

Airwell

Service Manual

Window WDF Series

Models: *AWWR-WDF009-C11*

AWWR-WDF012-C11



REFRIGERANT

R410A

Cooling only

SM Window F4 -A.1 GB

JAN' – 2014

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1. Precaution

1.1 Safety Precaution.

- **To prevent injury to the user or other people and property damage, the following instructions must be followed.**
- **Incorrect operation due to ignoring instruction will cause harm or damage.**
Before service unit, be sure to read this service manual at first.

1.2 Warning

Installation

- **Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.**
There is risk of fire or electric shock.
- **For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized service center.**
Do not disassemble or repair the product, there is risk of fire or electric shock.
- **Always ground the product.**
There is risk of fire or electric shock.
- **Install the panel and the cover of control box securely.**
There is risk of fire of electric shock.
- **Always install a dedicated circuit and breaker.**
Improper wiring or installation may cause fire or electric shock.
- **Use the correctly rated breaker or fuse.**
There is risk of fire or electric shock.
- **Do not modify or extend the power cable.**
There is risk of fire or electric shock.
- **Do not install, remove, or reinstall the unit by yourself(customer).**
There is risk of fire, electric shock, explosion, or injury.
- **Be caution when unpacking and installing the product.**
Sharp edges could cause injury, be especially careful of the case edges and the fins on the condenser

and evaporator.

- **For installation, always contact the dealer or an Authorized service center.**

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

- **Do not install the product on a defective installation stand.**

It may cause injury, accident, or damage to the product.

- **Be sure the installation area does not deteriorate with age.**

If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

- **Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.**

Moisture may condense and wet or damage furniture.

- **Take care to ensure that power cable could not be pulled out or damaged during operation.**

There is risk of fire or electric shock.

- **Do not place anything on the power cable.**

There is risk of fire or electric shock.

- **Do not plug or unplug the power supply plug during operation.**

There is risk of fire or electric shock.

- **Do not touch (operation) the product with wet hands.**

There is risk of fire or electric shock.

- **Do not place a heater or other appliance near the power cable.**

There is risk of fire and electric shock.

- **Do not allow water to run into electric parts.**

It may cause fire, failure of the product, or electric shock.

- **Do not store or use flammable gas or combustible near the product.**

There is risk of fire or failure of product.

- **Do not use the product in a tightly closed space for a long time.**

Oxygen deficiency could occur.

- **When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.**

Do not use the telephone or turn switches on or off. There is risk of explosion or fire.

- **If strange sounds, or small or smoke comes from product. Turn the breaker off or disconnect**

the power supply cable.

There is risk of electric shock or fire.

- **Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.**

There is risk of property damage, failure of product, or electric shock.

- **Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

There is risk of physical injury, electric shock, or product failure.

- **When the product is soaked (flooded or submerged), contact an Authorized service center.**

There is risk of fire or electric shock.

- **Be caution that water could not enter the product.**

There is risk of fire, electric shock, or product damage.

- **Ventilate the product from time to time when operating it together with a stove, etc.**

There is risk of fire or electric shock.

- **Turn the main power off when cleaning or maintaining the product.**

There is risk of electric shock.

- **When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.**

There is risk of product damage or failure, or unintended operation.

- **Take care to ensure that nobody could step on or fall onto the outdoor unit.**

This could result in personal injury and product damage.

CAUTION

- **Always check for gas (refrigerant) leakage after installation or repair of product.**

Low refrigerant levels may cause failure of product.

- **Install the drain hose to ensure that water is drained away properly.**

A bad connection may cause water leakage.

- **Keep level even when installing the product.**

To avoid vibration of water leakage

- **Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.**

It may cause a problem for your neighbors.

- **Use two or more people to lift and transport the product.**

Avoid personal injury.

- **Do not install the product where it will be exposed to sea wind (salt spray) directly.**

It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

Operational

- **Do not expose the skin directly to cool air for long periods of time. (Do not sit in the draft).**

This could harm to your health.

- **Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigerant system**

There is risk of damage or loss of property.

- **Do not block the inlet or outlet of air flow.**

It may cause product failure.

- **Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.**

There is risk of fire, electric shock, or damage to the plastic parts of the product.

- **Do not touch the metal parts of the product when removing the air filter. They are very sharp.**

There is risk of personal injury.

- **Do not step on or put anything on the product. (outdoor units)**

There is risk of personal injury and failure of product.

- **Always insert the filter securely. Clean the filter every two weeks or more often if necessary.**

A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

- **Do not insert hands or other object through air inlet or outlet while the product is operated.**

There are sharp and moving parts that could cause personal injury.

- **Do not drink the water drained from the product.**

It is not sanitary could cause serious health issues.

- **Use a firm stool or ladder when cleaning or maintaining the product.**

Be careful and avoid personal injury.

- **Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.**

PRECAUTION

There is risk of fire or explosion.

- **Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.**

They may burn or explode.

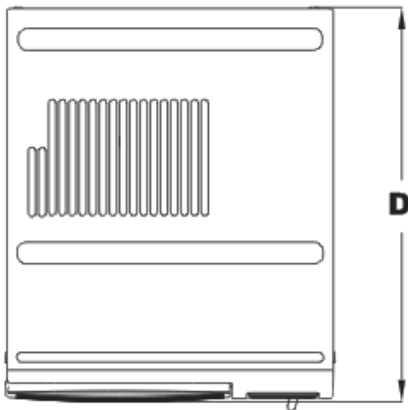
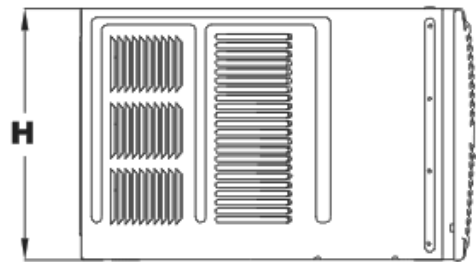
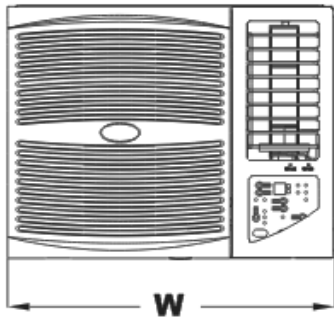
- **If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote of the batteries have leaked.**

The chemical in batteries could cause burns or other health hazards.

2. Specification.

Model			AWWR-WDF009-C11	AWWR-WDF012-C11
Characteristics		Units	Cooling	Cooling
Capacity ⁽¹⁾		kW	2,6	3,3
Pdesign		kW	2,6	3,3
SEER		W/W	3,6	3,6
Energy efficiency class			D	D
Annual energy consumption		kWh	253	321
Power supply		V/Ph/Hz	220-240V/Single/50Hz	220-240V/Single/50Hz
Circuit breaker rating		A	16	25,1
INDOOR	Fan type & quantity			Cross flow fan x1
	Fan speeds	H/M/L	RPM	890/810/730
	Air flow ⁽³⁾	H/M/L	m3/hr	380/350/310
	External static pressure	Min-Max	Pa	0
	Sound power level ⁽⁴⁾	H/M/L	dB(A)	56
	Sound pressure level ⁽⁵⁾	H/M/L	dB(A)	49/47/45
	Moisture removal		l/hr	1
	Condensate drain tube I.D		mm	
OUTDOOR	Refrigerant control			Capillary
	Compressor type, model			Rotary
	Air flow	H/L	m3/hr	
	Sound power level ⁽⁴⁾	H/L	dB(A)	65
	Sound pressure level ⁽⁵⁾	H/L	dB(A)	58
Dimensions	WxHxD	mm	600x380x560	660x428x680
Weight		kg	34	46
Package dimensions	WxHxD	mm	685x430x620	746x515x815
Packaged weight		kg	36,7	50
Stacking height		units	5 levels	5 levels
Refrigerant type			R410A	R410A
Refrigerant charge		kg	0,48	0,6
Operation control type			Remote control	Remote control

3. Dimension.



Model	Unit Dimension (WxHxD)mm
AWWR-WDF009-C11	600x380x560
AWWR-WDF012-C11	660x428x680

4. Function and control panel.

4.1 Function.

※Operation mode: Cooling, Fan, Dry.

※Fresh air switch.

※LED display

※Sleep mode

※Swing function.

※Self-diagnosis function

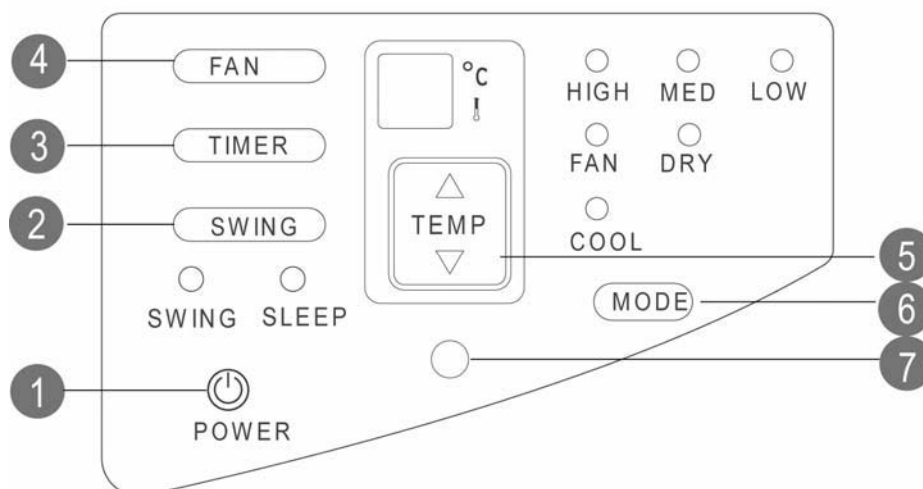
※Timer function.

※Anti-freezing control in cooling mode or drying mode. Prevent the water being freezed on evaporator by sensing the evaporator pipe temperature in cooling mode.

※Time Delay Safety. Restarting is for approx. 3 minutes.

※Auto-restart. When the power supply is interrupted and then restore, the air conditioners automatically restore the previous function setting.

4.2 Control panel.



1] ON/OFF OPERATION BUTTON

This button turns the air conditioner ON and OFF.

2】 SWING BUTTON

Press the “SWING” keypad(for the models with swing feature only) to activate the automatic air swing feature.

To stop the air swing feature, press the “SWING” keypad again.

Press the “SWING” keypad for 2 seconds will activate the SLEEP mode which can reduce noise creating a comfortable sleeping.

3】 TIMER BUTTON

Press the “TIMER” keypad to activate the “auto start/auto stop” timer function.

Auto Start/Stop programs can be from 0-12 hours. Each depression of the “TIMER” keypad will increase the selected time in 1 hour increments.

4】 FAN SPEED BUTTON

Press the button to select the low, Middle and High FAN Speed.

5】 TEMP BUTTON

Press the ▲ keypad to increase the set (operating) temperature of the unit and press the ▼ keypad to decrease the set(operating) temperature of the unit. The temperature setting range is from 16-31°C.

6】 MODE BUTTON

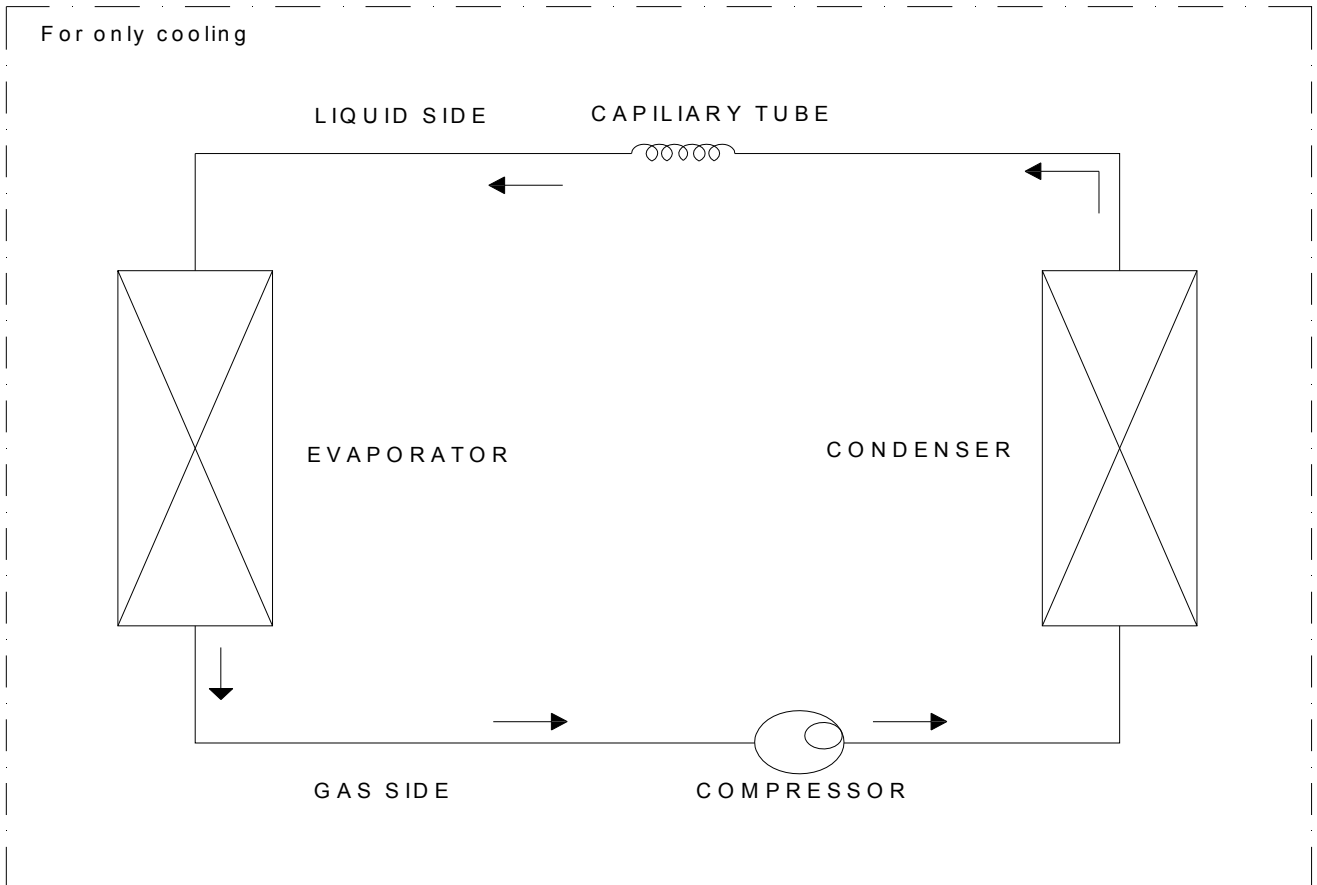
Press the “MODE” keypad to select the appropriate operating mode. For the Cooling & Heating models, the mode selection will alternate between COOLING, FAN, DRY.

7】 SIGNAL RECEIVER

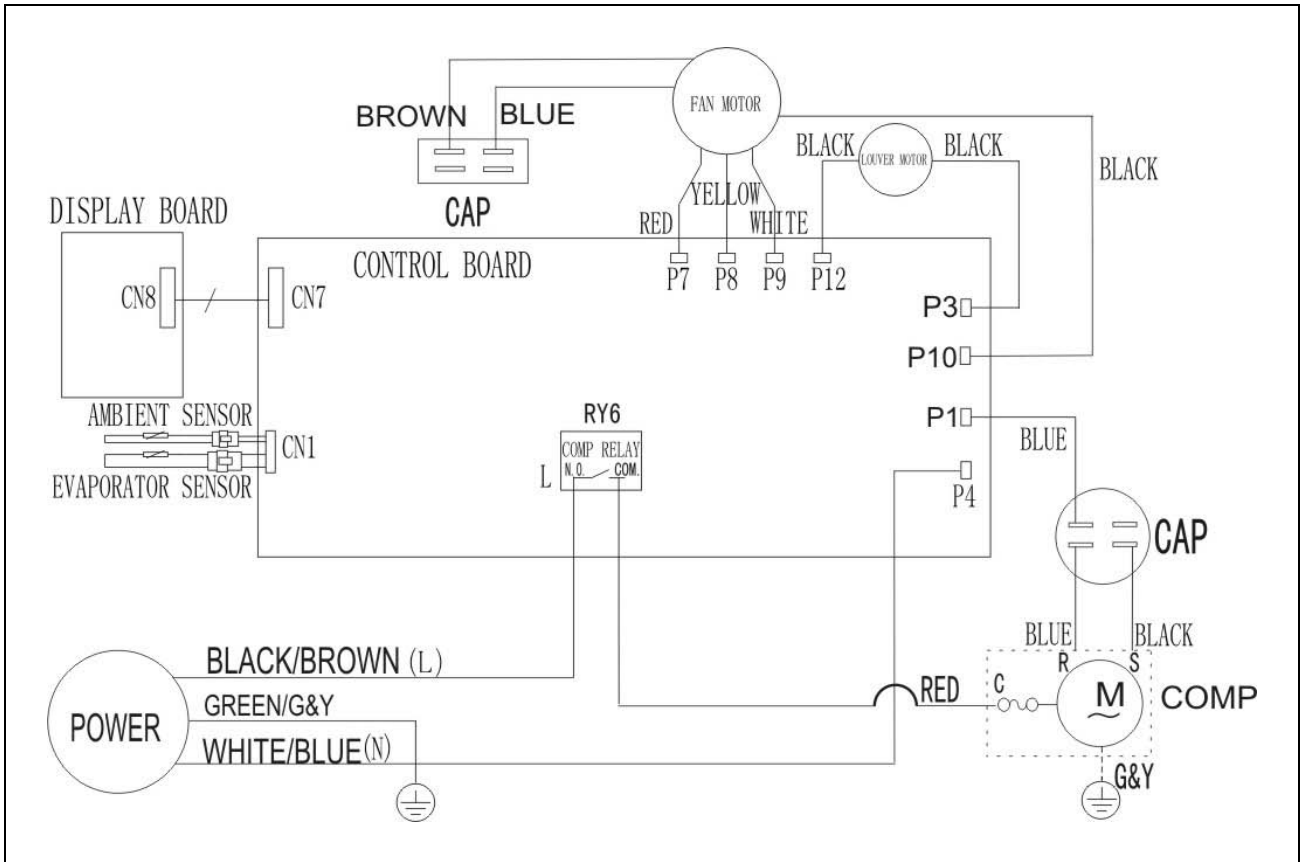
5. Refrigerant Cycle Diagram.

The figure below is a brief description of the important components and their function in what is called the refrigeration system.

This will help to understand the refrigeration cycle and the flow of the refrigerant in the cooling cycle.



6. Wiring Diagram



7. Protection Function.

7.1 Proper symbols and their meaning

- T1: Indoor ambient temperature
- T2: Indoor evaporator temperature
- T3: Outdoor condenser temperature
- Ts: Setting temperature through the remote controller

7.2 Protection Function

7.2.1 Three minutes delay at restart for compressor.

7.2.2 Anti-freezing protection at cooling or dry mode.

Anti-freezing control according to T2 (Indoor evaporator temperature).

If the evaporator pipe temperature had been lower than 1°C for 14 minutes, the evaporator anti-freezing protection will be activated. The compressor will keep off in the following 5 minutes. 5 minutes later, if the evaporator pipe temperature is still lower than 4°C, the compressor will stay off. Otherwise the compressor will be started and the function is cancelled.

Anti-freezing control according to TIME.

If the lasting time of compressor which is continuously running has got to 105 minutes with fan motor operating under Med or Low speed and the indoor ambient temperature lower than 26°C, the anti-freezing function will be activated. The compressor will keep off for 3 minutes.

Note: If the compressor stops operation, the time will be cleared.

7.2.3 Anti-frosting protection and defect at cooling or dry mode.

3 minutes later when compressor is running, if T2 has been less than -14°C for subsequent 3 minutes, the anti-frosting protection is activated and compressor will stop in the following 6 minutes. After that, if the condition for de-frosting function is met again in the following 10 minutes while the compressor is operating, the unit will display 'Ed' to indicate that the unit is in the de-frost defect.

The compressor and fan motor will be OFF

Note:

The Defect display can be cancelled only by pressing the ON/OFF button on the unit or the remote controller.

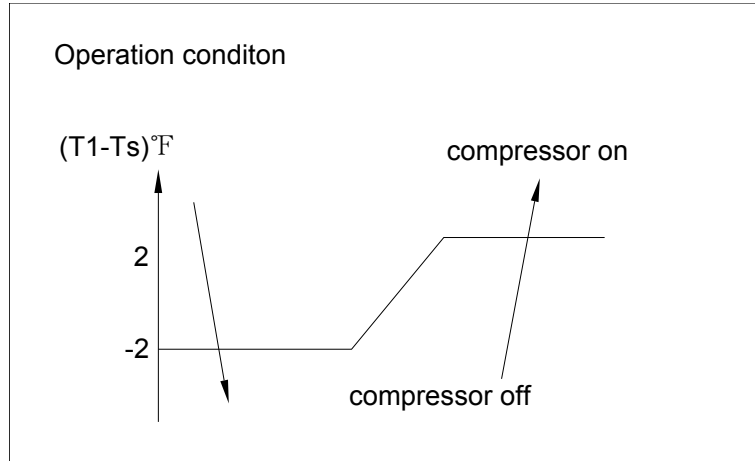
7.2.4 function.

7.2.4.1 Cooling

The speed of optionally chosen as

/Low

Compressor running rules:



Electronic

mode

indoor fan can be High/ Mid (optional)

$$T1 > TS + 2^{\circ}F, \text{ compressor on}$$

$$T1 \leq TS - 2^{\circ}F, \text{ compressor off}$$

7.2.4.2 Auto mode

The machine will choose cooling, fan-only mode according to ΔT ($\Delta T = T1 - Ts$).

$\Delta T = T1 - T_s$	Running mode
$\Delta T > 2^\circ\text{C}$	Cooling
$-1 \leq \Delta T \leq 2^\circ\text{C}$	Fan-only

The machine will choose actual running mode in auto mode in the below cases:

- Power on or change mode to auto mode or adjust temperature in auto mode, the machine will choose actual running mode again.
- A: In auto mode, if the compressor keeps not running for 15 minutes. judge condition B
B: If $1 < \Delta T$ or $\Delta T < -4^\circ\text{C}$, the machine will choose actual running mode again according to $T1 - T_s$ till the compressor stops..

7.2.4.3 Fan mode

- (1) Compressor stops.
- (2) Temperature setting function is disabled.
- (3) The speed of indoor fan can be optionally chosen as High/ Mid /Low.

7.3 Temperature sensor is open circuit or short circuit.

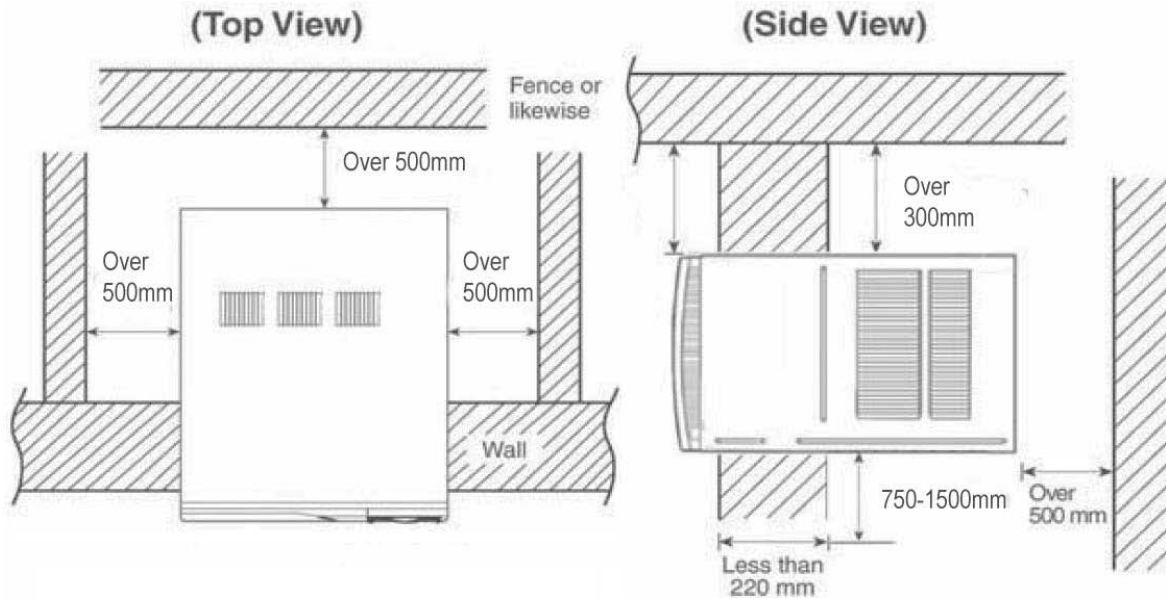
Defect code	malfunction explanation
Er	Room temperature sensor error.
En	Evaporator temperature sensor error.
Eo	Condenser temperature sensor error.
Ed	Evaporator de-frosting defect.

Malfunction display:

When the malfunction happened at the same time, the priority is: **Er > En > E0 > Ed**

8 Installation details

8.1 Select the best location.



1. To avoid vibration and noise, make sure the unit is installed securely and firmly.
2. Install the unit where the sunlight does not shine directly on the unit. If the unit receives direct sunlight, build an awning to shade the cabinet.
3. There should be no obstacle, such as a fence or wall, within 500mm from the back of the ambient because it will prevent heat radiation of the condenser.
4. Restriction of outside air will greatly reduce the cooling and heating efficiency of the air Conditioner.
5. Install the unit on a slight angle so that an condensate formed will not enter the room (about 10mm or 1/4" bubble with level).
6. Install the unit with its bottom portion 75~1500mm above the floor level.
7. The power cord must be connected to an independent circuit. The yellow/green wire must be grounded.

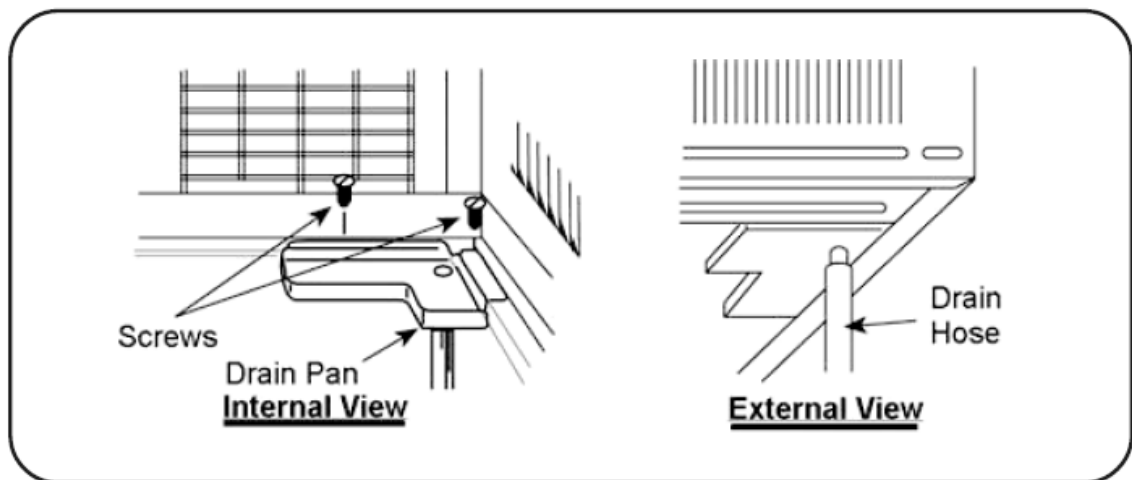
CAUTION

All side louvres of the cabinet must remain exposed to the outside of the structure.

8.2 Check off installation.

- The setting conditions must be checked prior to initial starting. The under mentioned items are especially important checking points when the installation is finished.
- Grounding wire (yellow/Green) is provided in the power cord. The wire must be grounded.
- Ensure that the unit is connected to a suitably rated and dedicated circuit.
- To avoid vibration or noise, make sure the air conditioner is installed securely.
- Avoid placing furniture or draperies in front of the air inlet and outlet.

8.3 How to drain.

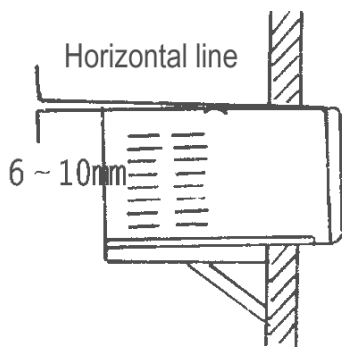


To get the maximum cooling efficiency, the air conditioner is designed to splash the condensation water on the condenser coil.

If the splashing sound annoys you, you can provide an outside drain by using the following procedure, which may however cause a small loss of performance.

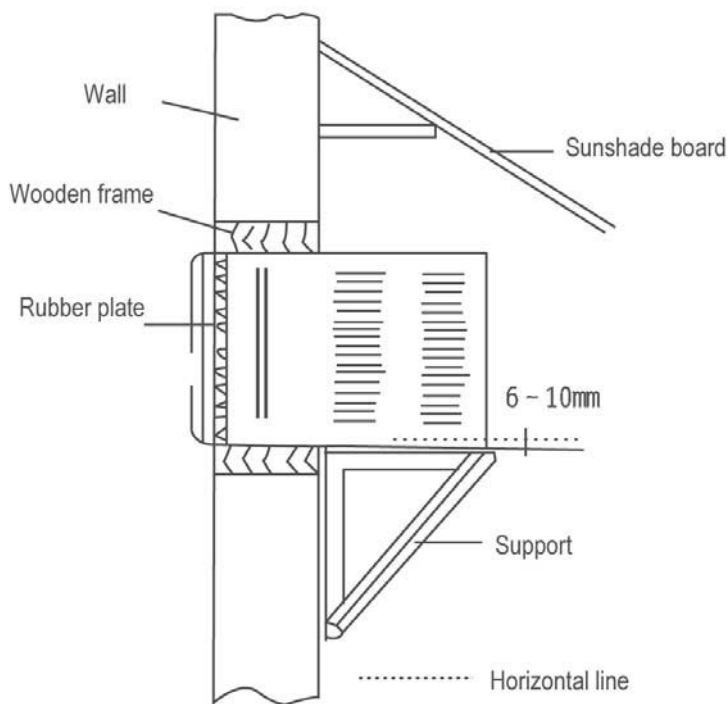
1. Slide out the chassis from the cabinet.
2. Remove the rubber plug from the body base plate.
3. Install the drain pan to the corner of the cabinet with 2 screws.
4. Connect the drain hose to the outlet on the drain pan bottom.
5. Slide the chassis into its original place in the cabinet.

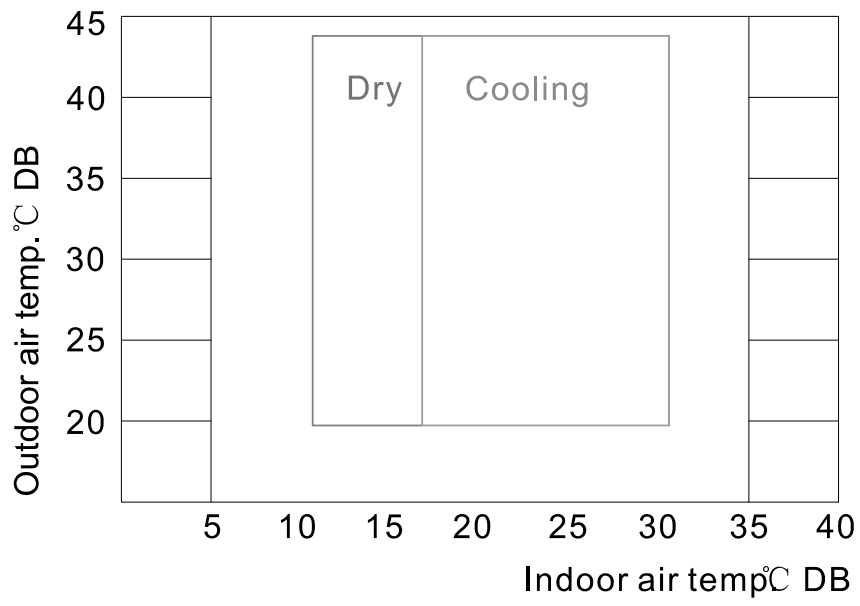
8.4 How to install.



- 1) Remove the sticker from the front panel.
- 2) Put the unit into the installation hole.
 - ✧ When installing the unit, it should be slanted down to the back to avoid the enlargement of noise or vibration.(Slant between 6-10mm.)
 - ✧ The installation place should be strong enough to avoid the enlargement of noise or vibration.
- 3) Fill up sews in the cabinet with sponge or foam.

- Use iron support
The installation hole should be strong enough to support the air conditioner. If it cannot, iron support has to be used outdoors.
Iron support should be fixed on the building.
- Use sunshade board
Air conditioner should avoid anything to be dropped into it and avoid direct sunshine. If there is no cover on it, you should contact the seller for installing the sunshade board. When installing the sunshade board, don't let it block the air at the side grille.



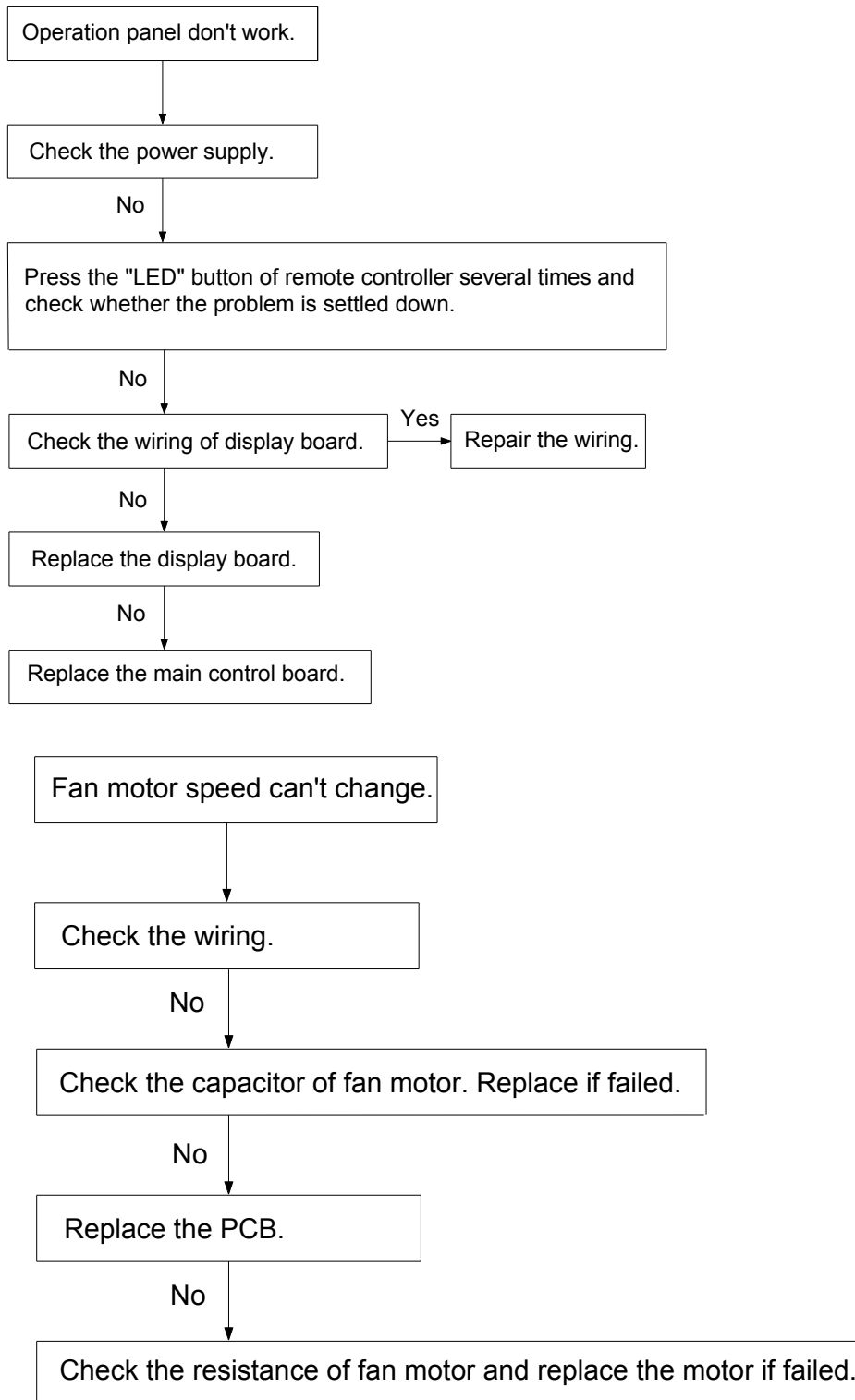


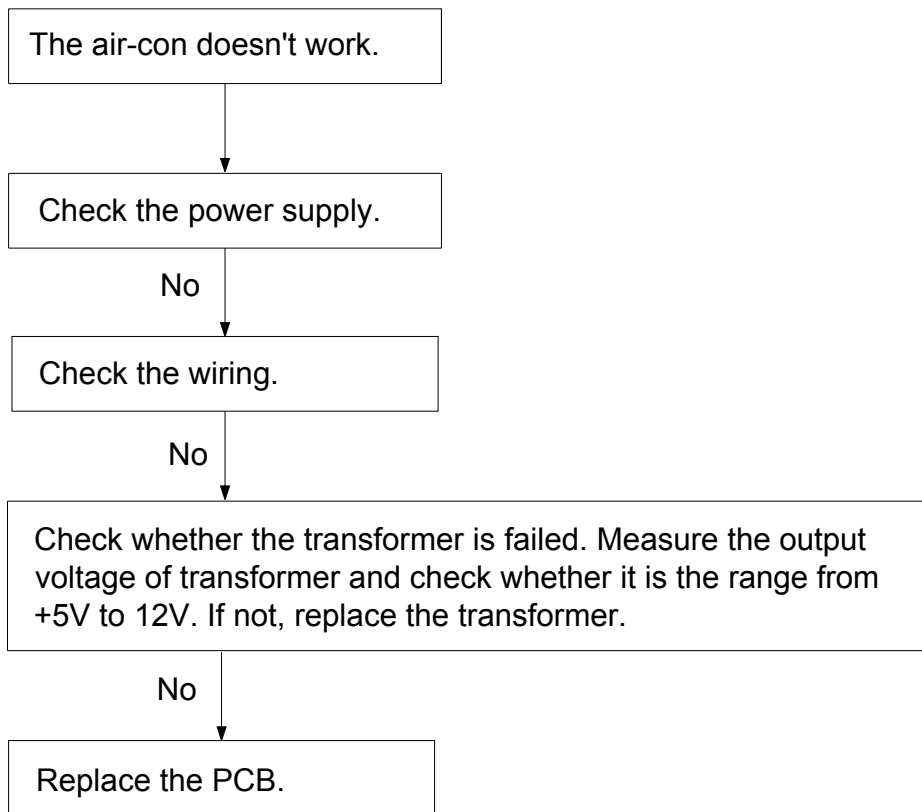
10 Characteristic of temperature sensor.

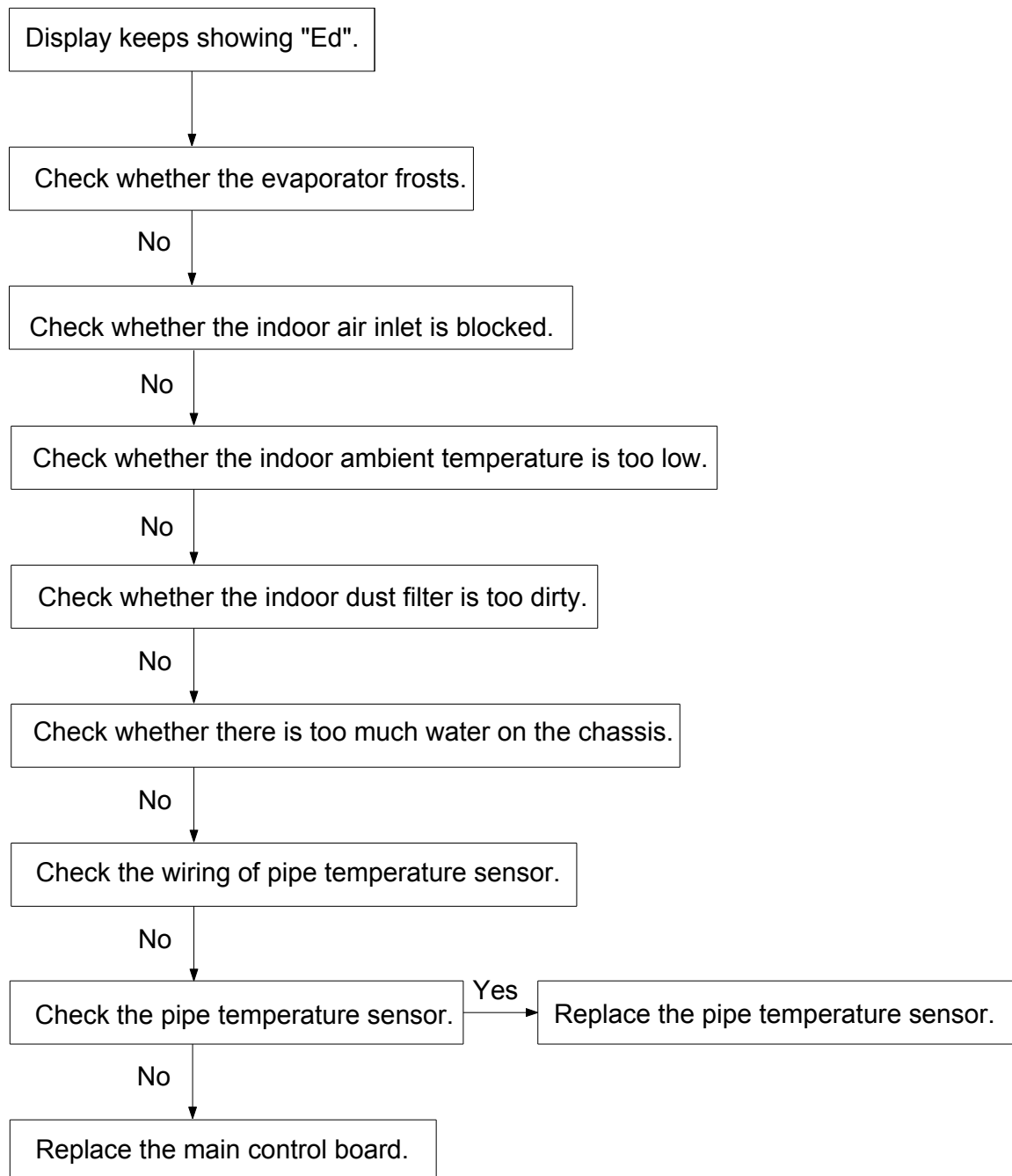
Temp. °C	Resistance KΩ	Temp. °C	Resistance KΩ	Temp. °C	Resistance KΩ
-10	62.2756	17	14.6181	44	4.3874
-9	58.7079	18	13.918	45	4.2126
-8	56.3694	19	13.2631	46	4.0459
-7	52.2438	20	12.6431	47	3.8867
-6	49.3161	21	12.0561	48	3.7348
-5	46.5725	22	11.5	49	3.5896
-4	44	23	10.9731	50	3.451
-3	41.5878	24	10.4736	51	3.3185
-2	39.8239	25	10	52	3.1918
-1	37.1988	26	9.5507	53	3.0707
0	35.2024	27	9.1245	54	2.959
1	33.3269	28	8.7198	55	2.8442
2	31.5635	29	8.3357	56	2.7382
3	29.9058	30	7.9708	57	2.6368
4	28.3459	31	7.6241	58	2.5397
5	26.8778	32	7.2946	59	2.4468
6	25.4954	33	6.9814	60	2.3577
7	24.1932	34	6.6835	61	2.2725
8	22.5662	35	6.4002	62	2.1907
9	21.8094	36	6.1306	63	2.1124
10	20.7184	37	5.8736	64	2.0373
11	19.6891	38	5.6296	65	1.9653
12	18.7177	39	5.3969	66	1.8963
13	17.8005	40	5.1752	67	1.830
14	16.9341	41	4.9639	68	1.7665
15	16.1156	42	4.7625	69	1.7055
16	15.3418	43	4.5705	70	1.6469

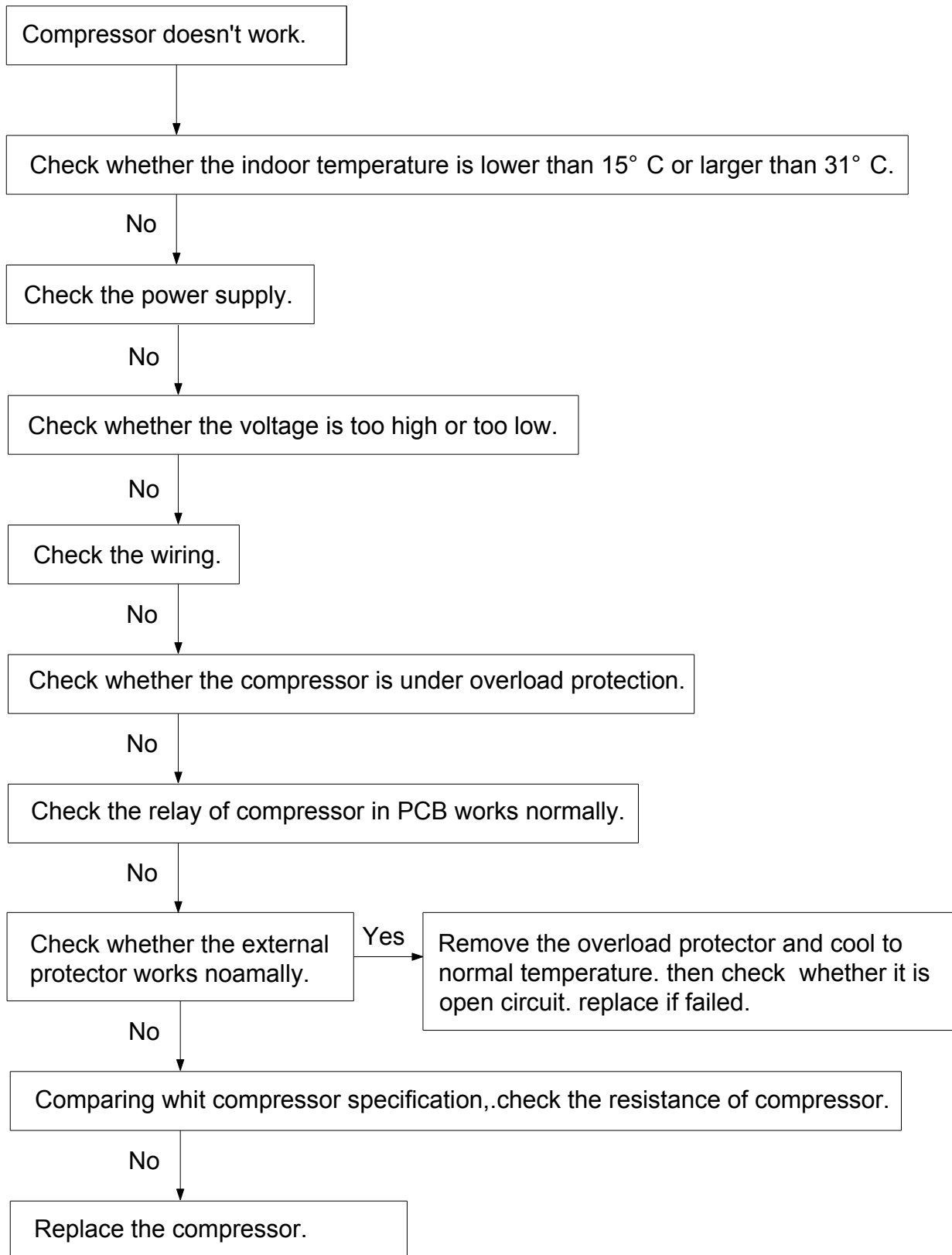
11 Troubleshooting

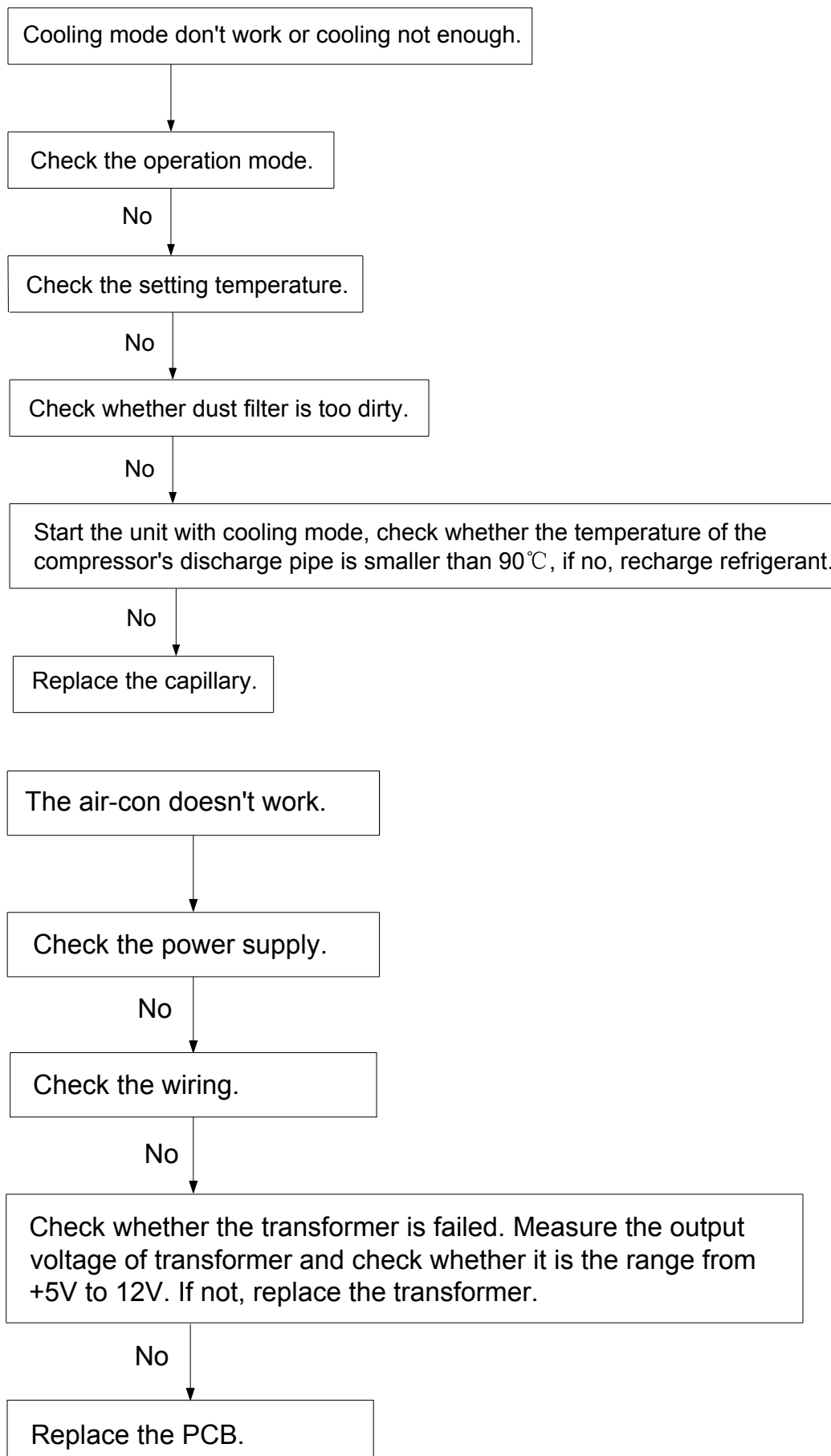
In general, possible trouble is classified in three kinds. One is called Starting Failure which is caused from an electrical defect, another is ineffective Air Conditioning caused by a defect in the refrigeration circuit and improper application, and the other is called the Structure Damage.

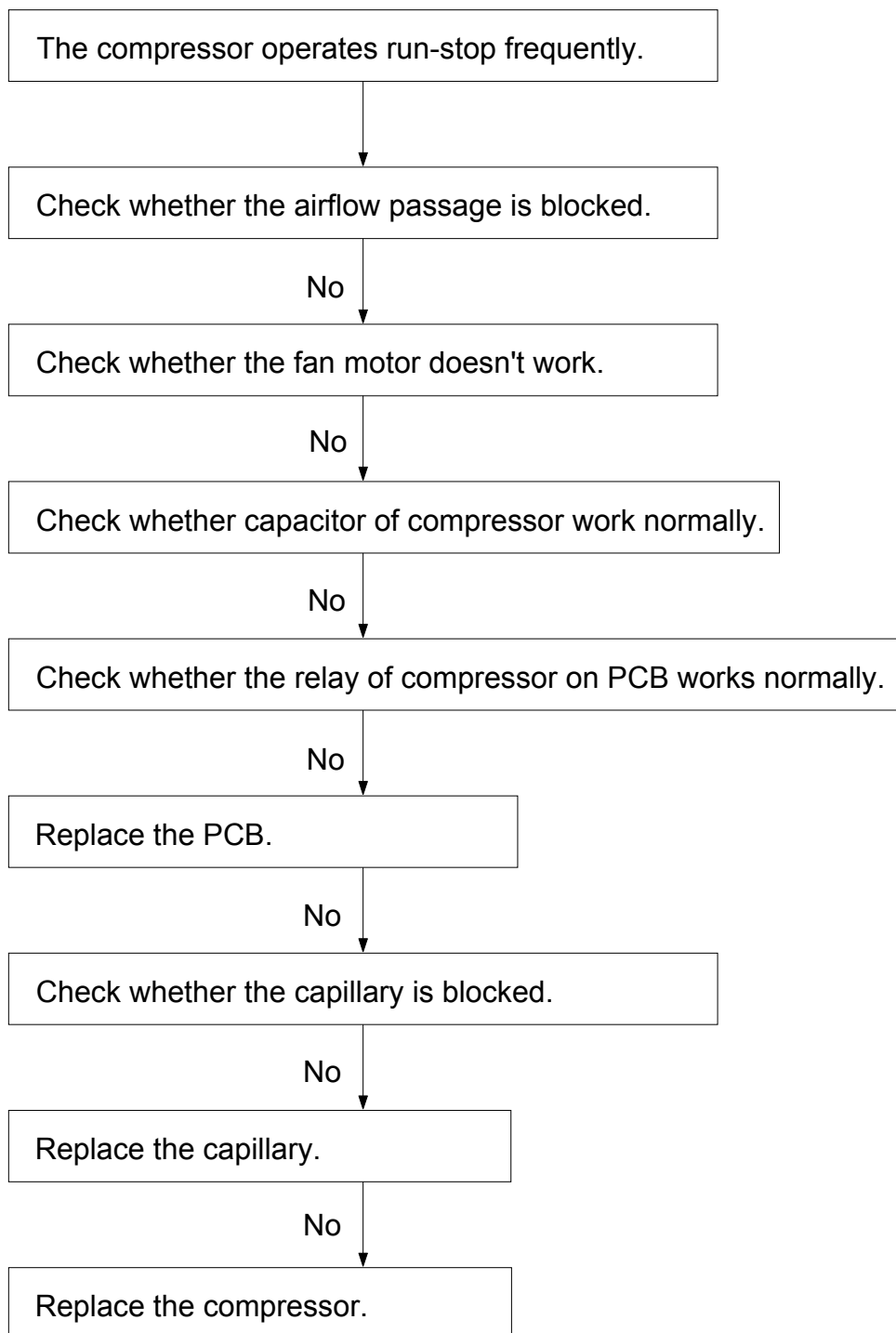


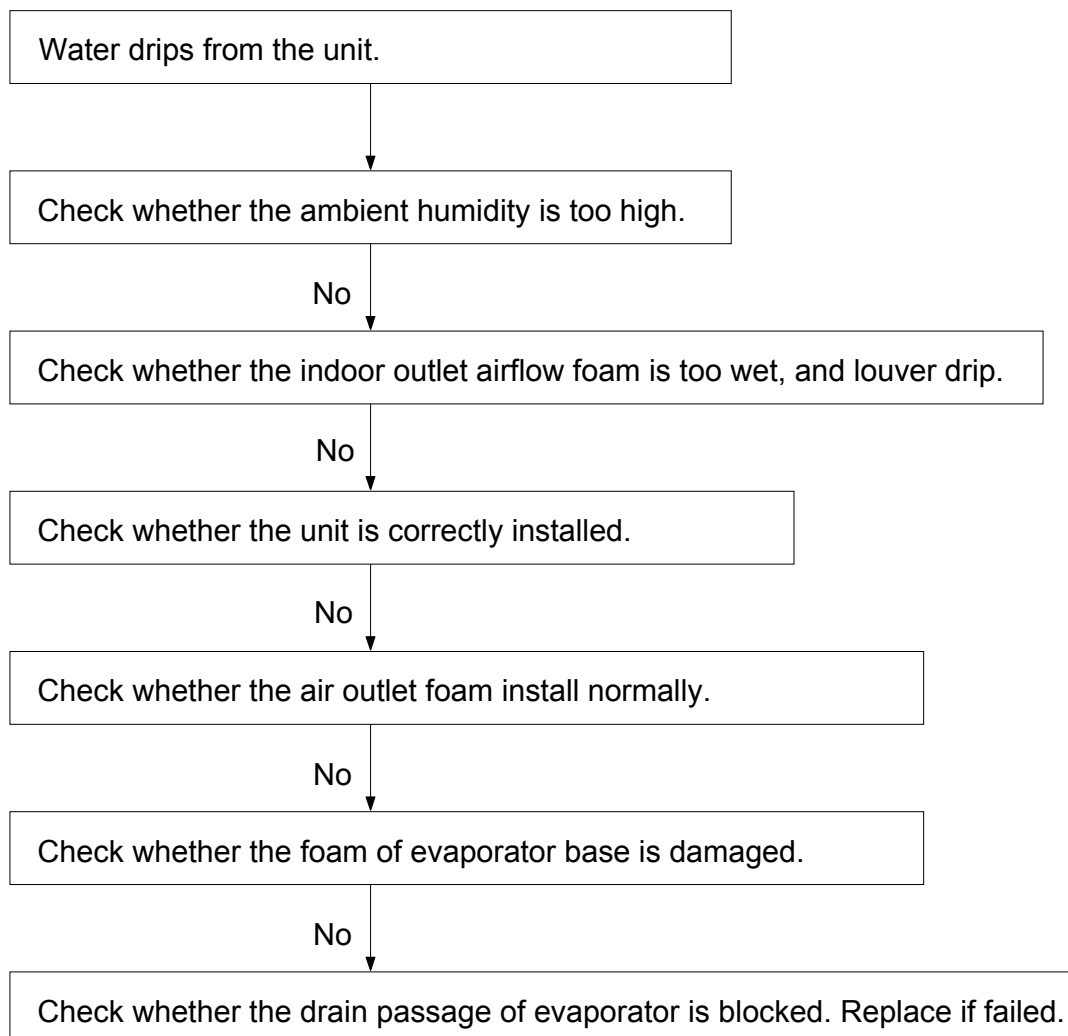




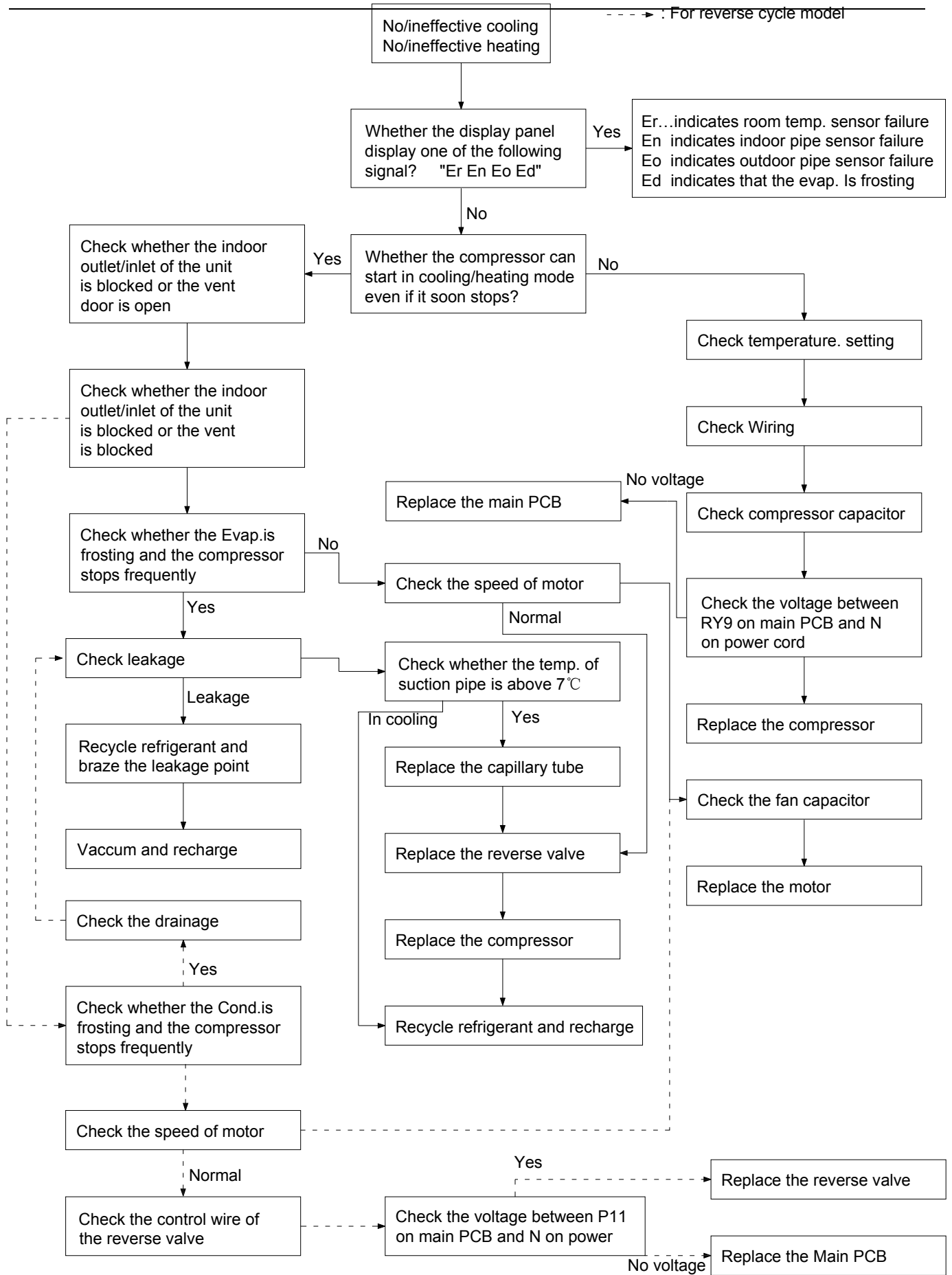






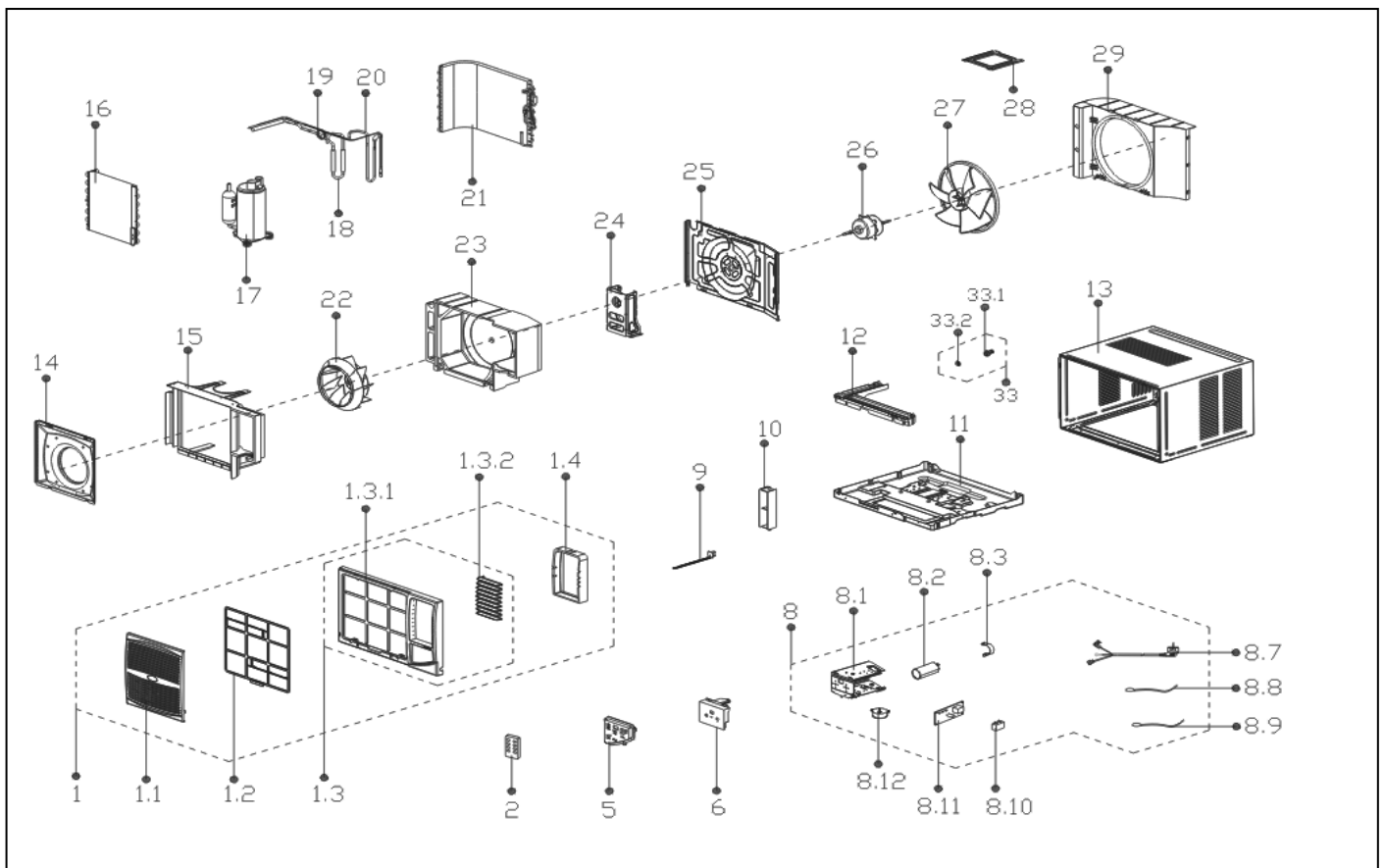


---> : For reverse cycle model



12 Exploded view and part list

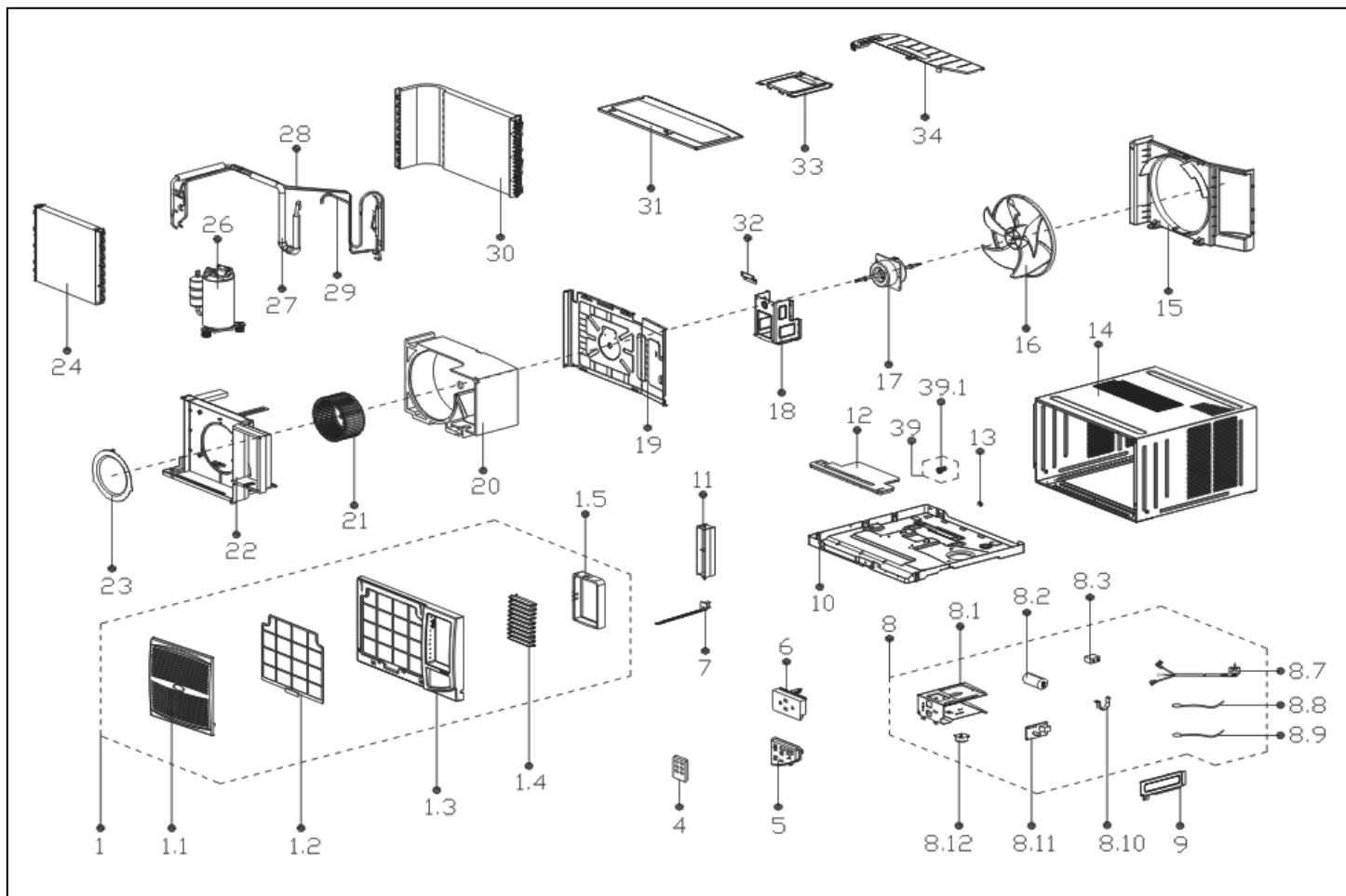
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Part list:

No.	Part Name	No.	Part Name
1	Panel assembly	11	Chassis assembly
1.1	Front panel	12	Evaporator base
1.2	Air filter	13	Cabinet assembly
1.3	Panel frame	14	Ventilation ring
1.3.1	Panel frame	15	Volute shell (below)
1.3.2	Horizontal louver	16	Evaporator coil assembly
1.4	Air outlet assembly	17	Compressor
2	Remote controller	18	Suction pipe assembly
5	Display box assembly	19	Capillary assembly
6	Cover of control panel	20	Discharge pipe assembly
7	Cover of electronic control box	21	Condenser assembly
8	Electronic control box assembly	22	Centrifugal fan
8.1	Electronic control box	23	Volute shell
8.2	Capacitor of compressor	24	Supporter assembly of fan motor
8.3	Capacitor clip	25	Front separating board
8.7	Power cord	26	Asynchronous motor
8.8	Pipe temperature sensor assembly	27	Axial flow fan
8.9	Ambient temperature sensor assembly	28	Buttstrap
8.10	Capacitor of fan motor	29	Rear separating
8.11	Main control board assembly	33	Installation accessory
8.12	Louver motor	33.1	Drain Connector
9	Fresh air door	33.2	Drain stopper
10	Horizontal louver		

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Part list:

No.	Part Name	No.	Part Name
1	Panel assembly	13	Drain stopper
1.1	Front panel	14	Cabinet assembly
1.2	Air filter	15	Rear separating
1.3	Panel frame	16	Axial flow fan
1.4	Horizontal louver	17	Asynchronous motor
1.5	Air outlet assembly	18	Supporter assembly of fan motor
4	Remote controller	19	Front separating board
5	Display box assembly	20	Volute shell
6	Cover of control panel	21	Centrifugal fan
7	Fresh air door	22	Volute shell (below)
8	Electronic control box assembly	23	Ventilation ring
8.1	Electronic control box	24	Evaporator coil assembly
8.2	Capacitor of compressor	26	Compressor
8.3	Capacitor of fan motor	27	Suction pipe assembly
8.7	Power cord	28	Capillary assembly
8.8	Pipe temperature sensor assembly	29	Discharge pipe assembly
8.9	Ambient temperature sensor assembly	30	Condenser assembly
8.10	Capacitor clip	31	Front cover
8.11	Main control board assembly	32	Connecting board
8.12	Louver motor	33	Buttstrap
9	Cover of electronic control box	34	Rear cover
10	Chassis assembly	39	Installation accessory
11	Horizontal louver	39.1	Drain Connector
12	Foam of volute shell		



SERVICE MANUAL

Window WDF Series