

SERVICEMANUAL CASSETTE

QW

CATALOGUE

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Picture of the formal

18000Btu	 <p>new</p>	
24000Btu	 <p>new</p>	
41000Btu		
48000Btu	 <p>new</p>	

Technical specifications



R22

Item		Model	KF-50QW	KFR-50QW	KF-70QW	KFR-70QW
Cooling Capacity		Btu	18000	18000	24000	24000
Heating Capacity		Btu	/	18800	/	25600
Power supply			220V~50Hz			
Power cable capacity		A	30	30	40	40
Cooling	Power input	W	1880	1880	2200	2200
	Running current	A	9.0	9.0	10.1	10.1
	EER	W/W	2.66	2.66	3.18	3.18
Heating	Power input	W	/	1750	/	1950
	Running current	A	/	8.2	/	8.9
	COP	W/W	/	3.14	/	3.85
Indoor Unit	Colour		White	White	White	White
	Control method		Remote control	Remote control	Remote control	Remote control
	Air volume(H)	m ³ /h	780	780	1250	1250
	Fan speed(H/M/S)	rmp	720/650/560	720/650/560	840/760/680	840/760/680
	Fan motor output power x qty	W	20X1	20X1	40X1	40X1
	Subsidiary electric heating	W	/	/	/	/
	Noise level	dB(A)	≤46	≤46	≤52	≤52
	Size of draining hose	mm	φ 25	φ 25	φ 25	φ 25
	Dimension	mm	570X570X300	570X570X300	950X950X240	950X950X240
	Weight	kg	23	23	30	30
Out-door Unit	Colour		White	White	White	White
	Throttle device		Capiuary throttle	Capiuary throttle	Capiuary throttle	Capiuary throttle
	Compressor type		Rotary	Rotary	Rotary	Rotary
	Compressor model		PH310/SHX33/TH338	PH310/SHX33/TH338	PH420/SHV33	PH420/SHV33
	Power input	W	1700	1700	2000	2000
	Starting current	A	40	40	60	60
	Running capacitor	μ F	40/50/50	40/50/50	50/50	50/50
	Fan speed	rpm	850	850	830	830
	Fan motor output power x qty	W	45X1	45X1	70X1	70X1
	Defrosting method		/	Sensor defrost	/	Sensor defrost
	Noise level	dB(A)	≤57	≤57	≤60	≤60
	Dimension	mm	920X355X600	920X355X600	920X375X730	920X375X730
	Weight	kg	49	51	60	60
Refrigerant	Type		R22	R22	R22	R22
	Refrigerant charged	g	1600	1600	1950	1950
Connecting piping	Liquid pipe	mm	φ 6.35	φ 6.35	φ 9.52	φ 9.52
	Gas pipe	mm	φ 12.7	φ 12.7	φ 15.88	φ 15.88
	Standard length	m	3.5	3.5	4	4
	Max.length	m	15	15	30	30
	Max.altitude difference	m	7	7	10	10

① Rated cooling capacity under below conditions:

Indoor temp:27℃DB, 19℃WB; Outdoor temp:35℃DB, 24℃WB.High speed;3.5-meter connecting pipe.

② Rated heating capacity under below conditions:

Indoor temp:20℃DB;Outdoor temp:7℃DB, 6℃WB.High speed;3.5-meter connecting pipe.

③ We get the noise under heating mode meantime.The fan runs at high speed.

④ Technical data is determined by the label data .

Technical specifications

R22

Item		Model	KF-120QW/S	KFR-120QW/S	KF-140QW/S	KFR-140QW/S
Cooling Capacity		Btu	41000	41000	48000	48000
Heating Capacity		Btu	/	44300	/	51000
Power supply			3N~50Hz 380V			
Power cable capacity		A	20	20	20	20
Cooling	Power input	W	4300	4300	4800	4800
	Running current	A	9.0	9.0	9.9	9.9
	EER	W/W	2.79	2.79	2.92	2.92
Heating	Power input	W	/	4300	/	4900
	Running current	A	/	9.0	/	10.0
	COP	W/W	/	3.02	/	3.06
Indoor Unit	Colour		White	White	White	White
	Control method		Remote controler	Remote controler	Remote controler	Remote controler
	Air volume(H)	m ³ /h	1750	1750	1750	1750
	Fan speed(H/M/S)	rmp	880/830/800	880/830/800	880/830/800	880/830/800
	Fan motor output power x qty	W	70X1	70X1	70X1	70X1
	Subsidiary electric heating	W	/	/	/	/
	Noise level	dB(A)	≤55	≤55	≤55	≤55
	Size of draining hose	mm	φ 25	φ 25	φ 25	φ 25
	Dimension	mm	950X950X290	950X950X290	950X950X290	950X950X290
	Weight	kg	45	45	45	45
Out-door Unit	Colour		White	White	White	White
	Throttle device		Capiuary throttle	Capiuary throttle	Capiuary throttle	Capiuary throttle
	Compressor type		Scroll compressor	Scroll compressor	Scroll compressor	Scroll compressor
	Compressor model		VR57KF-TFP-542	VR57KF-TFP-542	VR57KF-TFP-542	VR57KF-TFP-542
	Power input	W	4100	4100	4600	4600
	Starting current	A	60	60	60	60
	Running capacitor	μ F	/	/	/	/
	Fan speed	rpm	880	880	800	800
	Fan motor output power x qty	W	200X1	200X1	70X2	70X2
	Defrosting method		/	Sensor defrost	/	Sensor defrost
	Noise level	dB(A)	≤64	≤64	≤65	≤65
	Dimensions	mm	1000X410X960	1000X410X960	980X370X1325	980X370X1325
	Weight	kg	93	93	122	122
Refrigerant	Type		R22	R22	R22	R22
	Refrigerant charged	g	3200	3200	3500	3500
Connecting piping	Liquid pipe	mm	φ 9.52	φ 9.52	φ 9.52	φ 9.52
	Gas pipe	mm	φ 19.05	φ 19.05	φ 19.05	φ 19.05
	Standard length	m	5	5	5	5
	Max.length	m	50	50	50	50
	Max.altitude difference	m	15	15	15	15

① Rated cooling capacity under below conditions:

Indoor temp:27℃DB, 19℃WB; Outdoor temp:35℃DB, 24℃WB.High speed; 5-meter connecting pipe.

② Rated heating capacity under below conditions:

Indoor temp:20℃DB;Outdoor temp:7℃DB, 6℃WB.High speed;5-meter connecting pipe.

③ We get the noise under heating mode meantime.The fan runs at high speed.

④ Technical data is determined by the label data.

Technical specifications



R407C

Item		Model	KF-50QW	KFR-50QW	KF-70QW	KFR-70QW
Cooling Capacity		Btu	18000	18000	24000	24000
Heating Capacity		Btu	/	18800	/	25600
Power supply			220V~50Hz			
Power cable capacity		A	30	30	40	40
Cooling	Power input	W	1950	1950	2600	2600
	Running current	A	9.1	9.1	12.2	12.2
	EER	W/W	2.56	2.56	2.69	2.69
Heating	Power input	W	/	1750	/	2400
	Running current	A	/	8.2	/	11.2
	COP	W/W	/	3.26	/	3.04
Indoor Unit	Colour		White	White	White	White
	Control method		Remote control	Remote control	Remote control	Remote control
	Air volume(H)	m ³ /h	780	780	1250	1250
	Fan speed(H/M/S)	rmp	720/650/560	720/650/560	840/760/680	840/760/680
	Fan motor output power x qty	W	20X1	20X1	40X1	40X1
	Subsidiary electric heating	W	/	/	/	/
	Noise level	dB(A)	≤46	≤46	≤52	≤52
	Size of draining hose	mm	φ 25	φ 25	φ 25	φ 25
	Dimension	mm	570X570X300	570X570X300	950X950X240	950X950X240
	Weight	kg	23	23	30	30
Out -door Unit	Colour		White	White	White	White
	Throttle device		Capiuary throttle	Capiuary throttle	Capiuary throttle	Capiuary throttle
	Compressor type		Rotary	Rotary	Rotary	Rotary
	Compressor model		CHX33/PG295	CHX33/PG295	PG420/CHV33	PG420/CHV33
	Power input	W	1800	1800	2300	2300
	Starting current	A	50	50	60	60
	Running capacitor	μ F	50/35	50/35	50/50	50/50
	Fan speed	rpm	850	850	830	830
	Fan motor output power x qty	W	45X1	45X1	70X1	70X1
	Defrosting method		/	Sensor defrost	/	Sensor defrost
	Noise level	dB(A)	≤57	≤57	≤60	≤60
	Dimension	mm	920X355X600	920X355X600	920X375X730	920X375X730
	Weight	kg	49	51	59	61
Refrig -erant	Type		R407C	R407C	R407C	R407C
	Refrigerant charged	g	1400	1400	2000	2000
Conne -cting piping	Liquid pipe	mm	φ 6.35	φ 6.35	φ 9.52	φ 9.52
	Gas pipe	mm	φ 12.7	φ 12.7	φ 15.88	φ 15.88
	Standard length	m	3.5	3.5	4	4
	Max.length	m	15	15	30	30
	Max.altitude difference	m	7	7	10	10

① Rated cooling capacity under below conditions:

Indoor temp:27℃DB, 19℃WB; Outdoor temp:35℃DB, 24℃WB.High speed;3.5-meter connecting pipe.

② Rated heating capacity under below conditions:

Indoor temp:20℃DB;Outdoor temp:7℃DB, 6℃WB.High speed;3.5-meter connecting pipe.

③ We get the noise under heating mode meantime.The fan runs at high speed.

④ Technical data is determined by the label data.

Technical specifications

R407C

Item		Model	KF-120QW/S	KFR-120QW/S	KF-140QW/S	KFR-140QW/S
Cooling Capacity		Btu	41000	41000	48000	48000
Heating Capacity		Btu	/	44300	/	51000
Power supply			3N~50Hz 380V			
Power cable capacity		A	20	20	20	20
Cooling	Power input	W	4600	4600	5000	5000
	Running current	A	7.9	7.9	8.6	8.6
	EER	W/W	2.60	2.60	2.80	2.80
Heating	Power input	W	/	5000	/	5300
	Running current	A	/	8.5	/	9.2
	COP	W/W	/	2.63	/	2.83
Indoor Unit	Colour		White	White	White	White
	Control method		Remote controler	Remote controler	Remote controler	Remote controler
	Air volume(H)	m ³ /h	1750	1750	1750	1750
	Fan speed(H/M/S)	rmp	880/830/800	880/830/800	880/830/800	880/830/800
	Fan motor output power x qty	W	70X1	70X1	70X1	70X1
	Subsidiary electric heating	W	/	/	/	/
	Noise level	dB(A)	≤55	≤55	≤55	≤55
	Size of draining hose	mm	φ 25	φ 25	φ 25	φ 25
	Dimension	mm	950X950X290	950X950X290	950X950X290	950X950X290
	Weight	kg	45	45	45	45
Out-door Unit	Colour		White	White	White	White
	Throttle device		Capiuary throttle	Capiuary throttle	Capiuary throttle	Capiuary throttle
	Compressor type		Scroll compressor	Scroll compressor	Scroll compressor	Scroll compressor
	Compressor model		C-SBN353/C-SBN373	C-SBN353/C-SBN373	C-SBN353/C-SBN373	C-SBN353/C-SBN373
	Power input	W	4400	4400	4800	4800
	Starting current	A	60	60	60	60
	Running capacitor	μ F	/	/	/	/
	Fan speed	rpm	880	880	800	800
	Fan motor output power x qty	W	200X1	200X1	70X2	70X2
	Defrosting method		/	Sensor defrost	/	Sensor defrost
	Noise level	dB(A)	≤64	≤64	≤65	≤65
	Dimension	mm	1000X410X960	1000X410X960	980X370X1325	980X370X1325
	Weight	kg	93	93	122	122
Refrigerant	Type		R407C	R407C	R407C	R407C
	Refrigerant charged	g	3200	3200	4000	4000
Connecting piping	Liquid pipe	mm	φ 9.52	φ 9.52	φ 9.52	φ 9.52
	Gas pipe	mm	φ 19.05	φ 19.05	φ 19.05	φ 19.05
	Standard length	m	5	5	5	5
	Max.length	m	50	50	50	50
	Max.altitude difference	m	15	15	15	15

- ① Rated cooling capacity under below conditions:
Indoor temp:27℃DB, 19℃WB; Outdoor temp:35℃DB, 24℃WB.High speed; 5-meter connecting pipe.
- ② Rated heating capacity under below conditions:
Indoor temp:20℃DB;Outdoor temp:7℃DB, 6℃WB.High speed; 5-meter connecting pipe.
- ③ We get the noise under heating mode meantime.The fan runs at high speed.
- ④ Technical data is determined by the label data.

Technical specifications



R410A

Item		Model	KF-50QW	KFR-50QW	KF-70QW	KFR-70QW
Cooling Capacity		Btu	18000	18000	24000	24000
Heating Capacity		Btu	/	18800	/	25600
Power supply			220V~50Hz			
Power cable capacity		A	30	30	40	40
Cooling	Power input	W	2050	2050	2500	2500
	Running current	A	9.5	9.5	11.9	11.9
	EER	W/W	2.44	2.44	2.72	2.72
Heating	Power input	W	/	1700	/	2280
	Running current	A	/	8.0	/	10.7
	COP	W/W	/	3.24	/	3.29
Indoor Unit	Colour		White	White	White	White
	Control method		Remote controller	Remote controller	Remote controller	Remote controller
	Air volume(H)	m ³ /h	780	780	1250	1250
	Fan speed(H/M/S)	rmp	720/650/560	720/650/560	840/760/680	840/760/680
	Fan motor output power x qty	W	20X1	20X1	40X1	40X1
	Subsidiary electric heating	W	/	/	/	/
	Noise level	dB(A)	≤46	≤46	≤52	≤52
	Size of draining hose	mm	φ 25	φ 25	φ 25	φ 25
	Dimension	mm	570X570X300	570X570X300	950X950X240	950X950X240
	Weight	kg	23	23	30	30
Out-door Unit	Colour		White	White	White	White
	Throttle device		Capiuary throttle	Capiuary throttle	Capiuary throttle	Capiuary throttle
	Compressor type		Rotary	Rotary	Rotary	Rotary
	Compressor model		PA225	PA225	PA290	PA290
	Power input	W	1900	1900	2300	2300
	Starting current	A	36	36	60	60
	Running capacitor	μ F	50	50	50	50
	Fan speed	rpm	850	850	830	830
	Fan motor output power x qty	W	45X1	45X1	70X1	70X1
	Defrosting method		/	Sensor defrost	/	Sensor defrost
	Noise level	dB(A)	≤57	≤57	≤60	≤60
	Dimension	mm	920X355X600	920X355X600	920X375X730	920X375X730
	Weight	kg	49	51	59	61
Refrigerant	Type		R410A	R410A	R410A	R410A
	Refrigerant charged	g	1300	1300	1850	1850
Connecting piping	Liquid pipe	mm	φ 6.35	φ 6.35	φ 9.52	φ 9.52
	Gas pipe	mm	φ 12.7	φ 12.7	φ 15.88	φ 15.88
	Standard length	m	3.5	3.5	4	4
	Max.length	m	15	15	30	30
	Max.altitude difference	m	7	7	10	10

- ① Rated cooling capacity under below conditions:
Indoor temp:27℃DB, 19℃WB; Outdoor temp:35℃DB, 24℃WB.High speed;3.5-meter connecting pipe.
- ② Rated heating capacity under below conditions:
Indoor temp:20℃DB;Outdoor temp:7℃DB, 6℃WB.High speed;3.5-meter connecting pipe.
- ③ We get the noise under heating mode meantime.The fan runs at high speed.
- ④ Technical data is determined by the label data .

Main parts list

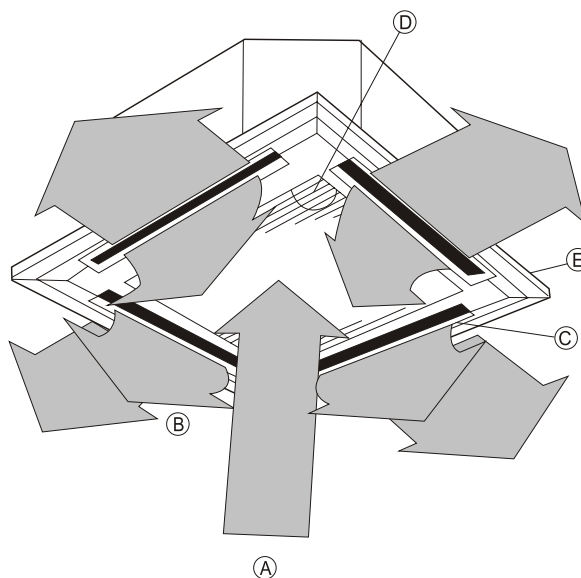


models name of parts	18000Btu	24000Btu	41000Btu	48000Btu
Indoor unit				
Fan motor	YDK-20-6K 220V 50Hz	YYK40-6D2 220V 50Hz	YYK40-6DA 220V 50Hz	YYK40-6DA 220V 50Hz
Step motor 1	28BYJ-48 12VDC	20BYJ46-51 12VDC	20BYJ46-51 12VDC	20BYJ46-51 12VDC
Step motor 2	/	20BYJ46-52 12VDC	20BYJ46-52 12VDC	20BYJ46-52 12VDC
Step motor 3	/	20BYJ46-61 12VDC	20BYJ46-61 12VDC	20BYJ46-61 12VDC
Step motor 4	/	20BYJ46-62 12VDC	20BYJ46-62 12VDC	20BYJ46-62 12VDC
Drain pump	PSB-7 220V 50Hz	PSB-12 220V 50Hz	PSB-12 220V 50Hz	PSB-12 220V 50Hz
Fan capacitor	CBB61 2 μ F/450V	CBB61 5 μ F/450V	CBB61 9 μ F/450V	CBB61 9 μ F/450V
Indoor temp. sensor Evaporator temp.sensor	R25=10. 0K Ω B25/50=3470K	R25=10. 0K Ω B25/50=3470K	R25=10. 0K Ω B25/50=3470K	R25=10. 0K Ω B25/50=3470K
Fuse	AC250V 5A	AC250V 5A	AC250V 5A	AC250V 5A
Transformer	DB-6-02 INPUT: AC220V/50Hz OUTPUT :15V/500mA	DB-6-02 INPUT: AC220V/50Hz OUTPUT :15V/500mA	DB-6-02 INPUT: AC220V/50Hz OUTPUT :15V/500mA	DB-6-02 INPUT: AC220V/50Hz OUTPUT :15V/500mA
Outdoor unit				
Fan motor	YDK120/18-6E 220V 50Hz	YDK120/30-6T 220V 50Hz	YDK140-200/6A 220V 50Hz	YDK120/30-6D 220V 50Hz
Fan capacitor	CBB61 3 μ F/450V	CBB61 4 μ F/450V	CBB61 10 μ F/450V	CBB61 4 μ F/450V
Evaporator temp.sensor	R25=10. 0K Ω B25/50=3470K	R25=10. 0K Ω B25/50=3470K	R25=5. 0K Ω B25/50=3470K	R25=5. 0K Ω B25/50=3470K
Compressor relay	/	JQX-116F-2 COIL 12VDC 25A	/	/
Contactor	/	/	GC3-12/22 (CJX1-12/22) 220V 50Hz 12A	GC3-12/22 (CJX1-12/22) 220V 50Hz 12A
R22				
Compressor	PH310/SHX33/TH338	PH420/SHV33	VR57KF-TFP	VR57KF-TFP
4-way valve	DHF-9	DHF-9	DHF-20	DHF-20
R capacitor	CBB65 40/50/50 μ F/450V	CBB65 50/50 μ F/450V	/	/
R407C				
Compressor	PG295/CHX33	PG420/CHV33	C-SBN353H8A	C-SBN373H8A
4-way valve	DHF-9	DHF-9	DHF-20	DHF-20
R capacitor	CBB65 35/50 μ F/450V	CBB65 50/50 μ F/450V	/	/
R410A				
Compressor	PA225	PA290	/	/
4-way valve	DHF-9	DHF-9	/	/
R capacitor	CBB65 50 μ F/450V	CBB65 50 μ F/450V	/	/

Indoor unit

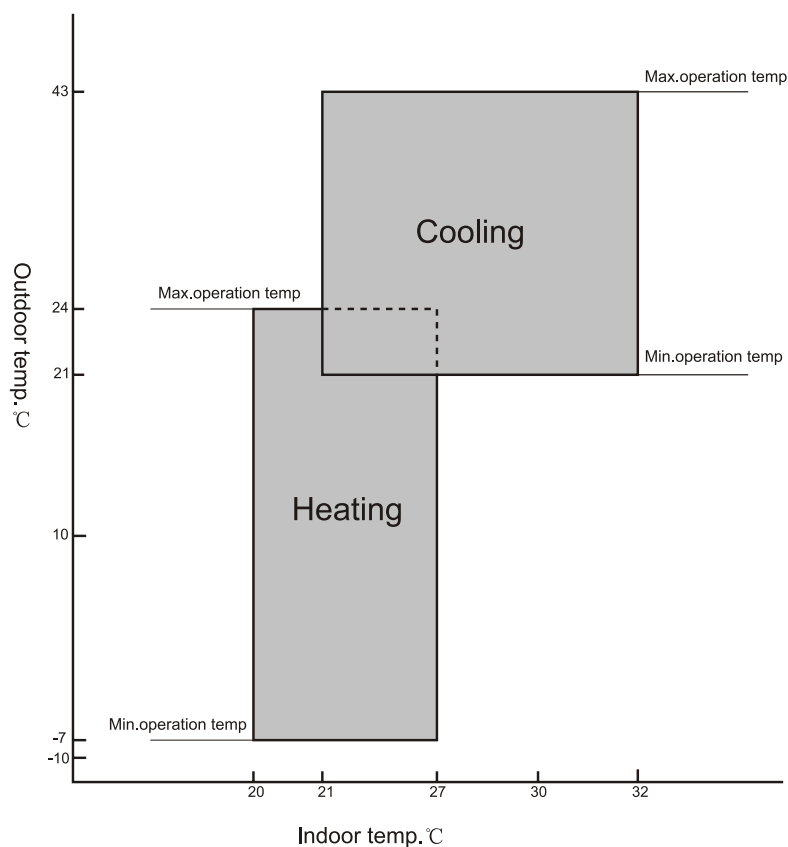
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- A. Air inlet
- B. 4-way air outlet
- C. Adjustment vanes
- D. Air filter
- E. Panel
- F. Remote control

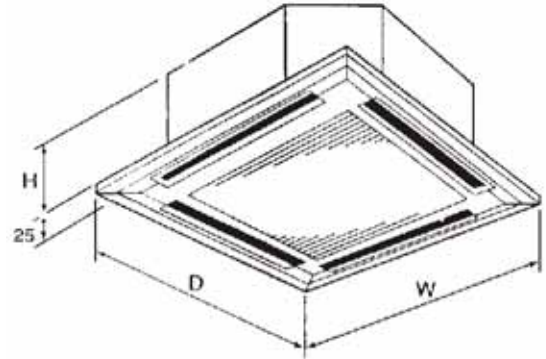
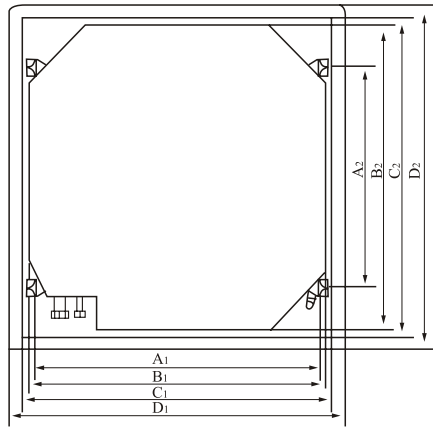


Working range

● ● ● ● ● ● ● ● ● ●



Indoor unit



A1、A2 Distance between screws for hanging

B1、B2 Dimension of indoor unit

C1、C2 Dimension of hole in ceiling

D1、D2 Dimension of panel

Dimension	W	D	H	A1	A2	B1	B2	C1	C2	D1	D2
18000Btu	650	650	300	470	470	570	570	610	610	650	650
24000Btu	950	950	240	810	600	840	840	880	880	950	950
41000Btu	950	950	290	810	600	840	840	880	880	950	950

new

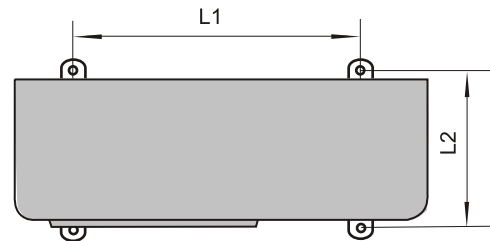
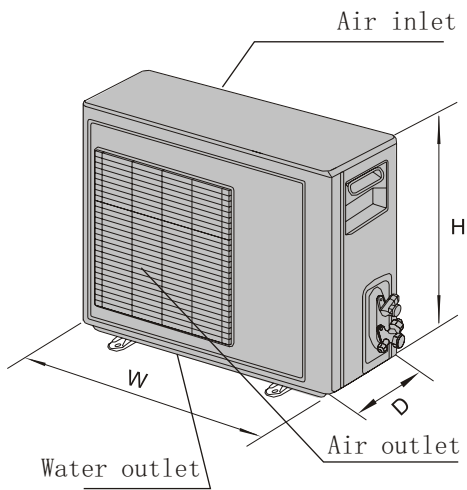
Dimension	W	D	H	A1	A2	B1	B2	C1	C2	D1	D2
18000Btu	650	650	300	470	470	570	570	610	610	650	650
24000Btu	950	950	240	830	740	820	820	880	880	950	950
41000Btu	950	950	290	830	740	820	820	880	880	950	950

Outdoor unit

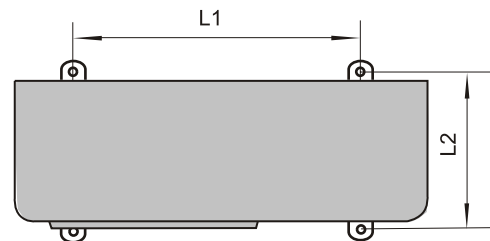
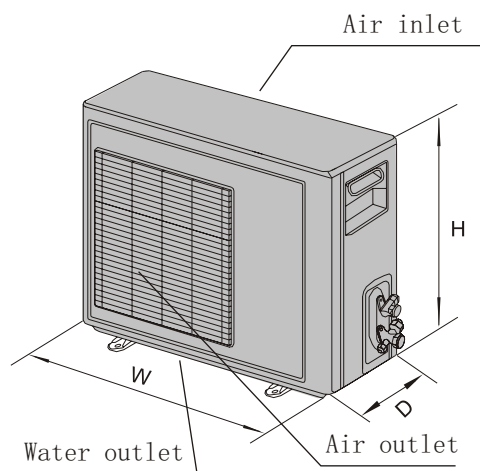


18000Btu

Unit (mm)



24000Btu

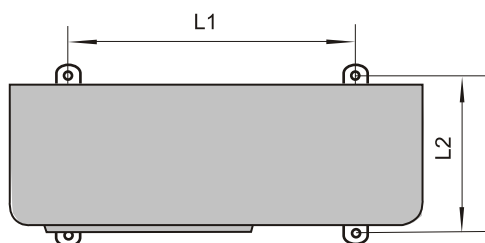
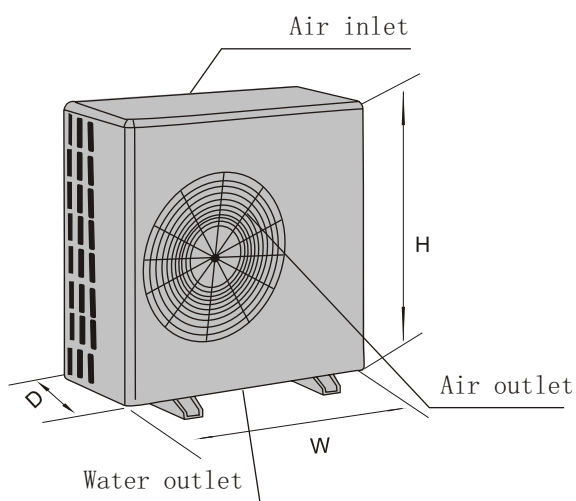


Dimension	18000Btu	24000Btu
W	850	860
H	600	730
D	290	310
L1	550	630
L2	310	340

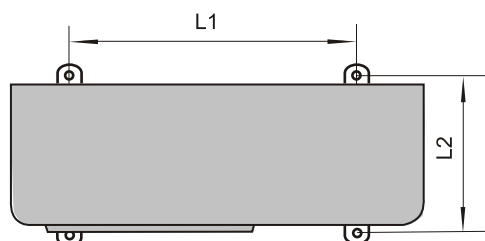
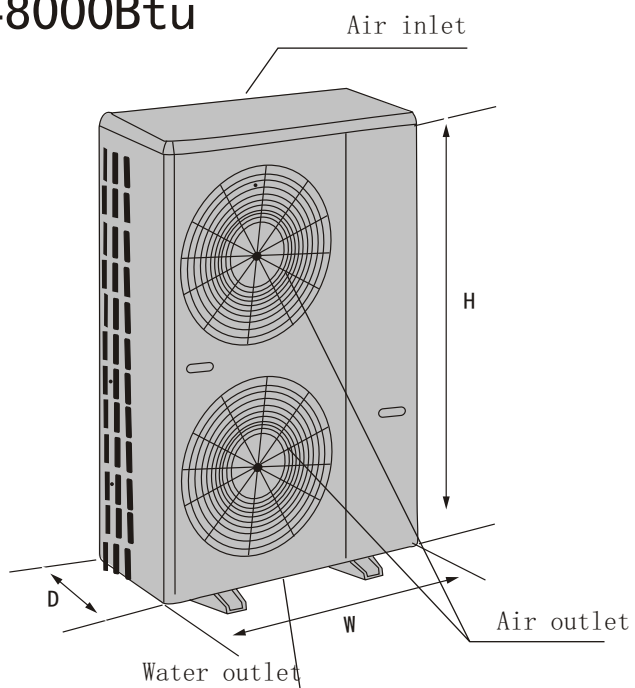
Outdoor unit



41000Btu

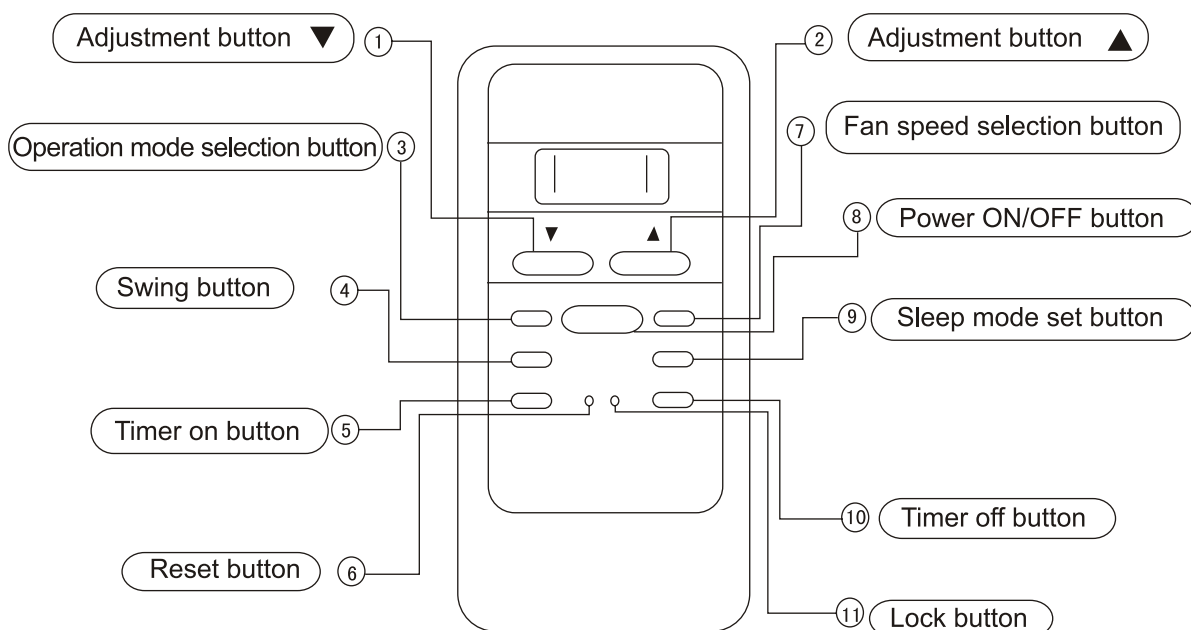


48000Btu



Dimension	41000Btu	48000Btu
W	960	980
H	1000	1325
D	410	370
L1	670	630
L2	380	380

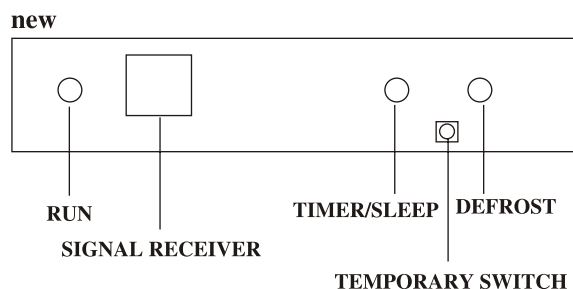
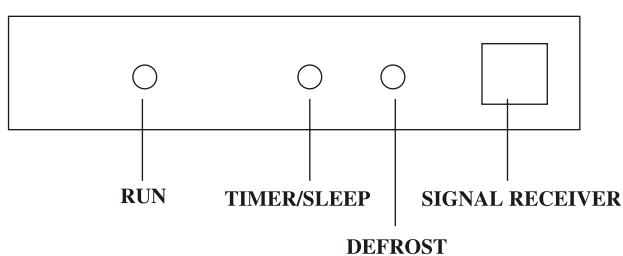
Remote controller



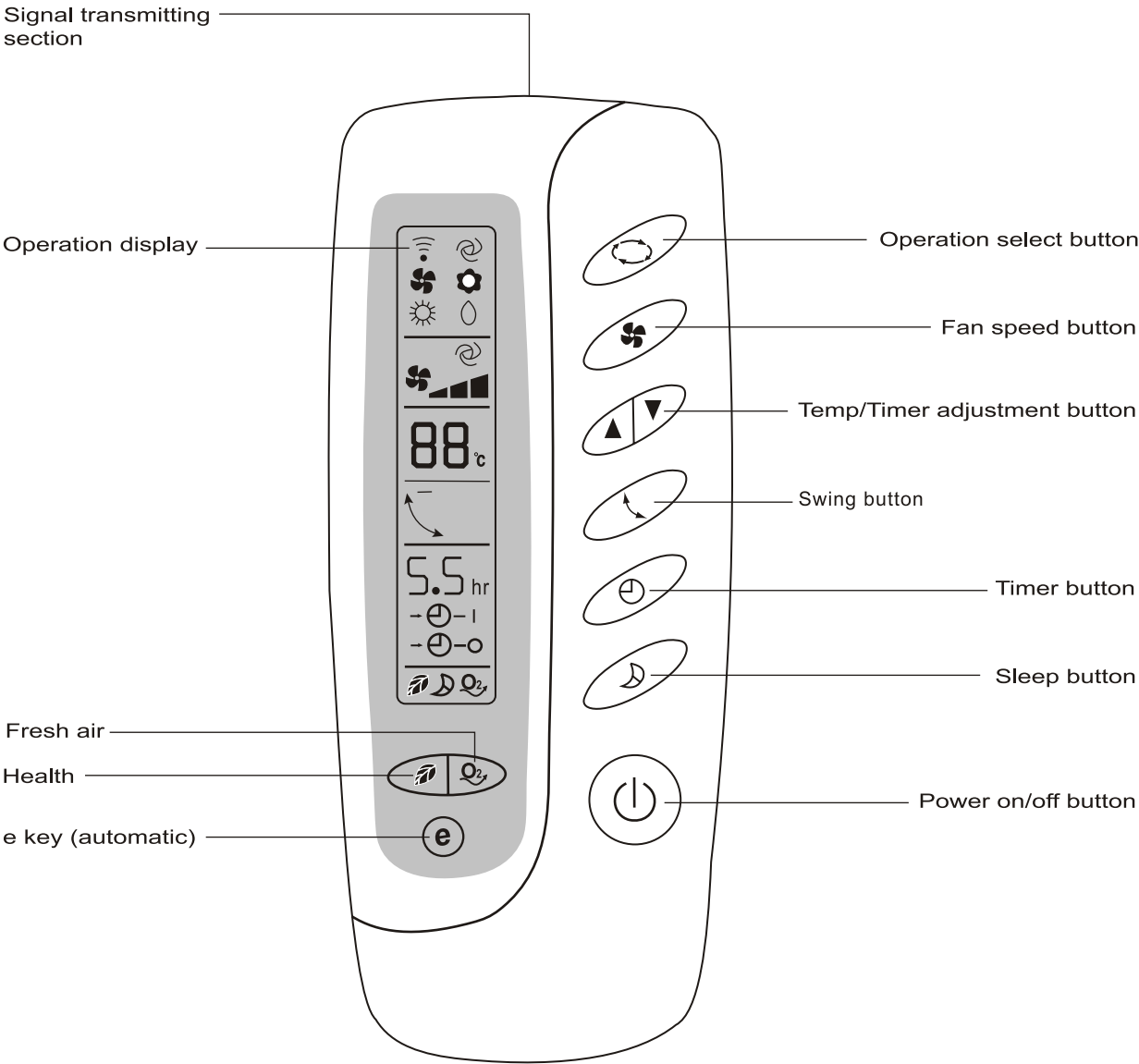
1.Name and function of button:

- (1) Adjustment button ▼:adjust the temperature.
- (2) Adjustment button ▲:adjust the temperature.
- (3) Operation mode selection button:Each time this button is pressed, the operation mode is changed in sequence, from AUTO — COOL — DRY — HEAT(FAN)
- (4) Swing button: First time presses it, the vane will swing automatically, press it again, the vane will stop swinging.
- (5) Timer on button: press it, timer on.
- (6)Reset button: Press it, the current set will be cancelled, the remote control is in reset mode.
- (7) Fan speed selection button: Each time this button is pressed, the fan speed is changed in sequence, from AUTO — HIGH — MEDIUM — LOW
- (8) Power ON/OFF button: Trun on or stop operation.
- (9) Sleep mode set button: press it can set the power saving mode.
- (10) Timer off button: press it, timer off.
- (11) Lock button: press it, the current set will be locked, press it again, the lock will be cancelled.

INDICATOR BOARD



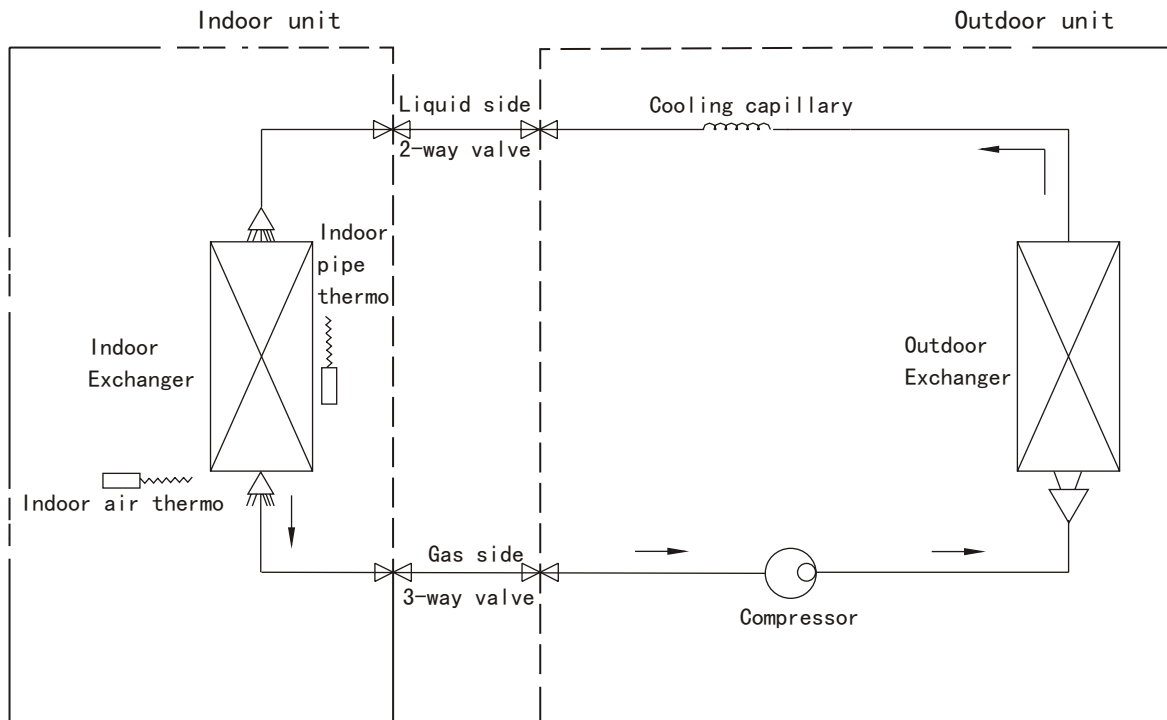
Remote controller



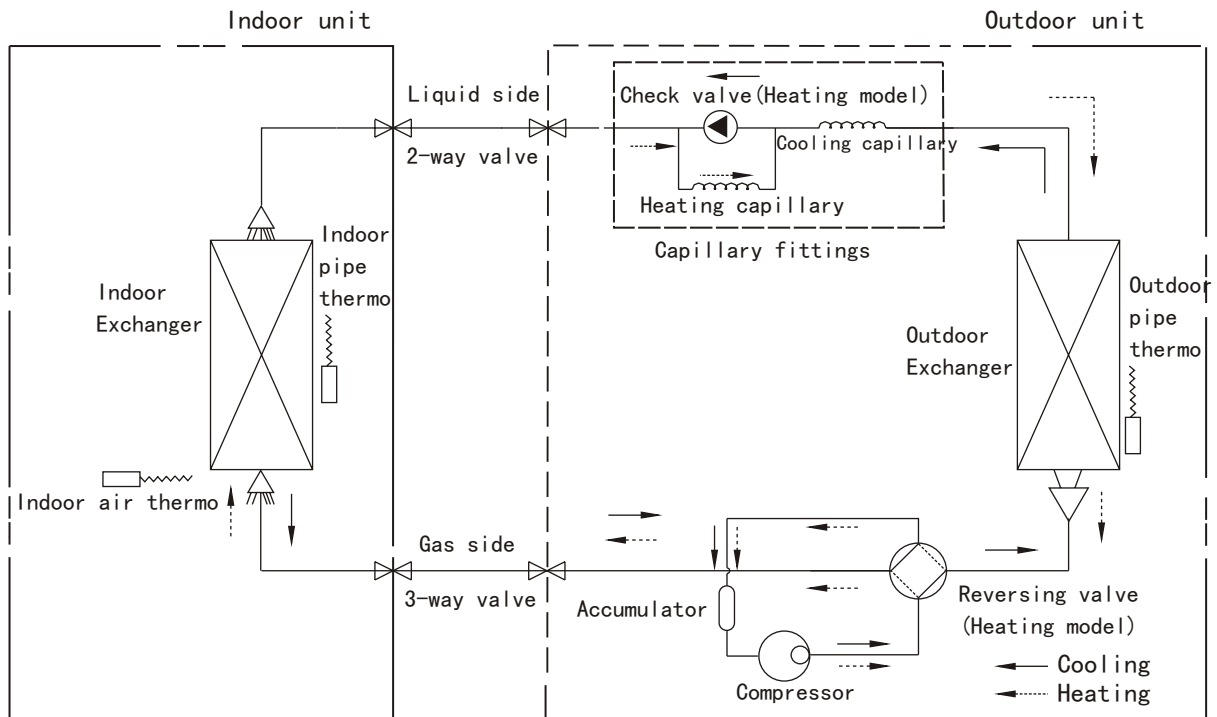
Note:Health button and fresh air button is optional,if air condition without these functions, these two button are invalid.

Refrigeration cycle diagram

COOLING



COOLING AND HEATING



System control elements

Attention: RT means room temperature; ST means setting temperature; IPT means indoor pipe temperature; EPT means Enviromental pipe temperature.

Operation modes selection: four operation modes involve AUTO, COOLING, DRY, HEATING (FAN). After pressing the mode button, the circular work describes as follow chart: (cooling only unit)



1、 Automatic operation

The range of setting and controlling temperature is 16~31℃. After entering the auto mode, according to the room temperature on that time the unit will choose the mode of cooling, dry or heating (fan).

When $RT > 25^{\circ}\text{C}$, it starts cooling and its first setting temperature is 24℃.

When $20^{\circ}\text{C} \leq RT \leq 25^{\circ}\text{C}$, it starts drying without any setting temperature.

When $RT < 20^{\circ}\text{C}$, it starts heating (fan) and its first setting temperature is 21℃.

2、 Cooling operation

The range of setting and controlling temperature is from 16~31℃. At that time the 4-way valve doesn't work all the time, furthermore, the compressor starts to work under the condition of three minutes self-protection.

A、 When $RT \leq ST - 1^{\circ}\text{C}$, the compressor and the outdoor motor stop operating at the same time while the indoor unit and the eliminating vane start to work on the base of setting estate.

B、 When $ST - 1^{\circ}\text{C} < RT < ST + 1^{\circ}\text{C}$, compressor, outdoor motor, indoor motor and eliminating vane start to operate on the base of original estate.

C、 When $RT \geq ST + 1^{\circ}\text{C}$, compressor, outdoor motor, indoor motor and eliminating vane start to work on the base of setting estate.

D、 Indoor unit control: the indoor unit changes into AUTO, LOW, MEDIUM, HIGH through setting remote controller.

E、 Eliminating vane control: the eliminating vane operation is set up by SWING button.

3、 Dry operation

A、 When entering the mode of dry, the setting temperature can't display.

B、 Indoor unite keeps low speed forever.

C、 The compressor and outdoor unit keep operating in 8 minutes, then, keep stopping in 3 minutes. When compressor is operating, indoor keeps working in low speed at the same time. When the compressor turns off, the indoor unit delays off in 10 seconds.

The 4-way valve keep stopping all the time, and the compressor starts to work under the condition of three minutes protection.

(1)、 When $RT < 15^{\circ}\text{C}$, dry mode cannot be in the estate of operation.

(2)、 The mode of controlling eliminating van is the same as the mode of cooling.

4、Heating operation

A、The range of setting and controlling temperature is 16~31℃.

B、Four valve keeps open.

(1)、When $RT \leq ST - 1^\circ\text{C}$, compressor, 4-valve and outdoor motor start to operate and indoor unit also start work in the condition of resistance cooling.

(2)、When $RT \leq ST + 1^\circ\text{C}$, compressor, outdoor motor stop working, indoor unit start working according to 4(5) and the 4 valve keep operating in original state.

(3)、When $ST - 1^\circ\text{C} < RT < ST + 1^\circ\text{C}$, compressor, outdoor motor and indoor unit keep operating in original state.

(4)、Resistance cooling

In the process of the temperature rising for the inner pipe, the indoor unit's operation state is decided by the temperature of inner pipe in order to avoid cool making people feeling uncomfortable. When $RT \geq 20^\circ\text{C}$, please set up the fan speed operation(no this condition over 24000btu); when $RT < 20^\circ\text{C}$, unit operates as follow that:

A、When $IPT < 22^\circ\text{C}$, indoor unit cannot work.

B、When $22^\circ\text{C} \leq IPT \leq 28^\circ\text{C}$, compressor operates in 2 minutes, indoor unit start operating in low speed.

C、When $28^\circ\text{C} \leq IPT \leq 35^\circ\text{C}$, indoor unit is set up in low and medium fan.

D、When $IPT > 35^\circ\text{C}$, indoor unit operates through setting fan speed.

E、Once complete setting, fan speed cannot decrease.

(5)、Afterheat function

In the process of heating, under the circumstances of close compressor, indoor unit's operation state is decided by temperature of inner pipe in order to make use of afterheat in the inner pipe.

A、When compressor stops, $IPT < 35^\circ\text{C}$ turns into low speed operation state.

B、When compressor stops 1 minute or $IPT \leq 26^\circ\text{C}$, indoor unit stops operating.

(6)、Heating burthen protection

In the process of the temperature rising for the inner pipe, when $IPT \geq 50^\circ\text{C}$, fan speed rises up to high to prevent heating burthen.

If IPT begin to decrease, when $IPT \leq 45^\circ\text{C}$, indoor unit resume normal fan speed; if IPT continue rising, when $IPT > 55^\circ\text{C}$ (model over 24000btu is 52°C), close the outdoor unit. After above-mentioned:

A、If temperature of inner pipe begin to decrease, when $IPT \leq 48^\circ\text{C}$, outdoor resume operation.

B、If temperature of inner pipe rises, when $IPT > 68^\circ\text{C}$ (over 24000btu is 62°C), compressor will be close, signal indicator blink 4 times every 8 sec. After 2 minutes 4-way valve is broken, when $IPT \leq 42^\circ\text{C}$ and compressor for 3 minutes delaying condition has disappeared, heating will resume normal operation.



(7)、Defrost operation

Outdoor sensor defrosts.

Start conditions (all must be satisfied):

- A、Compressor start to work in 20 minutes later.
- B、Accumulative working time for compressor need 50 minutes.
- C、 $EPT < -5^{\circ}\text{C}$

Period of defrosting: when beginning to defrost, indoor unit, compressor and outdoor motor keep static firstly, 50 seconds later, 4-way valve closes up; 10 seconds later again, compressor start to work and defrost.

End conditions (one of them need satisfying):

- A、Defrosting need 8 minutes.
- B、 $EPT > 10^{\circ}\text{C}$.

After the end of defrosting, compressor stops and outdoor motor starts; 50 seconds later, 4-way valve starts; 10 seconds later again, compressor also starts and the air-conditioner resumes heating operation normally.

5、Air-flow operation

Outdoor unit cannot operate in the state of air-flow. Indoor unit can operate according to the remote setting.

6、Drain automatically

Under the mode of cooling and dry, pump keeps operation with compressor at the same time.

Under heating mode, the pump don't start to operate, but when defrosting, pump and compressor must be set at the same time, then 5 minutes later they will close.

The pump doesn't need start in mode of air-flow.

7、Sleeping function

After we set up sleeping function, fan will turn into low speed state.

(1)、Under the cooling mode, after setting up sleeping for 1 hour while temperature setting is also risen by 1°C . Furthermore, 2 hours later please set up 1°C higher again.

(2)、Under the heating mode, after setting up sleeping for 1 hour while temperature setting is also decreased by 1°C . Furthermore, 2 hours later please set up 2°C lower again.

(3)、In 8 hours later the sleeping function will cancel by itself, then it will enter the original operation state.

8、Eliminating vane setting

Two operations state including "swing" and "localizer" can be set up by "vane" button. Angle for vane could be set up to proper position by "vane" button, then, appropriate angle will be realized by "localizer" button.

9、Anti-frost function

Under the mode of cooling and dry, when $IPT \leq 2^{\circ}\text{C}$, indoor motor turns into high speed automatically. If $IPT < -1^{\circ}\text{C}$ after compressor starts, compressor and outdoor motor will close up. When $IPT \geq 6^{\circ}\text{C}$, unit will resume cooling.

10、Abnormal system checking

After compressor keeps operating for 5 minutes, if $|RT - IPT| \leq 3^{\circ}\text{C}$ and last for 5 minutes,

compressor and outdoor motor will stop working. 3 minutes later, they will resume to operate again. If above mentioned condition turns up again, it's wrong with the system. The signal indicator will be blinking 3 times every 8 seconds.

11、Timer

(1)、Timer on

Time on is set by clock whose LCD displayed in remote controller.

The unit begins to work on setting time. Before timer on reaches, if the unit turns on in hand, timer on function will be cancelled. Under the operation state, if choose the timer on function, the unit will stop working firstly, then start at the time setting again. If under the state of close the unit will starts automatically on setting time.

(2)、Timer off

Time off is set by clock whose LCD displayed in remote controller.

The unit stops working on setting time. Before timer off reaches, if the unit turns off in hand, timer off function will be cancelled. Under the close state, if choose the timer off function, the function have no effect on the unit. If under the state of operation, the unit will turn off automatically on setting time.

12、Protection for sensor malfunction

(1)、Indoor temp sensor suffers from malfunction

After we connect electric resource but no turning on unit, the signal indicator is blinking 1 time every 8 seconds.

(2)、Inner pipe suffers from malfunction

After we connect electric resource but no turning on unit, the signal indicator is blinking 2 times every 8 seconds.

13、Delaying operation protection for compressor

Making this function aims at protecting compressor.

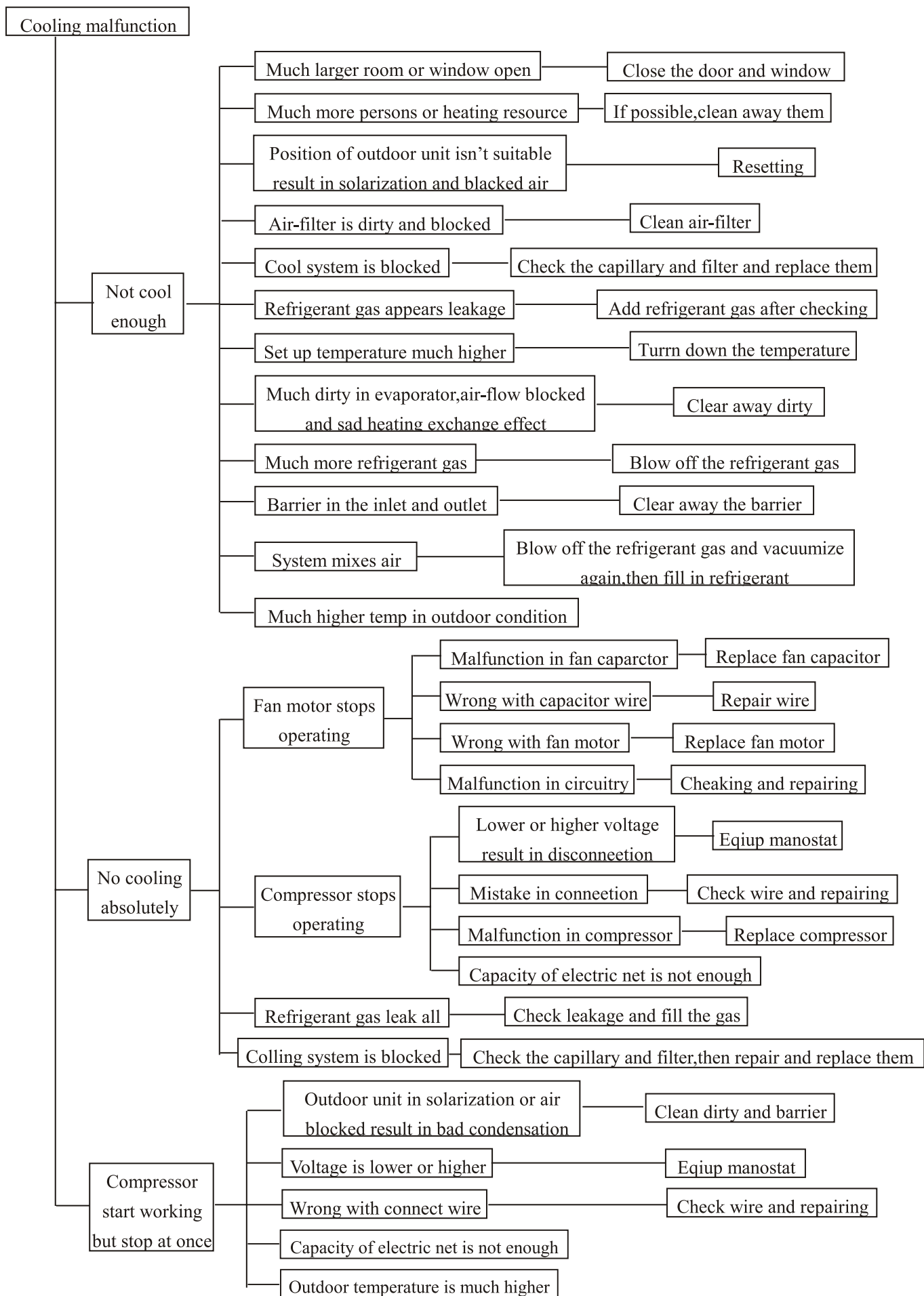
(1)、The close state changing to operation state for compressor in any condition except defrosting needs 3 minutes delaying to restart again.

(2)、It is no delaying for first starting.

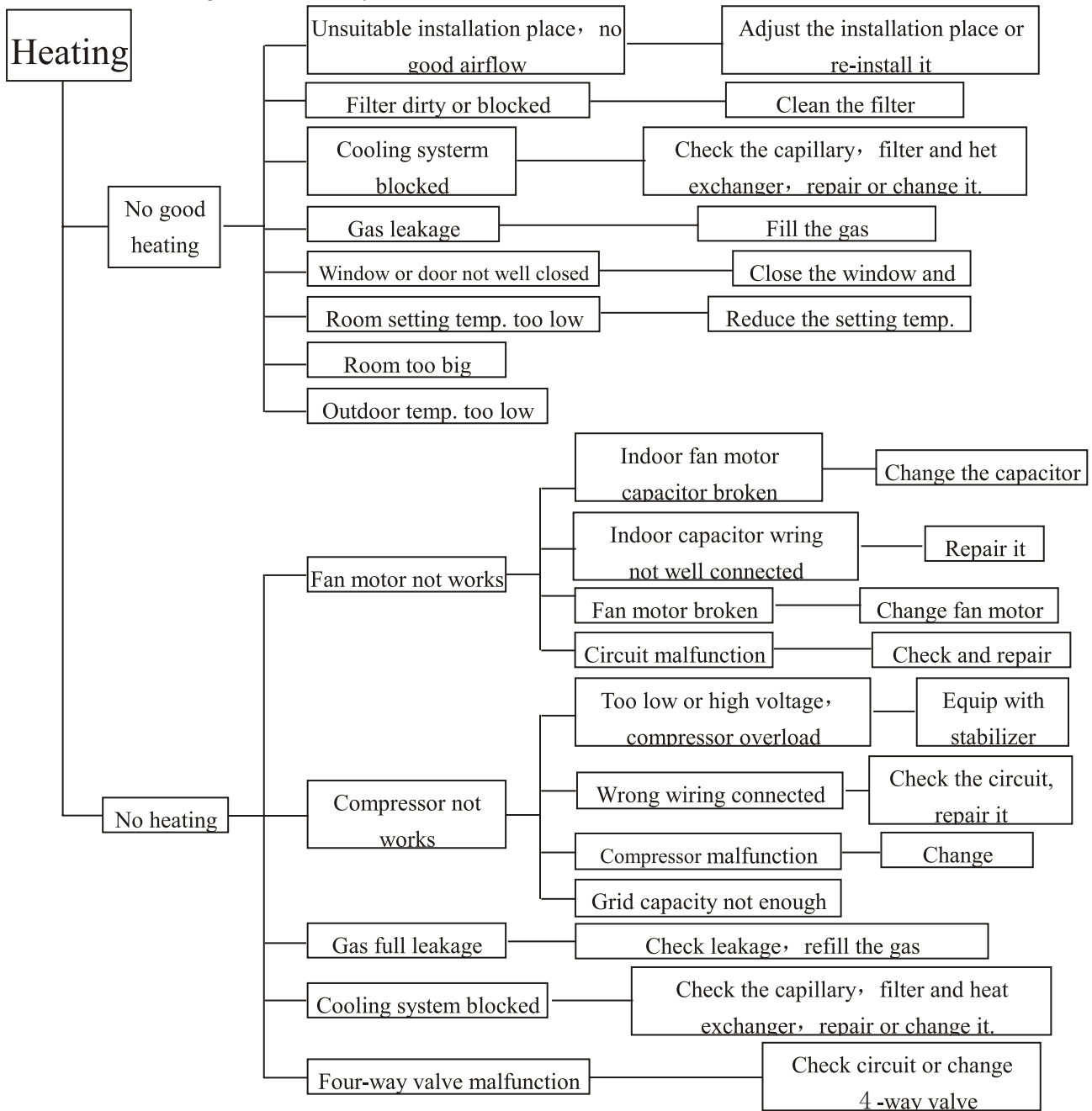
(3)、Once compressor starts, it should be lasting for 5 minutes at least.

FAULTS ANALYSE FLOW CHART

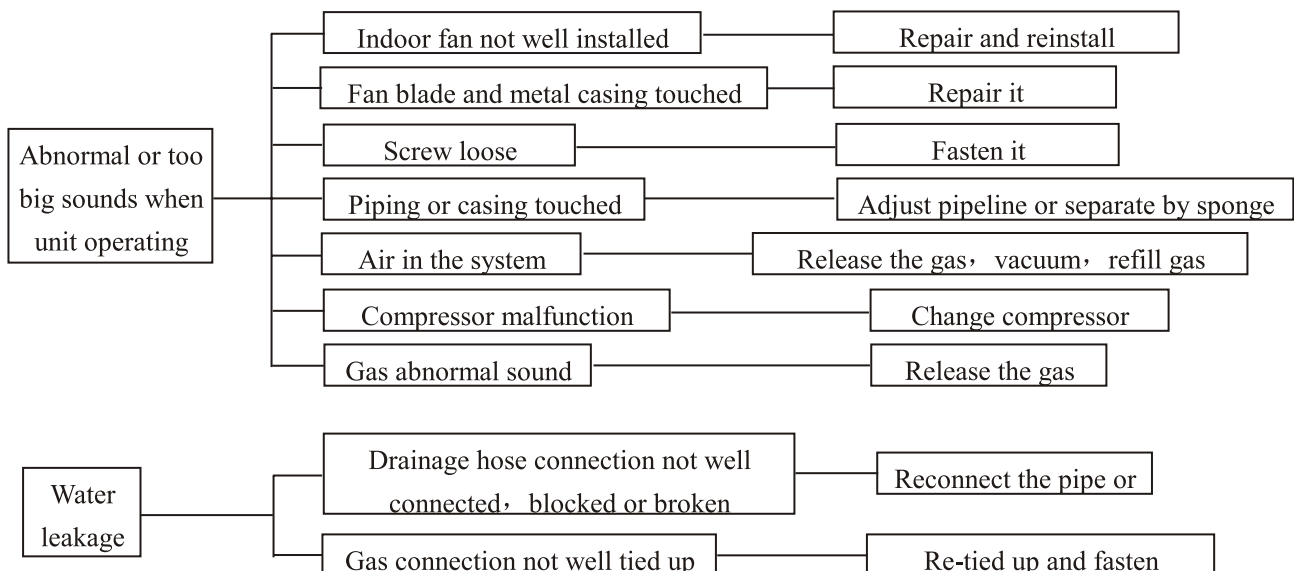
1、Process chart for cooling malfunction analysis



2、Process chart of heating malfunction analysis



3、Process chart of heating malfunction analysis of others

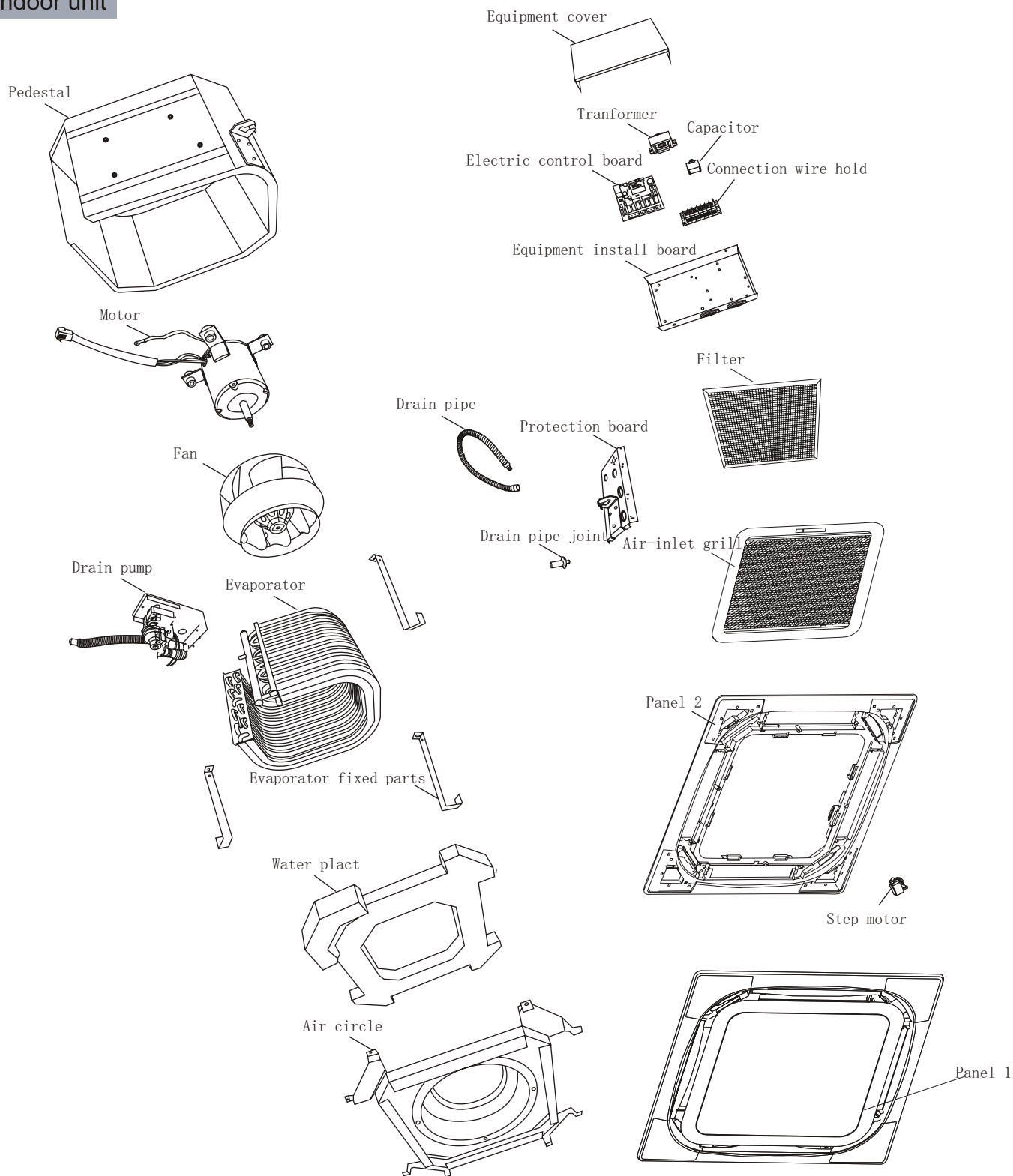


AULTS DIAGNØSE

No.	Trouble	Solution
1	No reaction after power connected	1) Check whether there is voltage 220V on the terminal L and N 2) Check whether the fuse broken. 3) Check whether the transformer is good or not 4) Check all the connecting wiring connected or not 5) Shortage of Phase
2	Operation indicator light (green) blink 1 time/8 sec.	Indoor temp. sensor problem 1) Check whether the terminal of room temp sensor connected or not 2) Check whether the room temp sensor Shuts or Short-circuits 3) If the above both no problem, change the PCB
3	Operation indicator light (green) blink 2 times/8 sec.	Indoor pipeline sensor problem 1) Check whether the terminal of indoor pipeline sensor connected or not 2) Check whether the indoor pipeline sensor Shuts or Short-circuits 3) If the above both no problem, change the PCB
4	Operation indicator light (green) blink 3 times/8 sec.	Cooling system problem: 1) Check whether the compressor, indoor and outdoor fan motor works. 2) Check the room and indoor pipeline sensor 3) Check whether the system blocked. 4) Check whether the system short of refrigerant 5) Check the outdoor ventilation good or not.
5	Operation indicator light (green) blink 4 times/8 sec.	System overload protection: 1) Check whether the air filter blocked or not 2) check whether the indoor fan motor got problem 3) check the airinlet and outlet blocked or not
6	Operation indicator light (green) blink 5 times/8 sec.	Indoor pipeline sensor problem 1) Check whether the terminal of indoor pipeline sensor connected or not 2) Check whether the indoor pipeline sensor Shuts or Short-circuits 3) If the above both no problem, change the PCB
7	Operation indicator light (green) blink 6 times/8 sec.	1) Check whether shortage of phase or wrong phase sequence 2) Check high and low pressure protection, keep closing status.
8	Operation indicator light (green) blink 7 times/8 sec.	Check whether the indoor and outdoor signal wiring wrong connected or not, S,G,N,Gshould be connected one by one (70QW and below no this wiring)
9	Stop after 5 min running, normal display	1) Check the room and indoor pipeline sensor 2) Check whether the brace of room temp. sensor close to the evaporator or not 3) Check whether the indoor temp. and indoor pipeline sensor wrong connected or not

Service Parts Name

Indoor unit

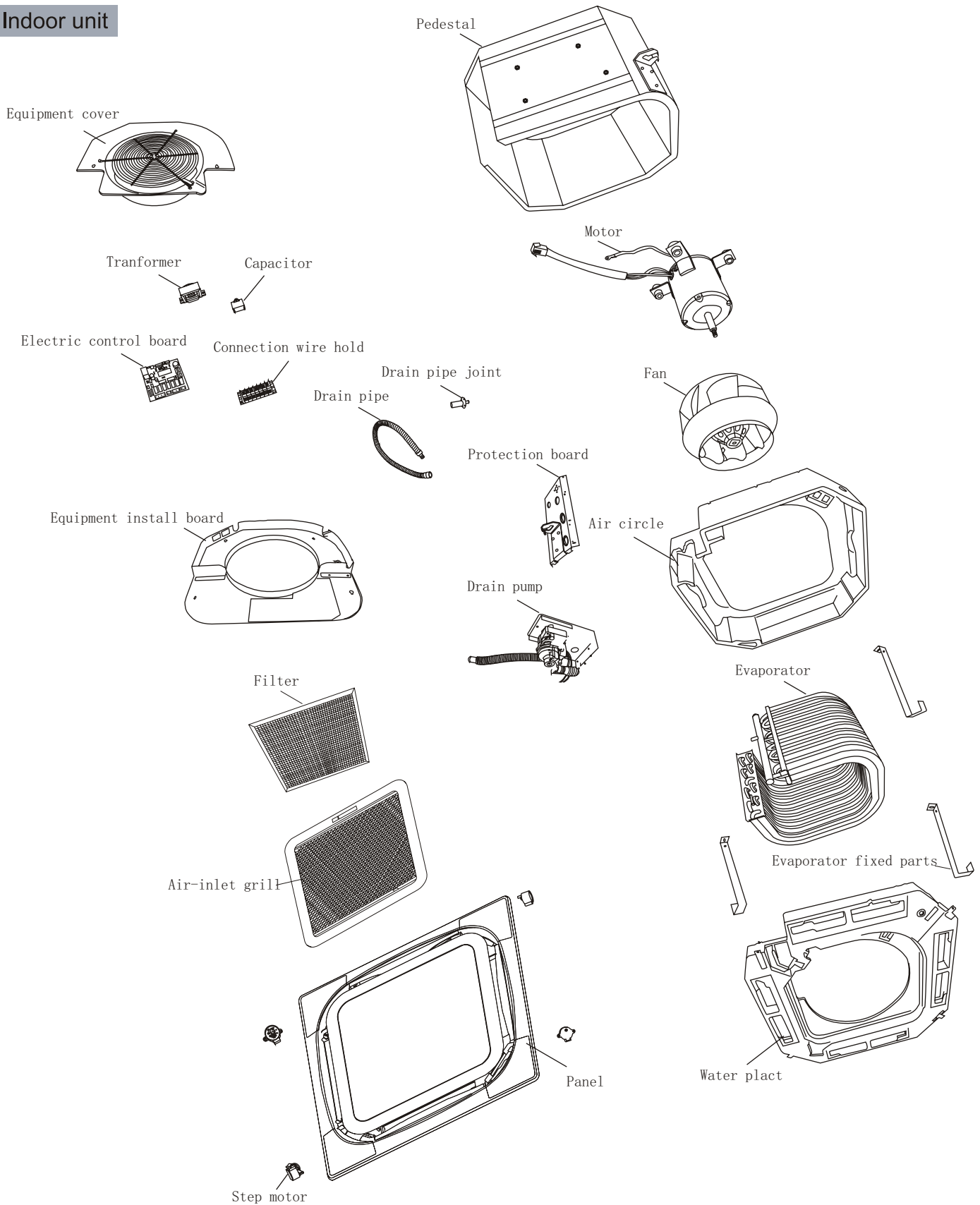


18000Btu

Service Parts Name



Indoor unit

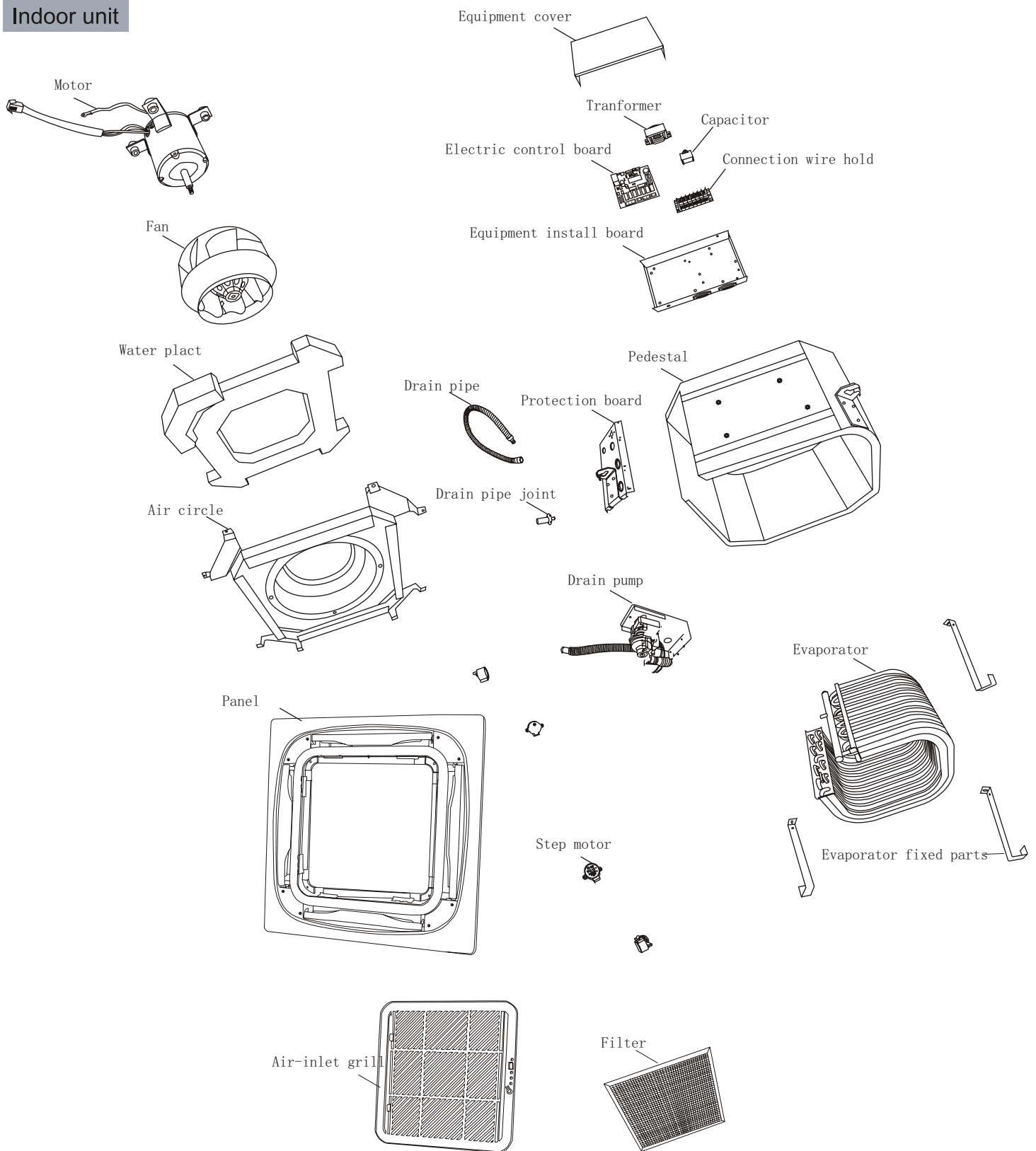


24000-48000Btu

Service Parts Name



Indoor unit

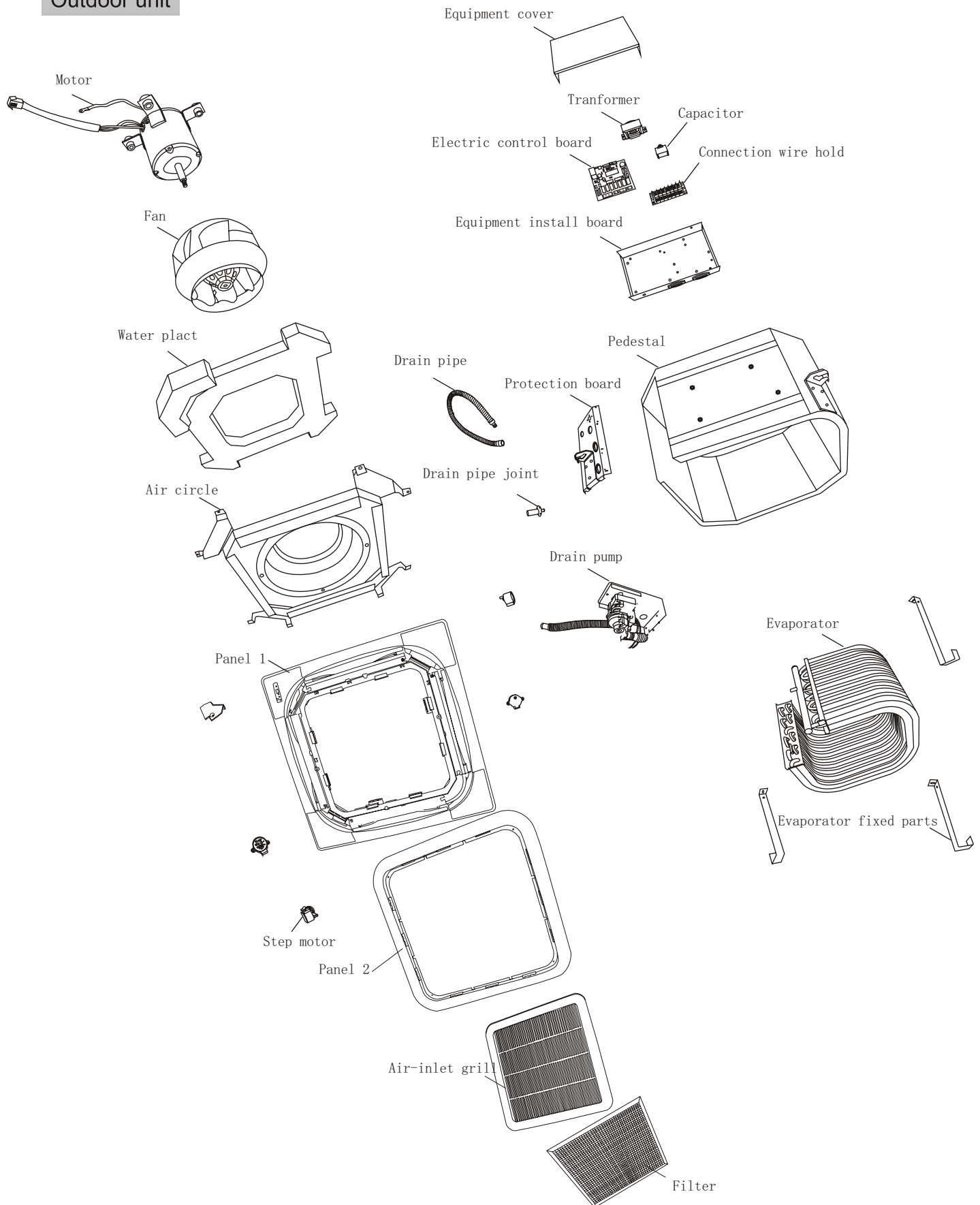


18000Btu (new)

Service Parts Name



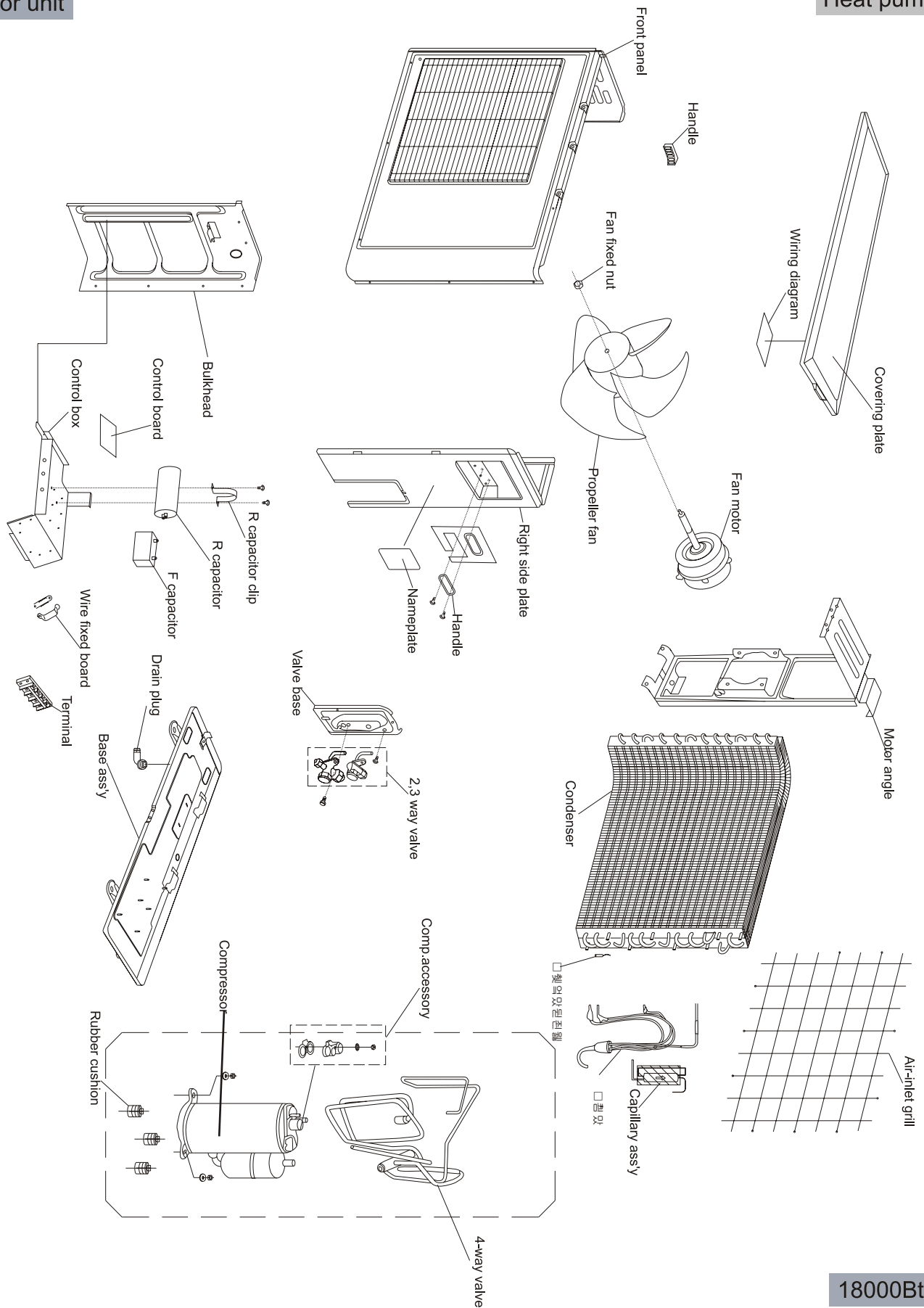
Outdoor unit



Service Parts Name

Outdoor unit

Heat pump



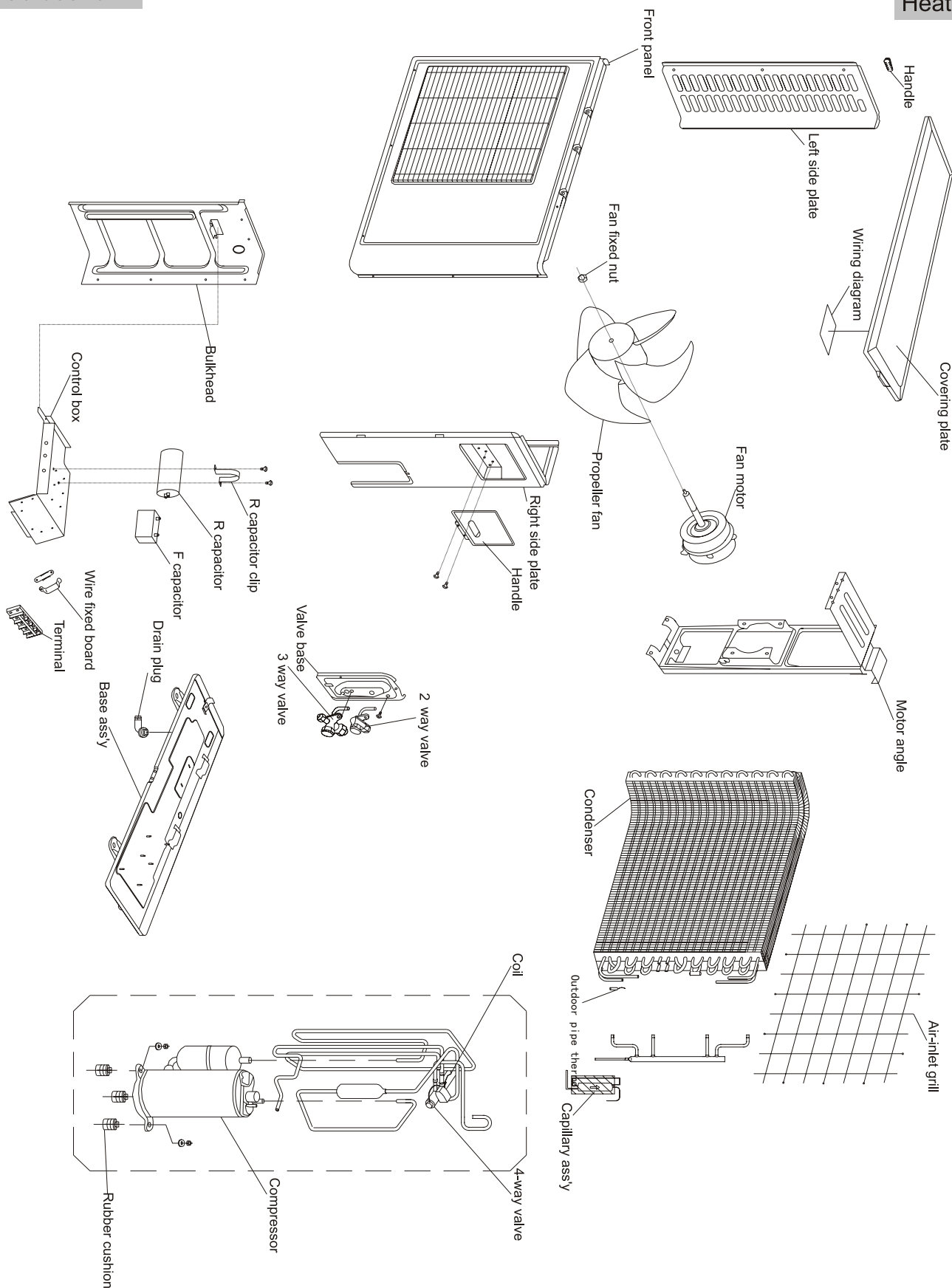
18000Btu

Service Parts Name



Outdoor unit

Heat pump



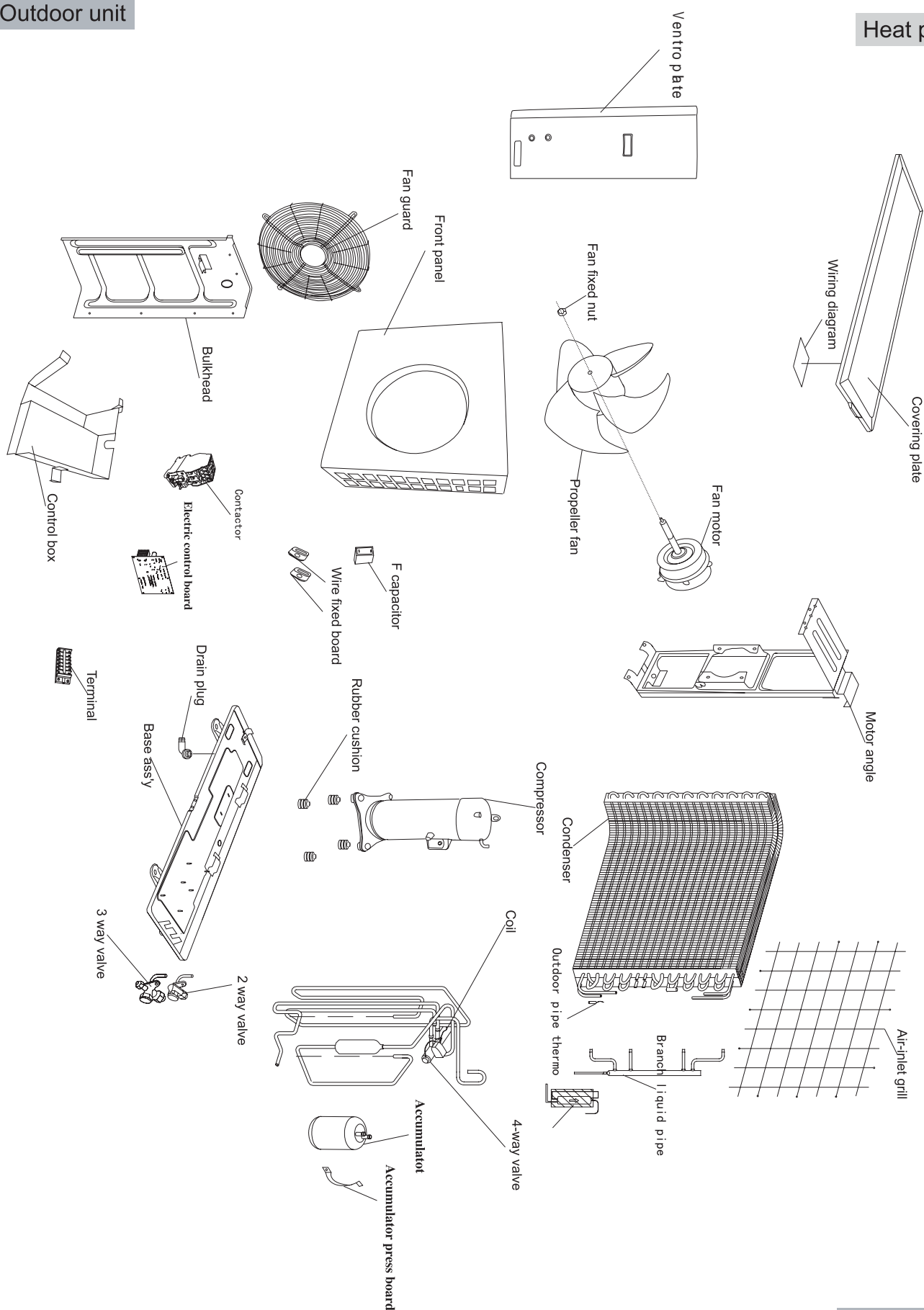
24000Btu

Service Parts Name



Outdoor unit

Heat pump



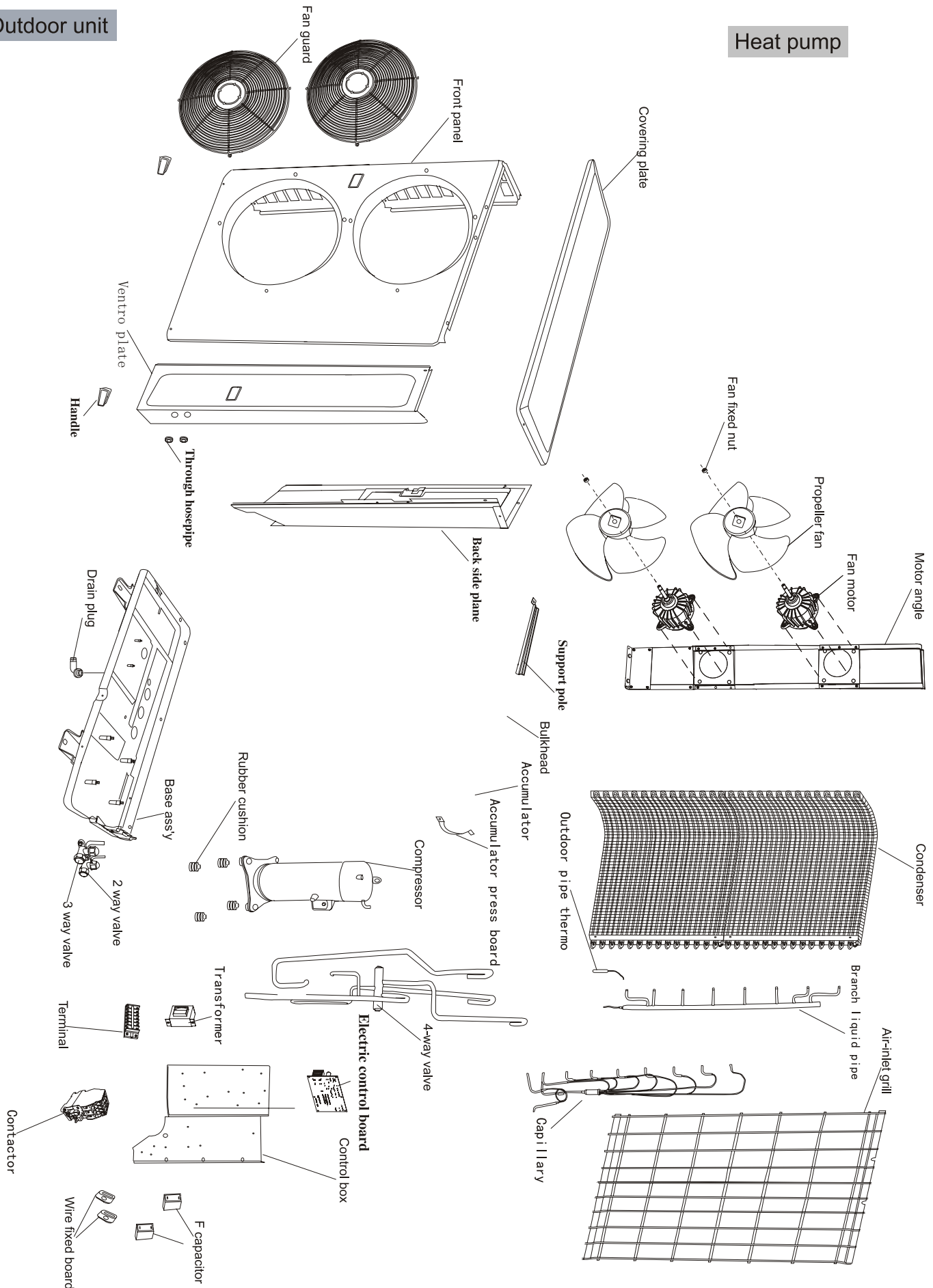
41000Btu

Service Parts Name



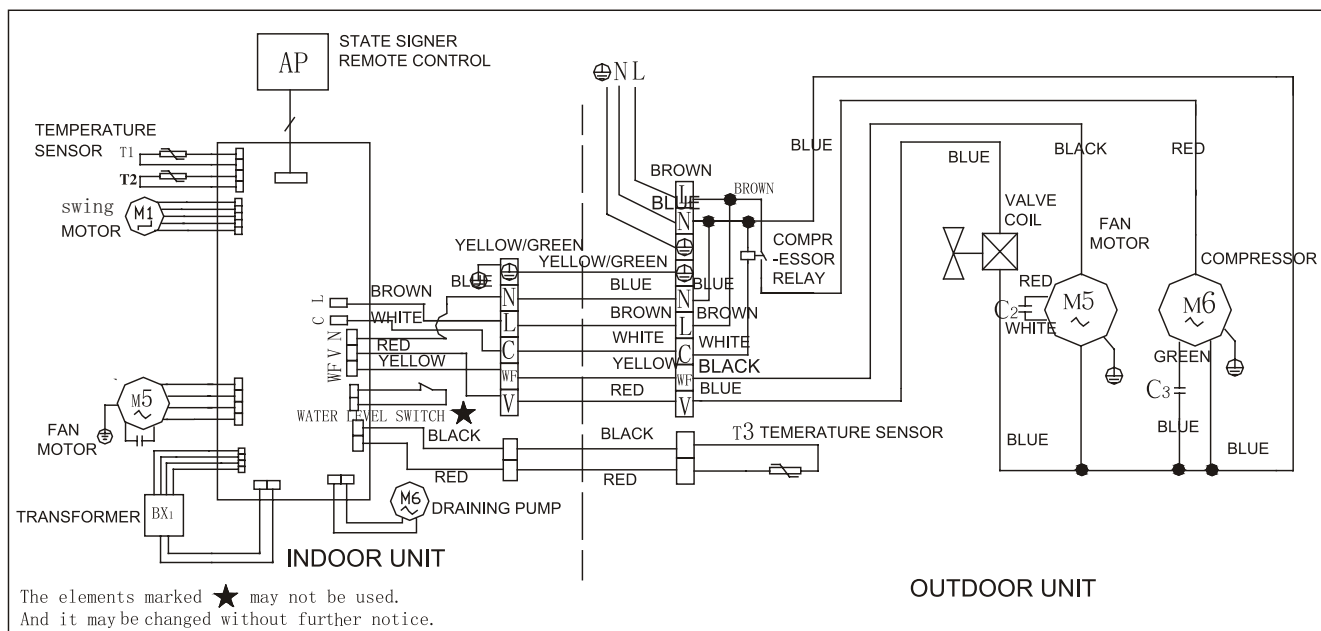
Outdoor unit

Heat pump

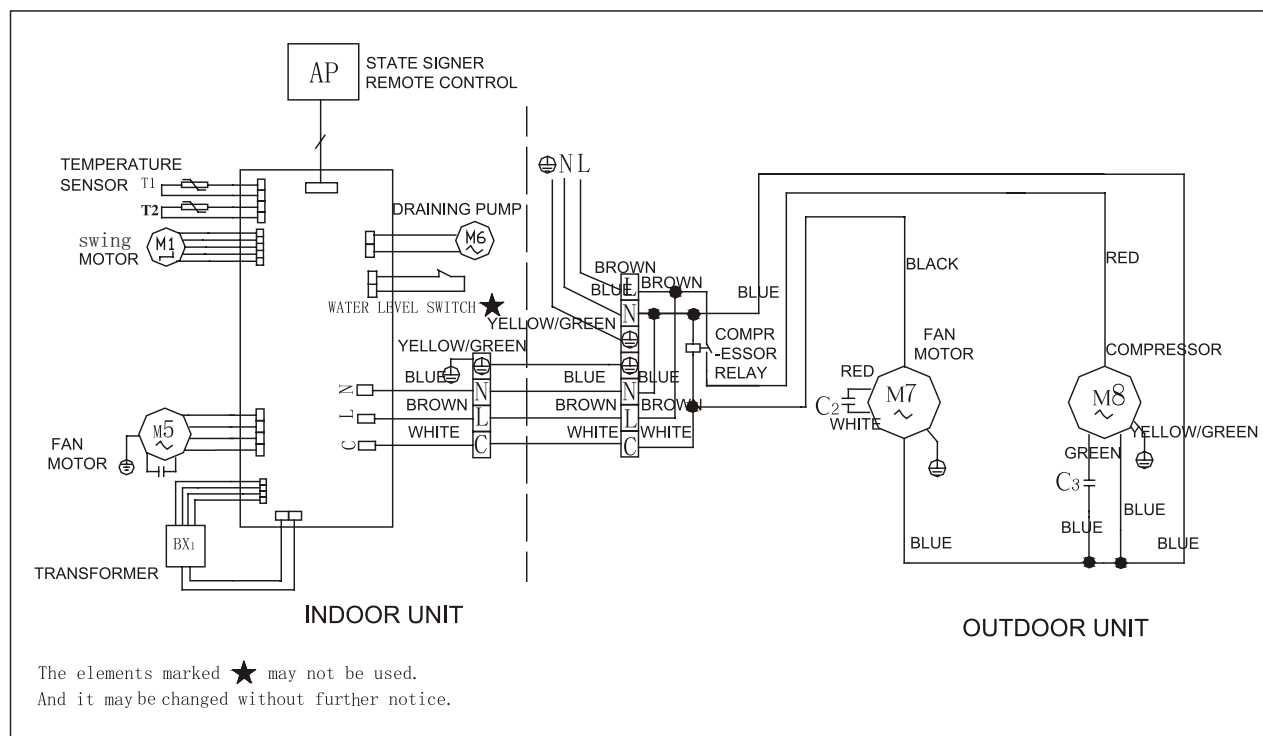


Wiring diagram

18000Btu(Cooding and heating)

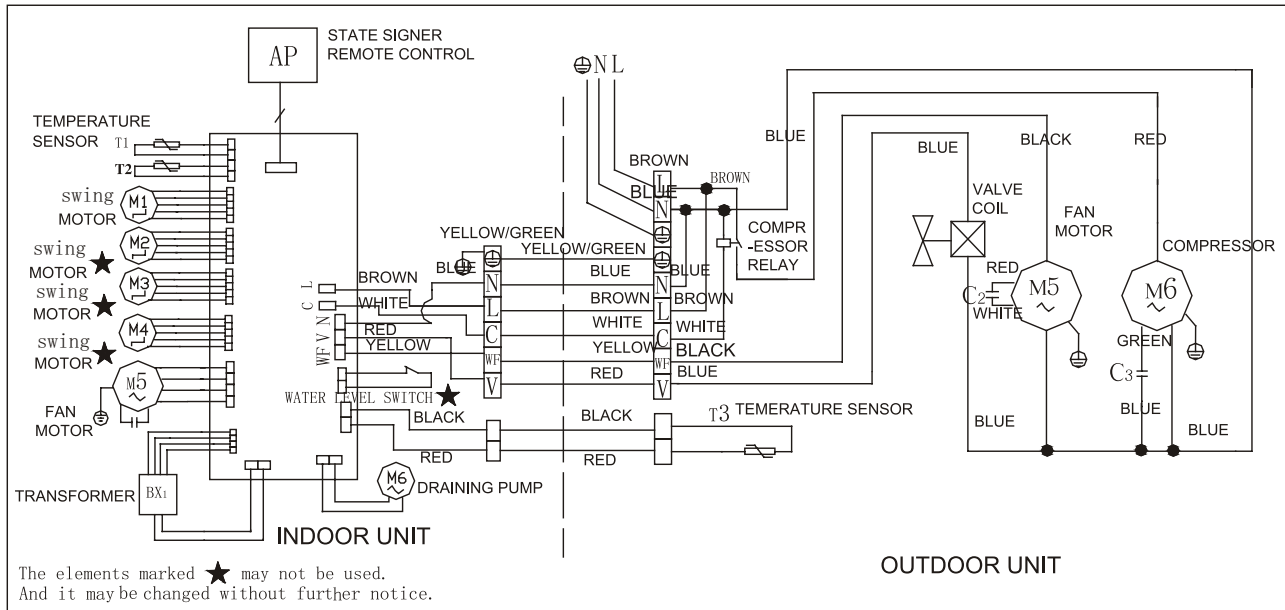


18000Btu(Cooding)

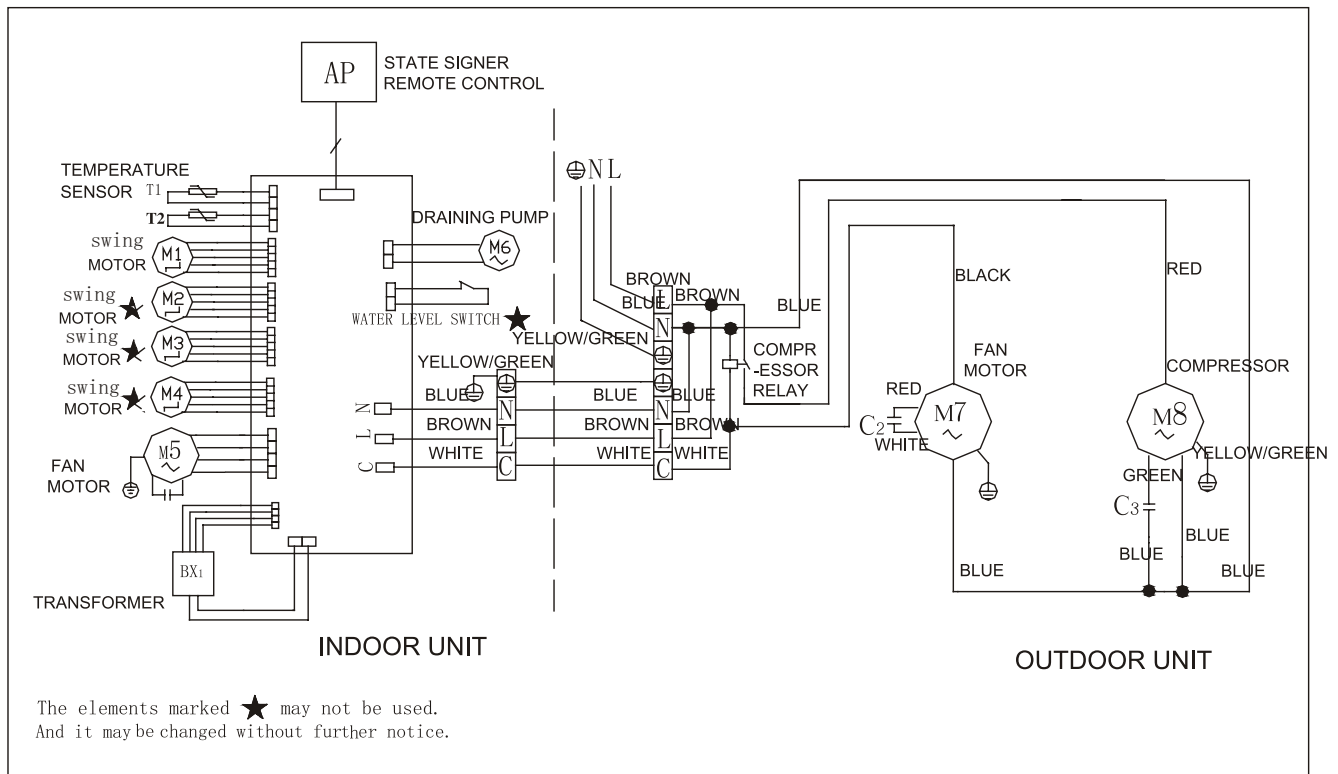


Wiring diagram

24000Btu(Cooding and heating)

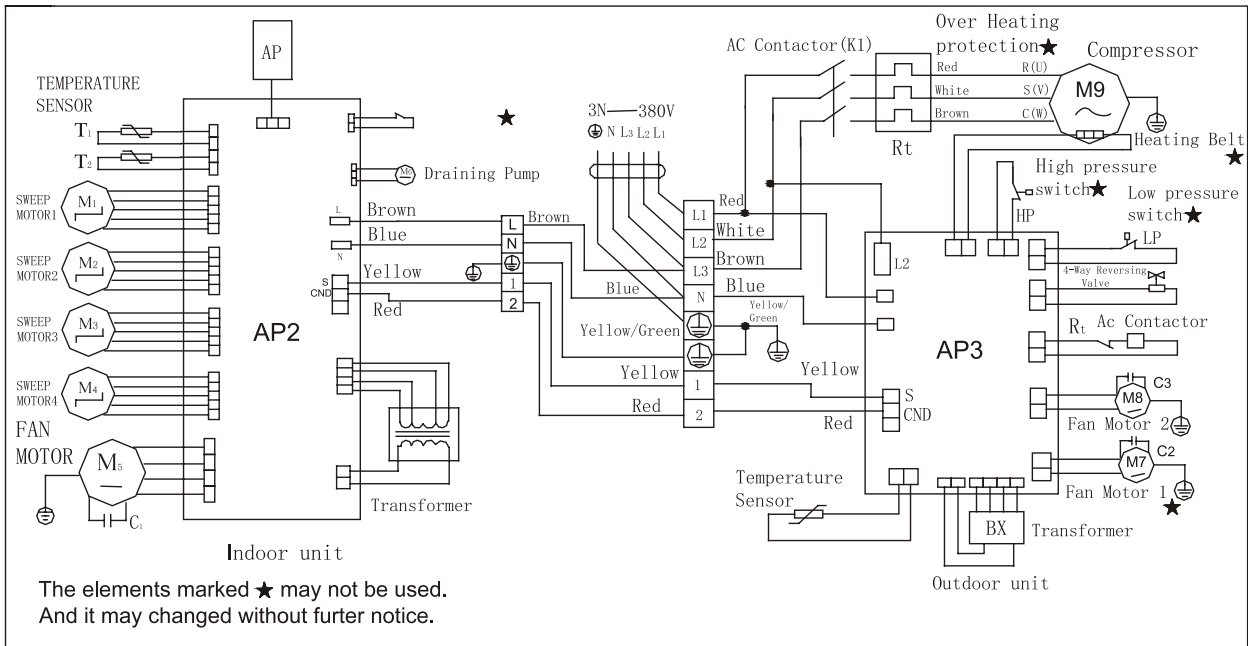


24000Btu(Cooling)

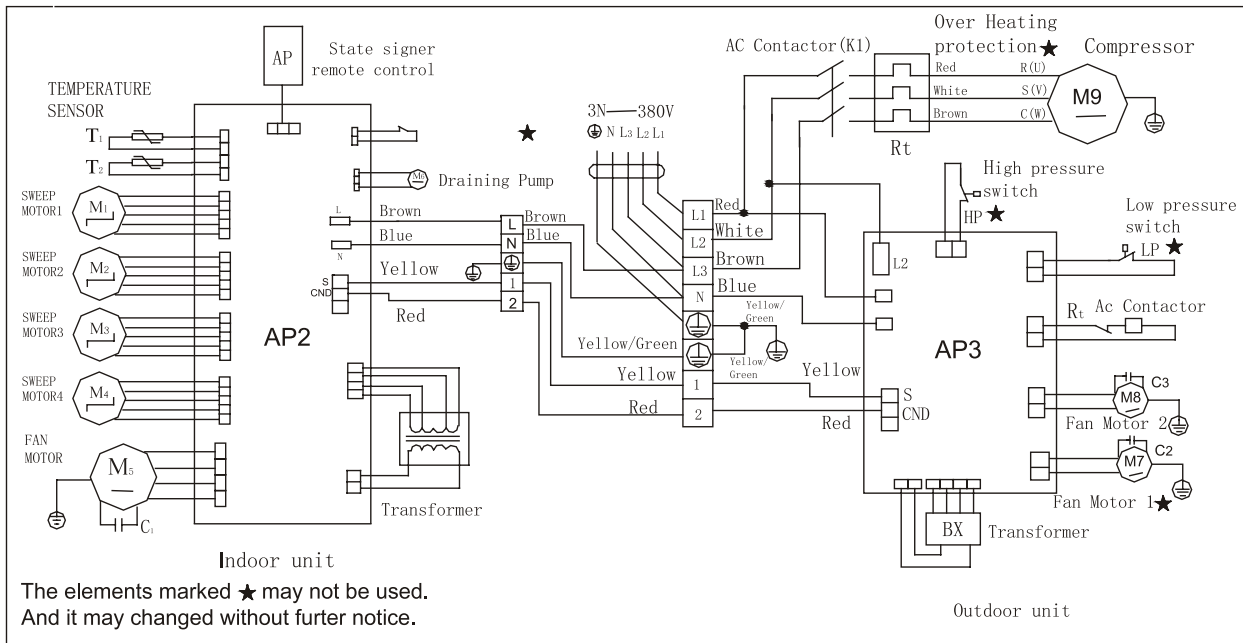


Wiring diagram

41000Btu-48000Btu(Cooding and heating)

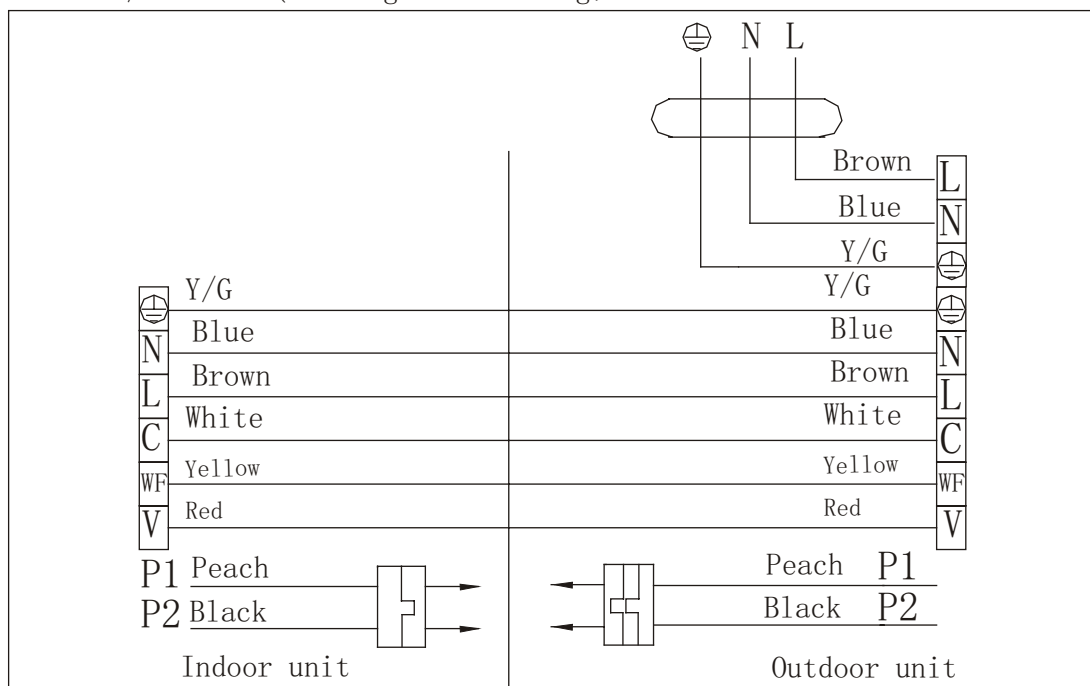


41000Btu-48000Btu(Cooling)

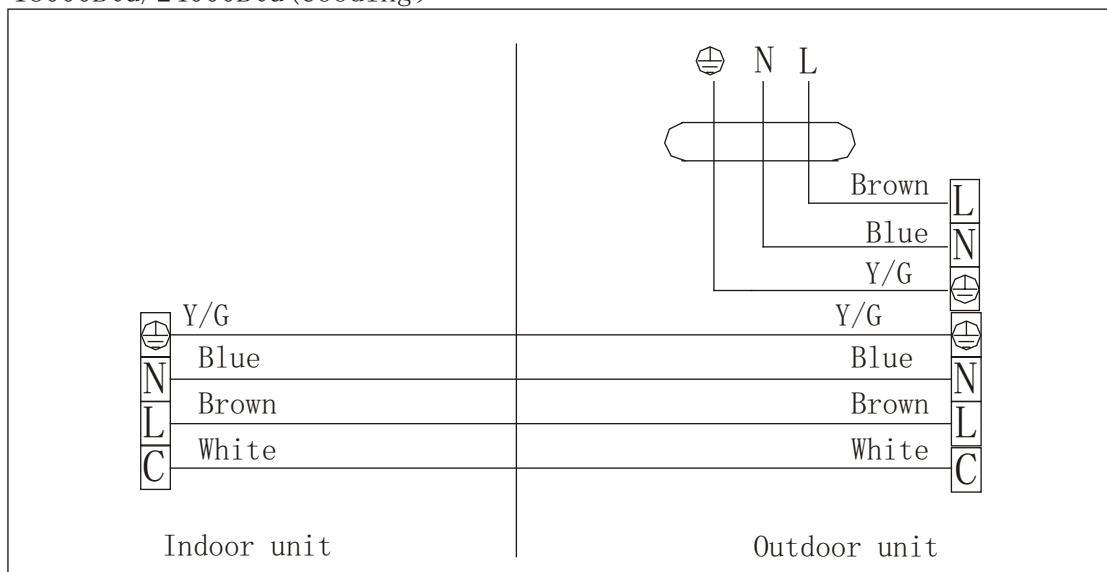


Wiring diagram

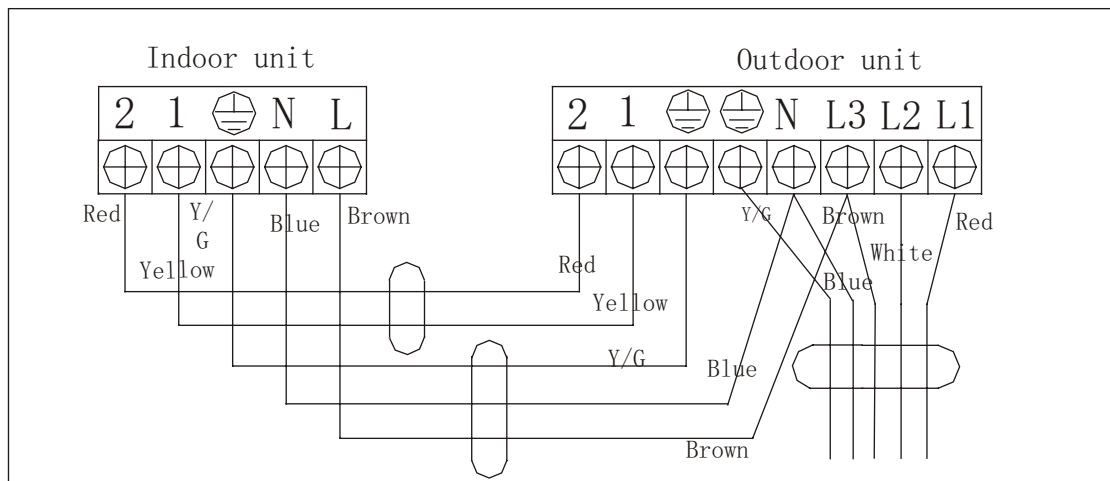
18000Btu/24000Btu(Cooding and heating)



18000Btu/24000Btu(Cooding)



41000Btu/48000Btu



RESISTANA — TEMPERATURE SPECIALITY TABLE

R25=5.000K Ω B25/50=3470K

Temp (°C)	Resistance (K Ω)		Temp (°C)	Resistance (K Ω)		Temp (°C)	Resistance (K Ω)
-16	30.517		13	8.093		42	2.674
-15	29.029		14	7.764		43	2.582
-14	27.622		15	7.451		44	2.493
-13	26.291		16	7.151		45	2.409
-12	25.033		17	6.866		46	2.327
-11	23.842		18	6.593		47	2.249
-10	22.716		19	6.333		48	2.174
-9	21.649		20	6.085		49	2.102
-8	20.623		21	5.848		50	2.032
-7	19.689		22	5.621		51	1.966
-6	18.773		23	5.405		52	1.902
-5	17.913		24	5.198		53	1.840
-4	17.097		25	5.000		54	1.780
-3	16.323		26	4.811		55	1.723
-2	15.589		27	4.630		56	1.668
-1	14.891		28	4.457		57	1.615
0	14.229		29	4.291		58	1.564
1	13.602		30	4.132		59	1.514
2	13.006		31	3.980		60	1.467
3	12.439		32	3.835		61	1.421
4	11.901		33	3.700		62	1.376
5	11.389		34	3.562		63	1.334
6	10.903		35	3.434		64	1.292
7	10.440		36	3.311		65	1.253
8	9.999		37	3.194		66	1.214
9	9.580		38	3.081		67	1.177
10	9.181		39	2.973		68	1.141
11	8.801		40	2.869		69	1.107
12	8.439		41	2.769		70	1.073

NOTE: Above items are suitable for outdoor coil temperature sensor of KFR-120QW/S



RESISTANA — TEMPERATURE SPECIALITY TABLE

R25=10.000K Ω B25/50=3470K

Temp (°C)	Resistance (K Ω)		Temp (°C)	Resistance (K Ω)		Temp (°C)	Resistance (K Ω)
-16	61.034		13	16.187		42	5.347
-15	58.057		14	15.529		43	5.163
-14	55.243		15	14.901		44	4.987
-13	52.583		16	14.303		45	4.817
-12	50.066		17	13.732		46	4.655
-11	47.685		18	13.187		47	4.498
-10	45.431		19	12.667		48	4.348
-9	43.297		20	12.170		49	4.203
-8	41.276		21	11.696		50	4.064
-7	39.361		22	11.242		51	3.931
-6	37.546		23	10.810		52	3.803
-5	35.826		24	10.396		53	3.680
-4	34.194		25	10.000		54	3.561
-3	32.646		26	9.622		55	3.446
-2	31.177		27	9.259		56	3.336
-1	29.783		28	8.913		57	3.230
0	28.459		29	8.582		58	3.127
1	27.203		30	8.264		59	3.028
2	26.011		31	7.961		60	2.933
3	24.879		32	7.670		61	2.841
4	23.802		33	7.391		62	2.753
5	22.779		34	7.124		63	2.667
6	21.806		35	6.868		64	2.584
7	20.880		36	6.622		65	2.505
8	19.999		37	6.387		66	2.428
9	19.160		38	6.162		67	2.354
10	18.362		39	5.945		68	2.283
11	17.602		40	5.738		69	2.214
12	16.877		41	5.538		70	2.147

NOTE: Above items are suitable for indoor temperature sensor, indoor coil temperature sensor, outdoor coil temperature sensor of KFR-50QW, KFR-70QW.
 Above items are suitable for indoor temperature sensor, indoor coil temperature sensor of KFR-120QW/S.

Faults & self-diagnoses



■ Resistance of compressor motor

● Wall split air conditioner (R22)

Model of compressor	Value of compressor motor (Ω) (20°C)		
	R-C	S-C	
PH310	1.74	2.91	
SHX33	1.79	3.50	
TH338	1.00	1.12	
PH420	1.13	2.10	
SHV33	1.03	2.57	
	U-V	U-W	W-V
VR57KF-TFP	2.76	2.76	2.76

● Wall split air conditioner (R407C)

Model of compressor	Value of compressor motor (Ω) (20°C)		
	R-C	S-C	
PG295	1.74	2.91	
CHX33	1.79	3.50	
PG420	1.13	2.10	
CHV33	1.45	3.34	
	U-V	U-W	W-V
C-SBN353	2.806	2.806	2.651
C-SBN373	2.806	2.806	2.651

● Wall split air conditioner (R410A)

Model of compressor	Value of compressor motor (Ω) (20°C)	
	R-C	S-C
PA225	1.54	2.48
PA290	1.13	2.10

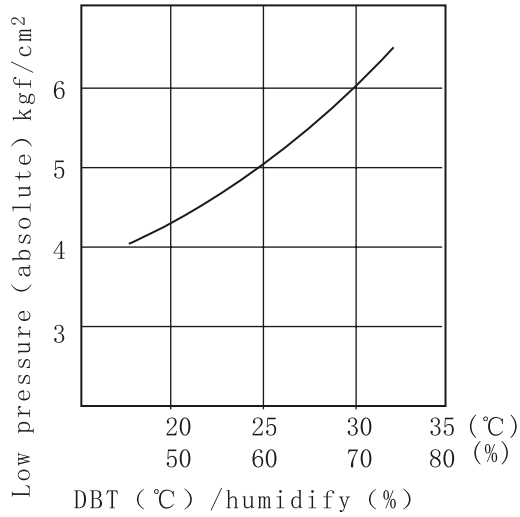
Adjustment of refrigerant charging

Type	18000Btu	24000Btu	41000/48000Btu
Additional refrigerant charging for adding each meter of connection tube	30g	60g	80g

CHARACTERISTIC CURVE

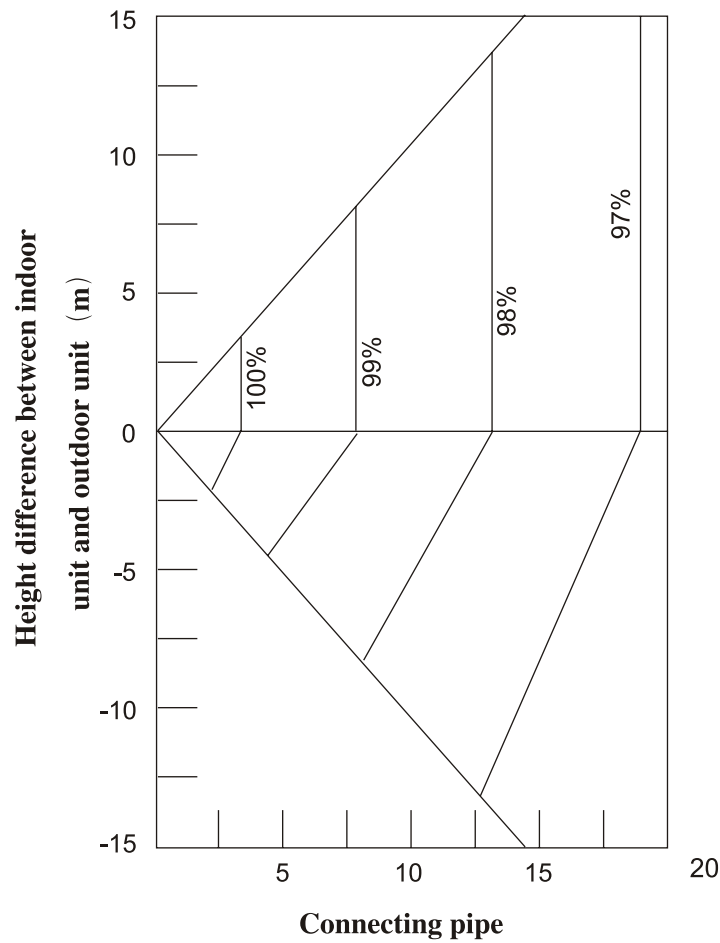
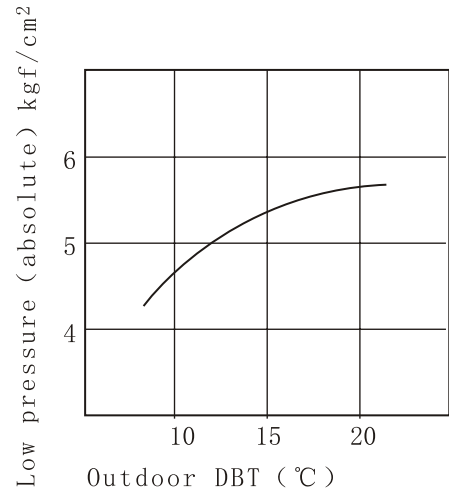
COOLING

Same condition of the indoor and outdoor when it tests



HEATING

Roomside condition: DBT21°C, WBT15.5°C



The change of refrigerant according to the connecting pipe length

