Ducted Air-conditioning(Heat Pump)Units (FG series)

MODEL

	FG25 FGR25	FG30 FGR30
	FG35/A FG35H/A	FGR35/A FGR35H/A
	FG25H FG30H	FGR30H
	FG5 FG6.5 FG7.5 FG10 FG12	FGR5 FGR6.5 FGR7.5 FGR10 FGR12

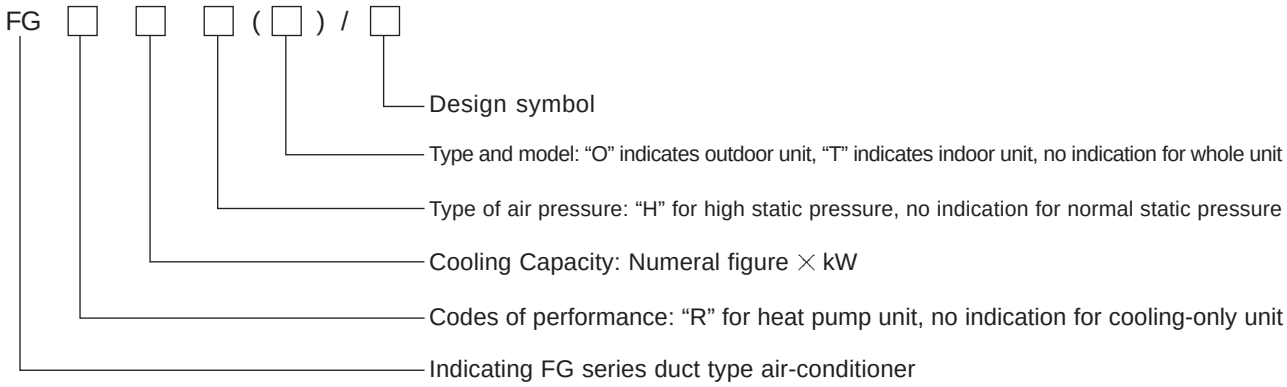
FG series duct type air conditioner (Heat Pump)

1. Summary

GREE FG series duct type air conditioner, not only integrates the advantage of great comfort and high taste of the central air conditioner system as well as the advantages of flexible installation and simple operation of the of home-use air conditioner. This product is designed with general and high static pressure type, which meet the demands of different customers.

Suitable for: FG series duct type air conditioner widely used at mini super market, multiple shop, hotel, inn, restaurant, office, assembly room, etc, especially for the air conditioning project of mini commercial and industry use building.

1.1 Model description



Example for models:

FGR25H indicates a high static pressure type duct air-conditioner heat pump unit with a cooling capacity of 25KW.

FG25 indicates a duct type air conditioner unit with a cooling capacity of 25KW.

1.2 Microchip control system

◇ **control function**

■ Memorized contro (when power on, the unit will restart and work at the last mode which set before power off)

■ Communication（the unit adopts dual CPUs communication to keep long-distance communication, the distance of main board and the manual controller can reach 20m.

■ Timing function（set time to run or shut down the unit, or run and shut down cycle)

■ T (the unit will give an alarm and show the malfunction code when the running is wrong)

■ Energy saving function（the unit be controlled automatically under the mode of energy saving）

■ Defending cold wind function（under the mode of heating , the indoor fan starts when the temperature of heater-exchanger higher than it of indoor）

■ Sending residual heat function（under the mode of heating , the indoor fan keeps on working several minutes when the compressor stop work）

◇ **Protection function:**

■ High pressure and low pressure protection（the compressor will stop work and show the malfunction code when the inspiration pressure lower or the exhaust pressure higher）

■ Over loading protection (the danfoss compressor has the function of protection from higher heat. It will stop working when its temperature higher than allowed and begin working when its temperature gets back.）

■ Current-over loading protection（the compressor will stop working and show the malfunction code when the current of compressor higher than allowed）

■ The exhaust pressure higher protection（the compressor will stop working and show the malfunction code when its temperature of exhaust higher than allowed）

■ Phase-scarce protection（the unit won't work and show the malfunction code when the power source isn't right or scarce）

■ Prevent frostbite protection（the compressor will stop working and show the malfunction code when the surface temperature of indoor heat exchanger is too low.）

■ Prevent high temperature protection（the compressor will stop working and show the malfunction code when the surface temperature of indoor heat exchanger is too high.）

■ Alarm of sensor malfunction（the unit will show the malfunction code when the sensor is short or open circuit）

◇ **display function:**

■ time show（show and set the real time）

■ timing operation show（show and set the timing operation）

■ cancel timing show（show canceling time）

■ the mode of run show（refrigeration 、dehumidify、heating、fan）

■ the melt of frost show（show the state when the heating unit melt the frost，only fit the heat pump units）

■ testing show（show the state under the mode of testing）

■ energy saving show（show the state under the mode of energy saving running）

■ temperature show（show the indoor temperature and the prescribed temperature before handt）

■ malfunction code show

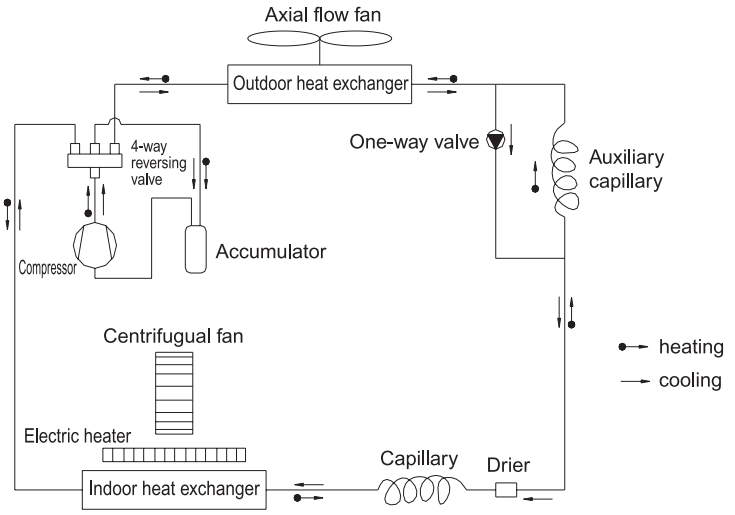
2. The capability of unit

2.1 The working elements of air conditioning:

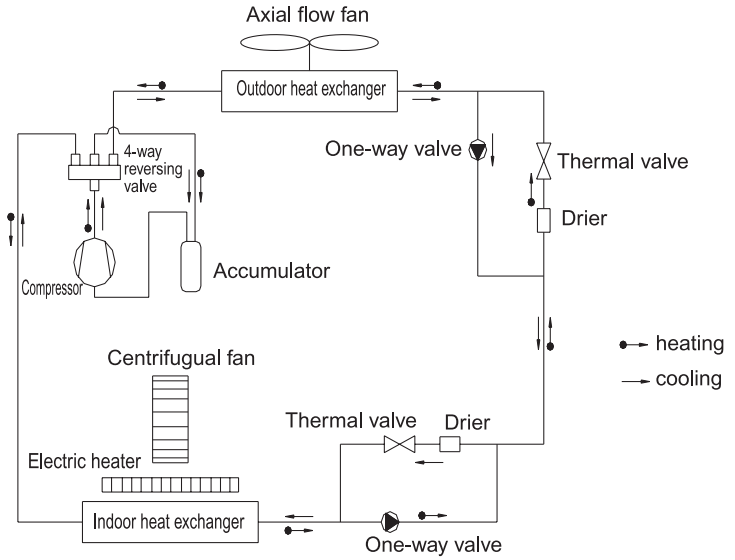
The working elements of refrigeration: The gaseous refrigerant which comes from indoor heat exchanger has low temperature and pressure. When refrigerating , it is absorbed by compressor and be compressed into gas with high temperature and high pressure . Then ,it is expelled from compressor into outdoor heat exchanger . The gaseous refrigerant is condensed into liquid when its heat quantity be absorbed by outdoor air with the help of fan. Throttled by throttle, the liquid refrigerant's temperature and pressure are reduced. After entering indoor heat exchanger, it is evaporated into gas with low temperature and low pressure when it absorb the heat quantity of indoor air with the help of fan. The unit goes round and round as that in order to refrigerate the indoor air.

The working elements of heating：When heating, the electromagnetic valve commutes and the refrigerant circulates as the contrary process of refrigerant process. The refrigerant gives out its quantity of heat in the indoor heat exchanger (the element used to heat by electricity begin heating under necessary condition). The refrigerant absorbs quantity of heat from outdoor heat exchanger in order to heating the indoor air.

A. Working elements diagram of heat pump duct type air conditoner

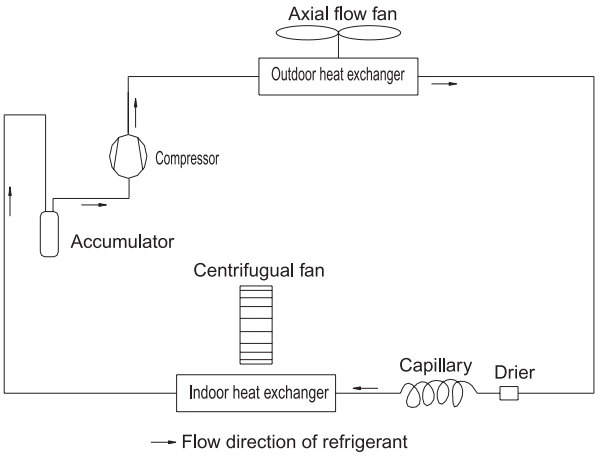


Working elements diagram of heat pump unit（Using capillary）

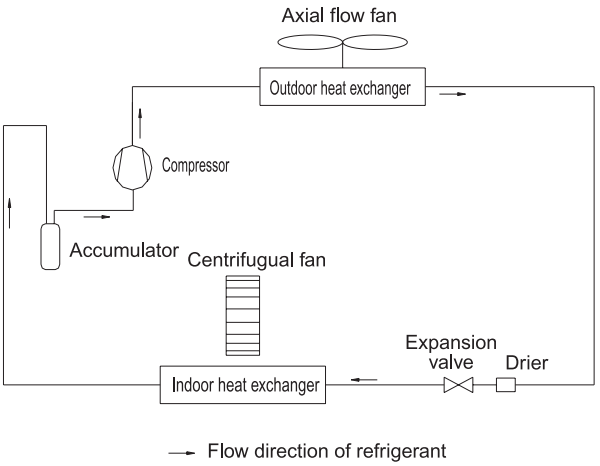


Working elements diagram of heat pump unit（Using expansion valve）

B. Cooling only duct type air conditioner



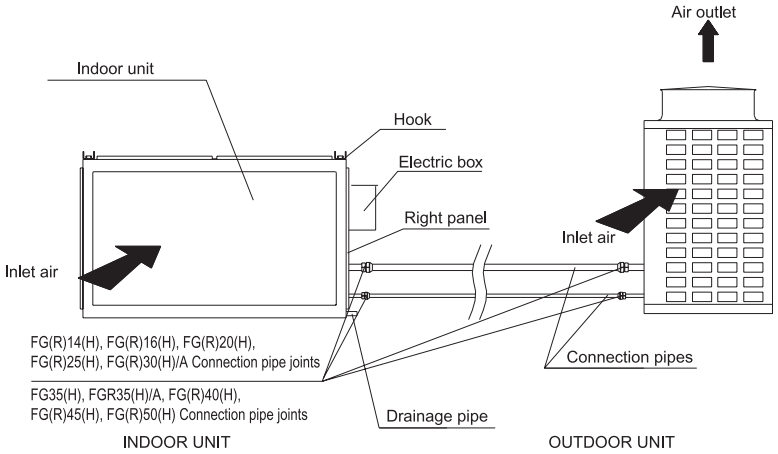
Working elements diagram of cooling only unit（Using capillary）



Working elements diagram of cooling only unit（Using expansion valve）

2.2 Structure of the units

Duct type air conditioner comprises indoor unit , outdoor unit and connecting pipe.

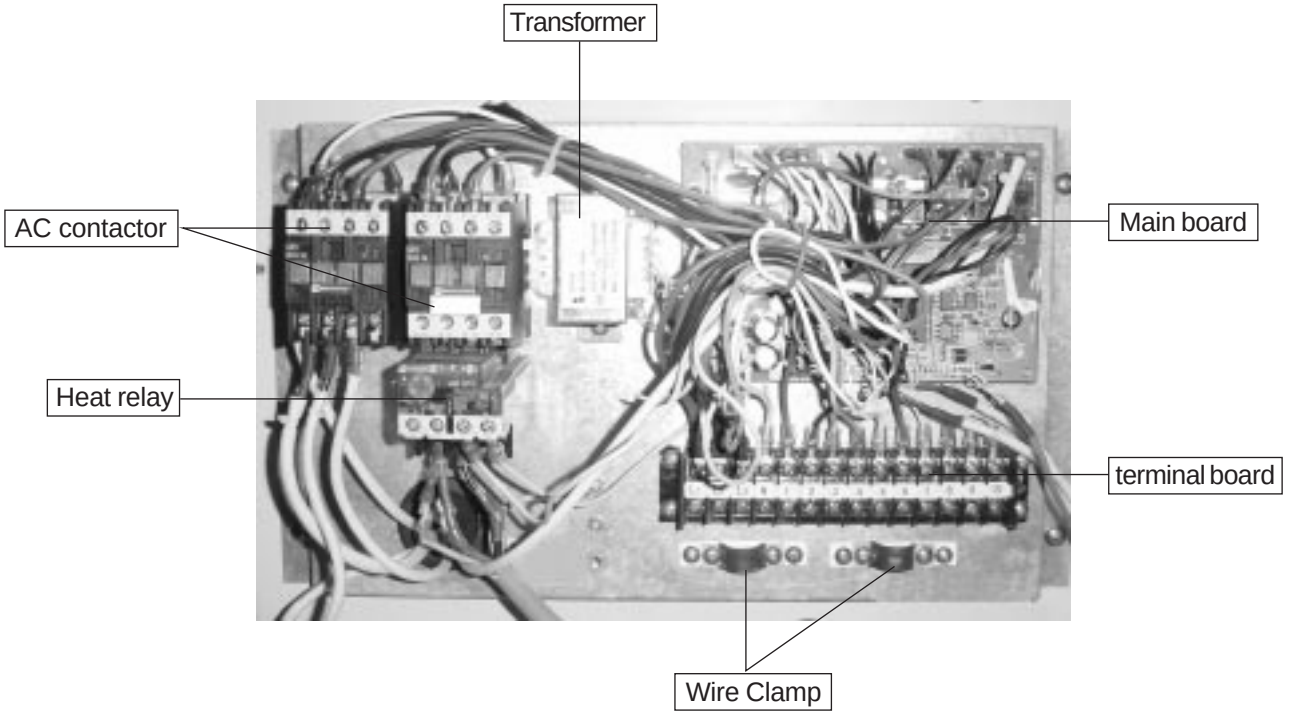


Structure of the units

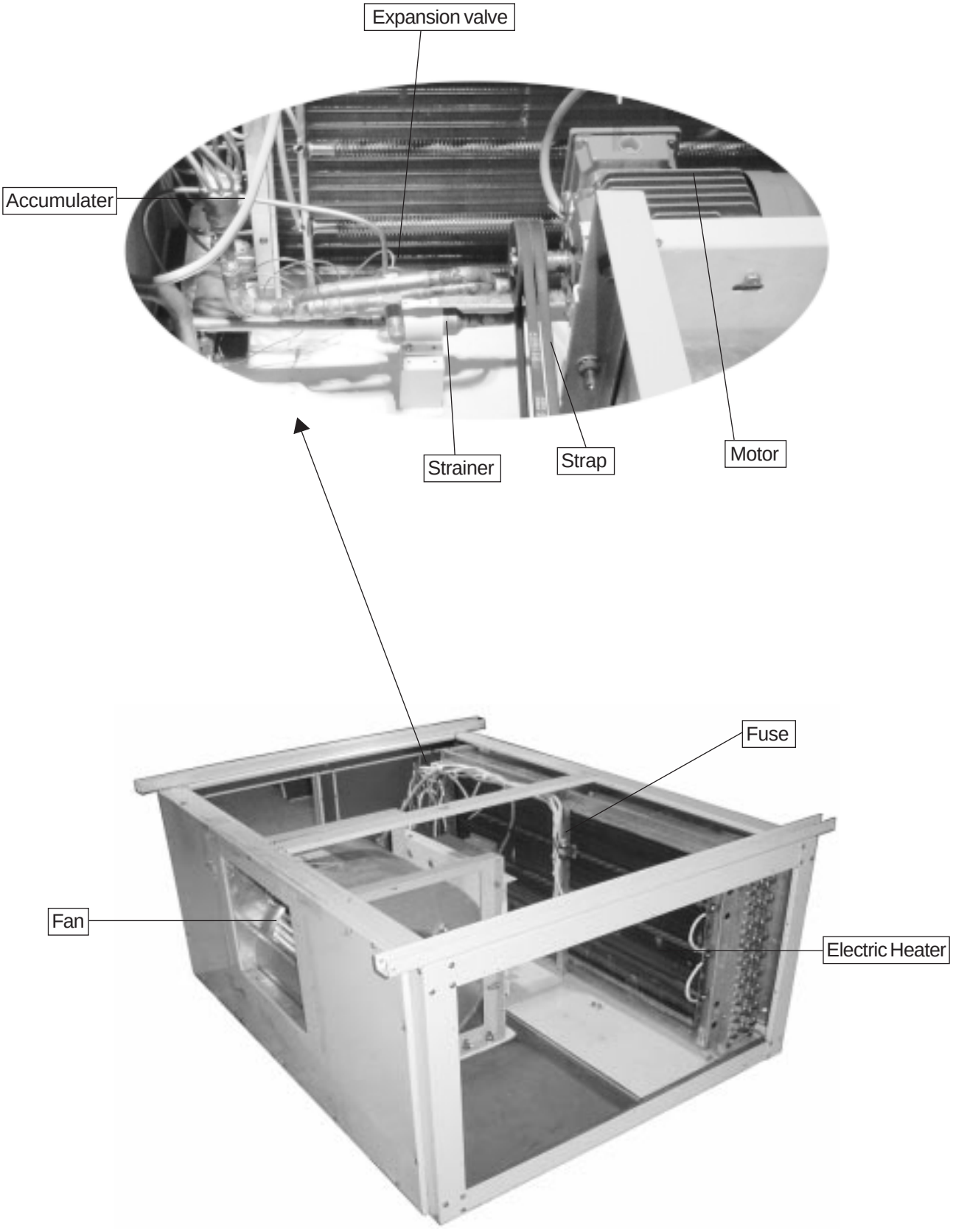
FG series duct type air conditioner (Heat Pump)

Indoor units of FG (R) -20, 25, 30, 35

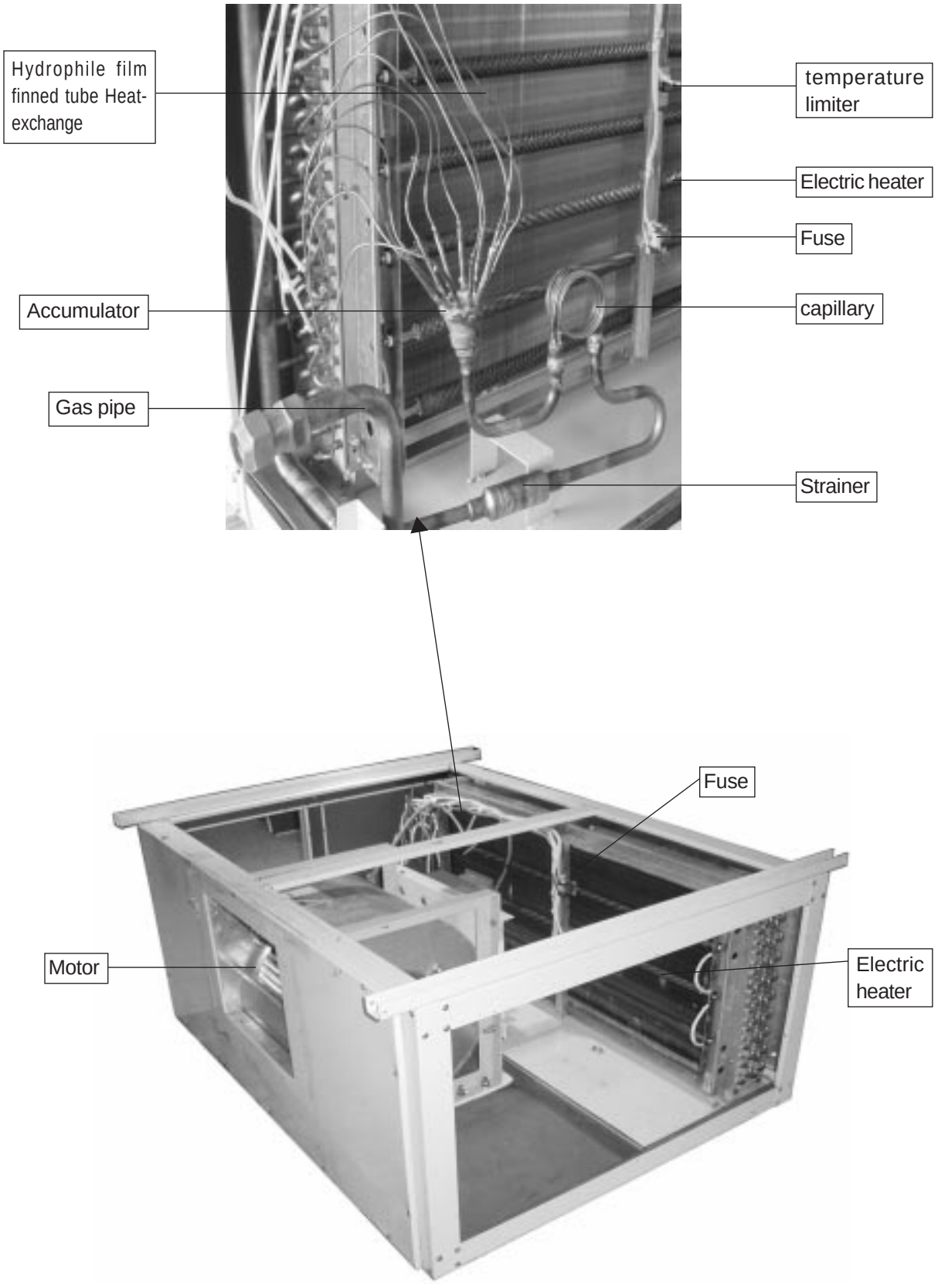
Indoor unit electric box of FG(R)-30,35



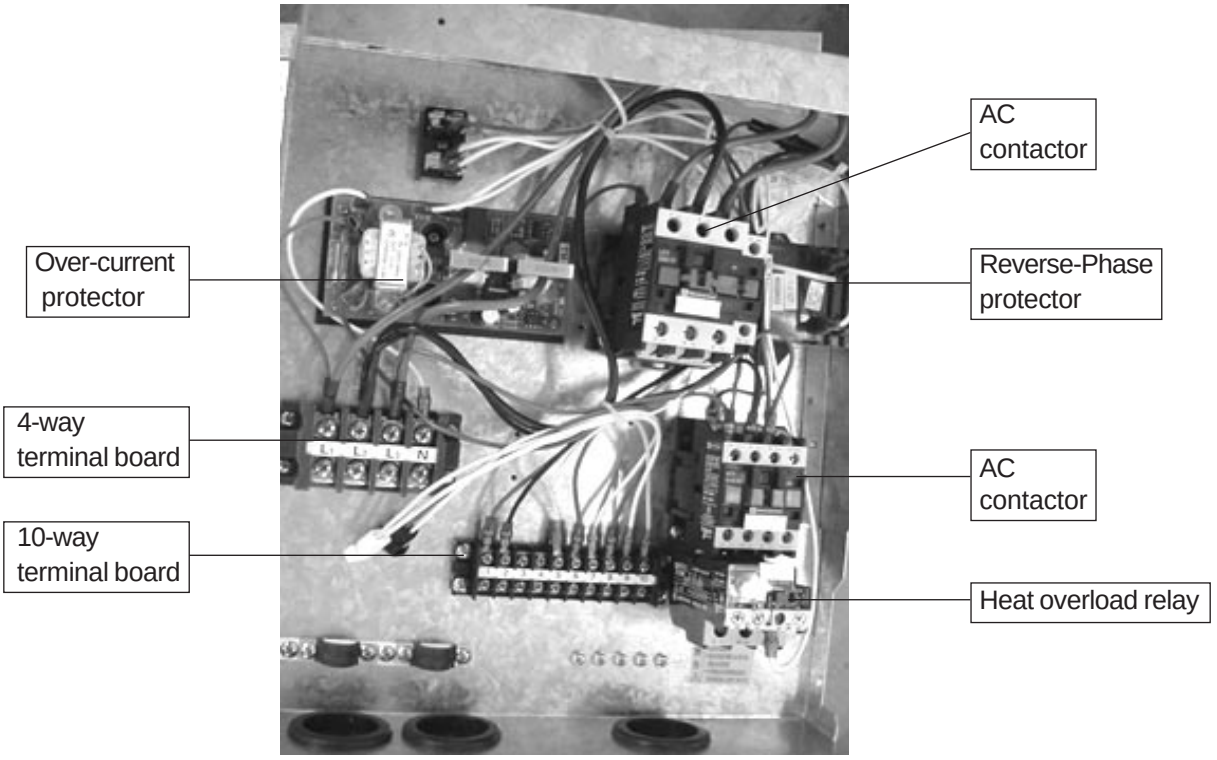
Indoor unit of FG (R) -35



Heat pump indoor unit of FG(R)-30

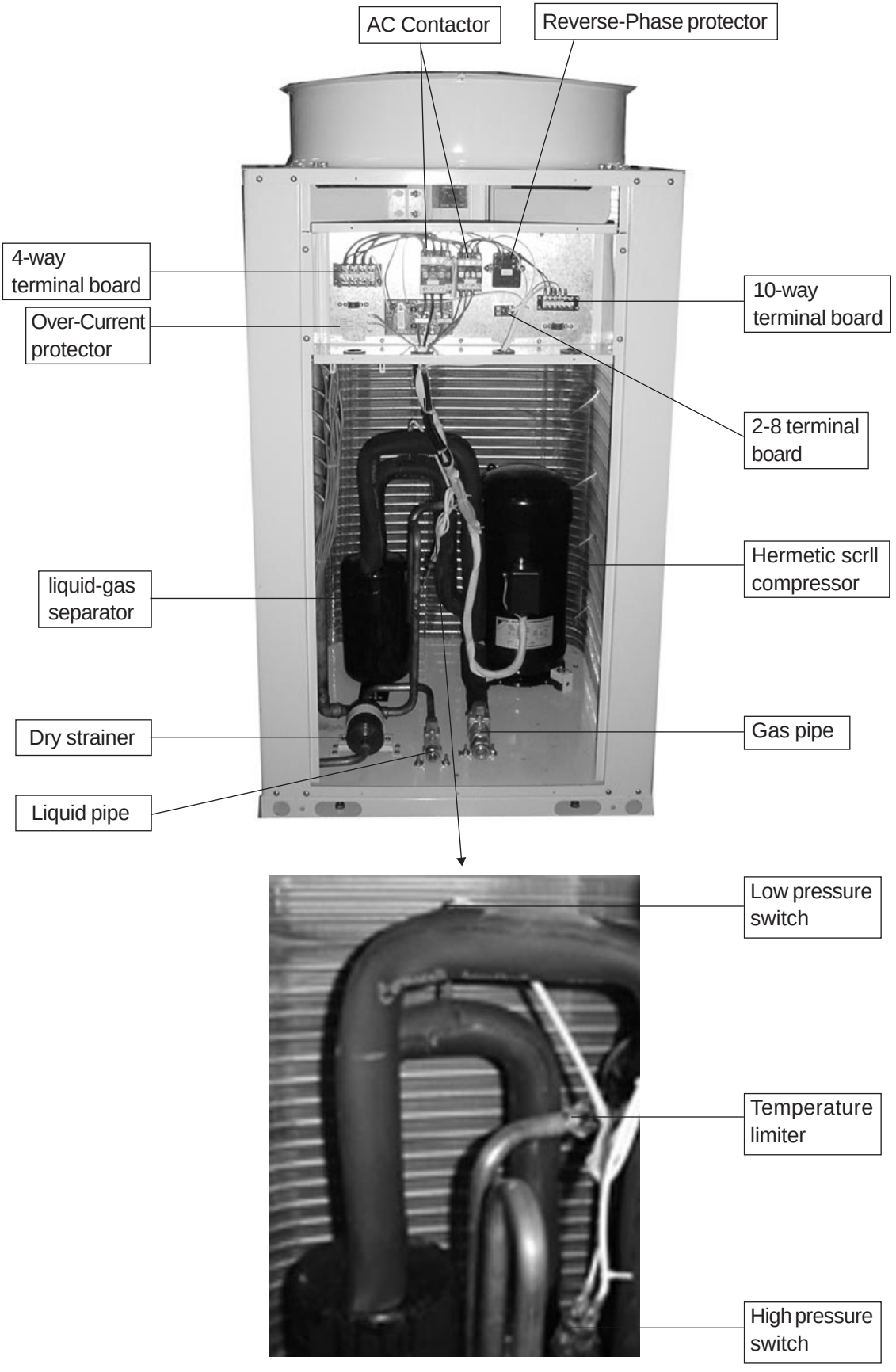


Outdoor unit electric box of FG (R) 30, FG30

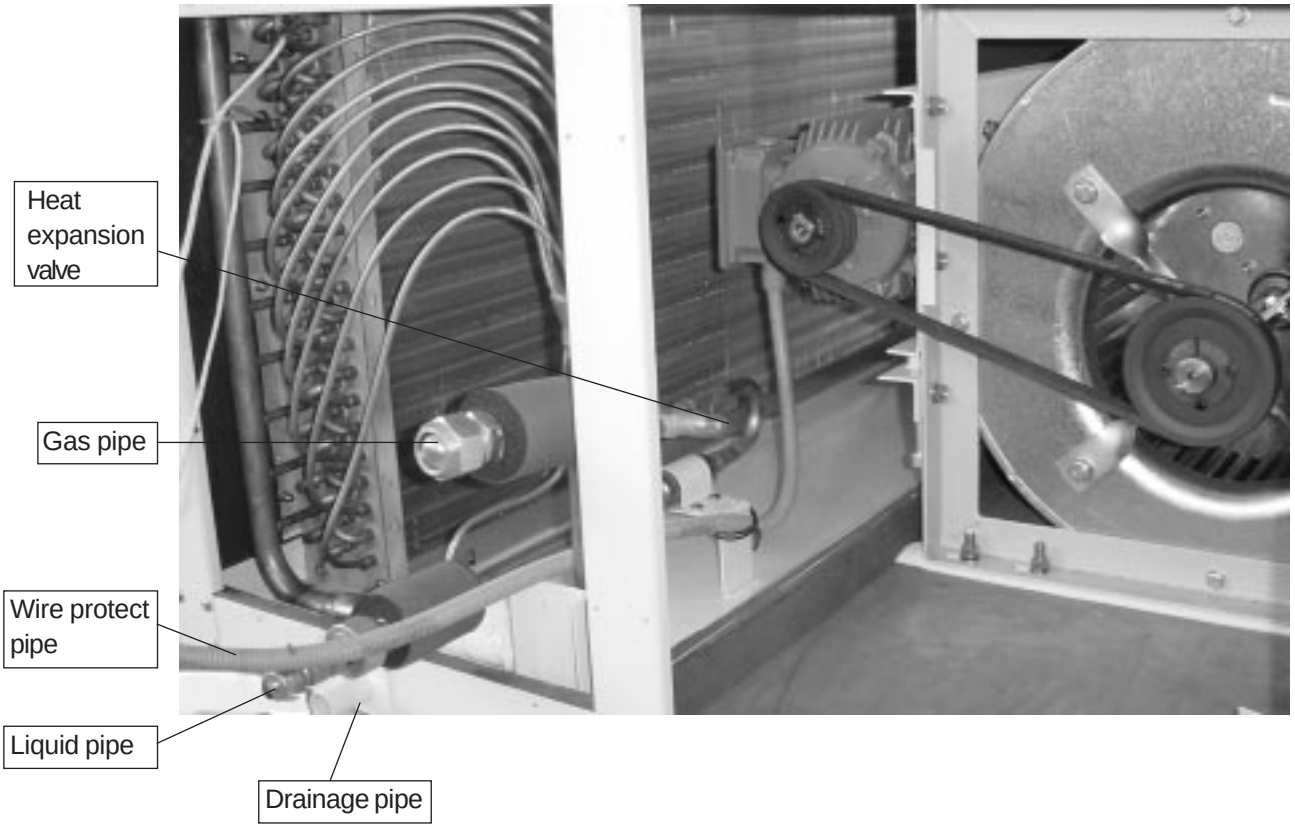


Outdoor unit of FG25

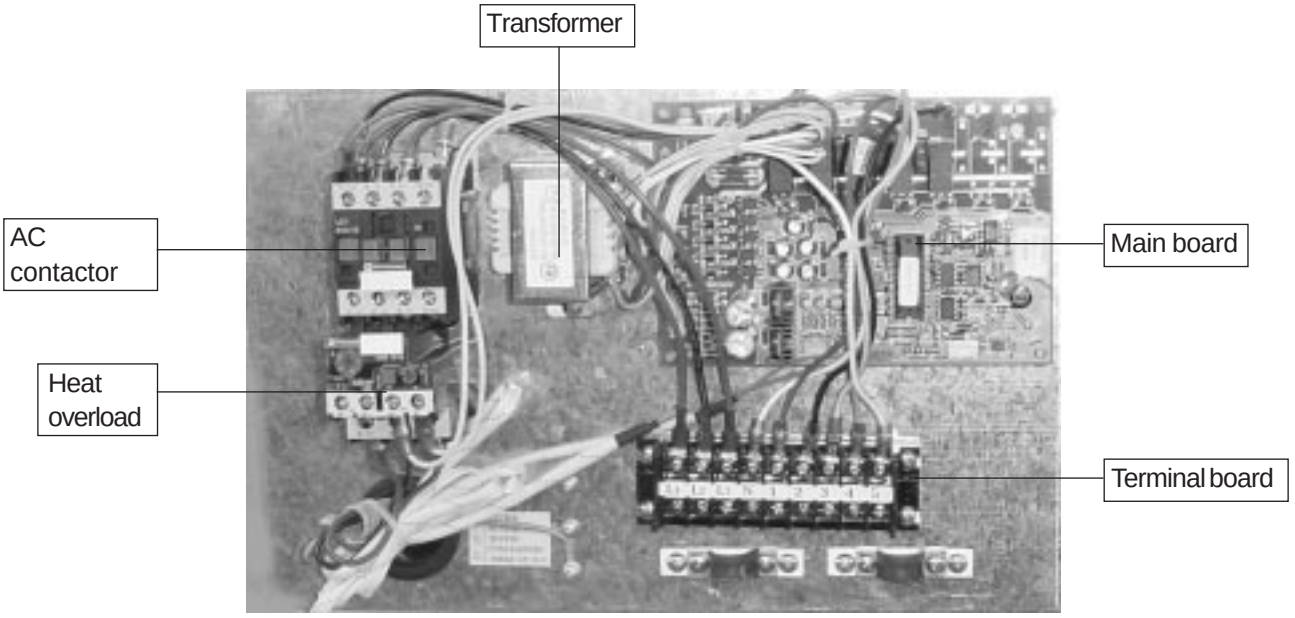
Outdoor unit detail of FG25



Indoor unit of FG25



Indoor unit electric box of FG25



2.3 Performance data table

◇ Specification and technical parameter of Duct type central air conditioner (High static pressure type)

Model			FG 14H	FGR 14H	FG 16H	FGR 16H	FG 20H	FGR 20H	FG 25H	FGR 25H	FG 30H/A	FGR 30H/A	FG 35H	FGR 35H/A	FG 40H	FGR 40H	FG 45H	FGR 45H	FG 50H	FGR 50H
Indoor unit			FG 14H(I)	FGR 14H(I)	FG 16H(I)	FGR 16H(I)	FG 20H(I)	FGR 20H(I)	FG 25H(I)	FGR 25H(I)	FG 30H/A(I)	FGR 30H/A(I)	FG 35H(I)	FGR 35H/A(I)	FG 40H(I)	FGR 40H(I)	FG 45H(I)	FGR 45H(I)	FG 50H(I)	FGR 50H(I)
Outdoor unit			FG 14H(O)	FGR 14H(O)	FG 16H(O)	FGR 16H(O)	FG 20H(O)	FGR 20H(O)	FG 25H(O)	FGR 25H(O)	FG 30H/A(O)	FGR 30H/A(O)	FG 35H(O)	FGR 35H/A(O)	FG 40H(O)	FGR 40H(O)	FG 45H(O)	FGR 45H(O)	FG 50H(O)	FGR 50H(O)
Cooling capacity		KW	14	14	16	16	20	20	25	25	30	30	35	35	40	40	45	45	50	50
Heating capacity of heat pump		KW	--	16	--	18	--	22	--	27	--	32	--	37	--	42	--	47	--	52
Power of Aux-heater		KW	--	4.5	--	4.5	--	6	--	6	--	9	--	9	--	12	--	12	--	12
Rated current	Cool	A	10.2	10.2	11.6	11.6	13.9	13.9	16.8	16.8	20.6	20.6	23.8	23.8	26.9	26.9	31	31	34	34
	Heat pump	A	--	9.9	--	11.4	--	13.6	--	16.3	--	20.2	--	23.6	--	26.5	--	30.5	--	33.2
Rated power	Cool	KW	5.7	5.7	6.5	6.5	7.7	7.7	9.3	9.3	11.3	11.3	13.3	13.3	15	15	17.5	17.5	19	19
	Heat pump	KW	--	5.5	--	6.4	--	7.5	--	9	--	11	--	12.8	--	14.5	--	17	--	18.5
Power source			3N~380V 50Hz																	
Compressor			Hermetically rotary																	
Air flow volume(Indoor unit)		m^3/h	2500	2500	3100	3100	3800	3800	4300	4300	5000	5000	5500	5500	6000	6000	6500	6500	7200	7200
Ex.Static pressure		Pa	260				320				350						370			
Noise	Indoor dB（A）		56		57		58		58		59		59		61		61		63	
	Outdoor dB（A）		61		62		63		64		64		65		66		67		68	
Refrigerant			R22																	
Refrigerant charge （kg）			5		6		7.5		8.5		10		11.5		12.5		13.5		14.5	
Connection pipes	liquid	mm	Ø22				Ø25				Ø28		Ø35		Ø35				Ø38	
	gas	mm	Ø12				Ø16				Ø16		Ø16		Ø19				Ø22	
Dimension (W×H×D)cm	Indoor		122×50×100				137×63×100				137×79×110				172×79×110				172×84×110	
	Outdoor		78×105×80				78×130×80		78×150×80		135×130×80		135×150×80		186×130×89					

Note：The data are tested in rated condition.

◇ Specification and technical parameter of Duct type central air conditioner (General static pressure type)

Model				FG14	FGR14	FG16	FGR16	FG20	FGR20	FG25	FGR25	FG30/A	FGR30/A	FG35	FGR35/A	FG40	FGR40	FG45	FGR45	FG50	FGR50
Indoor unit				FG14 (I)	FGR14 (I)	FG16 (I)	FGR16 (I)	FG20 (I)	FGR20 (I)	FG25 (I)	FGR25 (I)	FG30/A (I)	FGR30/A (I)	FG14 (I)	FGR14 (I)	FG40 (I)	FGR40 (I)	FG45 (I)	FGR45 (I)	FG50 (I)	FGR50 (I)
Outdoor unit				FG14 (O)	FGR14 (O)	FG16 (O)	FGR16 (O)	FG20 (O)	FGR20 (O)	FG25 (O)	FGR25 (O)	FG30/A (O)	FGR30/A (O)	FG14 (O)	FGR14 (O)	FG40 (O)	FGR40 (O)	FG45 (O)	FGR45 (O)	FG50 (O)	FGR50 (O)
Cooling capacity			KW	14	14	16	16	20	20	25	25	30	30	35	35	40	40	45	45	50	50
Heating capacity of heat pump			KW	--	16	--	18	--	22	--	27	--	32	--	37	--	42	--	47	--	52
Power of Aux-heater			KW	--	4.5	--	4.5	--	6	--	6	--	9	--	9	--	12	--	12	--	12
Rated current	Cool		A	9.9	9.9	11.2	11.2	13.6	13.6	16.3	16.3	20	20	23.6	23.6	26.5	26.5	31	31	33.2	33.2
	Heat pump		A	--	9.6	--	11	--	13.3	--	16	--	19.6	--	23.3	--	26	--	30	--	33
Rated power	Cool		KW	5.5	5.5	6.3	6.3	7.5	7.5	9.5	9.5	11	11	13	13	14.8	14.8	17	17	18.5	18.5
	Heat pump		KW	--	5.3	--	6.1	--	7.2	--	8.7	--	10.7	--	12.5	--	14	--	16.5	--	18.3
Power source				3N-380V 50Hz																	
Compressor				Hermetically rotary																	
Air flow volume (Indoor unit)			m^3/h	2500	2500	3100	3100	3800	3800	4300	4300	5000	5000	5500	5500	6000	6000	6500	6500	7200	7200
Ex.Static pressure			Pa	150				190				210						250			
Noise	Indoor dB (A)			55		56		57		57		58		58		60		60		62	
	Outdoor dB (A)			61		62		63		64		64		65		66		67		68	
Refrigerant				R22																	
Refrigerant charge (kg)				5		6		7.5		8.5		10		11.5		12.5		13.5		14.5	
Connection pipes	liquid		mm	Ø22				Ø25				Ø28		Ø35		Ø35				Ø38	
	gas		mm	Ø12				Ø16				Ø16		Ø16		Ø19				Ø22	
Dimension (W×H×D)cm		Indoor		122×50×100				137×63×100				137×79×110				172×79×110				172×84×110	
		Outdoor		78×105×80				78×130×80		78×150×80		135×130×80		135×150×80		186×130×89					

Note: The data are tested in rated condition.

◇ Specification and technical parameter of Duct type central air conditioner (General static pressure type)

A、Electrical specifications of cool only type unit.

Items		Model	FG14(H)	FG16(H)	FG20(H)	FG25(H)	FG30(H)	FG35(H)	FG40(H)	FG45(H)	FG50(H)
Power supply	Work Power		3N~380V 50Hz								
	Control Power		220VAC								
Rated Input		KW	5.95	6.75	8.01	9.81	11.5	12.86	15.05	17.55	19.35
Maximum Input		KW	7.9	8.7	10	12.4	14.2	15.5	20	20.5	22.2
Rated Current		A	12.2	13.67	15.92	18.52	21.74	23.14	27.08	30.2	33.1
Start Current		A	65	79	91	107	125	133	154	172	189
Compressor	Input Power	KW	4.4	5.2	6.03	7.83	9.04	10.2	11.6	13.2	15
	Working Current	A	9	10.5	12	14.6	16.9	17.9	20.5	22.1	25
Indoor Fan	Input Power	KW	1	1	1.43	1.43	1.91	1.91	1.91	3.6	3.6
	Working Current	A	1.97	1.97	2.72	2.72	3.64	3.64	3.64	6.5	6.5
Outdoor Fan	Input Power	KW	0.55	0.55	0.55	0.55	0.55	0.75	0.75	0.75	0.75
	Working Current	A	1.2	1.2	1.2	1.2	1.2	1.6	1.6	1.6	1.6
Recommended Cord	Indoor Power cord	$mm^2 \times$ Qty.	1.5×5	1.5×5	1.5×5	1.5×5	1.5×5	1.5×5	1.5×5	1.5×5	1.5×5
	Outdoor Power Cord	$mm^2 \times$ Qty.	4×5	4×5	4×5	4×5	6×5	6×5	10×5	10×5	10×5
	Signal Cord	$mm^2 \times$ Qty.	0.75×5								

B、Electrical specifications of cool only type unit.

Items \ Model			FGR 14(H)	FGR16(H)		FGR20(H)		FGR25(H)		FGR30(H)		FGR35(H)		FGR40(H)		FGR45(H)		FGR50(H)	
With electric heater			✓	--	✓	--	✓	--	✓	--	✓	--	✓	--	✓	--	✓	--	✓
Power supply	Work Power		3N~380V 50Hz																
	Control Power		220VAC																
Power of Aux. heater		KW	4.8	--	4.8	--	6	--	6	--	9	--	9	--	12	--	12	--	12
Input Power	Cool	KW	5.95	6.75		8.01		9.81		11.5		12.86		15.05		17.55		19.35	
	Heat	KW	10.8	6.5	11.5	8	14	9.8	15.8	11.2	20.2	12.8	21.8	15	27	17.5	29.5	19.2	31.2
Max. Power	Cool	KW	7.9	8.6		10.2		12.5		14.2		15.8		19		20.8		22.2	
	Heat	KW	12.7	8.4	13.4	10	16	12.2	18.2	14	23	15.6	24.6	18.5	30.5	20.5	32.5	21.8	33.8
Rated Current	Cool	A	12.2	13.67		15.92		18.52		21.74		23.14		27.08		30.2		33.1	
	Heat	A	19	13.6	20.5	15.85	24.95	18.3	27.4	21.2	34.9	22.8	36.5	26.8	45	29.8	48	32.8	51
Start Current	Cool	A	65	79		91		107		125		133		154		172		189	
	Heat	A	65	79		91		107		125		133		154		172		189	
Compressor	Input Power	KW	4.4	5.2		6.03		7.83		9.04		10.2		11.6		13.2		15	
	Working Current	A	9	10.5		12		14.6		16.9		17.9		20.5		22.1		25	
Indoor Fan	Input Power	KW	1	1		1.43		1.43		1.91		1.91		2.7		3.6		3.6	
	Working Current	A	1.97	1.97		2.72		2.72		3.64		3.64		4.98		6.5		6.5	
Outdoor Fan	Input Power	KW	0.55	0.55		0.55		0.55		0.55		0.75		0.75		0.75		0.75	
	Working Current	A	1.2	1.2		1.2		1.2		1.2		1.6		1.6		1.6		1.6	
Recommended wires (cross area X quantity)	Indoor Power cord	mm^2×Qty.	4.0×5	1.5×5	4.0×5	1.5×5	4.0×5	1.5×5	4.0×5	1.5×5	6.0×5	1.5×5	6.0×5	1.5×5	10×5	1.5×5	10×5	1.5×5	10×5
	Outdoor Power Cord	mm^2xQty.	4×5	4×5		4×5		4×5		6×5		6×5		10×5		10×5		10×5	
	Signal Cord	mm^2×Qty.	0.75×10																

Note:

1. The specified cross area is only applied to a range of less than 15m, if it is more than 15m, cross area of wires should be increased to prevent over current.

2. The specification of installed wires varies with installation method, environment and cable type, we should increase specification to satisfy its normal starting and running.

◇ **Nominal work condition:**

Test condition	Indoor		Outdoor	
	DB(℃)	WB(℃)	DB(℃)	WB(℃)
Rated cooling	27	19	35	24
Rated heating	20	15	7	6
Electric heating	20	----	----	----
Static pressure of air flow	20 ± 2.0	± 1.0	----	----

◇ **Working range:**

Item	Indoor		Outdoor	
	DB(℃)	WB(℃)	DB(℃)	WB(℃)
Maxiumu cooling running	32	23	43	26
Minimum cooling running	21	15	21	15
Maxmum heating running	27	----	24	18
Minimum heatling running	20	----	-5	-6

Power: 3N~380V 50Hz

Voltage: 380V ± 10%

2.4 Correction of capacity

◇ Correction factor of cooling capacity in different air inlet temp. of indoor (DB) and outdoor(DB):

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

Calculation of actual cooling capacity:

Actual cooling capacity = Rated cooling capacity × Correction factor of cooling capacity

Note:——Rated cooling capacity can be got in nameplate

——Correction factor can be got in above sheet.

Cooling capacity is measured with rated air flow volume.

◇ Correction factor of cooling capacity in different air inlet temp. of indoor (DB) and outdoor(WB):

Indoor inlet air DB (℃)	Outdoor inlet air WB (℃)				
WB	-5	0	6	10	15
16	0.77	0.89	1.02	1.13	-
18	0.77	0.88	1.02	1.12	-
20	0.76	0.87	1	1.11	1.25
21	0.76	0.78	0.99	1.1	1.24
22	0.75	0.86	0.97	1.09	1.23
24	0.75	0.85	0.96	1.08	1.22

Calculation of actual cooling capacity:

Actual cooling capacity = Rated cooling capacity × Correction factor of cooling capacity

Note:——Rated cooling capacity can be got in nameplate

——Correction factor can be got in above sheet.

Cooling capacity is measured with rated air flow volume.

◇ Correction factor of cooling capacity in different installation condition:

Equivalent total length		Correction factor of cooling capacity									
		5m	10m	15m	20m	25m	30m	35m	40m	45m	50m
height difference between indoor and outdoor unit (outdoor unit is higher)	0m	1.0	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	5m	1.0	0.97	0.95	0.93	0.91	0.89	0.87	0.85	0.83	0.81
	10m	-	0.96	0.94	0.92	0.90	0.88	0.89	0.84	0.82	0.80
	15m	-	-	0.93	0.91	0.89	0.87	0.85	0.83	0.81	0.79
	20m	-	-	-	0.90	0.88	0.86	0.84	0.82	0.80	0.78
	25m	-	-	-	-	0.87	0.85	0.83	0.81	0.79	0.77
height difference between indoor and outdoor unit (indoor unit is higher)	0m	1.0	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	5m	1.0	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	10m	-	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	15m	-	-	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	20m	-	-	-	0.94	0.92	0.9	0.88	0.86	0.84	0.82
	25m	-	-	-	-	0.92	0.9	0.88	0.86	0.84	0.82

Note: Equivalent length is the length of all pipes and bends in refrigerant circuit, long pipes will impair cooling and heating capacity, probably damage compressors, In designing, use as short pipe as possible, also design one oil bend in every 4-6m height difference.

◇ The installation demand of the pipe:

Model	Dimension of the pipe		Way of connection	Max. length	Max. height difference between indoor and outdoor unit	Max.elbow number (90^0)	Supplementary refrigerant(for extended pipe)
	Big pipe (gas)	Small pipe (liquid)					
FG(R)14(H)	22 × 1.5	12 × 1	Flaring connection	20	10	6	60g/m
FG(R)16(H)	22 × 1.5	12 × 1	Flaring connection	20	10	6	60g/m
FG(R)20(H)	25 × 1.5	16 × 1	Flaring connection	30	15	8	80g/m
FG(R)25(H)	25 × 1.5	16 × 1	Flaring connection	30	15	8	80g/m
FG(R)30(H)	28 × 1.5	16 × 1	Flaring connection	40	20	10	100g/m
FG(R)35(H)	35 × 1.5	16 × 1	Jointing connection	40	20	10	100g/m
FG(R)40(H)	35 × 1.5	19 × 1	Jointing connection	40	20	10	120g/m
FG(R)45(H)	35 × 1.5	19 × 1	Jointing connection	50	25	12	120g/m
FG(R)50(H)	38 × 2	22 × 1.5	Jointing connection	50	25	12	130g/m

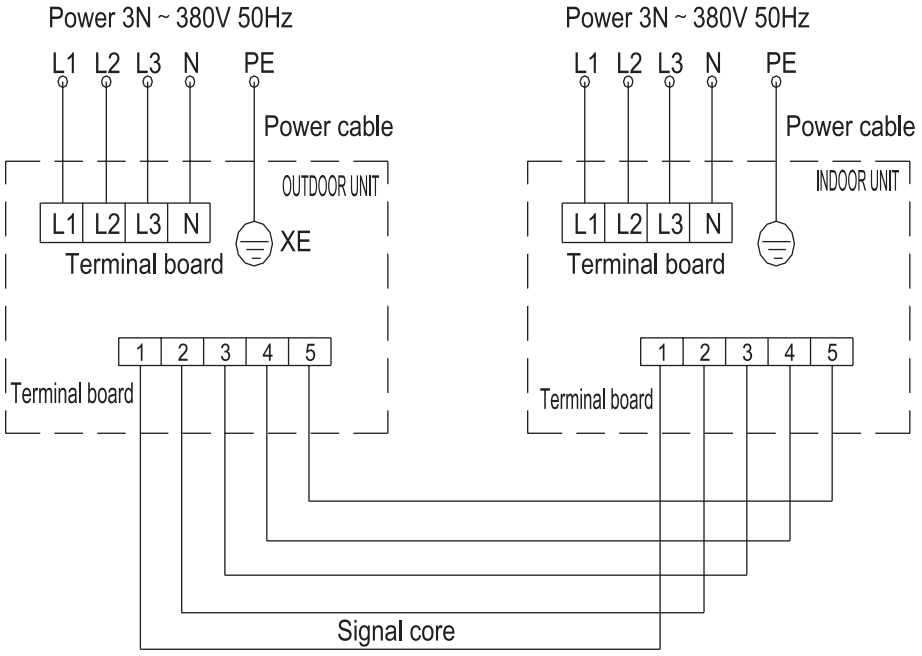
Note:

1. Standard pipe length is 10m, if connection pipes exceed 10m,you should charge mere refrigerant per extra meter as specified in above sheet.

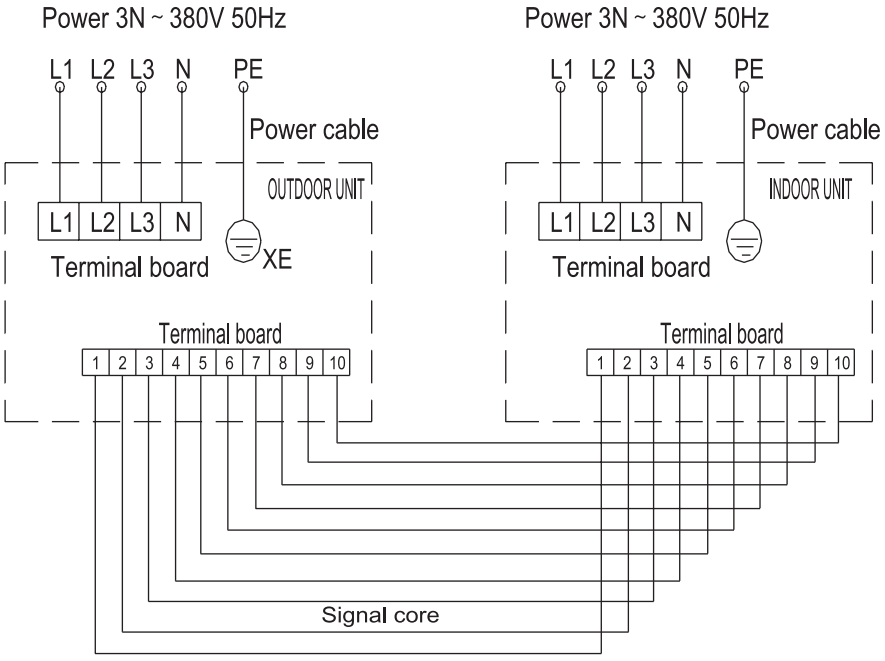
2. Cooling and heeting capacity attenuate with pipe length.

3. Circuit diagram

3.1 Electrical wiring diagram



Electrical wiring diagram of the cooling only models



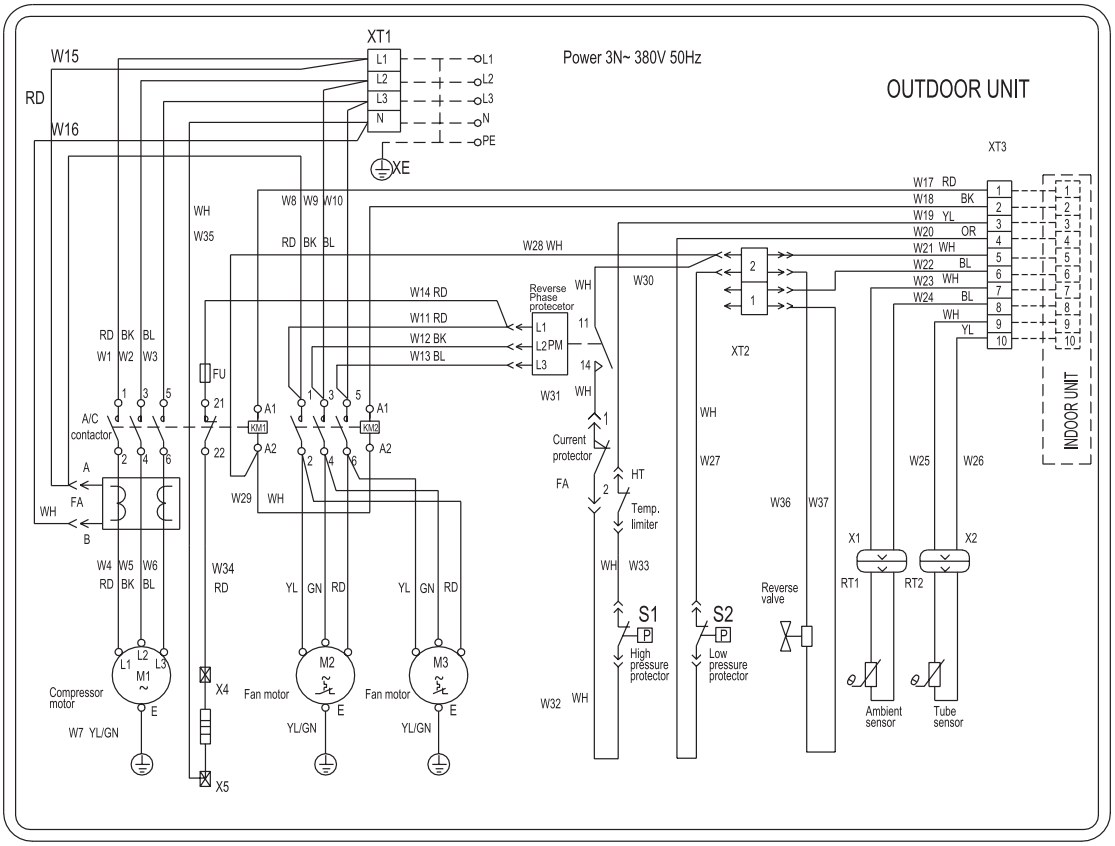
Electrical wiring diagram of the heat pump units

Note:

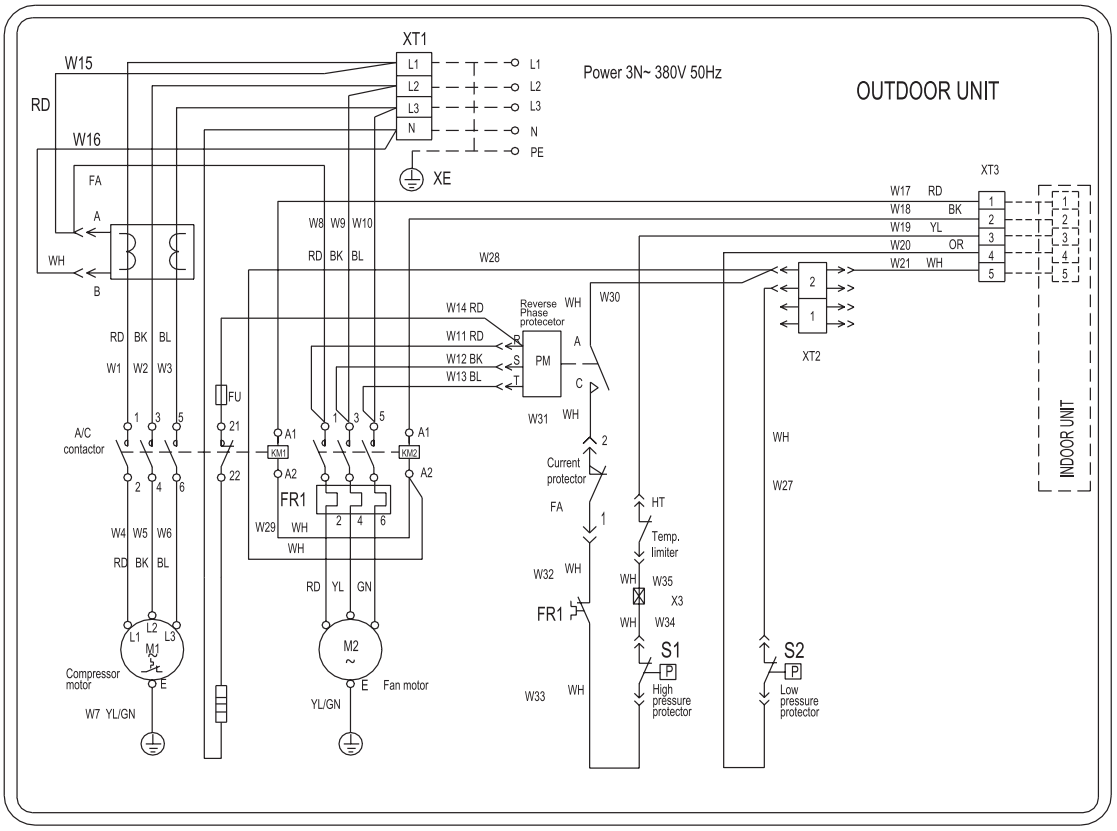
Specitfication of connecting cables and signal cable is shown in electric specification sheet.

3.2 Circuit diagram

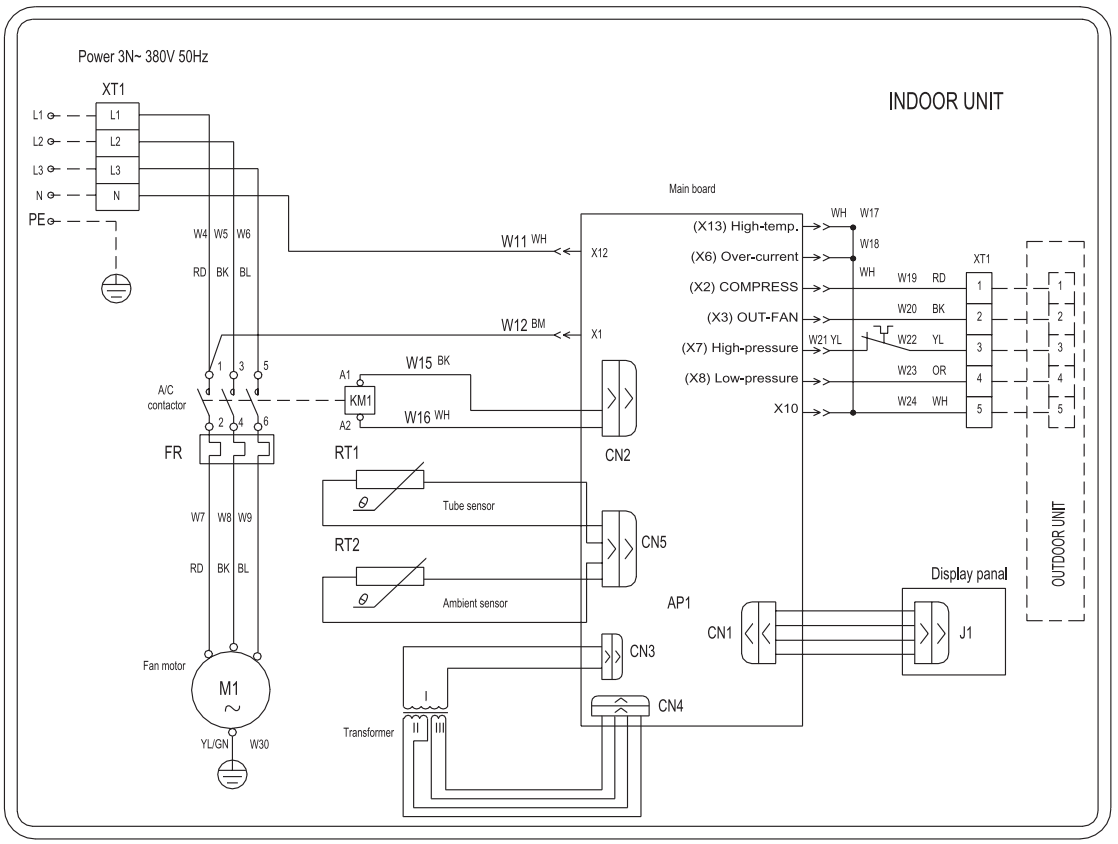
FGR35/35/40A(O)



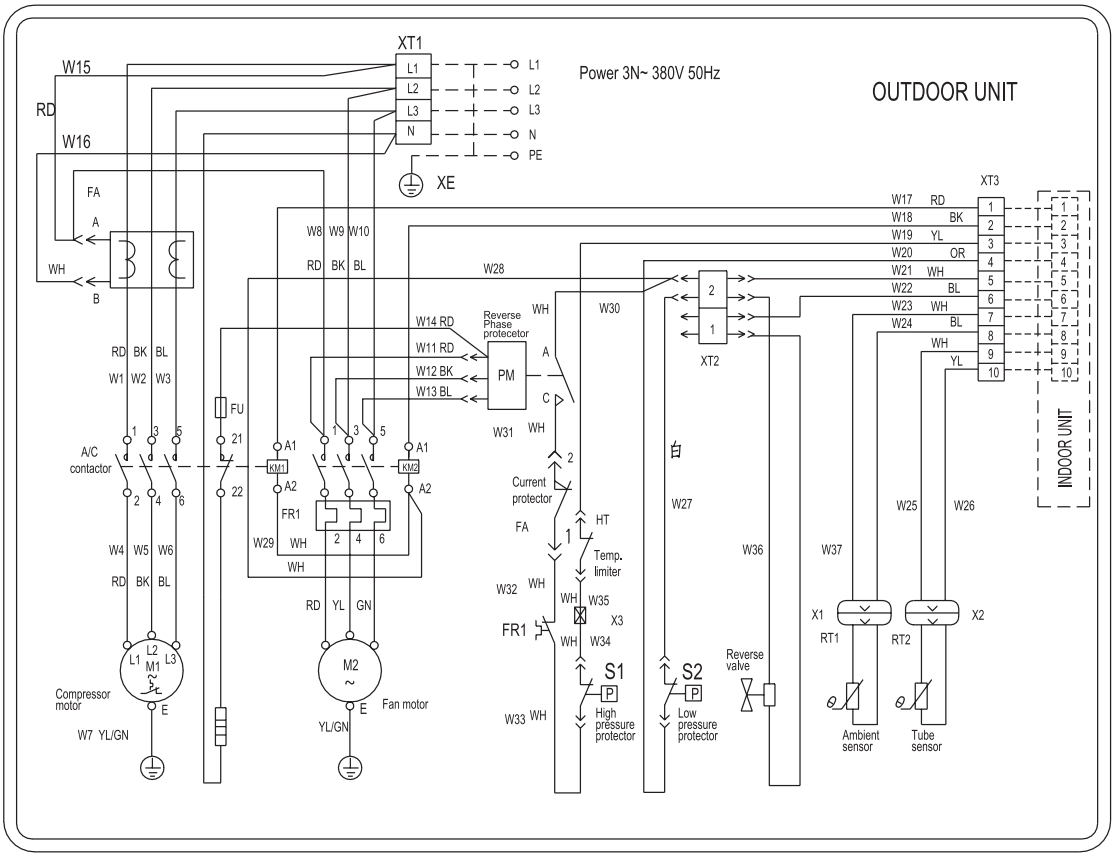
FG20/25(O)



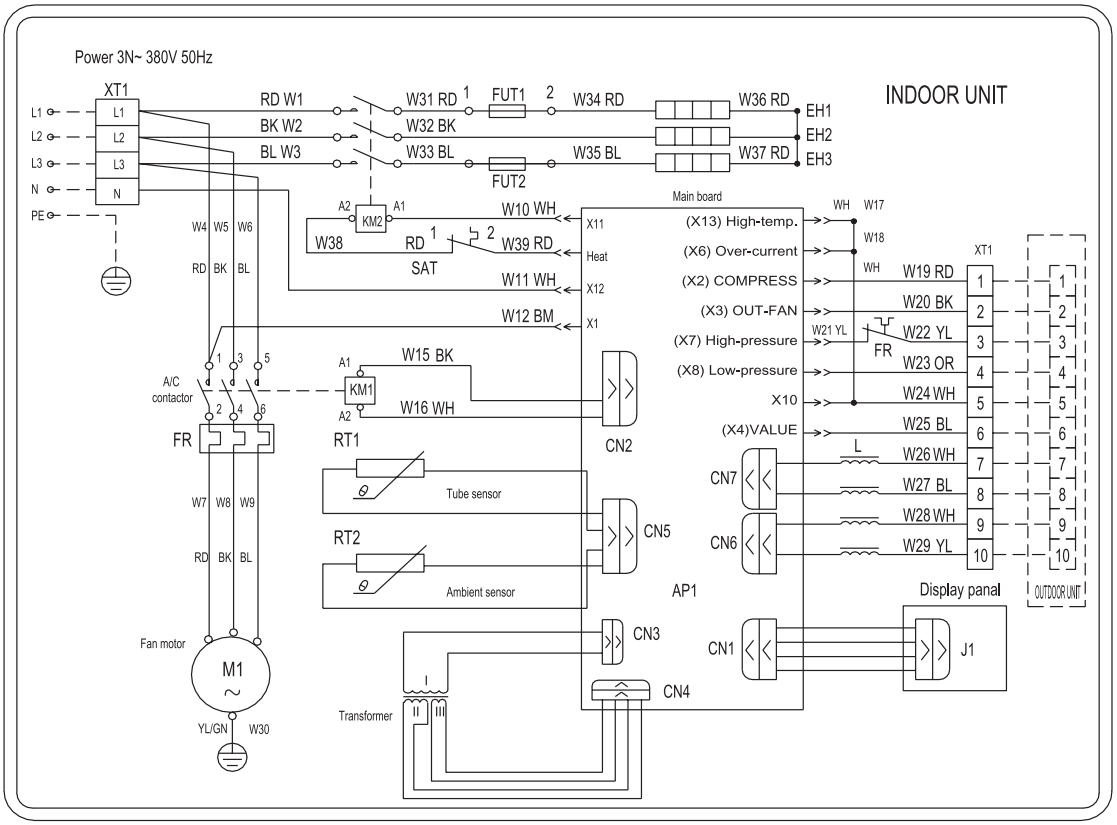
FG20/25(I)



FGR25(O)

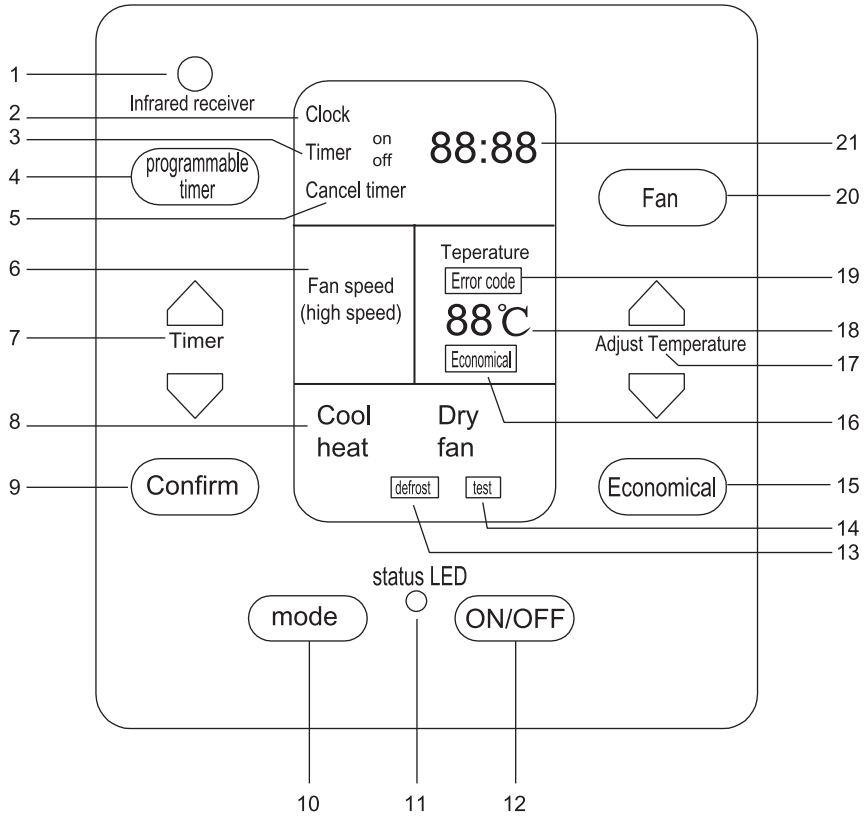


FGR25(I)



4. Operating specification

4.1 The manual controller panel (The controller similar to the ducted air conditioner KF family except the Fan speed remains high and no remote transmitter)



The manual controller is operated as the following table:

Control-key	LCD display menu
1 Infrared receiver	12 ON/OFF
2 Display clock	13 defrost
3 Timer's On/Off	14 test
4 programmable timer	15 Economical
5 Cancel timer	16 economical
6 Fan speed (auto/high/middle/low speed)	17 Adjust Temperature
7 Adjust Time	18 Temperature (or Error code)
8 Operating mode (Cool/Dry/Heat/Fan)	19 Error code
9 Confirm	20 Fan
10 Mode Select	21 Time display
11 status LED	

4.2 Operating modes (similar to the ducted air conditioner KF family)

1. On/Off

❖ Press the manual controller On/Off button turns ON the unit, the Status LED is provided in the manual controller panel reflect the operating status of the unit by blink.

❖ Press the manual controller On/Off button again ,this unit will stop and the Status LED corresponding change to be off.

2. programmable timer mode

❖ The programmable timer mode will be changed to manual operation with the following sequence while programmable timer button is pressed once.

→(clock)hour →(clock)minute → (timer On)hour → (timer On)minute → (timer Off)hour
→ (timer Off)minute → exit programmable timer mode

❖ Firstly press the programmable timer button, the (clock)hour on the LCD display menu will blink and be ready to be adjusted.

 : used to increase time;

 : used to reduce time.

Then press the programmable timer button again the (clock)minute will be adjusted. You can exit the mode by pressing the Confirm button.

Timer On/Off similar to clock adjust.

(Time will be changed with an hour (or a minute) while pressing Adjust Time button.)

❖ Press the programmable timer button while the controller dose not work at programmable timer mode:

 : display timer On(Off),be effective after pressing "confirm" button;

 : display cancel timer On(Off), be effective after pressing "confirm" button;

Note: If the user dose not press the "confirm" button in 15 second, the operation will be considered invalidate.

❖ When the user set the timer On & timer Off at the same time, the controller will automatically cancel the timer mode and generate a beep to indicate that the timer has inappropriately operated,

❖ The controller may remember when did the timer On/Off..

3 Adjust temperature

❖ Press the "Adjust temperature" button ,the temperature will be set.

 : used to increase the temperature;

 : used to reduce the temperature。

(Temperature will be changed with 1℃ while pressing "Adjust temperature" button)

Note: If the user havn't pressed the "Adjust temperature" button in 10 second, the Temperature won't display the setting temperature but room temperature.

❖ The setting temperature range at any mode is shown as following:

Heat -------- 16℃~30℃

Cool -------- 16℃~30℃

Dry -------- 16℃~30℃

4. economical mode

❖ Press the "economical" button, the unit will operate economical mode and light on the Economical LED.

❖ Press the "economical" button again, the controller will exit the Economical mode and the Economical LED OFF.

❖ In order to saving energy, the controller raises the temperature a litter in cooling operation or drops the temperature a litter in heating operation. This mode is called Economical mode.

❖ The setting temperature on the remote transmitter won't change while in the Economical mode

5. poperating mode

❖ The operating mode will be changed with the following sequence while operating mode button is pressed once.

→ Cool → Dry → Fan → Heat

❖ In cooling operation, the operating mode displays "Cool" and the setting temperature must be lower than the room temperature. If the setting temperature is higher than the room temperature, the unit won't work in cool mode but fan mode.

❖ In drying operation , the operating mode displays "Dry" and the compressor and outdoor fan work at "ON 6 OFF 4"(That's to say, they run 6 minutes and stop 4 minutes); the indoor fan speed is low speed. It is more efficiently to dry the room.

❖ In heating operation, the operating mode displays "Heat" and the setting temperature must be higher than the room temperature. If the setting temperature is lower than the room temperature, the unit won't work in heat mode.

Note: In heating operation, the unit has a pre-heat function and assistant heat by electricity.

The pre-heat function can prevent the indoor fan blowing out cool air into the room during the startup of heat mode. The assistant heat only consists in some units. We choose the assistant heat or not lie on the indoor fan speed, compressor On/Off, and room temperature.

❖ In fan operation, the operating mode displays "Fan". The room temperature can't be adjusted and the room temperature is displayed on temperature.

❖ In heating operation, outdoor unit will frost when the ambient temperature is too low and the humidity is too heavy. So defrost will start automaticly. During defrost, the heat mode is stopped and defrost is displayed .

❖ Note : cool mode units have no heat mode

6. test

When the unit is first power on and no press on any button:

Press the adjust temperature button  the unit operate heat mode forcibly and compressor On at once，4 way valve powered，high fan speed，test is displayed，the unit stopped after 5minutes.

Press the adjust temperature button  the unit operate cool mode forcibly and compressor On at once，high fan speed，test is displayed，the unit stopped after 5minutes.

* The test mode is used by factory only , if the unit operates in test mode, please press any button to exit the mode and stop the unit.

7. when the unit run out of control，error code will be lighted on。The error code is showedas the following table:

Error code	error	Error code	error
E1	Compressor high pressure cutout (beep)	F1	Indoor coil temperature failure
E2	Indoor coil freeze protection	F2	outdoor ambient temperature failure
E3	Compressor low pressure cut out (beep)	F3	outdoor coil temperature failure
F0	Indoor room temperature failure		

At this time, pleas stop the unit and ask for some career men to maintain it.

5. Installation and test run

5.1 Installation

5.1.1 Installation of indoor unit

◇ Select the location of indoor unit

● Avoid direct sunshine.

● Make sure the suspender or the structure of the building is strong enough to hold the unit。

● Make sure the drainage pipe is easy to connect out.

● The inlet and outlet of the unit should not be cumbered to keep good ventilation.

● Sufficient operational space should be maintained for the unit for taking down the servicing door and filters to maintenance.

● Make sure there is sufficient space around the unit for connecting the refrigerant pipe to outdoor unit.

● Make sure there is sufficient space around the unit for changing the belt wheel，motor，coil pipe, etc.

● There should be no danger of flammable and explosive material or flammable and explosive gas leak.

● The location should not be at the place with corrosive gas and heavy dust , fog ,lampblack and deep humidity.

● The indoor unit , power cord, connect cable should keep at least 1m distance from TV sets and receiver for avoiding interference

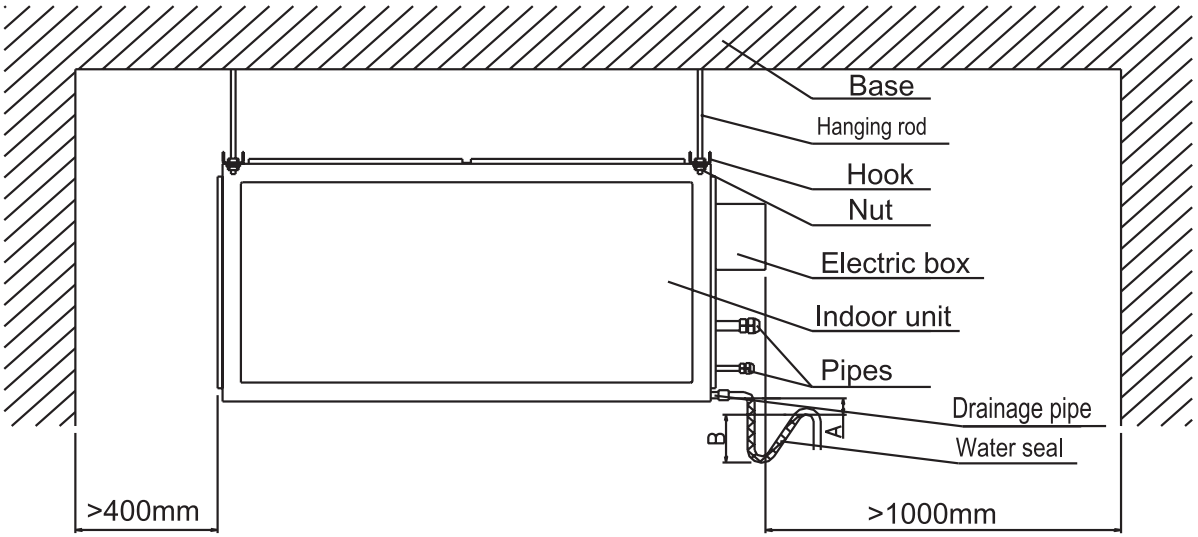


Figure 1 for indoor unit installation

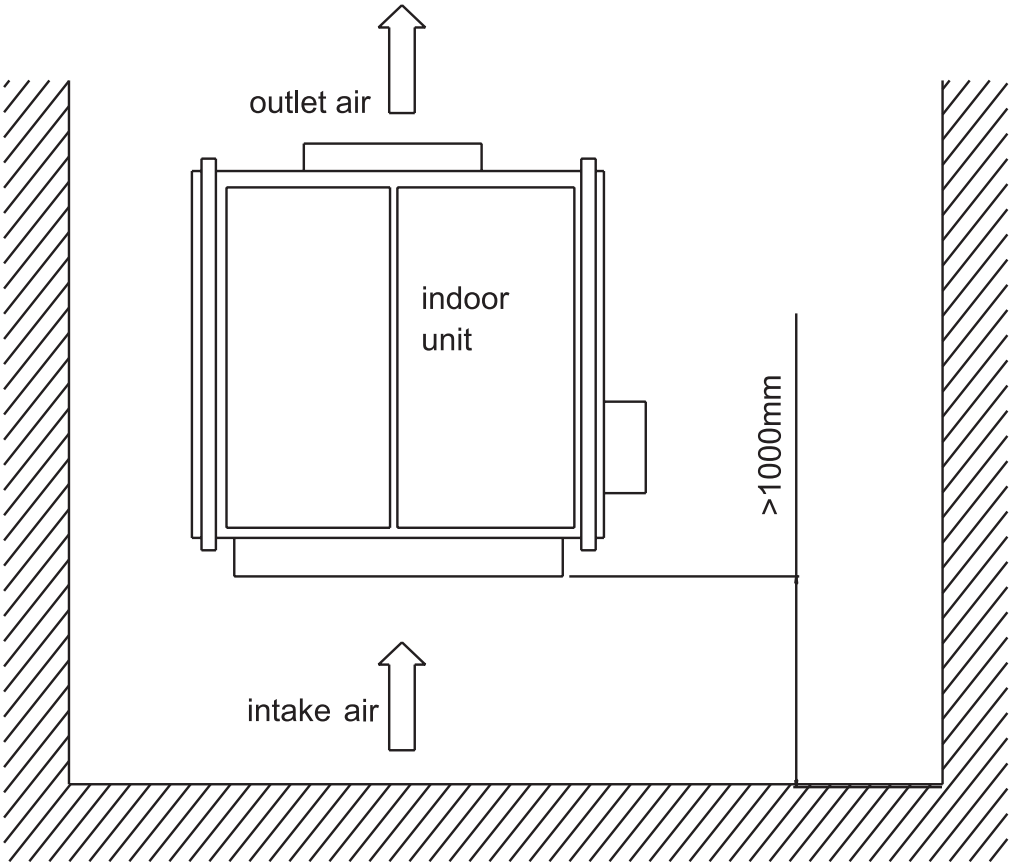


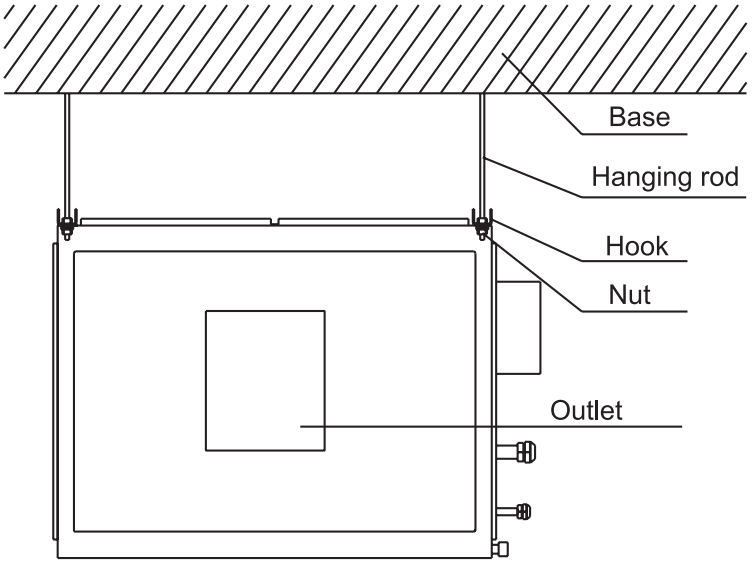
Figure 2 for indoor unit installation

◇ The installation of indoor unit

Install the indoor unit as shown below, it is important to keep the unit horizontal.

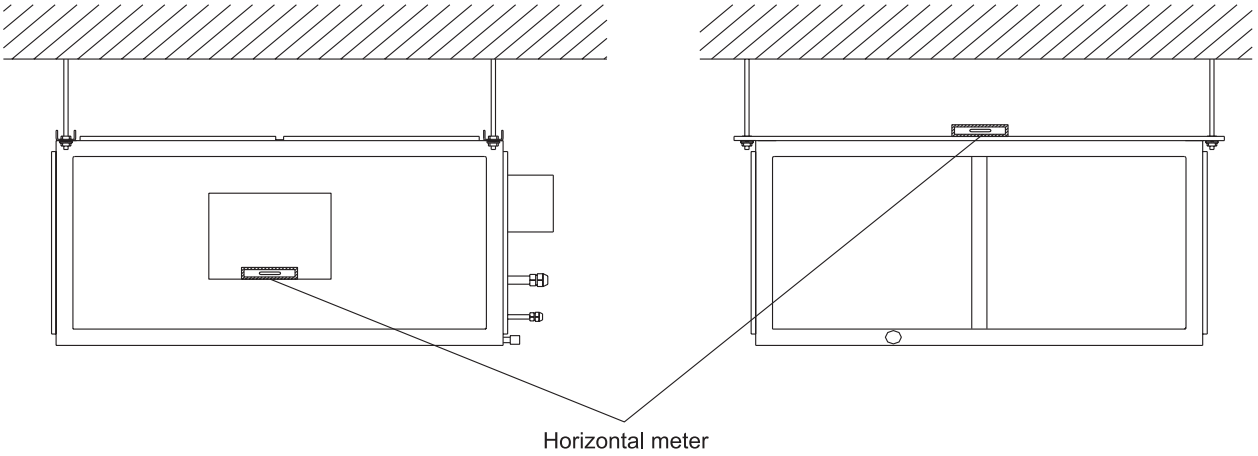
We need 4 hanging sticks to support the indoor unit, every single stick should at least stand 4 times of

the weight of the indoor unit.



◇ horizontal checking of indoor unit

Indoor unit should be installed horizontally. As shown below



◇ Installation of air ducts

● The designing of the air ducts should ensure good air flow function, in the designing , we should avoid the abrupt changing of air ducts or a bend right in front of the air outlet.

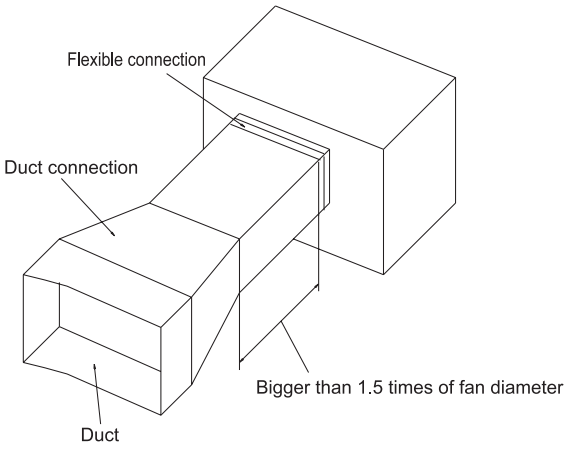
● If this machine is used as a fresh air unit, we should install a hermetic temperature-insulated valve in the fresh air duct.

● If we need a mixture of recycled air and fresh air, we can install the fresh air duct right on the recycled air duct.

● The connection between the indoor unit and the ducts should be flexible one, the weight of ducts can not be withstand by the indoor unit.

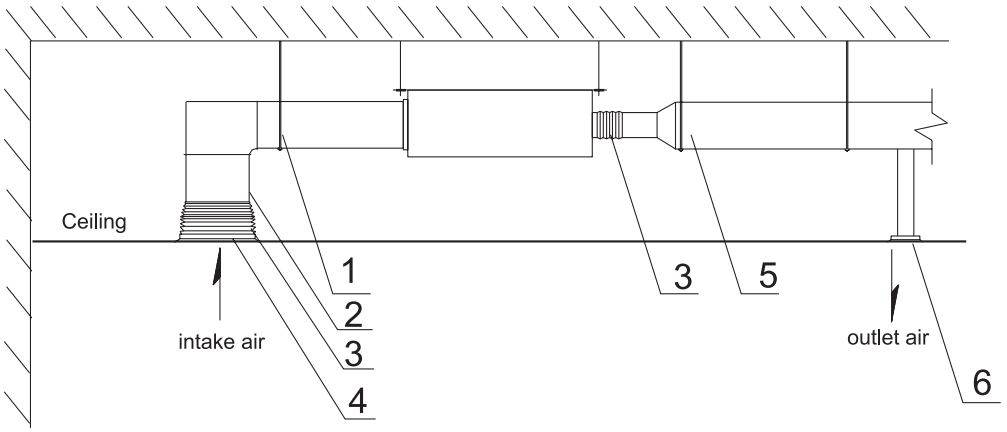
● Recycled air duct and air outlet duct should be well insulated to prevent condensate.

Note:It is forbidden to run the machine before the ducts are connected, when the machine is running, it is forbidden to disassemble the ducts.

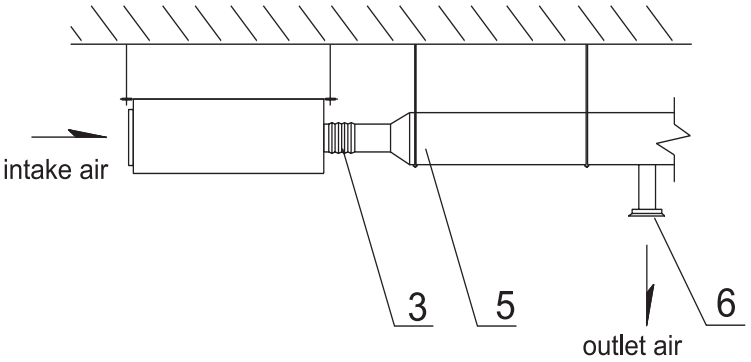


air ducts connection diagrams

● Typical installation



recycled air duct type



free suction air type

No.	Description	No	Description
1	Hanging stick	4	Suction window
2	Recycled air duct	5	Air outlet duct
3	Flexible connector	6	Air flow dispenser

Note:

1. We should consider noise and vibration reduction method in designing and installation of the ducts, noise source and air outlets should be away from the crowds.

2. It is recommended that all the air windows use condensate-proof type ,like the wooden one or plastic one.

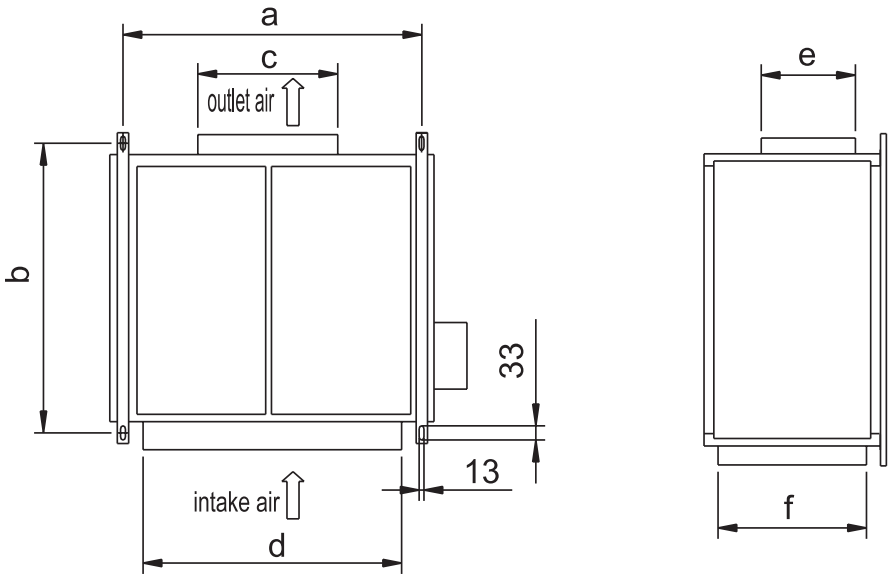
3. All the ducts should be well insulated to prevent heat leakage and condensate. Firstly, attach the male sticker on the ducts, then cover the duct with a layer of insulation foam which combined a layer of tin paper, fixed the layer with female sticker, then use the tin paper or other insulation material to seal the connection place.

4. All the ducts should be well fixed with the iron supporter which firmly attached the ceiling. All the connection places should be tightly sealed.

5. The designing and installation of ducts should conform to relative standards and regulations.

● Dimensions of indoor units

Installation dimensions of hanging stickers , air intake and air outlet holes(mm)



model		a	b	c	d	e	f
FG(R)14(H)(I)	FG(R)16(H)(I)	1180	1062	300	1120	264	355
FG(R)20(H)(I)	FG(R)25(H)(I)	1330	1062	474	1270	344	485
FG(R)30/A(H)(I)	FG(R)35/A(H)(I)	1330	1162	474	1270	404	635
FG(R)40(H)(I)	FG(R)45(H)(I)	1680	1162	474	1620	404	635
FG(R)50(H)(I)		1680	1162	474	1620	404	735

● Recommended air flow speed

Position \ Air flow speed m/s	Low speed duct		
	Residential building	Public building	Factory
Main duct	3.5~4.5	5.0~6.5	6.0~9.0
Horizontal branch duct	3.0	3.0~8.5	4.0~5.0
Air outlet duct	1.0~2.0	1.5~3.5	3.0~4.0
Air intake duct	<Air outlet duct	<Air outlet duct	<Air outlet duct

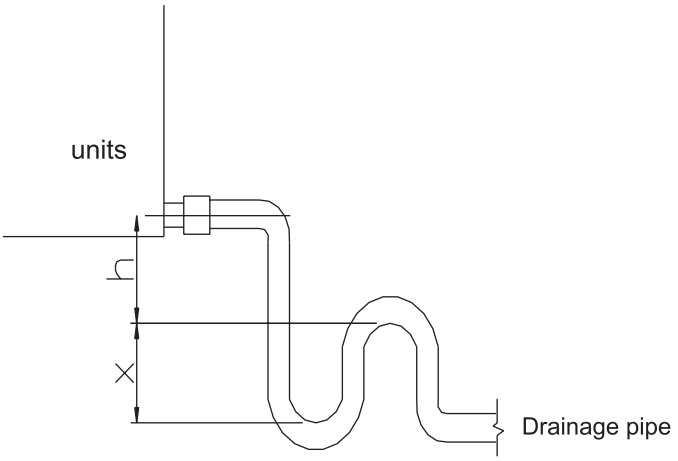
◇ Installation of drainage pipe of indoor unit

It is needed to tilt the drainage pipe to promise its good function, the connection place of the drainage pipe need to be well insulated to prevent condensate, the drainage pipe should be attached a water seal.

The static pressure in drainage pipe is negative $h=x\geqslant\frac{p}{10}+20(mm)$

The static pressure in drainage pipe is positive $x \geqslant 30mm$，$h \geqslant\frac{p}{10}+20$（mm）

P-absolute pressure in the drainage pipe，unit Pa.



Drainage pipe connection drawing

Note：1、The minimum of h should be bigger than 50mm.

2、Drainage pipe should be well insulated.

5.1.2 Installation of outdoor unit

◇ Selection of installation place of outdoor unit

● Outdoor unit should be installed on the solid ground.

● Indoor unit and outdoor unit should be as near as possible, in an effort to minimize the length of pipes and bend numbers.

● Avoid to install the outdoor unit right below the window due to noise.

● Select the installation place without direct sunshine, rain and other heat sources, otherwise you should

install shield for your outdoor unit.

● Air intake and air outlet can not be blocked.

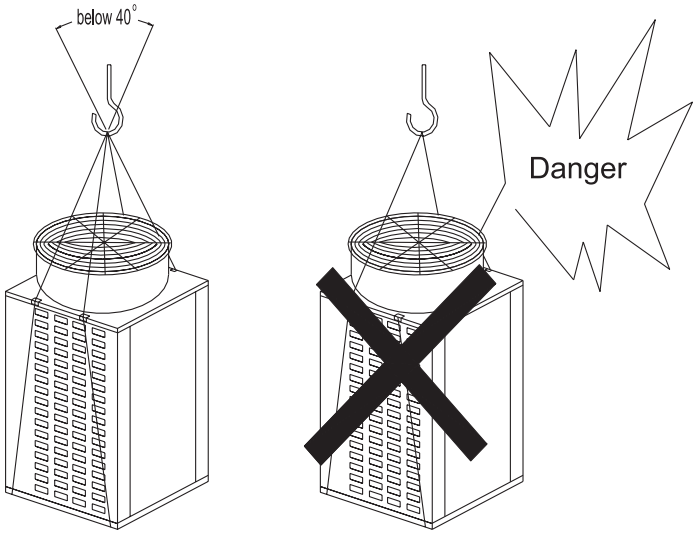
● Install the machine in a place which has good ventilation.

● Don't install the machine in place where accommodates dangerous or explosive stuffs, or dusty ,acid foggy place.

Air intake and outlet of outdoor unit can not attach ducts. In heat pump mode, condensate will drip out through the base of the outdoor unit, when ambient temperature is below 0℃（32),condensate will frost on the outdoor unit. When you installed the shield for outdoor unit, you should take the heat exchange of outdoor unit into consideration.

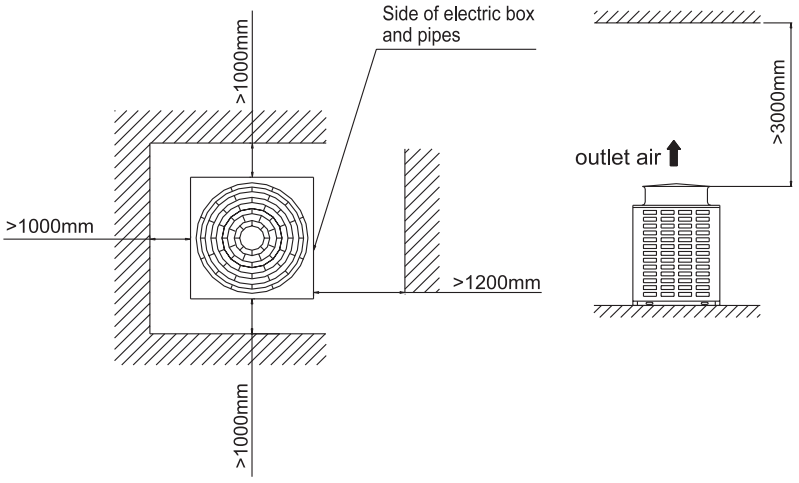
◇Transportation of outdoor unit

The angle between the ropes should be less than 40° , the below outdoor unit is the one of FG(R)25(O).

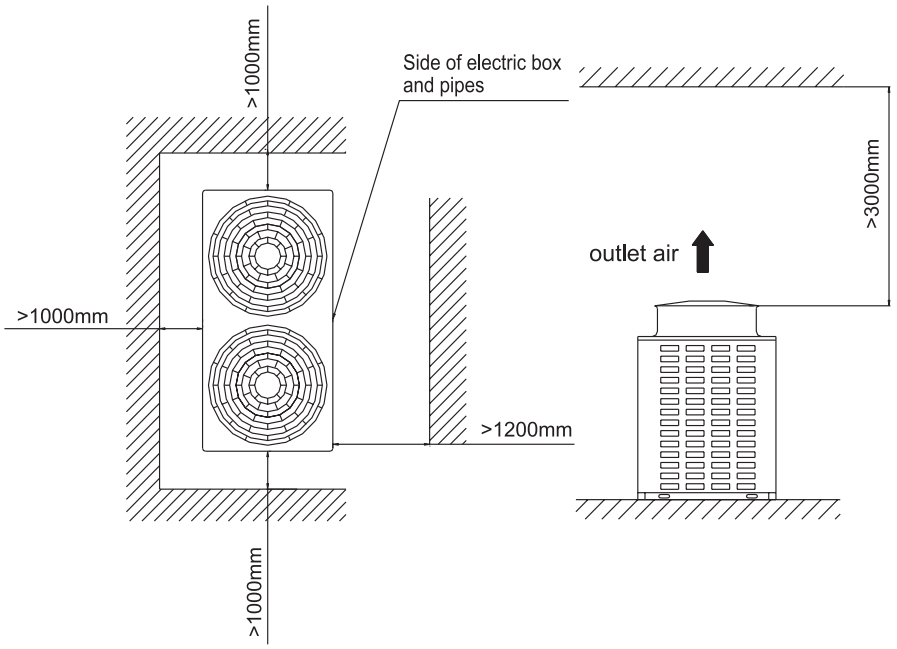


● Needed space to install outdoor unit

FG(R)14(O)、FG(R)16(O)、FG(R)20(O)、FG(R)25(O)



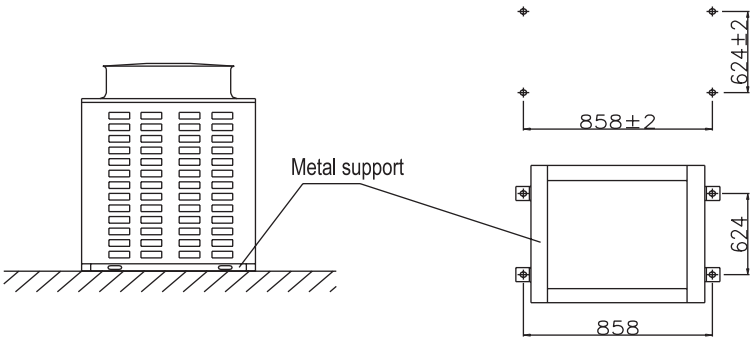
FG(R)30/A(O)、FG35(O)、FGR35/A(O)、 FG(R)40(O)、FG(R)45(O)、FG(R)50(O)



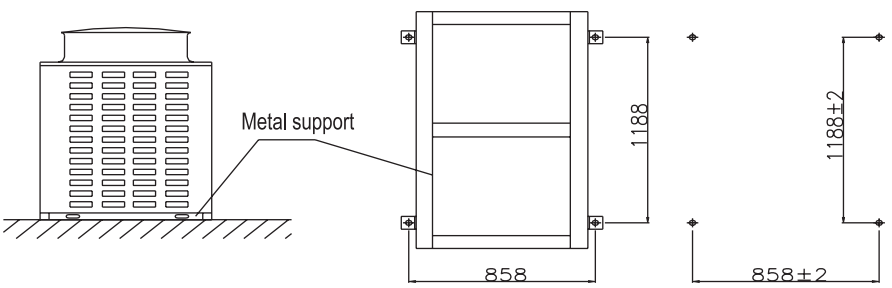
● Feet position of the outdoor unit

Use M12 bolts to fix the feet.

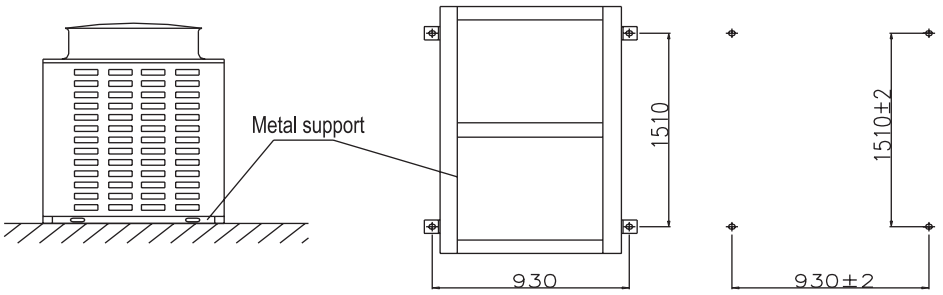
FG(R)14(O)、FG(R)16(O)、FG(R)20(O)、FG(R)25(O)



FG(R)30/A(O)、FG35(O)、FGR35/A(O)



FG(R)40(O)、FG(R)45(O)、FG(R)50(O)



5.1.3 Connection of indoor unit and outdoor unit

◇ pipes connection

A. Selection of connection pipes

Please refer to 2.4.2.4 the pipes requirement of indoor and outdoor units.

The principals designing the connection pipes are as below:

1. Use the connection pipes as short as possible, it is recommended to be within 5 m.

2. Minimize the height difference between indoor and outdoor unit.

3. Minimize the numbers of bend。

4. When connection pipe is longer than 20 m, it is needed to check if lubricative oil is enough, if necessary , pls add oil.

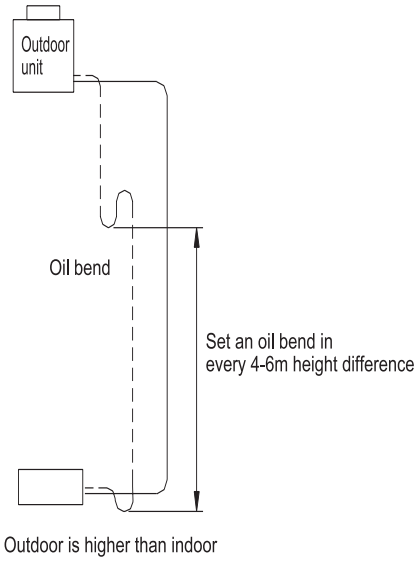
5. The standard length of the machine is 7 m,if you need longer connection pipes, pls charge more refrigerant as shown in the sheet.

6. If the height difference is bigger than 10 m, we should add one bend in every 6 m.

When indoor and outdoor unit are in different height level, pls refer to below installation drawing.

—— liquid pipe (thin)

------- gas pipe (thick)



B. Connection of pipes

● There are two ways to connect pipes, screw connection and welding connection（refer to 2.4.2.4 the pipes requirement of indoor and outdoor units）

（1）Screw connection

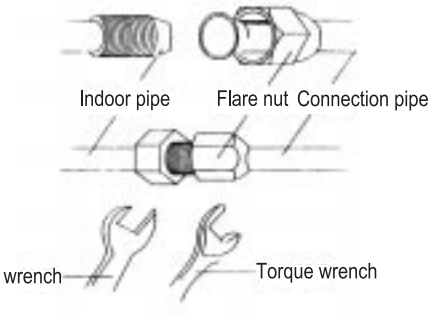
Please connect pipes as below

1. Use torque wrench to tighten nuts, the torque is required as below:

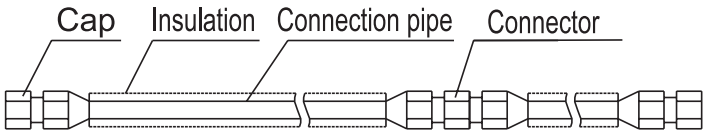
Outer diameter	Torque	Outer diameter	Description
ϕ 28mm	90-115NM	ϕ 19mm	Suction window
ϕ 25mm	80-105NM	ϕ 16mm	Air outlet duct

2. Center the copper pipe to the bolt,then screw the nut onto the bolt,it is better to mop refrigerant oil on the nut.

3. Use the torque wrench to tighten the nut till there is a sound.



4. When there is a connector between pipes, it should be fixed tightly, if indoor and outdoor unit is close enough to use one connection, it is better to use one.



pipes with connector

（2）Welding connection

Welding should follow technical process requirement to ensure quality.

1. Weld all the connecting places.

2. Burr the pipe after cutting it.

3. Charge nitrogen inside the pipe when welding it.

● Leakage test

After pipes connected, charge nitrogen into the system through gas valve, when the inner pressure reaches 1Mpa, use soap water to detect leakage in connecting places, if leakage happened, weld again.

Warning: don't use oxygen or acetylene instead of nitrogen!

● Air purge

After leakage test, use vacuum pump to vacuum the system. Other wise incondensable gas will raise system

pressure and impair performance.

● Vacuum leakage

Vacuum system pressure to 1300Pa, keep this pressure for 5 min, if this increases, find leakage place and weld again. Note: In welding connection method, we should open all the valves before vacuuming the system.

● Open valves

Refrigerant is in outdoor unit. when you finish all the installation of indoor and outdoor unit, you need to open valves ,let refrigerant fill the system. Be careful of opening valves, for angle valve, you must open to the maximum with a little bit force, then cover the cap. for ball valve ,open valve for 90° as instructed by arrow, then cover the cap. When all the valves are opened, change the label CLOSE to OPEN.

● Check leakage again

After all valves are open, leakage checking again in all connection places with soap water or electric leakage meter. After test, wipe up the tested places.

● Insulation

After all these finished, we should wrap connection pipes with insulation material tightly. Also wrap connection nuts to avoid condensate.

● Cautions:

1. Don't take off pipe caps before pipes connection.

2. After taking off caps, we should connect pipes quickly to avoid dust and water going into the system.

3. Use wall sleeve in wall hole.

4. It is better to have shortest pipes, smallest height difference between indoor and outdoor units, least bends and biggest bending radius in installing the units.

5. Don't damage pipes in installing the units, bending radius should be bigger than 200MM, don't bend pipe over 3 times in the same place, this will harden pipes.

◇ Wires connection between indoor and outdoor units.

A. Installation of wired control.

Refer to the same procedure as shown in 5.5.1.3 of KF series

B. Electrical wiring

● Refer to 4.3.2 electric diagram.

● Refer to 5.5.1.3 connection of power cord and connection wires of indoor and outdoor unit.

● We should install contactor which can cut all the power at the same time.

● Install wires according to relative standards and regulations.

● Open indoor electric box and outdoor one respectively, cross wires to the electric box. Connect wires according to electric diagrams, the specification of wires should not be lower than YZW0.75mm2,after confirmation, fix wires with wire clamp, then assemble the electric box cover.

● The unit should be grounded firmly. Earth wire can not connect with tap pipes ,gas pipes, telephone wires etc as a ground method.

● It is must to install current leakage switch or air switch with enough capacity in the circuits.

5.2 Debug

A. Preparation of trial run

1. Installation examination

● Check if pipes and wires connection comply with installation manual.

● Check if power cord, cross area of wires and air switch comply with the requirement, check if earth line is firmly grounded.

● Check if ducts and insulation comply with relative regulations

● Check if resistance of ducts comply with external static pressure of the machine.

● All the stuffs like screws and wires etc that remained in the machine after installation should be cleared.

● Check if ducts and air windows are clean and easy ventilated.

● Gas and liquid valve should be opened.

2. Examining items after installation

Item	possible defects	check
Is unit installed tightly?	It could damage unit ,vibrate abnormally or make noise.	
leakage checking done?	It impairs cooling performance.	
heat exchange of units guaranteed?	It leads to condensate and water dripping.	
drainage ok?	It leads to condensate and water dripping.	
Does power supply comply with the label?	It could damage the machine and burn the parts.	
Is installation of pipes and wires correct?	It could burn the parts and damage the unit.	
Is installation of pipes and wires correct?	there is a risk of current leakage.	
Do wires comply with regulations?	It could burn the parts and damage the machine.	
are air intake and air outlet blocked?	It impairs cooling performance.	
Is pipe length and refrigerant charge recorded?	It impairs cooling performance.	

B. Trial run

● Switch on power supply, check if the display of wired control is functional?

● Check if outside metal case is live?

● Select fan mode (detailed in 5.4.2), check if air blow is normal , is machine functional? In fan mode, outdoor unit will not run.

Note: check the current of fan motor, adjust air flow volume to control the current within rated condition.

● Start trial run (detailed in 5.4.2) ,check if the whole process is normal, if cooling and heating is normal, in this mode, indoor and outdoor unit will run.

● Check if drainage system is functional?

● After all this, use the wired control to run the machine.

● Finish the debug.

● Train users about matters of operation and maintenance.

6. Maintenance and defect diagnosis

6.1 Regular maintenance

● Filters can not be exposed to direct sunshine or fire.

● When you prepare not to use this machine for a long time, please choose fan mode for 3-4 hours to dry the internal parts.

1. Air filter

Filter is made by washable nylon , if you want clean it ,you can put it on a harder plate, then tap it gently to remove bigger particles. If necessary, you can wash it in water with mild detergent , then dry it naturally.

2. Outdoor exchanger

Outdoor exchanger must be cleaned on a regular basis, at least once two months. you can clean the surface with vacuum cleaner and nylon brush , please note don't wash it with water.

3. Belt

Some units of indoor are driven by belt, after some time, we should check the tightness of the belt.

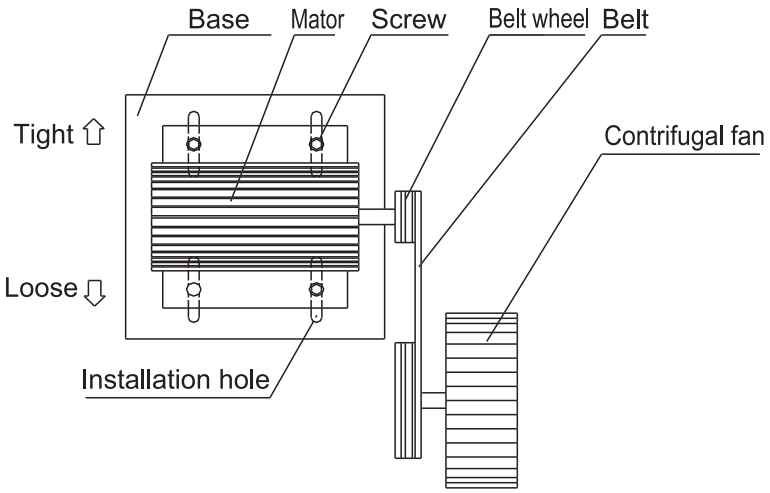
Note :adjustment of the tightness of the belt

The fans are driven by motor through belt, the speed and stability of the fans are determined by tightness of the belt. After some time , the level of tightness should be checked again, especially for new belt, it is needed to check twice within first 24 hours.

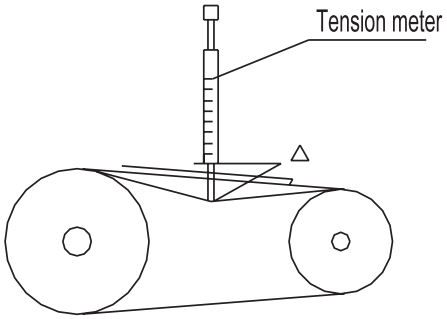
After one week running ,the tightness of the belt should be adjusted again, we should routinely check it every 1-2 months, also ensure the test results complying with the below sheet .

Cross type	Range of belt（mm）	tension（kg）	
		Maximum	Minimum
A	76-91.5, 96.5-122	1.02	0.68
B	86-106.7, 111.8-142	2.38	1.59

The adjustment is as follows, loosen screws fixing motor on the base, move motor along the direction of arrow as shown in the picture , then fix the screws again.



The tightness level of belt is tested by tension meter as shown below , when ?reaches the deviation length (deviation length= ———),read the value on the meter, the value should be in the category specified in the sheet.



4. Drainage pipe

Check if drainage pipe is blocked once every 3 months.

5. Running cautions of machine when season comes

1）Check if air intake and air outlet is blocked.

2）Check if the machine is firmly grounded.

3）Check if air filter is installed properly.

4）After a long period of stop , we should switch on the power supply 8 hours before we start the machine.

6. Maintenance after season goes

1）Clean the filter ,indoor body and outdoor body.

2）Cut off power supply.

3）Clean dust on outdoor unit.

7. Caution

When you do leakage test ,don't charge oxygen and acetylene into the system, use nitrogen and refrigerant to do this test.

6.2 Trouble shooting methods

◇ If the machine is abnormal ,check power supply and wires connection first.4 Drainage pipe Check if drainage pipe is blocked once every 3 months.

Defects	Possible reasons	Shooting method
Display E1	1. Incorrect phase sequence 2. Over current of comp. 3. High discharge t emp. of comp. 4. High discharge pressure of comp. 5. Overload of fan	1. Switch phases 2. Contact service center 3. Contact service center 4. Contact service center 5. Contact service center
Machine can not run	1. No power supply 2. Current leakage 3. Low voltage 4. ON/OFF button is in OFF. 5. Defects in control circuit	1. Turn on power supply 2. Contact service center 3. Contact power supply provider. 4. Switch to ON. 5. Contact service center.
Machine can run, but stop after a short time	1. Air intake and air outlet of indoor or outdoor are blocked 2. Abnormal control circuit 3. Pressure switch triggered 4. Indoor temp. is lower than 18℃ 5. Tube sensor is not in its position 6. Tube sensor is broken	1、Clear blockage 2. Contact service center 3. Contact service center 4. Bey ond operating range 5. Correct its position 6. Contact service center
Bad cooling performance	1. Filters are blocked 2. Air intake and air outlet of indoor or outdoor are blocked 3. Too many people or heat resources in the room 4. Door or window is open 5. Set temp is too high 6. Refrigerant leakage 7. Defective room sensor	1. Clean filters 2. Clear blockage 3. If possible, clear heat resources 4. Close door or window 5. Lower set temp. 6. Contact service center 7. Change room sensor
Bad heating performance	1. Filters are blocked 2. Air intake and air outlet of indoor or outdoor are blcked 3. Door or window is open 4. Set temp is too low 5. Refrigerant leakage 6. Ambient temp. is lower than -5℃ 7. Abnormal control circuit	1. Clean filters 2. Clear blockage 3. Close door or window 4. Heighten set temp. 5. Contact service center 6. Beyond operating range 7. Contact service center

◇ Following conditions are not defects

Defects		Reason
Machine can not run	Restart machine immediately after it stopped	Overload protector will lengthen restarting 3 min.
	Press temp. set button ,but release it immediately	
	Right after switching on power supply	The machine will not run within the first minute
Foggy air is blowing out of air outlet	Cooling mode	Indoor high temp air is cooled down quickly
Outdoor unit has high temp	Outdoor unit is stopped	Comp is emitting heat in order to restart the unit easily
Machine blows out dusts	It runs after a long period of stop	After a few minutes it will become OK
Machine blows out odour	The machine is running	It sucks in odors in the room

7. Parts list

Model: FG25H

No.	Description		Part No.	Qty
			FG25H	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器	43110168	1
4	Terminal board	接线板	42011202	1
5	Sensor	四芯感温包	39000182	1
6	AC contactor	交流接触器LC1D320M7C	44010214	1
7	Overload protector	过流保护器 22A	46020114	1
8	AC contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双胶线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal board 2-8	接线板2-8	42011103	1
16	Compressor and fittings	压缩机及其配件	00100057	1
17	Accumulator	汽液分离器	07228003	1
18	Fan	风机组件	15018605	1
19	Motor SW300A	电机SW300A	15018606	1
20	Motor M2QA-90S4A	电机M2QA-90S4A	15018304	1
21	Belt	皮带SPZ	76318312	2
22	Drier	干燥过滤器BFK-165S	07218201	1
23	Fan	风叶（室外机）	10518601	1
24	Belt wheel	皮带轮2-SPZ80- ϕ 24	73010201	1
25	Belt wheel	皮带轮2-SPZ100- ϕ 31	73010203	1

FG series duct type air conditioner (Heat Pump)

Model: FG25

No.	Description		Part No.	Qty
			FG25	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器	43110168	1
4	Terminal board	接线板	42011202	1
5	Sensor	四芯感温包	39000182	1
6	AC contactor	交流接触器LC1D320M7C	44010214	1
7	Overload protector	过流保护器 22A	46020114	1
8	AC contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双胶线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal board 2-8	接线板2-8	42011103	1
16	Compressor and fittings	压缩机及其配件	00100057	1
17	Accumulator	汽液分离器	07228003	1
18	Fan	风机组件	15018605	1
19	Motor SW300A	电机SW300A	15018606	1
20	Motor M2QA-90S4A	电机M2QA-90S4A	15018304	1
21	Belt	皮带SPZ	76318313	2
22	Drier	干燥过滤器BFK-165S	07218201	1
23	Cooling expand valve	制冷膨胀阀	07120307	1
24	Fan	风叶（室外机）	10518601	1
25	Belt wheel	皮带轮2-SPZ80- ϕ 24	73010201	1
26	Belt wheel	皮带轮2-SPZ100- ϕ 31	73010205	1

Model: FGR25

No.	Description		Part No.	Qty
			FGR25	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器	43110168	1
4	Terminal board	接线板	42011202	1
5	Sensor	四芯感温包	39000182	1
6	AC contactor	交流接触器LC1D320M7C	44010214	1
7	Overload protector	过流保护器 22A	46020114	1
8	AC contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双胶线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal board 2-8	接线板2-8	42011103	1
16	Compressor and fittings	压缩机及其配件	00100057	1
17	4-way valve	四通阀STF-0716	43000406	1
18	Accumulator	汽液分离器	07228003	1
19	Fan	风机组件	15218312	1
20	Motor SW300A	电机SW300A	15018606	1
21	Drier	干燥过滤器BKF-165S	07218201	1
22	Fan	风叶（室外机）	10518601	1

Model: FGR30H

a. Electric elimcnts

No.	Description		Part No.	Qty
			FGR30H	
1	PCB	主板Z4235	30224005	1
2	Display PCB	显示板Z4235	30294006	1
3	Transformer	电源变压器SC25A	43110168	1
4	14-way terminal	接线板(14位)	42011144	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	3
9	Thermal relay	热继电器LR2-D1308C	44020347	3
10	Contactor	交流接触器GC3-18/01KK	44010226	1
11	4-core cable	四芯双绞线	40010232	1
12	Phase reverse protector	逆相保护器	46020052	1
13	Fan wire	风机线YZW4X1.0	40010341	1
14	Tube sensor	室外管温感温包	39000184	1
15	Ambient sensor	室外环境感温包	39000183	1
16	Temp. limiter	限温器130℃	45040012	1
17	4-way terminal	四位接线板(60A)	42011051	1
18	10-way terminal	十位接线板	42011135	1
19	Terminal 2-8	接线板2-8	42011103	1

b. System element

No.	Description		Part No.	Qty
			FGR30H	
1	Compressor	压缩机及其配件ZR125KC-TFD-522	00100043	1
2	Thermal valve	热力膨胀阀TDEX8	07130312	2
3	Drier	干燥过滤器BFK-165S	07218201	1
4	4-way valve	四通阀（STF-0722）	430004061	1
5	Accumulator	汽液分离器	07228003	1
6	Fan motor	电机SW300B	15018607	2
7	Fan	风叶	10358202	2
8	Motor	电机M2QA-90L4A	15018303	1
9	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
10	Belt wheel	风机皮带轮2-SPA112- Φ 30	10548011	1
11	Belt	皮带SPA1207mm	76318304	2

Model: FG30H

a. Electric elements

No.	Description		Part No.	Qty
			FG30H	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器SC25A	43110168	1
4	9-way terminal	接线板(9位)	42011202	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双绞线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp. limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板(60A)	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal 2-8	接线板2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FG30H	
1	Compressor	压缩机及其配件ZR125KC-TFD-522	00100043	1
2	Thermal valve	热力膨胀阀TDEX11	07138308	1
3	Drier	干燥过滤器BFK-165S	07218201	1
4	Accumulator	汽液分离器	07228003	1
5	Motor	电机SW300B	15018607	2
6	Fan	风叶	10358202	2
7	Motor	电机M2QA-90S4A	15018303	1
8	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
9	Belt wheel	风机皮带轮2-SPA132- Φ 30	10548011	1
10	Belt	皮带SPA(1207mm)	76318304	2

Model: FG35/A

a. Electric elements

No.	Description		Part No.	Qty
			FG35/A	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器SC25A	43110168	1
4	9-way terminal	接线板(9位)	42011202	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双绞线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp. limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板(60A)	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal 2-8	接线板2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FG35/A	
1	Compressor	压缩机及其配件ZR144KC-TFD-522	00100049	1
2	Thermal valve	热力膨胀阀TDEX11	07138308	1
3	Drier	干燥过滤器BFK-165S	07218201	1
4	Accumulator	汽液分离器	07228003	1
5	Motor	电机SW300B	15018607	2
6	Fan	风叶	10358202	2
7	Motor	电机M2QA-90S4A	15018303	1
8	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
9	Belt wheel	风机皮带轮2-SPA132- Φ 30	10548011	1
10	Belt	皮带SPA(1250mm)	76318305	2

Model: FG35H/A

a. Electric elements

No.	Description		Part No.	Qty
			FG35H/A	
1	PCB	主板 Z4215	30224004	1
2	Display PCB	显示板 Z4215	30294005	1
3	Transformer	电源变压器 SC25A	43110168	1
4	9-way terminal	接线板(9 位)	42011202	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器 LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器 LC1D1210M7C	44010232	1
9	4-core cable	四芯双绞线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线 YZW4X1.0	40010341	1
12	Temp limiter	限温器 130℃	45040012	1
13	4-way terminal	四位接线板(60A)	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal 2-8	接线板 2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FG35H/A	
1	Compressor	压缩机及其配件ZR144KC-TFD-522	00100049	1
2	Thermal valve	热力膨胀阀 TDEX11	07138308	1
3	Drier	干燥过滤器 BFK-165S	07218201	1
4	Accumulator	汽液分离器	07228003	1
5	Motor	电机 SW300B	15018607	2
6	Fan	风叶	10358202	2
7	Motor	电机 M2QA-90L4A	15018303	1
8	Belt wheel	电机皮带轮 2-SPA80- Φ 24	10548010	1
9	Belt wheel	风机皮带轮 2-SPA112- Φ 30	10548011	1
10	Belt	皮带 SPA1207mm	76318304	2

Model: FGR30

a. Electric elements

No.	Description		Part No.	Qty
			FGR30	
1	PCB	主板Z4235	30224005	1
2	Display PCB	显示板Z4235	30294006	1
3	Transformer	电源变压器SC25A	43110168	1
4	14-way terminal	接线板(14 位)	42011144	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	3
9	Thermal relay	热继电器LR2-D1308C	44020347	3
10	Contactor	交流接触器GC3-18/01KK	44010226	1
11	4-core cable	四芯双绞线	40010232	1
12	Phase reverse protector	逆相保护器	46020052	1
13	Fan wire	风机线YZW4X1.0	40010341	1
14	Tube sensor	室外管温感温包	39000184	1
15	Ambient sensor	室外环境感温包	39000183	1
16	Temp. limiter	限温器130℃	45040012	1
17	4-way terminal	四位接线板(60A)	42011051	1
18	10-way terminal	十位接线板	42011135	1
19	Terminal 2-8	接线板2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FGR30	
1	Compressor	压缩机及其配件ZR125KC-TFD-522	00100043	1
2	Thermal valve	热力膨胀阀TDEX8	07138308	2
3	Drier	干燥过滤器BFK-165S	07218201	1
4	4-way valve	四通阀（STF-0722）	430004061	1
5	Accumulator	汽液分离器	07228003	1
6	Motor	电机SW300B	15018607	2
7	Fan	风叶	10358202	2
8	Motor	电机M2QA-90S4A	15018303	1
9	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
10	Belt wheel	风机皮带轮2-SPA132- Φ 30	10548012	1
11	Belt	皮带SPA(1250mm)	76318305	2

Model: FG30

a. Electric elements

No.	Description		Part No.	Qty
			FG30	
1	PCB	主板Z4215	30224004	1
2	Display PCB	显示板Z4215	30294005	1
3	Transformer	电源变压器SC25A	43110168	1
4	9-way terminal	接线板(9位)	42011202	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	1
9	4-core cable	四芯双绞线	40010232	1
10	Phase reverse protector	逆相保护器	46020052	1
11	Fan wire	风机线YZW4X1.0	40010341	1
12	Temp. limiter	限温器130℃	45040012	1
13	4-way terminal	四位接线板(60A)	42011051	1
14	6-way terminal	六位接线板	42011255	1
15	Terminal 2-8	接线板2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FG30	
1	Compressor	压缩机及其配件ZR125KC-TFD-522	00100043	1
2	Thermal valve	热力膨胀阀TDEX8	07130312	1
3	Drier	干燥过滤器BFK-165S	07218201	1
4	Accumulator	汽液分离器	07228003	1
5	Motor	电机SW300B	15018607	2
6	Fan	风叶	10358202	2
7	Motor	电机M2QA-90S4A	15018304	1
8	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
9	Belt wheel	风机皮带轮2-SPA132- Φ 30	10548011	1
10	Belt	皮带SPA(1250mm)	76318305	2

Model: FGR35/A

a. Electric elements

No.	Description		Part No.	Qty
			FGR35/A	
1	PCB	主板Z4235	30224005	1
2	Display PCB	显示板Z4235	30294006	1
3	Transformer	电源变压器SC25A	43110168	1
4	14-way terminal	接线板(14 位)	42011144	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器LC1D1210M7C	44010232	3
9	Thermal relay	热继电器LR2-D1308C	44020347	3
10	Contactor	交流接触器GC3-18/01KK	44010226	1
11	4-core cable	四芯双绞线	40010232	1
12	Phase reverse protector	逆相保护器	46020052	1
13	Fan wire	风机线YZW4X1.0	40010341	1
14	Tube sensor	室外管温感温包	39000184	1
15	Ambient sensor	室外环境感温包	39000183	1
16	Temp. limiter	限温器130℃	45040012	1
17	4-way terminal	四位接线板(60A)	42011051	1
18	10-way terminal	十位接线板	42011135	1
19	Terminal 2-8	接线板2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FGR35/A	
1	Compressor	压缩机及其配件ZR144KC-TFD-522	00100049	1
2	Thermal valve	热力膨胀阀TDEX11	07138308	2
3	Drier	干燥过滤器BFK-165S	07218201	1
4	4-way valve	四通阀（STF-0722）	430004061	1
5	Accumulator	汽液分离器	07228003	1
6	Motor	电机SW300B	15018607	2
7	Fan	风叶	10358202	2
8	Motor	电机M2QA-90S4A	15018303	1
9	Belt wheel	电机皮带轮2-SPA80- Φ 24	10548010	1
10	Belt wheel	风机皮带轮2-SPA132- Φ 30	10548011	1
11	Belt	皮带SPA(1250mm)	76318305	2

Model: FGR35H/A

a. Electric elements

No.	Description		Part No.	Qty
			FGR35H/A	
1	PCB	主板 Z4235	30224005	1
2	Display PCB	显示板 Z4235	30294006	1
3	Transformer	电源变压器 SC25A	43110168	1
4	14-way terminal	接线板(14 位)	42011144	1
5	4-core sensor	四芯感温包	39000182	1
6	Contactor	交流接触器 LC1D3201M7C	44010214	1
7	Current protector	过流保护器 26.4A	46020113	1
8	Contactor	交流接触器 LC1D1210M7C	44010232	3
9	Thermal relay	热继电器 LR2-D1308C	44020347	3
10	Contactor	交流接触器 GC3-18/01KK	44010226	1
11	4-core cable	四芯双绞线	40010232	1
12	Phase reverse protector	逆相保护器	46020052	1
13	Fan wire	风机线 YZW4X1.0	40010341	1
14	Tube sensor	室外管温感温包	39000184	1
15	Ambient sensor	室外环境感温包	39000183	1
16	Temp limiter	限温器 130℃	45040012	1
17	4-way terminal	四位接线板(60A)	42011051	1
18	10-way terminal	十位接线板	42011135	1
19	Terminal 2-8	接线板 2-8	42011103	1

b. System elements

No.	Description		Part No.	Qty
			FGR35H/A	
1	Compressor	压缩机及其配件 ZR144KC-TFD-522	00100049	1
2	Thermal valve	热力膨胀阀 TDEX11	07138308	2
3	Drier	干燥过滤器 BFK-165S	07218201	1
4	4-way valve	四通阀（STF-0722）	430004061	1
5	Accumulator	汽液分离器	07228003	1
6	Motor	电机 SW300B	15018607	2
7	Fan	风叶	10358202	2
8	Motor	电机 M2QA-90L4A	15018303	1
9	Belt wheel	电机皮带轮 2-SPA80- Φ 24	10548010	1
10	Belt wheel	风机皮带轮 2-SPA112- Φ 30	10548011	1
11	Belt	皮带 SPA(1207mm)	76318304	2

FG SERIES MINI-DUCT TYPE AIR CONDITIONER(2.6kW~12kW)

A. Brief

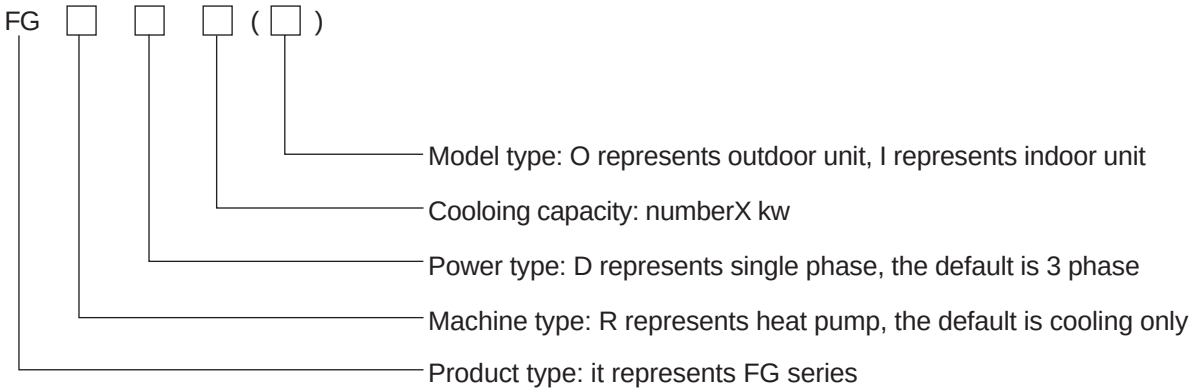
FG series mini-duct type air conditioners are developed based on KF series duct type air conditioners which have been produced for a long time, it features long distance air blow, high reliability, etc, it also has below advantages compared with KF series:

1. It increases external static pressure, it has two options of high static pressure and normal static pressure, the two options can be realized by changing the wires connection in electric box.

2. We added a fresh air hole in the indoor unit, it is more easy to exchange air and improve the air quality.

3. We added another model of single phase 4 horsepower based on the original 3 phase 4 horsepower machine.

B. Model description



Example:

FGRD10：Heat pump FG series duct type air conditioner with 10kw cooling capacity.

FG6.5：Cooling only FG series duct type air conditioner with 6.5kw cooling capacity.

C. Structure

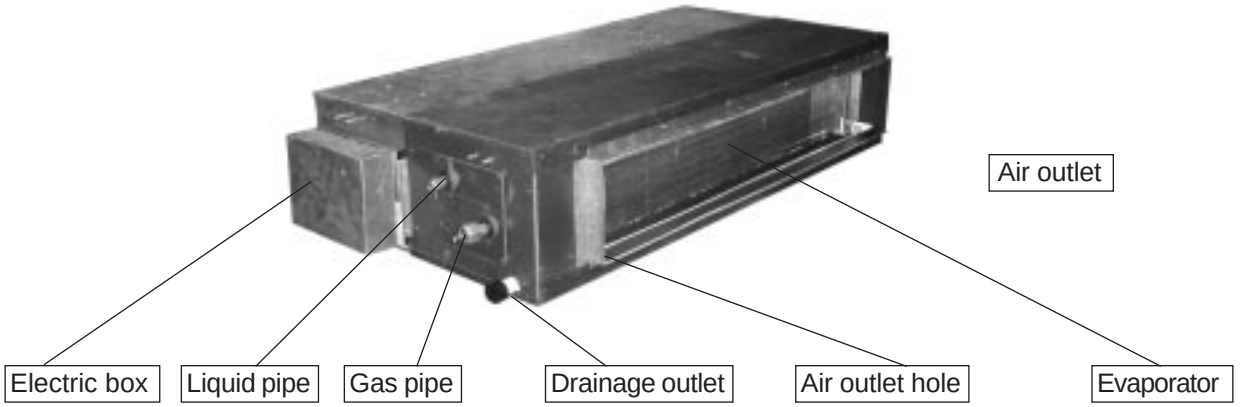
The main outline difference between FG series mini-duct type and KF series duct type.

1. The indoor heat exchanger of KF series is inclined, but the one of FG series is vertical, so the FG series is thinner than KF series with the same cooling capacity.

2. The drainage hole of KF series is in the middle of the unit, but the one of FG series is in the front.

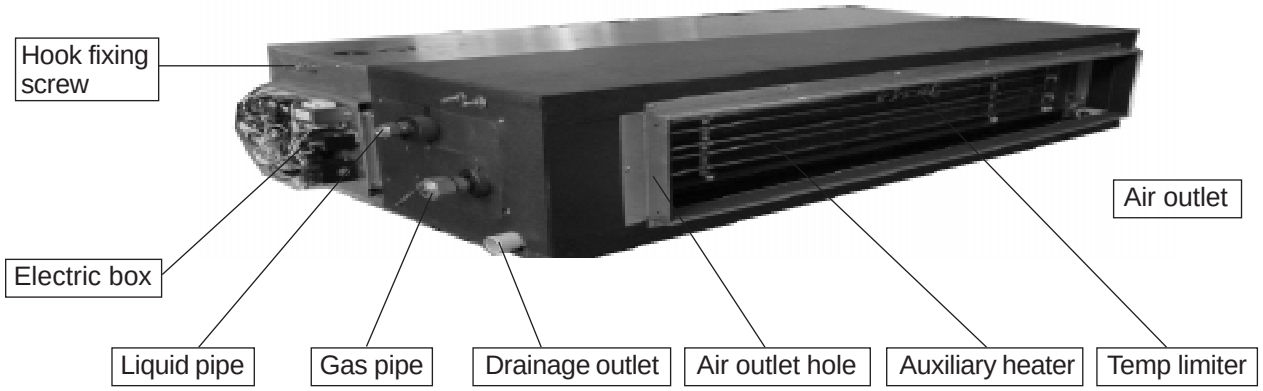
3. Air intake holes of different models of KF series have the same size, but the ones of FG series have different sizes.

Indoor unit of FG12

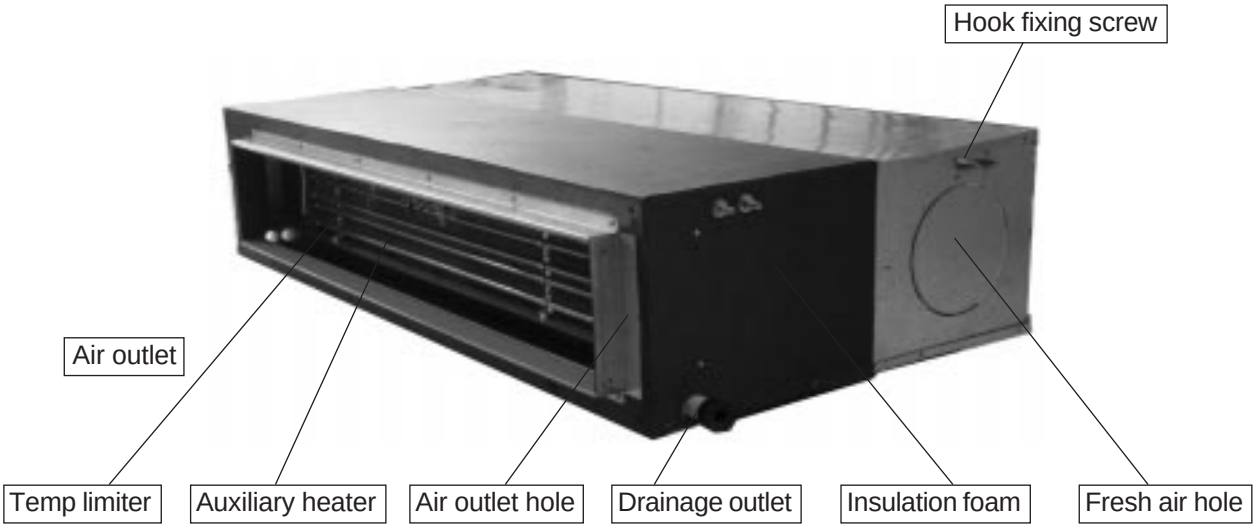


The below is the indoor unit of FGR12:

Left-front view of indoor unit of FGR12



Right-front view of indoor unit of FGR12



D. Specifications of FG series mini-duct type air conditioners

				Cooling only		Heat pump	
Indoor unit				FG2.6(I)	FG3.5(I)	FG2.6(I)	FG3.5(I)
Outdoor unit				FG2.6(O)	FG3.5(O)	FGR2.6(O)	FGR3.5(O)
Cooling capacity			W	2650	3500	2650	3500
			BTU/h	9040	11940	9040	11940
Heating capacity (heat pump/aux. heater)			W	---	---	3100+500	3800+800
			BTU/h	---	---	20460/25640	23900/31050
Current	Cooling		A	4.2	6.6	4.5	6.8
	Heat pump/ aux.heater		A	---	---	5.0/7.3	6.1/9.7
Power input	Cooling		W	900	1350	960	1390
	Heat pump/ aux.heater		W	---	---	1040/1540	1270/2070
Power supply				~220V 50Hz			
Compressor				Hermetically rotary			
Air flow volume			m^3/h	450	570	450	570
Ex. Static pressure			Pa	High 35Pa; Normal 10Pa			
Noise	Indoor		dB(A)	40	43	40	43
	Outdoor		dB(A)	55	56	55	56
Refrigerant				R22			
Refri. charge(kg)				0.8	0.95	0.9	1.05
Connection pipes	Liquid		mm	ϕ 6	ϕ 6	ϕ 6	ϕ 6
	Gas		mm	ϕ 9.52	ϕ 12	ϕ 9.52	ϕ 12
Indoor unit	Width		mm	913			
	Depth		mm	680			
	Height		mm	220			
	Net weight		mm	27			
	Air outlet size	L	mm	515			
		W	mm	172			
	Air intake size	L	mm	750			
		W	mm	172			
Outdoor unit	Width		mm	760			
	Depth		mm	250			
	Height		mm	530			
	Net weight		kg	32			
Drainage pipe(outside × inside)			mm	ϕ 20 × 1.5			

FG series duct type air conditioner (Heat Pump)

Continue

				Cooling only			Heat pump		
Indoor unit				FG5(I)	FG6.5(I)	FG7(I)	FG5(I)	FGR6.5(I)	FGR7.5(I)
Outdoor unit				FG5(O)	FG6.5(O)	FG7.5(O)	FGR5(O)	FGR6.5(O)	FGR7.5(O)
Cooling capacity			W	5000	6500	7700	5000	6500	7500
			BTU/h	17070	22200	26290	17070	22200	25610
Heating capacity (heat pump/aux. heater)			W	---	---	---	5800/7300	7200/9300	8200/10300
			BTU/h	---	---	---	19800/24930	24580/31730	27980/35180
Current	Cooling		A	8.9	12	13.7	8.9	12	13.9
	Heat pump/ aux.heater		A	---	---	---	8.54/15.7	10.9/20.4	12.7/22.2
Power input	Cooling		W	1980	2550	2800	1980	2550	2840
	Heat pump/ aux.heater		W	---	---	---	1850/3350	2300/4400	2600/4700
Power supply				~220V 50Hz					
Compressor				rotary		scroll	rotary		scroll
Air flow volume			m^3/h	840	1400		840	1400	
Ex. Static pressure			Pa	80Pa; 50Pa	High 100Pa; Normal 60Pa		80Pa; 50Pa	High 100Pa; Normal 60Pa	
Noise	Indoor		dB(A)	44	46	46	44	46	46
	Outdoor		dB(A)	57	59	59	57	59	59
Refrigerant				R22					
Refri. charge(kg)				1.5	1.85	2.5	1.7	2.1	2.5
Connection pipes	Liquid		mm	ϕ 6	ϕ 9.52		ϕ 6	ϕ 9.52	
	Gas		mm	ϕ 12	ϕ 16		ϕ 12	ϕ 16	
Indoor unit	Width		mm	904	1108		904	1108	
	Depth		mm	736	756		736	756	
	Height		mm	266	300		266	300	
	Net weight		mm	36	55		36	55	
	Air outlet size	L	mm	738	918		738	918	
		W	mm	207	207		207	207	
	Air intake size	L	mm	738	1008		738	1008	
		W	mm	207	250		207	250	
Outdoor unit	Width		mm	760	950		760	950	
	Depth		mm	250	412		250	412	
	Height		mm	530	700	840	700	700	840
	Net weight		kg	40	59	75	40	59	75
Drainage pipe(outside × inside)			mm	ϕ 30 × 1.5					

FG series duct type air conditioner (Heat Pump)

Continue

			Cooling only			Heat pump			
Indoor unit			FGD10(I)	FG10(I)	FG12(I)	FGRD10(I)	FGR10(I)	FGR12(I)	
Outdoor unit			FGD10(O)	FG10(O)	FG12(O)	FGRD10(O)	FGR10(O)	FGR12(O)	
Cooling capacity		W	10300	10000	12000	10000	10000	12000	
		BTU/h	35180	34150	41000	34150	34150	41000	
Heating capacity (heat pump/aux. heater)		W	---	---	---	11200/14800	11200/148000	13200/16800	
		BTU/h	---	---	---	37570/49870	38250/50550	45080/57380	
Current	Cooling	A	17.8	6.9	8.3	18.2	6.9	8.3	
	Heat pump/ aux.heater	A	---	---	---	17.3/34	6.6/12.1	8.0/13.5	
Power input	Cooling	W	3700	3840	4800	3800	3850	4800	
	Heat pump/ aux.heater	W	---	---	---	3550/7150	3720/7320	4600/8200	
Power supply			~220V 50Hz	3N~380 50Hz		~220V 50Hz	3N~380V 50Hz		
Compressor			Rotary						
Air flow volume		m^3/h	2000						
Ex. Static pressure		Pa	High 100Pa; Normal 60Pa						
Noise	Indoor	dB(A)	48						
	Outdoor	dB(A)	62						
Refrigerant			R22						
Refri. charge(kg)			3.5	3.4	3.6	3.5	3.5	3.8	
Connection pipes	Liquid	mm	ϕ 12						
	Gas	mm	ϕ 19						
Indoor unit	Width	mm	1463						
	Depth	mm	756						
	Height	mm	300						
	Net weight	mm	80						
	Air outlet size	L mm	1155						
		W mm	207						
	Air intake size	L mm	1278						
		W mm	250						
Outdoor unit	Width	mm	950						
	Depth	mm	412						
	Height	mm	1250						
	Net weight	kg	112						
Drainage pipe(outside × inside)		mm	ϕ 30 × 1.5						

Note:

1. The data are tested in rated condition.

2. High and normal external static pressure is reached by changing the wires connection in the electric box, the default is normal external static pressure.

3. Sound pressure level of noise is tested 1.4m below air conditioner

Rated conditions and running range

condition	indoor		outdoor	
	DB(℃)	WB(℃)	DB(℃)	WB(℃)
Rated cooling	27	19	35	24
Rated heating	20	---	7	6
Max. cooling	32	23	43	26
Min. cooling	18	14	18	---
Max. heating	24	18	27	---
Min. heating	15	---	-7	-8

◇ **Electrical specifications of FG series mini-duct type air conditioner**

	FG2.6	FGR2.6	FG3.5	FGR3.5	FG5	FGR5	FG6.5	FGR6.5
Power type	~220V 50Hz							
Voltage range V	185~242							
Rated input KW (cool/heat/aux. heater)	0.93	0.94/1.0/1.5	1.37	1.37/1.33/2.13	1.98	1.98/1.85/3.35	2.52	2.52/2.3/4.4
Rated current A (cool.heat/aux.heater)	4.25	4.6/5.2/7.5	6.9	6.92/6.7/11.1	8.9	8.9/8.54/15.7	12	12/11/20.3
Max. input KW	1.3	1.8	1.85	2.37	2.75	3.6	3.0	4.8
Starting current A	21	21	31	31	49	49	56	56
Aux. Heater input KW	/	0.5	/	0.8	/	1.5	/	2.1
Cross area of power cord mm^2	2.5	2.5	2.5	2.5	2.5	2.5	2.5	4.0

◇ continued

	FG7.5	FGR7.5	FGD10	FGRD10	FG10	FGR10	FG12	FGR12
Power type	~220V 50Hz				3N~ 380V 50Hz			
Voltage range V	185~242				320~420			
Rated input KW (cool/heat/aux. heater)	2.82	2.82/2.75/4.85	3.8	3.8/3.55/7.15	3.85	3.85/38/7.4	4.8	4.8/4.75/8.35
Rated current A (cool.heat/aux.heater)	14	14/13.2/22.8	18.2	18.2/17.3/34	7.4	7.4/7.1/12.6	8.6	8.7/8.5/14
Max. input KW	3.8	5.4	4.5	8.0	4.5	8.3	6.0	9.2
Starting current A	70	70	90	90	45	45	55	55
Aux. Heater input KW	/	2.1	/	3.6	/	3.6	/	3.6
Cross area of power cord mm^2	2.5	4.0	4.0	4.0×2	1.5	1.5×2	1.5	1.5×2

Note：Cross area of power cord is only applied when distance is within 15m, if the distance surpasses 15m, the cross area should be increased to avoid the wires overheating and burning.

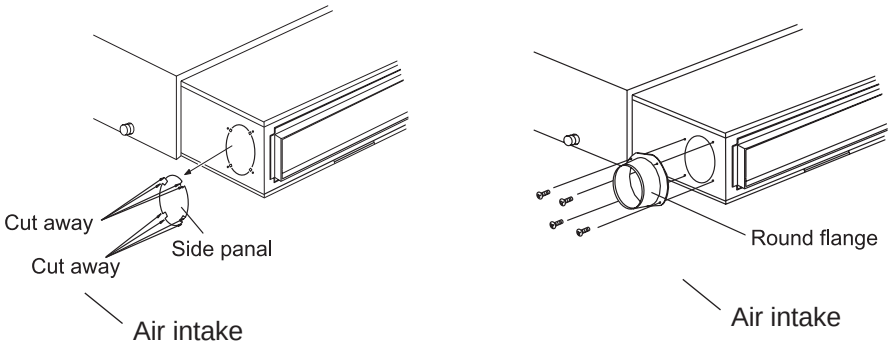
E. Installation of fresh air pipe

1) When you need to attach a fresh air pipe, cut the side panel first as shown in the left picture. If you don't want to use a fresh air pipe, you should seal the flaw in the side panel.

2) Attach the flange as shown in the right picture.

3) Fresh air pipe and flange need to be well insulated.

4) Fresh air need to be filtered and purified.

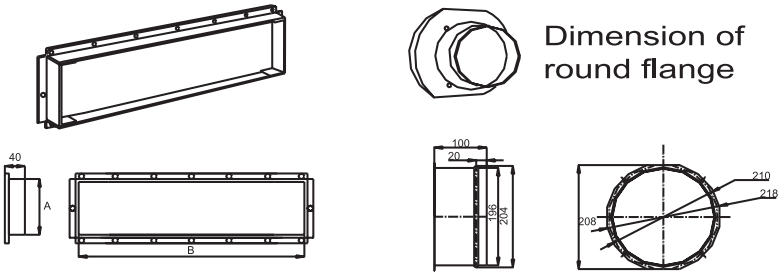


NOTE:

5）Air pipe should has one insulation layer to prevent heat leakage and condensate. The insulation method is as the one of air intake pipe and air outlet pipe; firstly, stick the male coupler on the pipe and attach one layer of insulation foam with a tin paper. secondly, attached the female coupler to fix the insulation layer,then use the tin paper strip to seal the connection place.

6）Fresh air pipe should be fixed on ceiling with an iron supporter, the connection place should be sealed tightly to prevent leakage.

F. Size and dimensions of air intake hole and air outlet hole.

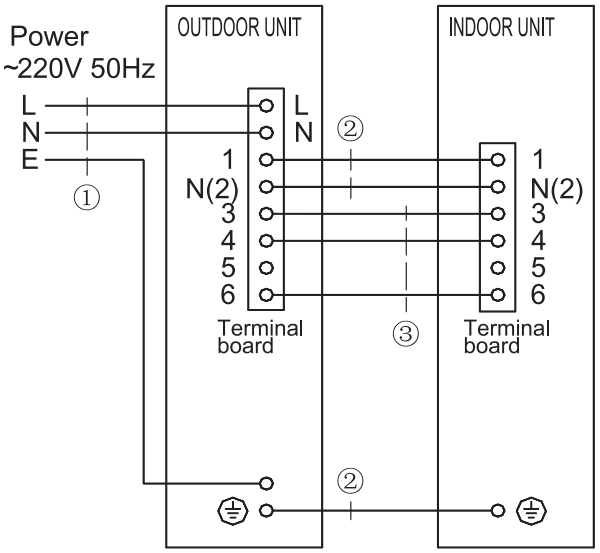


For recfangular

Model	Air outlet flange		Air intake flange	
	A	B	A	B
FG(R)2.6、FG(R)3.5	172	515	172	750
FG(R)5	207	738	207	904
FG(R)6.5、FG(R)7.5	207	918	250	1008
FG(R)D10、FG(R)10、FG(R)12	207	918	250	1008

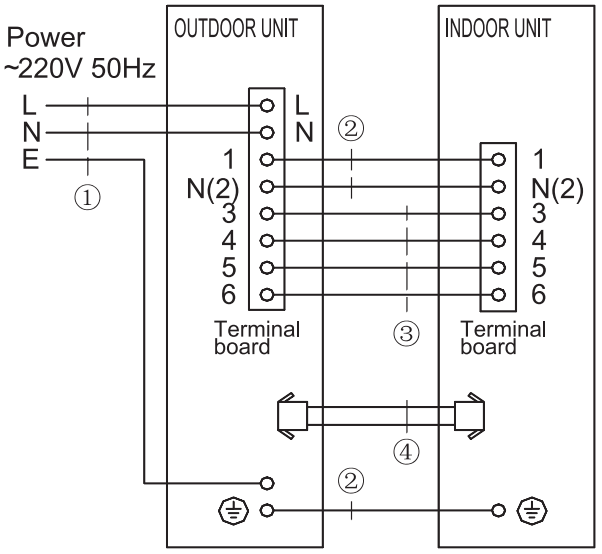
G. Circuit diagrams

FG6.5



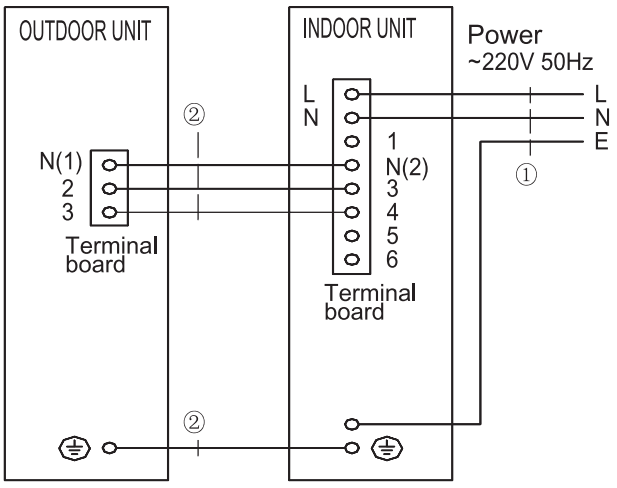
Note:①Power cable 3X2.5mm^2
②Intercnnecting cable 3X1.0mm^2
③Signal core 3X0.75mm^2

FGR6.5



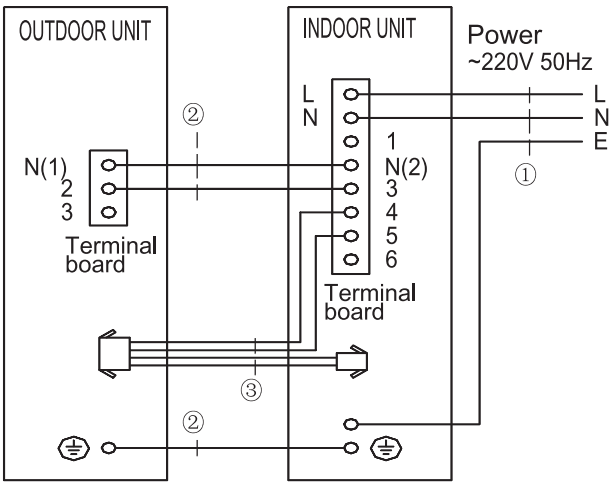
Note:①Power cable 3X4mm^2
②Intercnnecting cable 3X2.5mm^2
③Signal core 4X0.75mm^2
④Signal core 2X0.75mm^2

(FG2.6, FG3.5)



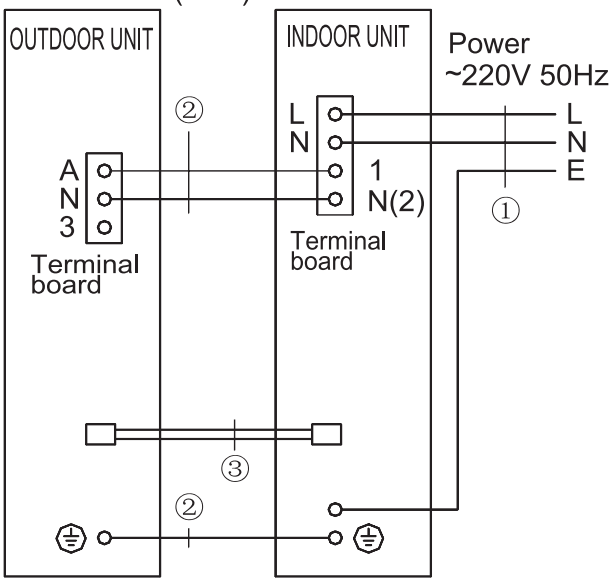
Note:①Power cable 3X2.5mm^2
②Intercnnecting cable 3X2m+1X1.5mm^2

(FGR2.6,FGR3.5)



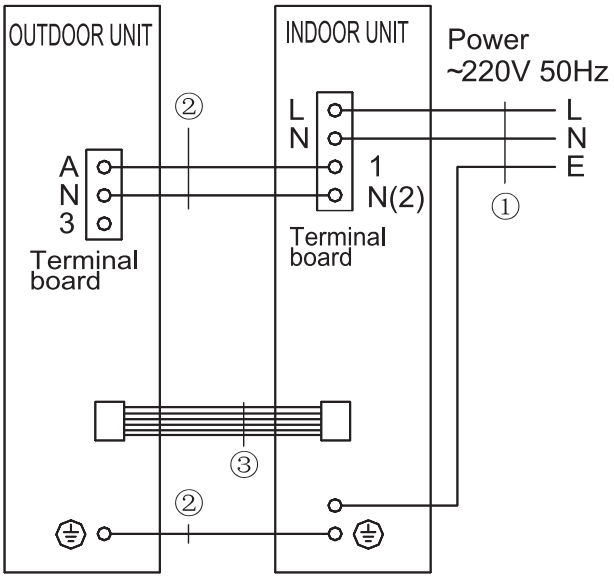
Note:①Power cable 3X2.5mm^2
②Intercnnecting cable 3X2.5mm^2
③Signal core 4X0.75mm^2

(FG5)



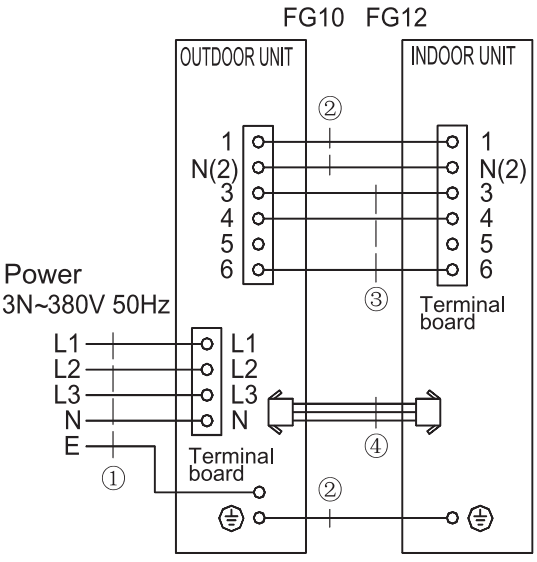
Note:①Power cable 3X2.5mm^2
②Intercnnecting cable 3X2.5mm^2
③Signal core 2X0.75mm^2

(FGR5)



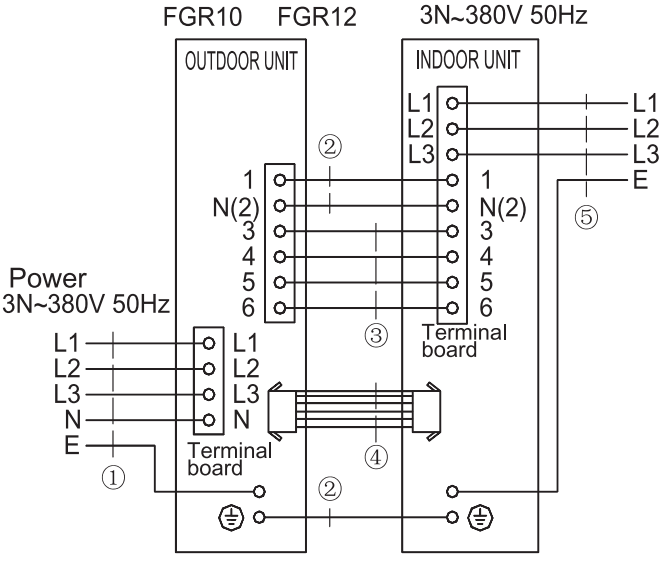
Note:①Power cable 3X2.5mm^2
②Intercnnecting cable 3X2.5mm^2
③Signal core 6X0.75mm^2

FG10 FG12



Note:①Power cable 5X1.5mm^2
②Intercnnecting cable 3X1.0mm^2
③Signal core 3X0.75mm^2
④Signal core 3X0.75mm^2

FGR10 FGR12 3N~380V 50Hz

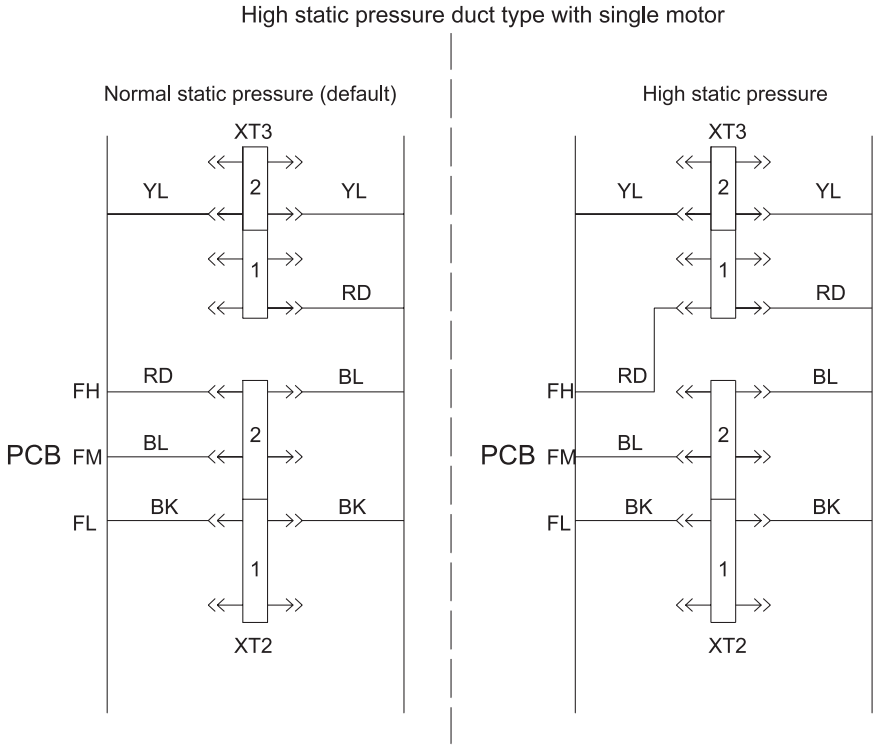


Note:①Power cable 5X1.5mm^2
②Intercnnecting cable 3X1.0mm^2
③Signal core 4X0.75mm^2
④Signal core 6X0.75mm^2
⑤Power cable 4X1.5mm^2

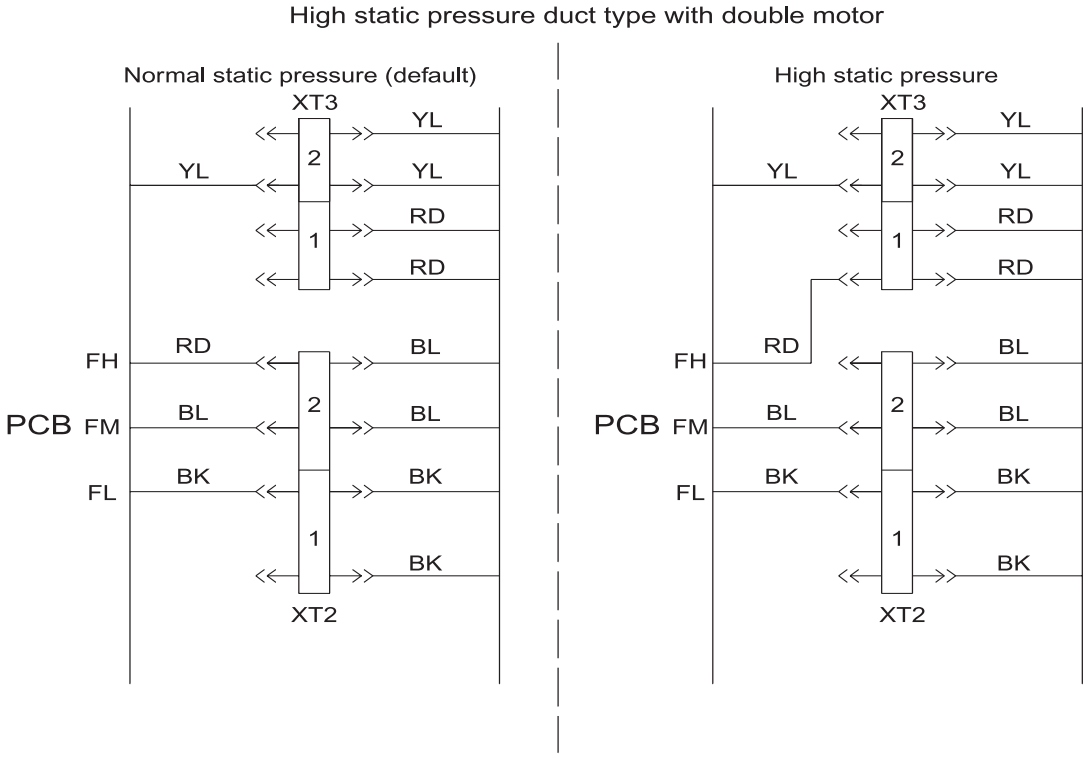
H. Change of high and normal external static pressure

The default status of the machine is normal external static pressure, if you need to change it to high static pressure, you can open the indoor electric box, change the wires as shown in the diagrams.

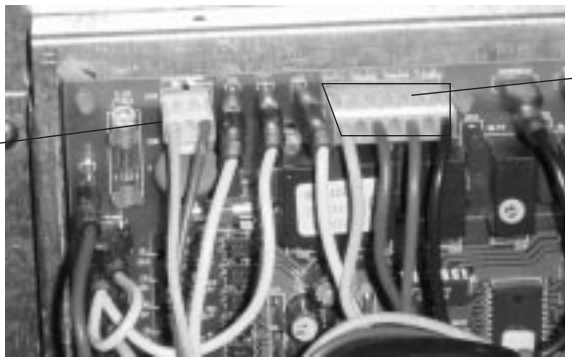
◇ **FG(R)2.6、3.5、5、6.5、7.5**



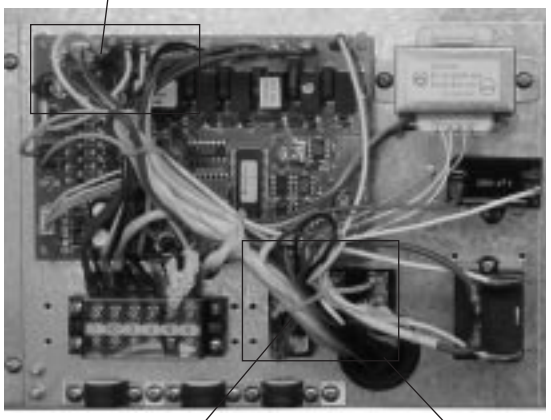
◇ **FG(R)10、12 and FG(R)D10**



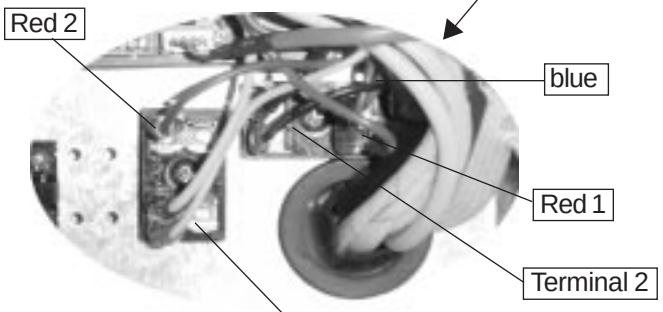
◇ **Pictures showing the wires change**



The method to change the normal to the highL
Switch the red 1 line in the terminal 2 to terminal 1, as shown below

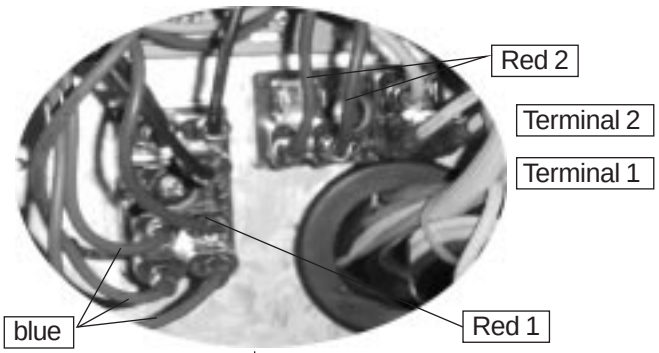


wires change of single motor

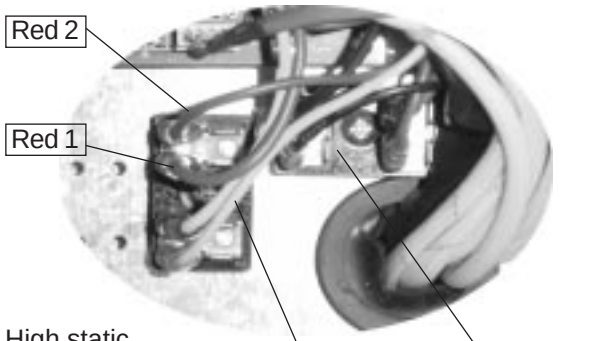


Normal static pressure

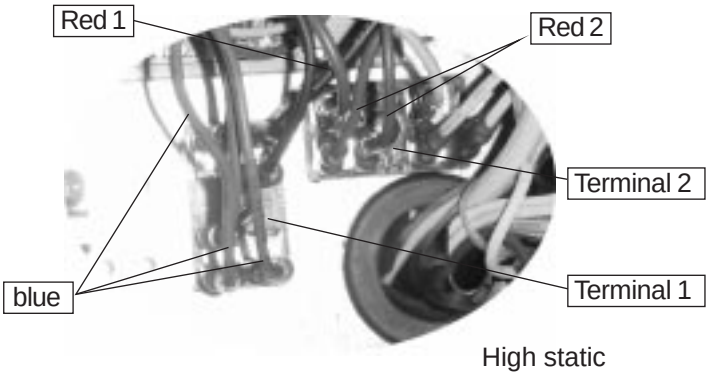
wires change of double motors



Normal static pressure

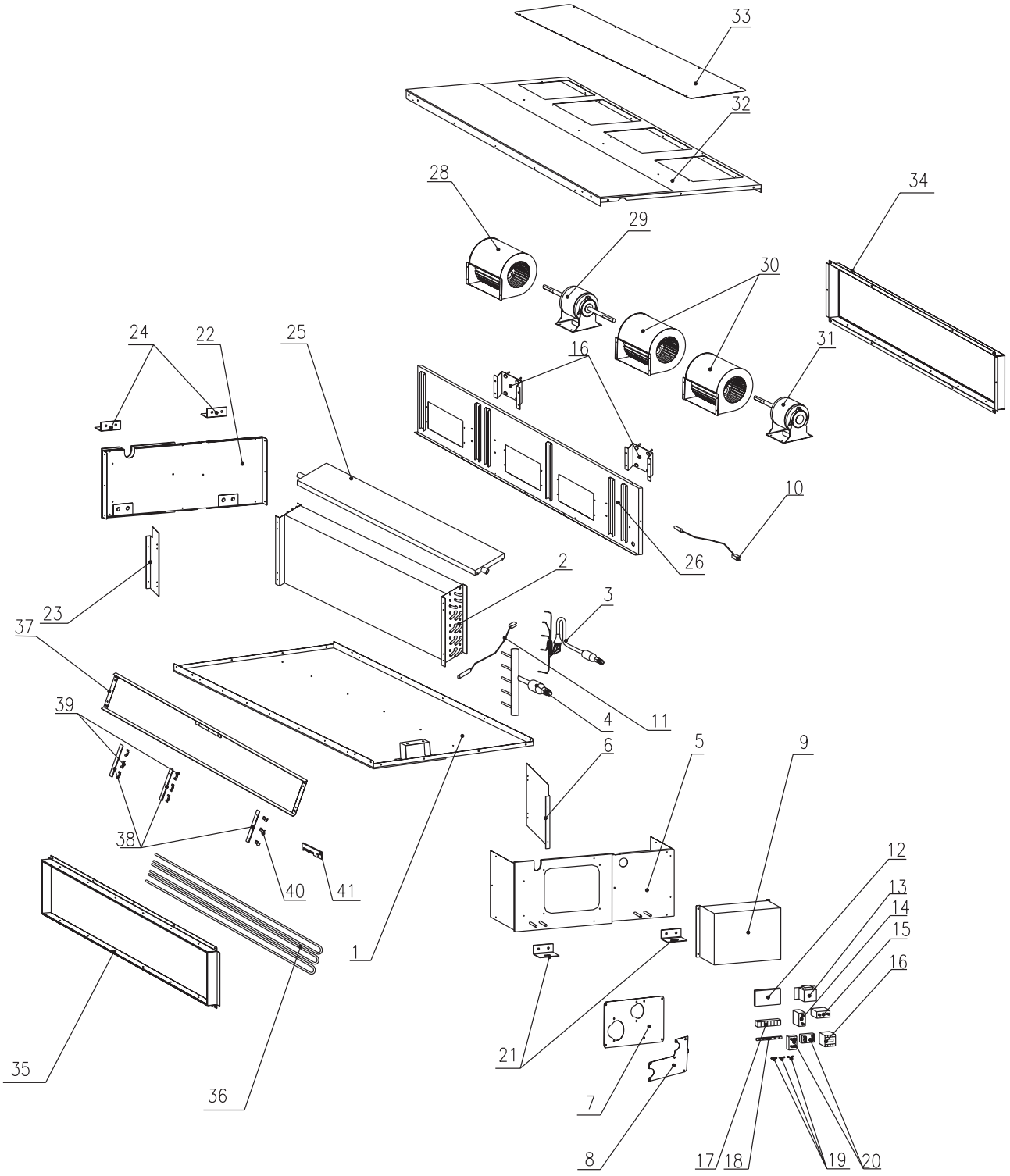


High static pressure



High static pressure

◇ **Explosive view and spare parts list of the indoor unit**



No.	Description		Part No.					Qty
			FGR5(I)	FGR6.5(I)	FGR7.5(I)	FGR10(I)	FGR12(I)	
1	Top cover board assy	上盖板组件	01258646	/	/	/	/	1
	Top cover board assy	上盖板部件	/	01258651	01258651	01258607	01258607	1
2	Evaporator assy	蒸发器组件	01038623	01038625	01038625	01038624	01038624	1
3	Enter liquid pipe component	进液管组件	03648601	03648605	03648605	03648602	03648602	1
4	Collect gas pipe component	集气管组件	03638625	03638633	03638633	03622460	03622460	1
5	Left side plate assy	左侧板组件	01308668	/	/	/	/	1
	Left side plate assy	左侧板部件	/	01308678	01308678	01308678	01308678	1
6	Left supporter of evaporator	蒸发器左支撑架	01078626	/	/	/	/	1
	Left supporter of evaporator	蒸发器左支架	/	01078603	01078603	01078603	01078603	1
7	Seal-board of connect pipe 1	连接管封口板 1	01498640	/	/	/	/	1
	Left side sealplate assy	左侧板封板组件	/	01308680	01308680	/	/	1
	Left side seal-hole plate assy	左侧板封口板组件	/			01308672	01308672	1
8	Seal-board of connect pipe 2	连接管封口板 2	01498644	/	/	/	/	1
	Seal-board of connect pipe	连接管封口板	/	01498610	01498610	01498601	01498601	1
9	Electric box assy	电器盒部件	01408511	01408638	01408638	01408633	01408633	1
10	Temperature Sensor	感温包	39000198710	39000198710	39000198710	39000198710	39000198710	1
11	Temperature Sensor	感温包	39000198711	39000198711	39000198711	39000198711	39000198711	1
12	Main board Z4035	主板Z4035	30224001	30224001	30224001	30224001	30224001	1
13	Transformer SC25A	电源变压器	43110618	43110618	43110618	43110618	43110618	1
14	Capacitor CBB61 5 μF/450V	电 容	/	/	/	33010064	33010064	1
15	Capacitor CBB61 8 μF/450V	电 容	33010014	33010014	33010014	33010014	33010014	1
16	Contactor LC1K0910M7	交流接触器	/	/	/	44010199	44010199	1
	Contactor GC8-30	交流接触器	44010234	44010234	44010234	/	/	1
17	9-bit Terminal board	九位接线板	/	/	/	42011143	42011143	1
	6-bit Terminal board	六位接线板	/	42011117	42011117	42011117	42011117	1
	4-bit Terminal board	接线板（4 位）	42010007	/	/	/	/	1
18	Insulation gasket F	绝缘垫片 F	70410524	70410524	70410524	70410524	70410524	1
19	Wire clamp	电线夹	71010102	71010102	71010102	71010102	71010102	3
20	Terminal board 2-8	接线板 2-8	42011103	42011103	42011103	42011103	42011103	2
21	Hook	挂钩	02112466	02118504	02118504	02118504	02118504	2
22	Right side plate assy	右侧板组件	01308670	/	/	/	/	1
	Right side plate assy	右侧板部件	/	01308679	01308679	01308679	01308679	1
23	Right support of evaporator	蒸发器右支撑板	01078625	/	/	/	/	1
	Right support of evaporator	蒸发器右支架	/	01078604	01078604	01078604	01078604	1
24	Hook	挂钩	02112466	02118504	02118504	02118504	02118504	2
25	Water try assy	接水盘组件	01278633	/	/	/	/	1
	Water try assy	接水盘部件	/	01278612	01278612	01278603	01278603	1
26	Fan motor holder	风机安装板组件	01338627	01338631	01338631	01338630	01338630	1
27	Motor support assy	电机支架组件	/	/	/	01708502	01708502	2
28	Fan motor(right)SYP-140/200J	风机（右式）	15012454	/	/	/	/	1
	Fan motor(right)SYP-200/190J-1	风机（右式）	/	15018604	15018604	15018604	15018604	1
29	Motor FG70A	电机FG70A	15018312	/	/	/	/	1
	Motor FG150A	电机FG150A	/	15018601	15018601	/	/	1
	Motor FG150B	电机FG150B	/	/	/	15018612	15018612	1
30	Fan motor(left)SYP-200/190J-1	风机（左式）	15012454	/	/	/	/	1
	Fan motor(left)SYP-200/190J-1	风机（左式）	/	15018603	15018603	/	/	1
	Fan motor(left)SYP-200/190J-1	风机（左式）	/	/	/	15018603	15018603	2
31	Motor FG75B	电机FG75B	/	/	/	01258649	01258649	1
32	Lower cover board	下盖板	01258612	/	/	/	/	1
	Lower cover board assy	下盖板部件	/	01258612	01258612	01258603	01258603	1

continue

No.	Description		Part No.					Qty
			FGR5(I)	FGR6.5(I)	FGR7.5(I)	FGR10(I)	FGR12(I)	
33	Cover of Air intake	回风盖板	01258650	01258614	01258614	01258602	01258602	1
34	Air intake Assy	回风口组件	01498641	/	/	/	/	1
	Air intake side-board Assy	回风口边板组件	/	01498609	01498609	01498604	01498604	1
35	Air intake Assy	回风口组件	01498641	/	/	/	/	1
	Air outlet Assy	出风口组件	/	01498612	01498612	/	/	1
	Air outlet side-board Assy	出风口边板组件	/	/	/	01498608	01498608	1
36	Electric heater	电加热管	32018613	32012402	32012402	32018614	32018614	1
37	Electric heater holder assy	电加热管上安装架组件	01228629	/	/	/	/	1
	Electric heater support	电热管支架组件	/	01228636	01228636	01228635	01228635	1
38	Fix bar for electric-heat tube	电加热管固定条	01228631	/	/	/	/	3
	Fix bar for electric-heat tube	电加热管固定条	/	01222401	01222401	01222401	01222401	3
39	Electric heater clamp 2	电热管卡件 2	01228635	/	/	/	/	4
	Electric heater clamp 2	电热管卡件 2	/	01228635	01228635	01228635	01228635	6
40	Electric heater clamp 1	电热管卡件 1	02115001	/	/	/	/	2
	Electric heater clamp 1	电热管卡件 1	/	02115001	02115001	02115001	02115001	3
41	Heat-protector assy	热保护器组件	46018601	46018501	46018501	46012402	46012402	1

No.	Description		Part No.					Qty
			FG5(I)	FG6.5(I)	FG7.5(I)	FG10(I)	FG12(I)	
1	Top cover board assy	上盖板组件	01258646	/	/	/	/	1
	Top cover board assy	上盖板部件	/	01258651	01258651	01258607	01258607	1
2	Evaporator assy	蒸发器组件	01038623	01038625	01038625	01038624	01038624	1
3	Enter liquid pipe component	进液管组件	03648601	03648605	03648605	03648602	03648602	1
4	Collect gas pipe component	集气管组件	03638625	03638633	03638633	03622460	03622460	1
5	Left side plate assy	左侧板组件	01308668	/	/	/	/	1
	Left side plate assy	左侧板部件	/	01308678	01308678	01308678	01308678	1
6	Left supporter of evaporator	蒸发器左支撑架	01078626	/	/	/	/	1
	Left supporter of evaporator	蒸发器左支架	/	01078603	01078603	01078603	01078603	1
7	Seal-board of connect pipe 1	连接管封口板 1	01498640	/	/	/	/	1
	Left side sealplate assy	左侧板封板组件	/	01308680	01308680	/	/	1
	Left side seal-hole plate assy	左侧板封口板组件	/			01308672	01308672	1
8	Seal-board of connect pipe 2	连接管封口板 2	01498644	/	/	/	/	1
	Seal-board of connect pipe	连接管封口板	/	01498610	01498610	01498601	01498601	1
9	Electric box assy	电器盒部件	01408511	01408638	01408638	01408633	01408633	1
10	Temperature Sensor	感温包	39000198710	39000198710	39000198710	39000198710	39000198710	1
11	Temperature Sensor	感温包	39000198711	39000198711	39000198711	39000198711	39000198711	1
12	Main board Z4015	主板Z4015	30224002	30224002	30224002	30224002	30224002	1
13	Transformer SC25A	电源变压器SC25A	43110618	43110618	43110618	43110618	43110618	1
14	Capacitor CBB61 5 μF/450V	电 容	/	/	/	33010064	33010064	1
15	Capacitor CBB61 8 μF/450V	电 容	33010014	33010014	33010014	33010014	33010014	1
17	6-bit Terminal board	六位接线板	/	42011117	42011117	42011117	42011117	1
	4-bit Terminal board	接线板（4 位）	42010007	/	/	/	/	1
18	Insulation gasket F	绝缘垫片 F	70410524	70410524	70410524	70410524	70410524	1
19	Wire clamp	电线夹	71010102	71010102	71010102	71010102	71010102	3
20	Terminal board 2-8	接线板 2-8	42011103	42011103	42011103	42011103	42011103	2
21	Hook	挂 钩	02112466	02118504	02118504	02118504	02118504	2
22	Right side plate assy	右侧板组件	01308670	/	/	/	/	1
	Right side plate assy	右侧板部件	/	01308679	01308679	01308679	01308679	1
23	Right support of evaporator	蒸发器右支撑板	01078625	/	/	/	/	1
	Right support of evaporator	蒸发器右支架	/	01078604	01078604	01078604	01078604	1
24	Hook	挂 钩	02112466	02118504	02118504	02118504	02118504	2
25	Water try assy	接水盘组件	01278633	/	/	/	/	1
	Water try assy	接水盘部件	/	01278612	01278612	01278603	01278603	1
26	Fan motor holder	风机安装板组件	01338627	01338631	01338631	01338630	01338630	1
27	Motor support assy	电机支架组件	/	/	/	01708502	01708502	2
28	Fan motor(right)SYP-140/200J	风机（右式）	15012454	/	/	/	/	1
	Fan motor(right)SYP-200/190J-1	风机（右式）	/	15018604	15018604	15018604	15018604	1
29	Motor FG70A	电机FG70A	15018312	/	/	/	/	1
	Motor FG150A	电机FG150A	/	15018601	15018601	/	/	1
	Motor FG150B	电机FG150B	/	/	/	15018612	15018612	1
30	Fan motor(left)SYP-200/190J-1	风机（左式）	15012454	/	/	/	/	1
	Fan motor(left)SYP-200/190J-1	风机（左式）	/	15018603	15018603	/	/	1
	Fan motor(left)SYP-200/190J-1	风机（左式）	/	/	/	15018603	15018603	2
31	Motor FG75B	电机FG75B	/	/	/	01258649	01258649	1
32	Lower cover board	下盖板	01258612	/	/	/	/	1
	Lower cover board assy	下盖板部件	/	01258612	01258612	01258603	01258603	1
33	Cover of Air intake	回风盖板	01258650	01258614	01258614	01258602	01258602	1
34	Air intake Assy	回风口组件	01498641	/	/	/	/	1
	Air intake side-board Assy	回风口边板组件	/	01498609	01498609	01498604	01498604	1
35	Air intake Assy	回风口组件	01498641	/	/	/	/	1
	Air outlet Assy	出风口组件	/	01498612	01498612	/	/	1
	Air outlet side-board Assy	出风口边板组件	/	/	/	01498608	01498608	1

CONTENTS

TECHNICAL SERVICE MANUAL

—— FG 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 Ducted Air-conditioning (Heat Pump)Units(FG series) products. 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
Nov. 2002

Editor In Chief: Chen Jianmin

Compiler: Chen Zhian Ouyang Jun Tian Guoku
Yang Rong Jia Tianwei Cao Xuan Wang Min

Proofreader: Li Bin Han Qian Lv Dongjian Cao Manqing
Translator: Yang Zezhou Ouyang Jun
Proofreader of Translation: Zhang Guoqiang Wei Chi
Designer of Cover: Li Jiesheng Sheng Zhiguo