

TECHNICAL SERVICE MANUAL

— **Bird 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 Bird Series 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
GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI
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CONTENTS

1. Bird Single-Split type	1
1.1 Summary	1
1.2 Technical specifications	3
1.3 Performance curves	15
1.4 Outlines and dimensions of indoor unit	18
1.5 Outlines and dimensions of outdoor unit	19
1.6 Explosive view and spare parts list of indoor unit	22
1.7 Explosive view and spare parts list of outdoor unit	34
1.8 Circuit diagram	40
1.9 PCB function manual	54
2. Bird Dual-Split type	59
2.1 Summary	59
2.2 Technical specifications	61
2.3 Performance curves	68
2.4 Outlines and dimensions of indoor unit	71
2.5 Outlines and dimensions of outdoor unit	72
2.6 Explosive view and spare parts list of indoor unit	74
2.7 Explosive view and spare parts list of outdoor unit	80
2.8 Circuit diagram	84
2.9 PCB function manual	90
3. Bird Multi-Split type	95
3.1 Summary	95
3.2 Technical specifications	97
3.3 Performance curves	100

3.4 Outlines and dimensions of indoor unit	103
3.5 Outlines and dimensions of outdoor unit	104
3.6 Explosive view and spare parts list of indoor unit	106
3.7 Explosive view and spare parts list of outdoor unit	110
3.8 Circuit diagram	113
3.9 PCB function manual	117
4. Bird Inverter type	123
4.1 Summary	123
4.2 Technical specifications	127
4.3 Performance curves	131
4.4 Outlines and dimensions of indoor unit	134
4.5 Outlines and dimensions of outdoor unit	135
4.6 Explosive view and spare parts list of indoor unit	136
4.7 Explosive view and spare parts list of outdoor unit	142
4.8 Circuit diagram	150
4.9 PCB function manual	155
4.10 Troubleshooting	183

2. Bird Dual-Split type

2.1 Summary



MODEL

NOTE

KF-20 × 2GW/A12	KFR-20 × 2GW/A12	CE STANDARD
KF-25 × 2GW/A12	KFR-25 × 2GW/A12	1Ph 220-230V 50Hz
KF-32 × 2GW/A12	KFR-32 × 2GW/A12	R22
KF-20 × 2GW/NA12	KFR-20 × 2GW/NA12	CE STANDARD
KF-25 × 2GW/NA12	KFR-25 × 2GW/NA12	1Ph 220-230V 50Hz
KF-32 × 2GW/NA12	KFR-32 × 2GW/NA12	R407C
GSW(9 × 2)-22L/A		1Ph 220V 60Hz
GSW(9 × 2)-22R/A		R22

2.2 Technical specifications

Table 2-1

Model		KF-20×2GW/A12	KFR-20 × 2GW/A12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 230V 50Hz		
Capacity(W)		2000 × 2	2000 × 2	2300 × 2
Rated input(W)		770 × 2	770 × 2	750 × 2
Rated current(A)		3.4 × 2	3.4 × 2	3.33 × 2
Air flow(m ³ /h)		400	400	400
Dehumidifying volume(L/h)		0.7	0.76	---
EER(W/W)		2.6	2.6	3.07
Indoor unit	Model	KF-20x2G/A12	KFR-20x2G/A12	
	Motor fan speed(rpm)	960/900/850		
	Output power(W)	8		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-585		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	36		
	Dimension(width-height-depth)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-20 × 2W/A12	KFR-20x2W/A12	
	Input power(W)	760	760	740
	Current(A)	3.2	3.2	2.87
	L.R.A.(A)	12	15	
	Throttling method	Capillary		
	Compressor model	Rotary		
	Compressor	SG433EB2	SG433EB2	
	Starting method	Cupacitor starting		
	Working temp.	≤ 115℃		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52	9.52	
	Row-fin distance(mm)	1-1.8		
	Working area(m ²)	0.4		
	Fan motor power(W)/speed(rpm)	25/780		
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	57		
	Dimension(width-height-depth)(mm)	950-710-412		
	Net weight(kg)	65		
Refrigerant charge (kg)	R22/0.65x2	R22/0.9x2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	9.52(3/8")	
	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.

Bird Series

Table 2-2

Model		KF-25x2GW/A12	KFR-25x2GW/A12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 230V 50Hz		
Capacity(W)		2500 × 2	2500 × 2	2900 × 2
Rated input(W)		790 × 2	990 × 2	1040 × 2
Rated current(A)		4.3 × 2	4.34 × 2	4.55 × 2
Air flow(m ³ /h)		450		
Dehumidifying volume(L/h)		1.2	1.2	---
EER(W/W)		2.53	2.53	2.79
Indoor unit	Model	KF-25 × 2G/A12	KFR-25 × 2G/A12	
	Motor fan speed(rpm)	1060/990/910		
	Output power(W)	13		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	≤ 38		
	Dimension(width-height-depth)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-25 × 2W/A12	KFR-25 × 2W/A12	
	Input power(W)	975	975	1025
	Current(A)	4.165	4.15	4.35
	L.R.A.(A)	22	22	22
	Throttling method	Capillary		
	Compressor	RH174VHAC	RH174VHAC	
	Starting method	Capacitor starting		
	Working temp.	≤ 115°C		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52		
	Row-fin distance(mm)	1-2.0	1-1.6	
	Working area(m ²)	0.4		
	Fan motor power(W)/speed(rpm)	38/700	60/780	
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	58		
	Dimension(width-height-depth)(mm)	950-710-412		
	Net weight(kg)	65		
Refrigerant charge (kg)	R22/0.8 × 2	R22/0.9 × 2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	9.52(3/8")	
	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.

Bird Series

Table 2-3

Model		KF-32x2GW/A12	KFR-32x2GW/A12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 230V 50Hz		
Capacity(W)		3200 × 2	3200 × 2	3600 × 2
Rated input(W)		1360 × 2	1339 × 2	1426 × 2
Rated current(A)		6.27 × 2	8.2 × 2	7.3 × 2
Air flow(m ³ /h)		480		
Dehumidifying volume(L/h)		1.2	1.2	---
EER(W/W)		2.35	2.31	2.76
Indoor unit	Model	KF-32 × 2G/A12	KFR-32 × 2G/A12	
	Motor fan speed(rpm)	1190/1090/990		
	Output power(W)	14		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	≤ 42		
	Dimension(width-depth-height)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-32 × 2W/A12	KFR-32 × 2W/A12	
	Input power(W)	1344	1323	1410
	Current(A)	6.07	8	7.1
	L.R.A.(A)	32.5	32.5	32.5
	Throttling method	Capillary		
	Compressor	C-RV232BH1AA	C-RV232BH1AA	
	Starting method	Capacitor starting		
	Working temp.	≤ 115°C		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	12		
	Row-fin distance(mm)	2-1.8	2-1.8	
	Working area(m ²)	0.4		
	Fan motor power(W)/speed(rpm)	60/780	60/780	
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	60		
	Dimension(width-height-depth)(mm)	950-840-412		
Net weight(kg)	72			
Refrigerant charge (kg)	R22/1.2 × 2	R22/1.25 × 2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	12(1/2")	
	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.

Bird Series

Table 2-4

Model		KF-20 × 2GW/ NA12	KFR-20 × 2GW/NA12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 220-230V 50Hz		
Capacity(W)		2000x2	2000x2	2400x2
Rated input(W)		850x2	850x2	920x2
Rated current(A)		3.7x2		4.0x2
Air flow(m ³ /h)		410	400	
Dehumidifying volume(L/h)		0.7		
EER(W/W)		2.5	2.8	
Indoor unit	Model	KF-20 × 2G/NA12	KFR-20 × 2G/NA12	
	Motor fan speed(rpm)	1060/990/910		
	Output power(W)	13		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	38		
	Dimension(width-height-depth)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-20 × 2W/NA12	KFR-20 × 2W/NA12	
	Input power(W)	810	810	860
	Current(A)	3.53	3.53	3.41
	L.R.A.(A)	19.5		
	Throttling method	Capillary		
	Compressor model	Rotary		
	Compressor	C-1RN70H5A		
	Starting method	Capacitor starting		
	Working temp.	≤ 115℃		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52		
	Row-fin distance(mm)	1-1.8		
	Working area(m ²)	0.65		
	Fan motor power(W)/speed(rpm)	80/790		
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	58		
	Dimension(width-height-depth)(mm)	950-710-412		
	Net weight(kg)	65		
Refrigerant charge (kg)	R407C/0.7 × 2	R407C/0.82 × 2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	9.52(3/8")	
	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.

Bird Series

Table 2-5

Model		KF-25 × 2GW/ NA12	KFR-25 × 2GW/NA12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 230V 50Hz		
Capacity(W)		2500x2	2500x2	2900x2
Rated input(W)		1100x2	1080x2	1100x2
Rated current(A)		4.78x2	4.70x2	4.78x2
Air flow(m ³ /h)		410	450	
Dehumidifying volume(L/h)		1.2		
EER(W/W)		2.5	2.8	
Indoor unit	Model	KF-25 × 2G/NA12	KFR-25 × 2G/NA12	
	Motor fan speed(rpm)	1060/990/910		
	Output power(W)	13		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	38		
	Dimension(width-height-depth)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-25 × 2W/NA12	KFR-25 × 2W/NA12	
	Input power(W)	1030	1030	1020
	Current(A)	4.2		4.4
	L.R.A.(A)	23		
	Throttling method	Capillary		
	Compressor model	Rotary		
	Compressor	C-RN80H5A		
	Starting method	Capacitor starting		
	Working temp.	≤ 115°C		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52		
	Row-fin distance(mm)	1-1.8		
	Working area(m ²)	0.65		
	Fan motor power(W)/speed(rpm)	80/790		
	Type-piece	Axial fan-1		
	Diameter(mm)	400		
	Defrosting method	Auto defrost		
	Noise(dB(A))	58		
	Dimension(width-height-depth)(mm)	950-710-412		
	Net weight(kg)	65		
Refrigerant charge (kg)	R407C/0.85x2	R407C/0.92x2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	9.52(3/8")	
	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.

Bird Series

Table 2-6

Model		KF-32 × 2GW/ NA12	KFR-32 × 2GW/NA12	
Function		Cooling	Cooling	Heating
Power supply		1Ph 230V 50Hz		
Capacity(W)		3200 × 2	3200 × 2	3800 × 2
Rated input(W)		1510 × 2	1390 × 2	1490 × 2
Rated current(A)		6.3 × 2	6.2 × 2	6.6 × 2
Air flow(m ³ /h)		500		
Dehumidifying volume(L/h)		1.4		
EER(W/W)		2.4	2.4	2.6
Indoor unit	Model	KF-32 × 2G/NA12	KFR-32 × 2G/NA12	
	Motor fan speed(rpm)	1190/1090/990		
	Output power(W)	14		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.4		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	41		
	Dimension(width-height-depth)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	KF-32 × 2W/NA12	KFR-32 × 2W/NA12	
	Input power(W)	1440	1280	1420
	Current(A)	6	5.8	6.3
	L.R.A.(A)	33.5		
	Throttling method	Capillary		
	Compressor model	Rotary		
	Compressor	C-RN110H5B		
	Starting method	Capacitor starting		
	Working temp.	≤ 115°C		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52		
	Row-fin distance(mm)	1-1.6		
	Working area(m ²)	0.65		
	Fan motor power(W)/speed(rpm)	60/780		
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	60		
	Dimension(width-height-depth)(mm)	950-840-412		
	Net weight(kg)	72		
Refrigerant charge (kg)	R407C/1.20 × 2	R407C/1.25kg × 2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	12(1/2")	
	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.

Bird Series

Table 2-7

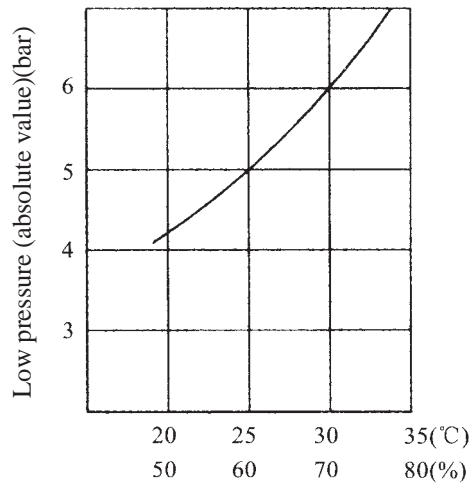
Model		GSW(9 × 2)-22L/A	GSW(9 × 2)-22R/A	
Function		Cooling	Cooling	Heating
Power supply		1Ph 220V 60Hz		
Capacity(W)		2500 × 2	2500 × 2	2900 × 2
Rated input(W)		870 × 2	970 × 2	1050 × 2
Rated current(A)		4.03 × 2	4.2 × 2	4.3 × 2
Air flow(m ³ /h)		450		
Dehumidifying volume(L/h)		1.2	1.2	---
EER(W/W)		2.78	2.9	3.3
Indoor unit	Model	GSW(9×2)-22L/A(I)	GSW(9 × 2)-22R/A(I)	
	Motor fan speed(rpm)	1050/960/900		
	Output power(W)	20		
	Fan type/piece	Cross flow fan-1		
	Diameter-length(mm)	φ 97mm-583		
	Evaporator	Aluminum fin-copper tube		
	Row-fin distance(mm)	2-1.6		
	Working area(m ²)	0.14		
	Swing motor	MP24GA		
	Input/speed(W)	2		
	Fuse(A)	Controller 3.15A Transformer 0.2A		
	Working capacitor(μF)	1		
	Noise(dB(A))	≤ 36		≤ 37
	Dimension(width-depth-height)(mm)	770-250-180		
Net weight(Kg)	8.5			
Outdoor unit	Model	GSW(9×2)-22L/A(O)	GSW(9 × 2)-22R/A(O)	
	Input power(W)	908	919	
	Current(A)	4.17	4.18	
	L.R.A.(A)	26	26	
	Throttling method	Capillary		
	Compressor	2P14S236A1J	2PS146H5DA02	
	Starting method	Capacitor starting		
	Working temp.	≤ 115°C		
	Condenser	Aluminum fin-copper tube		
	Pipe-diameter	9.52		
	Row-fin distance(mm)	2-1.8		
	Working area(m ²)	0.4		
	Fan motor power(W)/speed(rpm)	60/780	60/780	
	Type-piece	Axial fan-1		
	Diameter(mm)	450		
	Defrosting method	Auto defrost		
	Noise(dB(A))	56	58	
	Dimension(width-height-depth)(mm)	950-710-412		
	Net weight(kg)	65		
Refrigerant charge (kg)	R22/0.85 × 2	R22/0.95 × 2		
Connecting pipe	Length(m)	4		
	Outer diameter of connecting pipe	Liquid pipe(mm)	6(1/4")	
		Gas pipe(mm)	9.52(3/8")	
	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.

2.3 Performance curves

The change relation between low pressure, operation current and temp.

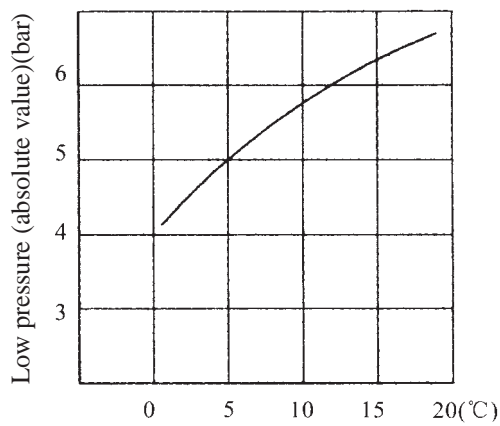
Cooling operation condition: In testing, indoor and outdoor have same work condition.



Dry bulb temp./ humidity
(a)

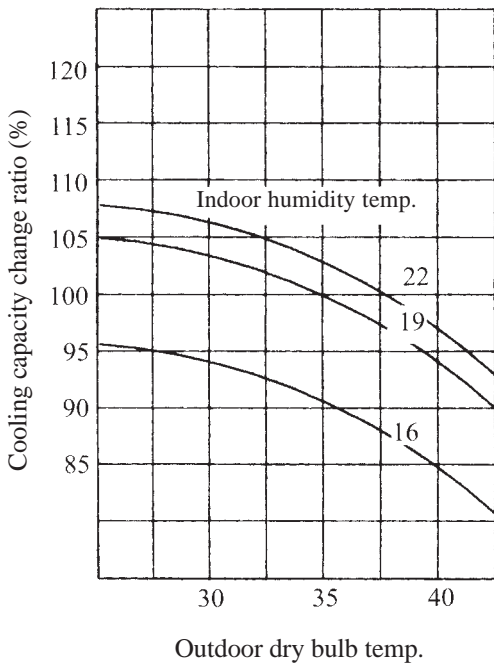
Heating operation

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



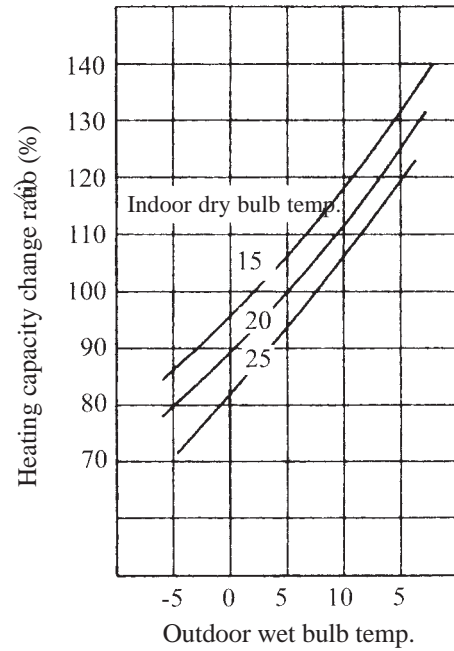
Outdoor dry bulb temp.
(b)

Cooling performance
Indoor Relative humidity 50%



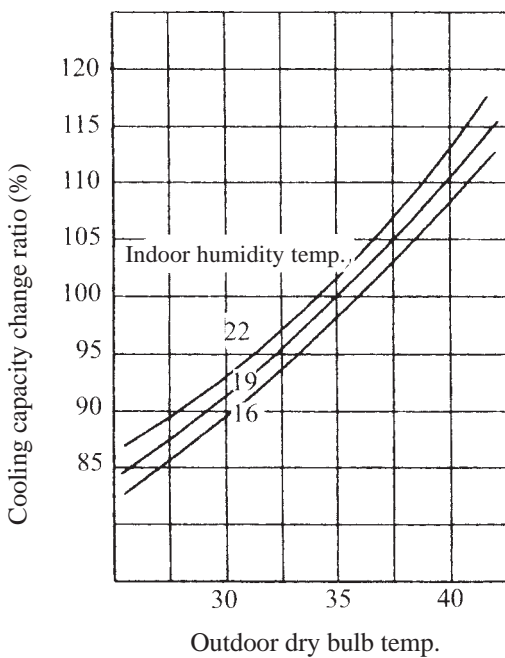
(a)

Heating performance (not including electric heater)
Outdoor relative humidity 85%



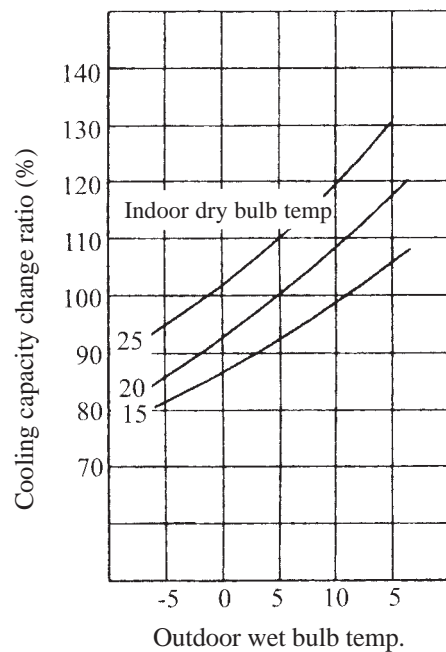
(b)

Cooling performance
Indoor Relative humidity 50%

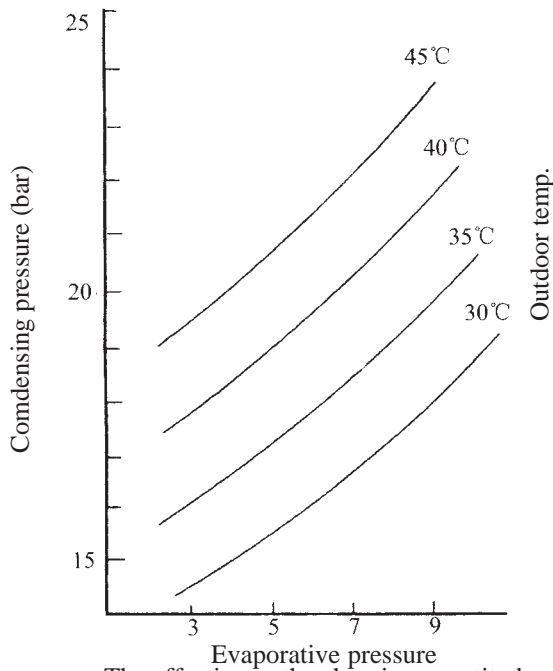


(c)

Heating performance (not including electric heater)
Outdoor relative humidity 85%

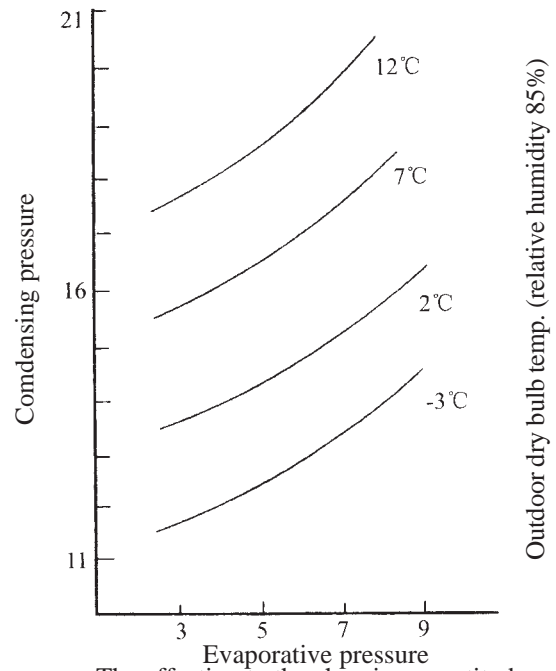


(d)



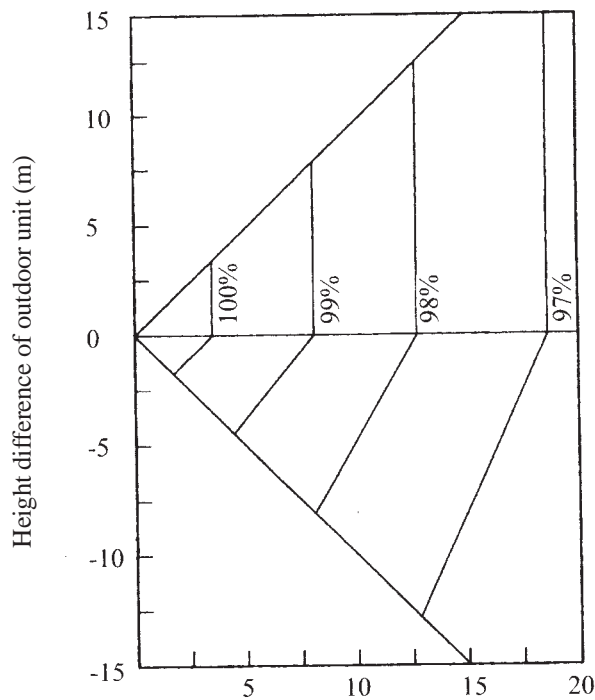
The affection to the charging quantity by pressure under cooling work condition.
(Indoor work condition: dry bulb 27°C, wet bulb 19.5°C)

(e)



The affection to the charging quantity by pressure under heating work condition.
(Indoor work condition: dry bulb 21°C)

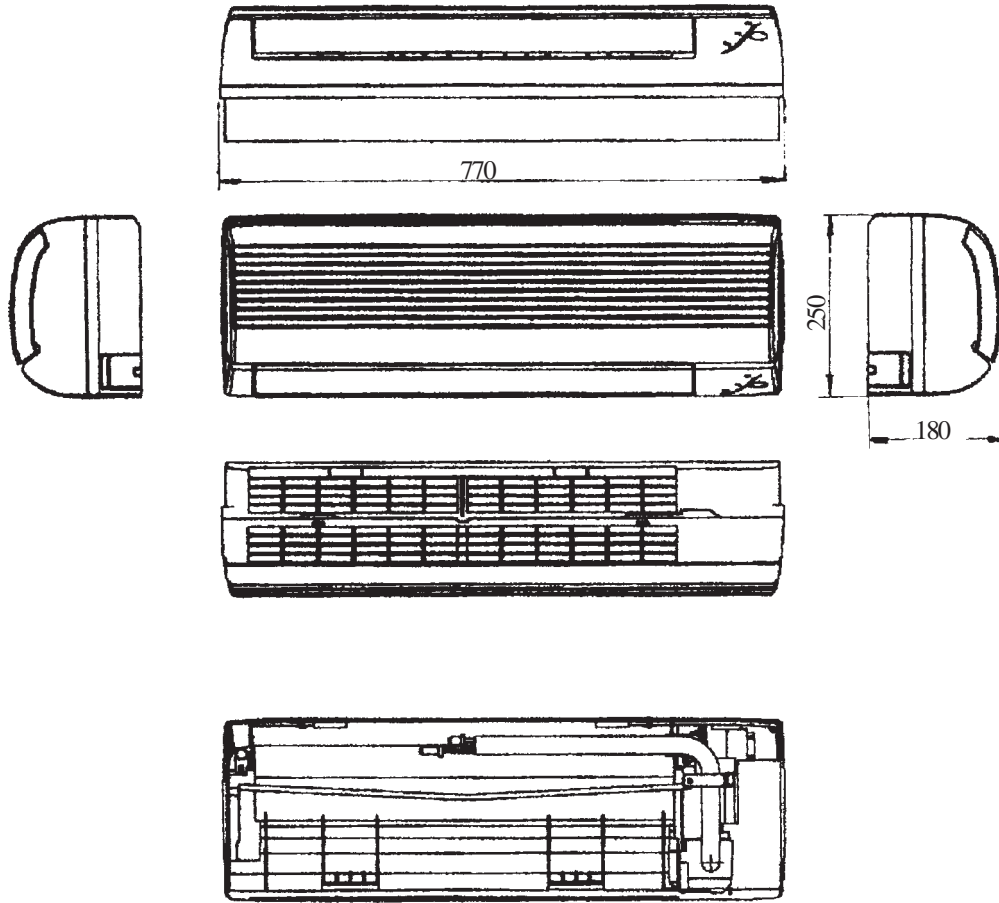
(f)



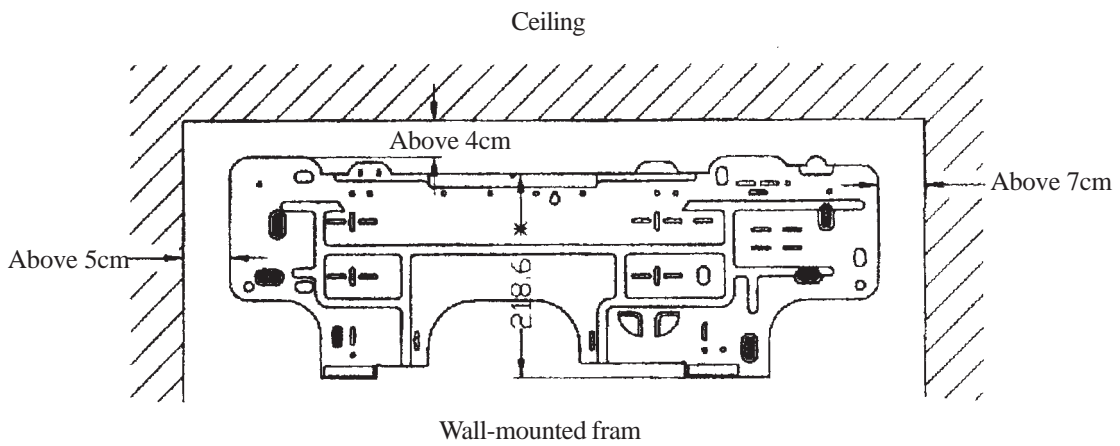
(g)

The length of connection pipe
Cooling capacity vary with the length of connection pipe

2.4 Outlines and dimensions of indoor unit

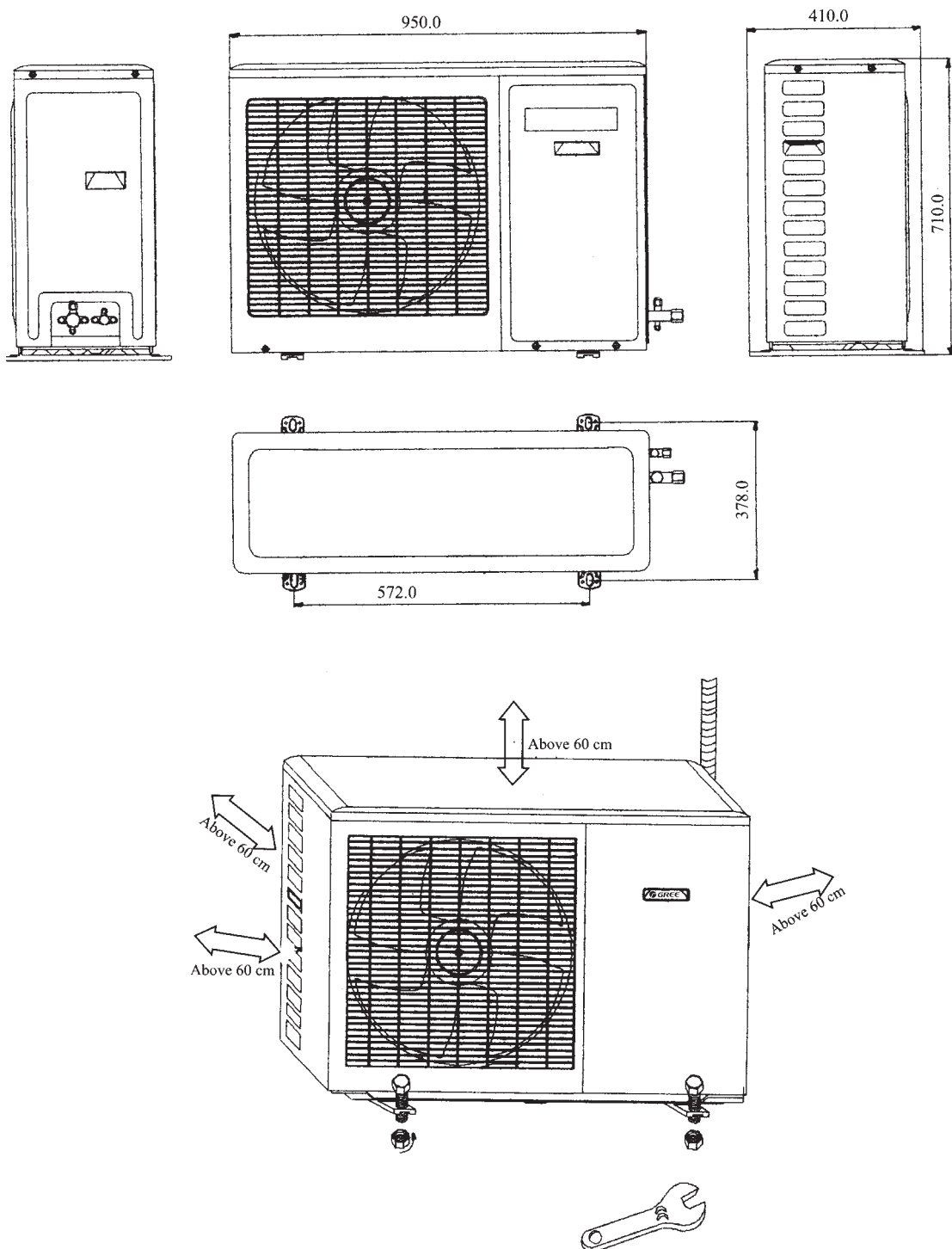


Units:mm



2.5 Outlines and dimensions of outdoor unit

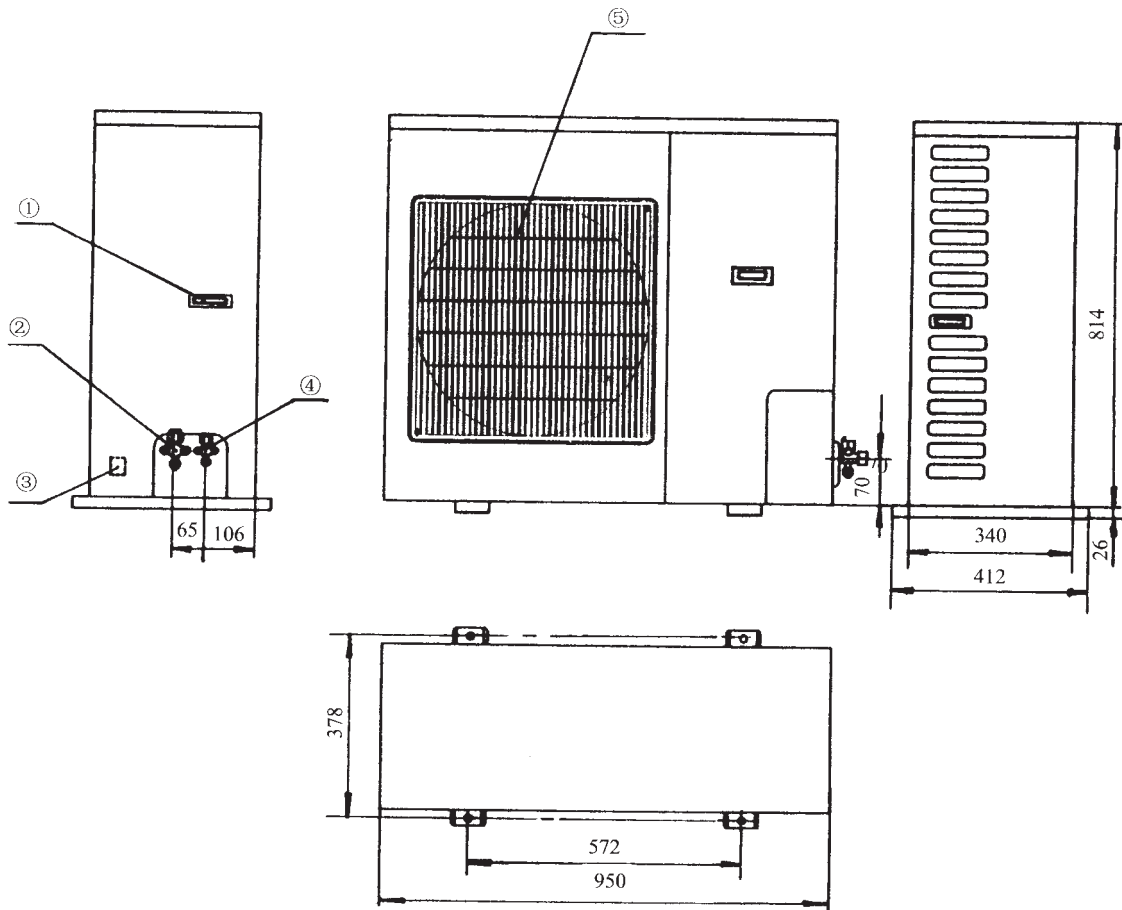
Model: KF-20X2GW/A12 KFR-20X2GW/A12
KF-25X2GW/A12 KFR-25X2GW/A12
KF-20X2GW/NA12 KFR-20X2GW/NA12
KF-25X2GW/NA12 KFR-25X2GW/NA12
GSW(9X2)-22L/A GSW(9X2)-22R/A



Bird Series

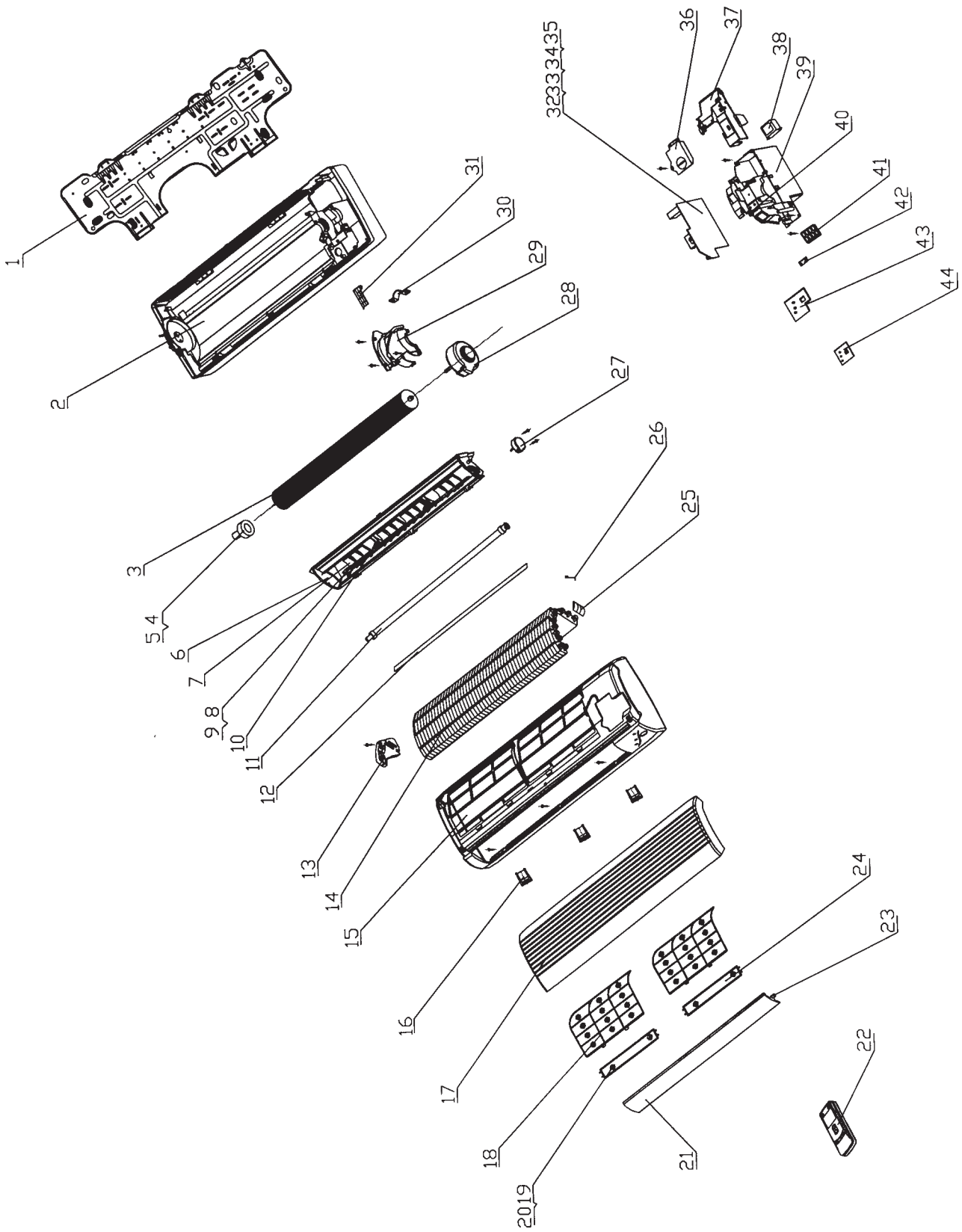
Model: KF-32X2GW/A12
KF-32X2GW/NA12

KFR-32X2GW/A12
KFR-32X2GW/NA12



① Handle for moving ② Liquid valve assy. ③ Wire hole ④ Gas valve assy. ⑤ Front panel

2.6 Explosive view and spare parts list of indoor unit



Bird Series

Table 2-8

No.	Description		Part No.						Qty
			KF- 20x2G/A12	KFR- 20x2G/A12	KF- 25x2G/A12	KFR- 25x2G/A12	KF- 32x2G/A12	KFR- 32x2G/A12	
1	Wall-Mounting Frame	壁挂板	01252438	01252438	01252438	01252438	01252438	01252438	1
2	Rear Case	底壳	22202002	22202002	22202002	22202002	22202002	22202002	1
3	Cross Flow Fan	贯流风叶	10352001	10352001	10352001	10352001	10352001	10352001	1
4	Fan Bearing	风扇轴承	76512210	76512210	76512210	76512210	76512210	76512210	1
5	Ring of Bearing	贯流风叶轴承胶圈	76512203	76512203	76512203	76512203	76512203	76512203	1
6	Water Tray	接水盘	20182006	20182006	20182006	20182006	20182006	20182006	1
7	Swing Louver	扫风叶片	10512002	10512002	10512002	10512002	10512002	10512002	12
8	Connecting Lever 1	扫风连杆 1	10582002	10582002	10582002	10582002	10582002	10582002	1
9	Connecting Lever 2	扫风连杆 2	10582003	10582003	10582003	10582003	10582003	10582003	1
10	Manual Lever	拔杆	10582001	10582001	10582001	10582001	10582001	10582001	2
11	Drainage Pipe	排水管	05232411	05232411	05232411	05232411	05232411	05232411	1
12	Evaporator Gate	蒸发器引水板	26112022	26112022	26112022	26112022	26112022	26112022	1
13	Evaporator Supporter	蒸发器角形架	24212001	24212001	24212001	24212001	24212001	24212001	1
14	Evaporator Assy	蒸发器部件	01002012	\	\	\	\	\	1
	Evaporator Assy		\	01002042	\	\	\	\	1
	Evaporator Assy		\	\	01002042	01002042	\	\	1
	Evaporator Assy		\	\	\	\	01002050	\	1
	Evaporator Assy		\	\	\	\	\	01002033	1
15	Front Case Assy	面板体部件	20002117	20002116	20002117	20002116	20002117	20002116	1
16	Screw Cover	螺钉盖	24252001	24252001	24252001	24252001	24252001	24252001	3
17	Front Panel	面板	20002001	20002001	20002001	20002001	20002001	20002001	1
18	Filter	过滤网	11122002	11122002	11122002	11122002	11122002	11122002	2
19	Air Cleaner holder	净化器支架	24222001	24222001	24222001	24222001	24222001	24222001	2
20	Air Cleaner A	净化器滤网 A	11012002	11012002	11012002	11012002	11012002	11012002	1
21	Guide Louver	导风板	10512001	10512001	10512001	10512001	10512001	10512001	1
22	Remote Controller	遥控器 Y512	30512505	30512505	30512505	30512505	30512505	30512505	1
23	Guide Louver Bearing	导风板轴套	10542011	10542011	10542011	10542011	10542011	10542011	3
24	Air Cleaner B	净化器滤网 B	11012003	11012003	11012003	11012003	11012003	11012003	1
25	Evaporator Pipe Cover	蒸发器接水槽	06122001	06122001	06122001	06122001	06122001	06122001	1
26	Sensor Insert	感温包插片 B	42020063	42020063	42020063	42020063	42020063	42020063	1
27	Stepping Motor MP24GA	步进电机 MP24GA	15212102	15212102	15212102	15212102	15212102	15212102	1
28	Motor FN8G	电机 (配左右胶圈)	15012037	15012037	\	\	\	\	1
	Motor FN13B		\	\	15012038	15012038	\	\	1
	Motor FN14A		\	\	\	\	15012108	15012108	1
29	Motor Clamp	电机压板	26112014	26112014	26112014	26112014	26112014	26112014	1
30	Wire Clamp	电线夹	71010103	71010103	71010103	71010103	71010103	71010103	1
31	Pipe Clamp	连接管压板	24242001	24242001	24242001	24242001	24242001	24242001	1
32	PCB 5K512 J	控制器 5K512 J	30025569	\	30025569	\	30025569	\	1
	PCB 5K522 J	控制器 5K522 J	\	30025570	\	30025570	\	30025570	1
33	Tube Sensor	管温感温包	39000159	39000159	39000159	39000159	39000159	39000159	1
34	Room Sensor	室温感温包	39000155	39000155	39000155	39000155	39000155	39000155	1
35	Fuse 3.15A 250VAC	保险管	46010014	46010014	46010014	46010014	46010014	46010014	1
36	Electric Box Cover 2	电器盒顶盖 2	01412007	01412007	01412007	01412007	01412007	01412007	1
37	Electric Box Cover 1	电器盒顶盖 1	20102114	20102114	20102114	20102114	20102114	20102114	1
38	Transformer SC28B1	电源变压器 SC28B1	43110170	43110170	43110170	43110170	43110170	43110170	1
39	Electric Box	电器盒	20102001	20102001	20102001	20102001	20102001	20102001	1
40	Cable Clamp	压线槽	70482001	70482001	70482001	70482001	70482001	70482001	1
41	Terminal Board GT4B3A2	接线板 GT4B3A2	42010184	42010184	42010184	42010184	42010184	42010184	1
42	Wire Clip	压线片	42012415	42012415	42012415	42012415	42012415	42012415	1
43	LED Holder	指示灯架	24212005	24212005	24212005	24212005	24212005	24212005	1

Bird Series

Table 2-8 continue

No.	Description		Part No.						Qty
			KF- 20x2G/A12	KFR- 20x2G/A12	KF- 25x2G/A12	KFR- 25x2G/A12	KF- 32x2G/A12	KFR- 32x2G/A12	
44	LED Board JD	接收板 JD	30046034	30046034	30046034	30046034	30046034	30046034	1
45	Connecting Cable	电源连接线	40020428	40020428	40020428	40020428	40020428	40020428	1
46	Signal Cable	信号控制线	\	40032150	\	40032150	\	40032150	1
47	Power Cord	电源线	40020262	40020262	40020262	40020262	40020262	40020262	1

The data are subject to change without notice.

Bird Series

Table 2-9

No.	Description		Part No.						Qty
			KF-	KFR-	KF-	KFR-	KF-	KFR-	
			20x2G/NA12	20x2G/NA12	25x2G/NA12	25x2G/NA12	32x2G/NA12	32x2G/NA12	
1	Wall-Mounting Frame	壁挂板	01252438	01252438	01252438	01252438	01252438	01252438	1
2	Rear Case	底壳	22202001	22202001	22202001	22202001	22202001	22202001	1
3	Cross Flow Fan	贯流风叶	10352001	10352001	10352001	10352001	10352001	10352001	1
4	Fan Bearing	风扇轴承	76512210	76512210	76512210	76512210	76512210	76512210	1
5	Ring of Bearing	贯流风叶轴承胶圈	76512203	76512203	76512203	76512203	76512203	76512203	1
6	Water Tray	接水盘	20182001	20182001	20182001	20182001	20182001	20182001	1
7	Swing Louver	扫风叶片	10512002	10512002	10512002	10512002	10512002	10512002	12
8	Connecting Lever 1	扫风连杆 1	10582002	10582002	10582002	10582002	10582002	10582002	1
9	Connecting Lever 2	扫风连杆 2	10582003	10582003	10582003	10582003	10582003	10582003	1
10	Manual Lever	拔杆	10582001	10582001	10582001	10582001	10582001	10582001	2
11	Drainage Pipe	排水管	05232411	05232411	05232411	05232411	05232411	05232411	1
12	Evaporator Gate	蒸发器引水板	01094001	01094001	01094001	01094001	01094001	01094001	1
13	Evaporator Supporter	蒸发器角形架	24212001	24212001	24212001	24212001	24212001	24212001	1
14	Evaporator Assy	蒸发器部件	01002100	01002100	01002100	01002100	01002100	01002101	1
15	Front Case Assy	面板体部件	20002111	20002111	20002111	20002111	20002111	20002116	1
16	Screw Cover	螺钉盖	24252001	24252001	24252001	24252001	24252001	24252001	3
17	Front Panel	面板	20002002	20002002	20002002	20002002	20002002	20002002	1
18	Filter	过滤网	11122002	11122002	11122002	11122002	11122002	11122002	2
19	Air Cleaner holder	净化器支架	24222001	24222001	24222001	24222001	24222001	24222001	2
20	Air Cleaner A	净化器滤网 A	11012002	11012002	11012002	11012002	11012002	11012002	1
21	Guide Louver	导风板	10512001	10512001	10512001	10512001	10512001	10512001	1
22	Remote Controller	遥控器 Y512	30512505	30512505	30512505	30512505	30512505	30512505	1
23	Guide Louver Bearing	导风板轴套	10542011	10542011	10542011	10542011	10542011	10542011	3
24	Air Cleaner B	净化器滤网 B	11012003	11012003	11012003	11012003	11012003	11012003	1
25	Evaporator Pipe Cover	蒸发器接水槽	06122001	06122001	06122001	06122001	06122001	06122001	1
26	Sensor Insert	感温头插片 B	42020063	42020063	42020063	42020063	42020063	42020063	1
27	Stepping Motor MP24GA	步进电机 MP24GA	15212102	15212102	15212102	15212102	15212102	15212102	1
28	Motor FN13B	电机 (配左右胶圈)	15012038	15012038	15012038	15012038	\	\	1
	Motor FN14A	电机 (配左右胶圈)	\	\	\	\	15012108	15012108	1
29	Motor Clamp	电机压板	26112014	26112014	26112014	26112014	26112014	26112014	1
30	Wire Clamp	电线夹	71010103	71010103	71010103	71010103	71010103	71010103	1
31	Pipe Clamp	连接管压板	24242001	24242001	24242001	24242001	24242001	24242001	1
32	PCB 5K512 J	控制器 5K512 J	30025569	\	30025569	\	30025569	\	1
	PCB 5K522 J	控制器 5K522 J	\	30025570	\	30025570	\	30025570	1
33	Tube Sensor	管温感温包	39000159	39000159	39000159	39000159	39000159	39000159	1
34	Room Sensor	室温感温包	39000155	39000155	39000155	39000155	39000155	39000155	1
35	Fuse 3.15A 250VAC	保险管	46010014	46010014	46010014	46010014	46010014	46010014	1
36	Electric Box Cover 2	电器盒顶盖 2	01412007	01412007	01412007	01412007	01412007	01412007	1
37	Electric Box Cover 1	电器盒顶盖 1	20102114	20102114	20102114	20102114	20102114	20102114	1
38	Transformer SC28B1	电源变压器 SC28B1	43110170	43110170	43110170	43110170	43110170	43110170	1
39	Electric Box	电器盒	20102001	20102001	20102001	20102001	20102001	20102001	1
40	Cable Clamp	压线槽	70482001	70482001	70482001	70482001	70482001	70482001	1
41	Terminal Board GT4B3A2	接线板 GT4B3A2	42010184	42010184	42010184	42010184	42010184	42010184	1
42	Wire Clip	压线片	42012415	42012415	42012415	42012415	42012415	42012415	1
43	LED Holder	指示灯架	24212005	24212005	24212005	24212005	24212005	24212005	1
44	LED Board JD	接收板 JD	30046034	30046034	30046034	30046034	30046034	30046034	1
45	Connecting Cable	电源连接线	40020428	40020428	40020428	40020428	40020428	40020428	1
46	Signal Cable	信号控制线	\	40032150	\	40032150	\	40032150	1
47	Power Cord	电源线	40020262	40020262	40020262	40020262	40020262	40020262	1

The data are subject to change without notice.

Bird Series

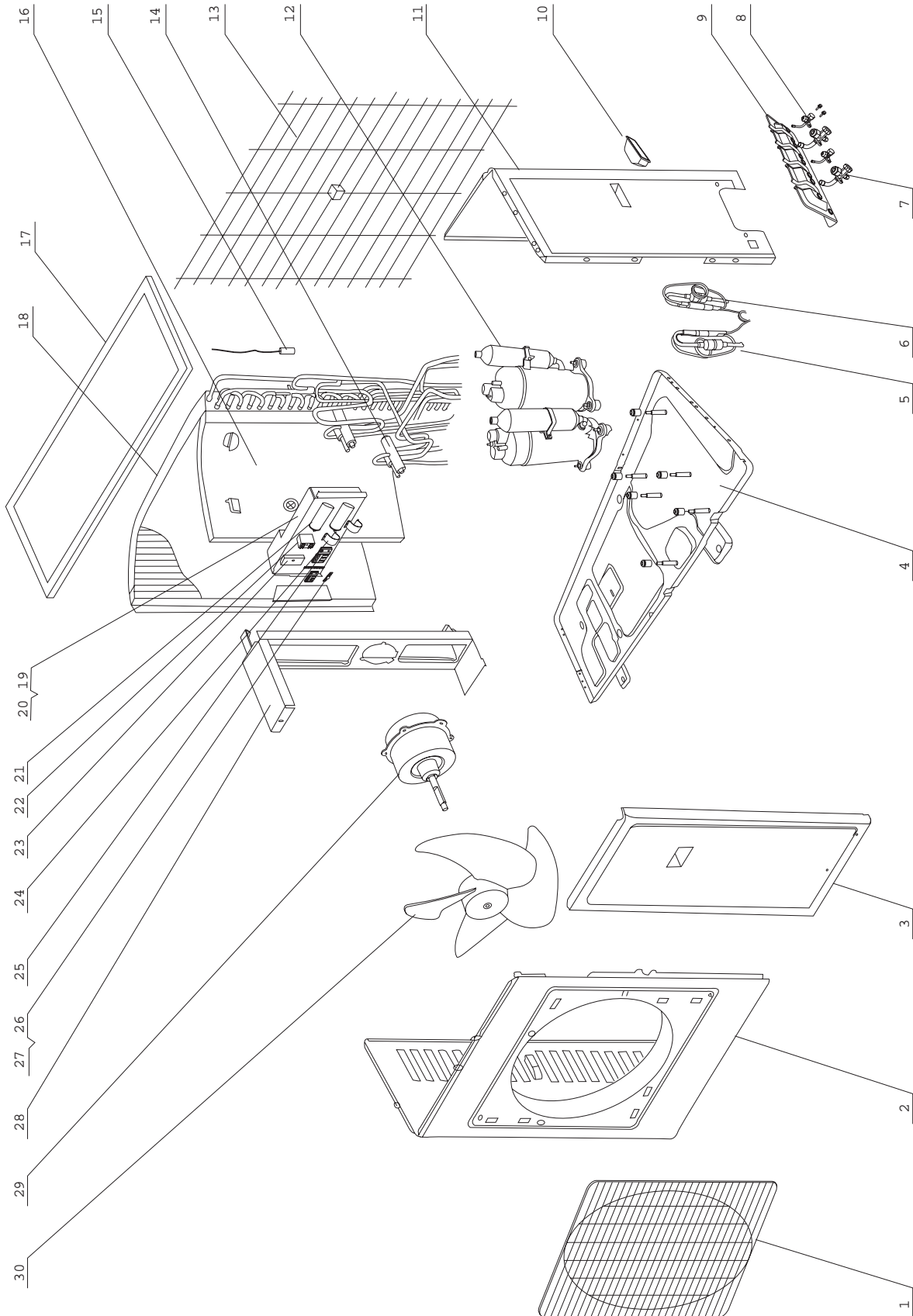
Table 2-10

No.	Description		Part No.		Qty
			GSW(9X2)-22 L/A(I)	GSW(9X2)-22 R/A(I)	
1	Wall-Mounting Frame	壁挂板	01252438	01252438	1
2	Rear Case	底壳	22202001	22202001	1
3	Cross Flow Fan	贯流风叶	10352001	10352001	1
4	Fan Bearing	风扇轴承	76512210	76512210	1
5	Ring of Bearing	贯流风叶轴承胶圈	76512203	76512203	1
6	Water Tray Assy	接水盘组件	20182012	20182012	1
7	Swing Louver	扫风叶片	10512002	10512002	12
8	Connecting Lever 1	扫风连杆 1	10582002	10582002	1
9	Connecting Lever 2	扫风连杆 2	10582003	10582003	1
10	Manual Lever	拨杆	10582001	10582001	2
11	Drainage Pipe	排水管	05232411	05232411	1
12	Evaporator Gate	蒸发器引水板	26112022	26112022	1
13	Evaporator Supporter	蒸发器角形架	24212001	24212001	1
14	Evaporator Assy	蒸发器部件	01002015	01002042	1
15	Front Case Assy	面板体部件	20002116	20002018	1
16	Screw Cover	螺钉盖	24252001	24252001	3
17	Front Panel	面板	20002001	20002001	1
18	Filter	过滤网	11122002	11122002	2
19	Air Cleaner holder	净化器支架	24222001	24222001	2
20	Air Cleaner A	净化器滤网 A	11012002	11012002	1
21	Guide Louver	导风板	10512001	10512001	1
22	Remote Controller	遥控器 Y512	30512506	30512505	1
23	Guide Louver Bearing	导风板轴套	10542011	10542011	3
24	Air Cleaner B	净化器滤网 B	11012003	11012003	1
25	Evaporator Pipe Cover	蒸发器接水槽	06122001	06122001	1
26	Sensor Insert	感温头插片 B	42020063	42020063	1
27	Stepping Motor MP24GA	步进电机 MP24GA	15212102	15212102	1
28	Motor FN20B-PG	电机(配左右胶圈)	15012035	15012035	1
29	Motor Clamp	电机压板	26112014	26112014	1
30	Wire Clamp	电线夹	71010103	71010103	1
31	Pipe Clamp	连接管压板	24242001	24242001	1
32	PCB 5C51F0A	控制器 5C51F0A	30025113	\	1
	PCB 5C52F0A	控制器 5C52F0A	\	30025134	1
33	Tube Sensor	管温感温包	39000116	39000159	1
34	Room Sensor	室温感温包	39000043	39000043	1
35	Fuse 3.15A 250VAC	保险管	46010014	46010014	1
36	Electric Box Cover 2	电器盒顶盖 2	01412007	01412007	1
37	Electric Box Cover 1	电器盒顶盖 1	01412006	20102084	1
38	Transformer SC28B1	电源变压器 SC28B1	43110170	43110170	1
39	Electric Box	电器盒	20102001	20102001	1
40	Cable Clamp	压线槽	70482001	70482001	1
41	Terminal Board GT4B3AZ	接线板 GT4B3AZ	42010184	42010184	1
42	Wire Clip	压线片	42012415	42012415	1
43	LED Holder	指示灯架	24212005	24212005	1
44	LED Board JD	接收板 JD	30046019	30046019	1
45	Connecting Cable	电源连接线	40020438	40020438	1
46	Signal Cable	信号控制线	\	40032119	1
47	Power cord	电源线	40020262	40020262	1

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2.7 Explosive view and spare parts list of outdoor unit



Bird Series

Table 2-11

No.	Description		Part No.						Qty
			KF- 20x2W/A12	KFR- 20x2W/A12	KF- 25x2W/A12	KFR- 25x2W/A12	KF- 32x2W/A12	KFR- 32x2W/A12	
1	Front Grill	面罩	22265251	22265251	22265251	22265251	22265251	22265251	1
2	Front Plate	外罩	01433028	01433028	01433028	01433028	01435254	01435254	1
3	Front Side plate	前侧板	01303023	01303023	01303023	01303023	01305247	01305247	1
4	Metal Base	底盘组件	01203270	01203270	01203016	01203016	01203013	01203013	1
5	Capillary Assy	毛细管组件 I	03003119	03003157	03003076	03003104	03003173	03003168	1
6	Capillary Assy	毛细管组件 II	03003120	03003158	03003404	03003105	03003153	03003169	1
7	Valve 3/8"	阀门 3/8"	07100108	07100108	07100108	07100108	\	\	2
	Valve 1/2"	阀门 1/2"	\	\	\	\	07100105	07100105	2
8	Valve 1/4"	阀门 1/4"	07100114	07100014	07100114	07100014	07100114	07100014	2
9	Valve Support	阀门支架	01713028	01713028	01713028	01713028	01713028	01713028	1
10	Handle	把手	26235252	26235252	26235252	26235252	26235252	26235252	2
11	Rear Side Plate	后侧板	01303103	01303103	01303103	01303103	01303103	01303103	1
12	Compressor SG433EB2	压缩机及配件	00100123	00100123	\	\	\	\	2
	Compressor RH174VHAC	压缩机及配件	\	\	00120078	00120078	\	\	2
	Compressor C-RV232BH1AA	压缩机及配件	\	\	\	\	00100339	00100339	2
13	Rear Grill	网罩	01473024	01473024	01473024	01473024	01475251	01475251	1
14	4-way Valve	四通阀	\	43000312	\	43000312	\	43000312	2
15	Tube Sensor	室外管温感温头	\	39000009	\	39000009	\	39000009	1
16	Isolation Sheet Assy	中间隔板组件	01233022	01233022	01233022	01233022	01235253	01235253	1
17	Top cover Assy	顶盖组件	01255260	01255260	01255260	01255260	01255260	01255260	1
18	Condenser Assy	冷凝器组件	01103349	01103019	01103349	01103109	01103045	01103122	1
19	Electric Box	电器盒	01413042	01413042	01413042	01413042	01413042	01413042	1
20	Electric box cover	电器盒盖板	01413047	01413047	01413047	01413047	01413047	01413047	1
21	Capacitor 30 μ F	电容 30 μ F/450V	33000021	33000021	\	\	33000021	33000021	2
	Capacitor 25 μ F	电容 25 μ F/450V	\	\	33000020	33000020	\	\	2
22	Capacitor 3 μ F	电容 3 μ F/450V	33010027	33010027	33010027	33010027	33010027	33010027	1
23	Dual Defrost Board	一拖二化霜板	\	30112003	\	30112003	\	30112003	1
	Velometer	调速器	30024413	\	30024413	\	30024413	\	1
24	Capacitor Clamp	电容夹	02143401	02143401	02140001	02140001	02143401	02143401	2
25	Terminal Board	三位接线板 A	42011113	42011113	42011113	42011113	42011113	42011113	2
26	Insulation Gasket D	绝缘垫片 D	70410525	70410525	70410525	70410525	70410525	70410525	2
27	Earthing Plate	接地铜板	42010202	42010202	42010202	42010202	42010202	42010202	1
28	Motor Support	电机支架	01703027	01703027	01703027	01703027	01705253	01705253	1
29	Motor FW38A	电机 FW38A	15013032	\	15013032	\	\	\	1
	Motor FW60J	电机 FW60J	\	15013038	\	15013038	15013038	15013038	1
30	Axial Flow Fan	轴流风叶	10335253	10335253	10335253	10335253	10335253	10335253	1

The data are subject to change without notice.

Bird Series

Table 2-12

No.	Description		Part No.						Qty
			KF- 20x2W/NA12	KFR- 20x2W/NA12	KF- 25x2W/NA12	KFR- 25x2W/NA12	KF- 32x2W/NA12	KFR- 32x2W/NA12	
1	Front Grill	面罩	22265251	22265251	22265251	22265251	22265250	22265250	1
2	Front Plate	外罩	01433030	01433030	01433030	01433030	01435254	0143 5254	1
3	Front Side plate	前侧板	01303023	01303023	01303023	01303023	01305247	01305247	1
4	Metal Base	底盘组件	01203260	01203260	01203016	01203016	01203013	01203013	1
5	Capillary Assy	毛细管组件 I	03003166	03003269	03003128	03003270	03003271	03003272	1
6	Capillary Assy	毛细管组件 II	03003167	03003273	03003165	03003274	03003275	03003276	1
7	Valve 3/8"(R407C)	阀门 3/8"(R407C)	07100132	07100132	07100132	07100132	\	\	2
	Valve 1/2"(R407C)	阀门 1/2"(R407C)	\	\	\	\	07100130	07100130	2
8	Valve 1/4"(R407C)	阀门 1/4"(R407C)	07100131	07100131	07100131	07100131	07100131	07100131	2
9	Valve Support	阀门支架	01713028	01713028	01713028	01713028	01713028	01713028	1
10	Handle	把手	26235252	26235252	26235252	26235252	26235253	26235253	2
11	Rear Side Plate	后侧板	01303103	01303103	01303103	01303103	01303004	01303004	1
12	Compressor C-1RN70H5A	压缩机及配件	00100321	00100321	\	\	\	\	2
	Compressor C-RN80H5A	压缩机及配件	\	\	00100328	00100328	\	\	2
	Compressor C-RN110H5B	压缩机及配件	\	\	\	\	00100336	00100336	2
13	Rear Grill Assy	网罩组件	01473024	01473024	01473024	01473024	01475251	01475251	1
14	4-way Valve	四通阀	\	43000308	\	43000308	\	430004021	2
15	Tube Sensor	室外管温感温头	\	39000009	\	39000009	\	39000009	1
16	Isolation Sheet Assy	中间隔板组件	01233022	01233022	01233022	01233022	01235253	01235253	1
17	Top cover Assy	顶盖组件	01255260	01255260	01255260	01255260	01255260	01255260	1
18	Condenser Assy	冷凝器组件	01103116	01103076	01103116	01103076	01103037	01103094	1
19	Electric Box	电器盒	01413042	01413042	01413042	01413042	01413042	01413042	1
20	Electric box cover	电器盒盖板	01413047	01413047	01413047	01413047	01413047	01413047	1
21	Capacitor 30 μ F	电容 30 μ F/450V	\	\	\	\	33000021	33000021	1
	Capacitor 22.5 μ F	电容 22.5 μ F/450V	33000002	33000002	33000002	33000002	\	\	2
22	Capacitor 2.5 μ F	电容 2.5 μ F/450V	33010026	33010026	33010026	33010026	33010026	33010026	1
23	Dual Defrost Board	一拖二化霜板	\	30112003	\	30112003	\	30112003	1
	Velometer	调速器	30024413	\	30024413	\	30024413	\	1
24	Capacitor Clamp	电容夹	02143402	02143402	02140002	02140002	02143401	02143401	2
25	Terminal Board	三位接线板 A	42011113	42011113	42011113	42011113	42011113	42011113	2
26	Insulation Gasket D	绝缘垫片 D	70410525	70410525	70410525	70410525	70410525	70410525	2
27	Earthing Plate	接地铜板	42010202	42010202	42010202	42010202	42010202	42010202	1
28	Motor Support	电机支架	01703027	01703027	01703027	01703027	01705253	01705253	1
29	Motor LW80D	电机 LW80D	15015054	15015054	15015054	15015054	\	\	1
	Motor LW60B	电机 LW60B	\	\	\	\	15015205	15015205	1
30	Axial Flow Fan	轴流风叶	10335257	10335257	10335257	10335257	10335253	10335253	1

The data are subject to change without notice.

Bird Series

Table 2-13

No.	Description		Part No.		Qty
			GSW(9x2) -22L/A(O)	GSW(9x2) -22R/A(O)	
1	Front Grill	面罩组件	22265251	22265251	1
2	Front Plate	外罩	01433028	01433030	1
3	Front Side plate	前侧板	01303023	01303023	1
4	Metal Base	底盘组件	01203013	01203013	1
5	Capillary Assy	毛细管组件 I	03003102	03003060	1
6	Capillary Assy	毛细管组件 II	03003153	03003075	1
7	Valve 3/8"	阀门 3/8"	07100108	07100108	2
8	Valve 1/4"	阀门 1/4"	07100014	07100014	2
9	Valve Support	阀门支架	01713028	01713028	1
10	Handle	把手	26235252	26235252	2
11	Rear Side Plate	后侧板	01303021	01303021	1
12	Compressor 2P14S236A1J	压缩机及配件	00100253	\	2
	Compressor 2PS146H5DA02	压缩机及配件	\	00100264	2
13	Rear Grill Assy	网罩组件	01473024	01473024	1
14	4 way Valve	四通阀	\	43000402	2
15	Sensor	室外感温头 EHP-2Y	\	39000009	1
16	Isolation Sheet Assy	中间隔板组件	01233022	01233022	1
17	Top Cover Assy	顶盖组件	01255260	01255260	1
18	Condenser Assy	冷凝器组件	01103349	01103019	1
19	Electric box	电器盒	01413042	0 1413004	1
20	Electric box cover	电器盒盖板	01413047	01413047	1
21	Capacitor 30 μ F/450V	电容 30 μ F/450V	33000018	\	2
	Capacitor 35 μ F/450V	电容 35 μ F/450V	\	33000027	2
22	Capacitor 3 μ F/450V	电容 3 μ F/450V	33010021	\	1
	Capacitor 3.5 μ F/450V	电容 3.5 μ F/450V	\	33010010	1
23	Dual Defrost Board	一拖二化霜板	\	30112003	1
	Velometer	调速器	30024413	\	1
24	Capacitor clamp	电容夹	02143411	0 2143401	2
25	Terminal Board	三位接线板 A	42011113	42011113	2
26	Insulation Gasket D	绝缘垫片 D	70410525	70410525	2
27	Earthing Plate	接地铜板	42010202	42010202	1
28	Motor Support	电机支架	01703027	01703027	1
29	Motor	电机 FW38P	15013031	\	1
	Motor	电机 FW80A	\	15013037	1
30	Axial Flow Fan	轴流风叶	10335254	10335257	1

The data are subject to change without notice.

2.8 Circuit diagram

These circuit diagrams are subject to change without notice.
Please refer to the ones stuck on the machines.

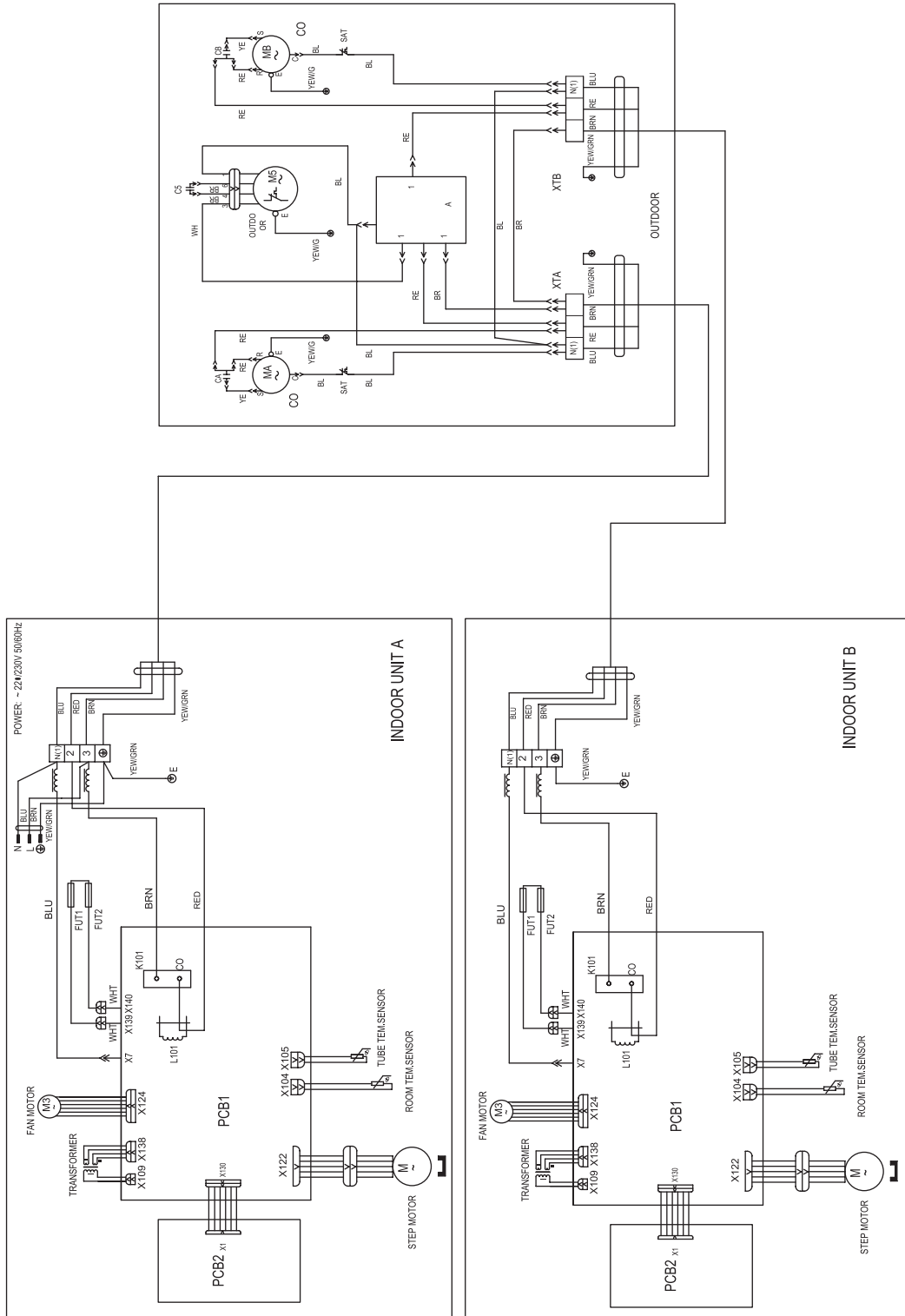
KF-20X2GW/A12

KF-32X2GW/A12

KF-20X2GW/NA12

KF-25X2GW/NA12

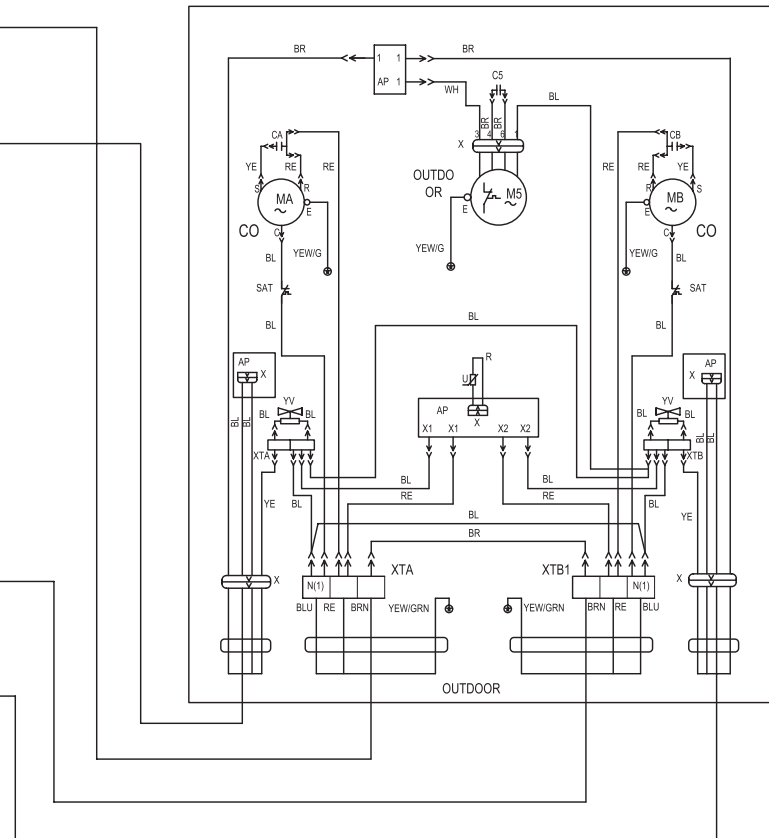
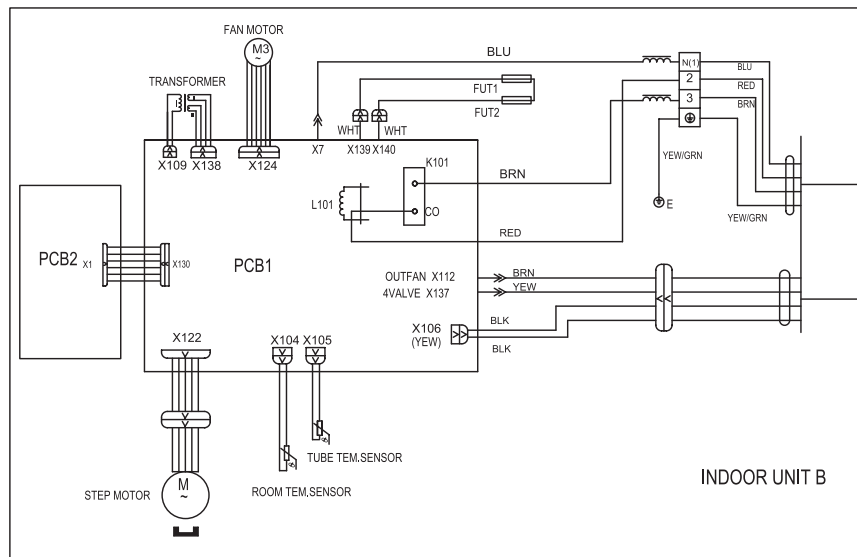
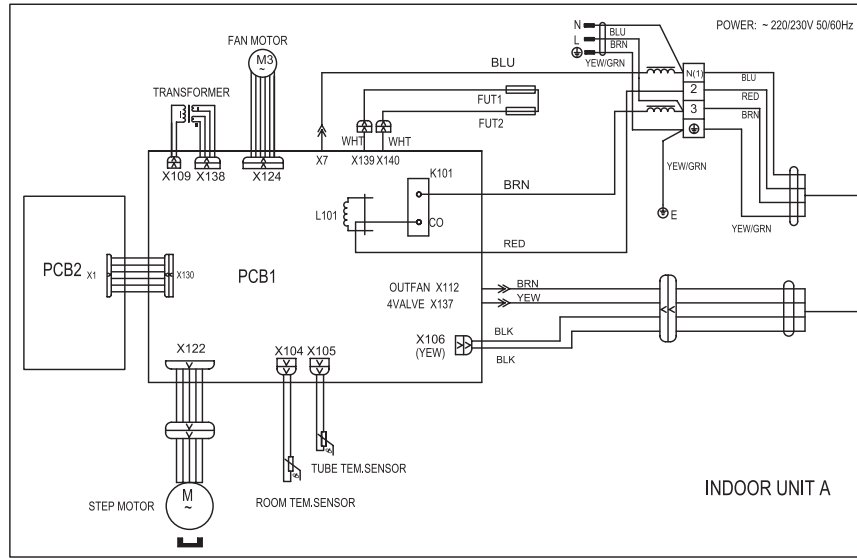
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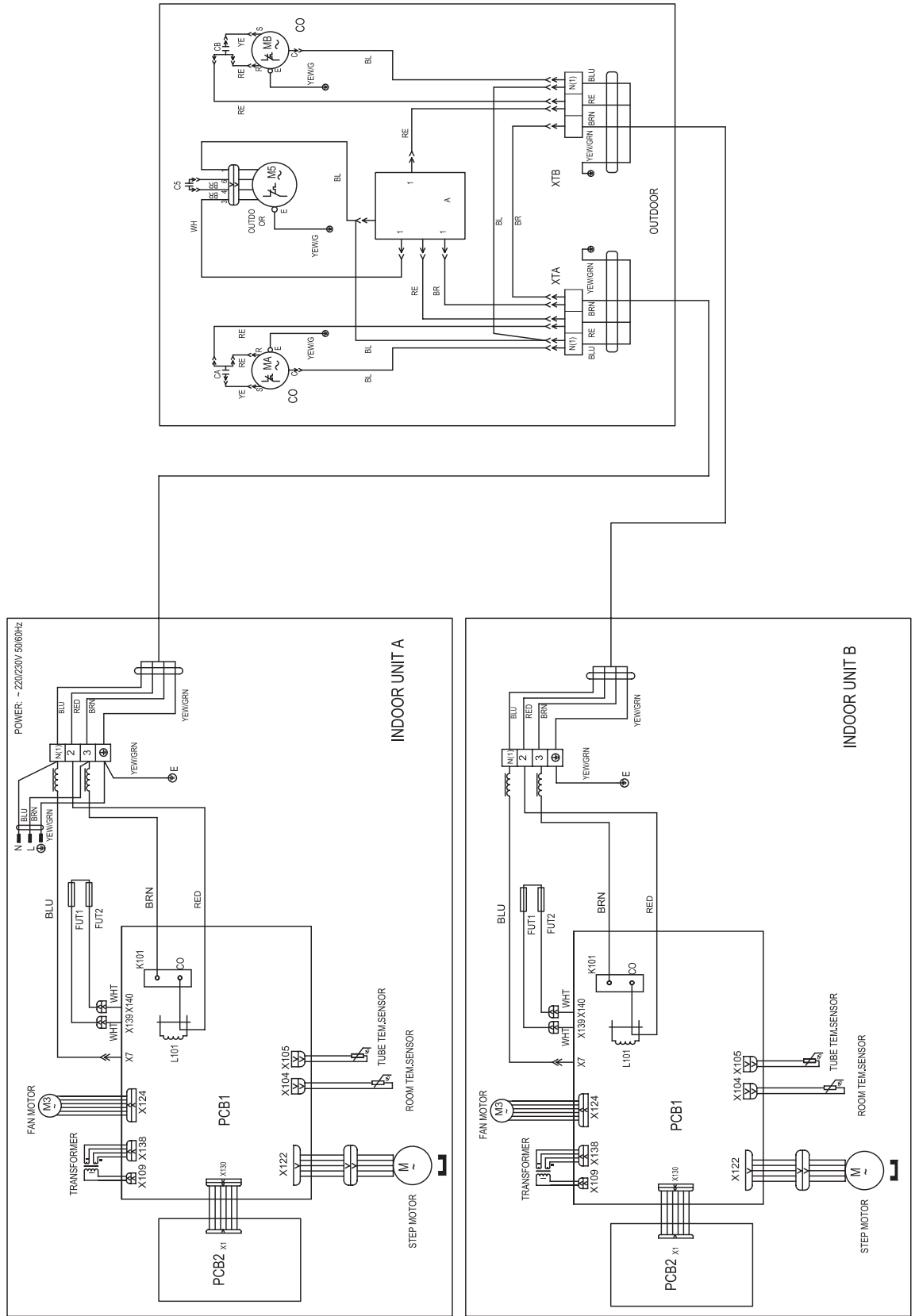
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KFR-20X2GW/NA12

KFR-32X2GW/A12
KFR-25X2GW/NA12

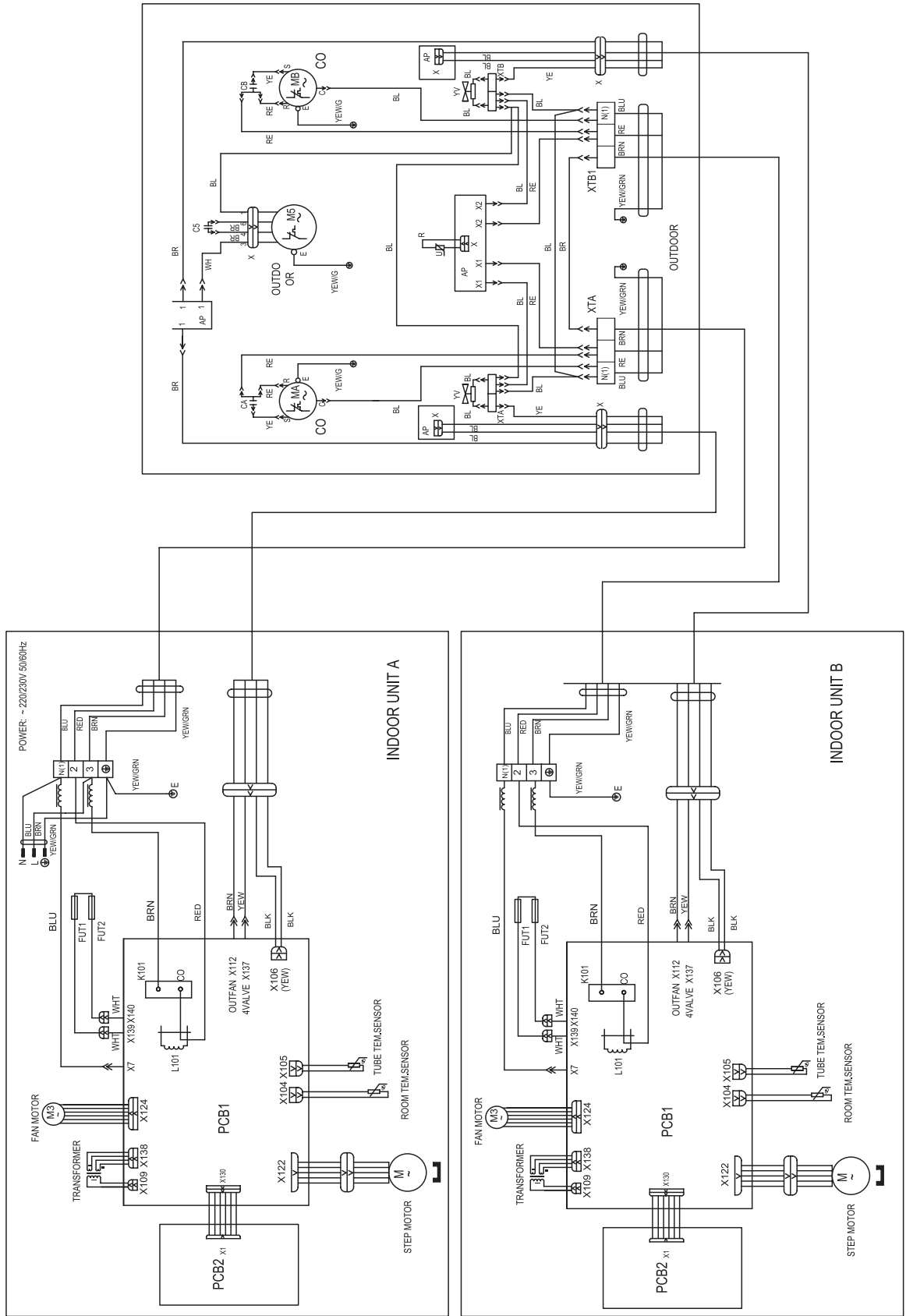
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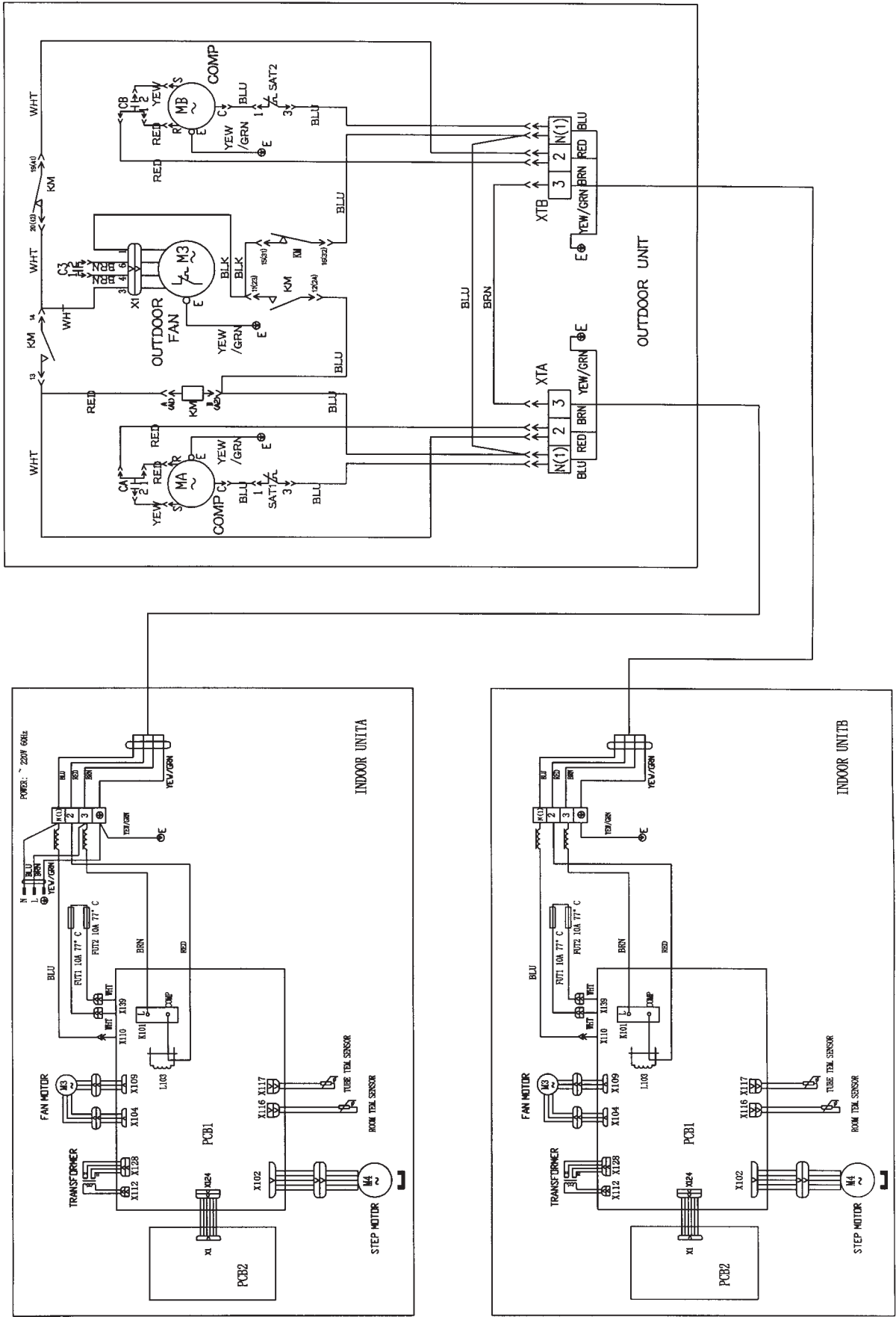
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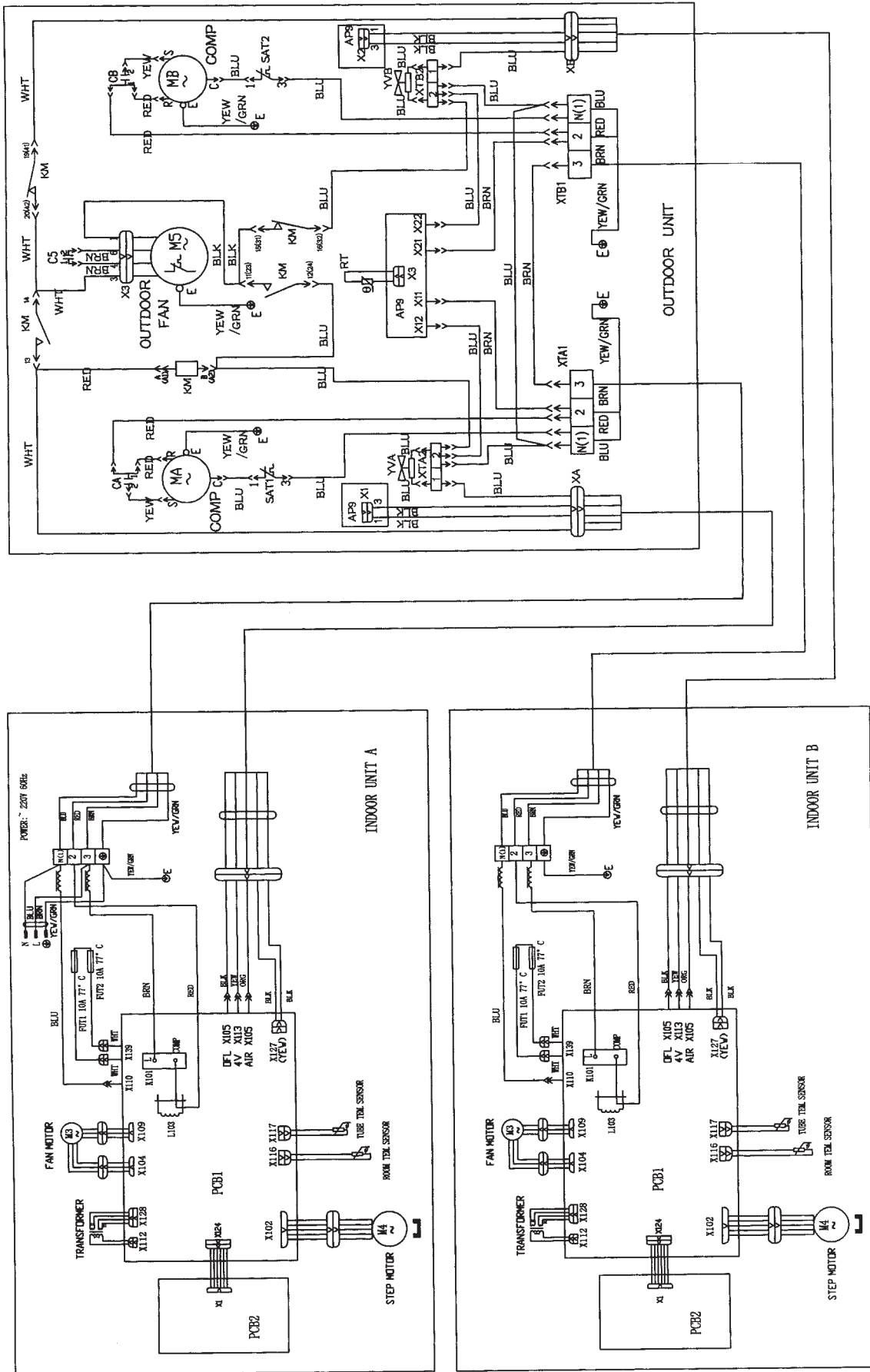
KFR-25X2GW/A12



GSW(9X2)-22L/A



GSW(9X2)-22R/A



2.9 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
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, 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.
- 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 the compressor has run 6 minutes, and detect $T_{eva} < 0^{\circ}\text{C}$ for continuous 3 minutes, then the compressor, outdoor fan stop, indoor fan runs 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.

c. overload protection

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

2. dehumidifying mode

(1) the working conditions and control measures

- a. If $T_{in} > T_{set} + 2^{\circ}\text{C}$, it is in cooling running, the indoor motor speed can be selected, and outdoor motor runs at low speed.
- b. 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 low speed, 6 minutes later the compressor and the outdoor fan stop, another 30 seconds later the indoor fan stops, 3 and a half minutes later, compressor and outdoor fan run again, indoor motor runs at low speed, then the machine cycles the above procedures repeatedly.
- c. 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 16~30°C.

(3) anti-freezing protection

If $T_{in} > T_{set} + 2^{\circ}\text{C}$, it goes into cooling running, anti-freezing function is the same with cooling mode, but the compressor must stop 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 delayed, 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

- a. If $T_{in} \leq T_{set} + 2^{\circ}\text{C} + T_{add}$, 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.
- b. If $T_{in} \geq T_{set} + 4^{\circ}\text{C} + T_{add}$, compressor stops first, 15 seconds later, outdoor motor stops, but reversing valve keeps working, indoor motor runs at the procedures of blowing surplus heat.
- c. If $T_{set} + 2^{\circ}\text{C} + T_{add} < T_{in} < T_{set} + 4^{\circ}\text{C} + T_{add}$, keep the previous running state. ($T_{add} = 1^{\circ}\text{C}$ or 0°C , it can be selected)

(2) In this mode, the temperature setting range is 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 detects $T_{eva} < 50^{\circ}\text{C}$ for continuous 8 seconds and $T_{in} \leq 25^{\circ}\text{C}$, electric heater will work, if compressor stops or indoor motor runs at low speed or $T_{eva} \geq 54^{\circ}\text{C}$ or $T_{in} \geq 28^{\circ}\text{C}$ or 10 seconds before defrosting, the electric heater will stop.

(4) protections

a. anti cool air

When the compressor starts, if $T_{eva} \geq 41^{\circ}\text{C}$ or the indoor fan runs after 20 seconds delayed, swing motor will run at the set speed.

b. anti high temp.

In heating mode, if it detects $T_{eva} \geq 56^{\circ}\text{C}$ (58°C can be selected), outdoor motor will stop. If $T_{eva} \leq 53^{\circ}\text{C}$, outdoor motor will be back running.

c. blowing surplus heat

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

d. Compressor's protection is the 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 minute, it begins to defrost , electric heater will stop for 10 seconds (even if electric heater is not working) , then indoor motor 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 become 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)

g. noise lowering protection

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

4. fan mode

The light is on when it runs.

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

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

Bird Series

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.

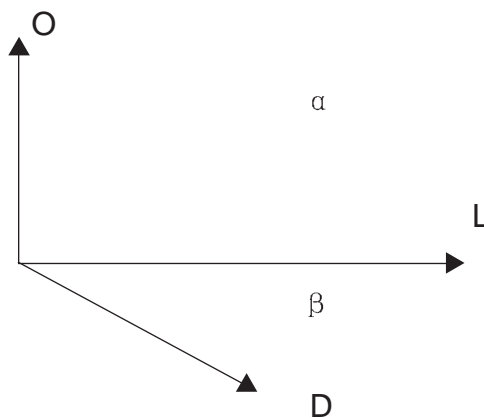
(3) protections

It is same as the one in cooling or heating mode.

E. other controls

1. SWING mode

Refer to the figure below:



2. beeper

- When PCB becomes active or receives the signal from the remote controller , the beeper will beep.
- If the rmostat 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 short-circuited , the beeper will alarm at the frequency 2 Hz .
- If the switch is in RUN position , the machine will run according to the remote signal.
- If the switch is in STOP position, the machine will stop.

5. SLEEP mode

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

Bird Series

1 hour, another 1°C will be lowered .

6. Automatic fan speed

- a. In cooling mode, if $T_{in} > T_{set} + 3^{\circ}\text{C}$ high speed
 $T_{set} + 1^{\circ}\text{C} \leq T_{in} \leq T_{set} + 3^{\circ}\text{C}$ middle speed
 $T_{in} < T_{set} + 1^{\circ}\text{C}$ low speed
- b. In heating mode, if $T_{in} \leq T_{set} - 2^{\circ}\text{C}$ high speed
 $T_{set} - 2^{\circ}\text{C} < T_{in} < T_{set}$ middle speed
 $T_{in} \geq T_{set} + 2^{\circ}\text{C}$ low speed

F. Fresh air function

1. 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.

G. Time function

1. Set time to turn on

When you set time the machine is inactive. If it reaches the time you have set, it will run as the previous settings. The time setting range is 0.5~24h.

2. Set time to turn off

When the machine is inactive you can set the time to be turned off. It will stop working when the time comes. The time setting range is 0.5~24h.

H. Memory function

After the power is cut suddenly, when it's restarted, it will run at the original state.