



Service Manual

**MODEL:GWH09AB-A3DNA1B
GWH12AB-A3DNA1B
(Refrigerant R410A)**

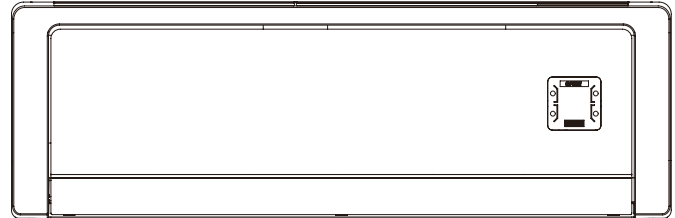
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Summary and Features

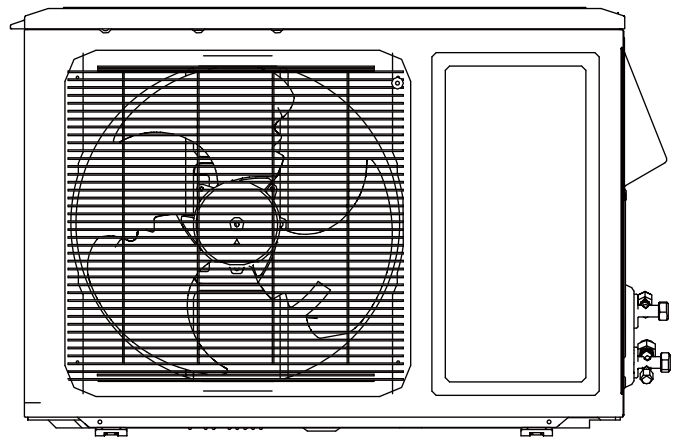
Indoor Unit

GWH09AB-A3DNA1B/I
GWH12AB-A3DNA1B/I



Outdoor Unit

GWH09AB-A3DNA1B/O
GWH12AB-A3DNA1B/O



Remote control window

YT1FF



1. Safety Precautions

Important!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

To prevent injury to the user or other people and property damage, the following instructions must be followed.

- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.

About the pictures:



Warning

Erroneous handling gives a high possibility to induce serious results such as death or heavy injury.



Caution

Erroneous handling may induce serious injury depending on the situation.



Warning

All electric work must be performed by licensed technician, according to local regulations and the instructions given in this manual.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

There is risk of fire, electric shock, explosion, or injury.

Ask your dealer or specialized subcontractor for installation or repair work.

- Make sure the ceiling/wall is strong enough to hold the unit's weight. The outdoor unit should be installed in a location where air and noise emitted by the unit will not disturb the neighbors.
- Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.
- The outdoor unit must be installed on stable, level surface, in a place where there is no accumulation of snow, leaves

or rubbish.

- The unit should be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons or strong winds.
- When the refrigerant touches the fire etc., it was decomposed and a poisonous gas is generated.
- Use only the specified refrigerant to charge the refrigerant circuit.
- Do not mix it with any other refrigerant and do not allow air to remain in the circuit.
- Air enclosed in the circuit can cause high pressure resulting in a rupture and other hazards.
- After completing installation work, make sure that refrigerant gas has not leaked.
- The limit density is made not to be exceeded even if the refrigerant leaks by any chance.
- Turn the power off at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- The unit must be properly earth connected.



Caution

- Never install on the place where a combustible gas might leak. The gas may ignite or explode when the gas leaks and collects in surround of the unit.
- When the unit is installed at telecommunication centers or hospitals, take a proper provision against noise.
- When installing at a watery place, provide an electric leak breaker.
- Do not wash the unit with water.
- Be very careful about unit transportation. The unit should not be carried by only one person if it is more than 20kg. It occasionally causes the damage of the unit and health to be impaired.
- Do not touch the heat exchanger fins with your hands. Doing so may cut your hands.
- Do not touch the compressor or refrigerant piping without wearing glove on your hands. Touching directly such part can cause a burn or frostbite as it becomes high or low temperature according to the refrigerant state.
- Do not operate the air conditioner without the air filter set place. Dust may accumulate, and cause a failure.
- At emergency (if you smell something burning), stop operation and turn the power source switch off.

2.Specifications

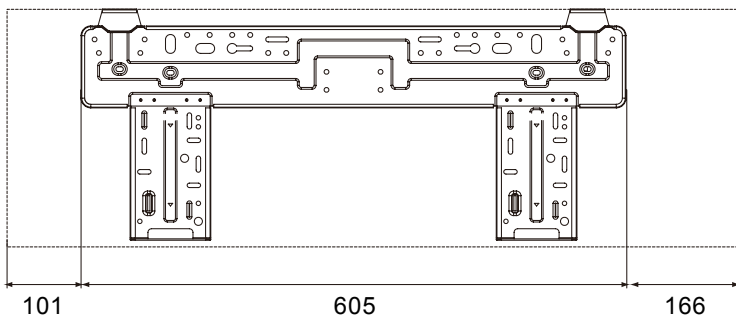
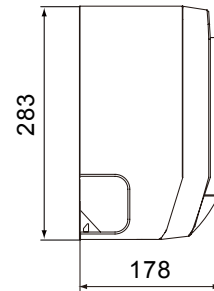
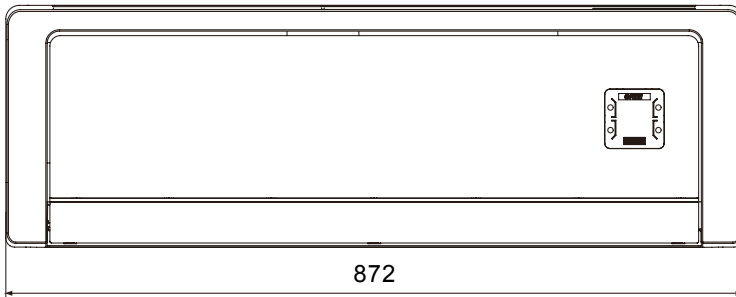
Parameter		Unit	Value		
Model			GWH09AB-A3DNA1B	GWH12AB-A3DNA1B	
Product Code			CB11500550	CB11500570	
Power Supply	Rated Voltage	V~	115	115	
	Rated Frequency	Hz	60	60	
	Phases		1	1	
Power Supply Mode			Outdoor	Outdoor	
Cooling Capacity (Min~Max)		Btu/h	9000(4000~11950)	12000(4500~13000)	
Heating Capacity (Min~Max)		Btu/h	9500(3412~12500)	13000(3200~14000)	
Cooling Power Input (Min~Max)		W	620(166~1180)	1000(160~1180)	
Heating Power Input (Min~Max)		W	680(200~1230)	1140(400~1250)	
Cooling Power Current		A	5.3	8.70	
Heating Power Current		A	6	10.00	
Rated Input		W	1100	1300	
Rated Current		A	10	12	
Air Flow Volume(SH/H/ML/SL)		m ³ /h	520/430/370/290/-	560/490/430/350/-	
Dehumidifying Volume		L/h	1.2	1.4	
EER		W/W	4.33	3.52	
COP		W/W	4.04	3.34	
SEER		W/W	23	22	
HSPF		W/W	9	9	
Application Area		m ²	12-18	16-24	
Indoor Unit	Model of indoor unit		GWH09AB-A3DNA1B/I	GWH12AB-A3DNA1B/I	
	Fan Type		Cross-flow	Cross-flow	
	Diameter Length(DXL)		mm	Φ85X668	Φ85X668
	Fan Motor Cooling Speed (SH/H/ML/SL)		r/min	1400/1150/1050/900/-	1500/1150/1050/900/-
	Fan Motor Heating Speed (SH/H/ML/SL)		r/min	1450/1250/1150/1050/400	1450/1250/1150/1050/400
	Output of Fan Motor		W	10	10
	Fan Motor RLA		A	/	/
	Fan Motor Capacitor		μF	/	/
	Input of Heater		W	/	/
	Evaporator Form			Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter		mm	Φ7	Φ7
	Row-fin Gap		mm	2-1.5	2-1.5
	Coil Length (LXD _X W)		mm	657X25.4X285	657X25.4X285
	Swing Motor Model			MP28VB	MP28VB
	Output of Swing Motor		W	2	2
	Fuse		A	3.15	3.15
	Sound Pressure Level (SH/H/ML/SL)		dB (A)	42/38/30/28/-	47/38/30/28/-
	Sound Power Level (SH/H/ML/SL)		dB (A)	52/48/40/38/-	57/48/40/38/-
	Dimension (WXH _X D)		mm	872X283X178	872X283X178
	Dimension of Carton Box (L/W/H)		mm	935X260X375	935X260X375
Dimension of Package (L/W/H)		mm	938X275X378	938X275X378	
Net Weight		kg	12	12	
Gross Weight		kg	15	15	

Outdoor Unit	Model of Outdoor Unit		GWH09AB-A3DNA1B/O	GWH12AB-A3DNA1B/O
	Compressor Manufacturer/Trademark		CHINA RESOURCES(SHENYANG) SANYO COMPRESSOR CO. LTD./SANYO	CHINA RESOURCES(SHENYANG) SANYO COMPRESSOR CO. LTD./SANYO
	Compressor Model		C-6RZ110H1A	C-6RZ110H1A
	Compressor Oil		FV50S	FV50S
	Compressor Type		Rotary	Rotary
	L.R.A	A	33.00	33
	Compressor RLA	A	4.59	4.59
	Compressor Power Input	W	800	800
	Overload Protector		Int11I-3979	Int11I-3979
	Throttling Method		Electron expansion valve	Electron expansion valve
	Operation temp	°C	16~30	16~30
	Ambient temp (cooling)	°C	18~43	18~43
	Ambient temp (heating)	°C	-7~24	-7~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ9.52	Φ9.52
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXD _{XW})	mm	747X44X508	747X44X559
	Fan Motor Speed	rpm	830	830
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	/	/
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1800	2000
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ400	Φ400
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	3.8	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2	1.2
	Sound Pressure Level (H/ML)	dB (A)	52/-/-	55/-/-
	Sound Power Level (H/ML)	dB (A)	62/-/-	65/-/-
	Dimension (WXHXD)	mm	848X540X320	848X590X320
Dimension of Carton Box (L/W/H)	mm	878X360X580	878X360X630	
Dimension of Package (L/W/H)	mm	881X363X595	881X363X645	
Net Weight	kg	40	41	
Gross Weight	kg	44	45	
Refrigerant		R410A	R410A	
Refrigerant Charge	kg	1.35	1.35	
Connecti on Pipe	Length	m	7.5	7.5
	Gas Additional Charge	g/m	20	20
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ12
	Max Distance Height	m	10	10
	Max Distance Length	m	15	20

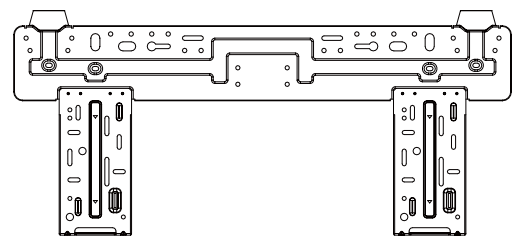
The above data is subject to change without notice. Please refer to the nameplate of the unit.

3. Construction Views

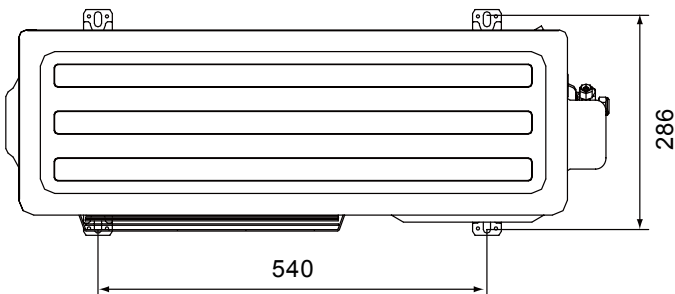
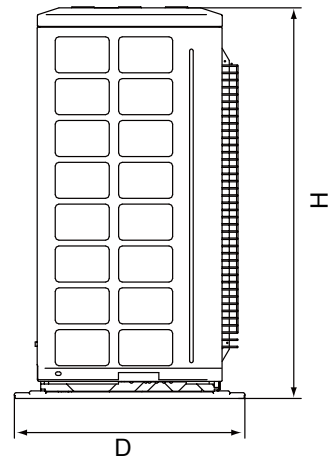
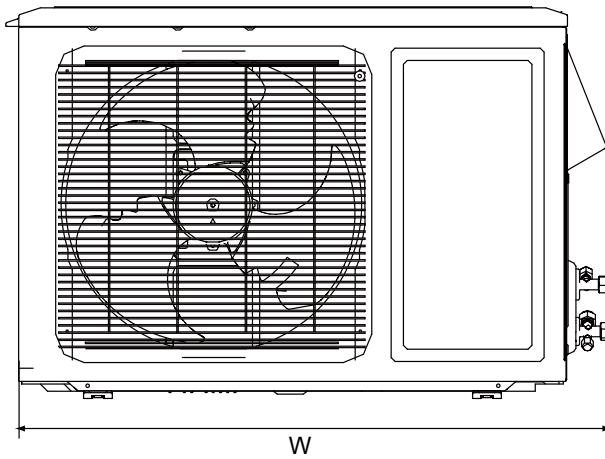
3.1 Indoor Unit



12K Unit:



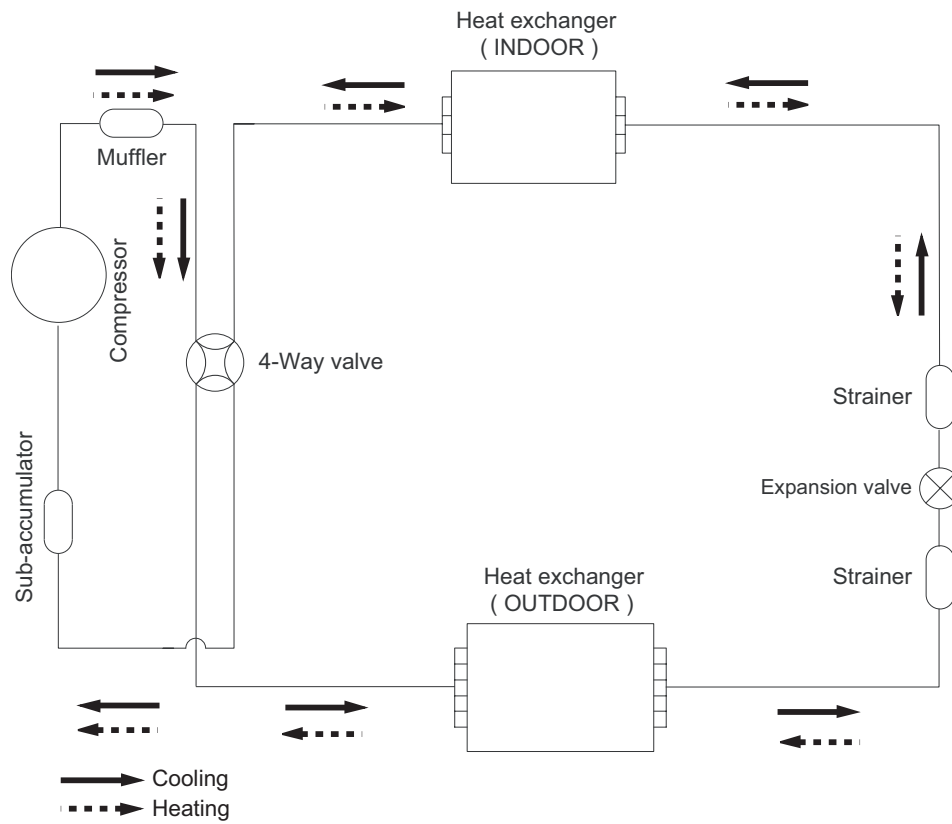
3.2 Outdoor Unit



Unit:mm

Model	W	H	D
09K	848	540	320
12K	848	590	320

4. Refrigerant System Diagram



Refrigerant pipe diameter

09K Unit

Liquid : 1/4" (6 mm)

Gas : 3/8" (9.52 mm)

12K Unit

Liquid : 1/4" (6 mm)

Gas : 1/2" (12 mm)

5. Schematic Diagram

5.1 Electrical Data

Meaning of marks

● Indoor Unit

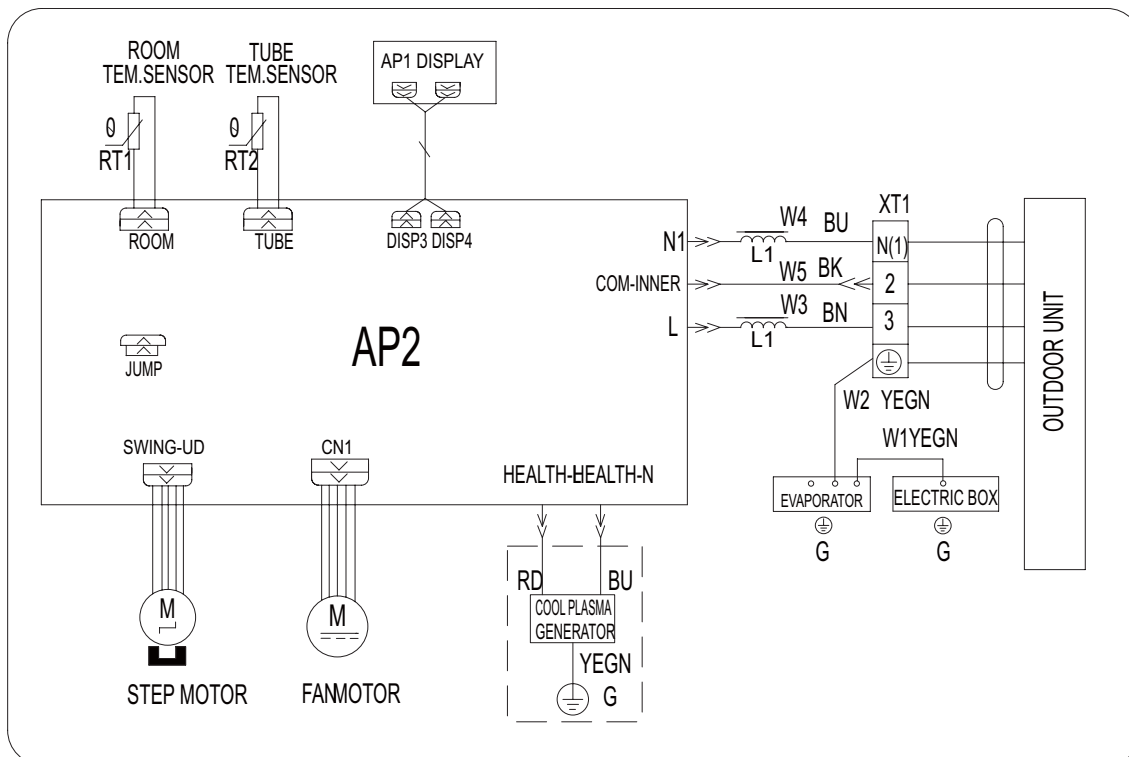
Symbol	Color symbol	Symbol	Color symbol
WH	WHITE	BN	BROWN
YE	YELLOW	BU	BLUE
RD	RED	BK	BLACK
YEGN	YELLOW GREEN	⊕	PROTECTIVE EARTH

● Outdoor Unit

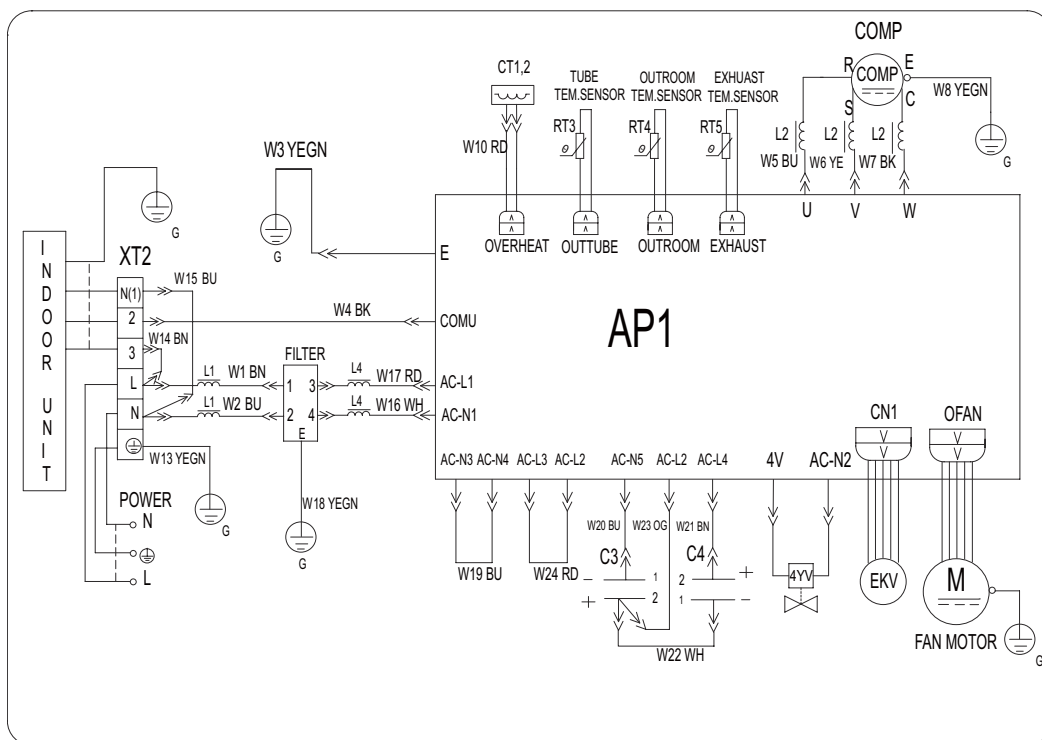
Symbol	Parts name	Symbol	Color symbol
L1 L2	NEUTRAL WIRE, LIVE WIRE	WH	WHITE
4YV	4-WAY VALVE	YE	YELLOW
EKV	ELETRIC EXPANSION VALVE	RD	RED
L	REACTOR	BN	SAT OVERLOAD BN BROWN
COMP	COMPRESSOR	BU	BLUE
⊕	PROTECTIVE EARTH	BK	BLACK
		YEGN	YELLOW GREEN

5.2 Electrical wiring

● Indoor Unit



● Outdoor Unit

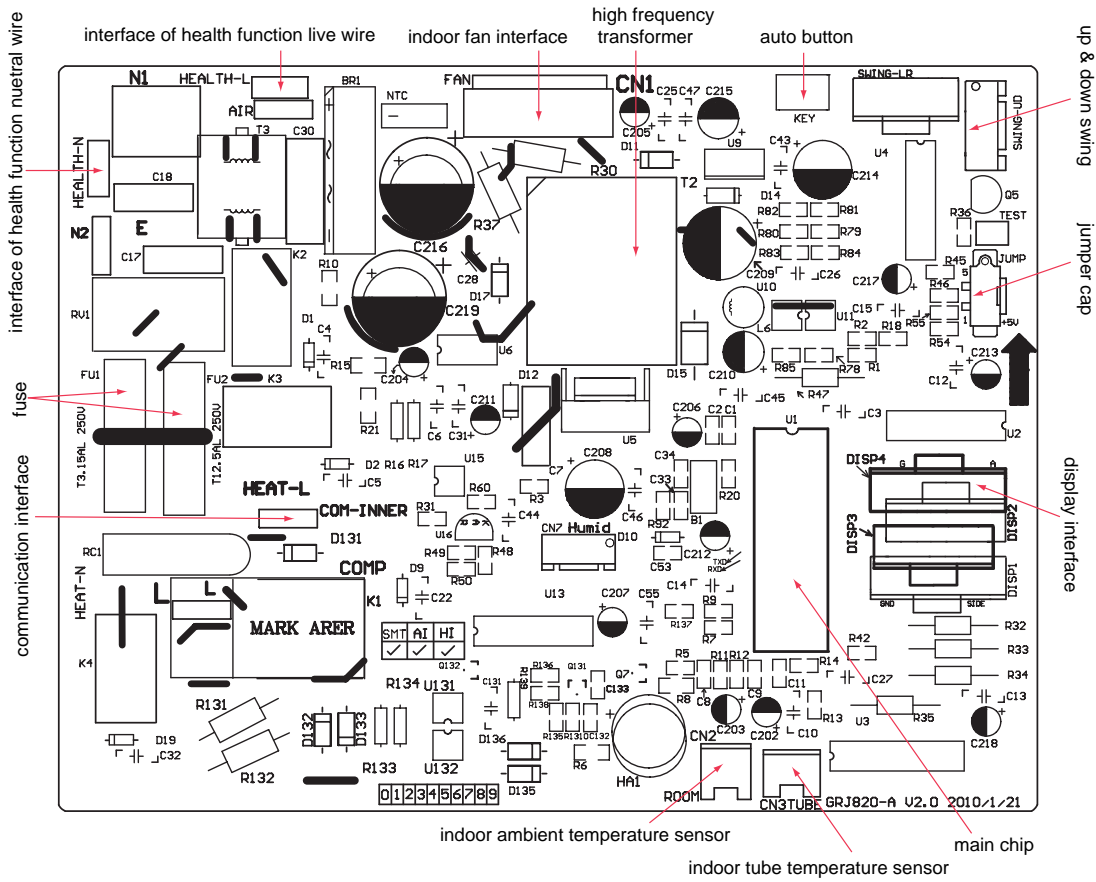


These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

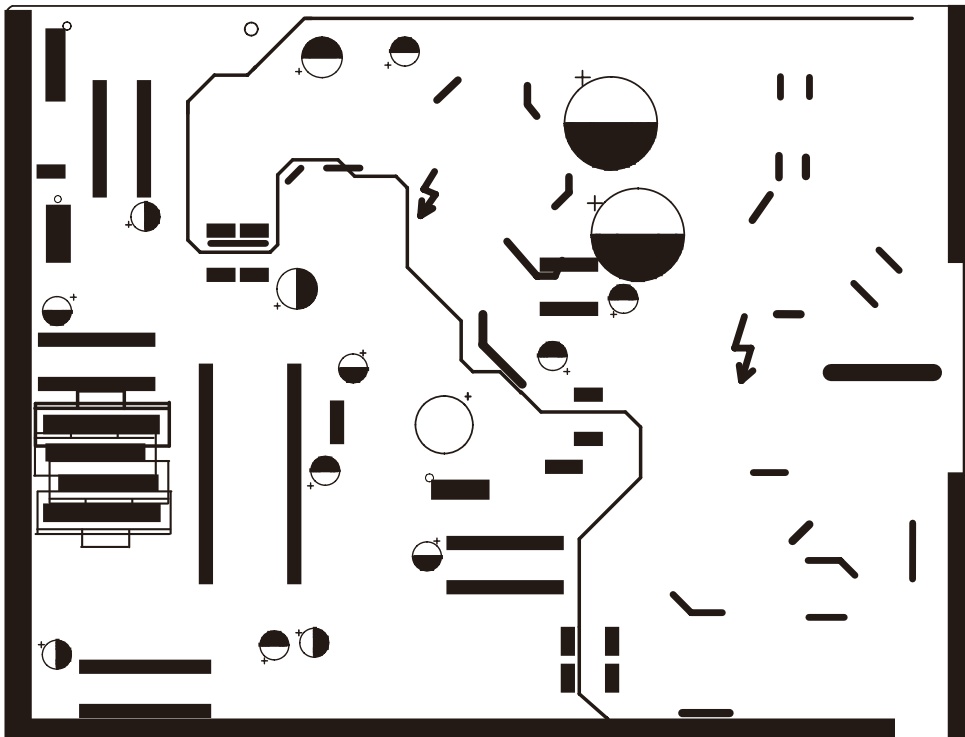
5.3 Printed Circuit Board

Indoor Unit

● TOP VIEW



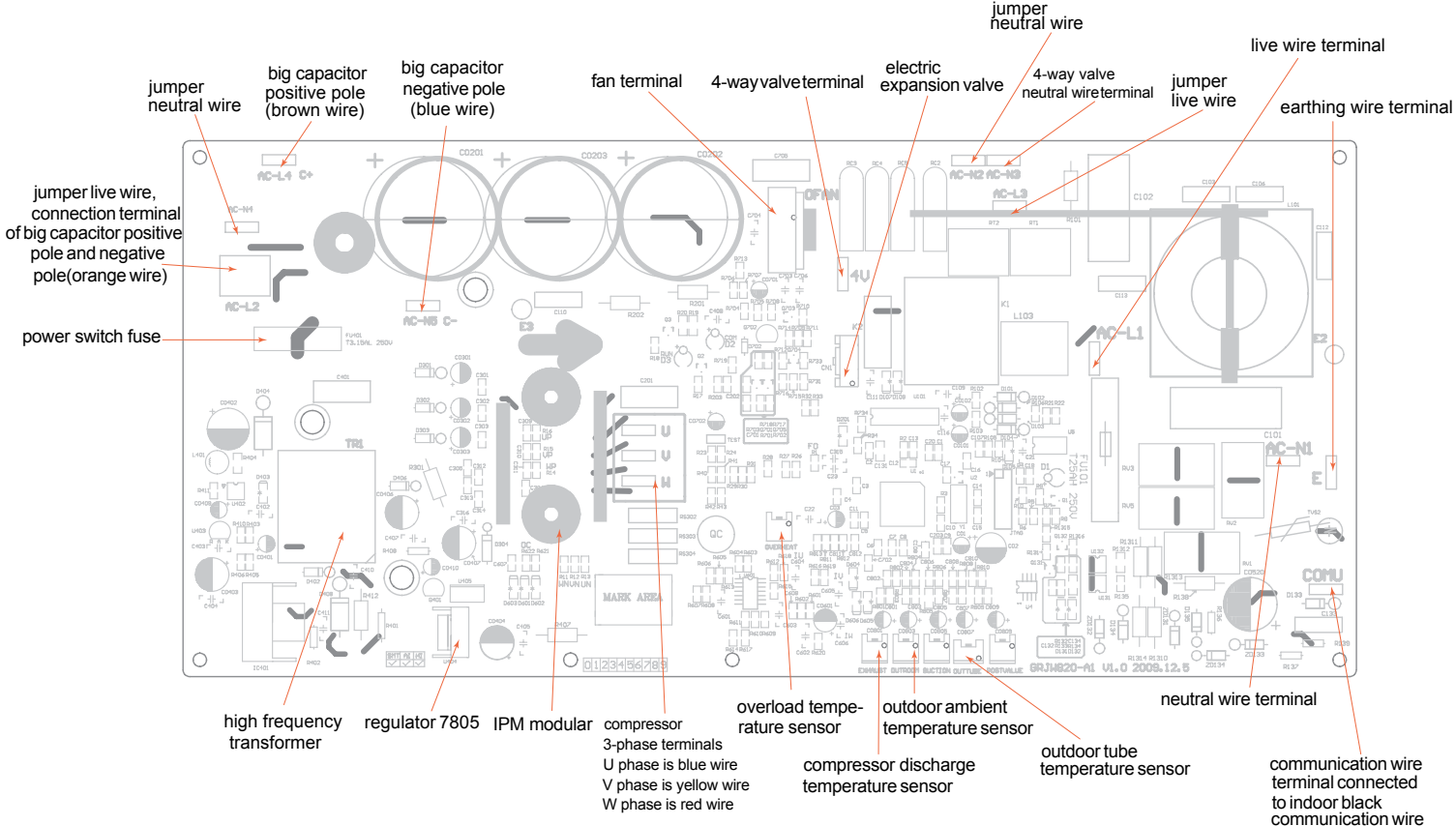
● BOTTOM VIEW



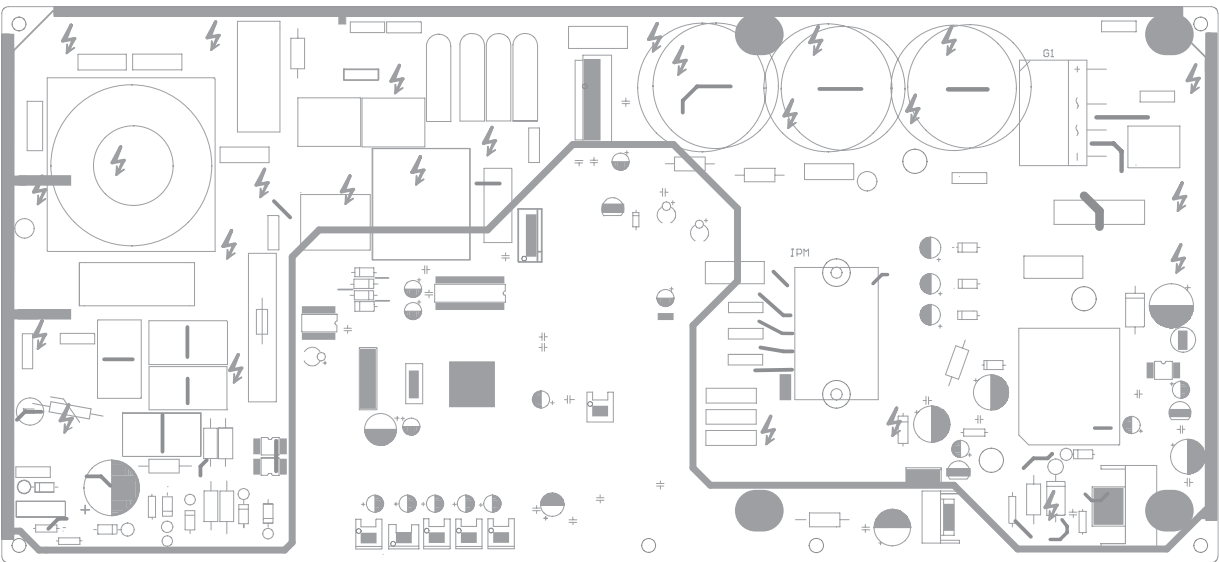
Outdoor Unit

Models GWH09AB-A3DNA1B/O , GWH12AB-A3DNA1B/O

TOP VIEW



BOTTOM VIEW



6. Function and Control

6.1 Remote Control Operations



- 1 ON/OFF Button
- 2 Setpoint Temperature DOWN Button
- 3 Setpoint Temperature UP Button
- 4 FAN Speed Button
- 5 MODE Button
- 6 I FEEL Button
- 7 HEALTH function Button
- 8 AIR function Button
- 9 Clock Button
- 10 Timer ON Button
- 11
- 12 X-FAN Button
- 13 Temperature Displaye Button
- 14 TIMER OFF Button
- 15 TURBO Button
- 16 Sleep Mode Button
- 17 Light Mode Button

(X-FAN is the alternative expression of BLOW for the purpose of understanding.)



Press this button, the unit will be turned on, press it once more, the unit will be turned off.



For presetting temperature decreased. Press this button, can set up the temperature,when unit is on . Continuously press and hold this button for more than 2 seconds,the corresponding contents will be changed rapidly, but in AUTO mode, set temperature is not adjustable.



For presetting temperature increasing. Press this button, the temperature can be set up, continuously press this button and hold for two seconds, the relative contents can quickly change, but in AUTO mode, set temperature is not adjustable.

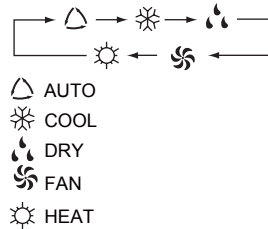


Press this button, Auto, Low, Middle, High speed can be circularly selected. After powered on, Auto fan speed is default. Under Dehumidify mode, Low fan speed only can be set up.



5 MODE :

Press this button, Auto, Cool, Dry, Fan, Heat mode can be selected circularly. Auto mode is default while power on. Under Auto mode, the temperature will not be displayed; In this mode, the unit will automatically select the suitable operation mode in accordance with the room temperature to make the room more comfortable for you.



Note: Only for models with heating function.

6 I FEEL :

Press this button, I FEEL On and I FEEL Off can be selected. When turn on I FEEL function. The unit will adjust temperature automatically according to the sensed temperature.

7 (The function is not for the models mentioned in the manual.)

Press this button to set HEALTH function ON or OFF. After the unit is turned on, it defaults to HEALTH function ON.

8 (The function is not for the models mentioned in the manual.)

Press this button to select AIR function ON or OFF.

9 CLOCK :

Press this button, the clock can be set up, signal blink and display. Within 5 seconds, the value can be adjusted by pressing + or - button, if continuously press this button for 2 seconds above, in every 0.5 seconds, the value on ten place of Minute will be increased 1. During blinking, repress the Clock button, signal will be constantly displayed and it denotes the setting succeeded. After powered on, 12:00 is defaulted to display and signal will be displayed. If there is signal be displayed that denotes the current time value is Clock value, otherwise is Timer value.

10 TIMER ON :

Timer On setting: Signal "ON" will blink and display, signal will conceal, the numerical section will become the timer on setting status. During 5 seconds blink, by pressing + or - button to adjust the time value of numerical section, every press of that button, the value will be increased or decreased 1 minute. Hold pressing + or - button, 2 seconds later, it quickly change, the way of change is: During the initial 2.5 seconds, ten numbers change in the one place of minute, then the one place is constant, ten numbers change in the tens place of minute at 2.5 seconds speed and carry. During 5s blink, press the Timer button, the timer setting succeeds. The Timer On has been set up, repress the timer On button, the Timer On will be canceled. Before setting the Timer, please adjust the Clock to the current actual time.

11 :

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



This is an universal use remote controller. If remote controller sends the following three kinds of status , or , the swing status of main unit will be which indicates the guide louver swings up and down between that all five positions:






When the guide louver start to swing up and down, if turn off the Swing, the air guide louver will stop at current position.

12 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 you have turned off the unit. After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

13 TEMP :

Press this button, could select displaying  (the indoor setting temperature) ,  (indoor ambient temperature) or  (outdoor am-bient temperature) .The unit defaults not to display the icon. During operation of TEMP button, the set temperature is always displayed

14 TIMER OFF :

Once press this key to enter into TIMER OFF setup, in which case the TIMER OFF icon will blink.The method of setting is the same as TIMER ON.



15 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in shortest time. Such as 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.
(This function is not applicable for some models)



16 SLEEP:

Press this button, Sleep On and Sleep Off can be selected. After Sleep function set up, the unit will automatically select the suitable operation mode to maintain the most comfortable temperature for you. This function is available in COOL , HEAT or DRY mode

17 LIGHT:

Press this button to select LIGHT on or off in the displayer. When the LIGHT on is set,the icon  will be displayed and the indicator light in the displayer will be on. When the LIGHT off is set, the icon  will be displayed and the indicator light in the displayer will be off.


18 "+" and "-" button about lock:

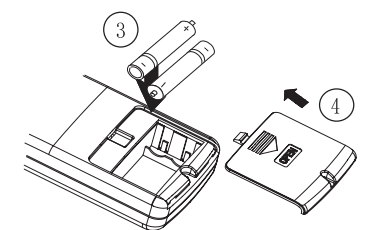
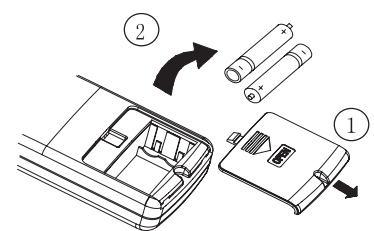
Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked,  is displayed . In this case, pressing any button ,  blinks three times.

19 "MODE" and " - " buttons About switch between fahrenheit and cenrigrade:

At unit OFF, press "MODE" and " - " buttons simultaneously to switch between $^{\circ}\text{F}$ and $^{\circ}\text{C}$.

6.2 Changing batteries and notices

1. Slightly to press the place with  , along the arrowhead direction to push the back cover of wireless remote control. (As show in figure)
2. Take out the used batteries. (As show in figure)
3. Insert two new AAA1.5V dry batteries, and pay attention to the polarity. (As show in figure)
4. Reinstall the battery cover plate. (As show in figure)



Sketch map for replacing batteries

★ Notes:

- When replacing the batteries, do not use used or different types of batteries, otherwise, it may cause malfunction.
- If the remote controller will not be used for a long time, please 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 replace them after 30 seconds. If it still can't operate properly, replace the batteries.

6.3 Description of Each Control Operation

1. Temperature Parameters

- ◆ Indoor preset temperature (T_{preset})
- ◆ Indoor ambient temperature ($T_{\text{amb.}}$)

2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

(1) Cooling Mode

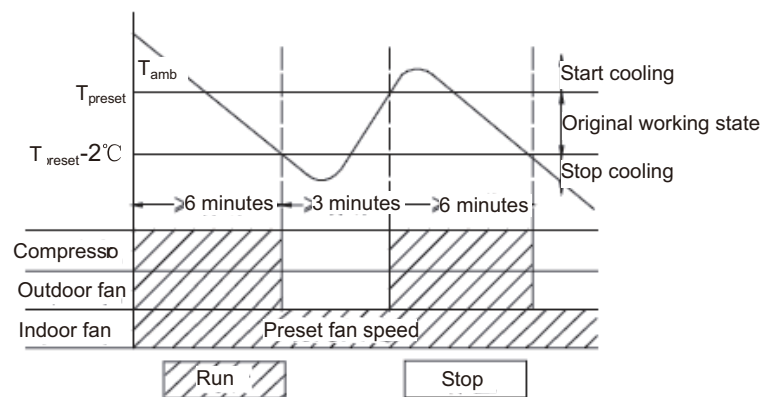
① Working conditions and process of cooling

When $T_{\text{amb}} \geq T_{\text{preset}}$, the unit will enter cooling operation, in which case the indoor fan, the outdoor fan and the compressor will work and the indoor fan will run at preset speed.

When $T_{\text{amb}} \leq T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will run at preset speed.

When $T_{\text{preset}} - 2^\circ\text{C} < T_{\text{amb}} < T_{\text{preset}} + 1^\circ\text{C}$, the unit will remain at its previous state.

- Under this mode, the four-way valve will be de-energized and temperature can be set within a range from 16 to 30°C .
If the compressor is shut down for some reason, the indoor fan and the swing device will operate at original state.



② Protection

◆ Freeze protection

Under cooling and dehumidifying mode, 6 minutes after the compressor is started:

If $T_{\text{evap}} \leq 2^\circ\text{C}$, the compressor will operate at reduced frequency.

If $T_{\text{evap}} \leq -1^\circ\text{C}$ is detected for durative 3 minutes, the compressor will stop, and after 30 seconds, the outdoor fan will stop; and under cooling mode, the indoor fan and the swing motor will remain at the original state.

If $T_{\text{evap}} \geq 6^\circ\text{C}$ and the compressor has remained at OFF for at least 3 minutes, the compressor will resume its original operation state.

◆ Total current up and frequency down protection

If $I_{\text{total}} \leq A$, frequency rise will be allowed; if $I_{\text{total}} \geq B$, frequency rise will not be allowed; if $I_{\text{total}} \geq C$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq D$, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(2) Dehumidifying Mode

① Working conditions and process of dehumidifying

If $T_{\text{amb}} > T_{\text{preset}}$, the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If $T_{\text{preset}} - 2^\circ\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}}$, the compressor remains at its original operation state.

If $T_{\text{amb}} < T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② Protection

Protection is the same as that under the cooling mode.

(3) Heating Mode

① Working conditions and process of heating

If $T_{amb.} \leq T_{preset} + 2^{\circ}\text{C}$, the unit enters heating mode, in which case the four-way valve, the compressor and the outdoor fan will operate simultaneously, and the indoor fan will run at preset speed in the condition of preset cold air prevention.

If $T_{amb.} \geq T_{preset} + 5^{\circ}\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will stop after 60-second blow at low speed

If $T_{preset} + 2^{\circ}\text{C} < T_{amb.} < T_{preset} + 5^{\circ}\text{C}$, the unit will maintain its original operating status.

➤ Under this mode, the four-way valve is energized and temperature can be set within a range of 16 - 30°C. The operating symbol, the heating symbol and preset temperature are revealed on the display.

② Condition and process of defrost

When duration of successive heating operation is more than 45 minutes, or accumulated heating time more than 90 minutes, and one of the following conditions is reached, the unit will enter the defrost mode after 3 minutes.

- $T_{outdoor\ amb.} \geq A^{\circ}\text{C}$, $T_{outdoor\ tube} \leq W^{\circ}\text{C}$;
- $A^{\circ}\text{C} \leq T_{outdoor\ amb.} < B^{\circ}\text{C}$, $T_{outdoor\ tube} \leq X^{\circ}\text{C}$;
- $B^{\circ}\text{C} \leq T_{outdoor\ amb.} < C^{\circ}\text{C}$, $T_{outdoor\ tube} \leq Y^{\circ}\text{C}$;
- $T_{outdoor\ amb.} < C^{\circ}\text{C}$, $T_{outdoor\ tube} \leq Z^{\circ}\text{C}$

At that time, the indoor fan stops and the compressor stops, and after 30 seconds the outer fan will stop, and then after 30 seconds, the four-way valve will stop. After 30 seconds, the compressor is initiated for raising the frequency to defrost frequency. When the compressor has operated under defrost mode for 7.5 minutes, or $T_{outdoor\ tube} \geq E$, the compressor will be converted to 53Hz operation. After 30 seconds, the compressor will stop. And after another 30 seconds, the four-way valve will be opened, and after 60 seconds, the compressor and the outer fan will be started, the indoor fan will run under preset cold air prevention conditions, and H1 will be displayed at temperature display area on the display panel. Defrost frequency is 70Hz.

3. Protection

◆ Cold air prevention

The unit is started under heating mode (the compressor is ON):

① In the case of $T_{indoor\ amb.} < 24^{\circ}\text{C}$: if $T_{tube} \leq 40^{\circ}\text{C}$ and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if $T_{tube} > 40^{\circ}\text{C}$, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if $T_{tube} > 42^{\circ}\text{C}$, the fan will run at present speed.

② In the case of $T_{indoor\ amb.} \geq 24^{\circ}\text{C}$: if $T_{tube} \leq 42^{\circ}\text{C}$, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if $T_{tube} > 42^{\circ}\text{C}$, the indoor fan will be converted to preset speed.

Note: $T_{indoor\ amb.}$ indicated in ① and ② refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

◆ Total current up and frequency down protection

If the total current $I_{total} \leq W$, frequency rise will be allowed; if $I_{total} \geq X$, frequency rise will not be allowed; if $I_{total} \geq Y$, the compressor will run at reduced frequency; and if $I_{total} \geq Z$, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(4) Fan Mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.

➤ Under the mode, temperature can be set within a range of 16 - 30°C.

(5) AUTO Mode

① Working conditions and process of AUTO mode

a. When $T_{amb.} \geq 26^{\circ}\text{C}$, the unit will run at cooling mode and the implied set temperature at this moment is 25°C.

b. When $T_{amb.} \leq 22^{\circ}\text{C}$, the cooling and heating unit will run at heating mode and the implied set temperature at this moment is 20°C; cooling only unit will run at fan mode and the set temperature displayed is 25°C.

c. When $23^{\circ}\text{C} \leq T_{amb.} \leq 25^{\circ}\text{C}$, the unit will keep the previous running mode; if it is first energized, it will run at fan mode.

d. After running at auto mode, the frequency of compressor in cooling operation is the same as that in cooling mode; the frequency of compressor in heating operation is the same as that in heating mode.

② Protection

- a. In cooling operation, protection is the same as that under the cooling mode;
- b. In heating operation, protection is the same as that under the heating mode;
- c. When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

(6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes**① Overload protection**

T_{tube} : measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

1) Cooling overload

- a. If $T_{\text{tube}} \leq 52^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If $T_{\text{tube}} \geq 55^{\circ}\text{C}$, frequency rise is not allowed.
- c. If $T_{\text{tube}} \geq 58^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If $T_{\text{tube}} \geq 62^{\circ}\text{C}$, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

- a. If $T_{\text{tube}} \leq 52^{\circ}\text{C}$, the unit will return to its original operation state.
- b. If $T_{\text{tube}} \geq 55^{\circ}\text{C}$, frequency rise is not allowed.
- c. If $T_{\text{tube}} \geq 58^{\circ}\text{C}$, the compressor will run at reduced frequency.
- d. If $T_{\text{tube}} \geq 62^{\circ}\text{C}$, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature $\geq 98^{\circ}\text{C}$, frequency is not allowed to rise.

If exhaust temperature $\geq 103^{\circ}\text{C}$, the compressor will run at reduced frequency.

If exhaust temperature $\geq 110^{\circ}\text{C}$, the compressor will stop.

If exhaust temperature $\leq 90^{\circ}\text{C}$ and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

④ Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

⑤ Overload protection

If temperature sensed by the overload sensor is over 115°C , the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 95°C , the overload protection will be relieved.

If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

⑥ Faults of temperature sensors

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 20 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 20 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

4. Other Controls

(1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection:

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1°C. Regulating Range: 16~30°C, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

(5) SLEEP State Control

a. When the air conditioner is under the mode of COOL, DRY, and the SLEEP mode has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will raise 1°C, and it will raise 1°C again after 2 hours, so it raise 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

b. When the air conditioner is under the mode of HEAT, and the Timer has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will reduce 1°C, and it will reduce 1°C again after 2 hours, so it reduce 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

c. The setting temperature keeps the same under the FAN mode and AUTO mode.

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

Cooling mode: $T_{ring} \geq T_{setting} + 2$, high speed; $T_{setting} - 2 < T_{ring} < T_{setting} + 2$, medium speed; $T_{ring} \leq T_{setting} - 2$, low speed.

Sending wind mode: $T_{ring} > T_{setting} + 4$, high speed; $T_{setting} + 2 \leq T_{ring} \leq T_{setting} + 4$, medium speed; $T_{ring} < T_{setting} + 2$, low speed.

Moisture removal mode: force to be set as the low speed

Heating mode: $T_{ring} \leq T_{setting} + 1$ high speed; $T_{setting} + 1 < T_{ring} < T_{setting} + 5$, medium speed; $T_{ring} \geq T_{setting} + 2$, low speed.

(7) Buzzer Control

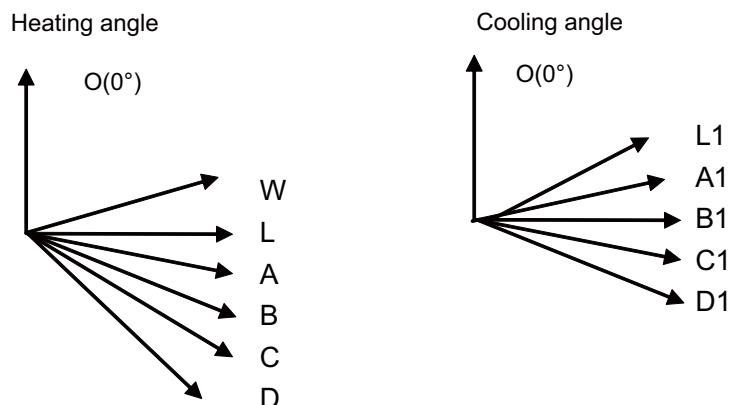
The buzzer will send a “Di” sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn't receive the remote control ON signal under the mode of heating mode.

(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to 0 counter-clockwise, close the air outlet. After starting the machine, if you don't set the swinging function, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine, then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location C, Location D, Location L to Location D, stop at any location between L~D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Display**① Operation pattern and mode pattern display**

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 16°C to 30°C) and indoor ambient temperature. The heating and air supply temperature will display 25°C under auto-mode, the temperature will display 18°C under the heating mode, and the temperature will display H1 under the defrosting mode. (If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Protection function and failure display

E2: Freeze-proofing protection E4: Exhausting protection E5: Overcurrent protection

E6: Communication failure E8: Overload protection

F1: Indoor ambient sensor start and short circuit (continuously measured failure in 20S)

F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 20S)

F3: Outdoor ambient sensor start and short circuit (continuously measured failure in 30S)

F4: Outdoor condenser sensor start and short circuit (continuously measured failure in 30S, and don't measure within 10 minutes after defrosted)

F5: Outdoor exhausting sensor start and short circuit (continuously measured failure in 30S after the compressor operated 3 minutes)

H3: Overload protection of compressor H5: Module protection

PH: High-voltage protection PL: Low-voltage protection

P1: Nominal cooling and heating P2: Maximum cooling and heating

P3: Medium cooling and heating P0: Minimum cooling and heating

(12) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 10 minutes under low air damper (The swing will operate as the former status within 10 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly. When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(13) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed. After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted form power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

7. Installation Manual

7.1 Notices for Installation

7.1.1 Caution

- 1.The unit must only be installed by authorized service center according to local or government regulations and in compliance with this manual .
- 2.Before installing, please contact with local authorized maintenance center. If the unit is not installed by the authorized service center, the malfunction may not be solved due to discommodious contacts.
- 3.When removing the unit to the other place, please firstly contact with the local authorized service center.
- 4.Warning:Before obtaining access to terminals,all supply circuits must be disconnected.
- 5.For appliances with type Y attachment,the instructions shall contain the substance of the following.If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- 6.The appliance must be positioned so that the plug is accessible.
- 7.The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.
8. The instructions shall state the substance of the following:This appliance is not intended for use by persons(including children) with reduced physical,sensory or mental capabilities,or lack of experience and knowledge,unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
Children should be supervised to ensure that they do not play with the appliance.

7.1.2 Installation Site Instructions

Proper installation site is vital for correct and efficient operation of the unit. Avoid the following sites where:

- strong heat sources, vapours, flammable gas or volatile liquids are emitted.
- high-frequency electro-magnetic waves are generated by radio equipment,welders and medical equipment.
- salt-laden air prevails (such as close to coastal areas).
- the air is contaminated with industrial vapours and oils.
- the air contains sulphures gas such as in hot spring zones.
- corrosion or poor air quality exists.

7.1.3 Installation Site of Indoor Unit

- 1.The air inlet and outlet should be away from the obstructions. Ensure the air can be blown through the whole room.
- 2.Select a site where the condensing water can be easily drained out, and where it is easily connected for outdoor unit.
- 3.Select a place where it is out of reach of children.
- 4.Select the place where the wall is strong enough to withstand the full weight and vibration of the unit.
- 5.Be sure to leave enough space to allow access for routine maintenance. The installation site should be 250cm or more above the floor.
- 6.Select a place about 1m or more away from TV set or any other electric appliance.
- 7.Select a place where the filter can be easily taken out.
- 8.Make sure that the indoor unit is installed in accordance with installation dimension instructions.
- 9.Do not use the unit in the laundry or by swimming pool etc.

7.1.4 Installation Site of Outdoor Unit

- 1.Select a site where noise and outflow air emitted by unit will not annoy neighbors.
- 2.Select a site where there is sufficient ventilation.
- 3.Select a site where there is no obstruction blocking the inlet and outlet.
- 4.The site should be able to withstand the full weight and vibration.
- 5.Select a dry place, but do not expose the unit to direct sunlight or strong wind.
- 6.Make sure that the outdoor unit is installed in accordance with the installation instructions,and is convenient for maintenance and repair.
- 7.The height difference between indoor and outdoor units is within 5 m, and the length of the connecting tubing does not exceed 10 m.
- 8.Select a place where it is out of reach of children.
- 9.Select a place which will not block pedestrian passage and influence the city appearance.

7.1.5 Safety Precautions for Electric Appliances

1. A dedicated power supply circuit should be used in accordance with local electrical safety regulations.
2. Don't drag the power cord emphatically.
3. The unit should be reliably earthed and connected to the special earth device by the professionals.
4. The air switch must have the functions of magnetic tripping and heat tripping to prevent short circuit and overload.
5. The minimum distance between the unit and combustive surface is 1.5m.
6. The appliance shall be installed in accordance with national wiring regulations.
7. An all-pole disconnection switch with a contact separation of at least 3mm in all poles should be connected in fixed wiring.

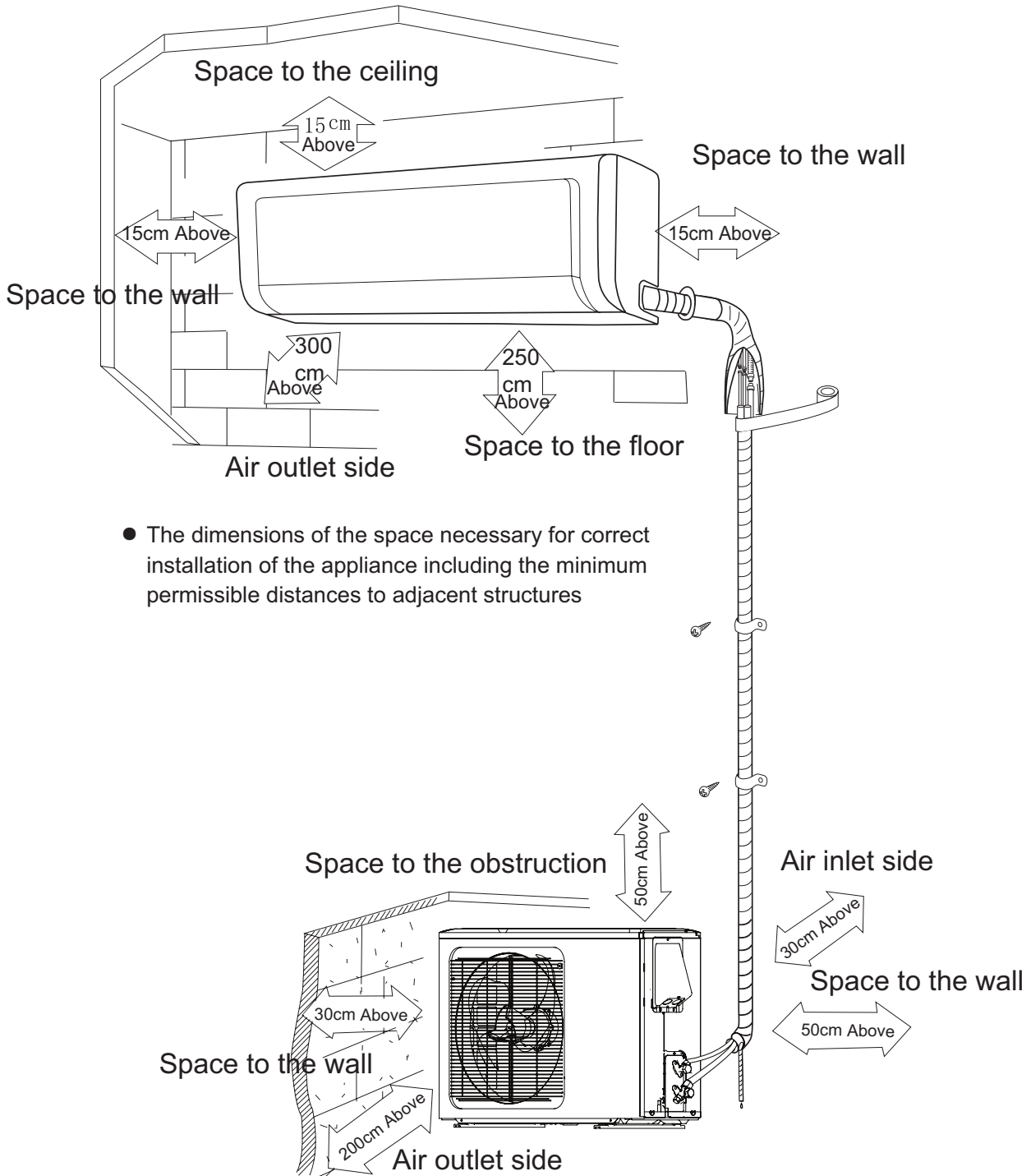
Note:

- **Make sure the live wire, neutral wire and earth wire in the family power socket are properly connected. There should be reliable circuit in the diagram.**
- **Inadequate or incorrect electrical connections may cause electric shock or fire.**

7.1.6 Earthing Requirements

1. Air conditioner is type I electric appliance. Please ensure the the unit is reliably earthed.
2. The yellow-green wire in air conditioner is the earthing wire which can not be used for other purposes. Improper earthing may cause electric shock.
3. The earth resistance should accord to the national criterion.
4. The user's power must have reliable earthing terminal. Please don't connect the earthing wire with the following:
 - ① Water pipe
 - ② Gas pipe
 - ③ Contamination pipe
 - ④ Other place that professional personnel consider is unreliable
5. The model and rating values for fuses accord with the silk print on fuse cover or related PCB.

7.2 Installation Drawing



Note: this drawing is only for reference; please refer to the real unit.

7.3 Install Indoor Unit

7.3.1 Installation of Mounting Plate

1. Make the mounting plate completely level. As the water tray's outlet of the indoor unit is two-way type, the indoor unit during installation should slightly slant to water tray's outlet for smooth drainage of condensing water.
2. Fix the mounting plate on the wall with screws. (Where is pre-covered with plastic granula)
3. Be sure that the mounting plate has been fixed firmly enough to withstand the weight of an adult of 60kg; further more, the weight should be evenly shared by each screw.

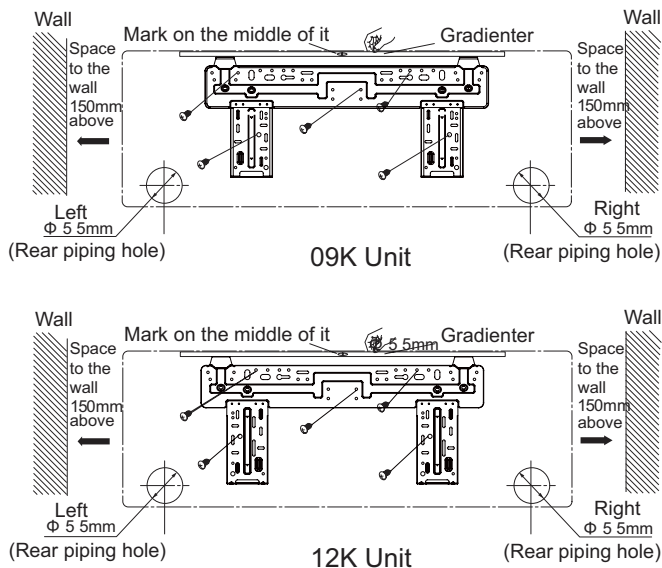
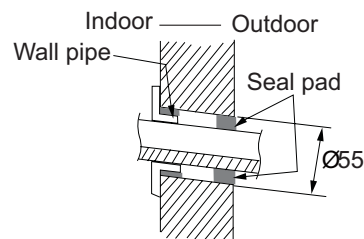


Fig.5

7.3.2 Drill Piping Hole

1. Slant the piping hole ($\Phi 55$) on the wall slightly downward to the outdoor side.
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.

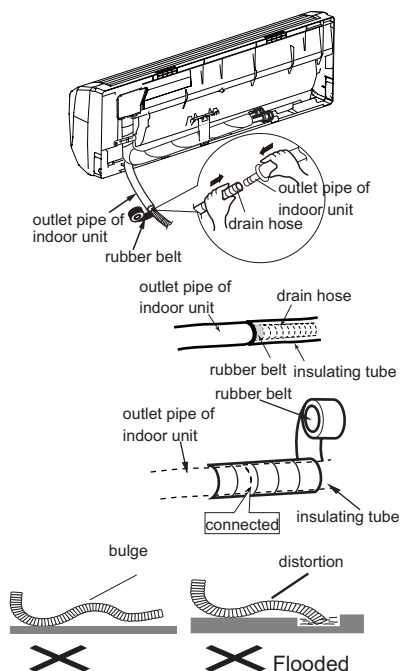


7.3.3 Installation of Drain Hose

1. Connect the drain hose to the outlet pipe of the indoor unit. Bind the joint with rubber belt.

2. Put the drain hose into insulating tube.

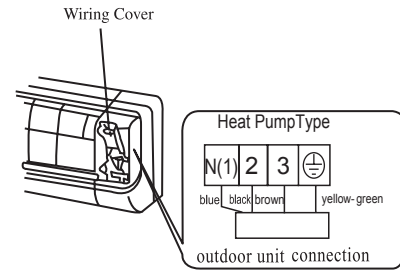
3. Wrap the insulating tube with wide rubber belt to prevent the shift of insulating tube. Slant the drain hose downward slightly for smooth drainage of condensing water.



Note: The insulating tube should be connected reliably with the sleeve outside the outlet pipe. The drain hose should be slanted downward slightly, without distortion, bulge or fluctuation. Do not put the outlet in the water.

7.3.4 Connecting Indoor and Outdoor Electric Wires

1. Open the front panel.
2. Remove the wiring cover.
3. Make the power connection cord and signal control wire (only for heat pump unit) pass through.
4. Reinstall the cord anchorage and wiring cover.
5. Reinstall the front panel. the hole at the back of indoor unit.



NOTE:

All wires between indoor and outdoor units must be connected by the qualified electric contractor.

- Electric wires must be connected correctly. Improper connection may cause malfunction.
- Tighten the terminal screws tightly.
- After tightening the screws, pull the wire slightly to confirm whether it's firm or not.
- Make sure that the electric connections are earthed properly to prevent electric shock.
- Make sure that the electric connections are earthed properly to prevent electric shock properly. Poor installation may cause fire or electric shock.

7.3.5 Installation of Indoor Unit

● The piping can be output from right, right rear, left or left rear.

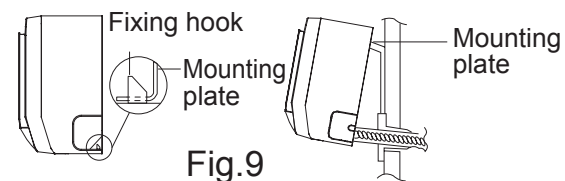
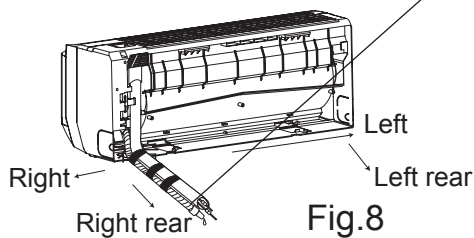
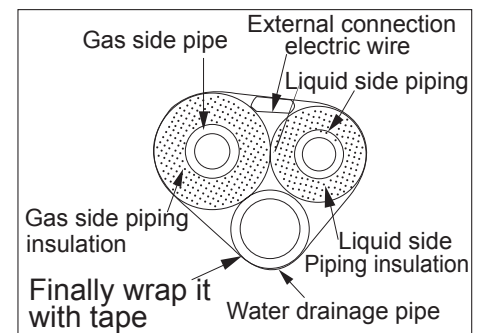
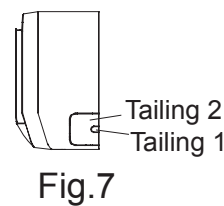
1. When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis when necessary (As shown in Fig.7)

- (1) Cut off the tailings 1 when routing the wiring only;
- (2) Cut off the tailings 1 and tailings 2 when routing both the wiring and piping.

2. Take out the piping from body case, wrap the piping, power cords, drain hose with the tape and then make hem pass through the piping hole. (As shown in Fig.8)

3. Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough. (As shown in Fig.9)

4. The installation site should be 250cm or more above the floor.

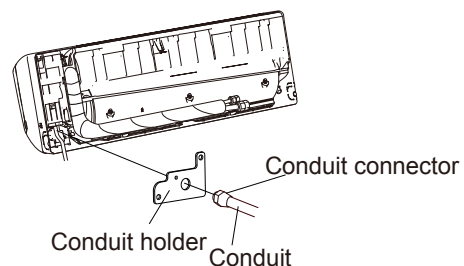


7.3.6 Install the Conduit assy

- 1) Pass the connection wires of indoor and outdoor units through the wire-passing pipe.
- 2) Fix the wire-passing pipe at the chassis with 2 screws.

● Conduit assy consists of conduit, conduit holder and conduit connector.

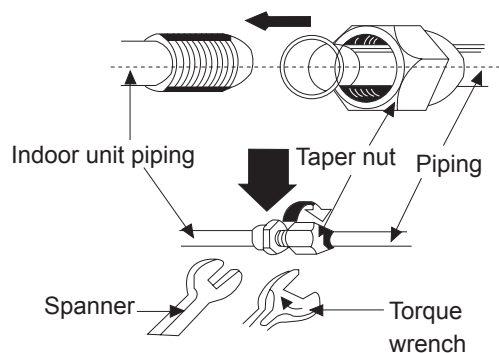
The length of the wire-passing pipe can be calculated according to the length of connection wire



7.3.7 Installation of Connection Pipe

- 1.Align the center of the piping flare with the related valve.
- 2.Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench by referring to the following:

Tube diameter	Tightening torque, approximate(N·m)
Φ6.35(1/4")	14~18N·m(140-180kgf·cm)
Φ9.52(3/8")	34~42N·m(340-420kgf·cm)
Φ12.7(1/2")	49~61N·m(490-610kgf·cm)
Φ15.88(5/8")	68~82N·m(680-820kgf·cm)



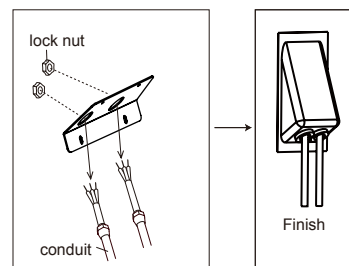
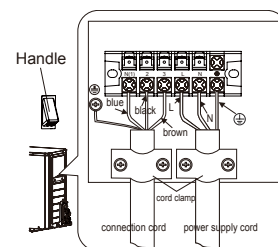
NOTE: Connect the connection pipe to indoor unit at first and then to outdoor unit. Handle piping bending with care. Do not damage the connection pipe. Ensure that the joint nut is tightened firmly, otherwise, it may cause leakage.

7.4 Install Outdoor Unit

7.4.1 Electric Wiring

- 1.Remove the handle from the outdoor unit.
2. Fasten the power supply cord and the connection cord to the retaining plate using the lock nut.(open the knock out holes if necessary)
- 3.Connect the power supply cord and the connection cord to terminal.
- 4.Fasten the power supply cord and connection cord with cord clamp.
5. Install the handle.

The screws are packed with the terminal board.



NOTE:

- Incorrect wiring may cause malfunction of spare part.
 - After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire.
- Schematic diagram being reference only, please refer to real product for authentic information.

7.4.2 Air Purging and Leakage Test

- 1.Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
- 2.Connect joint of charging hose to vacuum pump.
3. Fully open the handle of Lo manifold valve.
- 4.Open the vacuum pump for vacuumization. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
- 5.Keep vacuuming for more than 15mins and make sure the reading of multi-meter is -1.0×10^5 pa (-76cmHg).
6. Fully open high/low pressure valves.
7. Remove charging hose from charging end of low pressure valve.
8. Tighten lid of low pressure valve. (As shown in Fig.10)

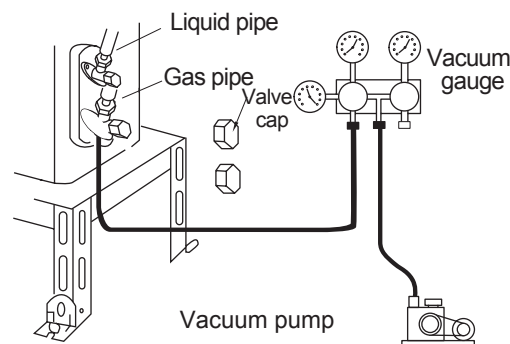


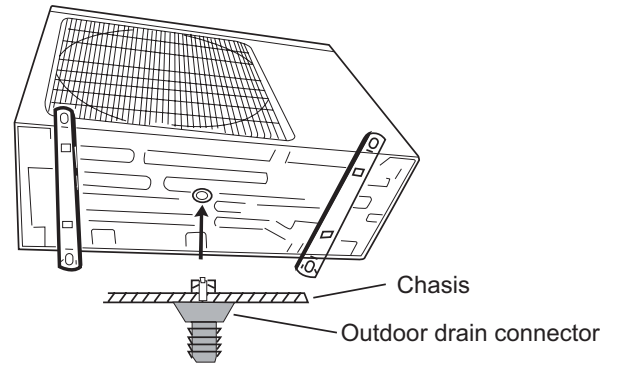
Fig.10

7.4.3 Outdoor Condensation Drainage (only for Heat pump unit)

During heating operation, the condensing water and defrosting water should be drained out reliably through the drain hose.

Install the outdoor drain connector in a 25 hole on the the base plate and attach the drain hose to the connector, so that the waste water formed in the outdoor unit can be drained out .The hole diameter 25 must be plugged.

Whether to plug other holes will be determined by the dealers according to actual conditions.



7.5 Check after Installation and Operation Test

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has it been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating) capacity
Is heat insulation sufficient?	It may cause condensation and dripping.
Is water drainage satisfactory?	It may cause condensation and dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the product.
Is the electric wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.
Has the unit been connected to a secure earth connection?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the part.
Are the inlet and outlet openings blocked?	It may cause insufficient cooling(heating) capacity.
Is the length of connection pipes and refrigerant capacity been recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1.Before Operation Test

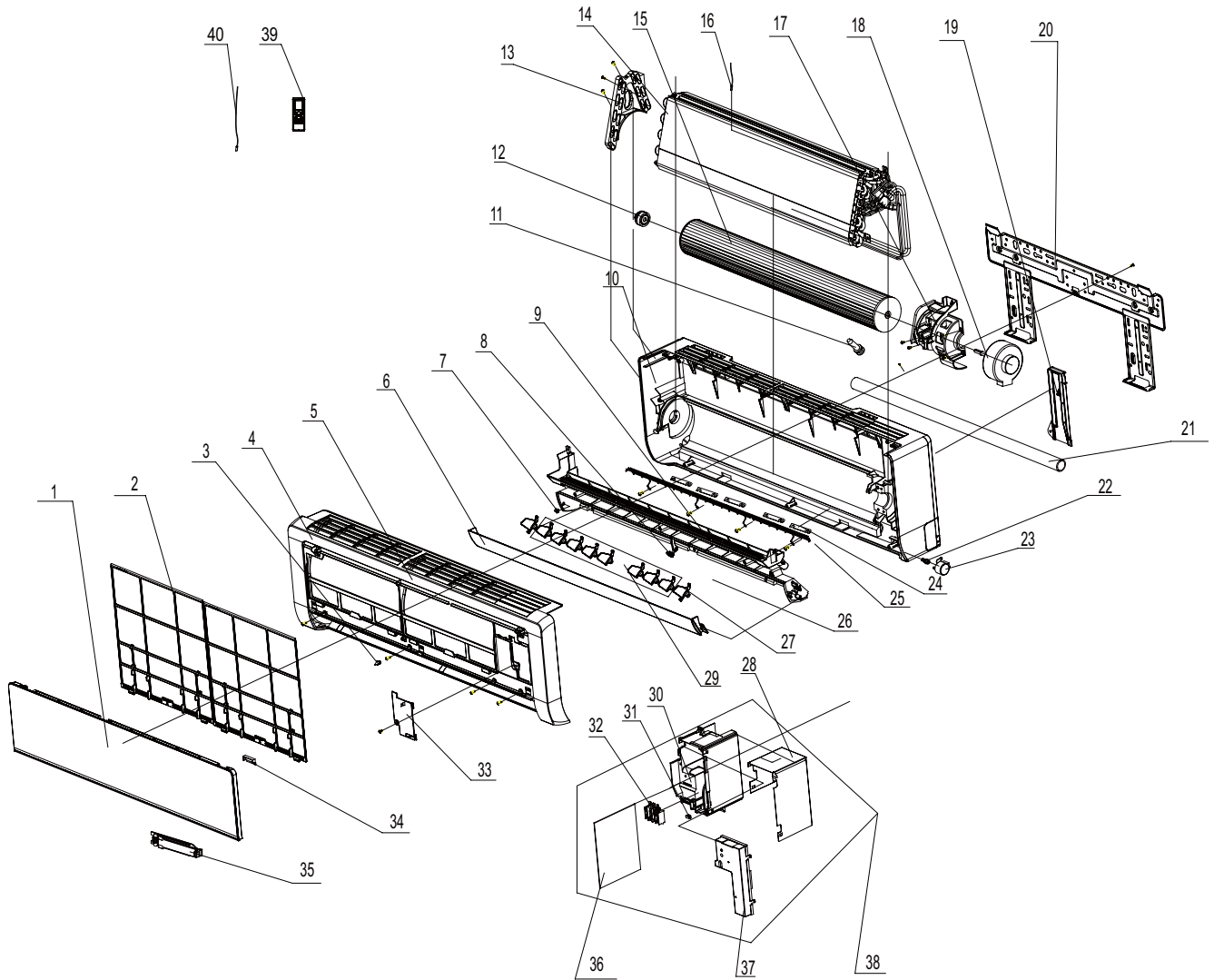
- (1)Do not switch on power before installation is finished completely.
- (2)Electric wiring must be connected correctly and securely.
- (3)Cut-off valves of the connection pipes should be opened.
- (4)All the impurities such as scraps and thrums must be cleared from the unit.

2.Operation Test Method

- (1)Switch on power and press "ON/OFF" button on the wireless remote controllerto start the operation.
- (2)Press MODE button to select the COOL, HEAT (Cooling only unit is not available), FAN to check whether the operation is normal or not.

8. Exploded Views and Parts List

8.1 Indoor Unit



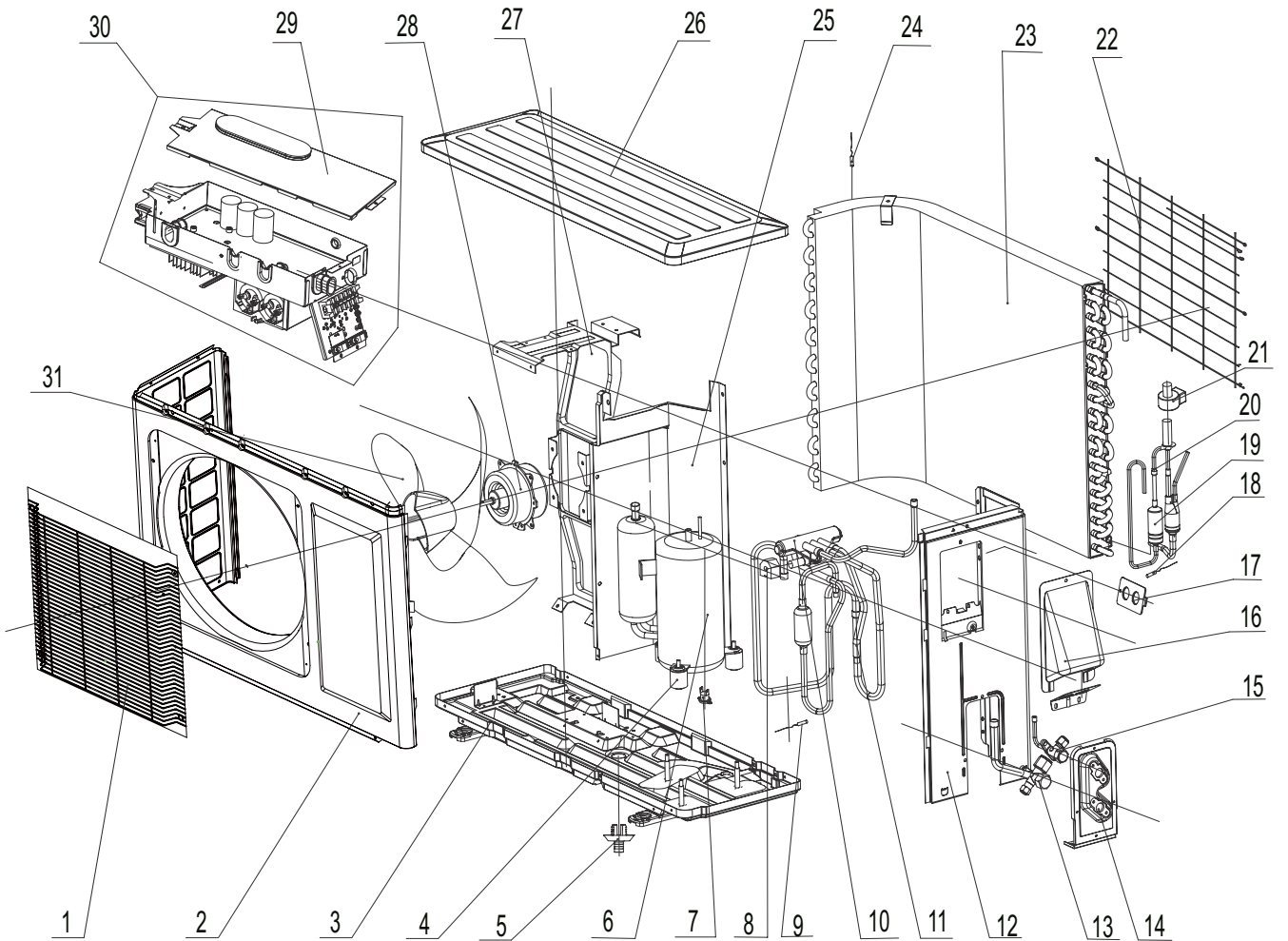
Exploded Views and Parts list

NO.	Description	Part Code		Qty
		GWH09AB-A3DNA1B/I	GWH12AB-A3DNA1B/I	
		Product Code	CB115N0550	
1	Front Panel Assy	2000276104	2000276104	1
2	Filter Sub-Assy	11122059	11122059	2
3	Screw Cover	24252019P	24252019P	3
4	Front Case	20012049P	20012049P	1
5	Front Case Assy	20002760	20002760	1
6	Guide Louver	10512102	10512102	1
7	Axile Bush	10542704	10542704	1
8	Axile Bush	10542008	10542008	1
9	Water Tray Assy	20182083	20182083	1
10	Rear Case assy	2220208402	2220208402	1
11	Rubber Plug (Water Tray)	76712012	76712012	1
12	O-Gasket sub-assy of Bearing	76512051	76512051	1
13	Evaporator Support	24212076	24212076	1
14	Evaporator Assy	01002089	0100252402	1
15	Cross Flow Fan	10352023	10352023	1
16	Tube Sensor	390000591	390000591	1
17	Motor Press Plate	26112132	26112132	1
18	Fan Motor	1501306801	1501306801	1
19	Pipe Clamp	26112124	26112124	1
20	Wall Mounting Frame	01252008	01252008	1
21	Drainage hose	0523001401	0523001401	1
22	Crank	10582070	10582070	1
23	Step Motor	15012086	15012086	1
24	Louver Clamp	26112127	26112127	5
25	Front grill	01472011	01472011	1
26	Swing lever	10582450	10582450	1
27	Air Louver(manual)	10512097	10512097	2
28	Shield cover of Electric Box sub-assy	01592073	01592073	1
29	Swing blade (Round hole)	10512099	10512099	8
30	Electric Box	20112085	20112085	1
31	Jumper	4202300106	4202300105	1
32	Terminal Board	42011233	42011233	1
33	Electric Box Cover2	20122074P	20122074P	1
34	Display Cover	20122042	20122042	1
35	Display Board	30565002	30565002	1
36	Main Board	30138202	30138202	1
37	Electric Box Cover1	20122103	20122103	1
38	Electric Box Assy	2010256209	2010256209	1
39	Remote Controller	30510050	30510050	1
40	Ambient Temperature Sensor	390000451	390000451	1

The above data are subject to be changed without notice.

8.2 Outdoor Unit

Model GWH09AB-A3DNA1B/O

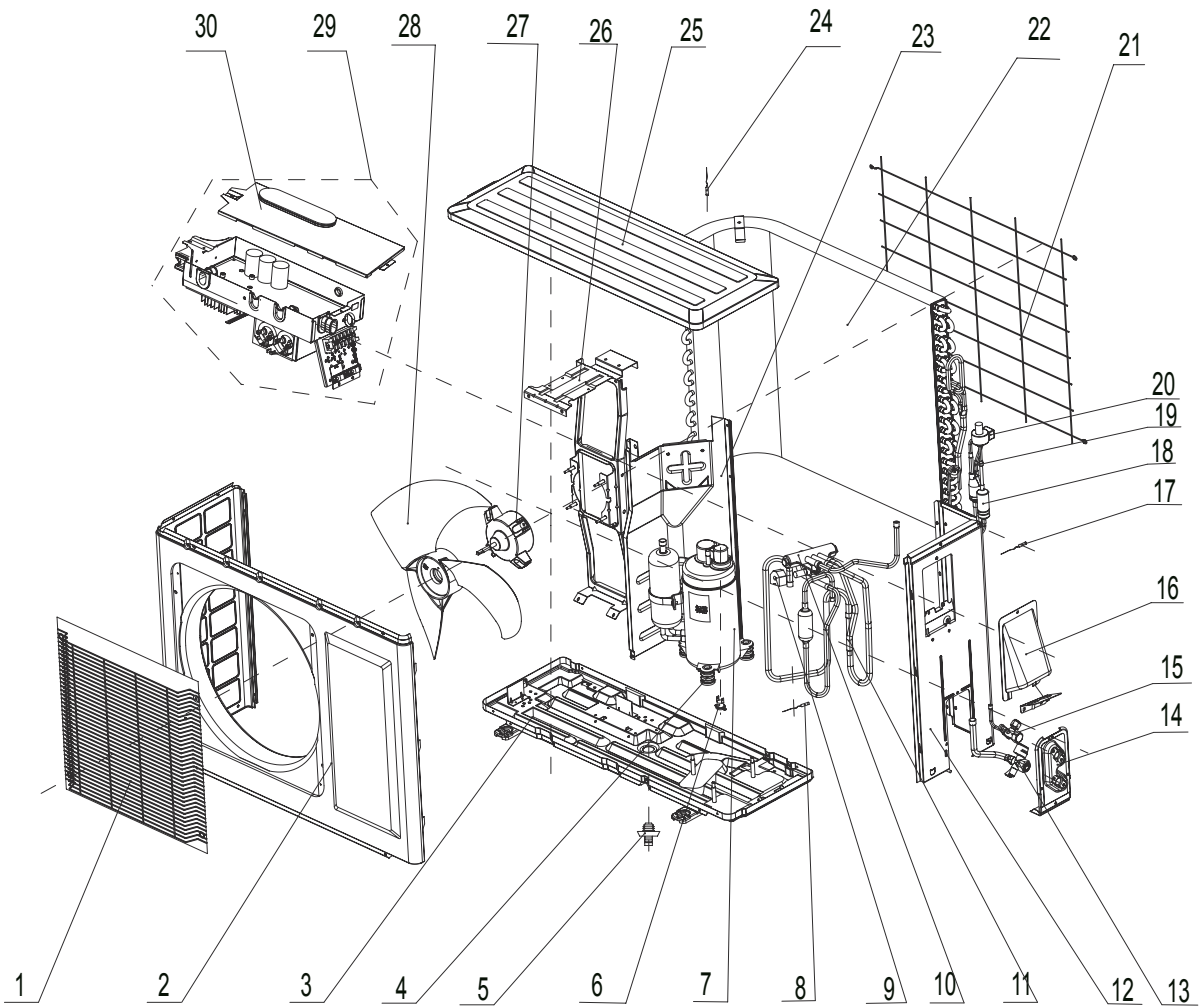


Exploded Views and Parts list

NO.	Description	Part Code	Qty
		GWH09AB-A3DNA1B/O	
	Product Code	CB115W0550	
1	Front Grill	01473012	1
2	Cabinet	0143304601P	1
3	Chassis Sub-assy	01203939P	1
4	Compressor Gasket	76815203	3
5	Drainage Connector	06123401	1
6	Compressor and fittings	00205212	1
7	Overload Protector	4300040021	1
8	Magnet Coil	4300040021	1
9	Discharge sensor	39000016	1
10	4-way Valve	430004032	1
11	4-way Valve Assy	03123315	1
12	Right Side Plate Assy	013030712	1
13	Valve	07100005	1
14	Valve Support	01713041	1
15	Valve	07100003	1
16	Cable Cross Plate sub-assy	02123015	1
17	Cover of pass wire	01413069	1
18	Tube Sensor	4300876701	1
19	Strainer	390001921	1
20	Electric Expansion Valve Sub-Assy	07220019	1
21	Magnet Coil	07133554	1
22	Rear Grill	01473014	1
23	Condenser Assy	01113298	1
24	Temperature Sensor	3900020801	1
25	Clapboard Sub-Assy	01233034	1
26	Top Cover Plate	01253443	1
27	Motor suport spot welding sub-assy	01703007	1
28	Fan Motor	15013069	1
29	Electric Box Cover Sub-Assy	0260309601	1
30	Electric Box Assy	0140398651	1
31	Axial Flow Fan	10333502	1

The above data are subject to be changed without notice.

Model GWH12AB-A3DNA1B/O



Exploded Views and Parts list

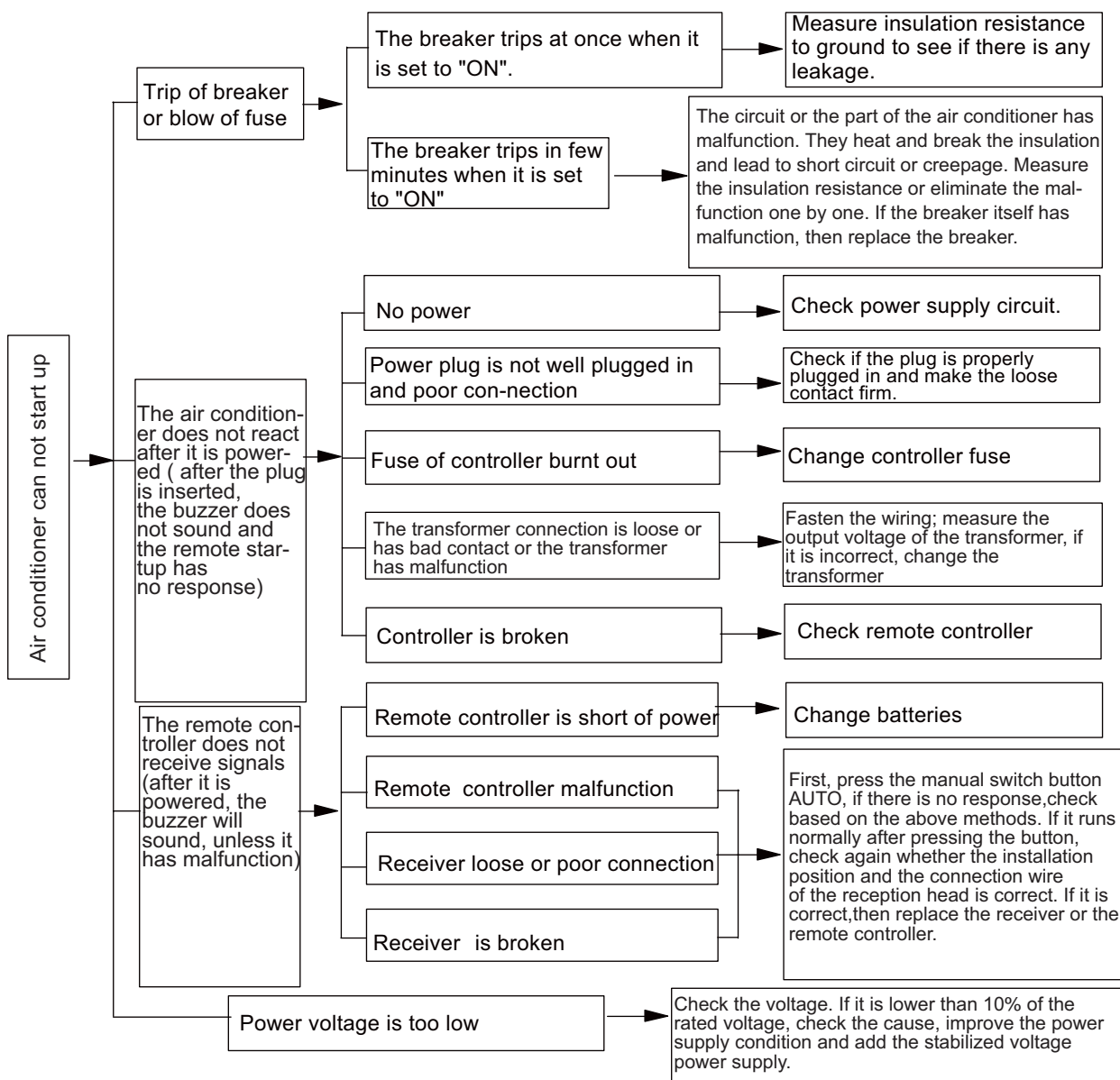
NO.	Description	Part Code	Qty
		GWH12AB-A3DNA1B/O	
		Product Code	
		CB115W0570	
1	Front Grill	01473012	1
2	Front Panel	0153500201	1
3	Chassis Sub-assy	01203939P	1
4	Compressor Gasket	76815203	3
5	Drainage Connector	06123401	1
6	Overload Protector	00180002	1
7	Compressor and fittings	00205212	1
8	Discharge sensor	39000016	1
9	Magnet Coil	4300040021	1
10	4-way Valve	430004032	1
11	4-way Valve Assy	03123316	1
12	Right Side Plate	0130507401P	1
13	Valve	07100006	1
14	Valve Support	01713041	1
15	Valve	07100003	1
16	Cable Cross Plate sub-assy	02123015	1
17	Tube Sensor	390001921	1
18	Strainer	07220019	1
19	Electric Expansion Valve Sub-Assy	07133069	1
20	Magnet Coil	4300876701	1
21	Rear Grill	01475014	1
22	Condenser Assy	01113520	1
23	Clapboard Sub-Assy	01233090	1
24	Temperature Sensor	3900020801	1
25	Top Cover Plate	01253443	1
26	Motor suport spot welding sub-assy	0170301002	1
27	Fan Motor	15013069	1
28	Axial Flow Fan	10333502	1
29	Electric Box Assy	0140398651	1
30	Electric Box Cover Sub-Assy	0260309601	1

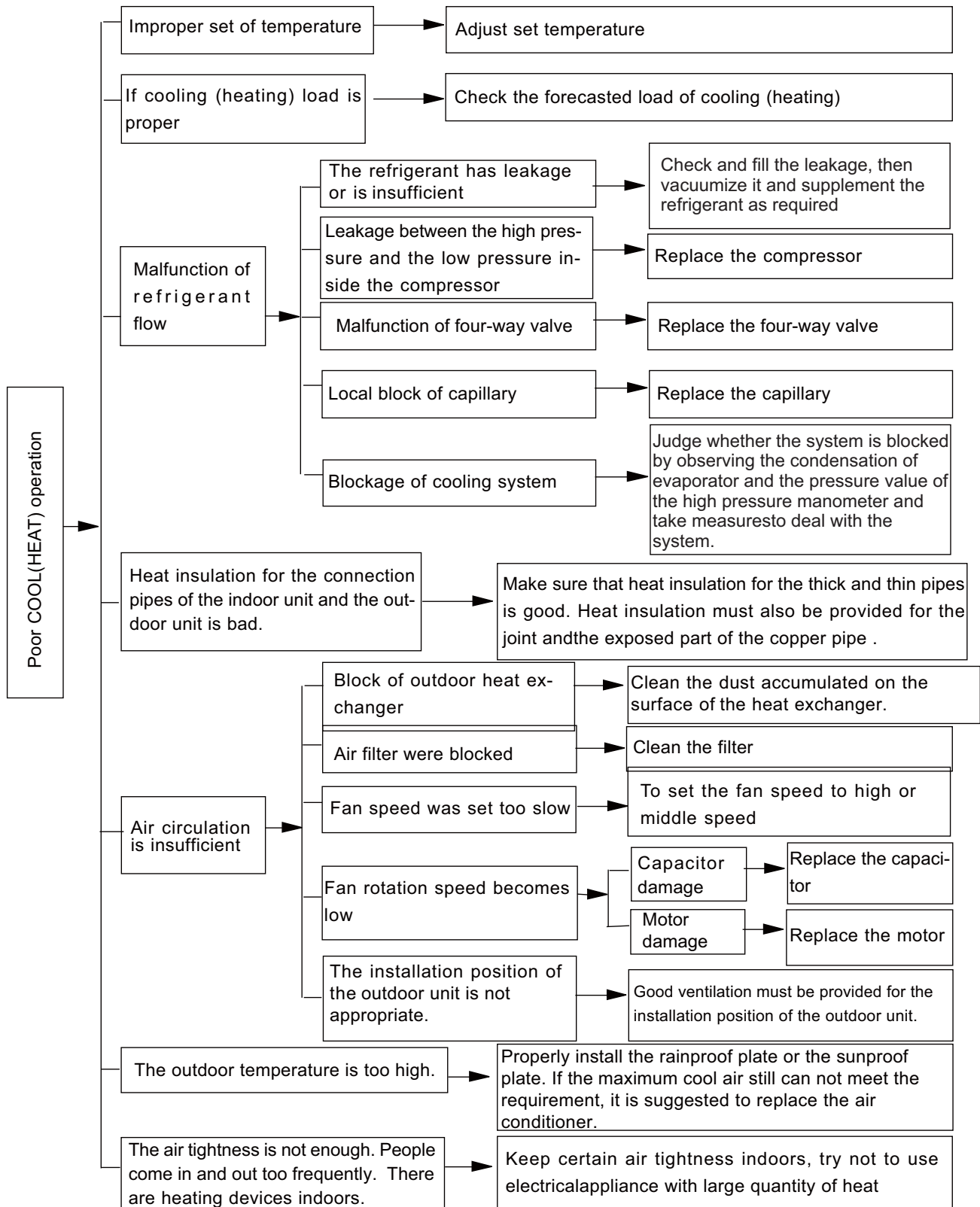
The above data are subject to be changed without notice.

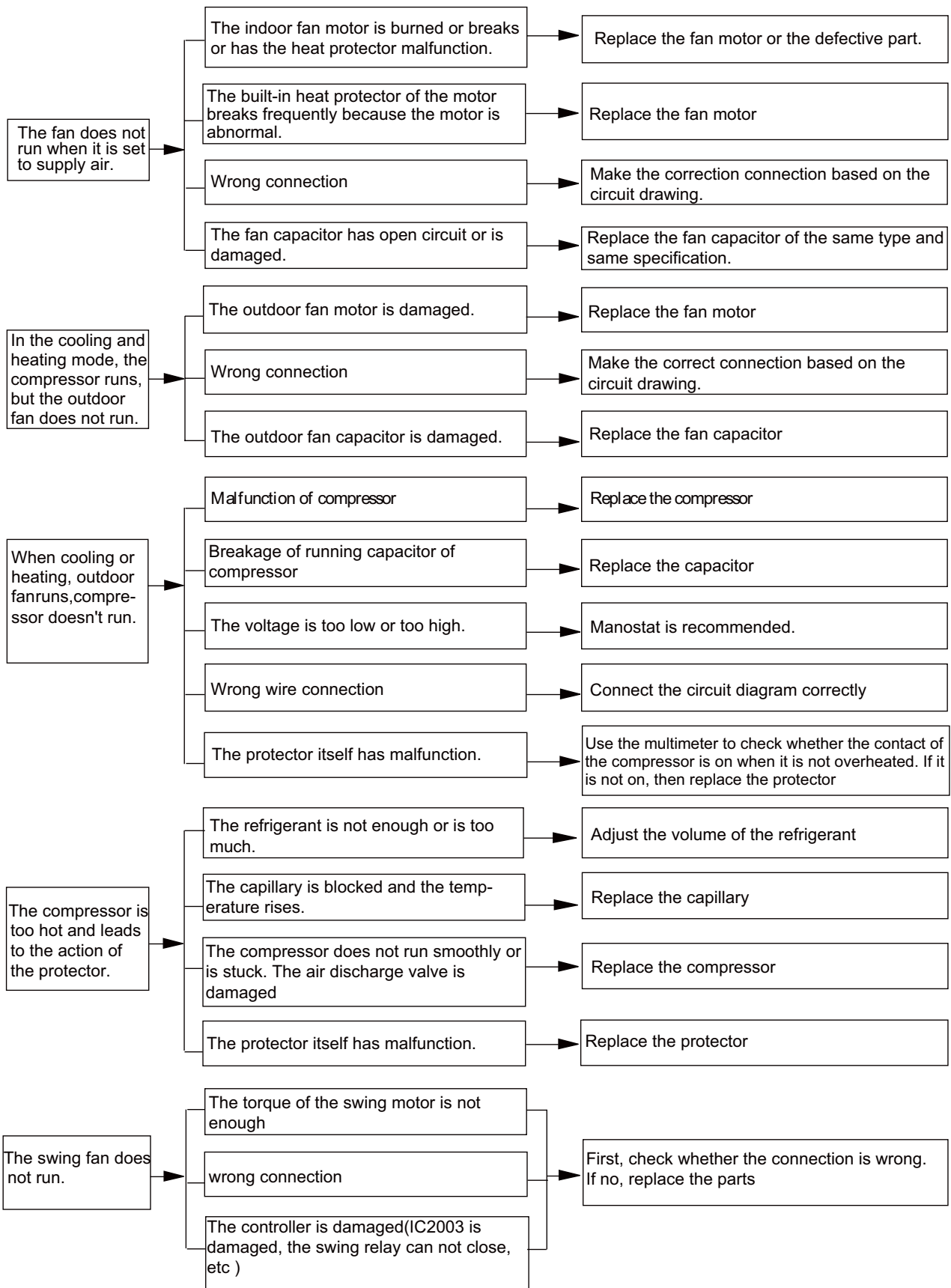
9. Troubleshooting

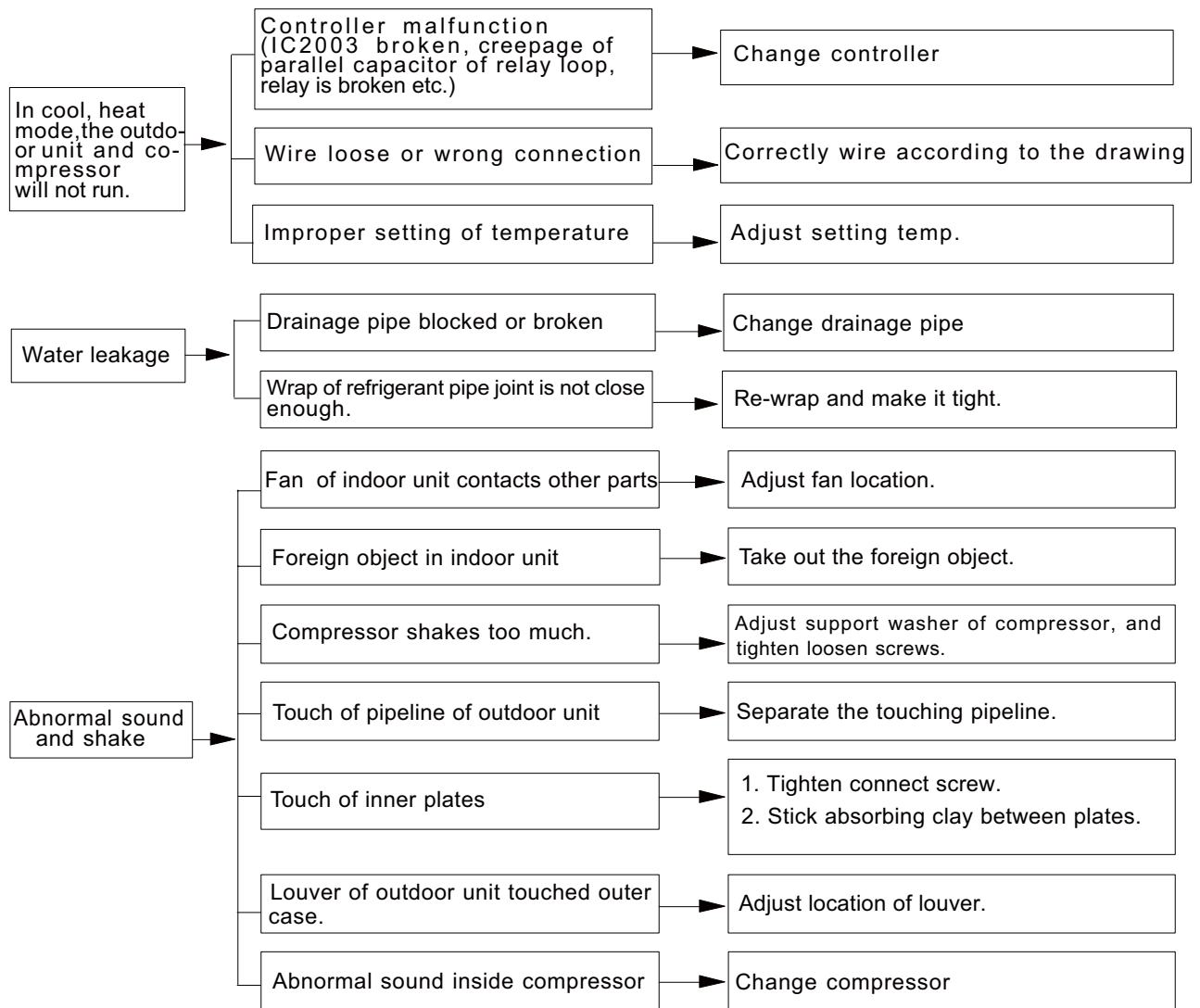
9.1 Malfunction Analysis

Note: When replacing the controller, make sure insert the wire jumper into the new controller, otherwise the unit will display C5





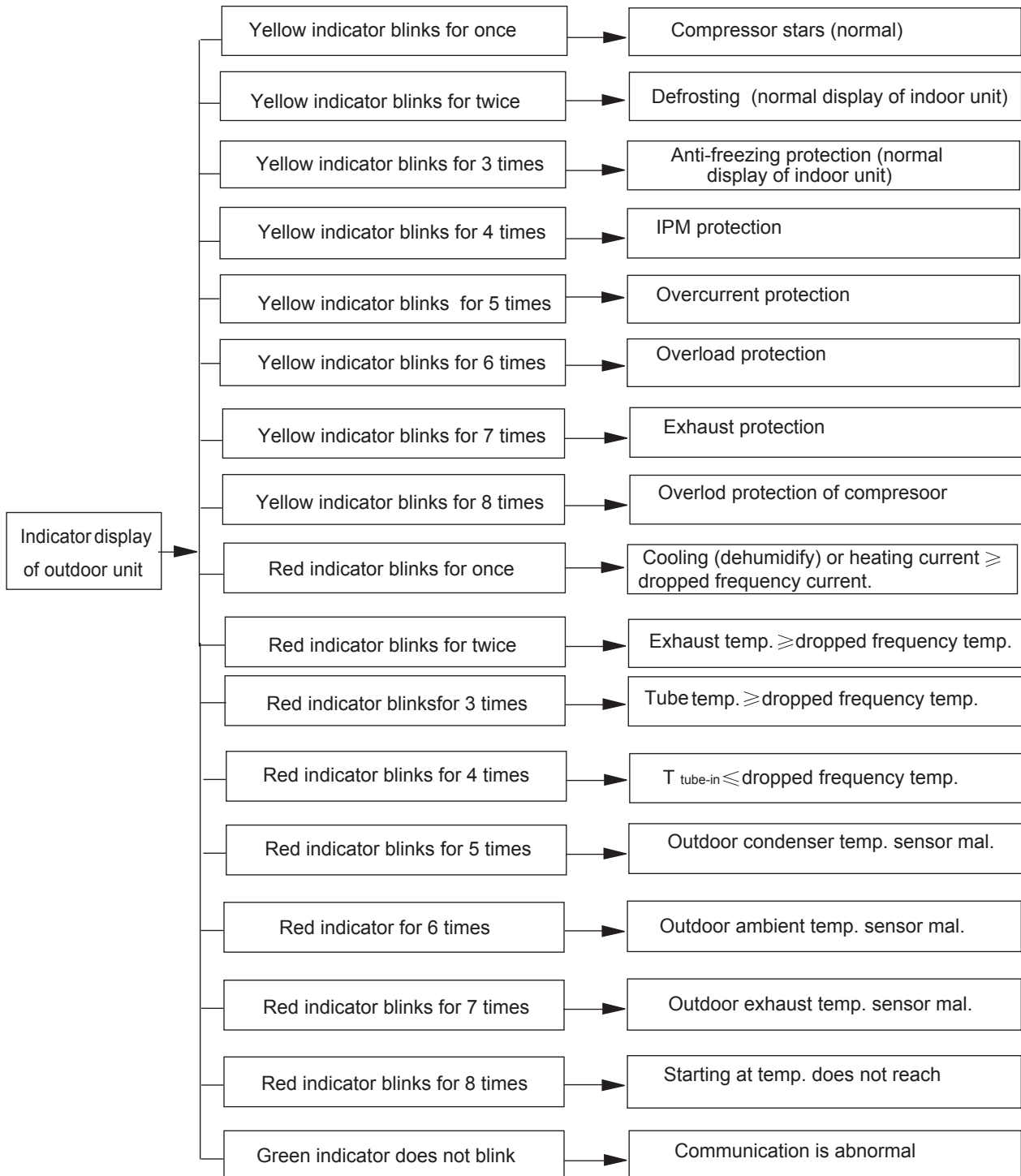




9.2 Flashing LED of Indoor/Outdoor Unit and Primary Judgement

Name of malfunction	Display of indoor unit	state of the lamps of outdoor unit PCB			Reasons
	ERROR CODE	GREEN-LED2	RED-LED3	YELLOW-LED4	
Stop for anti-freezing protection of indoor-unit	E2		blink-4 times	blink-3times	refrigerant leakage、 indoor unit air flow blocked up、 filter duty
Stop for exhaust protection	E4			blink-7 times	less refrigerant、 capillary blocked up、 ambient temperature is abominable
Stop for low voltage protection	E5			blink-5 times	low、 voltage、 ambient temperature is abominable
Stop for communication malfunction	E6	do not blink			communication line failure、 main PCB failure、 interfere souce、 connect line wrong
Stop for compressor overload protection	H3			blink-8 times	compressor shell over heat、 lessrefrigerant、 capillary blocked up
Overload protection	E8			blink-6 times	ambient temperature is abominable、 heat exchanger blocked up
Stop for IPMmodule protetion	H5			blink-4 times	IPM mouldel over heat、 low voltage、 silica gel
Direct current motor (indoor fan motor) does not operate	H6				The control terminal of direct current motor is not connected tightly; Fan blade rotates unsmoothly due to improper installation; Motor is not installed properly and tightly; Motor is damaged; Controller is damaged.
Indoor ambient temperature sensor malfunction	F1				terminal connect not reliable、 temperature sensor maifunction
Indoor tube temperature sensor malfunction	F2				terminal connect not reliable、 temperature sensor maifunction
Outdoor ambient temperature sensor malfunction	F3		blink-6 times		terminal connect not reliable、 temperature sensor maifunction
Outdoor tube temperature sensor malfunction	F4		blink-5 times		terminal connect not reliable、 temperature sensor maifunction
Outdoor exhaust temperature sensor malfunction	F5		blink-7 times		terminal connect not reliable、 temperature sensor maifunction
Automatic defrosting	H1			blink-2 times	H1is not error code,it is noemal operation.Just heat pump has this fuction
REMARK:	<p>1.Error codes only can be seen in the type which has the temperature display pcb.maybe some type has not this function,the lamps on the outdoor pcb are avaiable</p> <p>2.Normally,the communication between indoor unit and outdoor unit is successful, the gree lamp (led2)of outdoor pcb blink 1s on, 1s off.</p> <p>3.The red and yellow lamp blink 0.5s on,0.5s off,between two error display cycle,it will be 2s off.</p> <p>4.Led1(red)is power lamp.Led3(red)blinks-8 times which means temperature be up to machine run.When compressor starte,Led4(yellow)blinks 1 times</p>				

If malfunction occurs, corresponding code will display and the unit will resume normal until protection or malfunction disappears.



Analysis or processing of some of the malfunction display:

1. Compressor discharge protection
 Possible reasons: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser; the system has noncondensing gas (such as air, water etc.); blockage of capillary assy (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor; malfunction of protection relay; malfunction of discharge sensor; outdoor temperature too high.
 Processing method: refer to the malfunction analysis in the above section.
2. Low voltage overcurrent protection
 Possible reason: Sudden drop of supply voltage.
3. Communication malfunction
 Processing method: Check if communication signal cable is connected reliably.
4. Sensor open or short circuit
 Processing method: Check whether sensor is normal, connected with the corresponding position on the controller and if damage of lead wire is found.
5. Compressor overload protection
 Possible reasons: insufficient or too much refrigerant; blockage of capillary and increase of suction temp.; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.
 Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compressor is fine when it is not overheated, if not replace the protector.
6. System malfunction
 i.e. overload protection. When tube temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature of indoor heat exchanger when heating) is too high, protection will be activated.
 Possible reasons: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction.
 please refer to the malfunction analysis in the previous section for handling method .
7. IPM module protection
 Processing method: Once the module malfunction happens, if it persists for a long time and can not be self-canceled, cut off the power and turn off the unit, and then re-energize the unit again after about 10 min. After repeating the procedure for several times, if the malfunction still exists, replace the module.

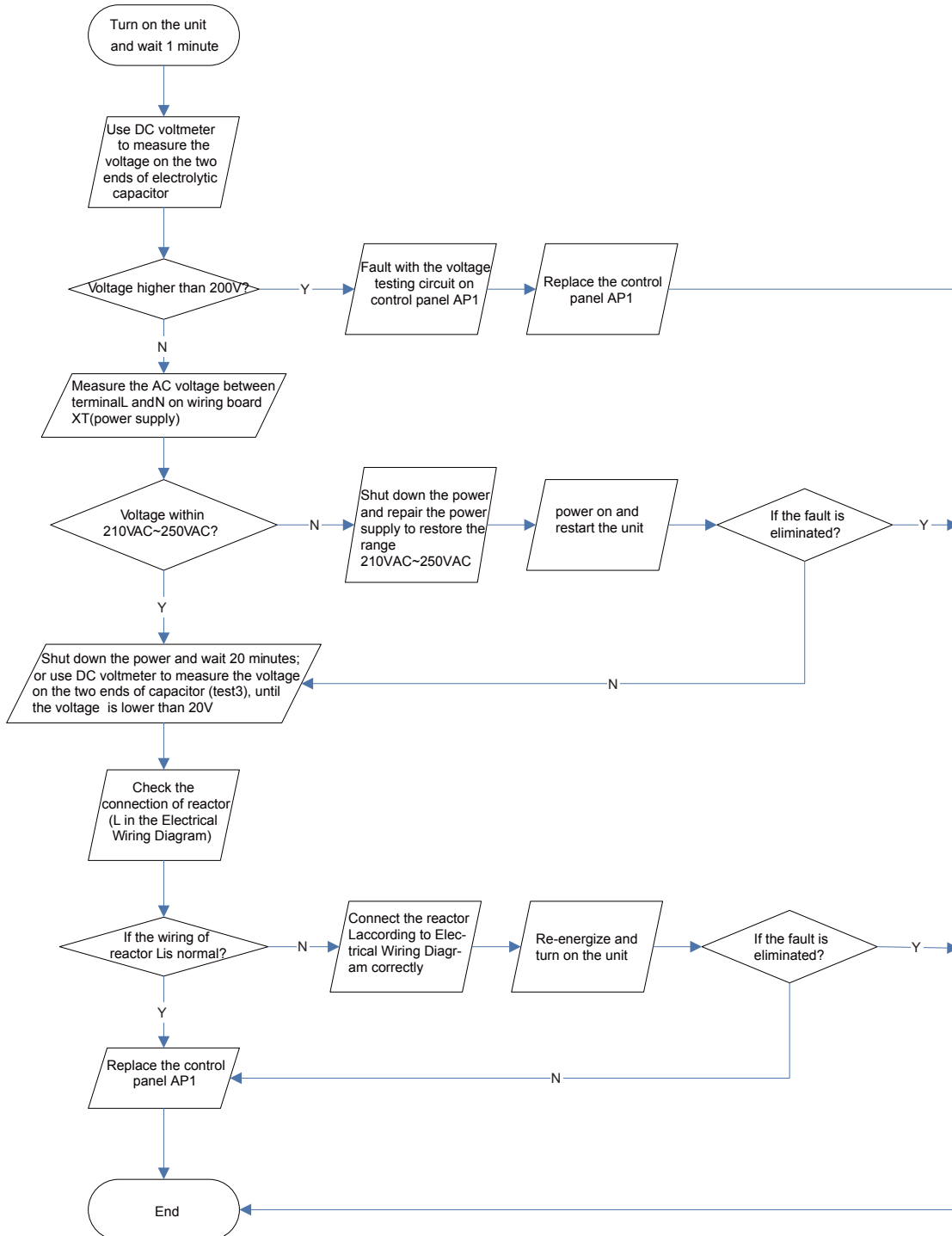
9.3 How to Check Simply the Main Part

(1) Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

Main Check Points:

- Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
- If the reactor (L) is correctly connected? If the connection is loose or fallen? If the reactor (L) is damaged?

Fault diagnosis process:

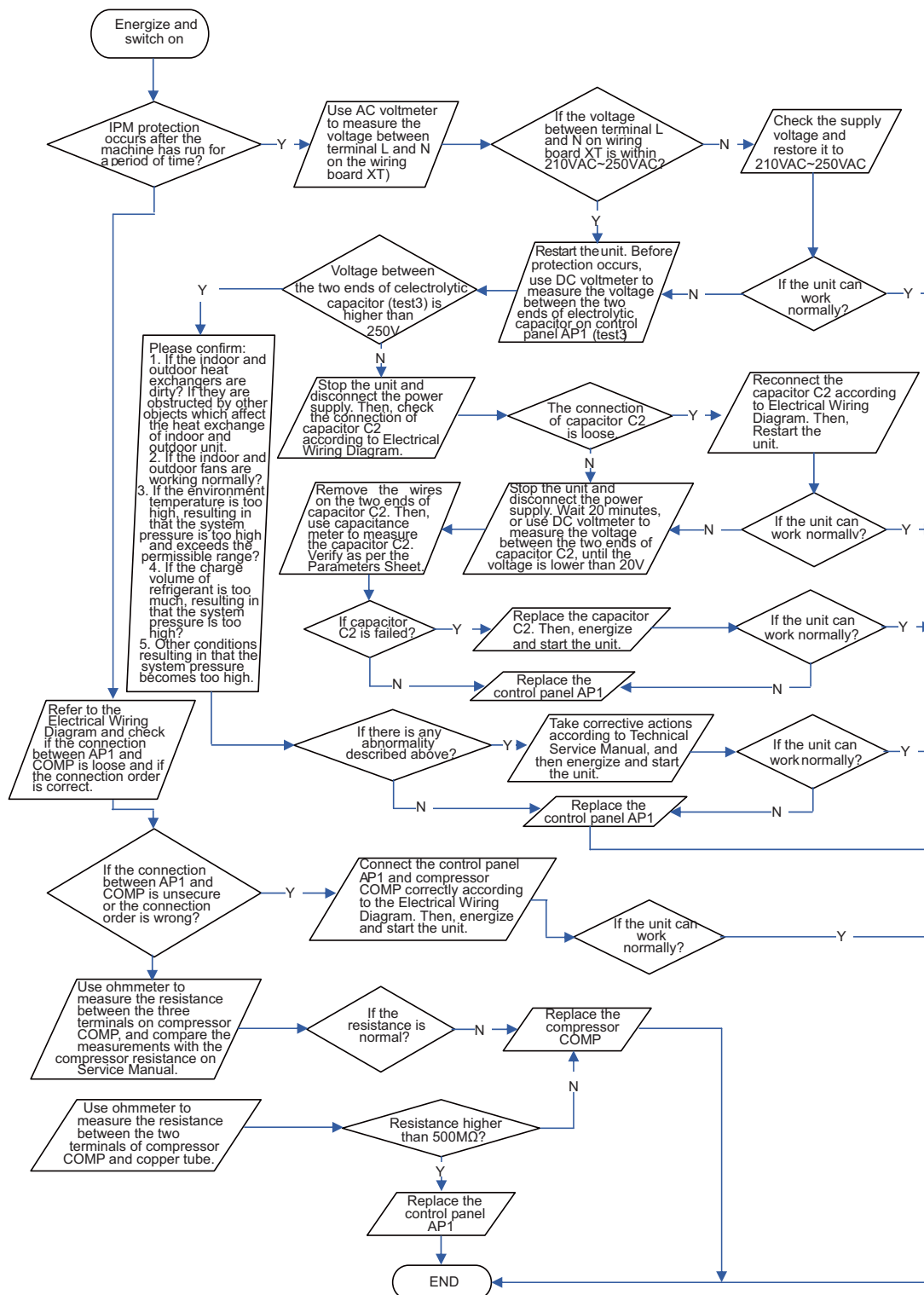


(2) IPM Protection, Out-of-step Fault, Compressor Phase Overcurrent (AP1 below refers to the outdoor control panel)

Main check points:

- If the connection between control panel AP1 and compressor COMP is secure? If loose? If the connection is in correct order?
- If the voltage input of the machine is within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)
- If the compressor coil resistance is normal? If the insulation of compressor coil against the copper tube is in good condition?
- If the working load of the machine are too high? If the radiation is good?
- If the charge volume of refrigerant is correct?

Fault diagnosis process:

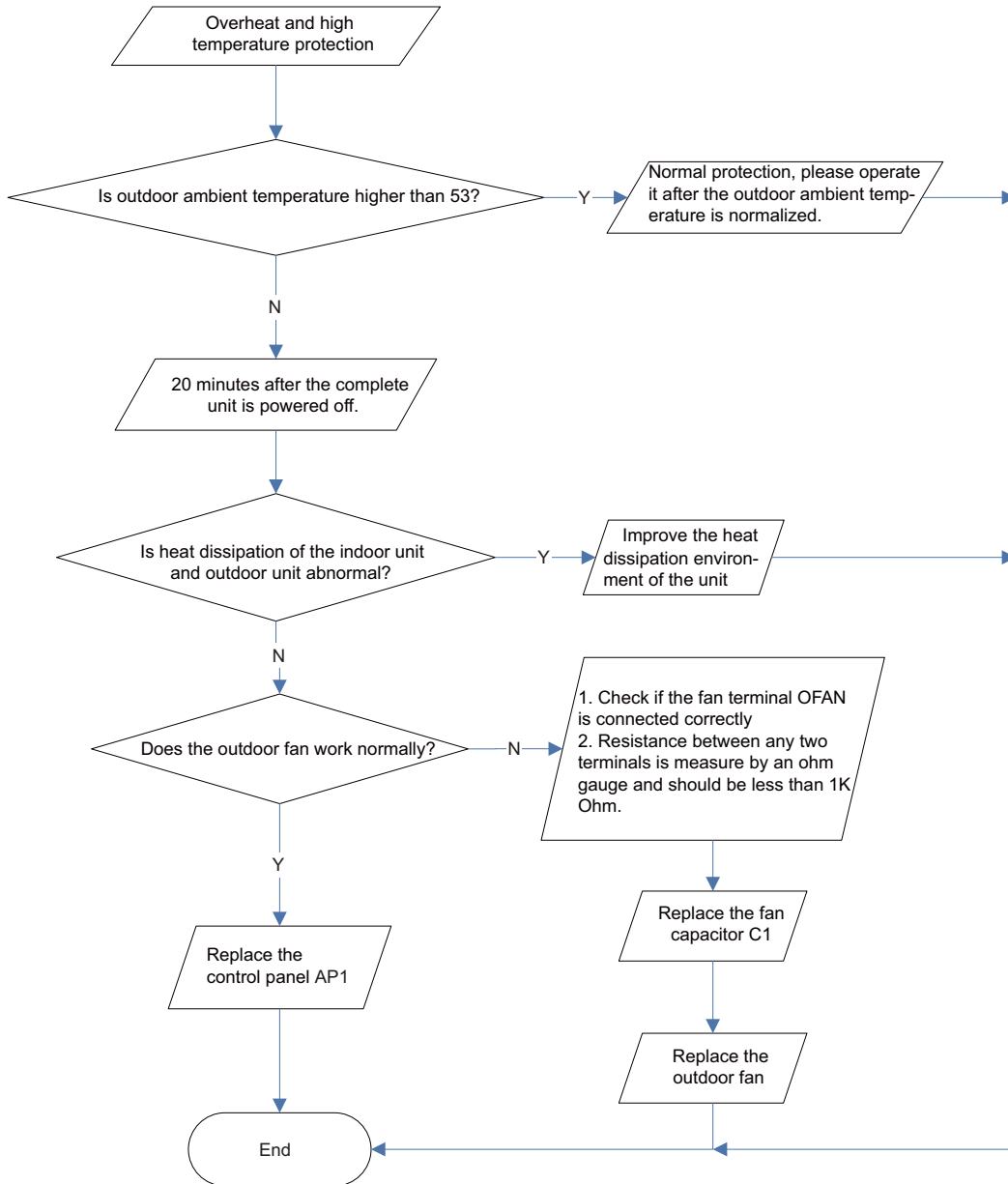


(3)High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Is outdoor ambient temperature in normal range?
- Are the outdoor and indoor fans operating normally?
- Is the heat dissipation environment inside and outside the unit is good?

Fault diagnosis process:

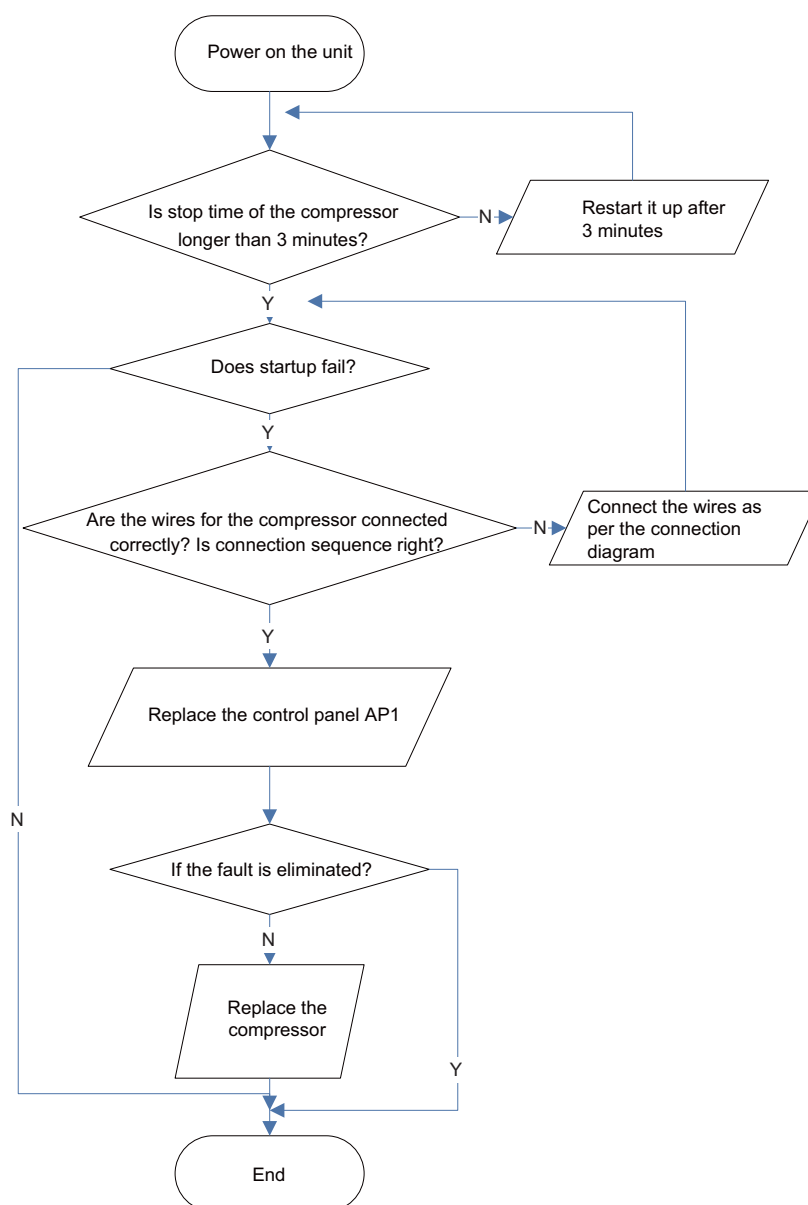


(4) Start-up failure (following AP1 for outdoor unit control board)

Mainly detect:

- Whether the compressor wiring is connected correct?
- Is compressor broken?
- Is time for compressor stopping enough?

Fault diagnosis process:

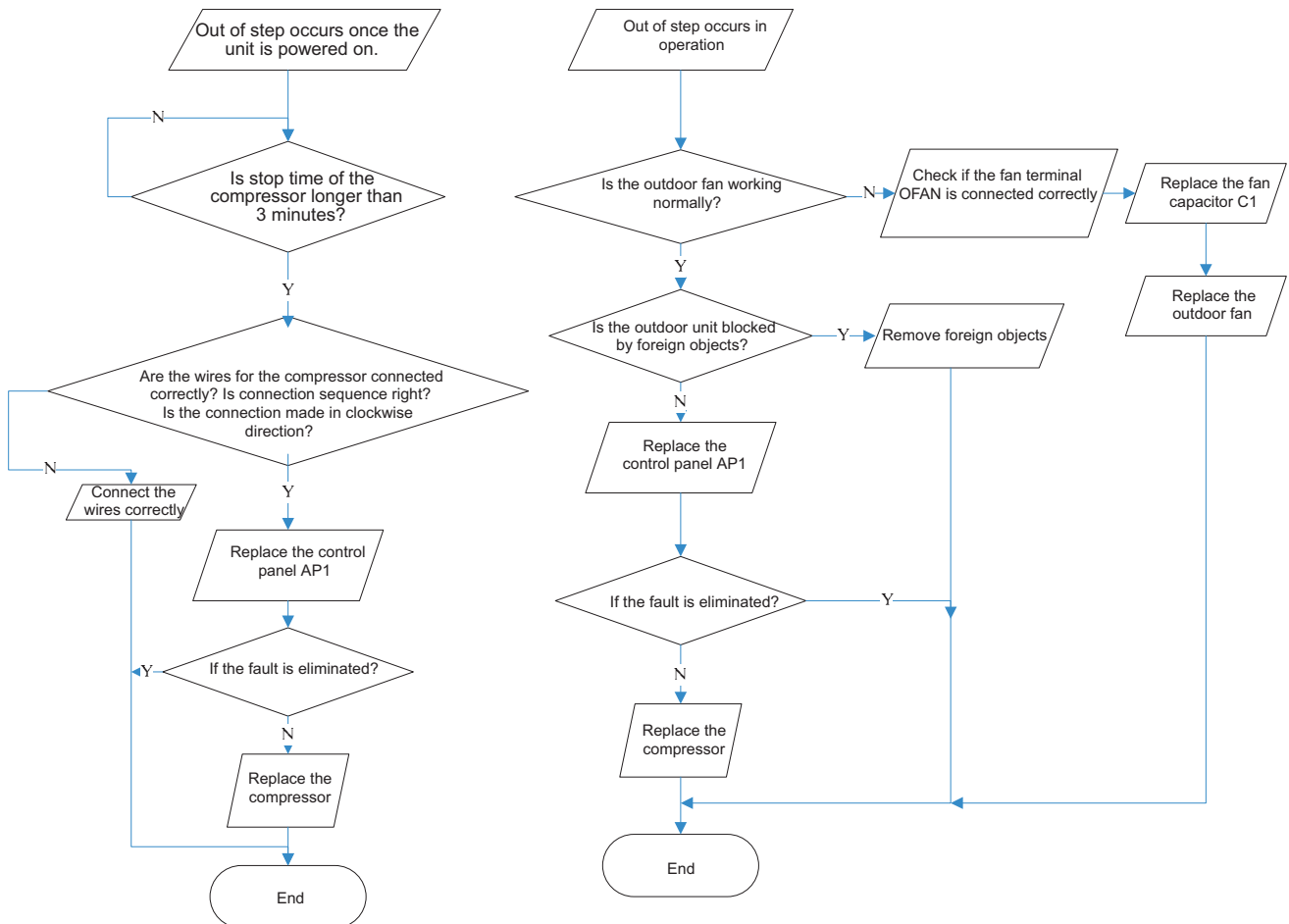


(5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Whether the system pressure is too high?
- Whether the input voltage is too low?

Fault diagnosis process:

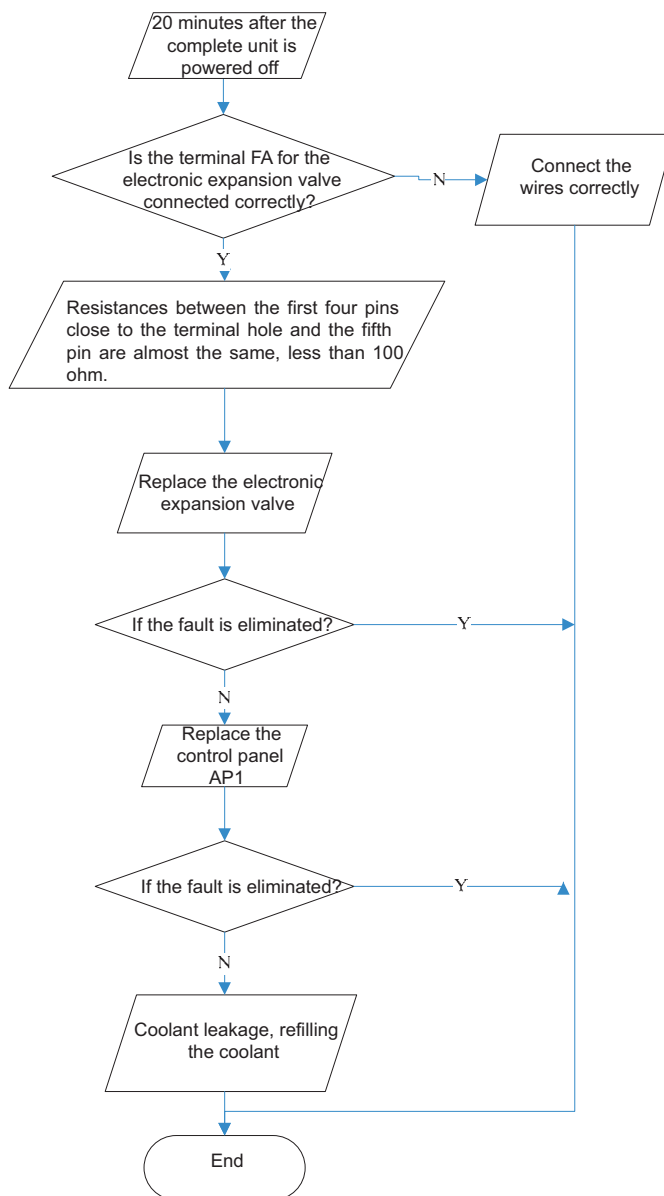


(6) Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit control board)

Mainly detect:

- Whether the PMV is connected well or not? Is PMV damaged?
- Is refrigerant leaked?

Fault diagnosis process:

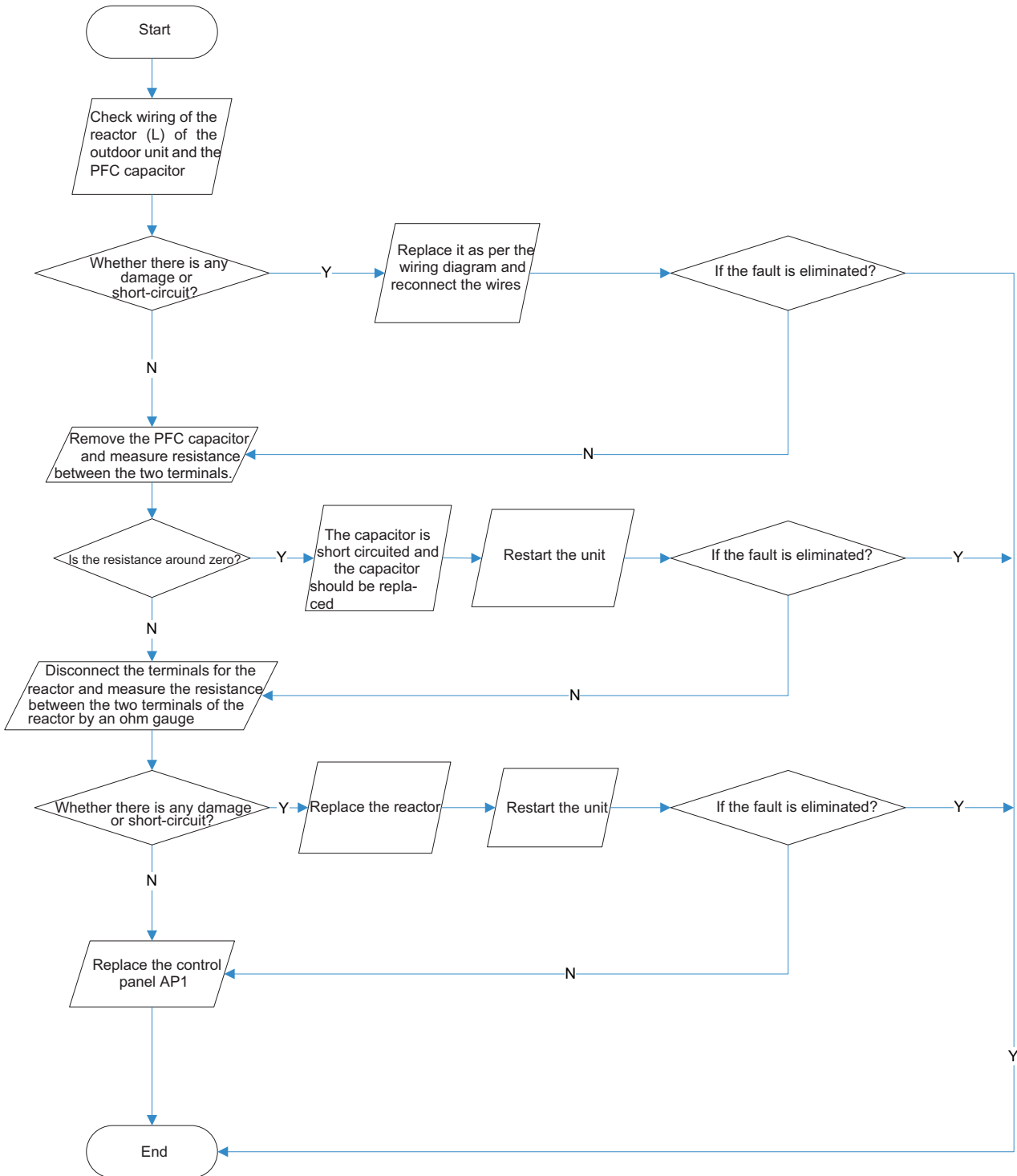


(7)Power factor correct or (PFC) fault (a fault of outdoor unit) (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

- Check if the reactor (L) of the outdoor unit and the PFC capacitor are broken

Fault diagnosis process:

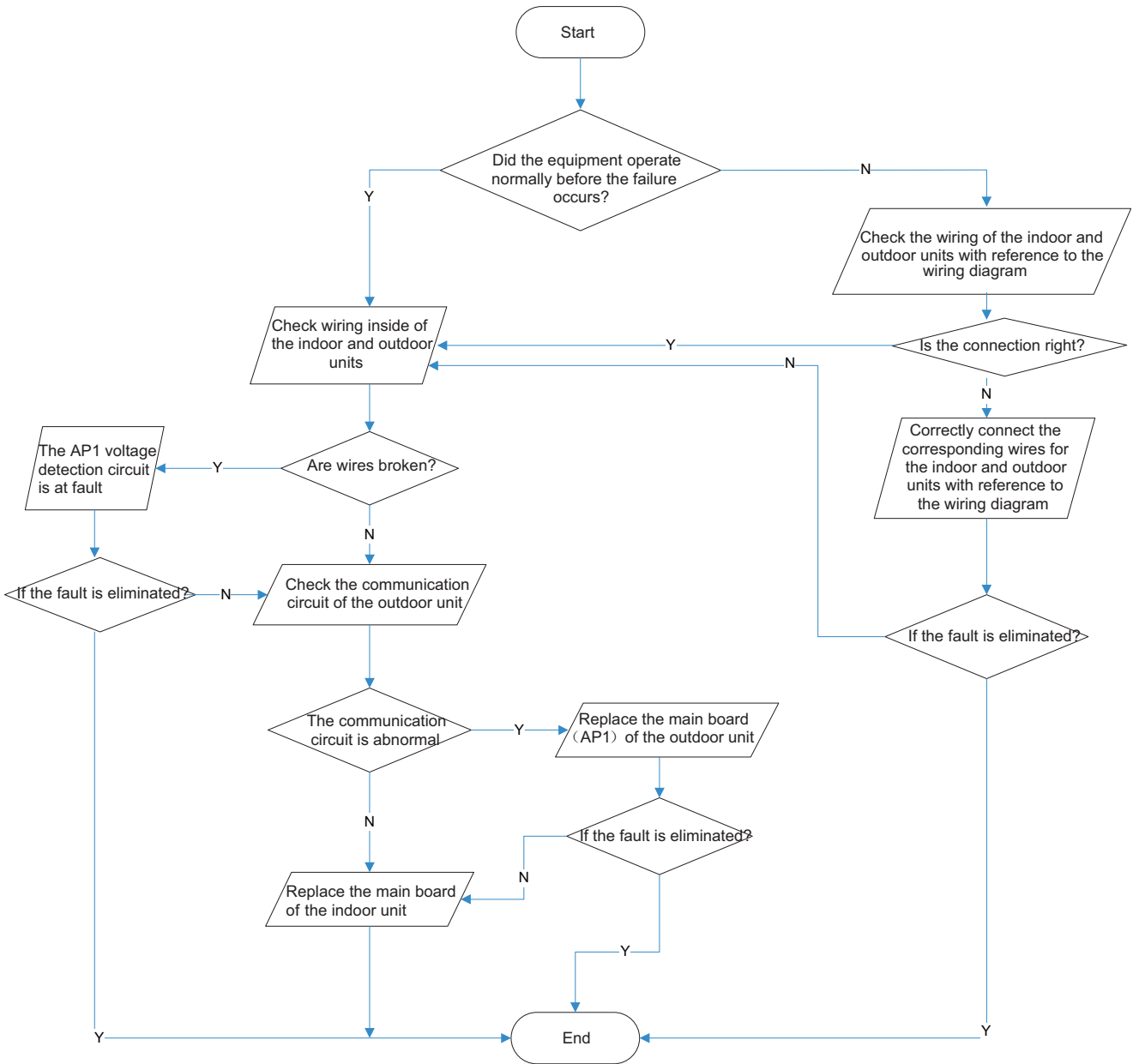


(8) Communication malfunction: (following AP1 for outdoor unit control board)

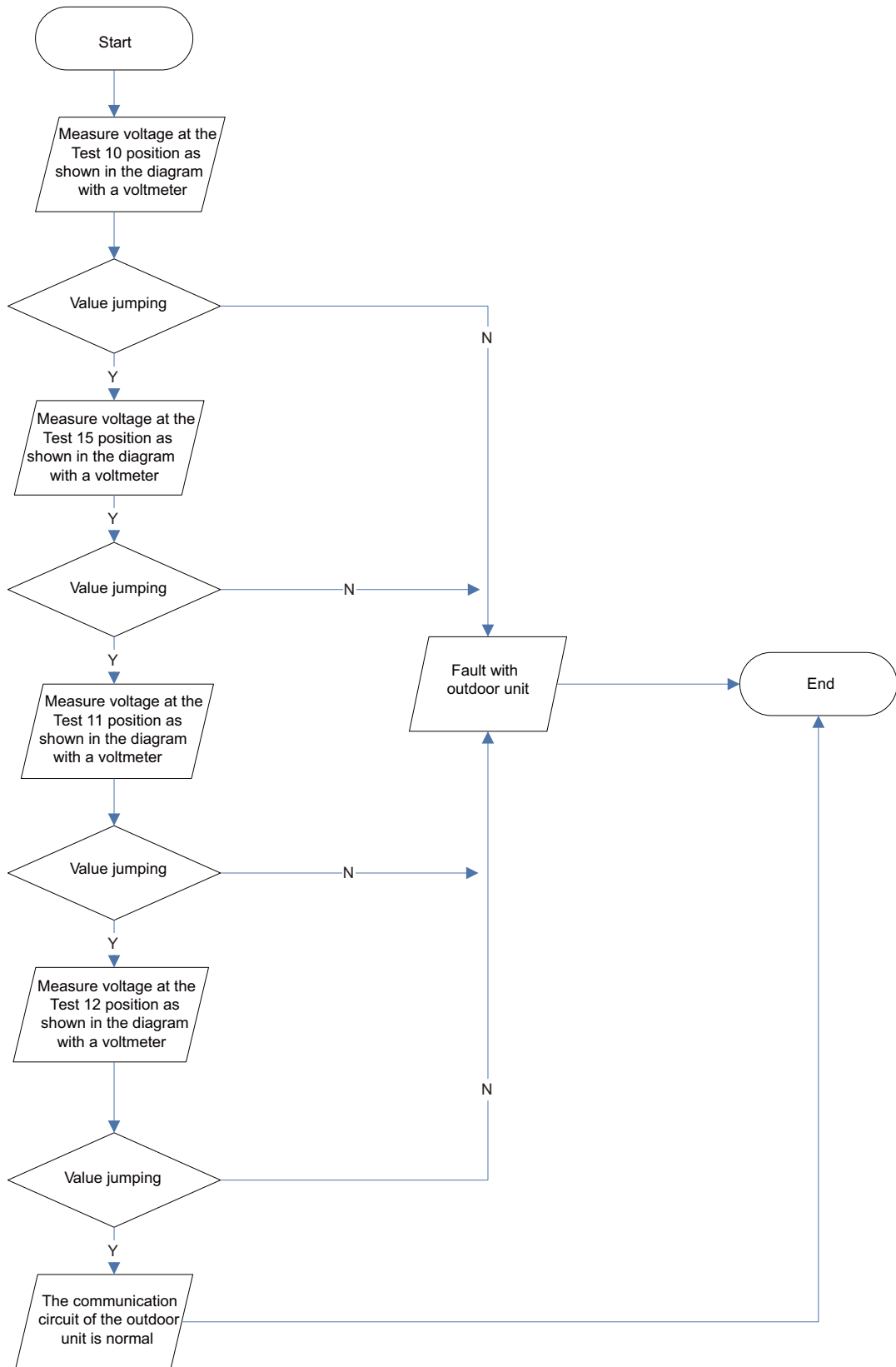
Mainly detect:

- Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?
- Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any damage?

Fault diagnosis process:



(9) Flow chart for outdoor communication circuit detecting:



Note: the information above is for reference only.

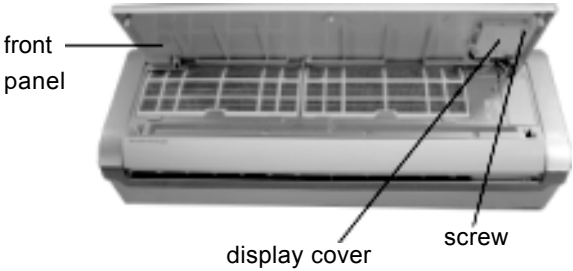
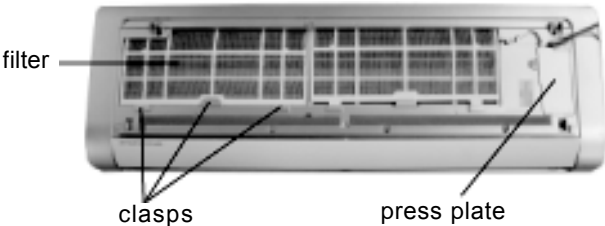

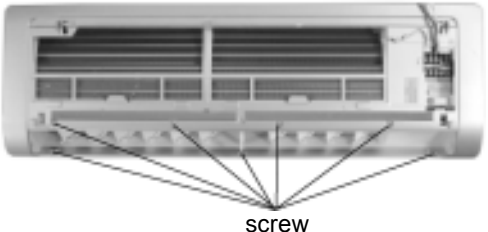
10. Removal Procedure

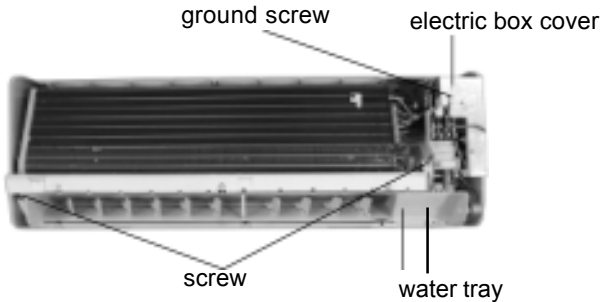
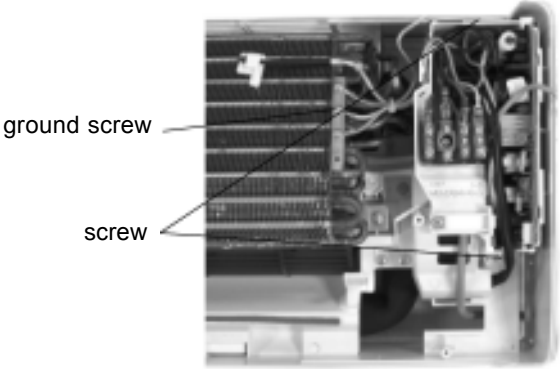
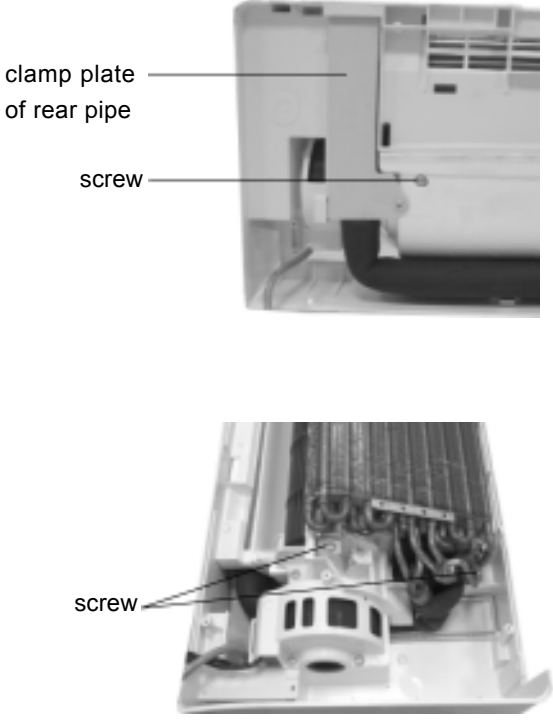
10.1 Removal Procedure of Indoor Unit

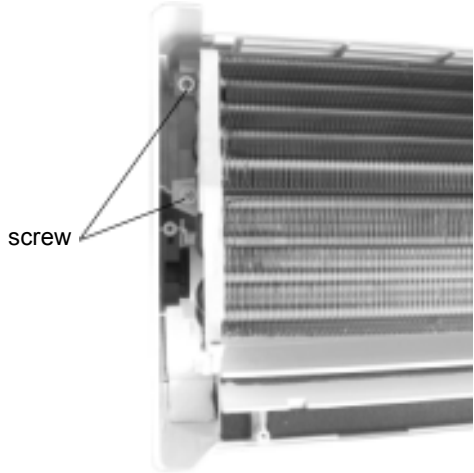
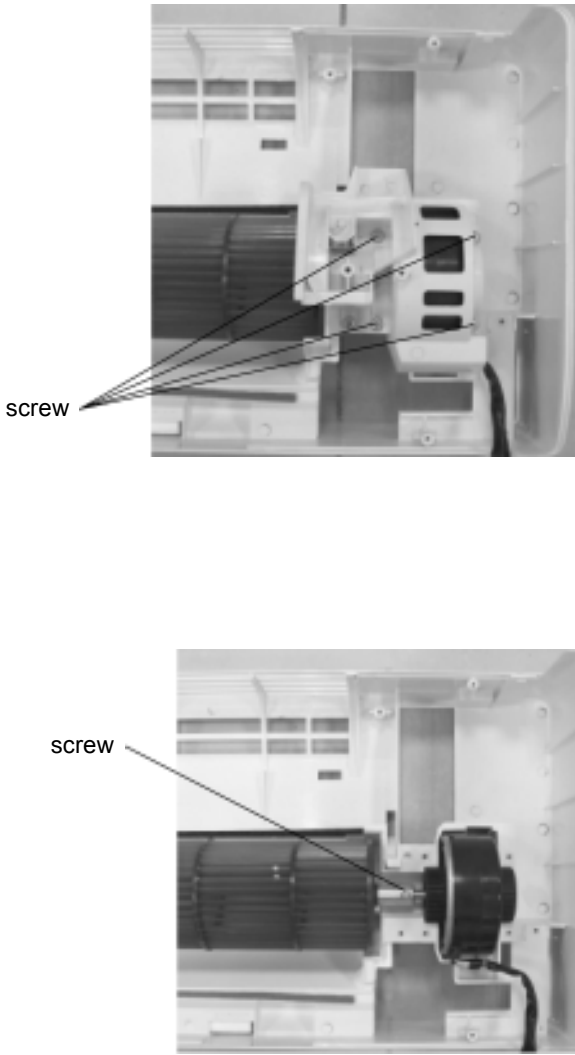


Warning

Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

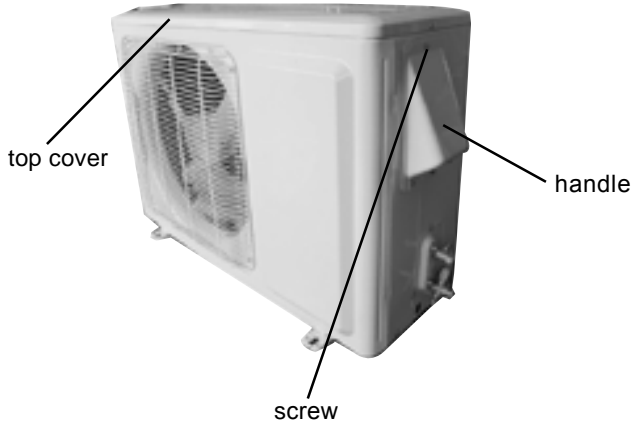
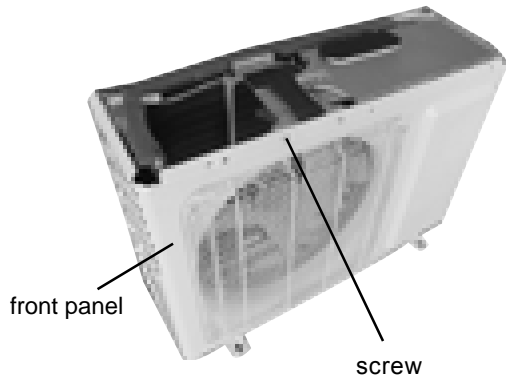
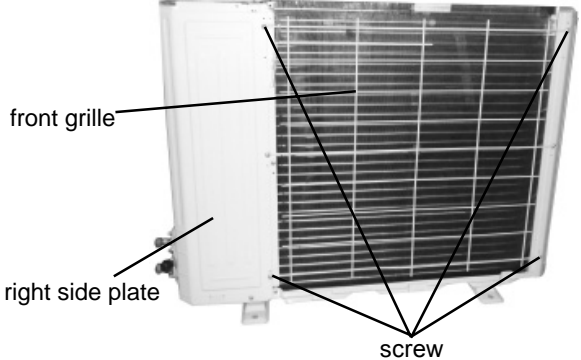
Step	Procedure	
1.Remove front panel	Push the convex parts in the left and right sides of the front panel, and then lift the front panel. Unscrew the screws fixing the display cover and pull out the plug. Forcibly lift the front panel upwards from the clasps to take it out.	
2.Remove filter and press plate	Top the middle section of air filter from the clasps at both sides. Pull the air filter forward to remove it. Unscrew the 1 screw on press plate to open the press plate.	
3.Remove guide louver	Push out the axle bush in the middle of guide louver. Then slightly bend the guide louver to remove it.	
4.Remove front case	Unscrew the 7 tapping screws fixing the front case, and turn the front case backwards to remove it.	

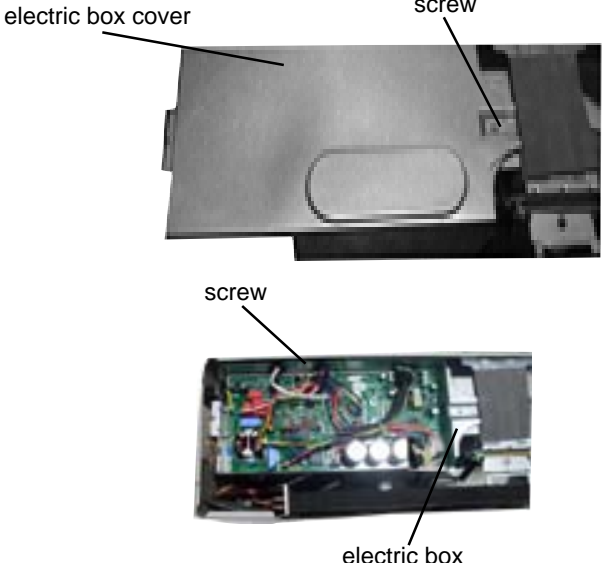
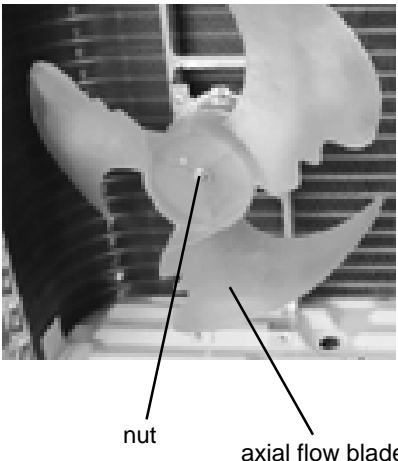
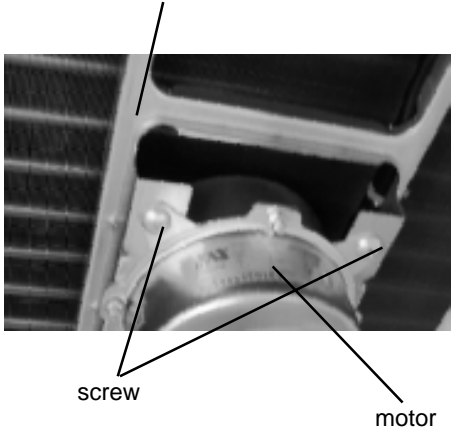
Step	Procedure
<p>5.Remove water tray</p>	<p>Unscrew the ground screw on the electric box cover and loose the clasps to remove electric box cover.Pullll out the wiring terminal.Unscrew the 2 screws fixing the water tray to remove the water tray.</p> 
<p>6.Remove electric box</p>	<p>Unscrew the 2 screws fixing the electric box. Unplug the motor terminal.Unscrew the three ground screws.Lift the electric box upwards to remove it.</p> 
<p>7.Remove evaporator</p>	<p>Unscrew the screws fixing the clamp plate of rear pipe at the back of evaporator to remove the plate.</p> <p>Unscrew the 2 screws in the right of evaporator.</p> 

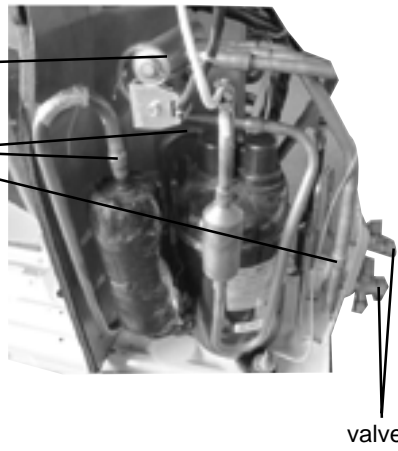


Step	Procedure	
	<p>Unscrew the 2 screws in the left of evaporator Turn the evaporator at certain angle to remove it.</p>	
<p>8.Remove motor and cross flow fan</p>	<p>Unscrew the screws fixing the press plate of motor and connecting motor and cross flow fan to remove the motor and cross flow fan.</p>	

10.2 Removal Procedure of Outdoor Unit

⚠ Warning Be sure to wait for a minimum of 10 minutes after turning off all power supplies before disassembly.

Step	Procedure
<p>1. Remove top cover and handle</p>	<p>Remove the screw fixing the handle and then remove the handle; Remove the screws around the top cover and then lift the top cover upwards to remove it.</p>  <p>The diagram shows a three-quarter view of the outdoor unit. A line points to the top cover, another to the handle on the right side, and a third to a screw on the bottom edge of the handle.</p>
<p>2. Remove front panel</p>	<p>Remove the screws fixing the front panel and then remove the front panel.</p>  <p>The diagram shows the outdoor unit from a front-three-quarter perspective with the front panel removed. A line points to the front panel and another to a screw on the bottom edge of the panel.</p>
<p>3. Remove front grille and right side plate</p>	<p>Remove the screws around the front grille and then remove the front grille; Remove the screws of right side plate with rear plate of condenser and valve support, and then lift the right side plate upwards to remove it.</p>  <p>The diagram shows the outdoor unit from a front view with the front grille and right side plate removed. A line points to the front grille, another to the right side plate, and a third to a screw on the bottom edge of the grille.</p>

Step	Procedure
4. Remove electric box sub-assy	<p>Remove the screws fixing the electric box cover and then lift the electric box cover upwards to remove it. Remove the screws fixing the electric box; disconnect the connection wire of compressor with fan motor and electric box, and then lift the electric box upwards to remove it.</p> 
5. Remove axial flow blade	<p>Loosen the nut to remove the nut, spring washer and cushion; remove the axial flow blade.</p> 
6. Remove motor and motor support	<p>Remove the screws fixing the motor and then remove the motor; remove the screws fixing the motor support and then lift the motor support upwards to remove it.</p> 

Step	Procedure	
7. Remove 4-way valve assy	<p>Unsolder the 4 welding joints of the 4-way valve assy with the condenser, the air-inlet and air-outlet port of compressor, the gas valve; remove the 4-way valve assy. Unsolder them quickly in order to avoid burning down the leading wire of compressor. (Note: Discharge the refrigerant completely before unsoldering the 4-way valve assy.)</p>	
8. Remove gas valve and liquid valve	<p>Remove the 2 bolts fixing the gas valve; unsolder the welding joint connecting the gas valve and the air-return pipe to remove the gas valve. (NOTE: when unsoldering, wrap the gas valve with a wet cloth completely to avoid damage to the valve caused by high temperature.)</p> <p>Remove the 2 bolts fixing the liquid valve; unsolder the welding joint connecting the liquid valve and the Y-type pipe to remove the liquid valve.</p>	
9. Remove compressor	<p>Loosen the foot nuts of the compressor (Note: Discharge the refrigerant completely); unsolder the welding joint of the compressor; remove the pipelines carefully and then remove the compressor.</p>	



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