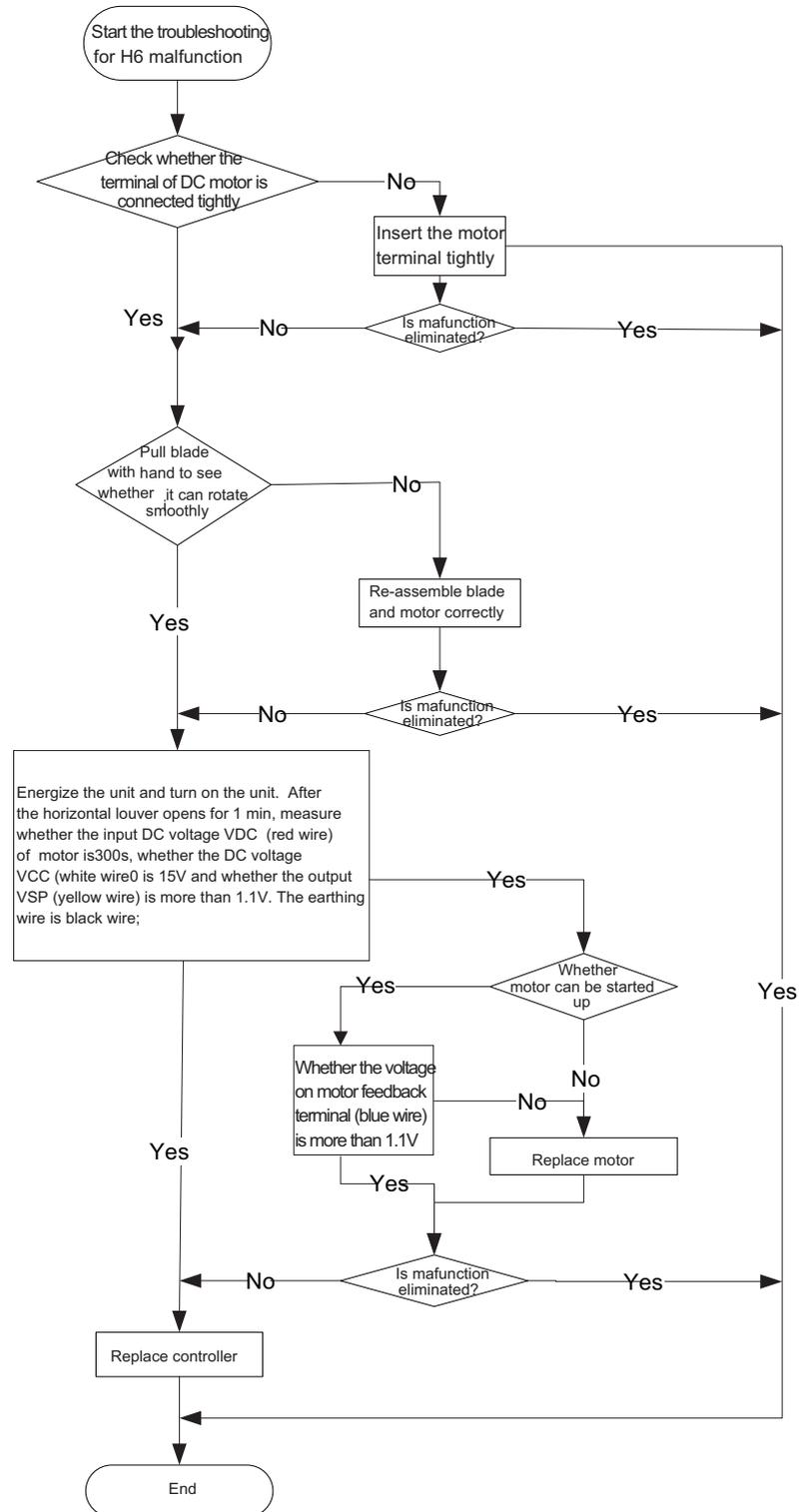


(3) Troubleshooting for C5 malfunction

Main causes for C5 malfunction; 1. Jumper cap hasn't been inserted on mainboard; 2. Jumper cap hasn't been inserted tightly; 3. Jumper cap is damaged; 4. The corresponding circuit of mainboard is abnormal. The check flow chart is as below:



(4) Troubleshooting for H6 malfunction



Note: The information above is for reference only.

9.3 Maintenance Method 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 it's 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; Unit's 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's 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	Pressure at the valve is much lower than the regulated range	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. Outdoor 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 there's abnormal sound	There's the sound of "PAPA"	Normal phenomenon. Abnormal sound will disappear after a few minutes.
When turn on or turn off the unit, there's 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 there're parts touching together inside the indoor unit	There's 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 there're parts touching together inside the outdoor unit	There's 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.

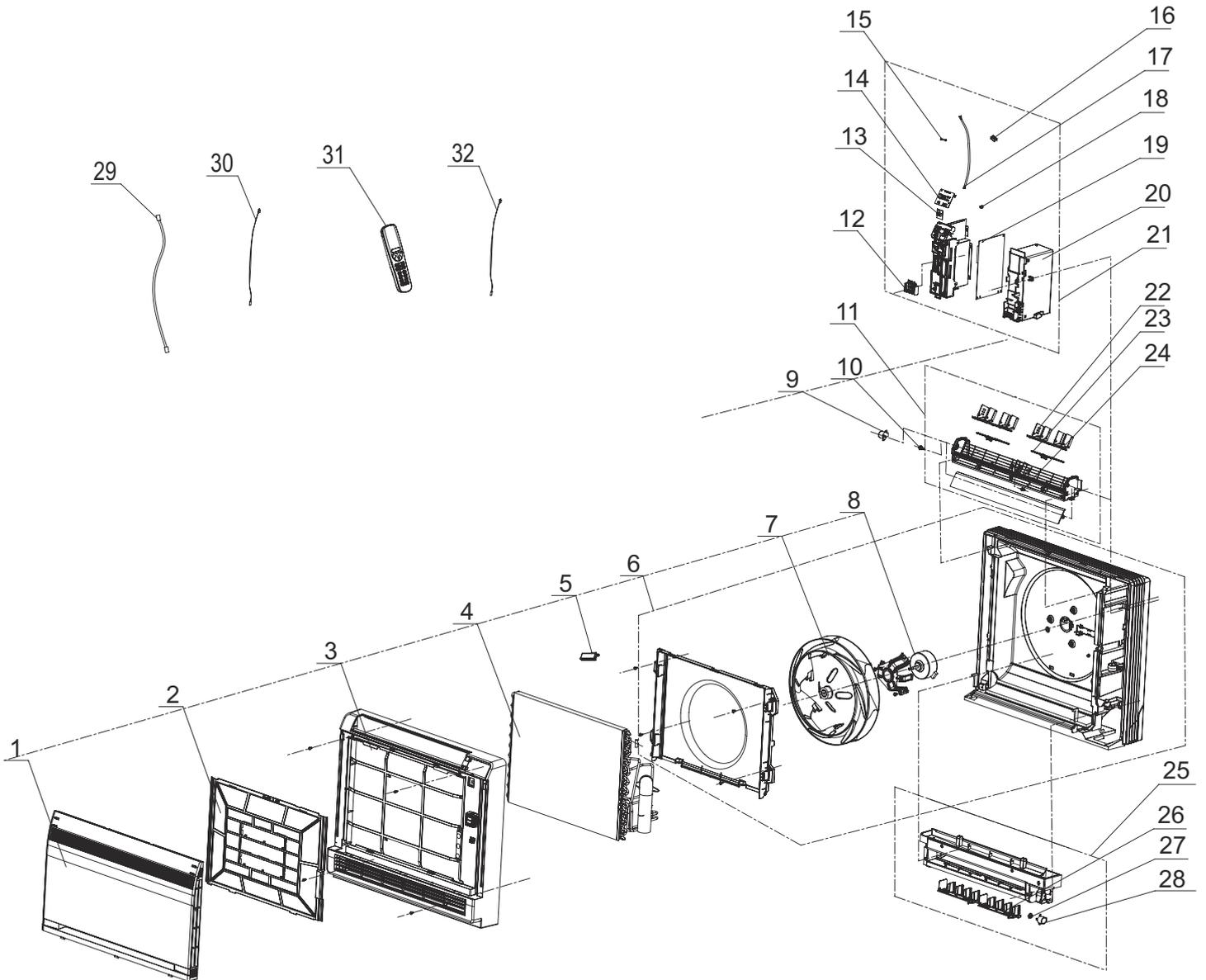
10. Exploded View and Parts' List

10.1 Indoor Unit

MUCNR-09-H3M

MUCNR-12-H3M

MUCNR-18-H3M



MUCNR-09-H3M

CL20827

Nº	Descripción	Ud.	Ref. Proveedor	Código
1	Front Panel Assy	1	20012756	
2	Filter Sub-Assy	1	11122139	
3	Front Case Assy	1	20012601	
4	Evaporator Assy	1	01002637	
5	Cold Plasma Generator	1	1114001604	
6	Rear Case assy	1	22202462	
7	Centrifugal Fan (Ventilador centrífugo)	1	10312005	CL96168
8	Fan Motor (Motor ventilador)	1	15012123	CL96169
9	Step Motor (Motor lamas)	1	1521210101	CL96170
10	Crank	1	73012005	
11	Swing Assy	1	10102042	
12	Terminal Board	1	42011233	
13	Switch Board	1	30112007	
14	Display Board (Placa display)	1	30568131	CL96171
15	Fuse	1	46010055	
16	Radiator	1	49010252	
17	Connection Wire	1	4003004202	
18	Jumping Connector	1	4202300101	
19	Main Board (Placa electrónica)	1	30138000047	CL96172
20	Electric Box	1	20112116	
21	Electric Box Assy	1	20102000184	
22	Air Louver (upper)	2	10512143	
23	Swing lever	2	10582096	
24	Shaft of Guide Louver	2	10542020	
25	Water Tray Assy	1	20182141	
26	Air Louver (lower)	2	10512144	
27	Axis (lower step motor)	1	10542034	
28	Step Motor (Motor lamas)	1	1521210805	CL96173
29	Connecting Cable	0	4002052317	
30	Temperature Sensor (Sensor de temperatura de tubería)	1	390000591	CL98667
31	Remote Controller (Control remoto)	1	30510134	CL96174
32	Ambient Temperature Sensor (Sensor de temp. ambiente)	1	390000451	CL98668

MUCNR-12-H3M

CL20828

Nº	Descripción	Ud.	Ref. Proveedor	Código
1	Front Panel Assy	1	20012756	
2	Filter Sub-Assy	1	11122139	
3	Front Case Assy	1	20012601	
4	Evaporator Assy	1	01002333	
5	Cold Plasma Generator	1	1114001604	
6	Rear Case assy	1	22202462	
7	Centrifugal Fan (Ventilador centrífugo)	1	10312005	CL96168
8	Fan Motor (Motor ventilador)	1	15012123	CL96169
9	Step Motor (Motor lamas)	1	1521210101	CL96170
10	Crank	1	73012005	
11	Swing Assy	1	10102042	
12	Terminal Board	1	42011233	
13	Switch Board	1	30112007	
14	Display Board (Placa display)	1	30568131	CL96171
15	Fuse	1	46010055	
16	Radiator	1	49010252	
17	Connection Wire	1	4003004202	
18	Jumping Connector	1	4202300102	
19	Main Board (Placa electrónica)	1	30138000047	CL96172
20	Electric Box	1	20112116	
21	Electric Box Assy	1	20102000185	
22	Air Louver (upper)	2	10512143	
23	Swing lever	2	10582096	
24	Shaft of Guide Louver	2	10542020	
25	Water Tray Assy	1	20182141	
26	Air Louver (lower)	2	10512144	
27	Axis (lower step motor)	1	10542034	
28	Step Motor (Motor lamas)	1	1521210805	CL96173
29	Connecting Cable	0	4002052317	
30	Temperature Sensor (Sensor de temperatura de tubería)	1	390000591	CL98667
31	Remote Controller (Control remoto)	1	30510134	CL96174
32	Ambient Temperature Sensor (Sensor de temp. ambiente)	1	390000451	CL98668

MUCNR-18-H3M

CL20829

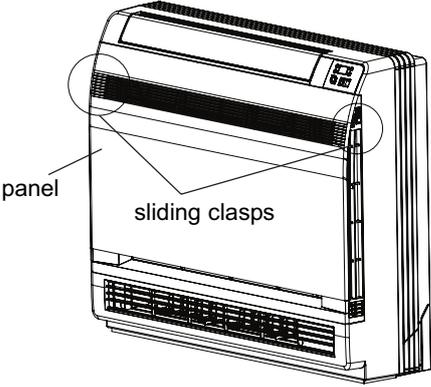
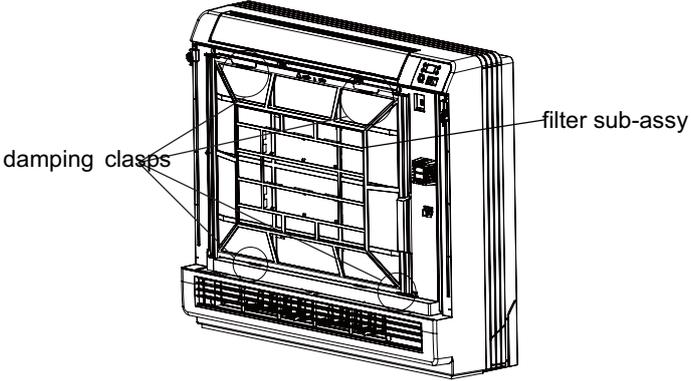
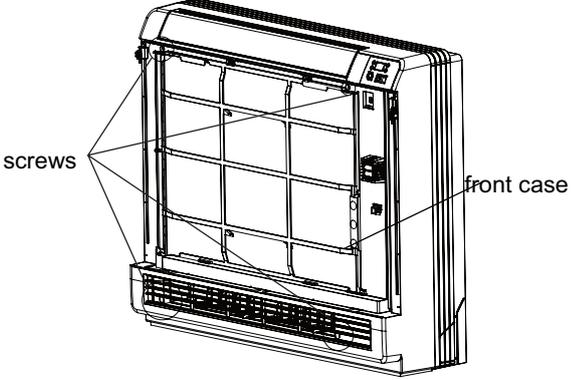
Nº	Descripción	Ud.	Ref. Proveedor	Código
1	Front Panel Assy	1	20012756	
2	Filter Sub-Assy	1	11122139	
3	Front Case Assy	1	20012601	
4	Evaporator Assy	1	01002332	
5	Cold Plasma Generator	1	1114001604	
6	Rear Case assy	1	22202462	
7	Centrifugal Fan (Ventilador centrífugo)	1	10312005	CL96168
8	Fan Motor (Motor ventilador)	1	15012123	CL96169
9	Step Motor (Motor lamas)	1	1521210101	CL96170
10	Crank	1	73012005	
11	Swing Assy	1	10102042	
12	Terminal Board	1	42011233	
13	Switch Board	1	30112007	
14	Display Board (Placa display)	1	30568131	CL96171
15	Fuse	1	46010055	
16	Radiator	1	49010252	
17	Connection Wire	1	4003004202	
18	Jumper Cap	1	4202300104	
19	Main Board (Placa electrónica)	1	30138000047	CL96172
20	Electric Box	1	20112116	
21	Electric Box Assy	1	20102000186	
22	Air Louver (upper)	2	10512143	
23	Swing lever	2	10582096	
24	Shaft of Guide Louver	2	10542020	
25	Water Tray Assy	1	20182141	
26	Air Louver (lower)	2	10512144	
27	Axis (lower step motor)	1	10542034	
28	Step Motor (Motor lamas)	1	1521210805	CL96173
29	Connecting Cable	0	4002052317	
30	Temperature Sensor (Sensor de temperatura de tubería)	1	390000591	CL98667
31	Remote Controller (Control remoto)	1	30510134	CL96174
32	Ambient Temperature Sensor (Sensor de temp. ambiente)	1	390000451	CL98668

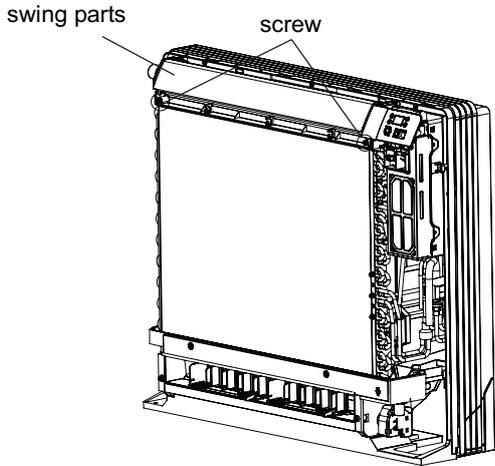
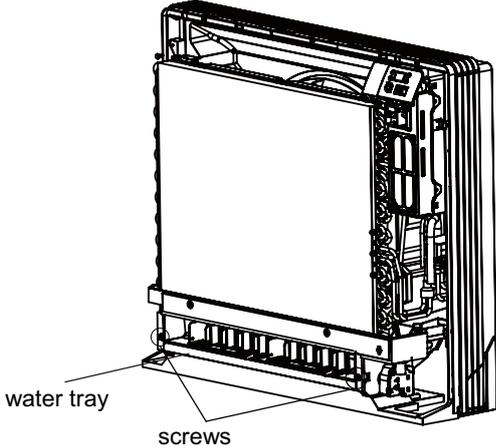
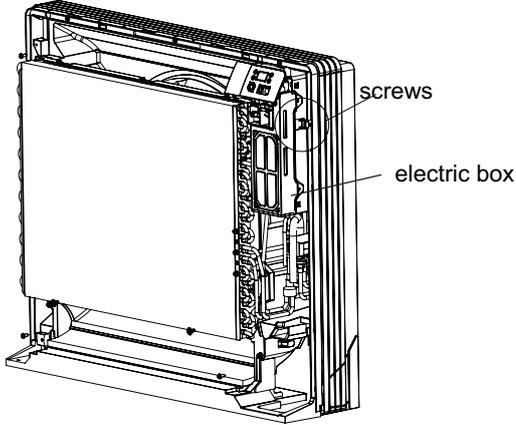
11. Removal Procedure

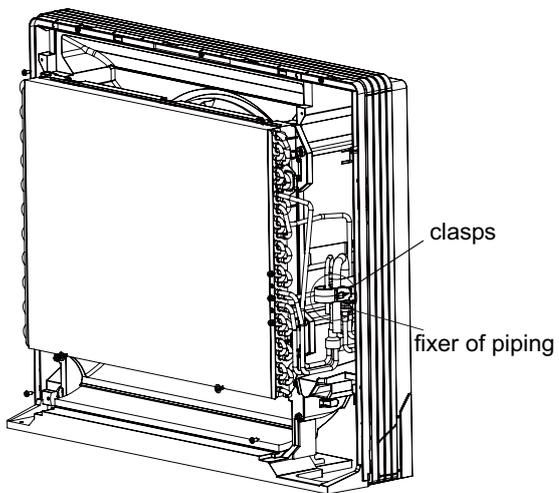
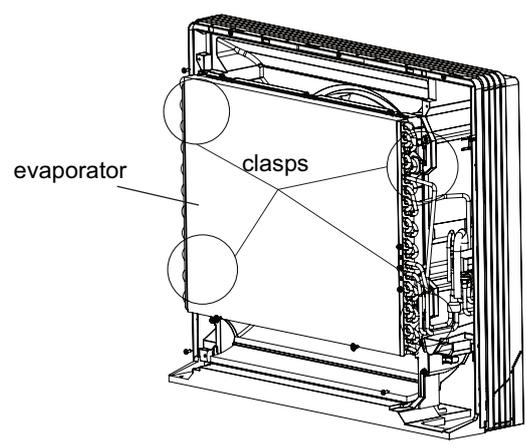
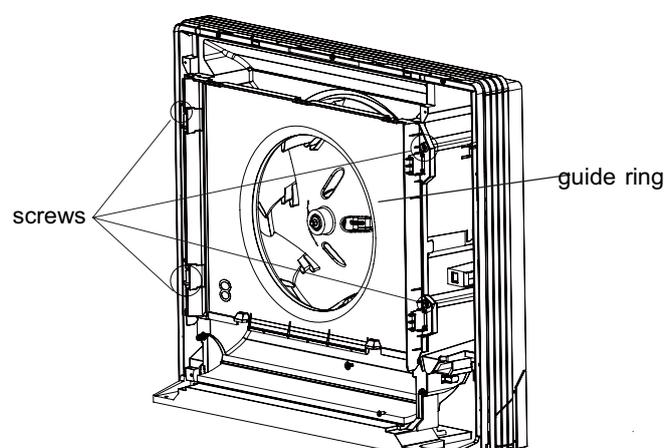


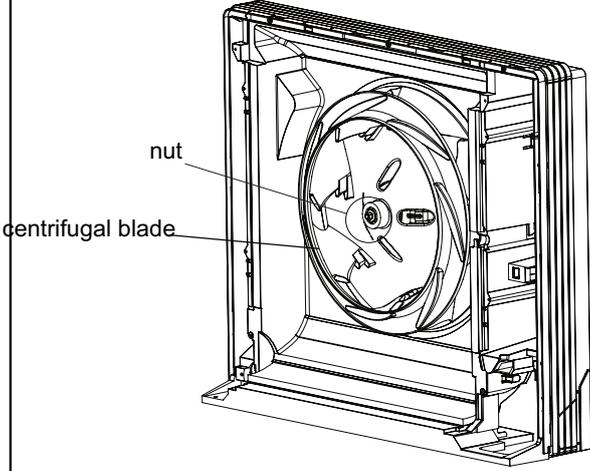
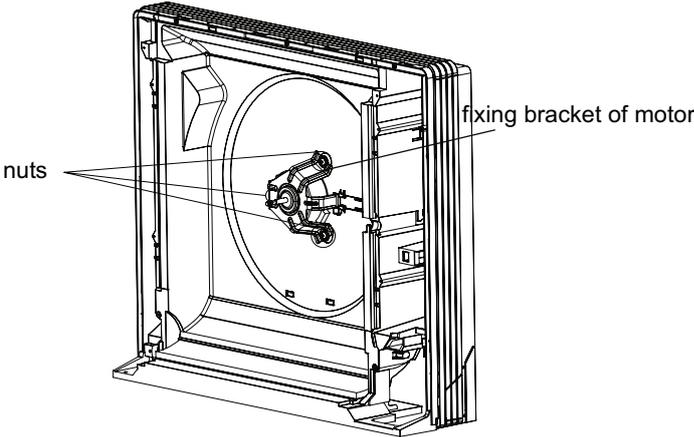
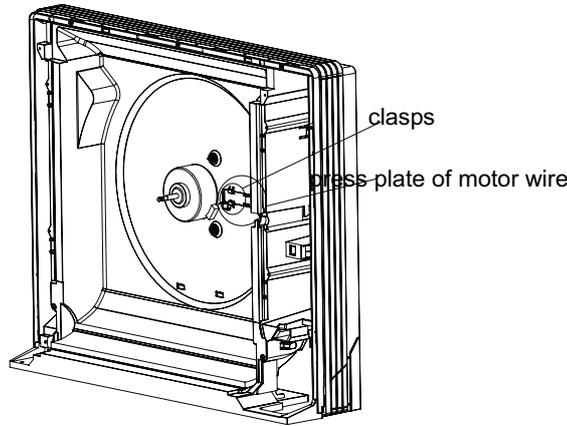
Caution: discharge the refrigerant completely before removal.

11.1 Removal Procedure of Indoor Unit

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

Steps	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>swing parts</p> <p>screw</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>water tray</p> <p>screws</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>  <p>screws</p> <p>electric box</p>

Steps	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> 

Steps	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 mounted on a motor. A single nut is shown being removed from the blade's attachment point. Labels 'nut' and 'centrifugal blade' point to the respective parts.</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 the motor's fixing bracket assembly. Three nuts are shown being removed from the bracket. Labels 'nuts' and 'fixing bracket of motor' point to the respective parts.</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 the motor wire press plate assembly. Two clasps are shown being loosened from the bottom case. Labels 'clasps' and 'press-plate of motor wire' point to the respective parts.</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: Configuration of Connection Pipe

1. Standard length of connection pipe

- 5m, 7.5m, 8m.

2. Min. length of connection pipe is 3m.

3. Max. length of connection pipe and max. high difference.

4. The additional refrigerant oil and refrigerant charging required after prolonging connection pipe

- After the length of connection pipe is prolonged for 10m at the basis of standard length, you should add 5ml of refrigerant oil for each additional 5m of connection pipe.
- The calculation method of additional refrigerant charging amount (on the basis of liquid pipe):

Cooling capacity	Max length of connection pipe	Max height difference
5000 Btu/h(1465 W)	15 m	5 m
7000 Btu/h(2051 W)	15 m	5 m
9000 Btu/h(2637 W)	15 m	10 m
12000 Btu/h(3516 W)	20 m	10 m
18000 Btu/h(5274 W)	25 m	10 m
24000 Btu/h(7032 W)	25 m	10 m
28000 Btu/h(8204 W)	30 m	10 m
36000 Btu/h(10548 W)	30 m	20 m
42000 Btu/h(12306 W)	30 m	20 m
48000 Btu/h(14064 W)	30 m	20 m

- When the length of connection pipe is above 5m, add refrigerant according to the prolonged length of liquid pipe. The additional refrigerant charging amount per meter is different according to the diameter of liquid pipe. See the following sheet.

• Additional refrigerant charging amount = prolonged length of liquid pipe X additional refrigerant charging amount per meter

Additional refrigerant charging amount for R22, R407C, R410A and R134a			
Diameter of connection pipe		Outdoor unit throttle	
Liquid pipe(mm)	Gas pipe(mm)	Cooling only(g/m)	Cooling and heating(g/m)
Φ6	Φ9.5 or Φ12	15	20
Φ6 or Φ9.5	Φ16 or Φ19	15	20
Φ12	Φ19 or Φ22.2	30	120
Φ16	Φ25.4 or Φ31.8	60	120
Φ19	/	250	250
Φ22.2	/	350	350

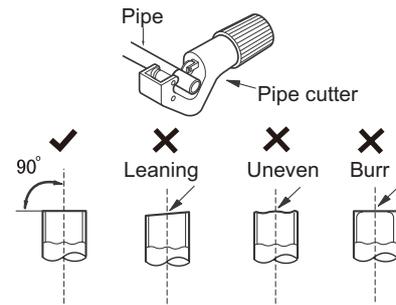
Appendix 3: Pipe Expanding Method

⚠ Note:

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

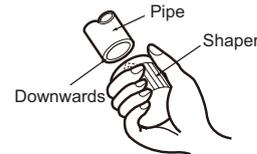
A: Cut the pipe

- 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

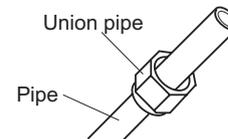
- Remove the burrs with shaper and prevent the burrs from getting into the pipe.



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.



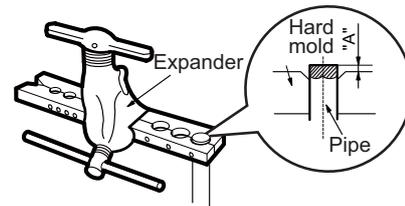
E: Expand the port

- Expand the port with expander.

⚠ Note:

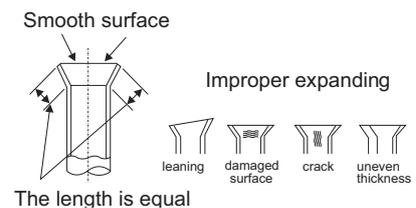
- "A" is different according to the diameter, please refer to the sheet below:

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 4: List of Resistance for Ambient Temperature Sensor

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(15K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	138.1	20	18.75	59	3.848	98	1.071
-18	128.6	21	17.93	60	3.711	99	1.039
-17	121.6	22	17.14	61	3.579	100	1.009
-16	115	23	16.39	62	3.454	101	0.98
-15	108.7	24	15.68	63	3.333	102	0.952
-14	102.9	25	15	64	3.217	103	0.925
-13	97.4	26	14.36	65	3.105	104	0.898
-12	92.22	27	13.74	66	2.998	105	0.873
-11	87.35	28	13.16	67	2.896	106	0.848
-10	82.75	29	12.6	68	2.797	107	0.825
-9	78.43	30	12.07	69	2.702	108	0.802
-8	74.35	31	11.57	70	2.611	109	0.779
-7	70.5	32	11.09	71	2.523	110	0.758
-6	66.88	33	10.63	72	2.439	111	0.737
-5	63.46	34	10.2	73	2.358	112	0.717
-4	60.23	35	9.779	74	2.28	113	0.697
-3	57.18	36	9.382	75	2.206	114	0.678
-2	54.31	37	9.003	76	2.133	115	0.66
-1	51.59	38	8.642	77	2.064	116	0.642
0	49.02	39	8.297	78	1.997	117	0.625
1	46.6	40	7.967	79	1.933	118	0.608
2	44.31	41	7.653	80	1.871	119	0.592
3	42.14	42	7.352	81	1.811	120	0.577
4	40.09	43	7.065	82	1.754	121	0.561
5	38.15	44	6.791	83	1.699	122	0.547
6	36.32	45	6.529	84	1.645	123	0.532
7	34.58	46	6.278	85	1.594	124	0.519
8	32.94	47	6.038	86	1.544	125	0.505
9	31.38	48	5.809	87	1.497	126	0.492
10	29.9	49	5.589	88	1.451	127	0.48
11	28.51	50	5.379	89	1.408	128	0.467
12	27.18	51	5.197	90	1.363	129	0.456
13	25.92	52	4.986	91	1.322	130	0.444
14	24.73	53	4.802	92	1.282	131	0.433
15	23.6	54	4.625	93	1.244	132	0.422
16	22.53	55	4.456	94	1.207	133	0.412
17	21.51	56	4.294	95	1.171	134	0.401
18	20.54	57	4.139	96	1.136	135	0.391
19	19.63	58	3.99	97	1.103	136	0.382

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(20K)

Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)	Temp(°C)	Resistance(kΩ)
-19	181.4	20	25.01	59	5.13	98	1.427
-18	171.4	21	23.9	60	4.948	99	1.386
-17	162.1	22	22.85	61	4.773	100	1.346
-16	153.3	23	21.85	62	4.605	101	1.307
-15	145	24	20.9	63	4.443	102	1.269
-14	137.2	25	20	64	4.289	103	1.233
-13	129.9	26	19.14	65	4.14	104	1.198
-12	123	27	18.13	66	3.998	105	1.164
-11	116.5	28	17.55	67	3.861	106	1.131
-10	110.3	29	16.8	68	3.729	107	1.099
-9	104.6	30	16.1	69	3.603	108	1.069
-8	99.13	31	15.43	70	3.481	109	1.039
-7	94	32	14.79	71	3.364	110	1.01
-6	89.17	33	14.18	72	3.252	111	0.983
-5	84.61	34	13.59	73	3.144	112	0.956
-4	80.31	35	13.04	74	3.04	113	0.93
-3	76.24	36	12.51	75	2.94	114	0.904
-2	72.41	37	12	76	2.844	115	0.88
-1	68.79	38	11.52	77	2.752	116	0.856
0	65.37	39	11.06	78	2.663	117	0.833
1	62.13	40	10.62	79	2.577	118	0.811
2	59.08	41	10.2	80	2.495	119	0.77
3	56.19	42	9.803	81	2.415	120	0.769
4	53.46	43	9.42	82	2.339	121	0.746
5	50.87	44	9.054	83	2.265	122	0.729
6	48.42	45	8.705	84	2.194	123	0.71
7	46.11	46	8.37	85	2.125	124	0.692
8	43.92	47	8.051	86	2.059	125	0.674
9	41.84	48	7.745	87	1.996	126	0.658
10	39.87	49	7.453	88	1.934	127	0.64
11	38.01	50	7.173	89	1.875	128	0.623
12	36.24	51	6.905	90	1.818	129	0.607
13	34.57	52	6.648	91	1.736	130	0.592
14	32.98	53	6.403	92	1.71	131	0.577
15	31.47	54	6.167	93	1.658	132	0.563
16	30.04	55	5.942	94	1.609	133	0.549
17	28.68	56	5.726	95	1.561	134	0.535
18	27.39	57	5.519	96	1.515	135	0.521
19	26.17	58	5.32	97	1.47	136	0.509

Appendix 1: Resistance Table of Ambient Temperature Sensor for Indoor and Outdoor Units(50K)

Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)		Temp(°C)	Resistance(kΩ)
-29	853.5		10	98		49	18.34		88	4.75
-28	799.8		11	93.42		50	17.65		89	4.61
-27	750		12	89.07		51	16.99		90	4.47
-26	703.8		13	84.95		52	16.36		91	4.33
-25	660.8		14	81.05		53	15.75		92	4.20
-24	620.8		15	77.35		54	15.17		93	4.08
-23	580.6		16	73.83		55	14.62		94	3.96
-22	548.9		17	70.5		56	14.09		95	3.84
-21	516.6		18	67.34		57	13.58		96	3.73
-20	486.5		19	64.33		58	13.09		97	3.62
-19	458.3		20	61.48		59	12.62		98	3.51
-18	432		21	58.77		60	12.17		99	3.41
-17	407.4		22	56.19		61	11.74		100	3.32
-16	384.5		23	53.74		62	11.32		101	3.22
-15	362.9		24	51.41		63	10.93		102	3.13
-14	342.8		25	49.19		64	10.54		103	3.04
-13	323.9		26	47.08		65	10.18		104	2.96
-12	306.2		27	45.07		66	9.83		105	2.87
-11	289.6		28	43.16		67	9.49		106	2.79
-10	274		29	41.34		68	9.17		107	2.72
-9	259.3		30	39.61		69	8.85		108	2.64
-8	245.6		31	37.96		70	8.56		109	2.57
-7	232.6		32	36.38		71	8.27		110	2.50
-6	220.5		33	34.88		72	7.99		111	2.43
-5	209		34	33.45		73	7.73		112	2.37
-4	198.3		35	32.09		74	7.47		113	2.30
-3	199.1		36	30.79		75	7.22		114	2.24
-2	178.5		37	29.54		76	7.00		115	2.18
-1	169.5		38	28.36		77	6.76		116	2.12
0	161		39	27.23		78	6.54		117	2.07
1	153		40	26.15		79	6.33		118	2.02
2	145.4		41	25.11		80	6.13		119	1.96
3	138.3		42	24.13		81	5.93		120	1.91
4	131.5		43	23.19		82	5.75		121	1.86
5	125.1		44	22.29		83	5.57		122	1.82
6	119.1		45	21.43		84	5.39		123	1.77
7	113.4		46	20.6		85	5.22		124	1.73
8	108		47	19.81		86	5.06		125	1.68
9	102.8		48	19.06		87	4.90		126	1.64



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