

TECHNICAL SERVICE MANUAL

—— Corner Split Series

GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI

Jinji West Rd. Qianshan Zhuhai

Guangdong China

Introduction

In this technical service manual, you will find rich references to Corner Split Type products, including photos, technical specifications, explosive views, spare parts lists and circuit diagrams. Service people and engineers of Gree's customers and distributors would find it a very handy source of technical information of our products.

Technical Support Department
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Corner Split Type

1.Summary



figure 1

MODEL	NOTE
KF-35GJW/A30 KFR-35GJW/A30	CE STANDARD 1Ph 220-230V 50Hz R22
KF-35GJW/NA30-E KFR-35GJW/NA30-E	CE STANDARD 1Ph 230-240V 50Hz R407C

Corner Split Type

2. Technical specifications

Table 1

Model			KF-35GJW/A30	KFR-35GJW/A30
Function			COOL	COOL/HEAT
Power supply			1Ph 220-230V 50Hz	
Capacity(W)			3500	3500/4000
Rated input(W)			1280	1300/1320
Rated current(A)			5.9	6.0/6.25
Air flow(m³/h)			450	
Dehumidifying volume(L/h)			1.2	
C.O.P(W/W)			2.65	2.7/3.0
Indoor unit	Model		KF-35GJ/A30	KFR-35GJ/A30
	Motor fan speed(rpm)		1430/1340/1260	
	Output power(W)		20	
	Fan type/piece		Cross flow fan-1	
	Diameter-length		φ 90 × 653	
	Evaporator		Aluminum fin-copper tube	
	Row-fin distance(mm)		3-1.6	
	Working area(m²)		0.2	
	Swing motor		MP35GA	
	Input/Power(W)		2	
	Fuse(A)		Controller 3.15A Transformer 0.2	
	Working capacitor(μ F)		1	
	Noise(dB(A))		≤ 41	
	Dimension(width-height-depth)(mm)		1000 × 256 × 674	
	Net weight(Kg)		15	
Outdoor unit	Model		KF-35W/A30	KFR-35W/A30
	Input power (W)		1360	1340/1410
	Current (A)		6.2	6.1/6.4
	L.R.A. (A)		31	
	Throttling method		Capillary	
	Compressor model		C-RV222H1AA	C-RV232BH1AA
	Compressor power(W)		780	
	Protector		Outer overload protection	
	Starting method		Power supply module	
	Working temp.		Exhaust temperature ≤ 115℃	
	Condenser		Aluminum-copper	
	Pipe-diameter		φ 9.52	
	Row-fin distance(mm)		2-1.6	
	Working area(m²)		0.3	0.5
	Fan motor power(W)/speed(rpm)		880	
	Type-piece		Axial fan-1	
	Diameter(mm)		φ 400	
	Defrosting method		Auto defrost	
	Noise (dB(A))		57	
	Dimension(width-height-depth)(mm)		888 × 540 × 320	
	Net weight(kg)		32	
	Refrigerant charge (kg)		R22 0.85	R22 1.2
Connecting pipe	Length(m)		4	
	Outer diameter	Liquid pipe	φ 12	
		Gas pipe	φ 6	
	Max distance	Height(m)	5	
		Length(m)	10	

The technical data are subject to change without notice .Please refer to the nameplate of the unit.

Corner Split Type

Table 2

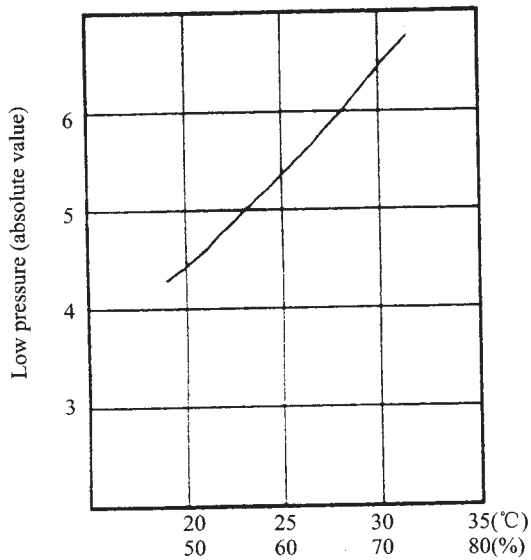
Model			KF-35GJW/NA30-E		KFR-35GJW/NA30-E	
Function			COOL		COOL/HEAT	
Power supply			1Ph 230-240V 50Hz			
Capacity(W)			3500		3500/4000	
Rated input(W)			1380		1360/1430	
Rater current(A)			6.4		6.3/6.6	
Air flow(m³/h)			450			
Dehumidifying volume(L/h)			1.2			
C.O.P(W/W)			2.4		2.4/2.8	
Indoor unit	Model		KF-35GJ/NA30-E		KFR-35GJ/NA30-E	
	Motor fan speed(rpm)		1430/1340/1260			
	Output power(W)		20			
	Fan type/piece		Cross flow fan-1			
	Diameter-length		φ 90 × 653			
	Evaporator		Aluminum fin-copper tube			
	Row-fin distance(mm)		3-1.6			
	Working area(m²)		0.2			
	Swing motor		MP35GA			
	Input/Power(W)		2			
	Fuse(A)		Controller 3.15A Transformer 0.2			
	Working capacitor(μ F)		1			
	Noise(dB(A))		≤ 41			
	Dimension(width-height-depth)(mm)		1000 × 256 × 674			
	Net weight(Kg)		15			
	Outdoor unit	Model		KF-35W/NA30-E		KFR-35W/NA30-E
Input power (W)		1360		1340/1410		
Current (A)		6.2		6.1/6.4		
L.R.A. (A)		31				
Throttling method		Capillary				
Compressor model		C-RV227H01AA		C-RV237H01AA		
Compressor power(W)		780				
Protector		Outer overload protection				
Starting method		Power supply module				
Working temp.		Exhaust temperature ≤ 115℃				
Condenser		Aluminum-copper				
Pipe-diameter		φ 9.52				
Row-fin distance(mm)		2-1.6				
Working area(m²)		0.3		0.5		
Fan motor power(W)/speed(rpm)		880				
Type-piece		Axial fan-1				
Diameter(mm)		φ 400				
Defrosting method		Auto defrost				
Noise (dB(A))		57				
Dimension(width-height-depth)(mm)		888 × 540 × 320				
Net weight(kg)		32				
Refrigerant charge (kg)		R407C 0.9		R407C 1.2		
Connecting pipe	Length(m)		4			
	Outer diameter	Liquid pipe	φ 12			
		Gas pipe	φ 6			
	Max distance	Height(m)	5			
		Length(m)	10			

The technical data are subject to change without notice .Please refer to the nameplate of the unit.

3. Performance curves

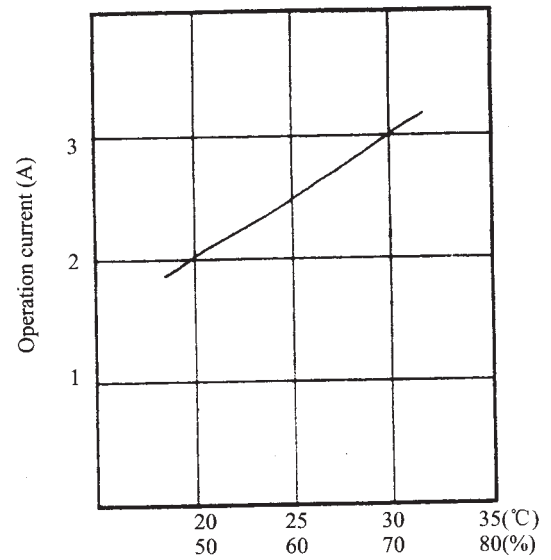
- Technical date
- Performance curve as fig1 fig2
- The change relation between low pressure , operation current and temp.

Cooling operation condition :In testing , indoor and outdoor have same work condition.



Dry bulb temp. / humidity

(a)

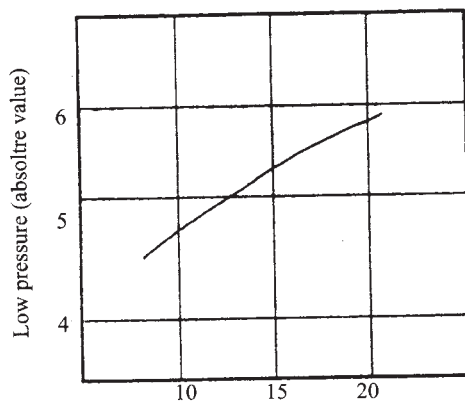


Dry bulb temp. / humidity

(b)

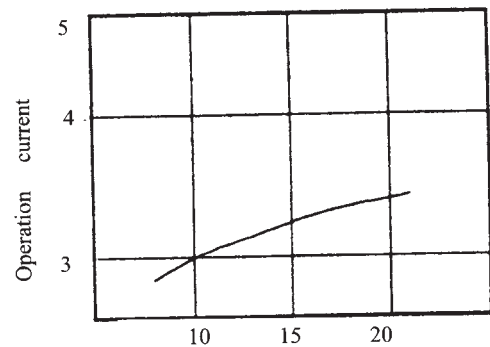
Heating operation

Indoor work condition : dry bulb temp. 21 ,wet bulb temp. 15.5



Outdoor dry bulb temp.

(c)



Outdoor dry bulb temp.

(d)

figure 2

Corner Split Type

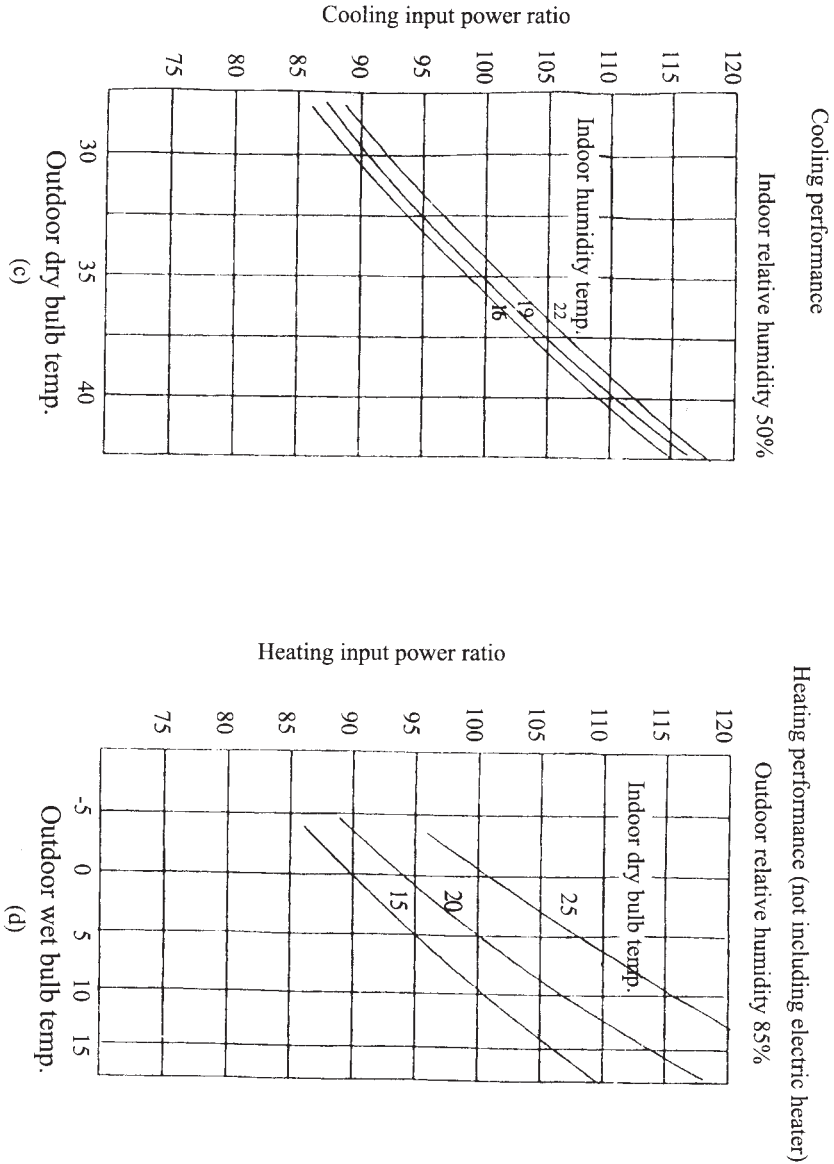
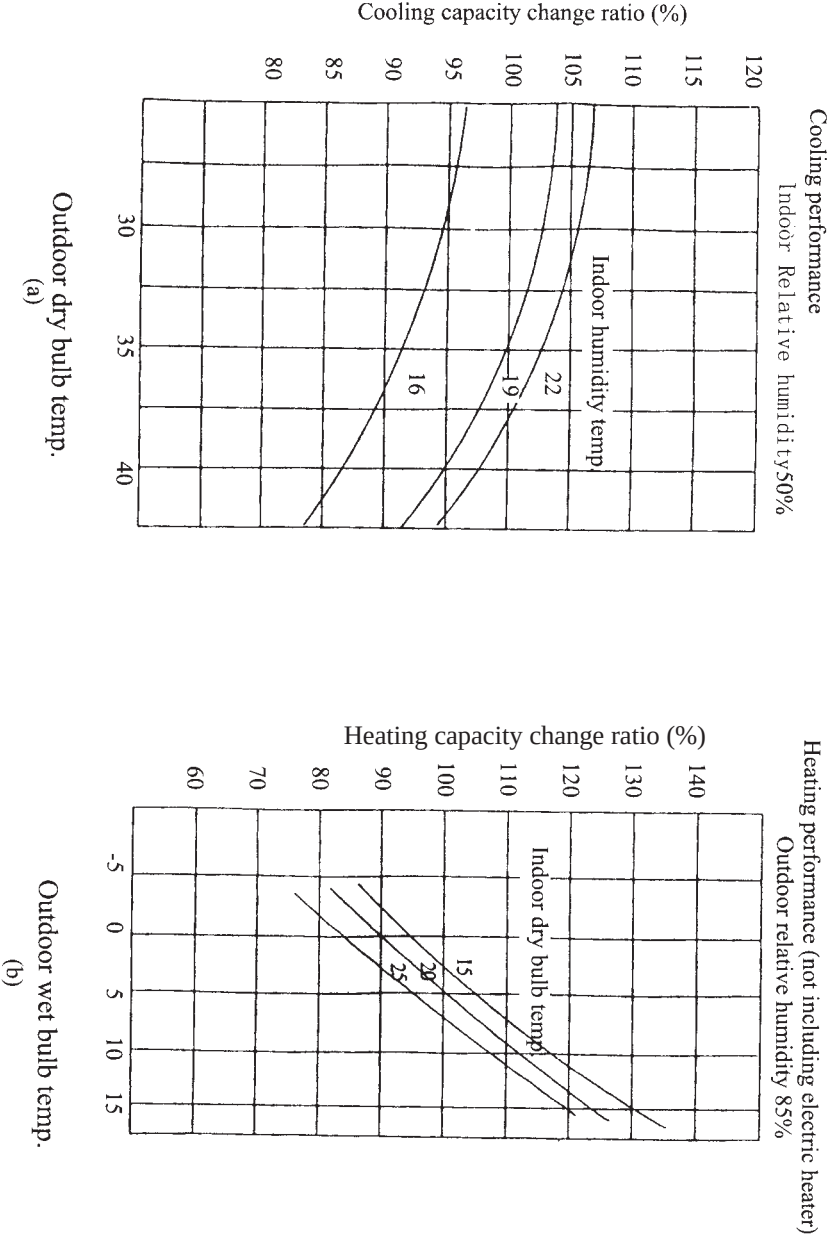


figure 3

Corner Split Type

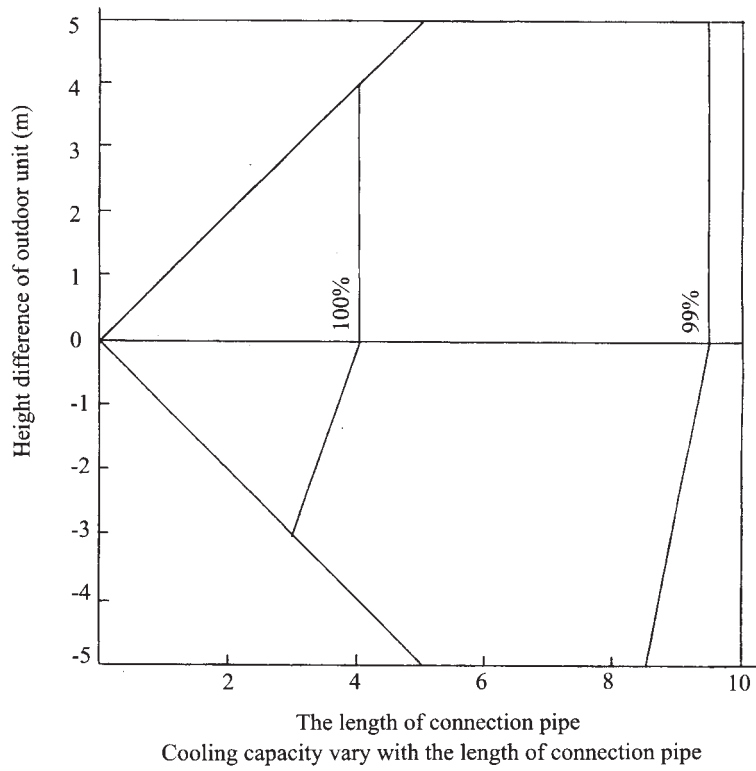
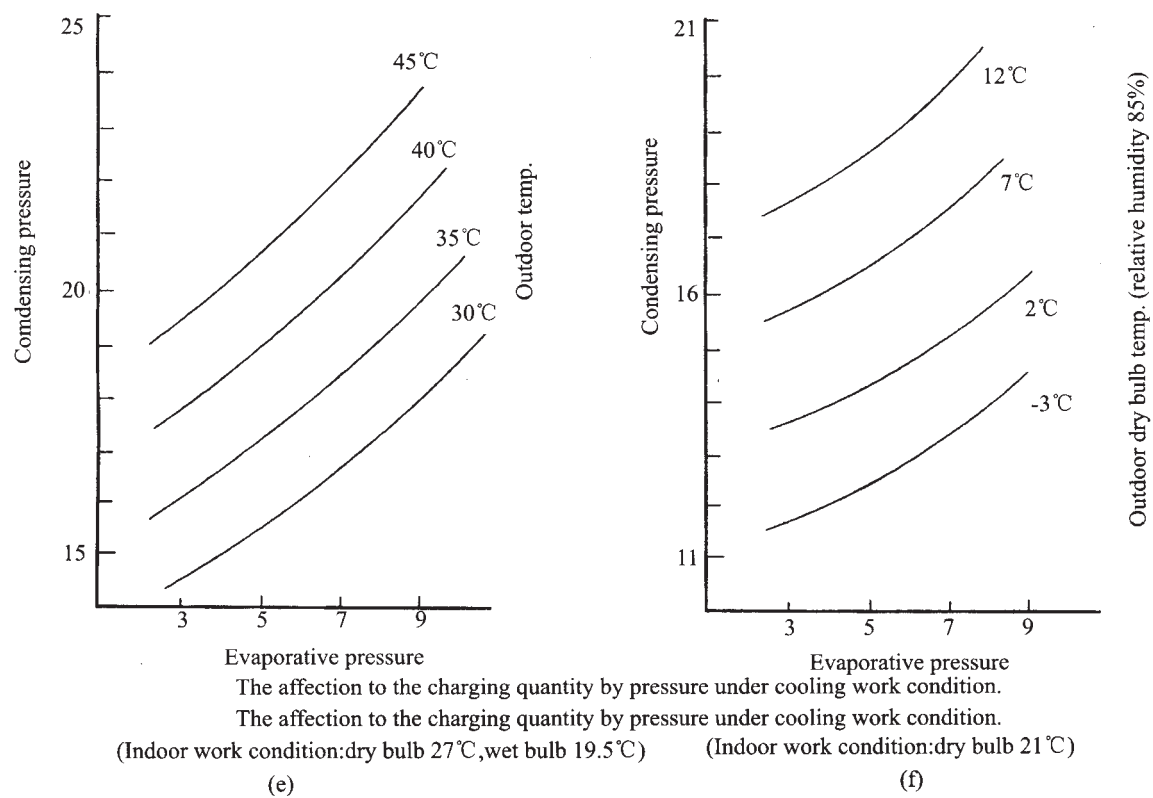


figure 4

4. Outlines and dimensions of indoor unit

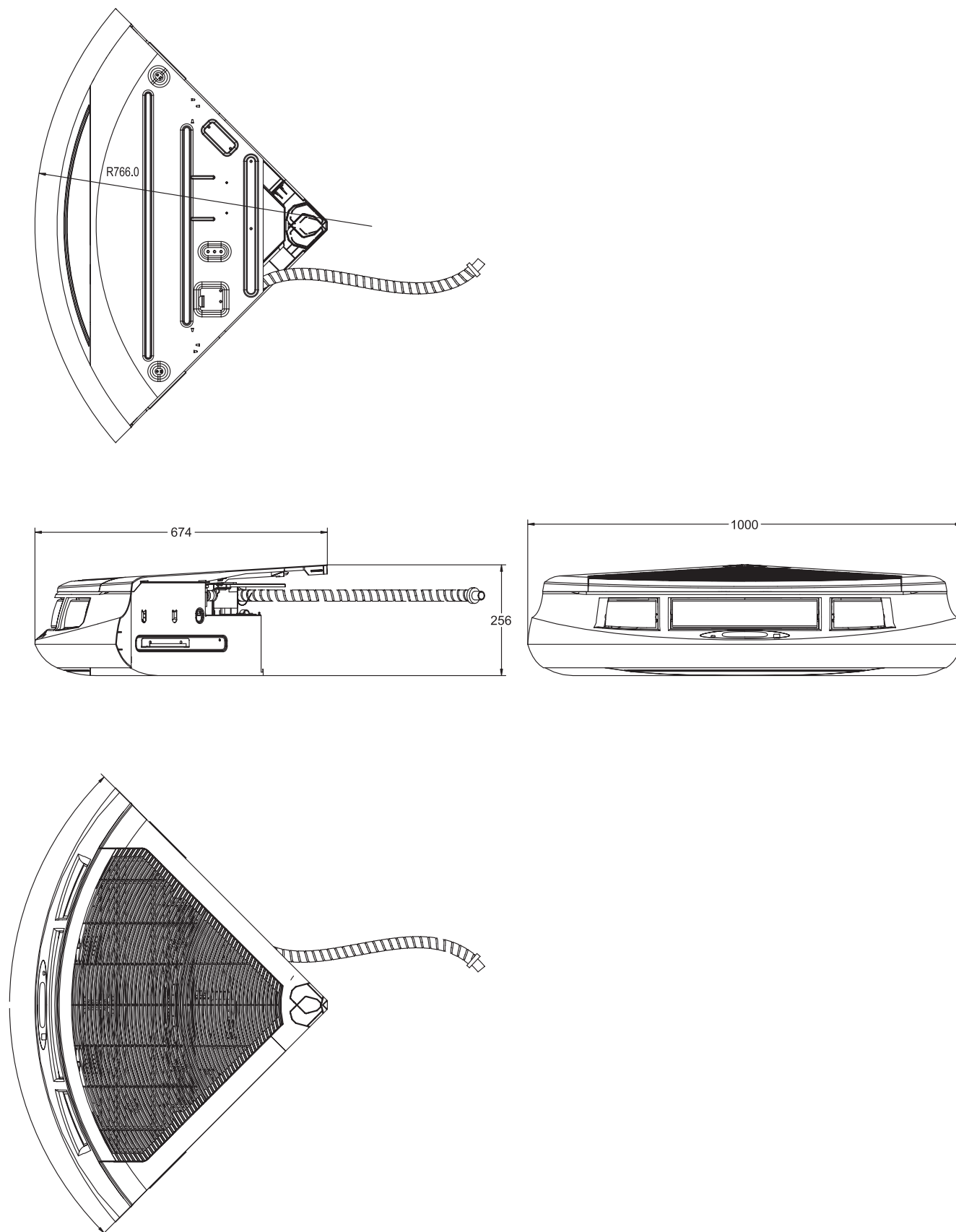


figure 5

5. Outlines and dimensions of outdoor unit

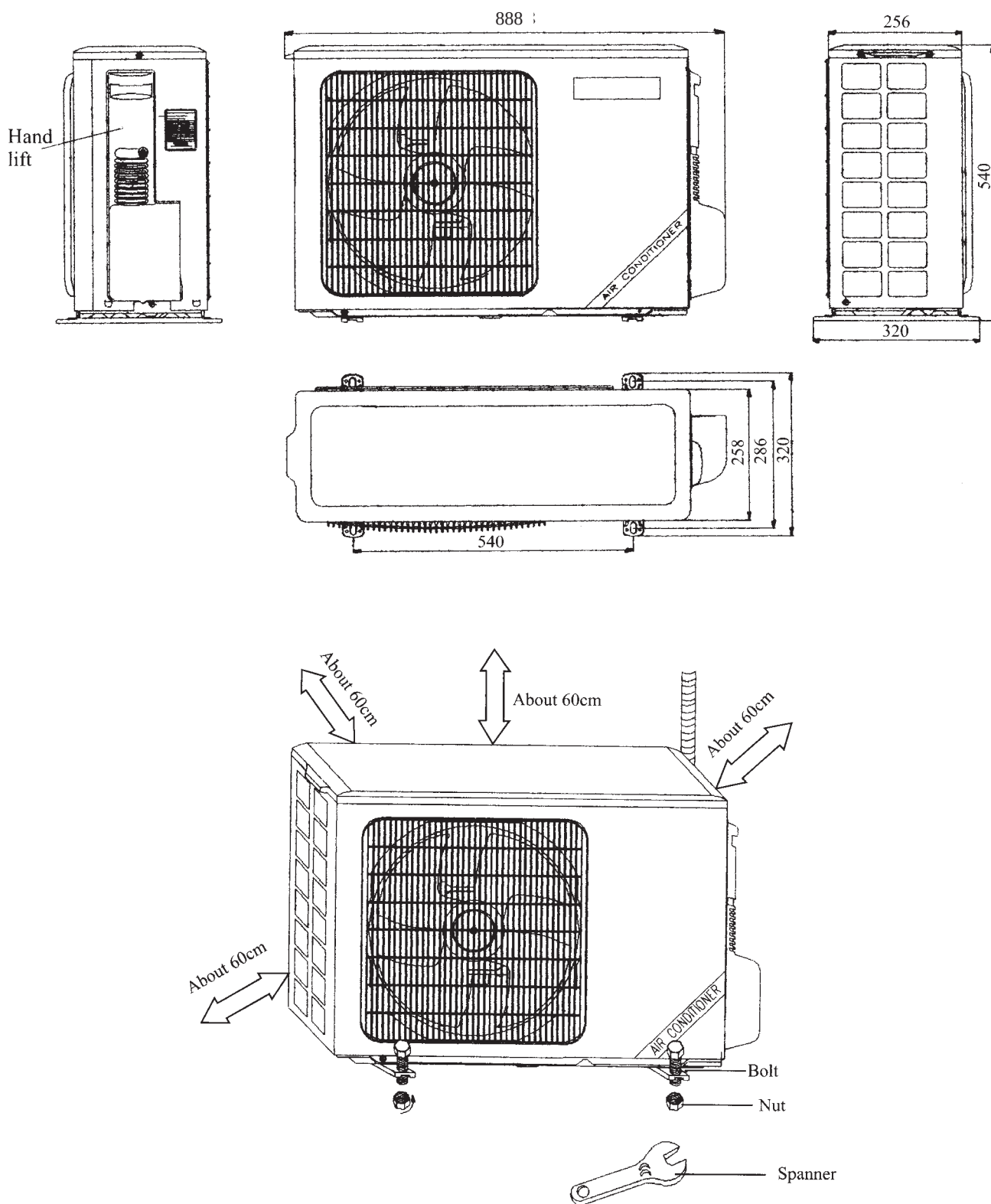


figure 6

6. Explosive view and spare parts list of indoor unit

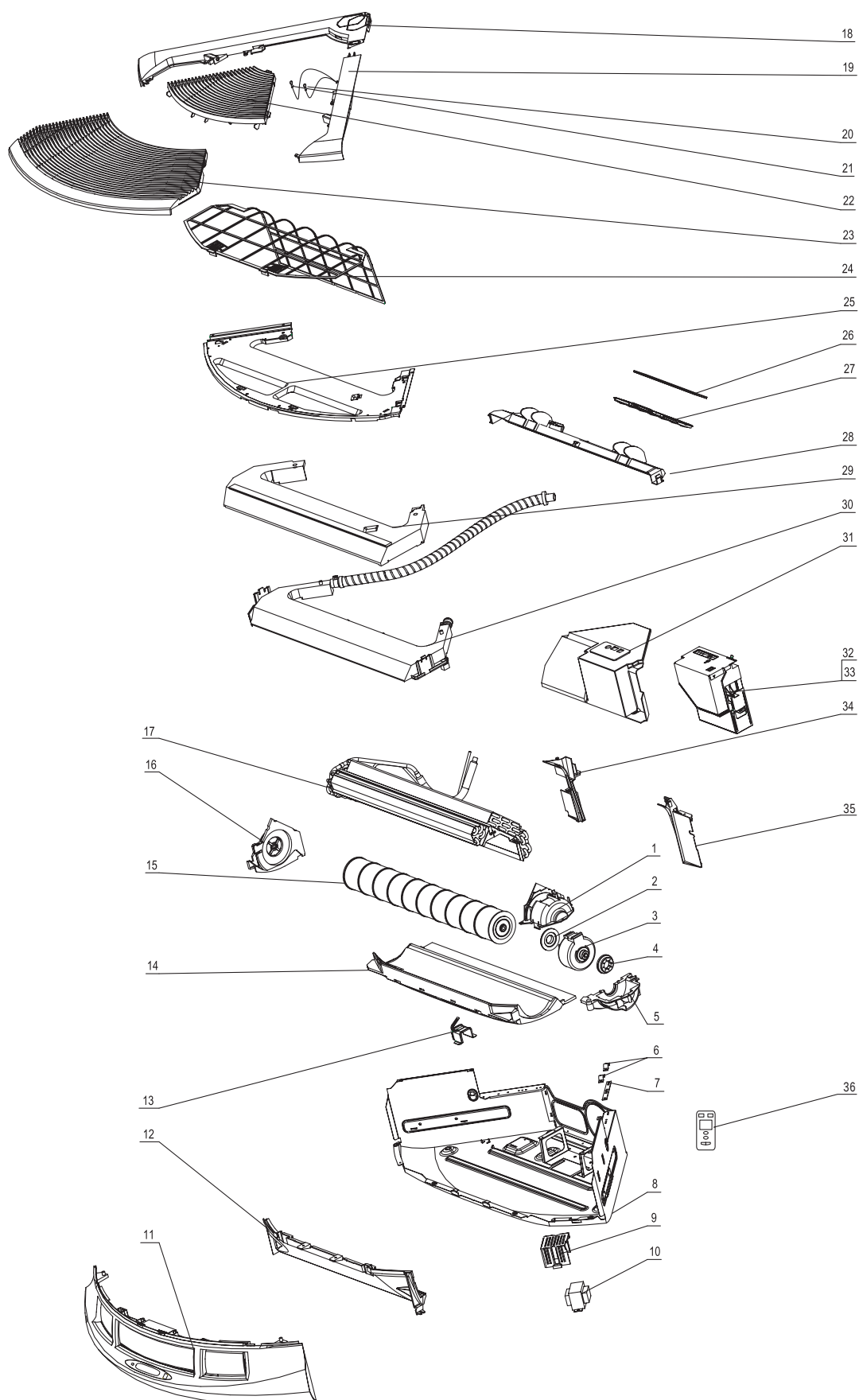


figure 7

Corner Split Type

Table 3

No	Description		Part No				Qty
			KF-35GJ /A30	KFR-35GJ /A30	KF-35GJ /NA30-E	KFR-35GJ /NA30-E	
1	Motor Cover	风叶电机上盖	22242002	22242002	22242002	22242002	1
2	Front Ring of Motor	电机前胶圈	\	\	\	\	1
3	Motor	电机 FN20E (抽头)	15012202	15012202	\	\	1
		电机 FN20J	\	\	150122021	150122021	1
4	Rear Ring of Motor	电机后胶圈	\	\	\	\	1
5	Motor Backseat	电机座	26152002	26152002	26152002	26152002	1
6	Wire Clamp	电线夹	71010103	71010103	71010103	71010103	2
7	Insulation Gasket C	绝缘垫片 C	70410523	70410523	70410523	70410523	1
8	Front Plate Assy	外罩组件	01432203	01432203	01432203	01432203	1
9	Transformen Cover	变压器罩	22262001	22262001	22262001	22262001	1
10	Transformen	变压器 SC33C	43110186	43110186	\	\	1
		变压器 SC33C1A	\	\	43110001	43110001	1
11	Front Plate assy	前面板组件	20004007	20004007	20004007	20004007	1
12	InsulationWindholeAssy	出风口隔板组件	20002203	20002203	20002203	20002203	1
13	Pipe clamp Assy	压管夹组件	02142205	02142205	02142205	02142205	1
14	Flue Foam Assy	风道泡沫组件	12312208	12312208	12312208	12312208	1
15	Cross flow Fan Assy	贯流风叶部件	10352201	10352201	10352201	10352201	1
16	Fan Support Assy	风叶支架组件	24212201	24212201	24212201	24212201	1
17	Evaporator Assy	蒸发器部件	01002201	01002143	01002201	01002143	1
18	Connecting Frame	大连接框	22412004	22412004	22412004	22412004	1
19	Connecting Frame	小连接框	22412003	22412003	22412003	22412003	1
20	Pothook	挂钩	02112204	02112204	02112204	02112204	1
21	Pothook	挂钩	02112204	02112204	02112204	02112204	1
22	Windhole Grill	小进风隔栅	22412002	22412002	22412002	22412002	1
23	Windhole Grill	大进风隔栅	22412001	22412001	22412001	22412001	1
24	Filter net	过滤网	11122004	11122004	11122004	11122004	1
25	Water Tray	接水盘压板	01272201	01272201	01272201	01272201	1
26	Air Cleaner	空气净化器	11012200	11012200	11012200	11012200	1
27	Air Cleaner Support	净化器支架	71012056	71012056	71012056	71012056	1
28	Air Cleaner Holder	净化器固定架	24222004	24222004	24222004	24222004	1
29	Water Tray Foam	接水盘泡沫	12312202	12312202	12312202	12312202	1
30	Water Tray Assy	接水盘组件	12412005	12412005	12412005	12412005	1
31	Electric Box Cover	电器盒安装盖	20102004	20102004	20102004	20102004	1
32	Electric Box	电器盒	20102002	20102002	20102002	20102002	1
33	PCB 55511A	控制器 55511A	30025016	\	30025016	\	1
	PCB 55521A	控制器 55521A	\	30025017	\	30025017	1
34	Right Filter Support	过滤网右支架	24222003	24222003	24222003	24222003	1
35	Left Filter Support	过滤网左支架	24222002	24222002	24222002	24222002	1
36	Remote controller Y512	遥控器 Y512	30512506	30512506	30512506	30512506	1
37	Stepping motor	步进电机 MP35GA	15212201	15212201	15212201	15212201	1

The data are subject to change without notice.

7. Explosive view and spare parts list of outdoor unit

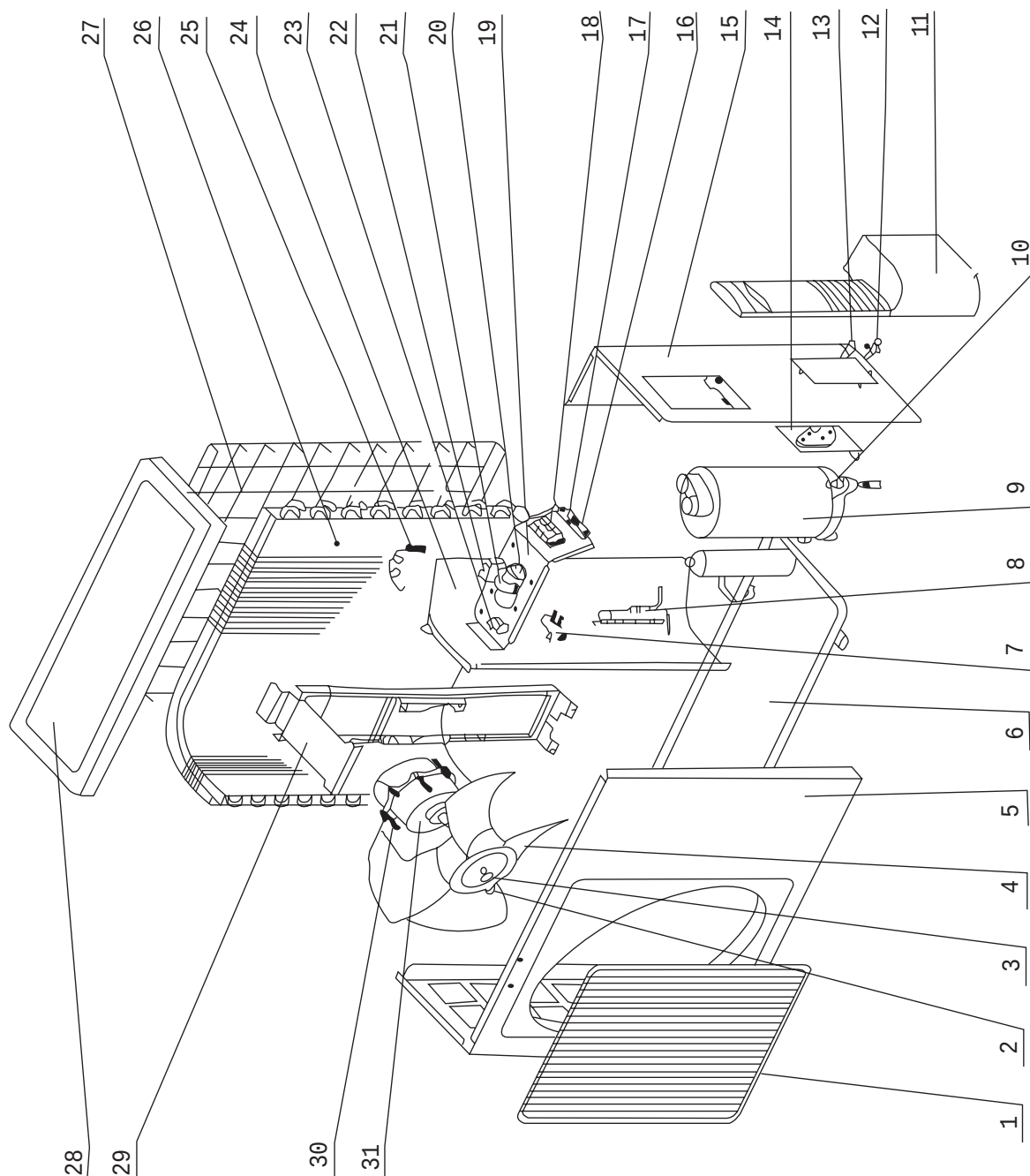


figure 8

Corner Split Type

Table 4

No	Description		Part No				Qty
			KF-35W/A30	KFR-35W/A30	KF-35W/NA 30-E	KFR-35W/NA 30-E	
1	Front Grill	面板格栅	22413431	22413431	22413431	22413431	1
2	Nut M6	螺母 M6	70310132	70310132	70310132	70310011	1
3	Washer 6	垫圈 6	70410252	70410252	70410252	70410252	1
4	Axial Flow Fan	轴流风叶	10333412	10333412	10333412	10333412	1
5	Front Plate	面板	01533423	20002041	01533423	01533428	1
6	Metal Base	底盘组件	01203008	01213045	01203008	01203373	1
7	4-way Valve	四通阀	\	43000402	\	43004021	1
	4-way Fittings	四通阀配件	\	43000400	\	43000400	1
8	Capillary Assy	毛细管组件	03003072	03003118	03003072	03003344	1
9	CompressorC-RV222H1AA	压缩机及配件	00100340	\	\	\	1
	CompressorC-RV232BH1AA		\	00100339	\	\	1
	CompressorC-RV227H01AA		\	\	00100352	\	1
	CompressorC-RV237H01AA		\	\	\	00100353	1
10	Nut with Washer M6	带垫螺母	70310012	70310014	70310012	70310011	3
11	Handle	大提手	26233433	26233433	26233433	26233433	1
12	Valve 1/2"	阀门 1/2 "	07100147	07100147	07100133	07100133	1
13	Valve 1/4"	阀门 1/4 "	07100120	07100120	07100149	07100149	1
14	Valve Support	阀门支架	01713041	01713041	01713041	01713041	1
15	Right Side Plate Assy	右侧板组件	01302000	01302004	01302000	01302004	1
16	Wire Clamp	电线夹	71010103	71010103	71010103	71010103	2
17	Insulation Gasket	绝缘垫片	70410525	70411053	70410525	70410523	1
18	Terminal Board T386A	三位接线板 T386A	42011241	42011241	42011241	42011241	1
19	Electric Plate	电器盒	01413425	01413425	01413425	01413425	1
20	Comp Capaitor 30uF/450V	压缩机电容	33000018	33000018	33000018	\	1
	Comp Capaitor 25uF/451V		\	\	\	33000020	1
21	Capacitor Clamp	电容夹	02143401	02143401	02143401	02143401	1
22	Fan Capacitor 3uF/450V	风机电容	33010021	33010021	33010021	33010027	1
23	Terminal Board 2-8	接线板 2-8	\	42011103	\	42011103	1
24	Isolation Sheet Assy	隔板组件	01233417	01233417	01233417	01233417	1
25	Tube Sensor	管温感温包	\	39000115	\	39000115	1
26	Condenser Assy	冷凝器组件	01103408	01103409	01103408	01103409	1
27	Rear grill Assy	后护网组件	11123402	11123402	11123402	11123402	1
28	Top cover Assy	顶盖组件	01253261	01253261	01253261	01253261	1
29	Motor Support	电机支架	01703391	01703391	01703391	01703391	1
30	Self-tapping Screw	自攻螺钉	70140561	70140561	70140561	70140561	4
31	Motor FW48A	风扇电机	15013036	15013036	\	\	1
	Motor FW48F		\	\	150130391	150130391	1

The data are subject to change without notice.

These circuit diagrams are subject to change.
Please refer to the ones stuck on the machines.

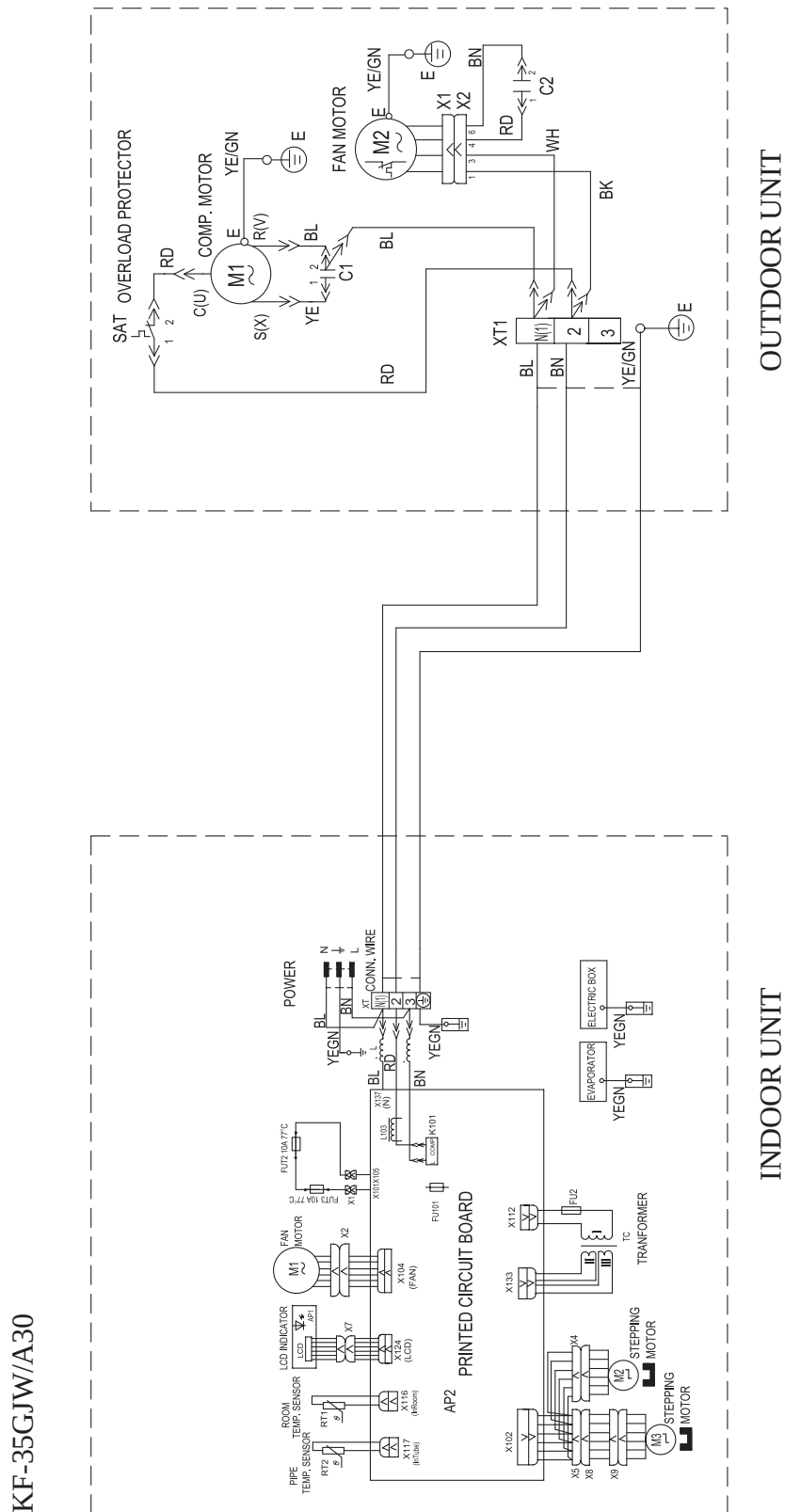


figure 9

KFR-35GJW/A30

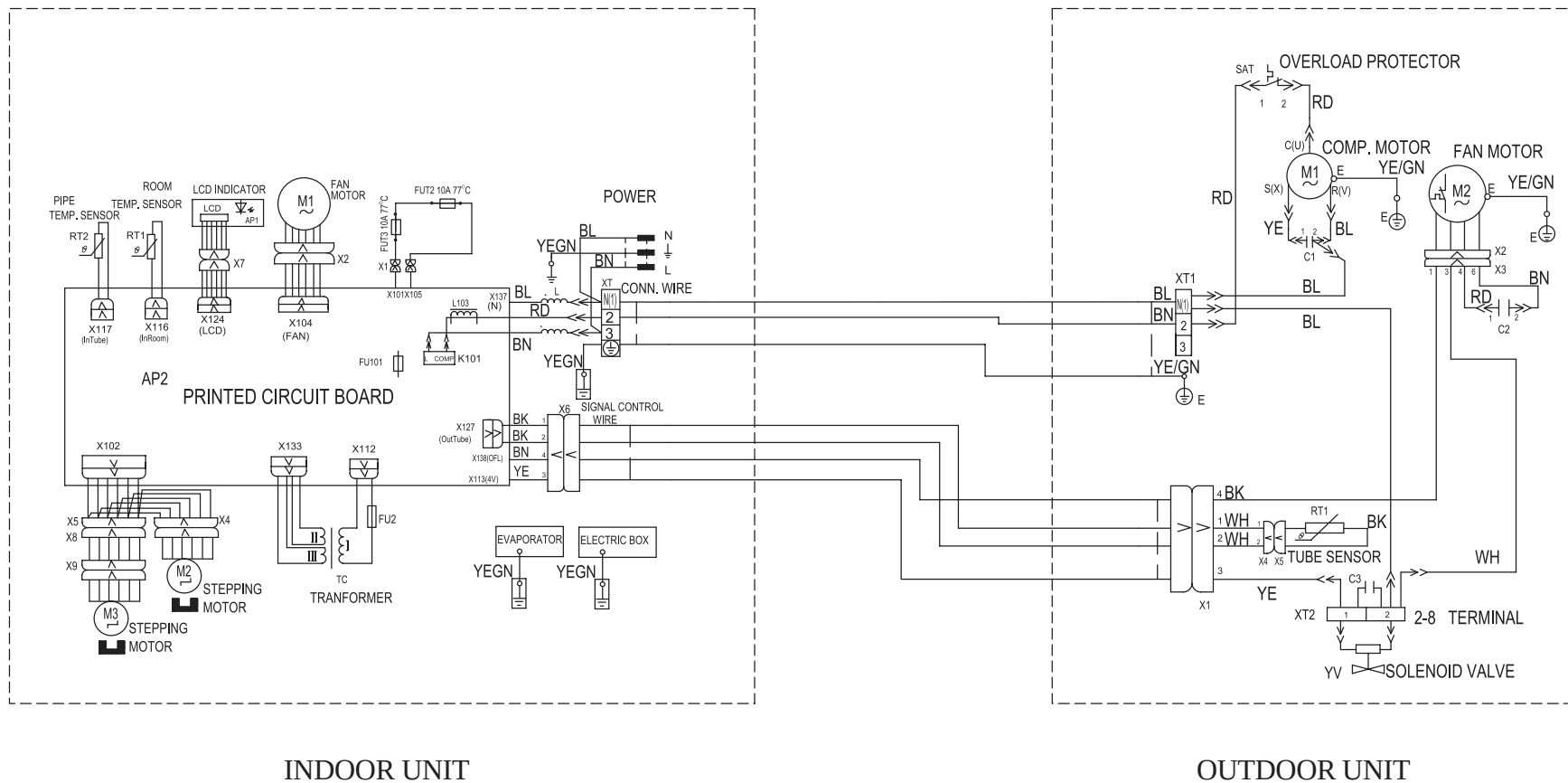


figure 10

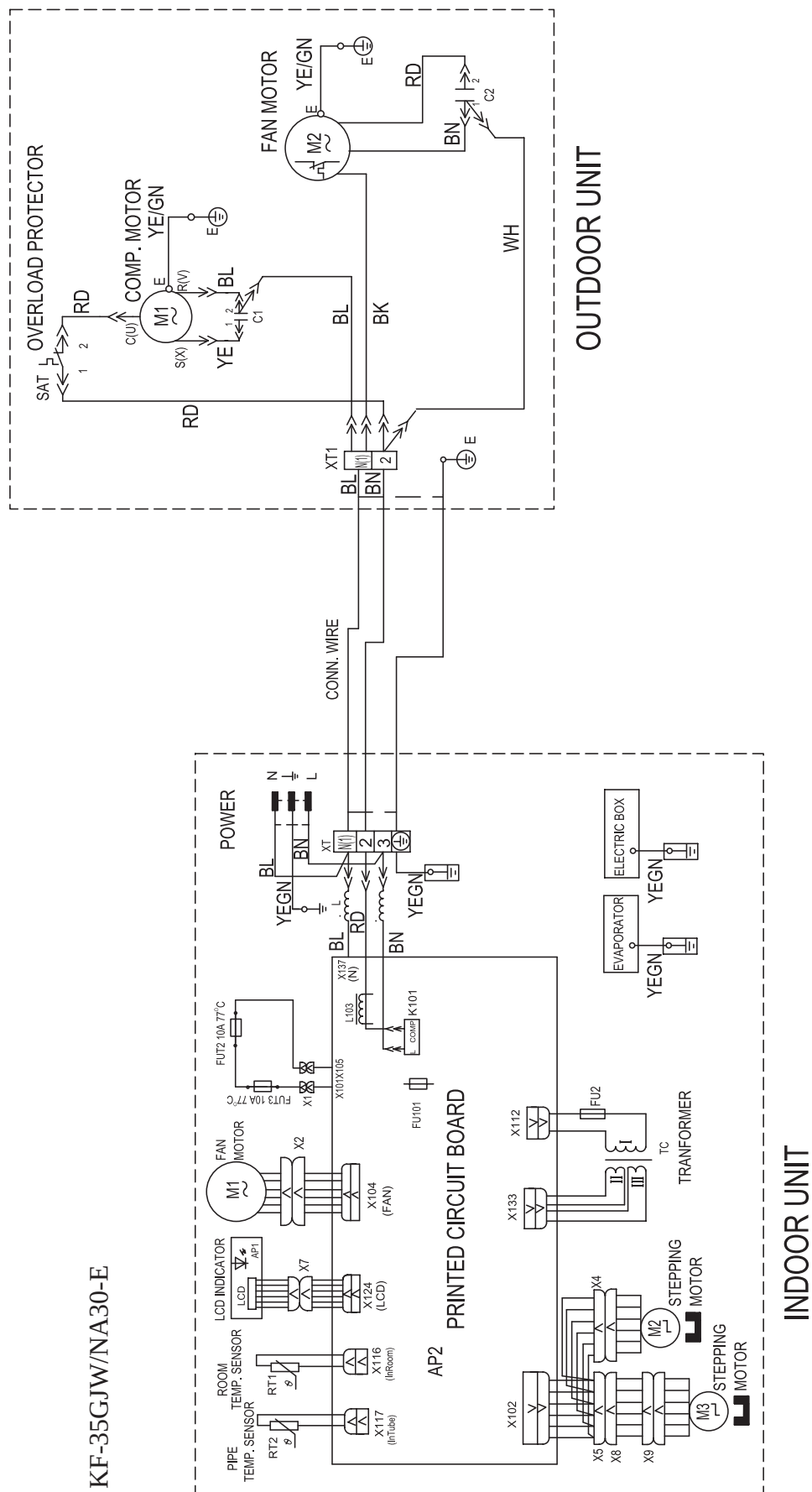


figure 11

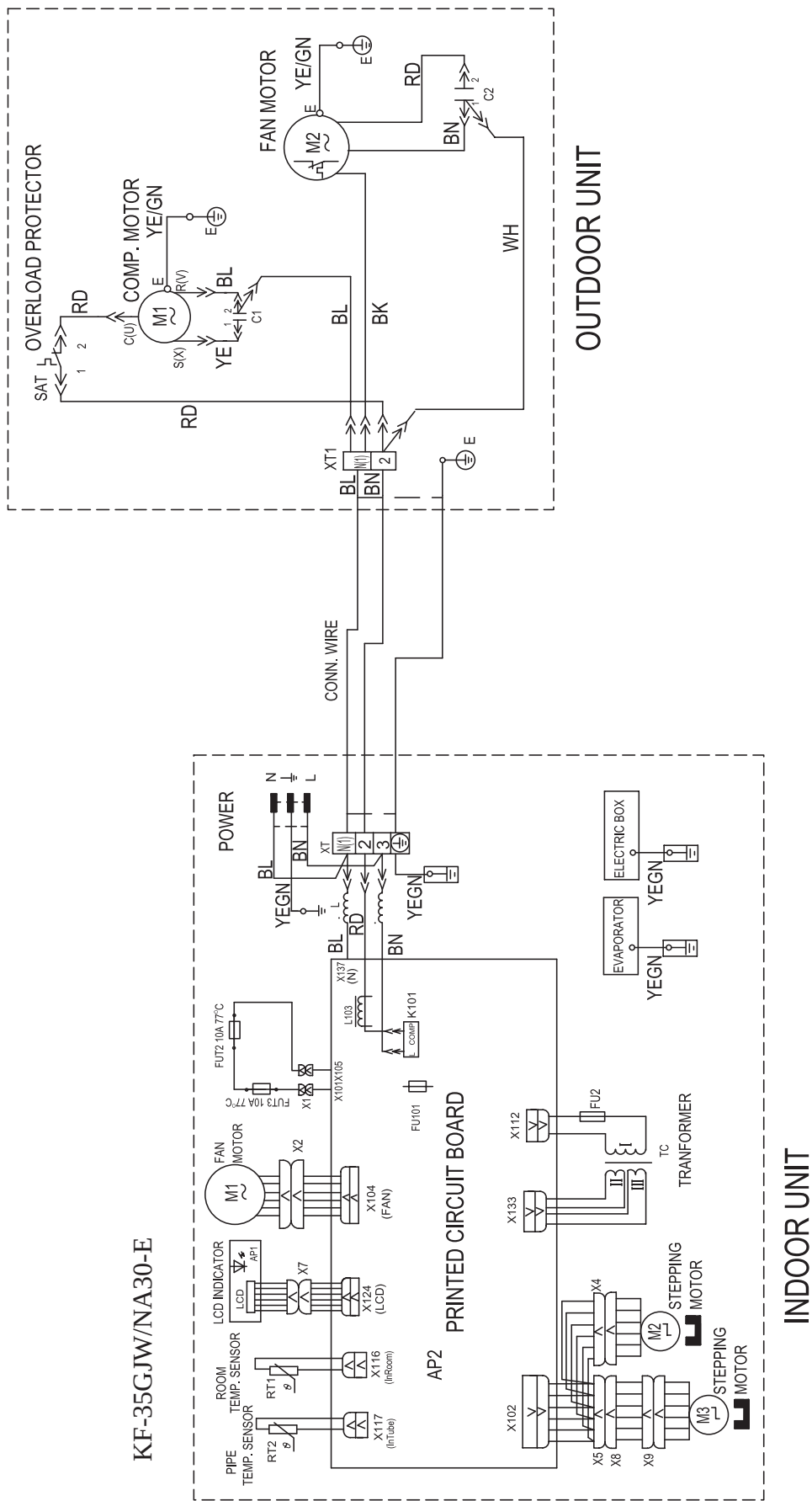


figure 12

9. PCB function manual

5 In 1 PCB function manual

A. running mode

1. cooling 2. dehumidifying 3. heating 4. fan 5. auto

B. input parameters

1. indoor ambient temp. T_{in}
2. evaporator tube temp. T_{eva}
3. setting temp. T_{set}
4. condenser tube temp. T_{con}

C. targets

1. indoor motor (PG motor)
2. swing motor
3. outdoor motor (two speeds motor)
4. compressor
5. four-way reversing valve
6. electric heater
7. fresh motor

D. fundamental functions

1. cooling mode

(1) the running conditions and control measures

- a. if $T_{in} \geq T_{set} + 1^{\circ}\text{C}$, the machine runs at the cooling mode. Compressor runs, outdoor motor runs at low speed, indoor fan runs at the set fan speed.
- b. if $T_{in} \leq T_{set} - 1^{\circ}\text{C}$, the machine stops. Compressor stops first, outdoor motor stops after 15 seconds, indoor motor runs at the set fan speed.
- c. if $T_{set} - 1^{\circ}\text{C} < T_{in} < T_{set} + 1^{\circ}\text{C}$, keep the previous state.

(2) in this mode, the reversing valve is inactive, the temp. setting range is from 16~30°C.

(3) Protect function

- a. anti-freezing function.

if compressor have run 6 minutes, and detect $T_{eva} < 0^{\circ}\text{C}$ for continuous 3 minutes, then the compressor, outdoor fan stopped, indoor fan run at the set fan speed. After 3 minutes later, it will run at the original state if $T_{eva} \geq 10^{\circ}\text{C}$.

- b. compressor protection

Compressor's starting interval should be more than 3 minutes no matter in whatever modes and conditions. If it's plugged in first time, the compressor does not have 3 minutes delay. When

Corner Split Type

compressor is started, it will not stop within 5 minutes unless it is plugged out.

c. overload protection

If it detect the system current surpass the designed 13 A for continuous 3 minutes, the machine go into fan mode, when 3 minutes passed and it detect the current no more than 13 A, it will back to original state. If it detects overloading states for 3 consecutive times within 30 minutes, the machine stops, and must be restarted by remote controller.

2. dehumidifying mode

(1) the working conditions and control measures

- If $T_{in} > T_{set} + 2^{\circ}\text{C}$, it is in cooling running, the indoor motor speed can be selected ,and outdoor motor run at low speed.
- If $T_{set} - 2^{\circ}\text{C} \leq T_{in} \leq T_{set} + 2^{\circ}\text{C}$, it goes into dehumidifying running ,the indoor motor run at the low speed, 6 minutes later the compressor and later the outdoor fan stops, another 30 seconds later, the indoor motor stops, 3 and a half minutes later, compressor and outdoor fan run again ,indoor motor runs at the low speed, then the machine cycle the above procedures repeatedly. outdoor motor runs at the low speed.
- If $T_{in} < T_{set} - 2^{\circ}\text{C}$, compressor ,outdoor motor and indoor motor stop.

(2) in this mode, the reversing valve is inactive , the temp. setting range is 18~30°C.

(3) Anti-freezing protection.

If $T_{indoor} > T_{set} + 2^{\circ}\text{C}$, it goes into cooling running , anti-freezing function is same with cooling mode, but the compressor must stops for 4 minutes. when it goes into dehumidifying mode, compressor runs 6 minutes , if it detects $T_{eva} < 0^{\circ}\text{C}$,compressor and outdoor motor stop, indoor motor runs at low speed ,after 3 minutes delay ,and $T_{eva} \geq 10^{\circ}\text{C}$, it will be back to its original state.

3. heating mode

(1) the working conditions and control measures

- If $T_{in} \leq T_{set} + 2^{\circ}\text{C}$, it goes into heating mode, reversing valve, compressor and outdoor motor all work in the same time, indoor fan will run at the same procedures with anti cool air function.
- If $T_{in} \geq T_{set} + 4^{\circ}\text{C}$, compressor stops first, 15 seconds late, outdoor motor stops ,but reversing valve keeps working, indoor motor run at the procedures of blowing surplus heat.
- if $T_{set} + 2^{\circ}\text{C} < T_{indoor} < T_{set} + 4^{\circ}\text{C}$, keep the previous running state.

(2) in this mode, the temperature setting range is from 16~30°C.

(3) The working conditions of auxiliary electric heater.

In heating mode, when compressor is working, indoor motor runs at high speed and middle speed .if it detect $T_{eva} < 50^{\circ}\text{C}$ for continuous 8 seconds and $T_{indoor} \leq 25^{\circ}\text{C}$, electric heater will work ,if compressor stop or indoor motor runs at low speed or $T_{eva} \geq 54^{\circ}\text{C}$ or $T_{indoor} \geq 28^{\circ}\text{C}$ or 2 minntes before defrosting , the electric heater will stop.

(4) protections

a .anti cool air

when the machine starts heating and $T_{eva} \geq 22^{\circ}\text{C}$, indoor motor runs at low speed, and swing motor makes the louver at the horizontal position(in Bird line, it will swing to the maximum air

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volume position), if $T_{eva} \geq 40^{\circ}\text{C}$ or compressor have run 2 minutes ,indoor motor and swing motor will run at the set speed.

b .anti high temp.

In heating mode, if it detect $T_{eva} \geq 56^{\circ}\text{C}$ (58°C can be selected), outdoor motor will stop(in this period it will not detect the defrosting temp.). if $T_{eva} \leq 52^{\circ}\text{C}$, outdoor motor will be back running (it will not detect defrosting temp. in the first 5 seconds).

c. blowing surplus heat

In heating mode, when set temp is reached ,comp. stops first,15 seconds later outdoor fan stops, Indoor motor blows 30 seconds (60 seconds can be selected) at low speed.

d. Compressor's protection is same with the one in cooling mode.

e. Overload protection

If it detects that the system current surpassed the designed 13 A for continuous 3 seconds, compressor, electric heater and outdoor motor stop , indoor motor runs the same procedures as the blowing surplus heat condition. After 3 minutes and current no more than 13 A, the machine will be back to its original state, indoor motor runs as the anti cool air condition. If it detects overloading state for 3 consecutive times within 30 minutes, the machine stops, and it must be restarted by remote controller.

f. defrosting conditions and procedures

In heating mode, if compressor has run 44 minutes (in its first 6 minutes it will not detect defrosting temp.) , and it has detected $T_{con} \leq -4^{\circ}\text{C}$ for continuous 1 minutes , it begins to defrost , electric heater will stop for 10 seconds (even if electric heater is not working) , then indoor motor and compressor stops , reversing valve becomes inactive in another 2 seconds, another 2 seconds later, outdoor motor stops, when $T_{con} \geq 10^{\circ}\text{C}$ or defrosting lasts for 10 minutes , outdoor motor and reversing valve becomes active , indoor motor will run as the anti cool air condition, then it cycles again, recalculates the compressor's running time again. (In this period , if any protection works , and after the machine is back to work , it will re-start defrosting state. it will not detect outdoor tube temp when compressor's in its first 6 minutes running)

h.noise lowering protection

When you use RUN/STOP button to switch off the machine, reversing valve will become inactive in 2 minutes.

4.AUTO mode

(1)in AUTO mode, standard cooling $T_{set}=25^{\circ}\text{C}$, standard heating $T_{set}=20^{\circ}\text{C}$

(2)working procedures

a. If $T_{indoor} \geq T_{set} + 1^{\circ}\text{C}$, select cooling mode, from this time, the set temp. is 25°C . If $T_{indoor} \leq T_{set} - 1^{\circ}\text{C}$, compressor and outdoor motor stop, indoor motor runs at the set speed, if $T_{set} - 1^{\circ}\text{C} < T_{indoor} < T_{set} + 1^{\circ}\text{C}$, keep the original state.

b. If $T_{indoor} \leq T_{set} + 2^{\circ}\text{C}$, select heating mode, from this time, the set temp. is 20°C , if $T_{indoor} \geq T_{set} + 4^{\circ}\text{C}$, compressor stops first, outdoor motor stops 15 seconds later , reversing valve is always active, indoor motor runs as the blowing surplus heat condition. If $T_{set} + 2^{\circ}\text{C} < T_{indoor} < T_{set} + 4^{\circ}\text{C}$,

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keeps the original state.

Cooling & heating AUTO mode: in AUTO mode, when the machine is switched from heating mode to the other modes, reversing valve becomes inactive in 90 seconds.

Cooling only AUTO mode: there is no heating function in this mode.

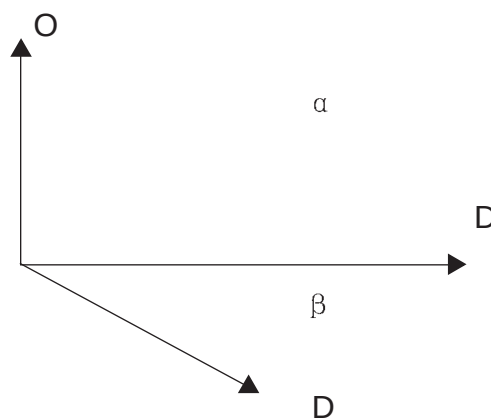
(3) protections

It is same as the one in cooling or heating mode, there is only one exception , the compressor doesn't have at least 5 minutes protection.

E. other controls

1. SWING mode

- When it is active, the louver returns to position O, close the air outlet.
- When machine works, it turns to the max. Air output position D, then returns back to position L to stand by (position L is the horizontal place mentioned before).
- In swing state, the louver swings between position L and position D.
- When the machine is switched off, it is back to position O.



2. beeper

- When PCB becomes active or receives the signal from the remote controller , the beeper will beep.
- If thermostat is open-circuited or short-circuited, when you press the TEST button, the beeper will alarm at the frequency 2HZ.

3. indication lamps

it flashes when defrosting begin.

4. multi-step switch .

- If the switch is in AUTO position, the machine will run at the AUTO mode, if there is a signal from remote controller, it will run according to the signal .
- If the switch is in TEST position, the machine will run at the COOL mode, indoor motor will run at high speed , swing motor will run according to SWING mode. If there is a signal from remote controller, it will run according to the signal .if the thermostat is open-circuited or

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short-circuited , the beeper will alarm at the frequency 2 HZ .

c. If the switch is in RUN position , the machine will run according to the remote signal.

d. If the switch is in STOP position, the machine will stop.

5. SLEEP mode.

a. In cooling or dehumidifying mode, 1 hour after you set the sleep timer , T_{set} will add 1°C automatically, another 1 hour, another 1°C will be added.

b. In heating mode, 1 hour after you set the sleep timer, T_{set} will lower 1°C automatically, another 1 hour, another 1°C will be lowered .

6. Automatic fan speed .

a. In cooling mode, if $T_{indoor} > T_{set} + 4^{\circ}\text{C}$ high speed
 $T_{set} + 2^{\circ}\text{C} \leq T_{indoor} \leq T_{set} + 4^{\circ}\text{C}$ middle speed
 $T_{indoor} < T_{set} + 2^{\circ}\text{C}$ low speed

b. In heating mode, if $T_{indoor} \leq T_{set} - 1^{\circ}\text{C}$ high speed
 $T_{set} - 1^{\circ}\text{C} < T_{indoor} < T_{set} + 1^{\circ}\text{C}$ middle speed
 $T_{indoor} \geq T_{set} + 1^{\circ}\text{C}$ low speed

F. Fresh air function.

1. there are two fresh air modes .

a. fresh air 2

fresh air motor will work 1 hour, then rest 1 hour, then cycle again.

b. fresh air 1

press the button AIR on the remote controller to select fresh air 1 function, the swing motor keeps running till you give a signal to change it.