
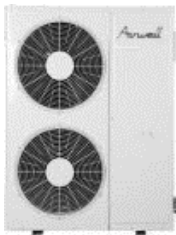


*Airwell*

# Service Manual

## FLOOR CEILING FAF 060

INDOR UNIT			OUTDOR UNIT
Type	Image	Model	Model
Floor Ceiling		FAF 060 – N11	<div>AWSI YIFA060–H13</div> 

R410A

HEAT PUMP

MAY 2013

SM FAF 060 – 1-A. 1GB

Version : 1

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## 1. INTRODUCTION

### 1.1. General

The FAF Floor Ceiling series is a high-level technology product for residential and commercial application, offering comfort, low noise operation and energy-efficient.

### 1.2. Main Features

- Suspended ceiling design, installation under ceiling, saving room space, it is very suitable for family or offices;
- Convenient and flexible for indoor unit installation, can be installed under the ceiling or on the floor;
- Auto two operation modes, multi fan speed, makes you feel more comfortable;
- Shell was formed by mold, the appearance is “slim”, “elegant”, “fashion” and “comfortable”;
- Special insulation design, achieves high heat insulation efficiency and no condensation on shell;
- Long term air filter, the wash period is two times longer than normal filter, maintenance is free;
- Adopting low noise centrifugal fan, strong wind but quiet operation, the silence design achieves harmony residential living;
- All the installation and maintenance can be done in the bottom of unit, saving the maintenance space;
- 3-phase power supply type units with low ambient temperature cooling function, which makes the unit can run normally on the condition that the ambient temperature falls down to -15°C;
- Standard remote controller and optional wired controller;
- Auxiliary electric heater for heat pump unit, with fast heating and low ambient temperature heating functions;
- Failure automatic detection, if there is a failure, the indicator will flash and the failure code will display on the wired controller, the failure cause is easier to be found.

## 2. PRODUCT DATA SHEET

### 2.1 Indoor Unit Specifications

Model	Indoor		FAF 060 – N11	
	Outdoor		YIFA 060 – H13	
Power Supply		V~,Hz,Ph	380~415,50,3	
Capacity	Cooling	Btu/h	54600	
		kW	16.0	
	Heating	Btu/h	59700	
		kW	17.5	
Electric Data	Rated Cooling Power Input		kW	5.56
	Rated Heating Power Input		kW	5.68
	Rated Cooling Current		A	9.57
	Rated Heating Current		A	9.78
Performance	EER		W/W	2.88
	COP		W/W	3.08
Indoor Fan Fotor	Model			YSK-105W-4
	Brand			HUATE
	Output Power x Fan quantity		W	105
	Capacitor		uF	4
	Speed (Hi/Mi/Lo)		r/min	1380/1100/970
Indoor Coil	a.Number Of Row			3
	b.Tube Pitch(a)x Row Pitch(b)		mm	25.4×22
	c.Fin Spacing		mm	1.6
	d.Fin Material			Hydrophilic aluminum fin
	e.Tube Outside Dia.and Material		mm	φ9.52, Inner grooved
	f.Coil Length x Height x Width		mm	1333×220×38.1
	g.Heat Exchanging Area		m <sup>2</sup>	16.36
Indoor Unit	Indoor Air Flow (Hi/Mi/Lo)		m <sup>3</sup> /h	1800/1440/1260
	Noise Level(Hi/Mi/Lo)		dB(A)	51/48/42
	External Static Pressure		Pa	0
	Net Dimension (W*H*D)		mm	1631×660×205
	Packing Dimension (W*H*D)		mm	1710×720×280
	Net Weight		Kg	44
	Gross Weight		Kg	50
Refrigerant Pipe	Liquid Side		mm	9.52
	Gas Side		mm	19.05
	Max. Refrigerant Pipe Length		m	50
	Max. Difference In Level		m	30
	Operation Temperature Range		℃	16~32
Ambient Temperature Range(Cooling/Heating)		℃	-5~49/-10~24	
Application Area		m <sup>2</sup>	64-107	
Connection Wiring	Power Wiring( Indoor)		mm <sup>2</sup>	3×1mm <sup>2</sup>
	Power Wiring( Outdoor)		mm <sup>2</sup>	5×2.5mm <sup>2</sup>
	Signal Wiring		mm <sup>2</sup>	2×1mm <sup>2</sup>
Wireless Remote Controller			YKR-H/009E	
Qty/per 20'& 40'&40HQ(Only For Reference)		Set	20/41/43	

## 2.2 Outdoor Unit Specifications

Model			YIFA 060 – H13
Power Supply		V~,Hz,Ph	380~415,50,3
Max. Input Consumption		W	7800
Max. Current		A	20.5
Capacity	Cooling	Btu/h	54600
		kW	16.0
	Heating	Btu/h	59700
		kW	17.5
Compressor	Model		JT170G-P8Y1
	Type		SCROLL
	Brand		DAIKIN
	Capacity	W	15900
	Input	W	4500
	Rated Current(RLA)	A	8.9
	Locked Rotor Amp(LRA)	A	59.4
	Thermal Protection temp.		UP18WA162-46G
	Capacitor	uF	/
	Refrigerant Oil	ml	1500
OutdoorFan Motor	Model		YDK68-6-359
	code		R60020200600
	Brand		WEITELI
	Output Power x Fan quantity	W	68*2
	Capacitor	uF	3*2
	Speed	r/min	860
Coil	a.Number Of Row		2
	b.Tube Pitch(a)x Row Pitch(b)	mm	22×19.05
	c.Fin Pitch	mm	1.6
	d.Fin Material		Hydrophilic aluminum fin
	e.Tube Outside Dia.And Material	mm	φ7.94, Inner grooved
	f.Coil Length x Height x Width	mm	750×1188×38.1
	g.Heat Exchanging Area	㎡	38.85
Air Flow Volume		CFM	3059
		m <sup>3</sup> /h	5200
Noise Level		dB(A)	62
Dimension(W×D×H)	Net	mm	945×340×1255
	Packing	mm	1090×430×1370
Weight	Net	kg	101
	Gross	kg	115
Refrigerant Type/Quantity	Type		R410A
	Charged Volume	g	Up to 5 meters
Design Pressure		MPa	4.15
Refrigerant Piping	Liquid Side	mm	9.52
	Gas Side	mm	19.05
	Max. Length	m	50
	Max. Height	m	30
Operation Temperature Range		°C	16~32
Ambient Temp (Cooling/Heating)		°C	-5~49/-10~24
Application Area		m <sup>2</sup>	64-107
Connection Wiring	Power Wiring (Indoor)	mm <sup>2</sup>	3×1mm <sup>2</sup>
	Power Wiring (Outdoor)	mm <sup>2</sup>	5×2.5mm <sup>2</sup>
	Signal Wiring	mm <sup>2</sup>	2×1mm <sup>2</sup>
Stuffing Quantity	20/40/40H	Unit	20/42/44

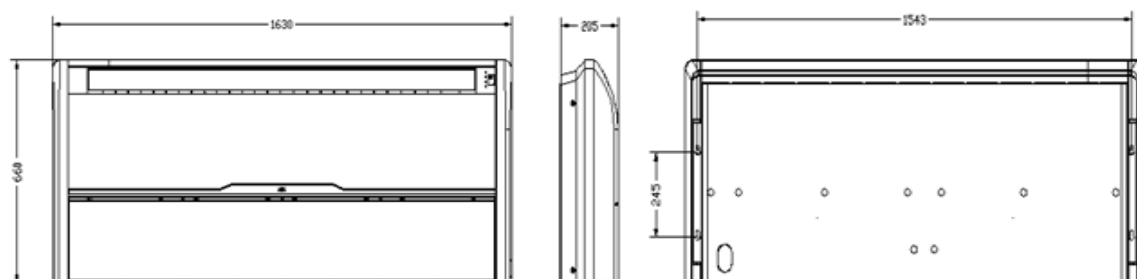
### 3. RATING CONDITIONS

#### 3.1 Rating Conditions

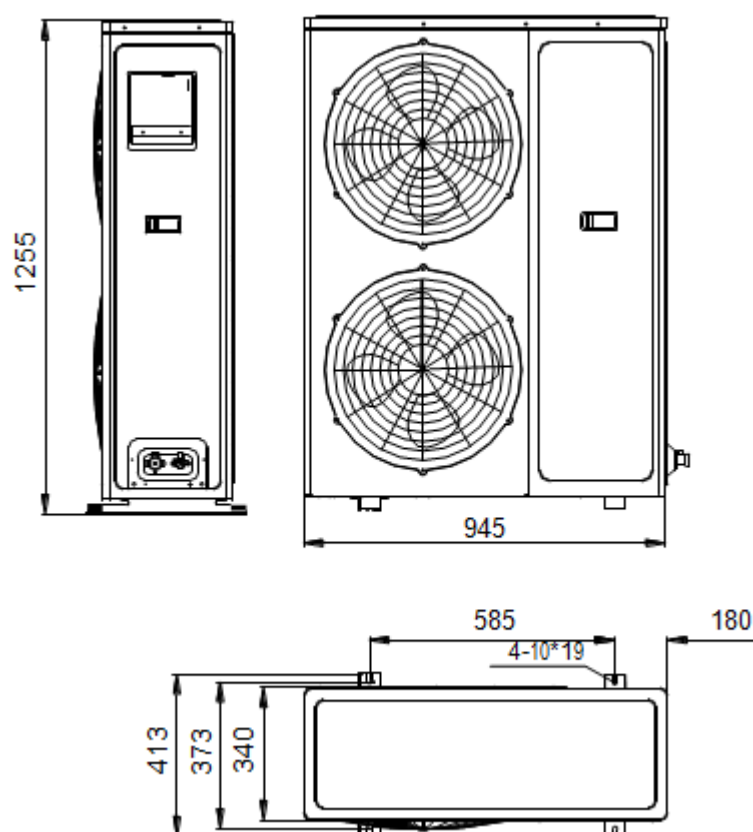
Power supply		380-415V 3N~/50Hz
Voltage		320~420V
Outdoor ambient temperature	Cooling	-5~49°C(Low ambient cooling function)
	Heating	-10~24°C

## 4. OUTLINE DIMENSIONS

### 4.1 FAF 060 – N11



### 4.2 YIFA 060 – H13



## 5. PERFORMANCE DATA

### 5.1 Amendment coefficient of cooling capacity under different indoor/outdoor DB and WB temperature.

Indoor air inlet temperature °C		Outdoor air inlet DB temperature °C				
DB	WB	25	30	35	40	43
23	16	0.98	0.94	0.89	0.85	0.82
25	18	1.05	1	0.95	0.90	0.87
27	19	1.1	1.05	1	0.95	0.91
28	20	1.12	1.07	1.02	0.96	0.93
30	22	1.19	1.13	1.08	1.02	0.99
32	24	1.26	1.20	1.15	1.08	1.05

#### Actual cooling capacity calculation:

Actual cooling capacity = amendment coefficient of cooling capacity × nominal cooling capacity

- Nominal cooling capacity could be found from the performance parameters list;
- Amendment coefficient of cooling capacity could be found from table above.

### 5.2 Amendment coefficient of heating capacity under different indoor/outdoor DB and WB temperature.

Indoor air inlet DB temperature °C	Outdoor air inlet WB temperature °C				
	-5	0	6	10	15
16	0.65	0.80	1.02	1.13	-
18	0.61	0.76	1.02	1.12	-
20	0.6	0.75	1	1.11	1.25
21	0.59	0.72	0.99	1.1	1.24
22	0.58	0.71	0.97	1.09	1.23
24	0.56	0.7	0.96	1.08	1.22

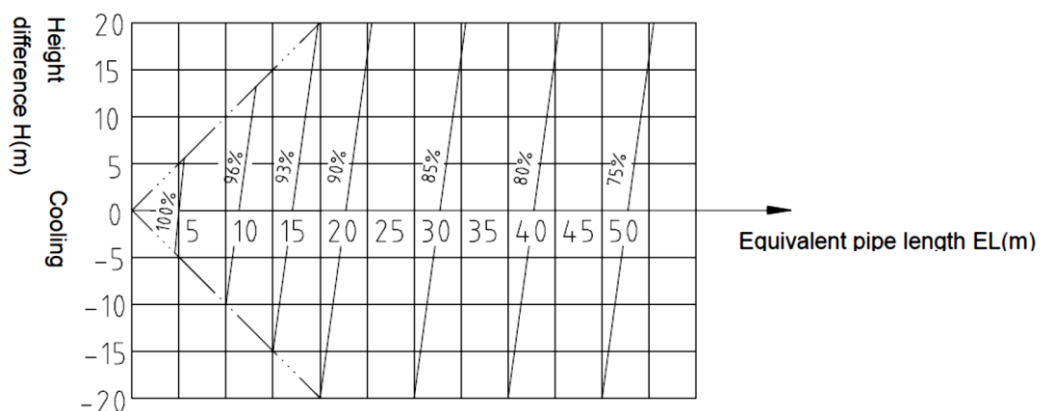
#### Actual heating capacity calculation:

Actual heating capacity = amendment coefficient of heating capacity × nominal heating capacity

- Nominal heating capacity could be found from the performance parameters list
- Amendment coefficient of heating capacity could be found from table above.

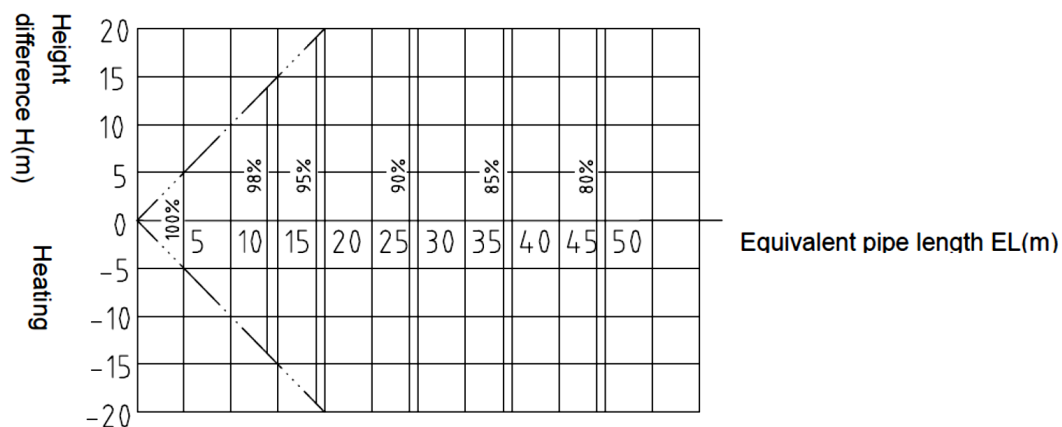


### 5.2.1 Amendment coefficients of heating and cooling capacity under different height drop Different Cooling Capacity modified coefficients at different height:



Note:  $H$  = Height of Outdoor Unit — Height of Indoor Unit

### Different Heating Capacity modified coefficients at different height



Note:  $H$  = Height of Outdoor Unit — Height of Indoor Unit

### 5.2.2 Equivalent pipe length conversion

Equivalent pipe length means converting pipe elbow to straight pipe length after considerate the pressure loss.

Elbow and Oil loop conversion tablet

<div> <div>Type</div> <div>Pipe Dia.(mm)</div> </div>	Bend	Oil Loop
6. 35	0. 10	0. 7
9. 52	0. 18	1. 3
12. 70	0. 20	1. 5
15. 88	0. 25	2. 0
19. 05	0. 35	2. 4
22. 02	0. 40	3. 0

Equivalent pipe length  $L = \text{Actual Pipe length } L + \text{Bend Qty} \times \text{Equivalent pipe bend length} + \text{Oil Loop Qty} \times \text{Equivalent Oil Loop length}$

Sample:

ALCA-H42A5/C5 Actual Pipe length is 25 meters, Gas pipe diameter is 19.05mm. If there's 5 bends and 2 oil loops during the installation, then the equivalent pipe length should be:

$$L = 25 + 0.35 \times 5 + 2.4 \times 2 = 31.5(\text{m})$$

#### • Specification of connection pipe for indoor unit and outdoor unit

Cooling Capacity(Btu/h)		18000	24000	36000	48000	60000
Connection Pipe (mm)	Liquid Pipe	Φ6.35	Φ9.52	Φ9.52		
	Gas Pipe	Φ12.7	Φ15.88	Φ19.05		
Max. Length(m)	Liquid Pipe Dia.	Φ6.35	Φ9.52	Φ9.52		
	Gas Pipe Dia.	Φ12.7	Φ15.88	Φ19.05		
	Max. Length	20	30	50		
Max. Height (m)		15	15	30		
Max. Bend Qty		4	4	10		
Extra R410a per meter when the pipe length is more than 5 meter (kg)		0.02	0.02	0.07		

#### Caution:

1.The standard Pipe length is 5m, if the pipe length is less than this then no additional charging is necessary. If the pipe length is more than this then you should charge more refrigerant into the system according to the above Charging Data

2.The thickness of the pipe is 0.5-1.0, bearing pressure is 3.040MPa;

3.If the connection pipe is too long, the cooling capacity and stability would be decreased. And the more bend quantity, the resistance in the piping system would be bigger, then the cooling and heating capacity would be decreased even lead to compressor broken. We suggest you to use the shortest connection pipe according to the pipe length parameter in this manual.

## 6. ELECTRICAL DATA

### 6.1 Electrical connection precaution

Warning	Installation of electric items must be carried out by qualified, professional technicians. An isolated circuitry should be fixed with whole-pole disconnection devices, which is with at least 3mm gap of touch point. . Power supply and indoor to outdoor connection should use special cable. Providing the necessity of installation or replacement, the professional technician of service store appointed by manufacturer must be required, while self-operation by users is prohibited.
	In case of any electric shock accident, the creepage protection devices /power supply on-off and breaker must be required with power supply.
	The specification of fuse for single phase control board is F5AL 250V, while for 3 phase control board, both indoor and outdoor unit, it is F3.15AL 250V.
	Machine must be earthed surely. If not, it'll be probably caused creepage.
	Equivalent 227IEC53(RVV) type of power cord of GB5023 or the excelled must be required. The cords should be fixed properly against broken, while ends/joints of cords is under outside force. Improper connection or fixation will cause disaster like fire....etc. Equivalent 245IEC57(YZW) type of power cord of GB5023 or the excelled must be used as connection line of indoor and outdoor.
Notice	The earth line is neither allowed to connect to gas pipe, water pipe or circuitry of telephone or lighting rod, nor to the earth line of other devices.
Others	<ul style="list-style-type: none"> <li>● Please fix power supply cord and connection wires of indoor and outdoor, in accordance with circuit diagram</li> <li>● Fix the cords into terminal boards properly and safely with cable fixation tools to avoid any danger caused by the power cord under outside forces.</li> <li>● After fixation, use bind tape (affixed) to bind wires avoiding any collision with other components like compressor, copper pipes...etc</li> </ul>

## 6.2 Recommendation of power supply cord

Table 1 (power supply 380V 3N~, 50Hz)

Cooling capacity (Kw)	Model	Power supply spec.	Power supply cord of indoor unit	Power supply cord of outdoor unit	Connection wires
16	FAF - 060	Outdoor unit: 380-415V 3N~50Hz Indoor unit: 220-240V~50Hz Indoor and outdoor input separately	3×1 mm <sup>2</sup>	5×2.5 mm <sup>2</sup>	2×1 mm <sup>2</sup>

### NOTICE:

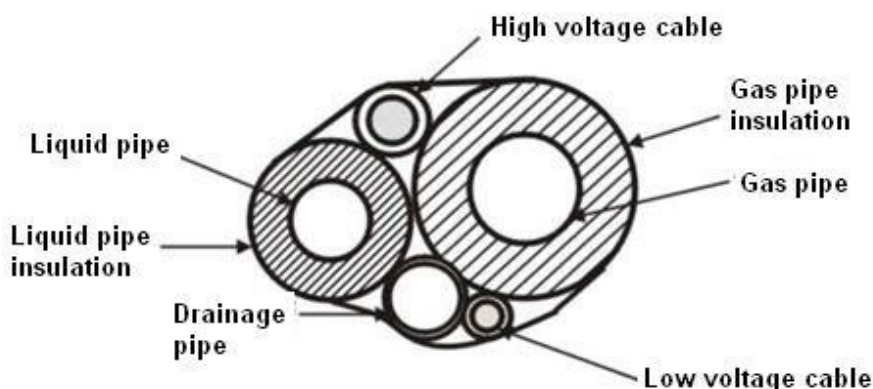
- Above mentioned power supply cord is the cable which connect air on-off of indoor to indoor/outdoor unit. Power supply cord of indoor/outdoor unit is the power supply cable connecting indoor and outdoor unit
- The section area of power supply cord core is minimized one. To avoid voltage pressure dropped down, while longer power supply cord needed, the section area should be enlarged for one gauge.
- The connection wires to indoor unit is the cable of 27IEC53(RVV) type, 300/500V; while the connection wires to outdoor unit and the connection wires from outdoor to indoor unit is the multi-end of cable (neoprene) of 245IEC57(YZW)type,300/500V. If the single core with double skin type of cable is chosen for installation, please choose 1# gauge of section area and wrapped with special jacket for electrician.
- All of the ceiling/floor type unit is without accessorial electric heating

### 6.3 Indoor wire connection

Remove electric control box cover of indoor unit connect the wires in accordance with the electric diagram mentioned on the back of the cover. The wire ends must be tightly fixed into terminal boards without ease. The earth wire must be fixed into appointed position.

### 6.4 Outdoor wire connection

- Remove the electric item cover, which is positioned in the right side of outdoor unit, connect the wires in accordance with the electric diagram on the back of the cover.
- Be sure that pressing the wires tightly with the terminal boards while it through the board, the wire ends must be tightly fixed into terminal boards. The earth wire must be fixed into appointed position.
- After all the wire connected, bundle connection pipe, connection wires and drainage pipe with strips like mentioned drawing below:

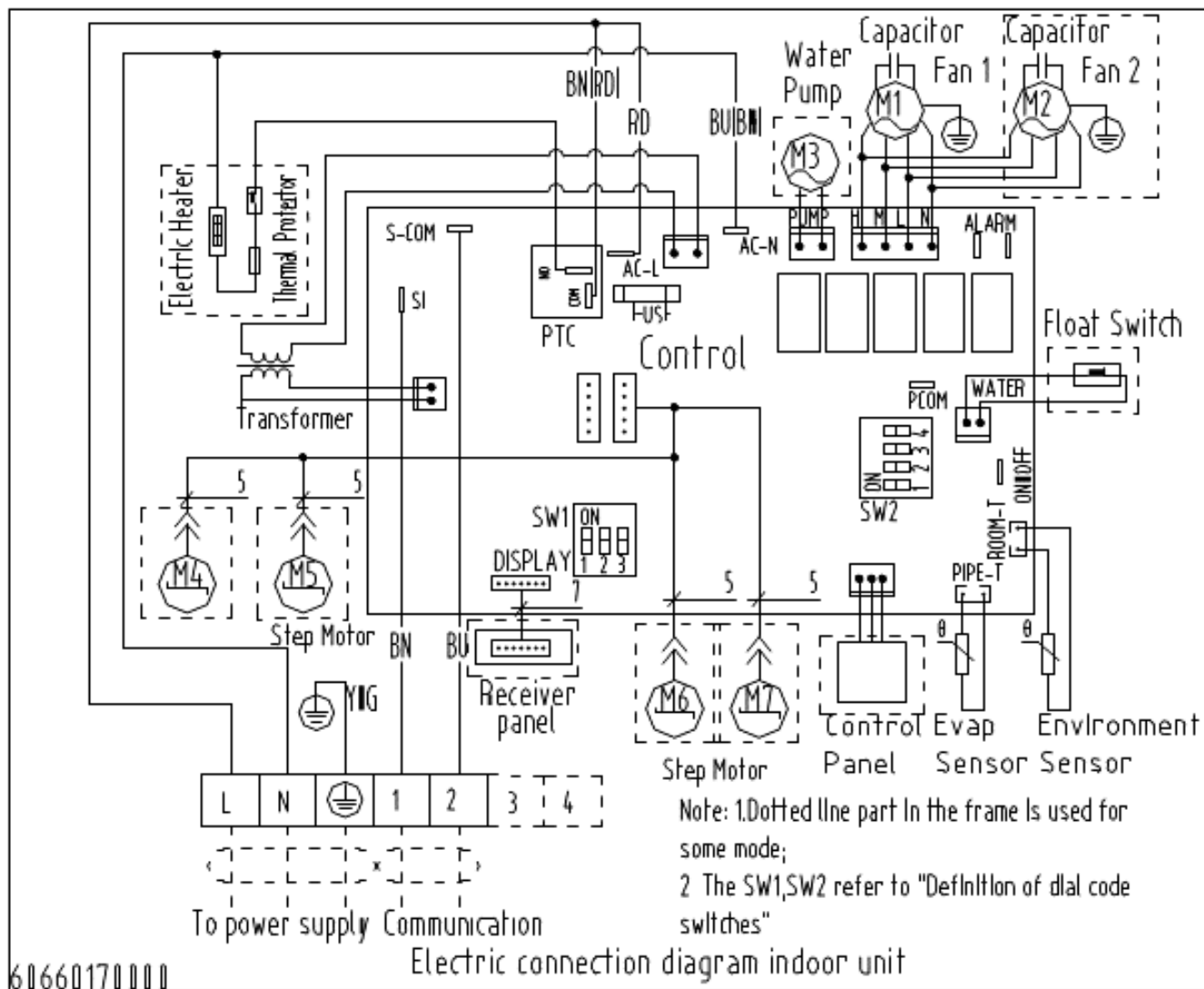


#### Notice:

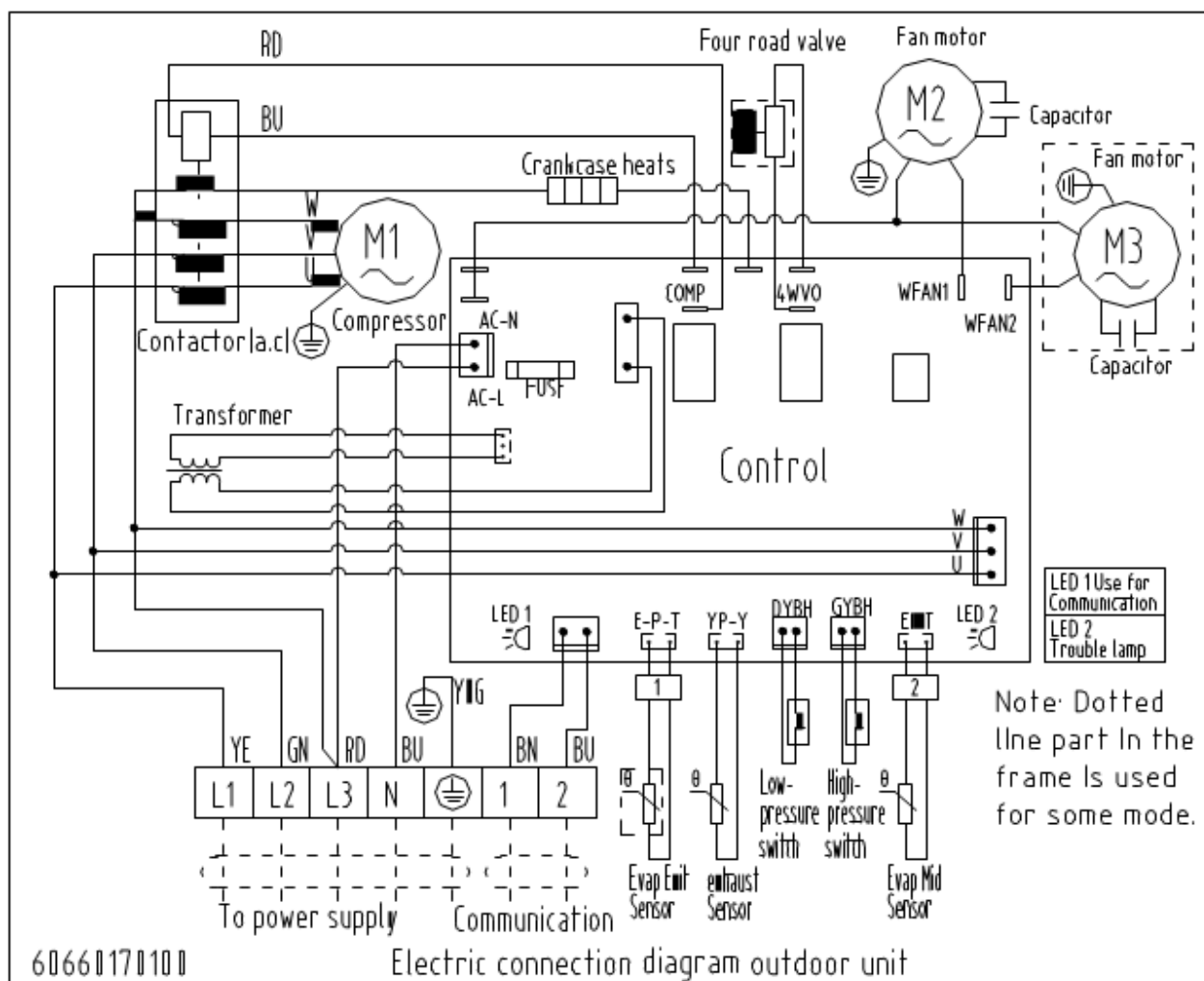
- Compressor of AL-C(H)36/5R1(U), AL-C(H)48/5R1(U), AL-C(H)60/5R1 (U) is 3 phase power supply and the outdoor PCB with phase sequence protection. Please be careful with wire connection.
- Be sure don't make the drainage pipe flat while bundled!

## 7. WIRING DIAGRAMS & ELECTRICAL CONNECTIONS

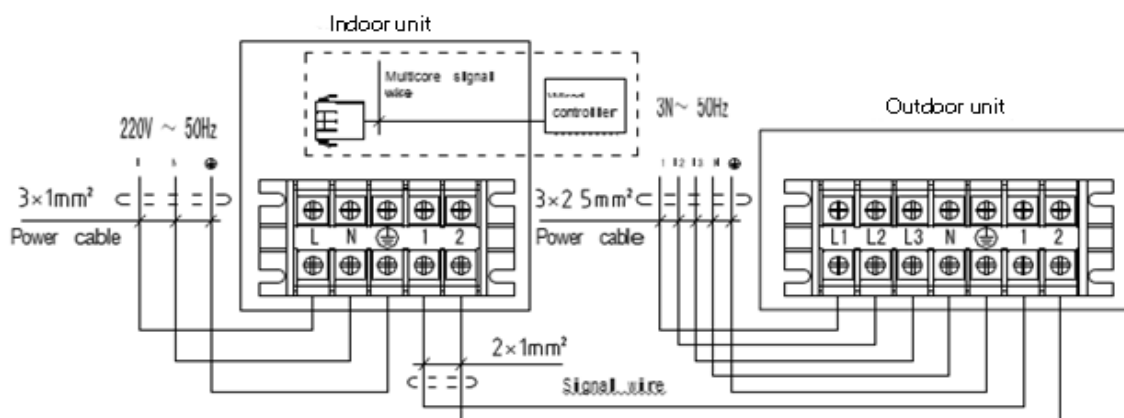
### 7.1 FAF 060 – N11



### 7.2 YIFA 060 – H13

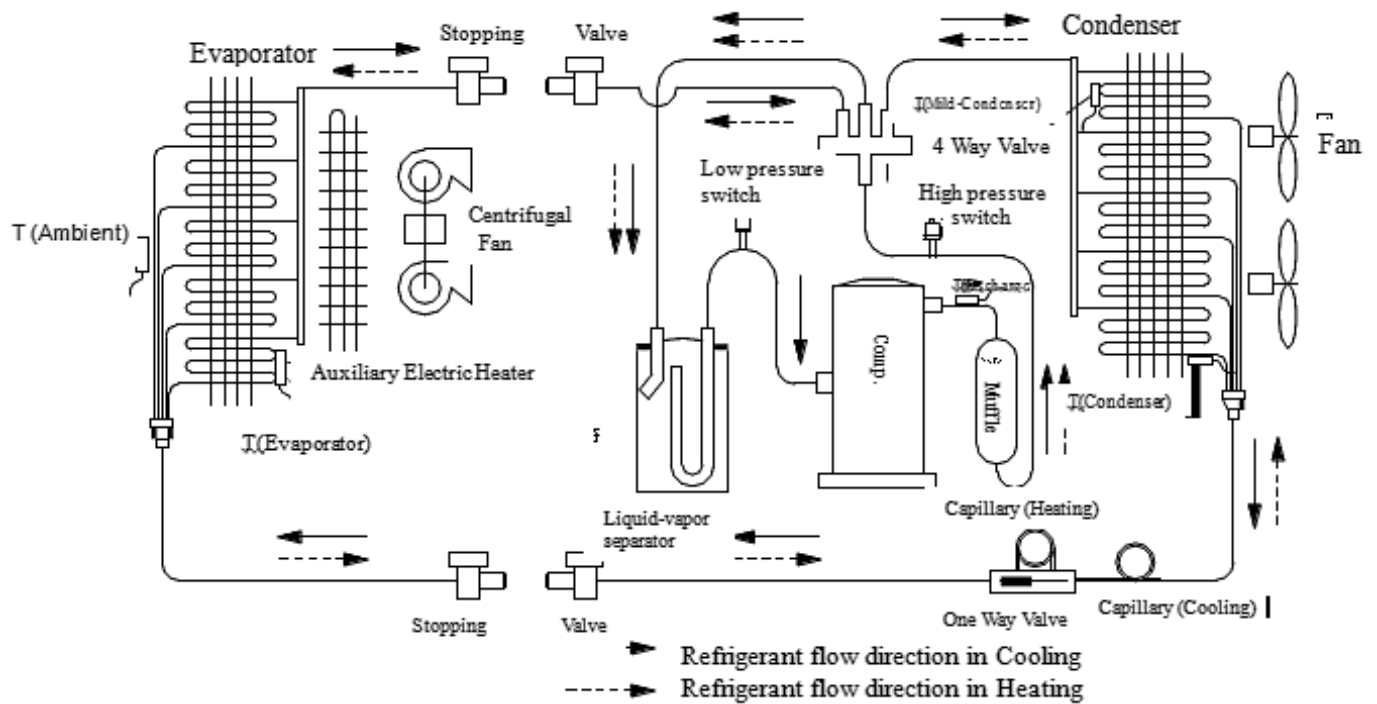


### 7.3 Indoor Unit FAF 060 – N11 / Outdoor Unit YIFA 060 – H13



## 8. REFRIGERATION DIAGRAMS

### 8.1 Indoor Unit FAF 060 – N11 / Outdoor Unit YIFA 060 – H13





## 9. TUBING CONNECTIONS

**Outdoor Unit**

**Indoor Unit**

**(A)** Suction line  
**(B)** Liquid line  
**(C)** Flare nut  
**(D)** Pipe insulation  
**(E)** Insulating sleeve

**Tube bending**

$R \geq 3.5\phi$

TUBE (Inch)	1/4"	3/8"	1/2"	5/8"	3/4"
<b>TORQUE (Nm)</b>					
<b>Flare Nuts</b>	11-13	40-45	60-65	70-75	80-85
<b>Valve Cap</b>	13-20	13-20	18-25	18-25	40-50
<b>Service Port Cap</b>	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

## 10. CONTROL SYSTEM

### 10.1 Main Functions

#### ▪ Forced switch

When air conditioner is on, press forced switch, the unit will be turned off; or when air conditioner is off, press the forced switch, unit will be turned on and enter into auto mode operation. Once receiving signal from remote control or wired control, the unit will run in setting mode.

#### ▪ Commissioning

Press forced switch for 5 seconds until buzzer sounds twice, then controller gets into commissioning. At the state of commissioning, press the forced switch, the unit will be turned off. The commissioning time will last for 30 minutes and the mode is cooling.

a) In the mode of commissioning, inlet air temperature sensor is ineffectual. Compressor runs after 3 min protecting.( 3 min protecting are not available in the first time power),indoor fan is running in low speed.

b) In the mode of commissioning, no protection is valid except the three phase protection and the 3 min protection for the compressor.

#### ▪ Auto operation

When remote control select auto mode, the unit will choose cooling, dehumidify or heating according to indoor temperature and automatically runs at selected mode.

a) When getting into auto mode, the indoor unit runs at low wind for 20 seconds while other equipment not start, after 20 seconds, indoor fan stops, the units enters into mode judgment.

b) Once the room temperature over 27°C the units run in cooling mode of setting wind and setting temperature 24°C.

c) When the room temperature is between 20°C and 27°C, the units run in dehumidifying mode of setting wind and setting temperature 24°C

d) When the room temperature is under 20°C, the unit run in heating mode (Cooling-only in ventilation mode) of setting wind and setting temperature 24°C

e) The system mode do not change according to temperature fluctuation, restarting or mode changing, the controller should select operation mode.

#### ▪ Cooling operation

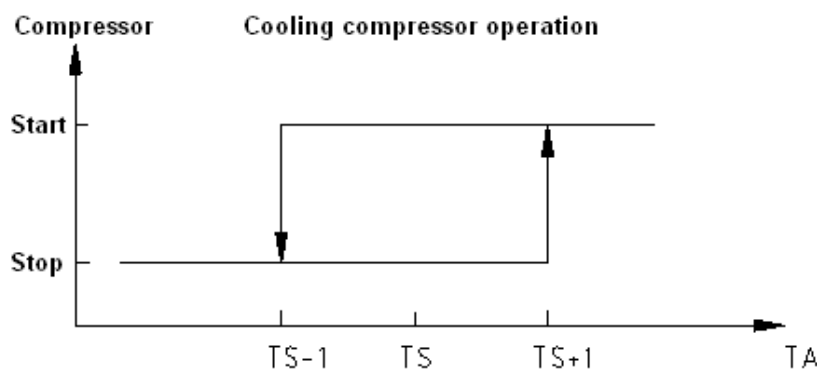
Temperature is set by remote controller or wired controller, it can be adjusted from 16°C - 32°C by pressing "temperature +", "temperature -" on the remote controller (or wired controller). Press "fan speed" button to choose fan speed among auto wind, high speed wind, medium speed wind, low speed wind. Operation state

a) The indoor fan motor always runs at the speed set by remote controller or wired controller.

b) When the indoor temperature  $T_A$ -setting temperature  $T_S \geq 1^\circ\text{C}$ , the compressor starts as well as outdoor fan after compressor meets 3 min protection

c) When  $T_A = T_S$ , The unit operation state keep the same.

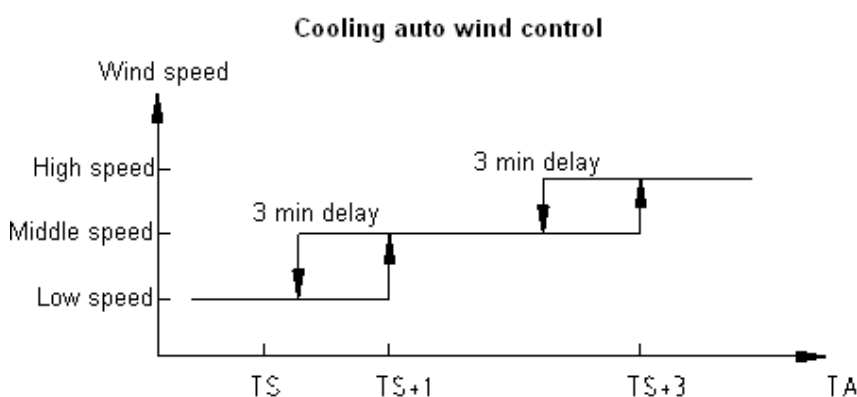
d) When indoor unit temperature  $T_A - \text{setting temperature } T_S \leq -1$ , the compressor and outdoor fan stop after compressor meets 3 min protection.



#### Auto wind control

When unit is set to auto wind by remote controller or wired controller, indoor wind speed will be controlled abide by regulation as follow

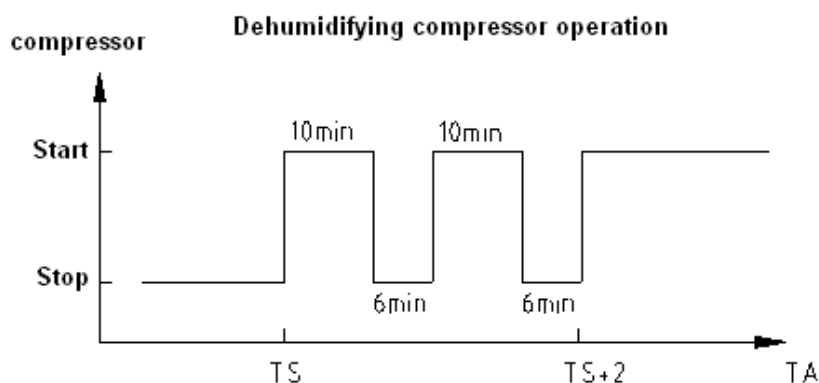
- a) When  $TA - TS \geq 3^{\circ}\text{C}$ , at high speed
- b) When  $TS + 1^{\circ}\text{C} \leq TA < TS + 3^{\circ}\text{C}$ , at medium speed c) When  $TA - TS < 1^{\circ}\text{C}$ , at low speed
- d) There is no 3 min delay when wind speed switch from low to high, contrary to wind speed switch from high side to low side.



Temperature is set by remote controller (or wired controller), temperature adjustable range from  $16^{\circ}\text{C}$ -  $32^{\circ}\text{C}$ , user can adjust temperature through "temperature + " and "temperature - "button on remote controller or wired controller. Press "fan speed" button to choose fan speed among auto wind, high speed wind, medium speed wind, low speed wind.

#### Operation state

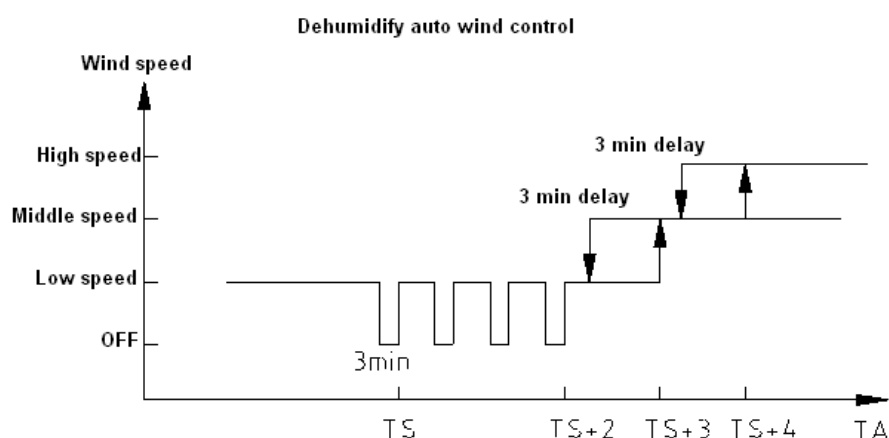
- a) When  $TA \geq TS + 2^{\circ}\text{C}$ , and 3 min protection can be satisfied, the compressor and outdoor fan will run continuously and wind speed run at set speed.
- b) When  $TS \leq TA < TS + 2^{\circ}\text{C}$  and 3 min protection can be satisfied, the compressor and outdoor fan keep 10 min on while off in another 6 min, indoor fan keeps 13 min on while off in subsequent 3 min, the indoor fan will start at low wind speed after the compressor stops for 3 min.
- c) When  $TA < TS$  and 3 min protection can be satisfied, the compressor, outdoor fan and indoor fan stops running, the indoor fan restart at low wind speed after the compressor stops 3 min



#### ▪ Auto wind control

When unit is set to auto wind by remote controller or wired controller, indoor wind speed will be controlled abide by regulation as follow

- a) If  $TA - TS \geq 4^{\circ}\text{C}$ , at high speed
- b) If  $TS + 3^{\circ}\text{C} \leq TA < TS + 4^{\circ}\text{C}$ , at medium speed c) If  $TS + 2^{\circ}\text{C} \leq TA < TS + 3^{\circ}\text{C}$ , at low speed
- d) If  $TS \leq TA < TS + 2^{\circ}\text{C}$ , at low speed intermittently
- e) If  $TA < TS$ , the indoor fan will restart after stop for 3 min, and operates at low wind.



#### ▪ Ventilation operation

Outdoor unit stay closed, indoor fan motor operates at set wind and wind speed can be set at high, medium, low by remote controller.

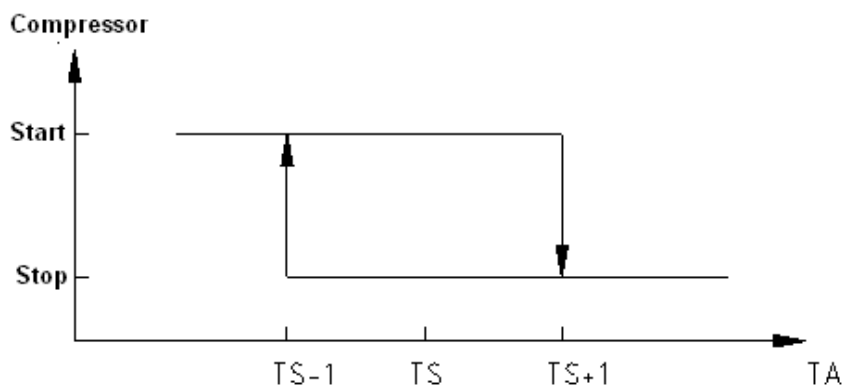
#### ▪ Heating operation

Temperature is set by remote controller (or wired controller), temperature control range from  $16^{\circ}\text{C}$ -  $32^{\circ}\text{C}$ , user can adjust temperature through "temperature +" and "temperature -" button on remote controller or wired controller. Press "fan speed" button to choose fan speed among auto wind, high speed wind, medium speed wind, low speed wind.

#### ▪ Operation state

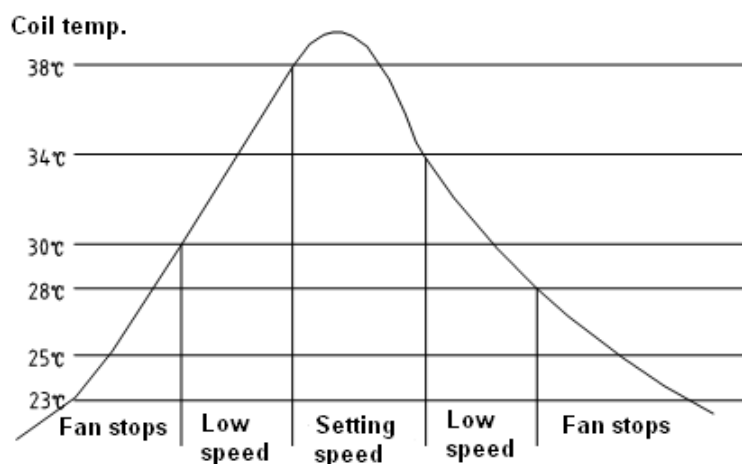
- a) When  $TA - TS \leq -1^{\circ}\text{C}$ , if compressor meets 3 min protection, the compressor and outdoor fan start, indoor fan runs according to Anti-cold air condition
- b) When  $TA - TS \geq 1^{\circ}\text{C}$ , if compressor meets 3 min continuous operation, the compressor and outdoor fan stop, indoor fan runs according to Anti-cold air condition
- c) If  $TA = TS$ , stay in the previous state.

### Heating compressor operation



#### ▪ Anti-cold air

- a) Anti-cold air when the compressor is running
- b) When TE is raising and  $TE < 30^{\circ}\text{C}$ , indoor fan stops, if  $30^{\circ}\text{C} \leq TE < 38^{\circ}\text{C}$ , indoor fan runs at low wind speed.
- c) When  $TE \geq 38^{\circ}\text{C}$ , indoor fan runs at setting speed
- d) When TE is descending and  $TE > 34^{\circ}\text{C}$ , indoor fan runs at setting speed. When  $28^{\circ}\text{C} < TE \leq 34^{\circ}\text{C}$ , indoor fan runs at low wind. When  $TE \leq 28^{\circ}\text{C}$ , indoor fan stops.



- a) Anti-cold air when the compressor is off
- b) When  $TE > 30^{\circ}\text{C}$ , if indoor fan is originally on then it blows low wind( last for maximum 30S). c) When  $TE \leq 30^{\circ}\text{C}$ , indoor fan stops.

#### ▪ Blowing surplus heat

When indoor temperature reach set temperature or turn off the unit , if  $TE > 35^{\circ}\text{C}$ , indoor fan motor operates at low wind, if indoor temperature  $\leq 35^{\circ}\text{C}$ , indoor fan stops running.

#### ▪ Swing control

There are totally 4 swing modes : A, B, C, D, among them A and B is an assembly, C and D is an assembly. Each mode switches through sleep button on remote control or wired control, detail operation

is as follows: press sleep button 10 times continuously in 5 second, buzzer sounds 4 times, and swing angle belongs to C/D mode (it takes effect when repower on), in the same way press sleep button 10 times continuously in 5 second, buzzer sounds 2 times, then swing returns to A/B mode (it takes effect when repower on). The swing mode switches among assembly is accomplished by dip switch. Detailed operations are as follows: ON as A mode, OFF as B mode, OFF as C mode.

## ▪ Timing

The largest timing time is 24 hours, minimum scale is 1 min, single timing style, timing function will keep valid when mode change, and indication lamp keep light once set.

### Timing off

Only when the unit is running, this function can be set, set range is 1min-24h and unit will automatically shutdown when time runs out.

### Timing on

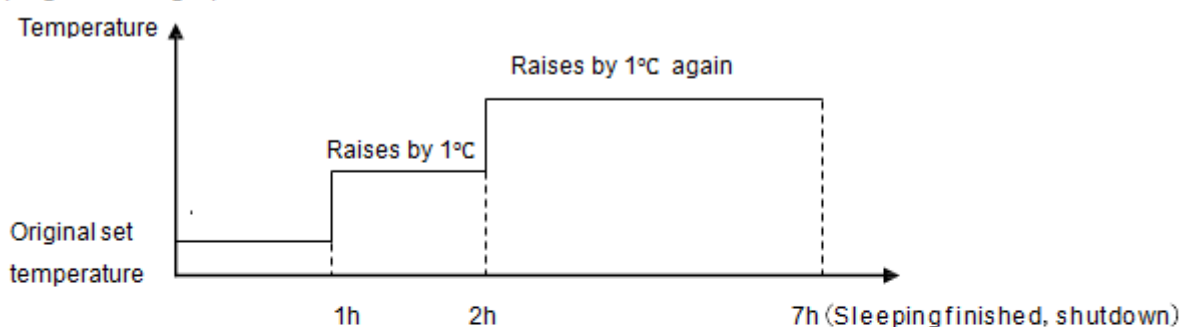
Only when the unit is running, this function can be set, set range is 1min-24h and unit will automatically shutdown when time runs out. Turn on or turn off after timing set, original timing and sleeping functions will be canceled automatically.

## ▪ Sleeping

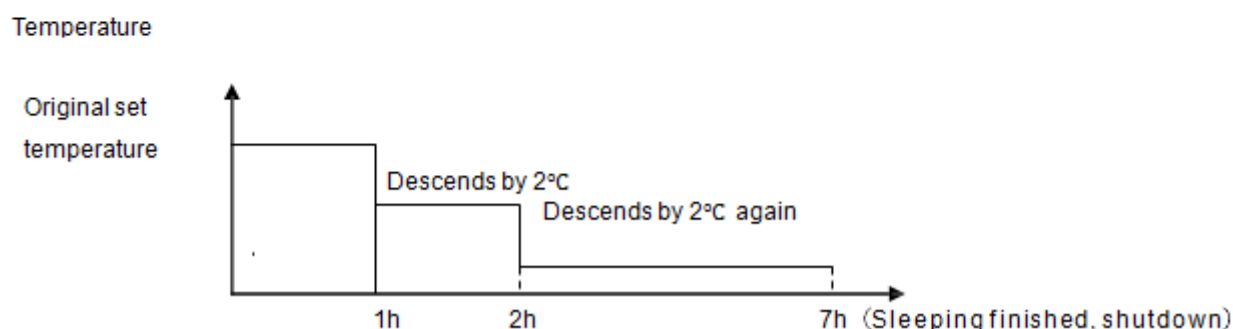
The sleeping function is valid in auto, cooling, dehumidifying, heating operation, indoor fan blows low wind once enters into sleeping mode and sleeping indication lamp turns to light. Press the sleep button and enters to sleeping operation, for cooling operation the set temperature raises by 1°C 1 h later, and for heating operation the set temperature descends by 2°C 1 h later. After another 1h operation, for cooling operation the set temperature raises by 1°C again, and for heating operation the set temperature descends by 2°C again. After the sleeping mode runs for 7h the unit shutdown.

When enters into sleeping operation, mode switch will be valid, however sleeping function will be cancel after mode switch and if press "temperature +" button the unit will adjust temperature according to " new set temperature + amending temperature." At the state of sleeping mode, press "sleep" button, mode button or turn off the unit, the sleeping mode will be canceled.

### Sleeping in cooling operation :



### Sleeping in heating operation :



## ▪ Long Distance

- a) Control board has function of long distance control
- b) The switch of long distance control can be masked through indoor unit DIP switch.
- c) When long distance switch is off and unit turns off, the remote controller and wired controller shall not be able to turn on the unit.
- d) When long distance switch is on and unit starts in auto mode, mode can be changed by remote controller or wired controller.

▪ **Self -check operation**

Press the forced switch at the same time power on, the buzzer sounds twice and enters into self-check operation process  
Electric heating motion, indoor fan operates at high speed → operation lamp light for 1s → timing lamp light for 1s → power lamp light for 1s → indoor fan runs at low speed and medium speed both for 1s  
→ compressor motion 1s → four ways valve motion 1s → outdoor motion 1s → buzzer sounds once then close and unit enters into ready state, ending self-check.

**10.2 Control function**

▪ **Anti-freezing protection**

- a) The protection is to prevent indoor evaporator from frosting in large area.
- b) When indoor coil temperature  $\leq -2$  and lasts for 10s, in addition, the compressor keeps running for 5 min or longer, the compressor and outdoor fan stops running, indoor fan runs at setting speed.
- c) If indoor coil temperature  $\geq 7^{\circ}\text{C}$ , unit quits the protection, once the compressor meets 3 min protection the unit restart.
- d) This function is valid only when cooling or dehumidifying.

▪ **Anti-over-heating protection**

- a) This protection is to avoid wind temperature is too high in heating to cause user feel uncomfortable.
- b) When indoor coil temperature  $\text{TE} \geq 57^{\circ}\text{C}$  and lasts for 10s, outdoor unit stops, when indoor coil temperature  $\text{TE} \geq 64^{\circ}\text{C}$  and lasts for 10s, the compressor stops and indoor unit fan speed keep unchanged.
- c) When  $\text{TE} < 52^{\circ}\text{C}$ , unit quits this protection, after the compressor meets 3 min protection, unit returns to normal operation.
- d) This function is only valid when heating.

▪ **Cooling high pressure protection**

- a) This protection is to prevent outdoor motor failure which leads to compressor exhaust pressure over using range to cause compressor damage.
- b) When outdoor coil temperature  $> 64^{\circ}\text{C}$ , and lasts for over 20s, the compressor stops running, when the coil temperature  $< 52$  degree and the 3 min compressor protection is satisfied, the compressor returns to normal running.
- c) Once high pressure protection appears 3 times in half an hour, the whole unit stops running and indoor unit alarms high pressure protection.

▪ **Shortage of refrigerant or four valves failure protection**

- a) This protection is to prevent refrigerant shortage of system and four ways valve failure to turn direction when heating, both of which lead to cycle liquid be greatly produced which damage the compressor
  - ① Make a record of indoor coil temperature T1 before compressor starts, when the compressor keeps running for 6 hours, indoor temperature is T2, and if  $\text{T1}-\text{T2} > 5^{\circ}\text{C}$
  - ② The compressor keeps running for 6 min then room temperature - indoor coil temperature  $< 5^{\circ}\text{C}$
- b) Heating operation: Satisfy the following two conditions and lasts for 10s:
  - ① Make a record of indoor coil temperature T1 before compressor starts, the compressor keeps running (except defrost operation) for 8 min, indoor coil temperature is T2, if  $\text{T2}-\text{T1} \leq 8^{\circ}\text{C}$
  - ② The compressor keeps running (except defrost operation) for 8 min, if  $\text{T2}-\text{T1} < 8^{\circ}\text{C}$

▪ **Exhaust temperature protection**

- a) This function is to prevent exhaust temperature be too high to reduce the compressor operation longevity
- b) When the compressor started, exhaust temperature  $\text{TP} > 120^{\circ}\text{C}$  and lasts for 3s, exhaust temperature protection will be activated, the compressor stops, as well as outdoor fan, and alarm outdoor protection. c) When exhaust temperature falls to  $85^{\circ}\text{C}$ , quits this protection, the failure code will not disappear but the unit can resume after restart.

**Note:** This function is available for three phase power supply

▪ **High and low pressure protection**

- a) This protection is to guarantee the unit runs in allowing range, free from the compressor damage
- b) High pressure protection: High pressure switch off and lasts for 3s, high pressure protection appears, the compressor and fan motor all stops, alarm outdoor unit protection, and failure code will not disappear even when high pressure switch returns to normal, but the unit can resume when restart.
- c) Low pressure protection
  - ① Checking low pressure failure after the unit starts for 5 min, low pressure switch off and lasts for 3s, low pressure protection appears, the compressor and fan motor stop, alarming outdoor protection, failure code disappear after low pressure switch return to normal, when the compressor 3 min protection is satisfied unit returns to normal running.
  - ② When low pressure appears 3 times in 30 min, the protection is unable to resume, the whole unit stops and the unit can resume after the failure is solved and restart
  - ③ Do not check low pressure when defrosting.

**Note:** This function is available for three phase power supply

▪ **Phase sequence protection**

- a) This protection is to prevent the compressor rollback or lack phase lead to over current, and finally destroy the compressor
- b) When outdoor unit appears lack phase or phase sequence incorrect, the unit stops immediately and enters into protection, alarming outdoor protection, even phase sequence or lack phase switch return to normal the failure code will not disappear, the unit can resume when restarting

▪ **Outdoor fan motor control**

The unit has function of low ambient cooling and high ambient heating, when cooling take outdoor coil temperature as basis and when heating take indoor coil temperature as basis, the outdoor fan automatic carries out stepless speed adjustment to keep the unit in normal operation state.

▪ **Defrosting control**

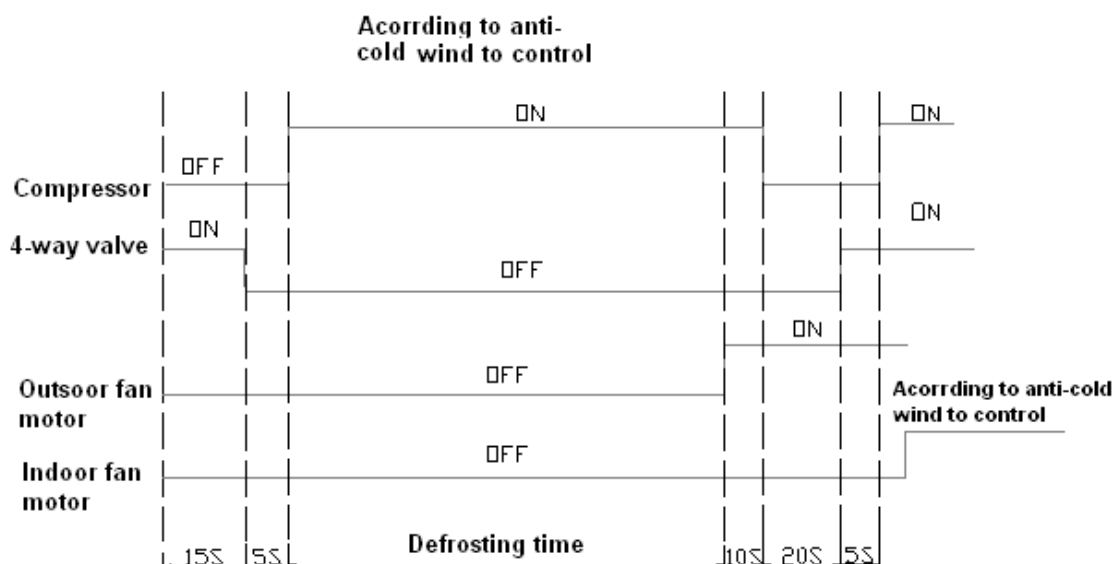
- a) On the situation that the outdoor sensor is in good condition, once following conditions are satisfied defrosting begins, the operation lamp will shine when running defrosting.
  - ① Outdoor coil temperature below definite temperature and lasts for 2 min
  - ② The compressor running time surpass defrosting internal time (defrosting internal time recalculates when power off by accident or remote controller), the compressor keeps running continuously for over 5 min. When defrosting begins, the compressor, indoor fan, outdoor fan will stop, 15s later 4-way valve will be closed, and 5 more seconds later the compressor enters into defrosting operation.
- b) Ending defrosting condition (one of the following conditions is satisfied defrosting ends)
  - ① Outdoor coil temperature  $\geq 12^{\circ}\text{C}$
  - ② Defrosting time up to 10 min
  - ③ Mode switch or turning off the unit by remote controller defrosting exits immediately.



After the defrosting is finished, outdoor fan will start, 10 s later the compressor will stop, and 15 s later four ways valve will open, 5 more seconds later the compressor will start, the unit returns to normal heating operation, and indoor fan runs as anti-cold wind mode

c) Defrosting entering temperature and heating internal time will auto-adjusted by outdoor defrosting time

d) Defrosting time sequence drawing



- **Intelligent defrosting function(only in the case of outdoor coil is damaged this function is carried out)**  
**Entering conditions**

On the condition of running intelligent defrosting operation, one of following 7 conditions is satisfied (As for secondary condition in upper condition, it is only valid that all secondary condition be satisfied at the same time)

**a) Condition No.1**

- ①The outdoor fan enters into over-load protection and stops running.
- ②Outdoor fan stops running then restarts and keeps running over 10 min
- ③The compressor accumulating running time  $\geq 45\text{min}$
- ④The compressor continuous running time  $\geq 20\text{min}$
- ⑤ $TE \leq 48^\circ\text{C}$ .

**b) Condition No.2**

- ①Enter into heating mode 5 min later or finish defrosting 5 min later, catch the max difference value between TE and TA  
If  $TE \geq 38^\circ\text{C}$ , when the difference between TE and TA decrease by  $5^\circ\text{C}$  or more and lasting time  $\geq 3\text{min}$   
If the difference between TE and TA decrease by  $3^\circ\text{C}$  or more and lasting time  $\geq 3\text{min}$
- ②The compressor continuous running time  $\geq 5\text{min}$
- ③The compressor accumulating running time  $\geq 45\text{min}$
- ④ $TE \leq 48^\circ\text{C}$  ;

**Note:** If there is wind modification, and when indoor fan wind speed descends 1 grade, temperature modification

-1°C.when indoor fan wind speed climbs 1 grade, temperature modification +1°C

**c) Condition No.3**

- ①The compressor accumulating running time  $\geq 3h$
- ②The continuous compressor running time  $\geq 5min$
- ③The min. difference between TE and TA  $< 16^{\circ}C$

**d) Condition No.4**

- ①The min. difference between TE and TA  $< 16^{\circ}C$  continuously last for 5 min
- ②The compressor accumulating running time  $\geq 45$  min
- ③The compressor continuous running time  $\geq 20min$

If the condition is satisfied unit will enter into defrosting, current TE will be recorded before defrosting. When the defrosting is over, and the compressor continuously runs for 10 min, then compare current TE

with TE before defrosting, if the latter doesn't high than former by  $3^{\circ}C$  or more, next time unit will not

enter into defrosting at this condition, until mode switch, turn off then restart to heating or go through a defrosting yet.

**e) Condition No.5**

Begin to calculate time once air conditioner enters into over-heating protection, enters into compulsory defrosting after 2 h later.

**f) Condition No.6**

- ①5 min later after enters into heating mode for the first time, catching max value of TE, if TE  $< 38^{\circ}C$
- ②The compressor continuous running time  $\geq 5min$
- ③The compressor accumulating running time  $\geq 45$  min

**g) Condition No.7**

- ①At heating mode and the compressor accumulating running time is over 2h.
- ②Within the 2 h never carry out defrosting
- ③The compressor continuous running time  $\geq 5min$ , catching max value of TE, if TE  $< 30$  and lasting time  $\geq 3min$ .

- **Quit conditions**

One of following 3 conditions is satisfied unit quit the intelligent defrosting

- a) Intelligent defrosting time  $\geq 9\text{min}$
- b) Intelligent defrosting time lasts for 4 min, if  $TE \geq 0^\circ\text{C}$ , and in 10s TE increased by  $2^\circ\text{C}$  or more.
- c) Intelligent defrosting time lasts for 5min, if  $TE \geq 5^\circ\text{C}$

- **Defrosting time sequence**

- a) When the defrosting begins, the compressor, indoor fan, outdoor fan all stop, 30s later 4-way valve will be closed as well, then 15s later the compressor starts and enters into defrosting operation.
- b) When quit from defrosting, the compressor stops and outdoor fan starts, 55s later four ways valve will be open, and 5s later the compressor starts and air conditioner returns to normal operation, indoor fan operates as anti-freezing wind mode.

- **Sensor failure**

- a) Indoor room temperature (TA)  
When TA is abnormal, the unit stops to run protection, failure code will display (see the failure indication table), failure code will disappear when TA returns to normal.
- b) Indoor coil temperature (TE)  
When TE is abnormal, failure code will display (see the failure indication table), failure code will disappear when TE returns to normal
- c) Outdoor coil temperature (TW)  
When in cooling or dehumidifying mode, doesn't check TW  
When in heating mode, after the unit starts outdoor coil temperature will be checked, if TW is abnormal, unit normal starting is permitted, and defrosting automatically be set as intelligent, failure code will display (see the failure indication table), failure code disappears when TW return to normal, and heating defrosting returns to normal.
- d) Exhaust temperature (TP)  
Check the exhaust temperature sensor when power on  
When TP is abnormal, unit will start normally and exhaust over-heat protection be canceled, at the same time failure code displays, failure code disappears when TP back to normal, exhaust over-heat protection will be recovery
- e) Outdoor condensation temperature (TL) When in heating mode, doesn't check TL  
When in cooling mode, after the unit starts check the outdoor condensation temperature, if TL is abnormal the unit normal starting is allowed and cancel the low ambient cooling function, at the same time the failure code displays, failure code disappears when TH back to normal, the low ambient cooling function will be recovery.

- **Communication failure**

- a) Communication failure between indoor and outdoor units:  
The indoor and outdoor communication is abnormal, or one of indoor unit and outdoor unit control board is not electrified, then power off and display failure code, when communication returns to normal failure code disappears.
- b) The communication failure of wired controller: when wired controller or main control board doesn't receive correct signal for consecutive 2 min, then turn off and display failure code, when communication returns to normal failure code disappears.

## 11. TRUBLESHOOTING

### 11.1 Failure Code

When air condition has failure, the timing lamp on light board of controller will display different code according to different failure case.

### 11.1.2 Unit failure code for unit power supply is 380-415V

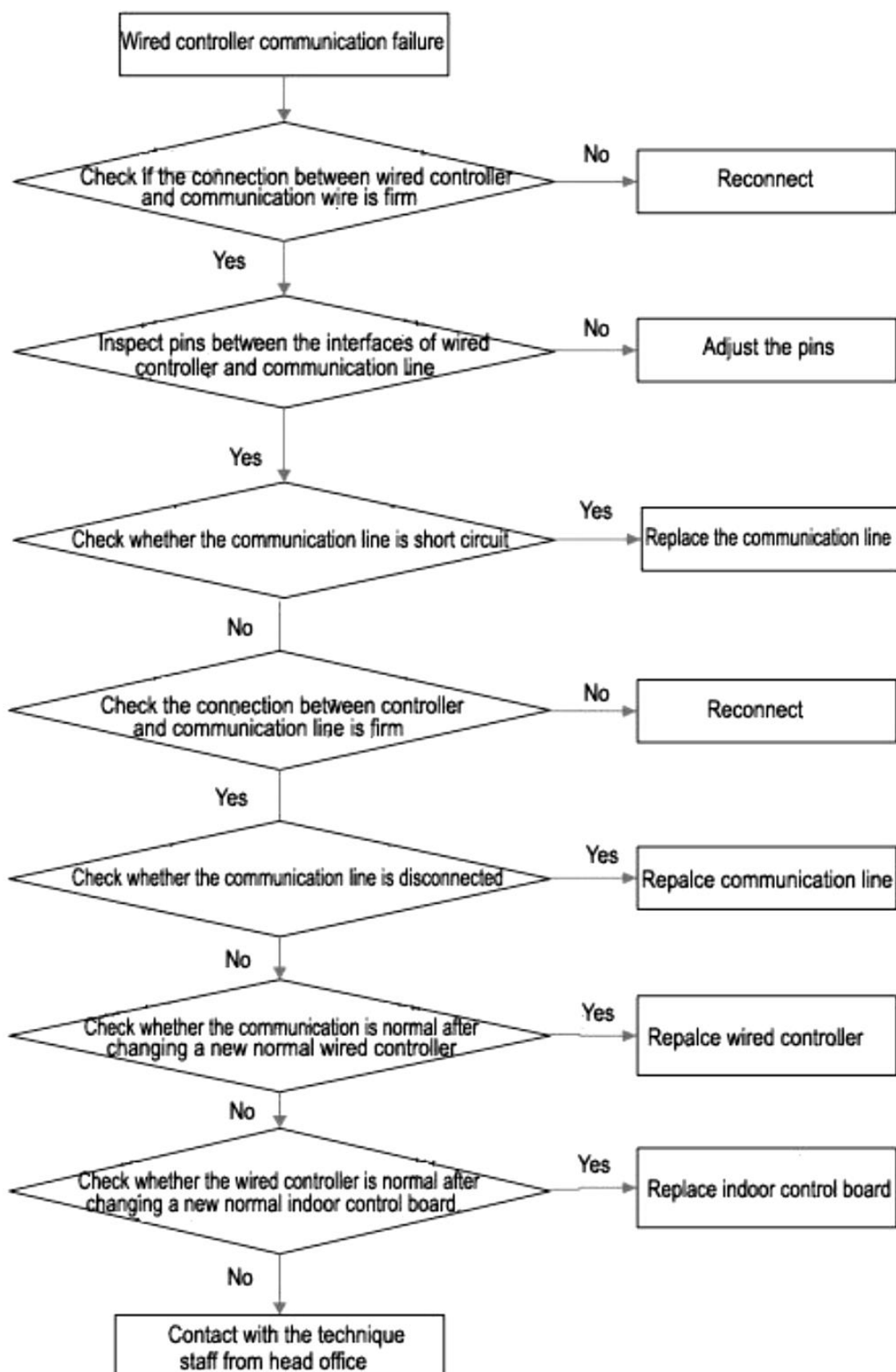
Suitable for units: capacity 36000~60000BTU, power supply 380-415V 3N~, 50Hz

Failure causing	Display mode1 ( indication lamp on display lamp board)	Display mode1 ( failure lamp on control board)	Display mode3 ( wired controller)	Display priority	Phenomenon
Communication failure	Flash 5 times and go out 2S	Flash 2 times and go out 2S	F1	1	shutdown
Wired controller communication failure	—	—	E5	1	shutdown
Drainage system failure	Flash 4 times and go out 2S	—	E4	3	shutdown
Outdoor protection( Phase failure )	Flash6 times and go out 2S	—	E6	2	shutdown
Outdoor protection (discharging over-temperature )	Flash 10 times and go out 2S	Flash 10 times and go out 2S	EA	7	shutdown
High pressure protection	Flash 9 times and go out 2S	Flash 1 times and go out 2S	E9	6	shutdown
Low pressure protection	Flash 9 times and go out 2S	Flash 3 times and go out 2S	E9	6	shutdown
Indoor temp. sensor abnormal(TA)	Flash 1 times and go out 2S	—	E1	4	shutdown
Indoor coil sensor abnormal(TE)	Flash 3 times and go out 2S	—	E3	5	shutdown
Outdoor coil sensor abnormal(TW )	Flash 2 times and go out 2S	Flash 2 times and go out 2S	E2	8	non-stop
Outdoor condensate temp. Sensor abnormal(TL)	Flash 7 times and go out 2S	Flash 7 times and go out 2S	E7	9	non-stop
Discharging temp. sensor abnormal(TP)	Flash 8 times and go out 2S	Flash 8 times and go out 2S	E8	10	non-stop
Refrigerant shortage	Flash 11 times and go out 2S	Flash 11 times and go out 2S	E0	11	shutdown

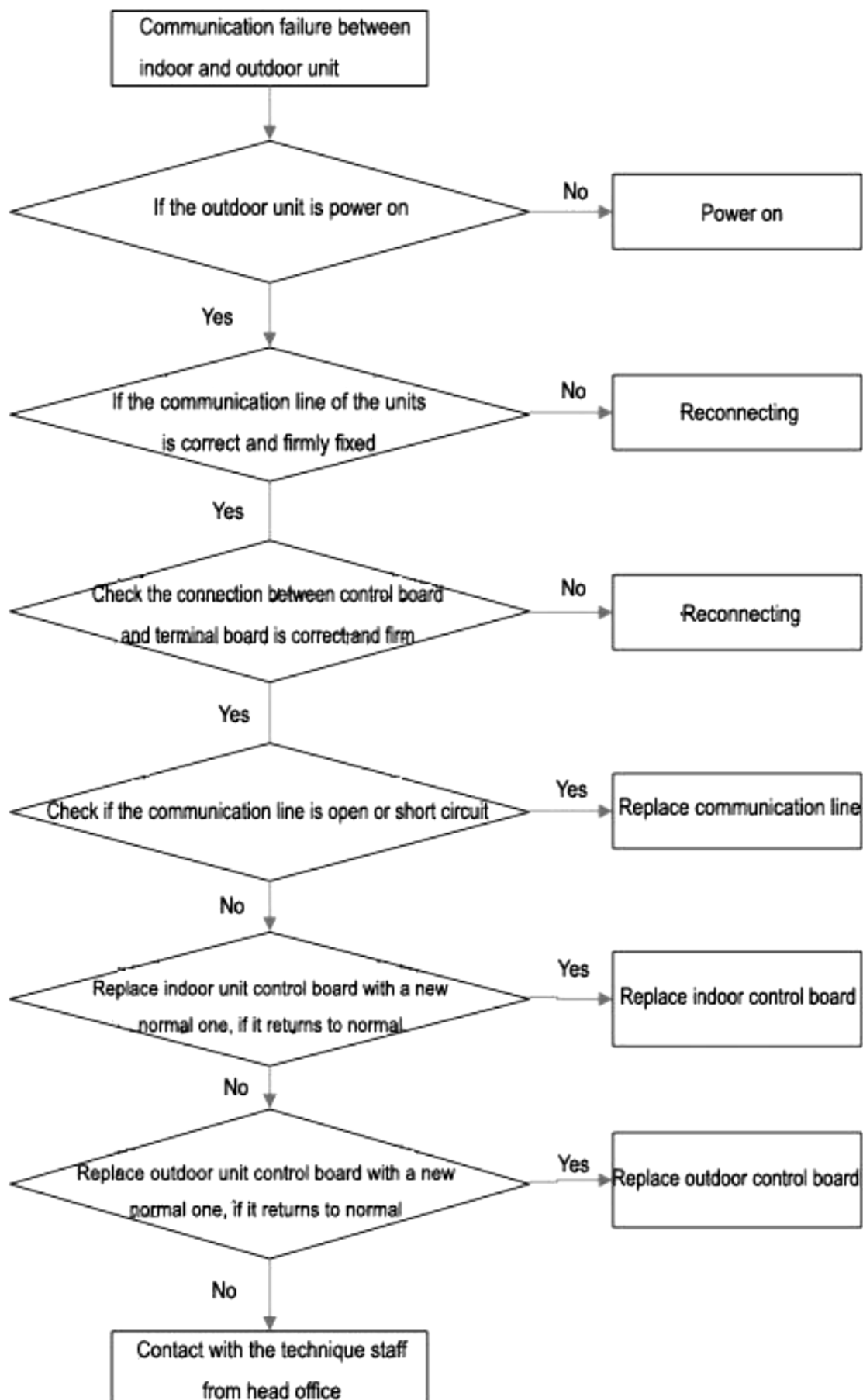
**Note:** When correct signal has not been received by wired control or main control board in 2 consecutive min, then the unit turns off and indicates relative failure code, once communication renew and failure code disappears automatically.

### 11.3 Failure analysis and elimination

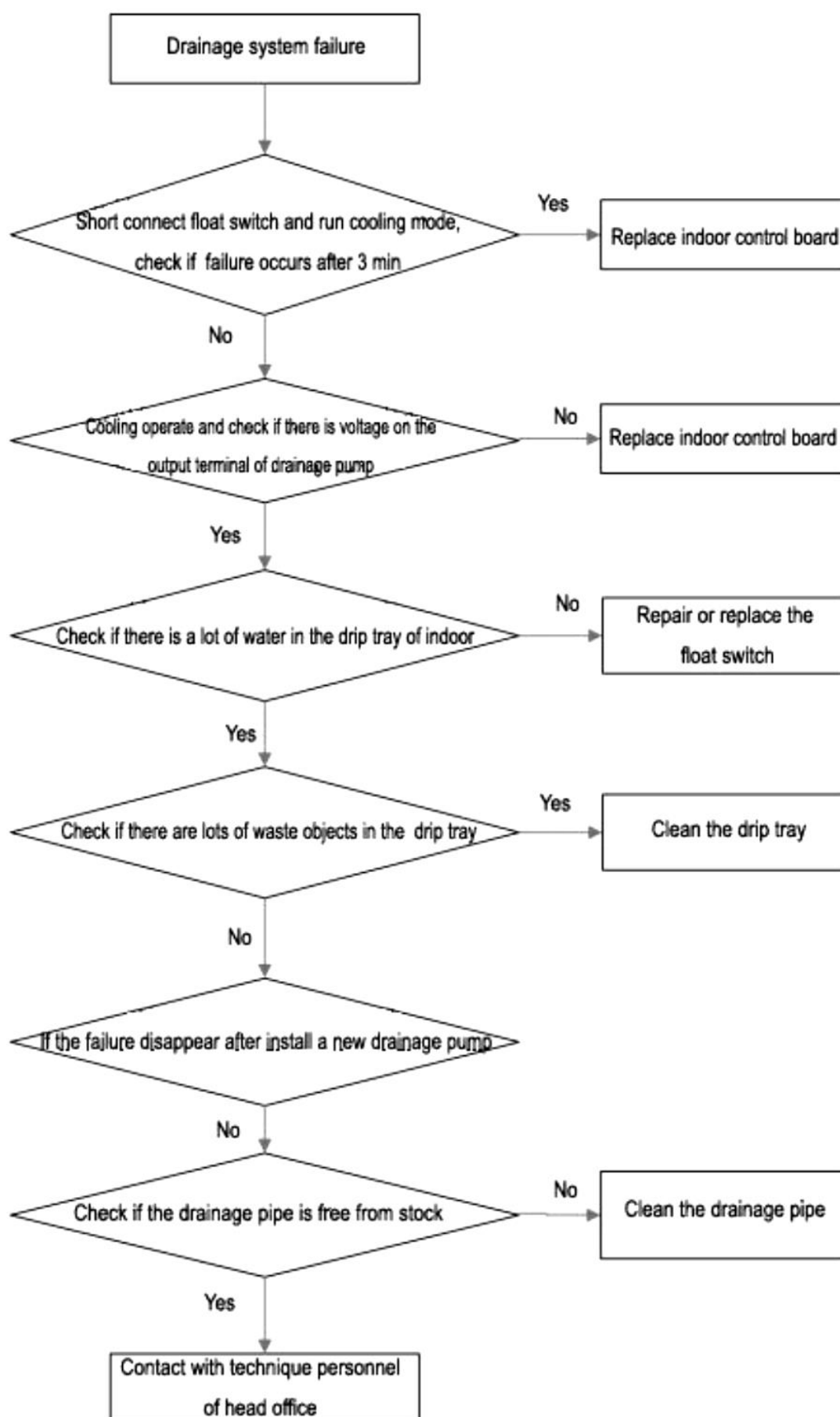
#### 11.3.1 Analysis and elimination for the failure with failure code



Communication failure between indoor and outdoor unit

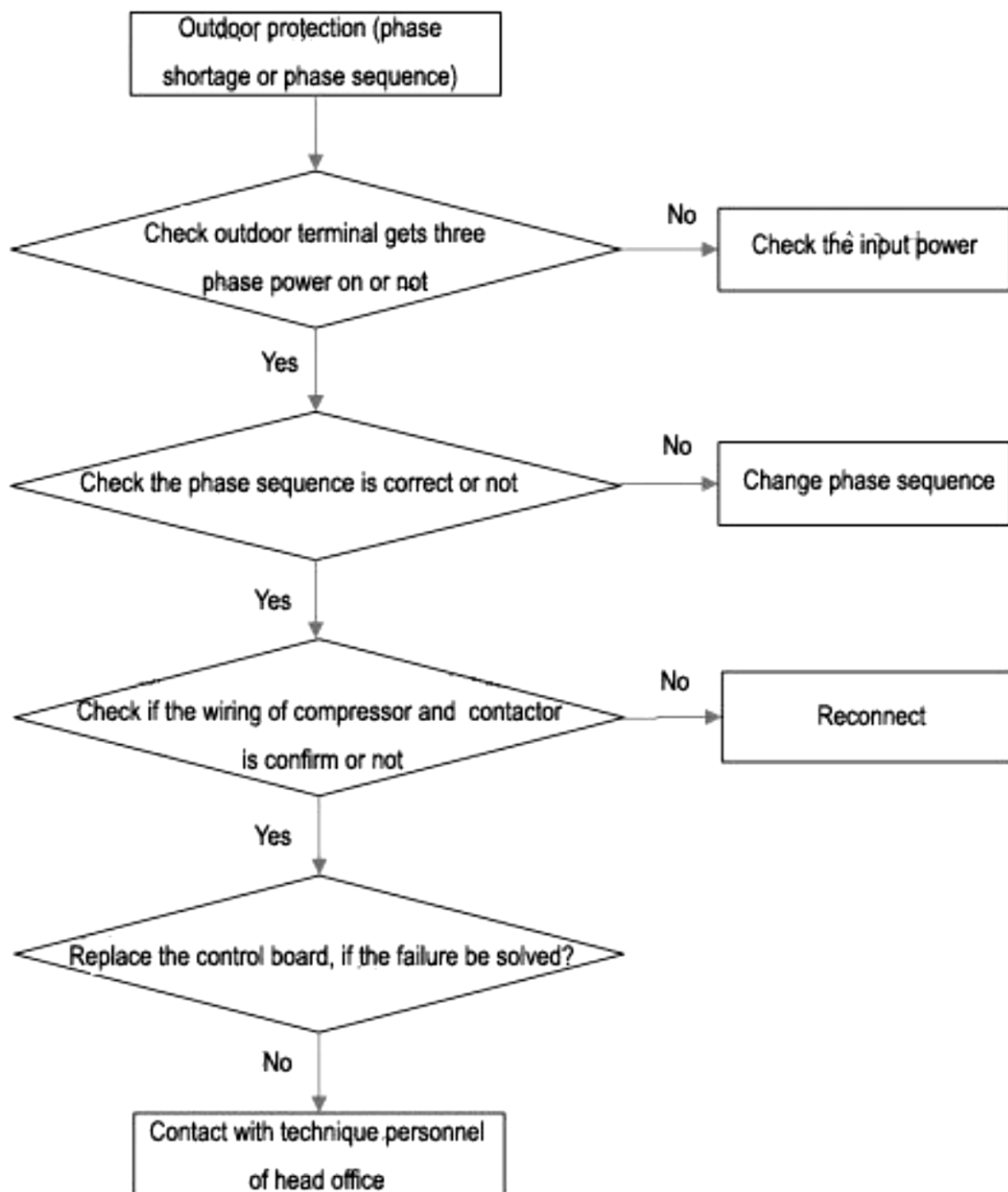


## Drainage system failure

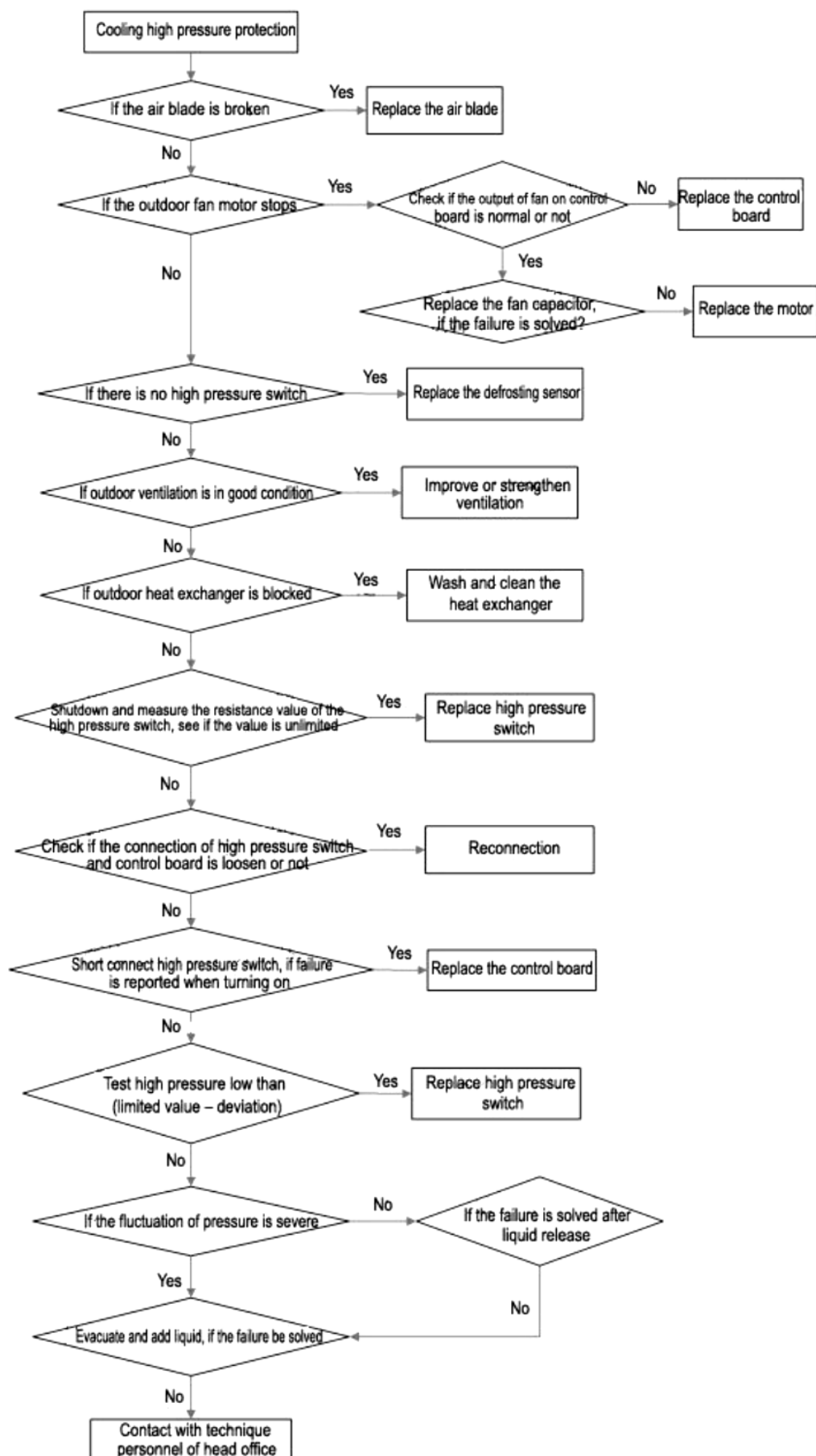




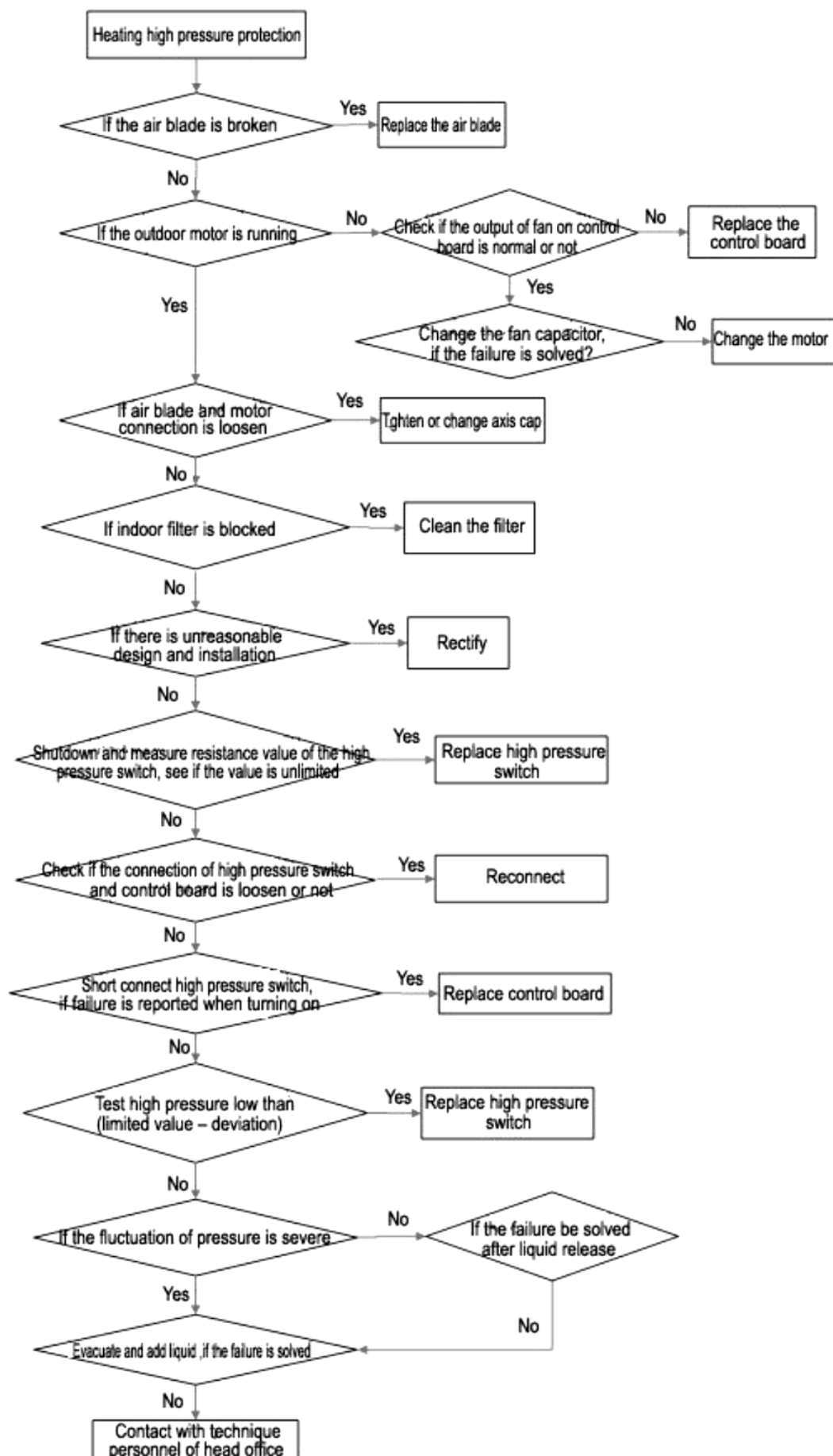
## Outdoor protection (phase sequence)



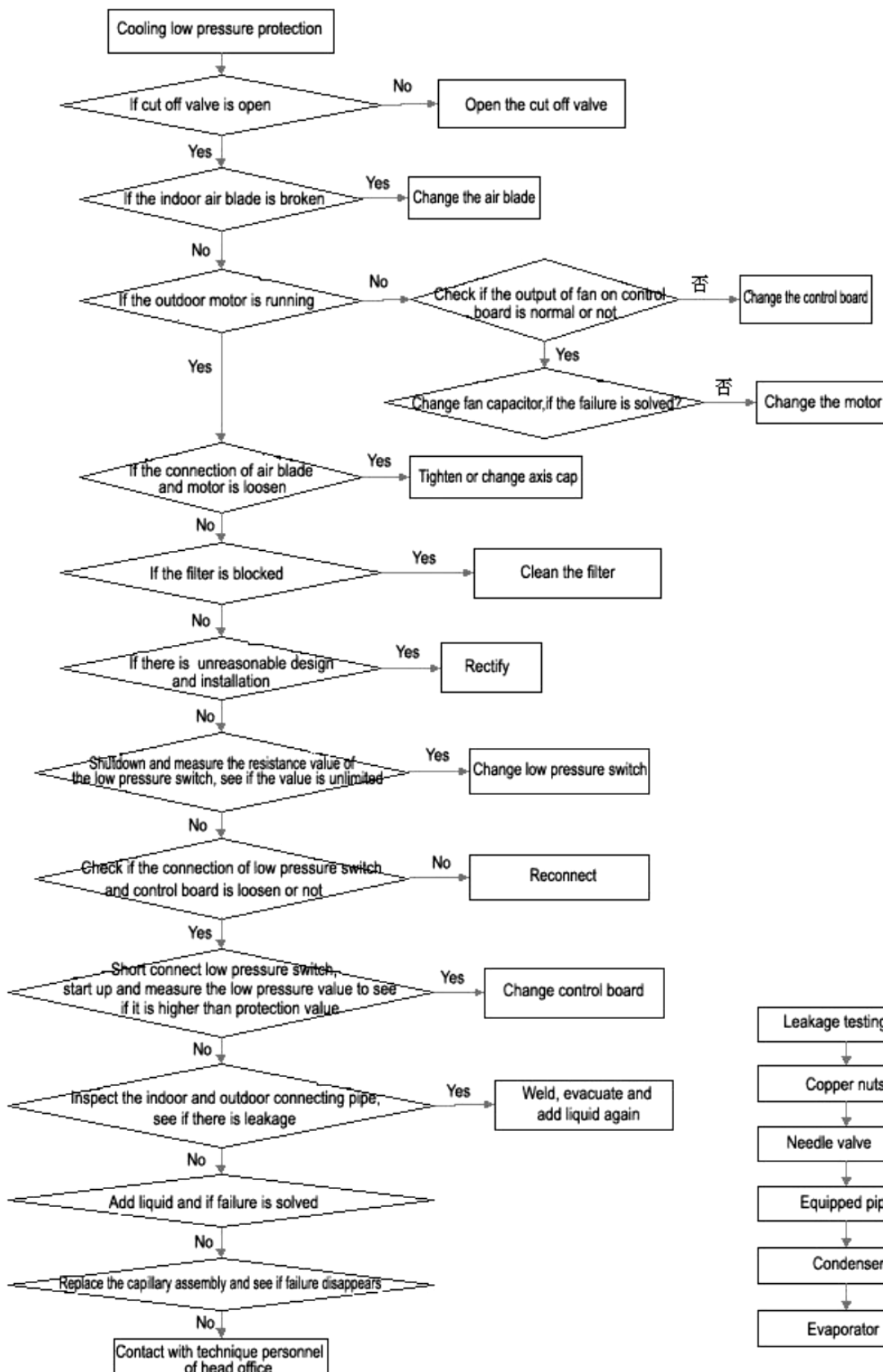
# Cooling high pressure protection



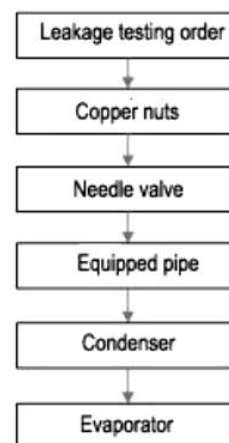
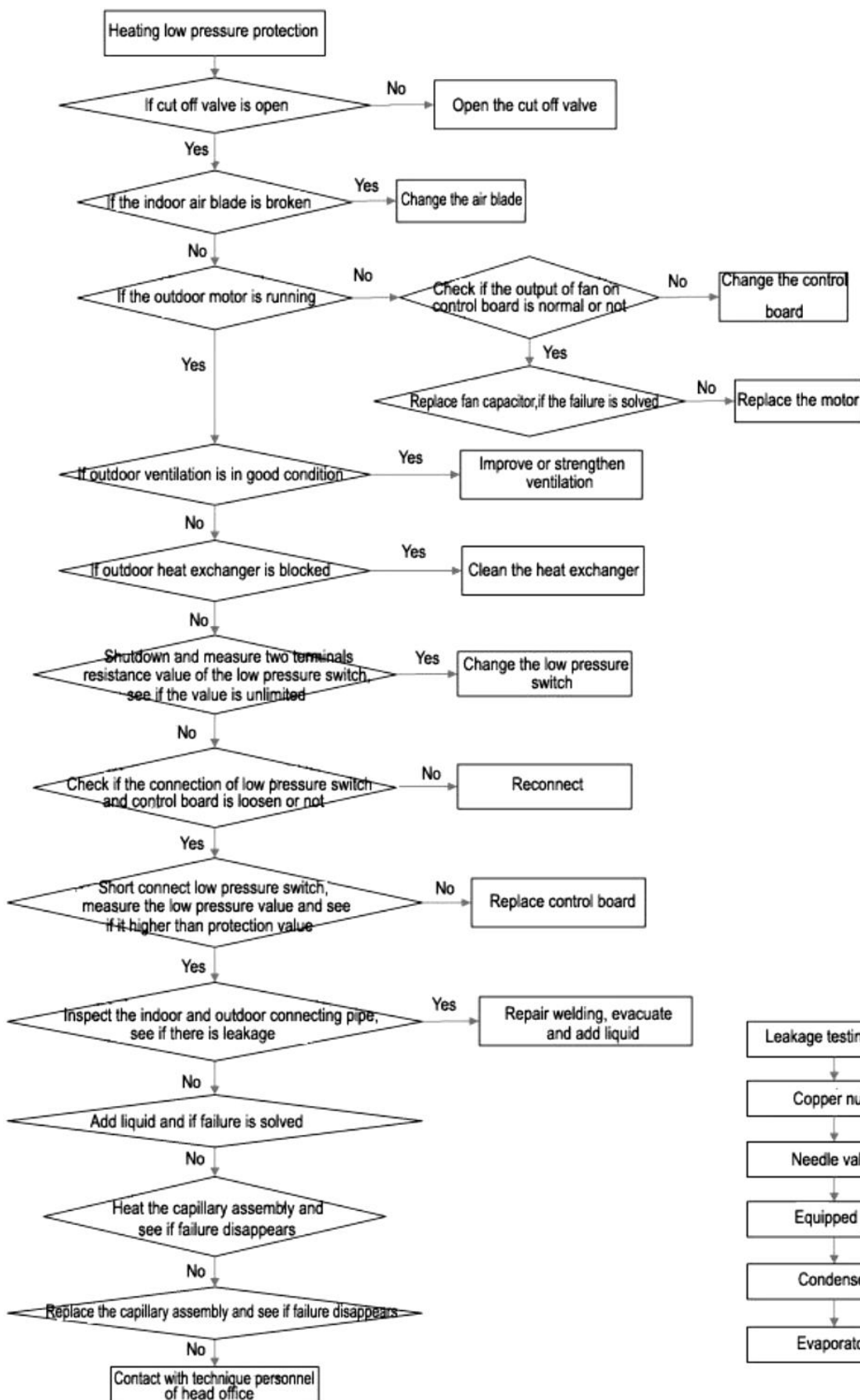
# Heating high-pressure protection



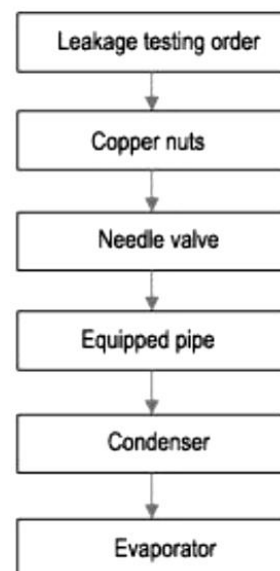
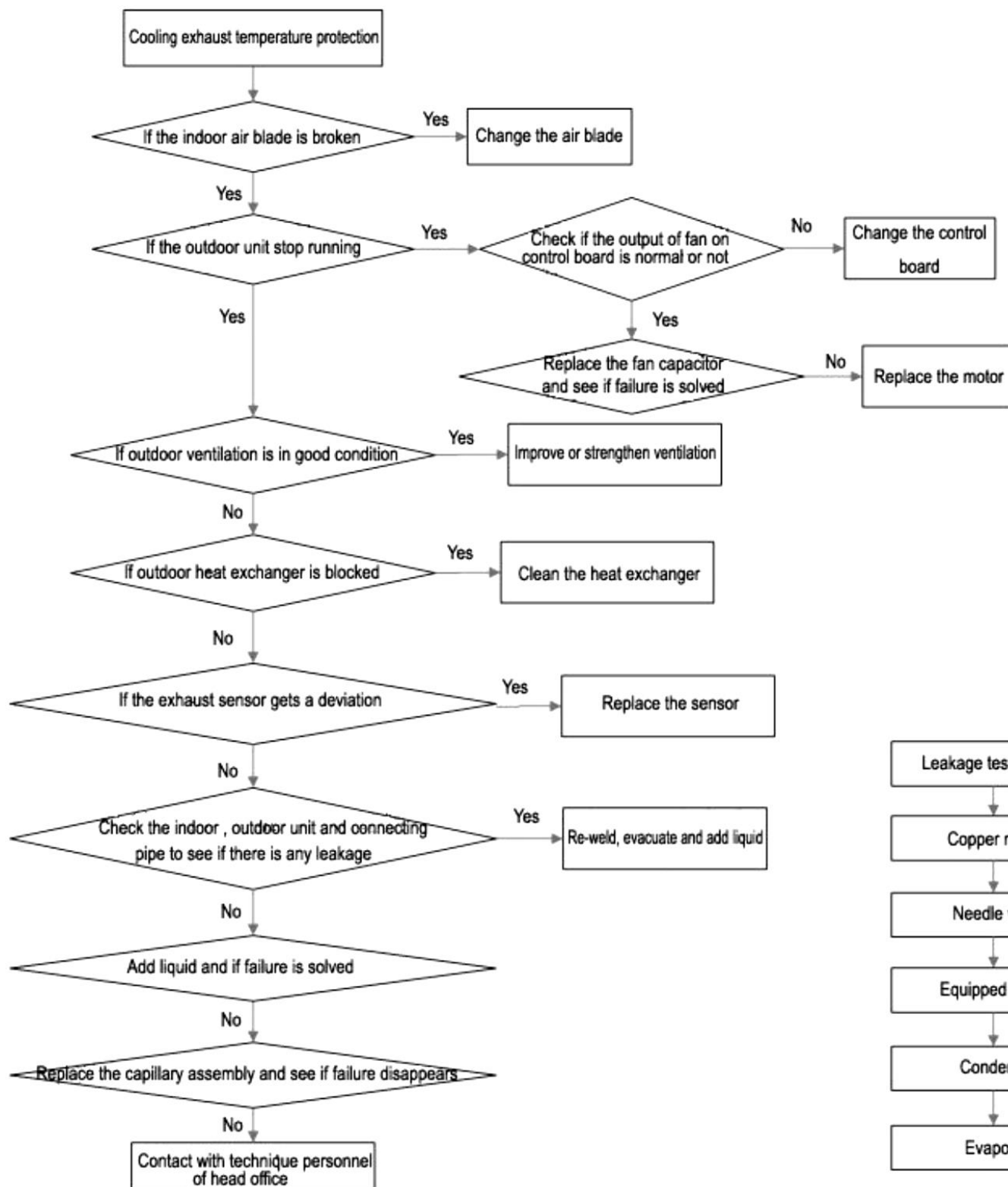
# Cooling low-pressure protection



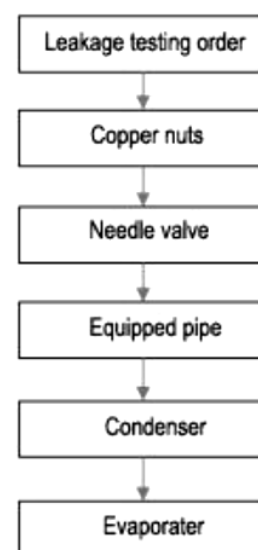
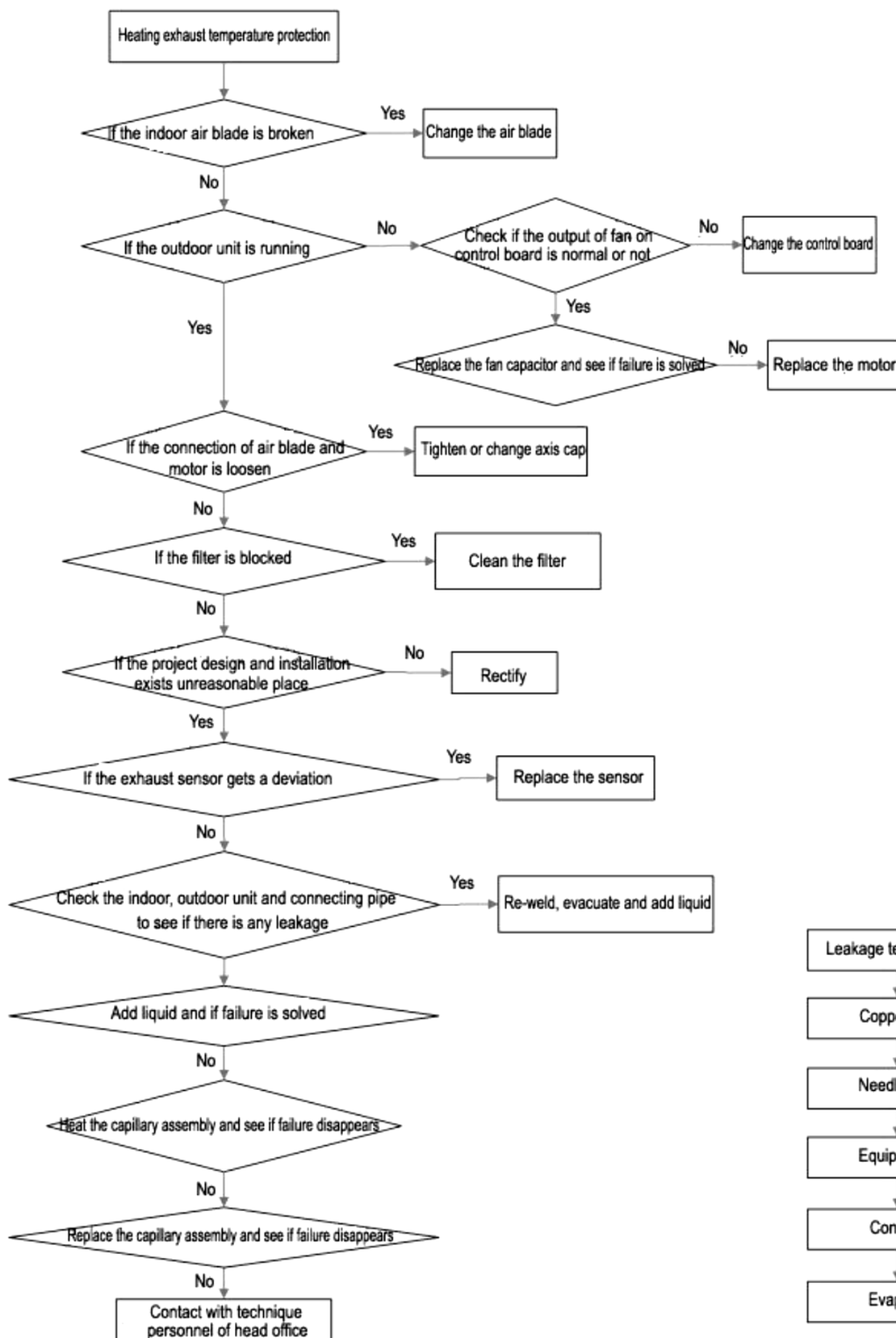
# Heating low-pressure protection



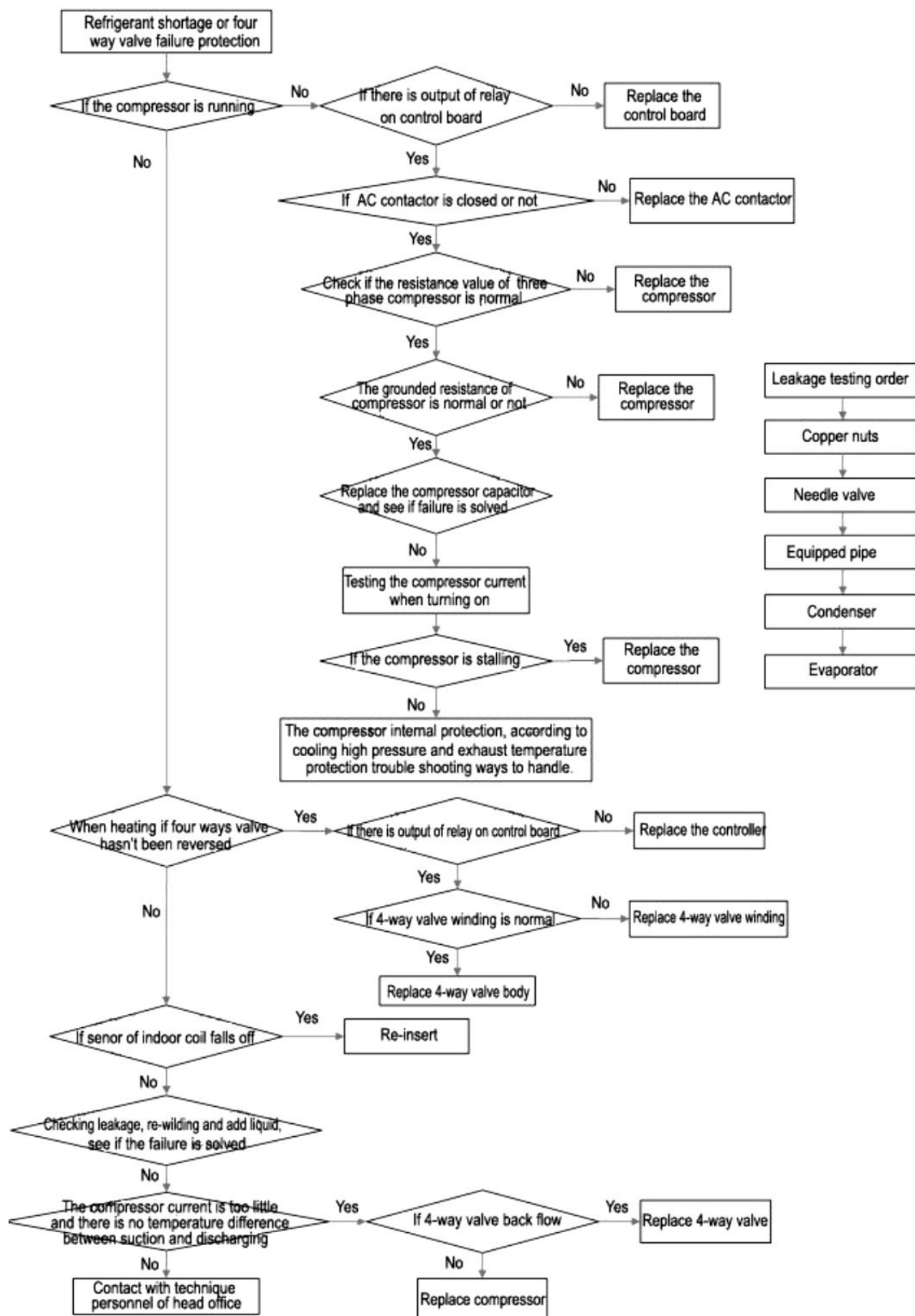
# Cooling exhaust temperature protection



# Heating exhaust temperature protection

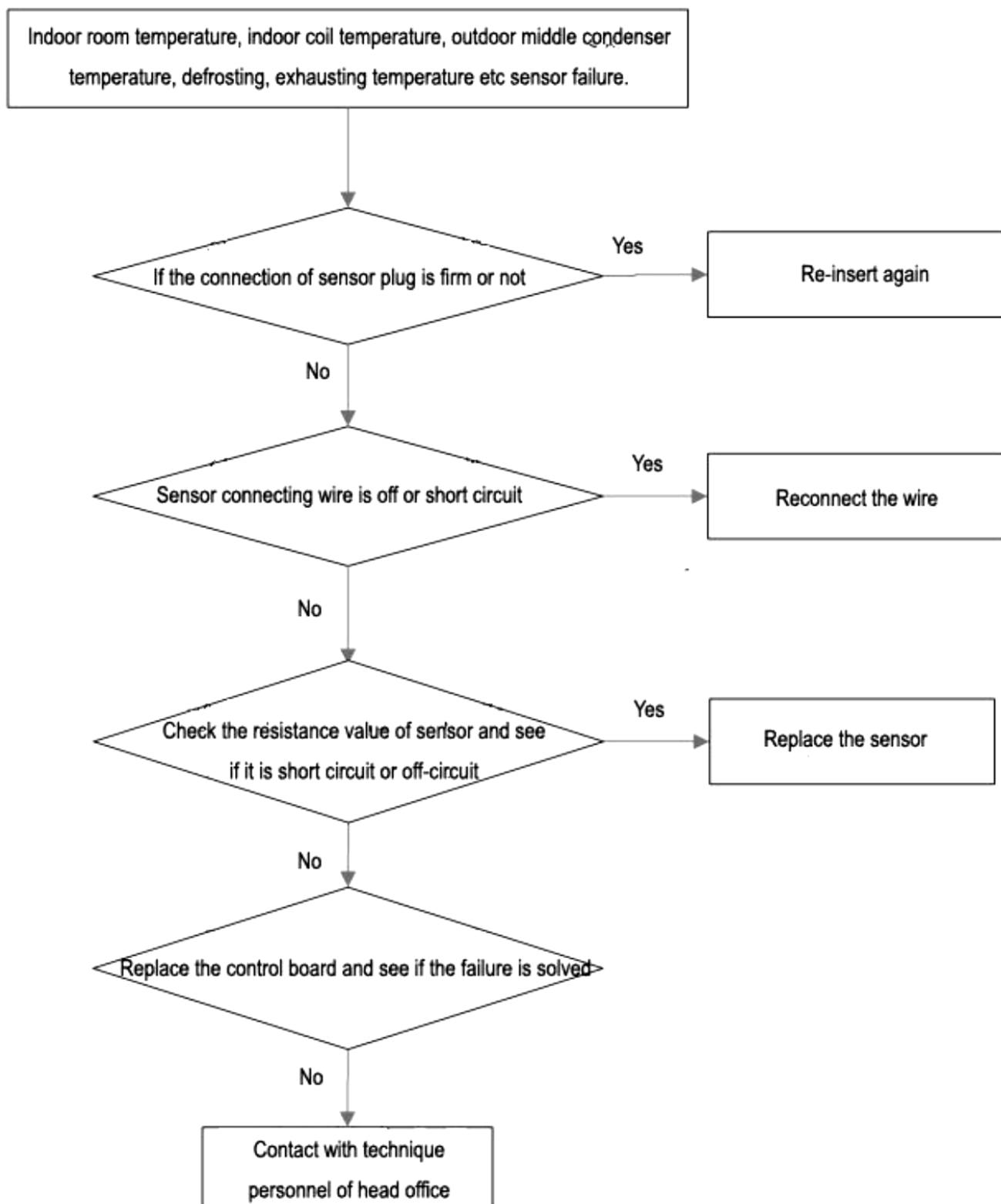


# Refrigerant shortage or four way valve failure protection





## Sensor failure protection

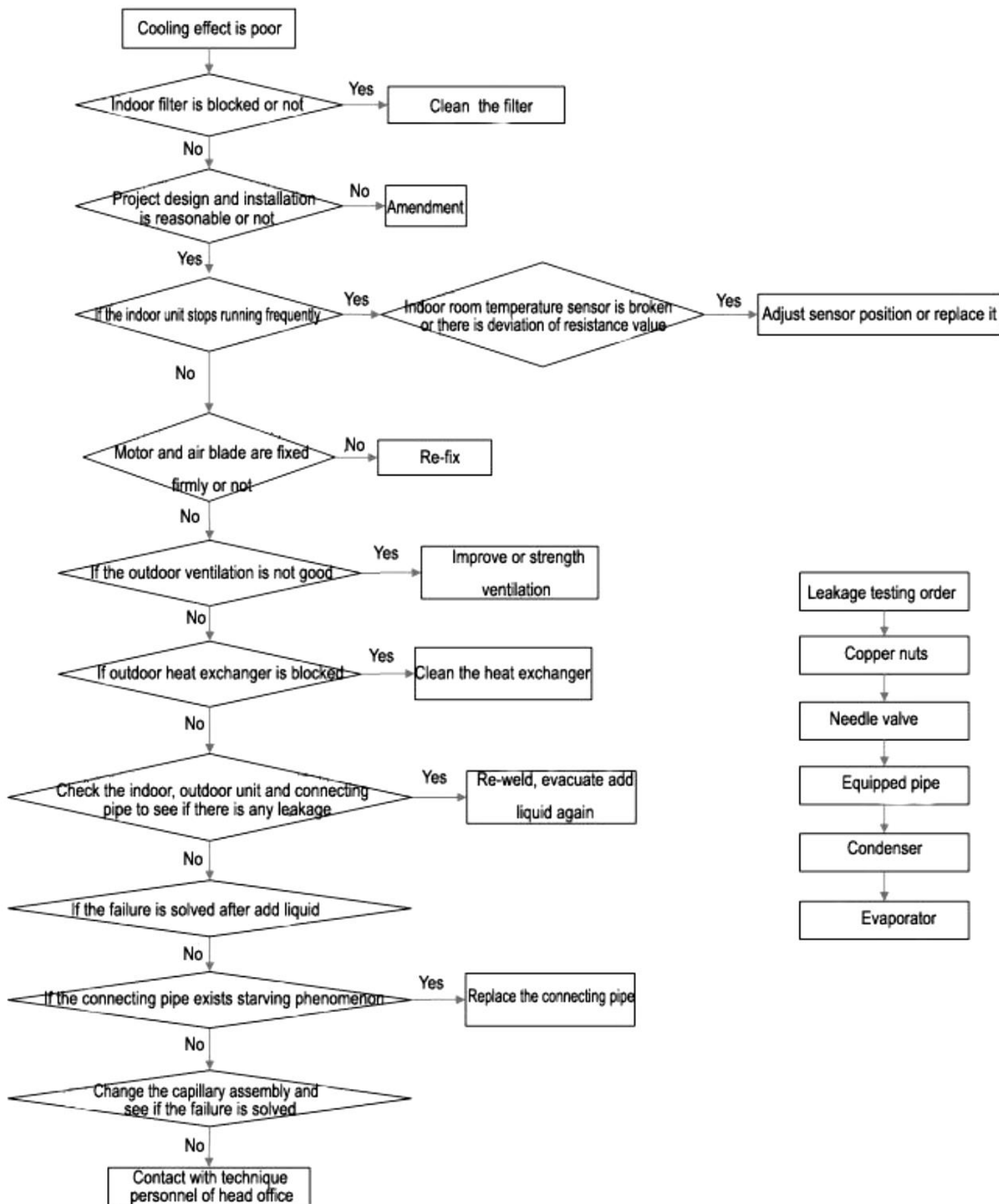


## 11.4 Analysis and elimination for the failure without failure code

### 11.4.1 No action after power-on

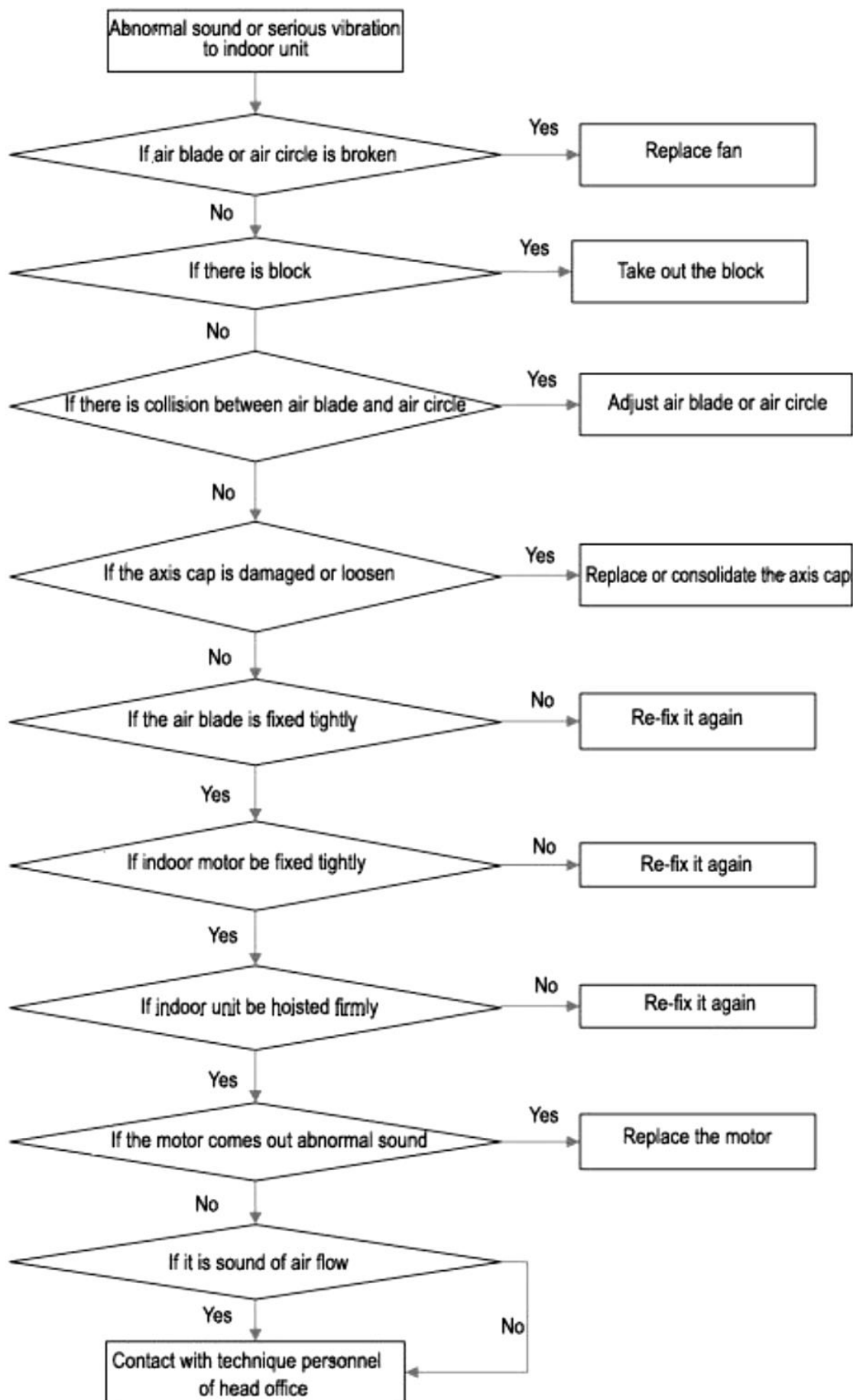


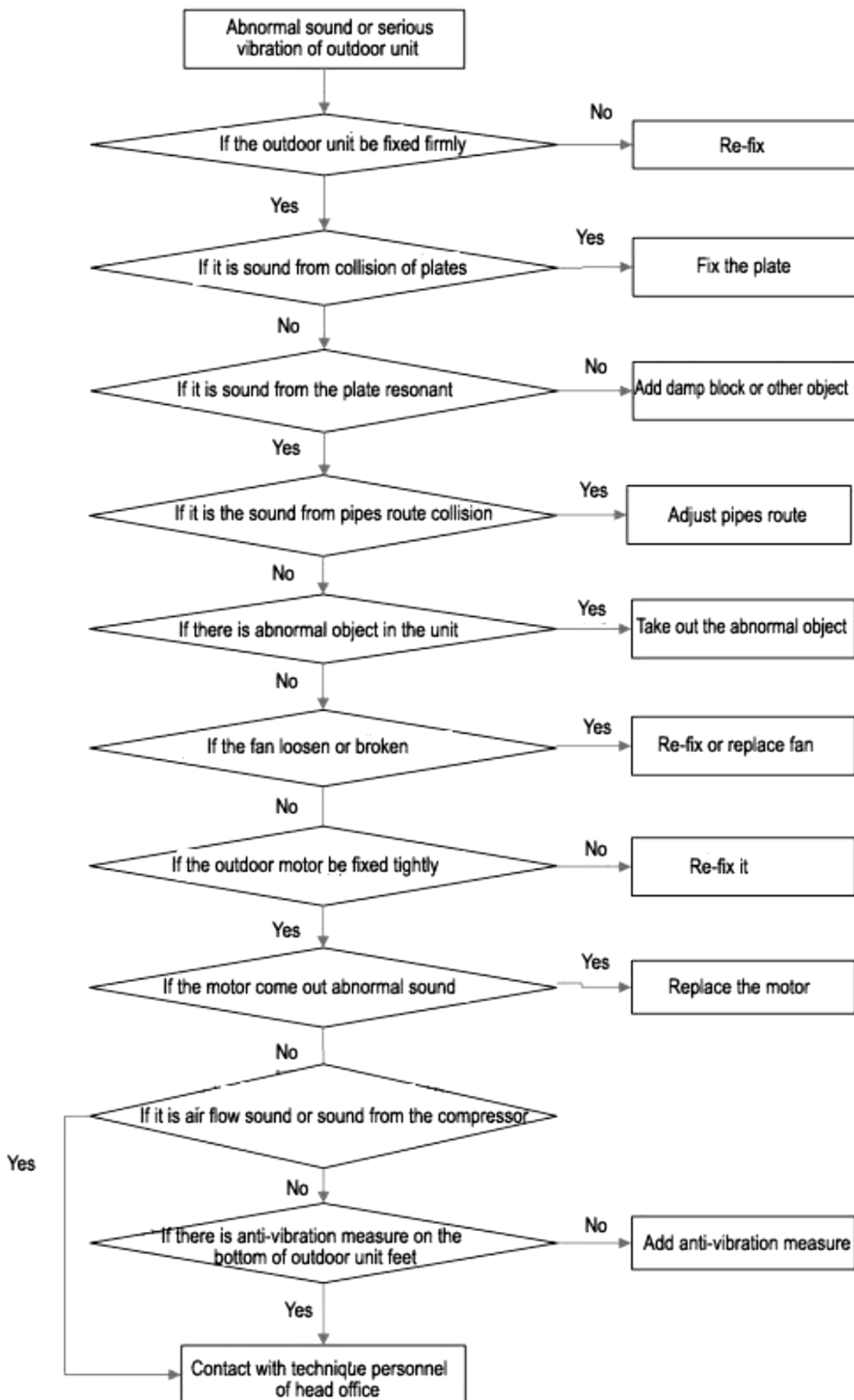
#### 11.4.2 Air conditioner operates, but effect is terrible



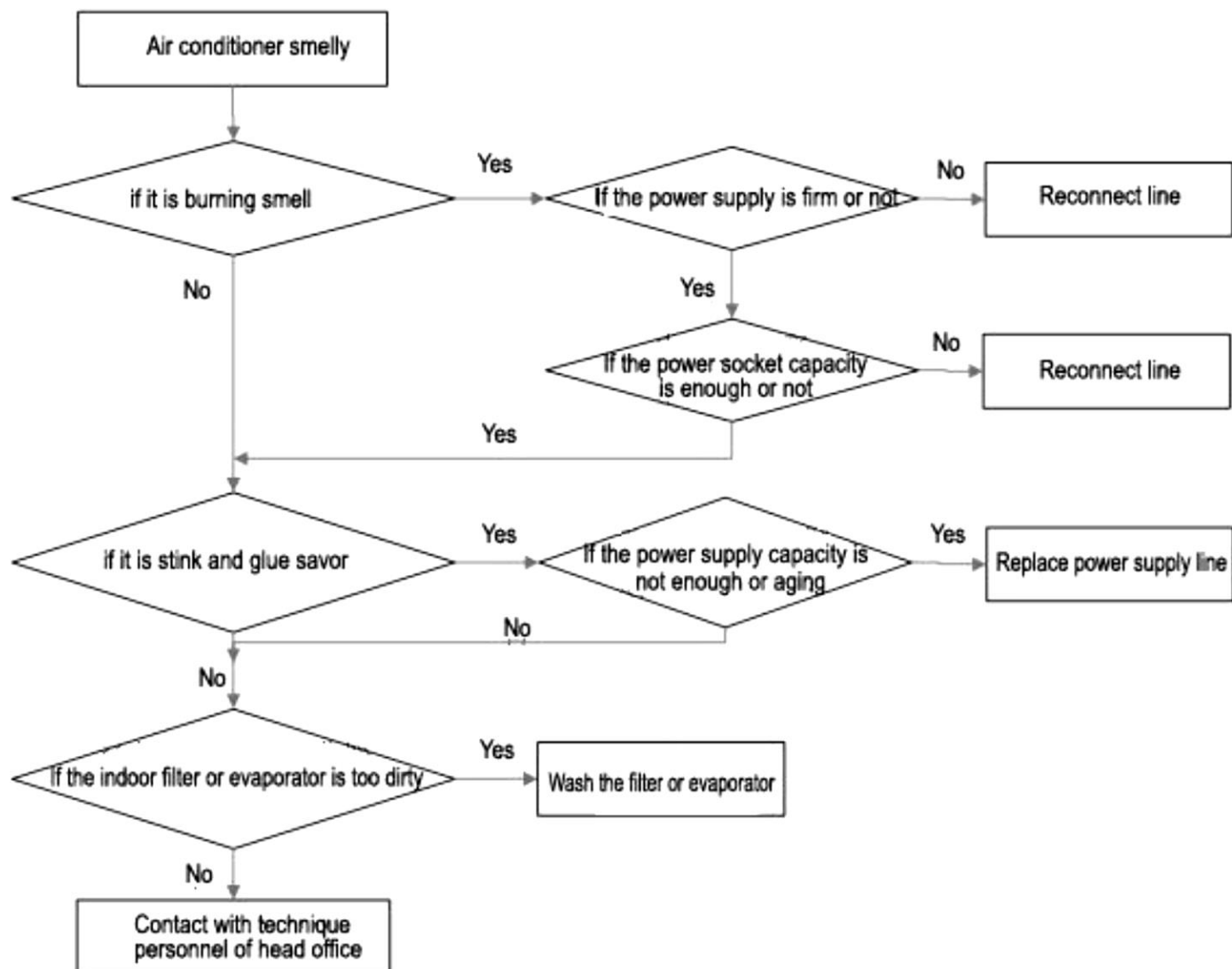


### 11.4.3 Abnormal sound or vibration

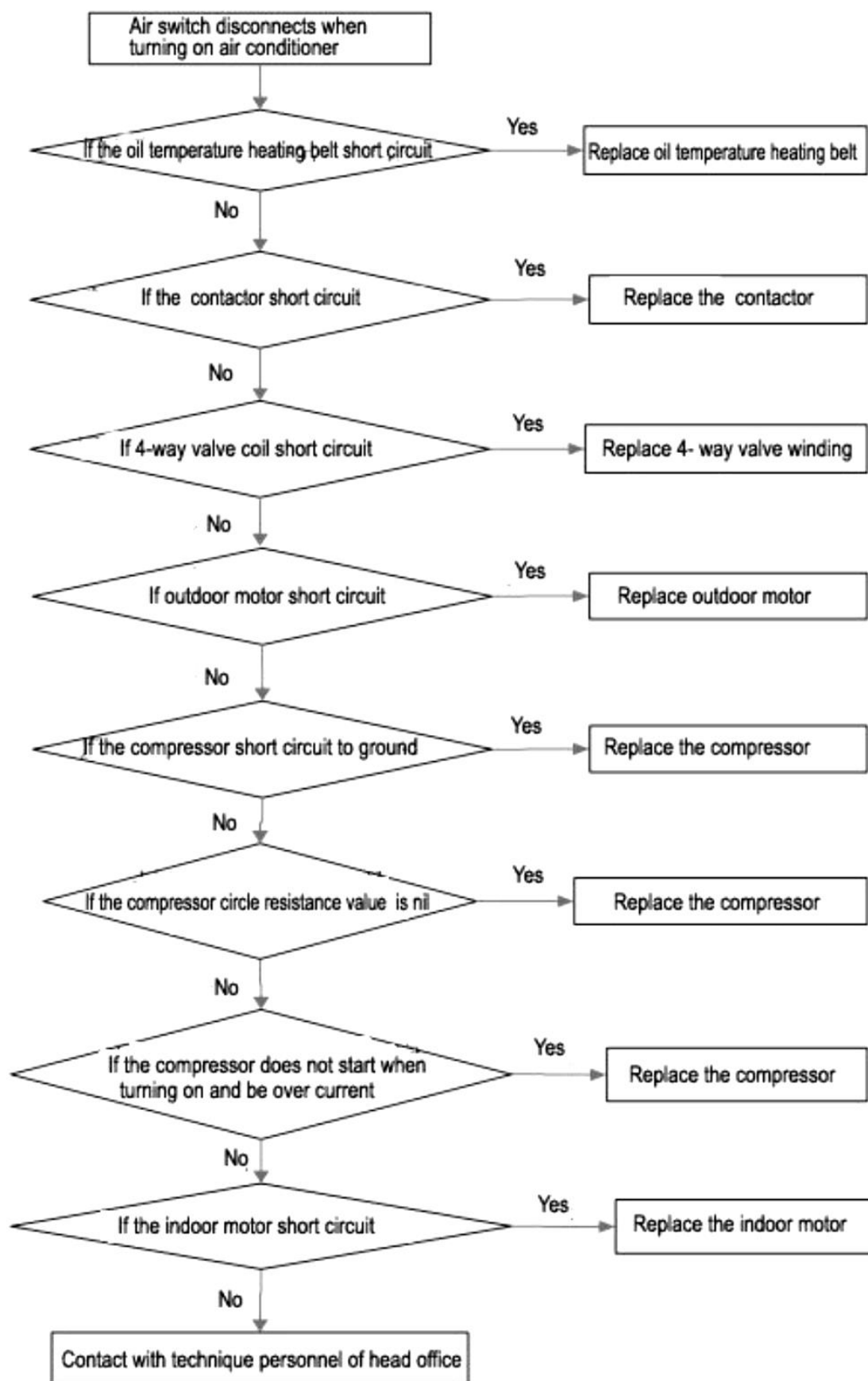




11.4.4 Abnormal odor

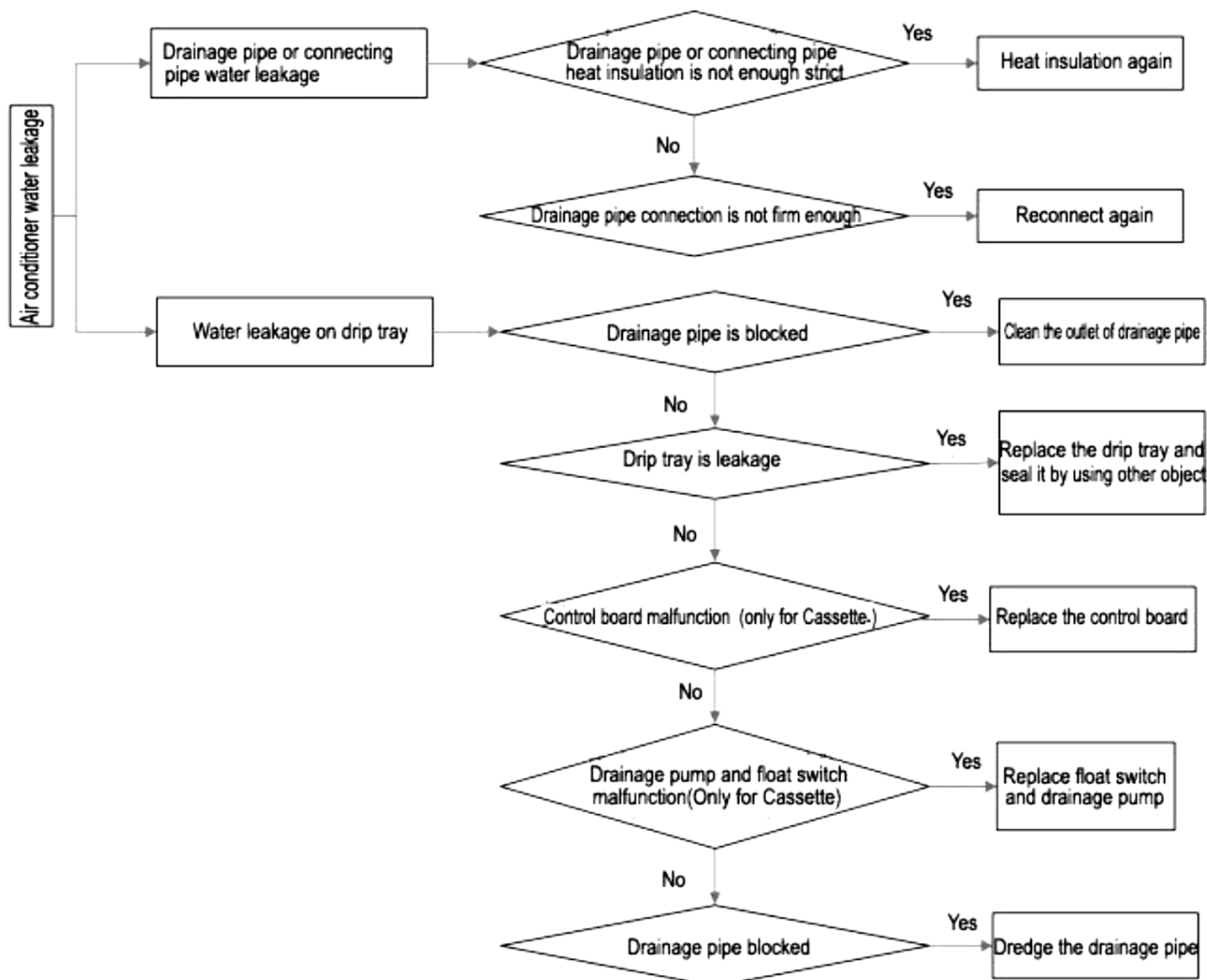


#### 11.4.5 Air switch action when air conditioner starting up





### 11.4.6 Air conditioner water leakage



## 11.5 Non-aircon failure

### 11.5.1 Poor cooling or heating efficiency, but it is not failure

During the process of using air conditioner, some phenomenon seems to be malfunction but actually not. Thus when cooling effect does not achieve to your expectation, the following factors have to be ruled out

Phenomenon	Causing explanation
High outside temperature and too many indoor individuals, even air conditioner runs at full-load operation, the wind blowing out from air outlet is cold, but it is difficult to lower the indoor temperature, this is not malfunction.	When the outdoor temperature is higher, more heat penetrates into indoor space, which increases the cooling load of AC. If there are too many individuals(for example 10 individuals) and every individual gives off 120W, totally 1200W, this will running out of half of AC cooling capacity, and the unit's cooling capacity this time is far from enough, indoor temperature is hard to lower down. It is normal phenomenon and do not mean useless of AC.

Power voltage is too low, causing AC uneasy to start and shut down after starting, or fuse burned out etc.	It is not malfunction, need to find out the causing, if the causing is the electricity net voltage is too low, user should load a power manostat to keep voltage between 220V-380V for AC normally running
Select high wind speed but indoor temperature still at high side, air flow from the air outlet is too weak.	It is because air filter is too dirty or blocked making cooling capacity fail to be brought by air flow, causing cooling capacity inadequate. Take out filter and wash, the problem will be solved.
Select high wind speed, the vibration and sound of unit are severe.	Fan runs at high speed, severe vibration and sound of unit is normal phenomenon
Temperature controller adjusts improper and max cooling capacity is not utilized completely, thus indoor temperature can't lower down.	Adjust the temperature controller, and problem will be solved.
As for Heat pump air conditioner heating effect is not ideal during cold winter, this is normal phenomenon.	The lowest temperature is $-7^{\circ}\text{C}$ when heating, below this temperature unit cannot heat effectively.
Improper installation will lead to indoor temperature uneven or bad cooling effect.	It is necessary to adjust AC installation position

#### 11.5.2 It means there is failure if following phenomenon is happened

Phenomenon	Causing explanation
Mirage comes out from indoor unit	When the cold air from AC cools the indoor air
Noise	<ul style="list-style-type: none"> <li>• When air conditioner stops running, there will be some noise, and this is because the refrigerant flows contrarily.</li> <li>• AC expand or shrink according to temperature, causing harsh sounds</li> <li>• Liquid sound is from refrigerant flowing</li> </ul>
Sometimes, the room is smelly	<ul style="list-style-type: none"> <li>• The AC itself will not be smelly, if it is smelly, it is because environment smell accumulated</li> <li>• Solution: clean the filter</li> </ul>
when heating, there is no wind at the beginning of starting unit	<ul style="list-style-type: none"> <li>• It is to prevent cold air blowing, please be patient</li> <li>• The unit has auto-restart function, when it is repowered again, unit will run according to the mode which is set before the power off. (Note: default is closed)</li> </ul>

The unit has auto-restart function, when it is repowered again, unit will run as setting mode.

**Note:** closed default

## 11.6 Electric components malfunction inspection

No	Component name	Inspection methods
1	Compressor	1. Using multi-meter ohm phase, there is correct resistance value among windings (single phase compressor refers to specification, three phase compressor resistance approximately equal), resistance of winding should be infinite.
2	Control board	1. 1Check if any connection part of PCB loosen or drop off, printed tinsel and components have any burn, fade, breaking off or aging phenomenon, all joints exist short circuit phenomenon etc. 2. Test the circuit board system in the term of voltage, pulse on, resistance variation, by using testing meter. 3. Judge the output and input is normal or not according to electric principle diagram
3	Contactator	1、 Press the contactor by hand, the contactor reacts immediately and without question 2、 The contacting point of contactor has no burn and melt phenomenon 3、 The winding has resistance value below 1000, but cannot be nil or infinite
4	4-ways valve winding	The winding has resistance value below 1000, but cannot be nil or infinite
5	Capacitor	1、 No expansion phenomenon apparently 2、 Measure capacitor by using capacitor phase of multi-meter( if the multi-meter has no capacitor phase, use ohm phase, contact the two terminal of meter to two feet of capacitor, and quickly switch positive pole and negative pole and reconnect, the resistance should display from nil to infinite quickly. The resistance can't change is always nil or infinite).
6	Sensor	1. Using multi-meter to measure resistance, find out temperature according to resistance table, the temperature should accord with sensor temperature. 2. Resistance cannot be nil or infinite
7	Motor	1、 No burning trace apparently 2、 Using multi-meter ohm phase, there is correct resistance value among windings (single phase compressor refers to specification, three phase compressor resistance approximately equal), resistance of winding should be infinite.

## 11.7 Sensor resistance reference table

### 11.7.1 Coil and environment temperature sensor 5K3470 resistance reference table

Coil and environment temperature sensor 5K3470					
Tx(°C)	Average (KΩ)	Tx(°C)	Average (KΩ)	Tx(°C)	Average (KΩ)
-20	72.99	21	5.854	61	1.421
-19	35.16	22	5.626	62	1.376
-18	33.43	23	5.408	63	1.334
-17	31.80	24	5.199	64	1.293
-16	30.26	25	5.000	65	1.254
-15	28.80	26	4.811	66	1.215
-14	27.42	27	4.630	67	1.179
-13	26.12	28	4.456	68	1.143
-12	24.88	29	4.291	69	1.109
-11	23.71	30	4.132	70	1.076
-10	22.60	31	3.980	71	1.044
-9	21.55	32	3.835	72	1.013
-8	20.56	33	3.695	73	0.9837
-7	19.61	34	3.562	74	0.9550
-6	18.72	35	3.434	75	0.9273
-5	17.87	72	3.311	76	0.9005
-4	17.06	37	3.193	77	0.8746
-3	16.30	38	3.081	78	0.8496
-2	15.57	39	2.972	79	0.8254
-1	14.88	40	2.869	80	0.8021
0	14.23	41	2.769	81	0.779
1	13.60	42	2.673	82	0.758
2	13.01	43	2.581	83	0.737
3	12.45	44	2.493	84	0.716
4	11.91	45	2.409	85	0.696
5	11.40	46	2.307	86	0.677
6	10.92	47	2.249	87	0.658
7	10.46	48	2.174	88	0.641
8	10.02	49	2.102	89	0.623
9	9.596	50	2.032	90	0.606
10	9.197	72	1.965	91	0.590
11	8.817	52	1.901	92	0.574
12	8.454	53	1.839	93	0.559
13	8.108	54	1.780	94	0.544
14	7.779	55	1.722	95	0.530
15	7.464	56	1.667	96	0.726
16	7.164	57	1.614	97	0.502
17	6.877	58	1.563	98	0.489
18	6.603	59	1.724	99	0.476
19	6.342	60	1.466	100	0.464
20	6.092				

# 11.8 Exhaust temperature sensor 6.339K3954

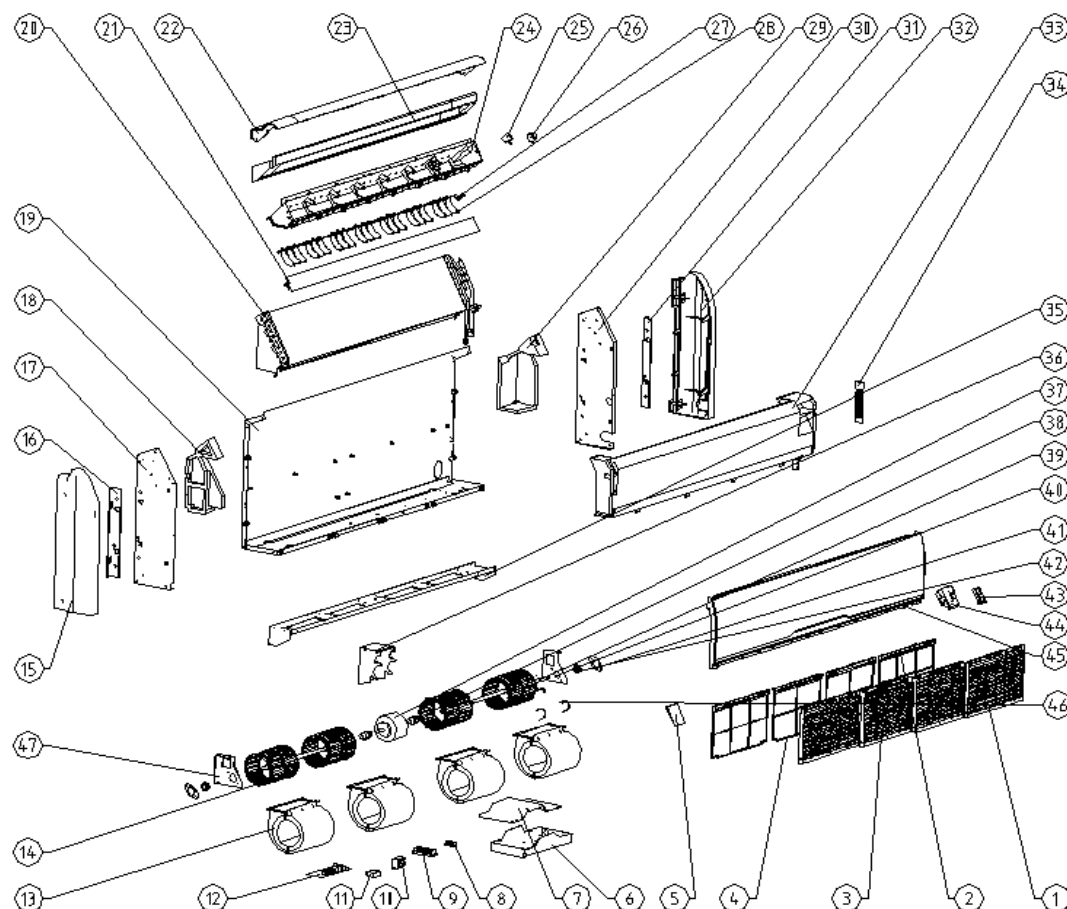
Exhaust temperature sensor R80 : 6.339KΩ±1% B25/80=3954K±1%							
T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]	T [°C]	Rmin [KΩ]
-20	440.7	20	60.42	60	12.32	100	3.377
-19	417.0	21	57.79	61	11.89	101	3.279
-18	394.7	22	55.29	62	11.48	102	3.184
-17	373.7	23	52.91	63	11.08	103	3.093
-16	353.9	24	50.65	64	10.70	104	3.003
-15	335.2	25	48.49	65	10.34	105	2.918
-14	317.7	26	46.44	66	9.992	106	2.836
-13	301.2	27	44.49	67	9.652	107	2.755
-12	285.6	28	42.64	68	9.328	108	2.678
-11	271.0	29	40.88	69	9.017	109	2.603
-10	257.1	30	39.19	70	8.717	110	2.530
-9	244.0	31	37.59	71	8.428	111	2.460
-8	231.7	32	36.06	72	8.152	112	2.392
-7	220.0	33	34.59	73	7.885	113	2.326
-6	209.0	34	33.21	74	7.628	114	2.262
-5	198.6	35	31.88	75	7.381	115	2.201
-4	188.7	36	30.60	76	7.143	116	2.141
-3	179.4	37	29.39	77	6.914	117	2.083
-2	170.7	38	28.23	78	6.693	118	2.026
-1	162.4	39	27.13	79	6.480	119	1.972
0	154.5	40	26.07	80	6.276	120	1.920
1	147.1	41	25.06	81	6.075	121	1.868
2	140.0	42	24.09	82	5.881	122	1.819
3	133.3	43	23.17	83	5.694	123	1.772
4	127.1	44	22.29	84	5.514	124	1.725
5	121.1	45	21.44	85	5.340	125	1.680
6	115.4	46	20.64	86	5.175	126	1.636
7	109.9	47	19.86	87	5.014	127	1.594
8	104.9	48	19.13	88	4.859	128	1.552
9	100.0	49	18.42	89	4.711	129	1.513
10	95.43	50	17.74	90	4.567	130	1.475
11	91.07	51	17.09	91	4.429	131	1.437
12	86.93	52	16.46	92	4.294	132	1.401
13	83.00	53	15.87	93	4.166	133	1.365
14	79.26	54	15.30	94	4.040	134	1.331
15	75.71	55	14.74	95	3.920	135	1.297
16	72.33	56	14.22	96	3.803	136	1.266
17	69.13	57	13.71	97	3.691	137	1.234
18	66.08	58	13.23	98	3.583	138	1.204
19	63.18	59	12.77	99	3.478	139	1.174

# 1.9 Compressor freezing oil brand and standard oil charge

Outdoor model	Brand	Compressor specification	Compressor Lubricating Oil brand	Oil charge (cm3)
AL-C(H)60/5R1(U)	DAIKIN	JT170G-P8Y1	DAPHNE FVC68D	1500

## 12. EXPLODED VIEWS AND SPARE PARTS LISTS

### 12.1 Indoor Unit

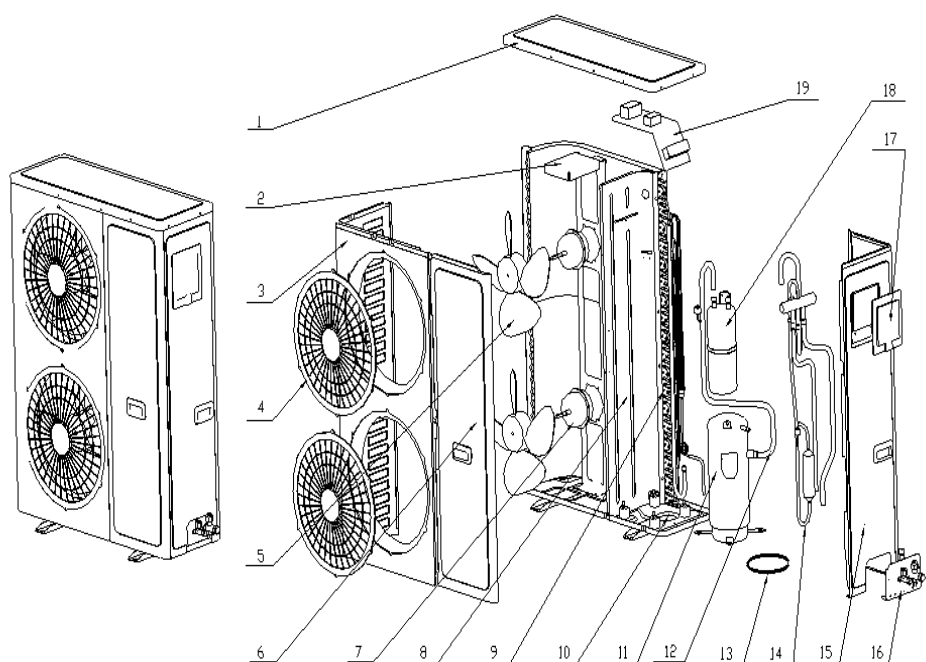


N0.	Part Description	Part code number	Quantity
1	Air-inlet filter	A16420012000002	1
2	Air-inlet grill(white)	A16420010000002	1
3	In the center filter net	A16420012000003	1
4	Air-inlet grill(white)	A16420010000003	1
5	Left side adornment plank	A16420015000002	1
6	The electricity controls a box	A16421038000009	1
7	The electricity controls a box of cover	A16421005000205	1
8	Compress tightly electric wire seat	A11220544000008	1
	Compress tightly electric wire cover	A11220544000008	1
9	Terminal board	A16427001000003	1
10	Transformer	A16422005000017	1
11	Capacitor	A16430015000005	1
12	PCB board	A16422001000029	1
13	Top plastics	A16444002000003	1
	Low plastics	A16444002000004	1
14	centrifugal fan assembly	A16444001000004	1
15	The left side covers	A16420014000007	1

## Indoor Unit

N0.	Part Description	Part code number	Quantity
16	Left suspend plate	A16421001000029	1
17	Bracket board welding assembly of left-hand	A16321006000005	1
18	Left foam	A16428001000017	1
19	Chassis welding assembly	A16321006000020	1
20	Evaporator assembly	A16324006000012	1
21	Sway a breeze leaf	A16420005000004	1
22	The crest covers plank	A16420014000015	1
23	Topmost foam	A16428001000022	1
24	Air guide louver assembly	A16420006000006	1
25	Step motor	A16430001000018	1
26	Step motor	A16430001000022	1
27	Connect a pole	A16420008000003	1
	Connect a pole	A16420008000005	1
28	Perpendicular blade	A16420007000008	1
29	Right foam	A16428001000018	1
30	Bracket board welding assembly of right-hand	A16321006000006	1
31	Right suspend plate	A16421001000030	1
32	The Right side covers	A16420014000008	1
33	Draining tray	A16321006000007	1
34	Drain pipe	A16432019000004	1
35	Volute fixing board	A16421002000187	1
36,37,46	Motor	A16430001000026	1
38	Motor coupling	A16444007000001	1
39	Motor lengthen axes	A16444007000003	1
40	Bearing base	A16421002000011	1
41	Bearing top cover	A16421002000219	1
42	Rubber bearings	A16432016000033	1
43	Display board	A11222023000333	1
44	Display board cover	A16420017000002	1
45	Front panel	A16420013000017	1
47	Bearing base	A16421002000189	1

## 12.2 Outdoor Unit



N0.	Part Description	Part Code Number	Quantity
1	Top cover board	A11321009000010	1
2	Motor bracket assembly	A16321004000117	1
3	Big panel	A11321005000047	1
4	Net for big panel	A16420020000009	2
5	Axial-flow wind leaves	A16444008000025	2
6	Small panel	A11321005000048	1
7	Outdoor Motor	A16430001000223	2
8	Wind-defending vertical board	A11321025000034	1
9	Condenser assembly	A16324004000154	1
9,1	Upside condenser component	A16324004000022	1
9,2	Cooling capillary	A16426016000592	1
9,3	Heating capillary	A16426016000593	1
10	Chassis assembly	A16321004000077	1
11	Compressor	A16438001000038	1
12	Return air pipe assembly	A16325004000814	1
12,1	Low Pressure Switch	A16442024000005	1
13	Oil heat strap	A16430022000002	1
14	Four-way valve assembly	A16325004000815	1
14,1	High Pressure Switch	A16442024000010	1
14,2	Four-way valve	A11225509000067	1
14,3	Four-way valve loop	A11330011000030	1
14,4	Muffler	A16325004000796	1
15	Right-hand board	A11321007000088	1
16	valve plate	A11321031000016	1
16,1	Stop valve 3/8in	A16441004000052	1
16,2	Stop valve 3/4in	A16441004000049	1
17	Cover for electric components	A16421005000262	1
18	Flash chamber	A16442023000010	1
19	Electric assembly	A16322004000107	1
19,1	PCB board	A16422001000019	1
19,2	AC contactor	A16430009000029	1
19,3	Capacitor for fan motor	A11330010000047	1
19,4	Terminal board	A16427001000033	1
19,5	transformer	A16422005000005	1
19,6	Sensor 1.3m	A16430007000048	1
19,7	Sensor 0.9m	A16430007000101	1
19,8	Sensor 0.9m	A16430007000157	1
19,9	Electric components box	A11321015000013	1



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