Fisher
Aircon Solutions Ltd., Inc. USA

TECHNICAL & SERVICE MANUAL

CASSETTE TYPE AIR-CONDITIONER
(One-way cassette)

FSK-94HF

FI-SM-040830

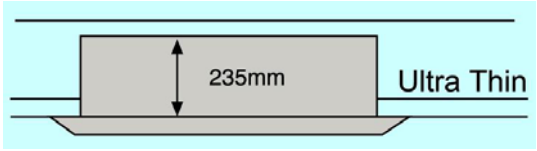
One-way Cassette Air-conditioner

Table of Contants

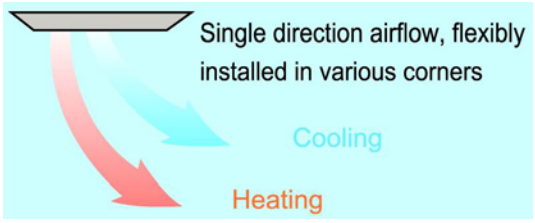
NOTICE
Specifications are subject to change without notice for further improvement.
All the product information has been carefully checked.

Part 1. Product Features

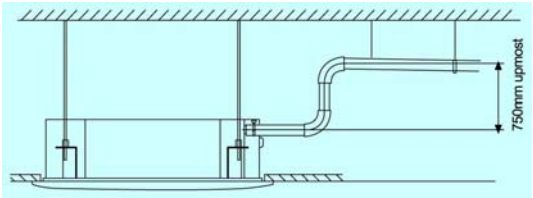
1) Lower noise level
2) Smoother air flow with less turbulence
   ---Owing to the multiple-blade fan rotor and the air guide design, the airflow is getting smoother and more comfortable
3) One direction air flow
   ---Quick cooling
4) Stylish design
   ---Be harmonious with any interior decoration and creates an elegant environment
5) Ultra thin machine body
   ---Space saving: only 235mm



6) Convenient installation
   ---Able to be flexibly installed in various corners



   ---Standardized sectional module
   --- More flexible in routing the tube through the ceiling space due to the condensed water can be lift through the drain pump up to 750mm above the drain port



7) Easier to do cleaning and maintenance
   ---Flat type suction grille of easy cleaning

Part 2. Specification

Model			FSK-94HF
Power supply		V-Hz-Ph	220-240V~,50,1
Cooling	Capacity	Btu/h	9000
	Capacity	kW	2.65
	Input	W	1098
	Rated current	A	4.87
	EER	Btu/w.h	2,42
Heating	Capacity	Btu/h	10000
	Capacity	kW	2,95
	Input	W	1102
	Rated current	A	4.84
	COP	Btu/w.h	2,68
Moisture Removal		L/h	1
Max. input consumption		W	1320
Max. current		A	6.2
Starting current		A	20
Compressor	Model		PG180X1C-4DZ3
	Type		Rotary
	Brand		Toshiba
	Supplier		TOSHIBA(Guangdong)
	Capacity	Btu/h	10800
	Input	W	1015
	Rated current(RLA)	A	4.5
	Locked rotor Amp(LRA)	A	19.8
	Thermal protector		UP3SE0591-T61
	Capacitor	uF	30UF/440-450V
	Refrigerant oil	ml	400
Indoor fan motor	Model		YSK20-4
	Brand		Welling、Changheng
	Input	W	46
	Capacitor	uF	1.2UF/450V
	Speed(hi/mi/lo)	r/min	980/820/770
Indoor coil	Number of rows		2
	Tube pitch(a)x row pitch(b)	mm	25.4x22
	Fin spacing	mm	1.6
	Fin type (code)		Hydrophilic aluminium
	Tube outside dia.and type	mm	ϕ9.53x0.35 Innergroove tube
	Coil length x height x width	mm	600 x216x44
	Number of circuits		1
Indoor air flow (Hi/Lo)		m^3/h	470/320
Indoor noise level (Hi/Lo)		dB(A)	38/35

Indoor unit	Dimension (W*H*D)(body)	mm	850x235x400
	Packing (W*H*D)(body)	mm	1080x310x460
	Dimension (W*H*D)(panel)	mm	1050x18x470
	Packing (W*H*D)(panel)	mm	1120x172x540
	Net/Gross weight(body)	kg	23/27
	Net/Gross weight(panel)	kg	4/7
Outdoor fan motor	Model		YDK25-6C
	Brand		Welling
	Input	W	85
	Capacitor	uF	2.5uF/450V
	Speed	r/min	900
Outdoor coil	Number of rows		1
	Tube pitch(a)x row pitch(b)	mm	25.4x22
	Fin spacing	mm	1.4
	Fin type (code)		Hydrophilic aluminium
	Tube outside dia.and type	mm	ϕ9.53x0.35 Innergroove tube
	Coil length x height x width	mm	754x508x22
	Number of circuits		2
Outdoor air flow		m^3/h	1900
Outdoor noise level		dB(A)	42
Outdoor unit	Dimension(W*H*D)	mm	780x540x250
	Packing (W*H*D)	mm	910x575x335
	Net/Gross weight	kg	36/39
Refrigerant type		g	R407c/850g
Design pressure		MPa	1.2～3.5MPa
Refrigerant piping	Liquid side/ Gas side	mm(inch)	ϕ6.35/ ϕ9.53(1/4”-3/8”)
	Max. refrigerant pipe length	m	15
	Max. difference in level	m	5
Connection wiring			AWG#22
Plug type			No
Controller			Remote
Operation temp		℃	17～30
Ambient temp		℃	（-7～45）

Notes: 1. Nominal cooling capacities are based on the following conditions:

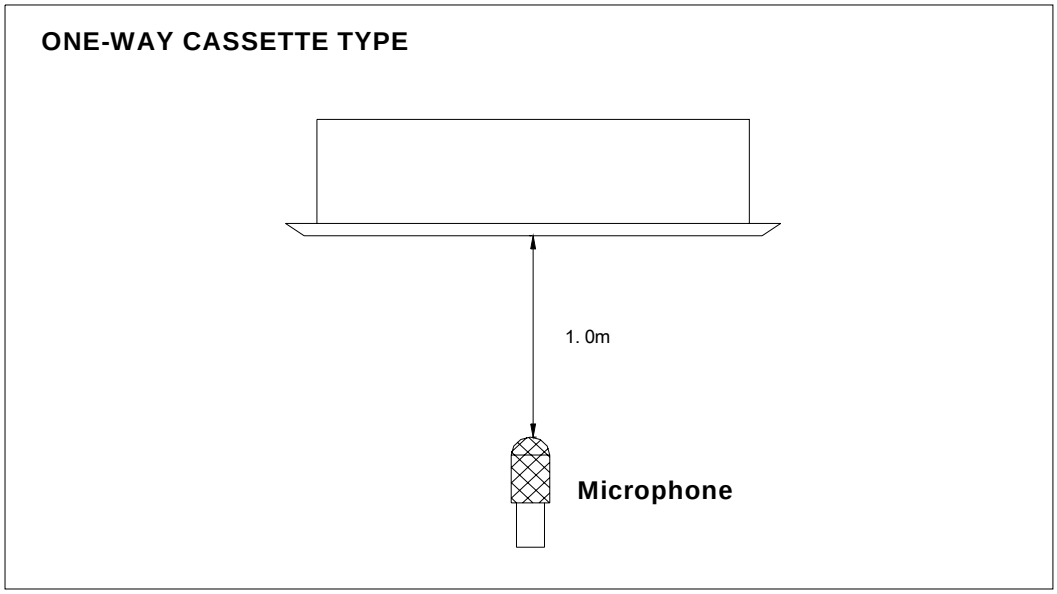
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 8m(horizontal)

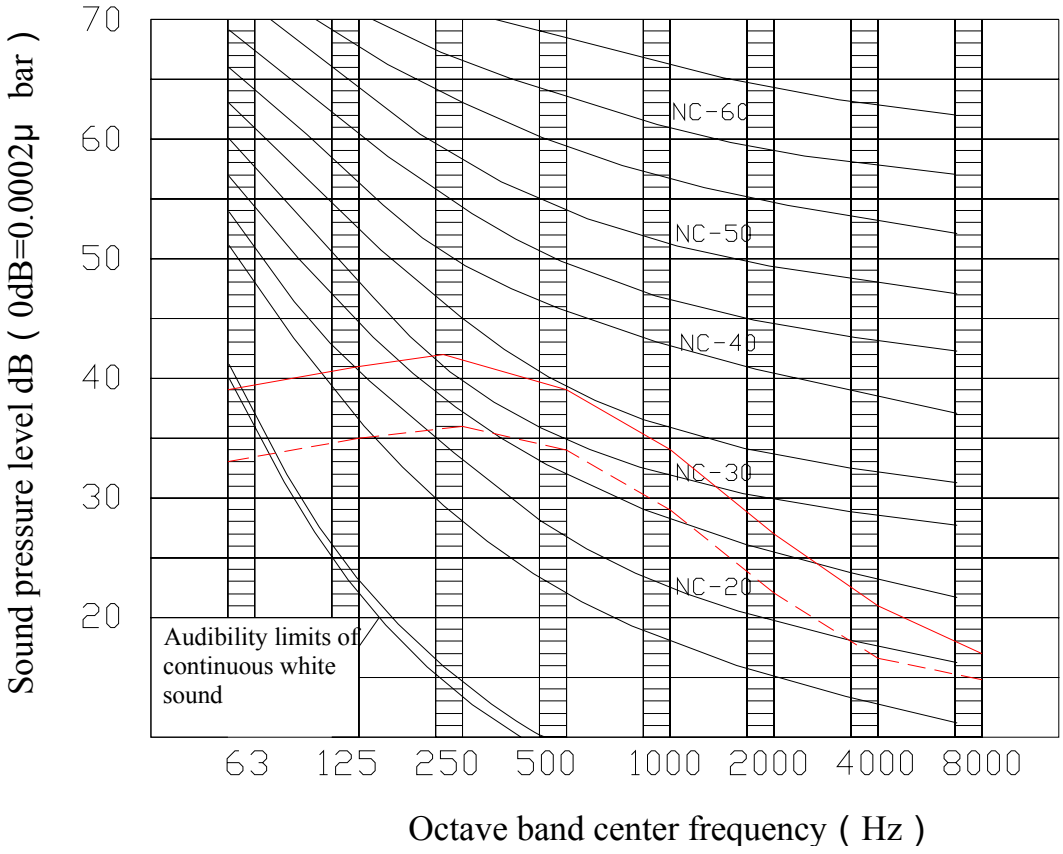
2. Nominal heating capacities are based on the following conditions:

Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 8m(horizontal)

3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

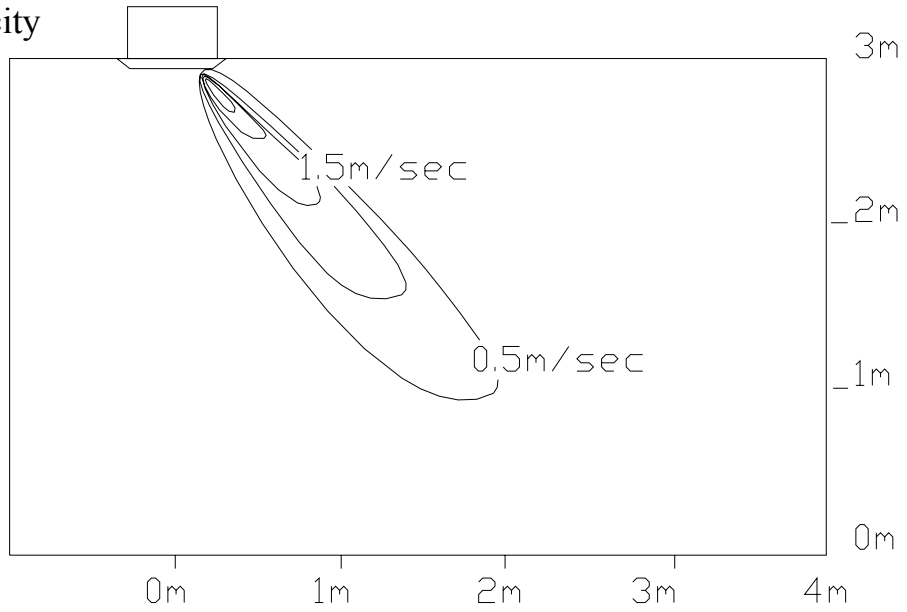
Part 3 Noise Level



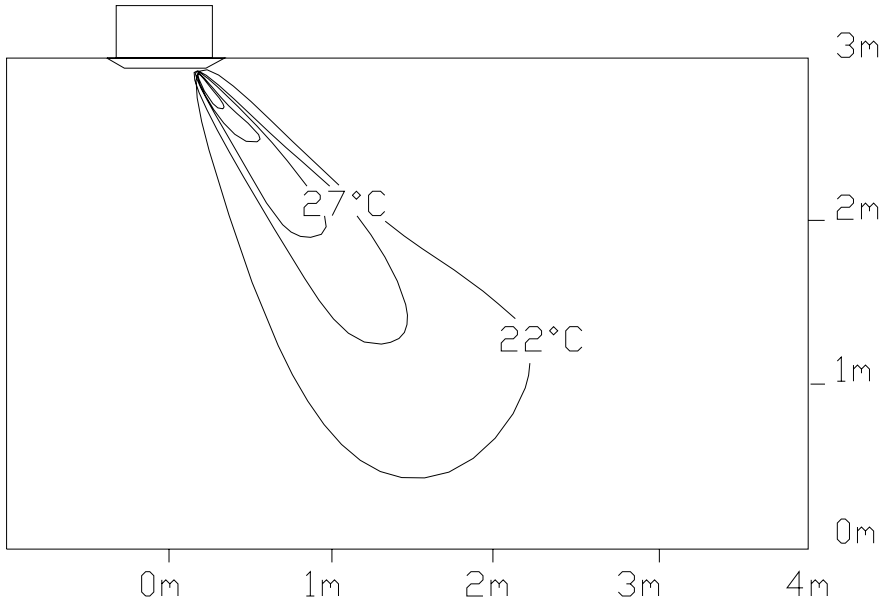


Part 4 Velocity & temperature distribution

Airflow velocity



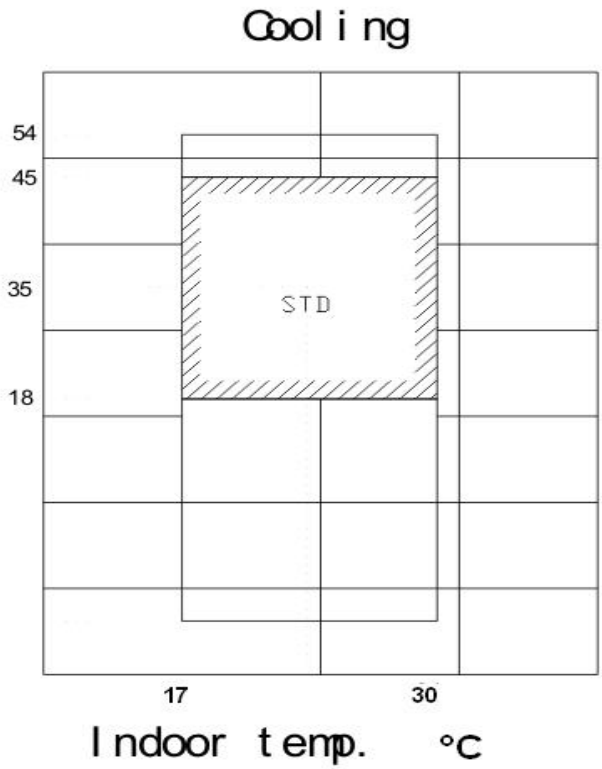
Temperature



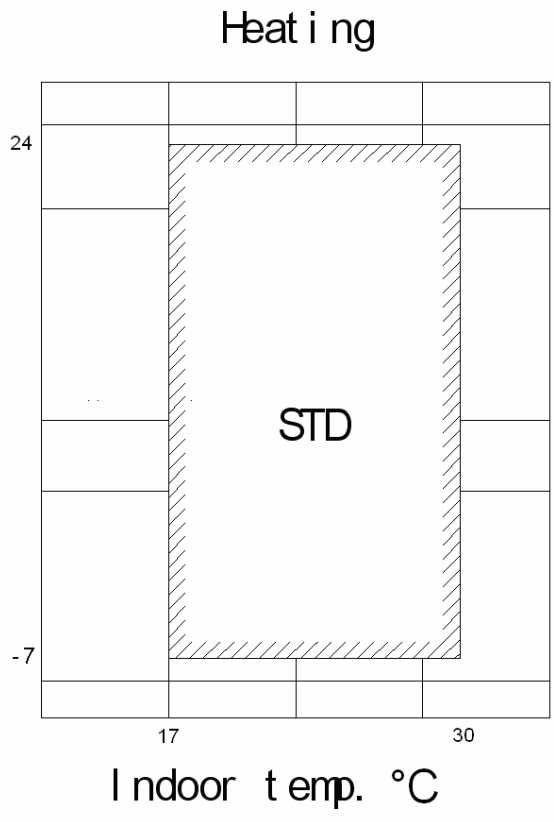
Part 5 Operation Range

Ensure the operating temperature is in allowable range.

Cooling only



Heat pump



Part 6 Capacity Table

Model: FSK-94HF

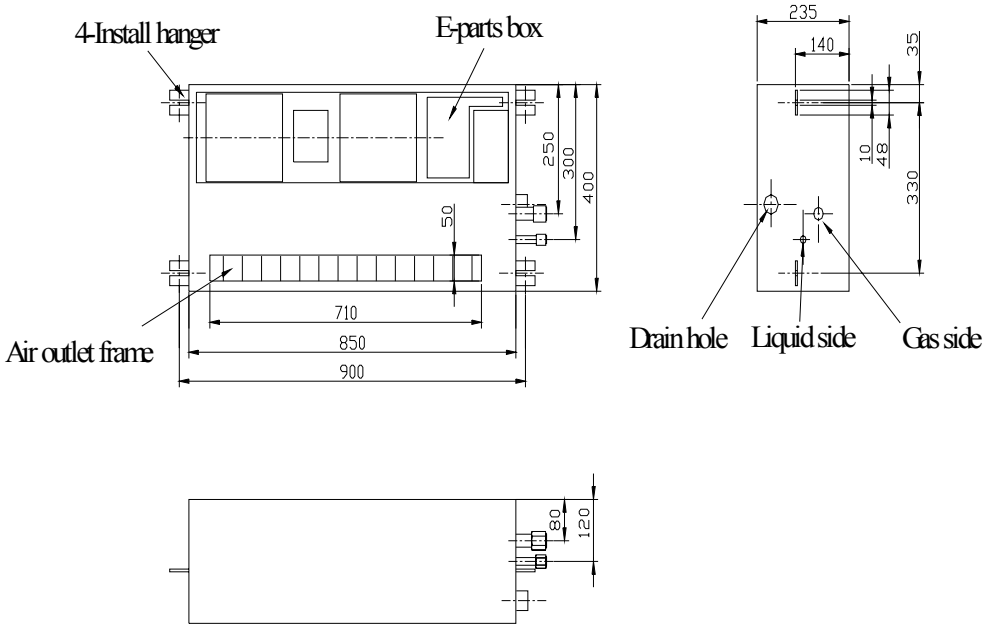
COOLING		**OUTDOOR TEMPERATURE DRY**						
Indoor Conditions		**21ºC**	**25ºC**	**30ºC**	**35ºC**	**40ºC**	**45ºC**	**50ºC**
21ºC D 15ºC W	Total capacity kW	2.51	2.40	2.32	2.18	2.10	2.03	1.97
	Sensitive capacity kW	2.01	1.92	1.85	1.75	1.68	1.62	1.57
	Input kW.	0.69	0.78	0.88	0.98	1.08	1.18	1.28
24ºC D 17ºC W	Total capacity kW	2.75	2.63	2.54	2.39	2.30	2.22	2.15
	Sensitive capacity kW	2.20	2.10	2.03	1.91	1.84	1.78	1.72
	Input kW.	0.72	0.83	0.93	1.04	1.14	1.24	1.35
27ºC D 19ºC W	Total capacity kW	2.99	2.86	2.76	**2.60**	2.50	2.42	2.34
	Sensitive capacity kW	2.39	2.29	2.20	2.08	2.00	1.93	1.87
	Input kW.	0.76	0.87	0.98	**1.09**	1.20	1.31	1.42
32ºC D 23ºC W	Total capacity kW	3.44	3.29	3.17	2.99	2.87	2.78	2.69
	Sensitive capacity kW	2.75	2.63	2.54	2.39	2.30	2.22	2.15
	Input kW.	0.88	1.00	1.13	1.25	1.38	1.50	1.63

Model: FSK-94HF

HEATING		**OUTDOOR TEMPERATURE**							
Indoor Conditions		**24ºC D 18ºC W**	**12ºC D 11ºC W**	**7ºC D 6ºC W**	**4ºC D 3ºC W**	**0ºC D -1ºC W**	**-5ºC D -6ºC W**	**-7ºC D -8ºC W**	**-15ºC D -16ºC W**
15ºC	Capacity kW	3.60	2.88	2.40	2.16	2.04	1.62	1.68	1.56
	Input kW.	1.32	1.06	0.88	0.84	0.79	0.75	0.70	0.62
18ºC	Capacity kW	4.05	3.24	2.70	2.43	2.30	2.03	1.89	1.76
	Input kW.	1.49	1.19	0.99	0.94	0.89	0.84	0.79	0.69
20ºC	Capacity kW	4.50	3.60	**3.00**	2.70	2.55	2.25	2.10	1.95
	Input kW.	1.65	1.32	**1.10**	1.05	0.99	0.94	0.88	0.77
22ºC	Capacity kW	4.95	3.96	3.30	2.97	2.81	2.48	2.31	2.15
	Input kW.	1.82	1.45	1.21	1.15	1.09	1.03	0.97	0.85
27ºC	Capacity kW	5.85	4.68	3.90	3.51	3.32	2.93	2.73	2.54
	Input kW.	2.15	1.72	1.43	1.36	1.29	1.22	1.14	1.00

Part 7 Outlines and Dimension

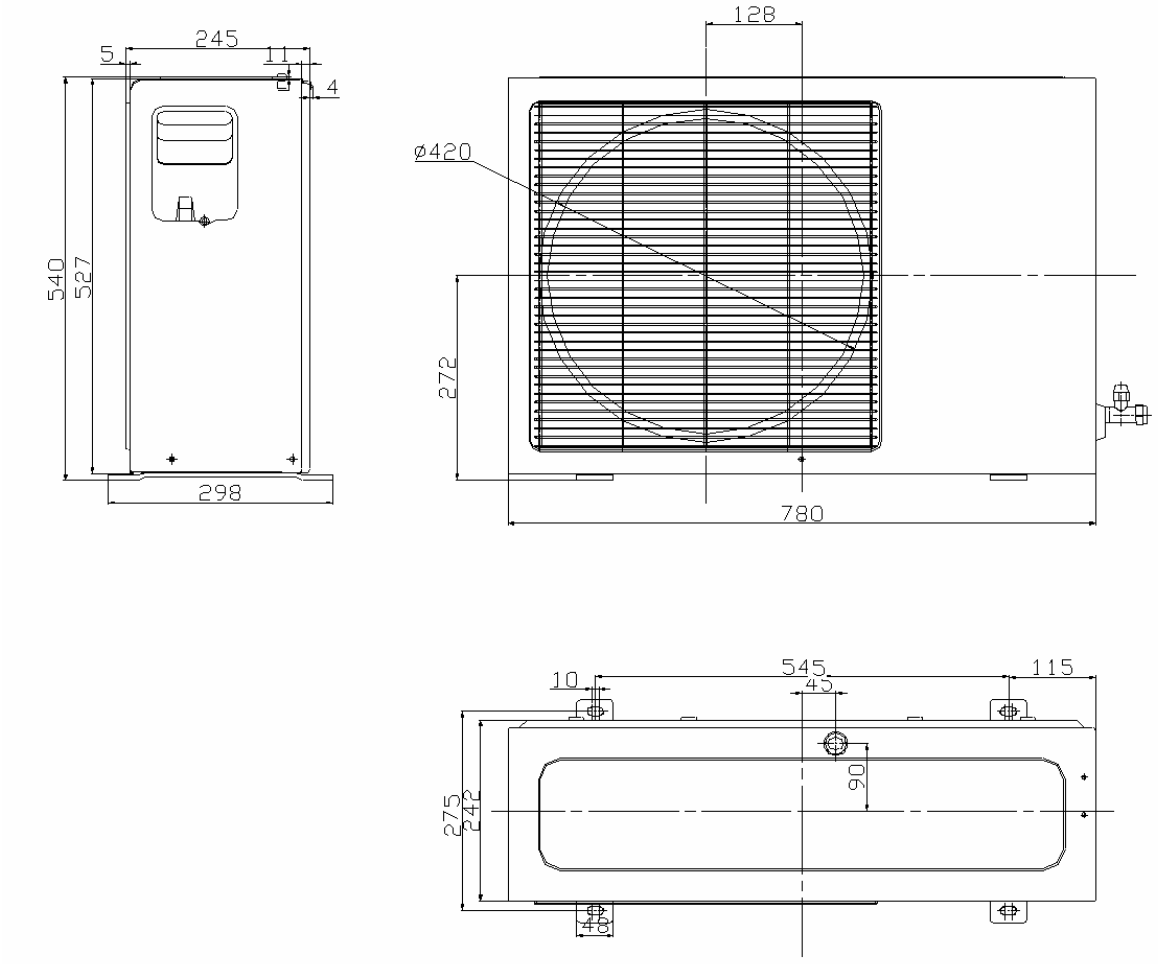
1. Indoor unit



Name	
Drain hole	Φ38mm
Liquid side	Φ6.35
Gas side	Φ9.53

2. Outdoor unit

FSO-94HF



Part 8. Electric Control Functions

1. Performance Index

No.	Item	Index
1	Applicable Voltage Range	165-253V~
2	A/C Frequency	50Hz
3	Working environment temperature	-7°C- +45°C

2. Main Parts Introduction

2.1 Indoor Fan

High speed and low speed.

Breeze speed for anti-cold air.

2.2 Outdoor Fan

Only one speed.

2.3 Buzzer

2.3.1 It will buzz when its driving port in the main chip outputs high level.

2.3.2 It will buzz once when the main frame receives remote start-up signal.

2.3.3 It will buzz once for 1 second when receiving turn-off signal.

2.3.4 It will buzz for 0.5 second once receiving other signal.

2.3.5 It will not buzz when receiving abnormal signal.

2.4 Indicator

2.4.1 There are 4 indicators: operating indicator, timer indicator, water level warning indicator, defrosting indicator and pre-heating indicator (wind-delivery indicator for cooling-only A/C).

2.4.2 LED indicates errors when protection is in effective.

2.5 Four-way Valve

It is controlled by relays.

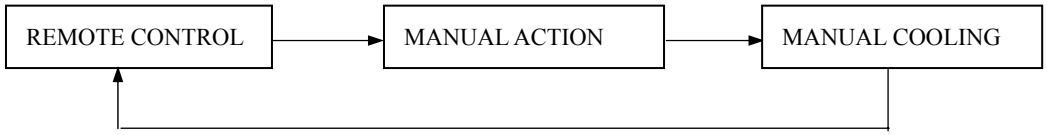
2.6 Condensate Pump

It is controlled by relays.

3. Operation Modes and Functions

3.1 Manual Operation

3.1.1 The manual operation mode is controlled through “manual” pad in the wind in-take grid, including such two modes as manual action and manual cooling. Push the manual pad for each switchover, the order for which is shown below:



3.1.2 Manual Cooling

3.1.2.1 Under this mode, no remote control signal will be received.

3.1.2.2 The compressor is started up unconditionally and the rotating speed of indoor and outdoor fans is set to be in high and forced cooling operation. At the same time, the wind grille is forced to swing (irrelevant to

temperature setting and environment temperature) and will be automatically switched over to manual mode 30 minutes later, under which manual mode will be in effective.

3.1.2.3 Under this mode, the buzzer will buzz twice with each lasting 0.5 second at 0.5 interval. During the first 30 minutes of unconditional forced cooling operation, the operation indicator will blink at 0.5Hz. In the process of switchover to manual action mode, the buzzer buzzes for 0.5 second and the indicator is illuminated.

3.1.2.4 Under this mode, the corresponding protections are in effective (3- minute delayed start-up, over current, outdoor protection and evaporator low temperature protection.). Corresponding protection will act once any protection is in active.

Push "manual" pad once to end this mode and enter the remote control pending status. The buzzer will buzz for 1 second and the indicator turn off.

3.1.3 Manual Action

3.1.3.1 Under this mode, the remote signal will be received and corresponding actions will be taken accordingly upon the receipt of the remote signal.

3.1.3.2 On entering this mode, the buzzer will buzz for 0.5 second and the indicator on.

3.1.3.3 The system will operate under the auto mode whose temperature is set to be 24°C and at the same time, the wind grille will swing automatically.

3.1.3.4 Under this mode, corresponding protections are in effective.

3.1.3.5 Push " manual" pad to end this mode and switch over to manual cooling mode.

3.2 Heating Mode

3.2.1 Four-way valve opens at once, while defrosting process closes.

3.2.2 Condition for the compressor action: (Ts = set temperature, Ta = room temperature)

	Condition	Compressor	Outdoor fan
Room temp. up	Ta > Ts+4	Off	Off
	Ta <Ts+4	On	On
Room temp. down	Ta < Ts+3	On	On
	Ta >Ts+3	Off	Off

3.2.3 Indoor Fan Action

3.2.3.1 Anytime remote switchover for fan speed among high/low/auto(anti-cold air function takes priority).

3.2.3.2 Anti-cold air:

Switchover between fan speed and fine tune can be set according to temperature of evaporator pipe.

	Condition T= Indoor exchanger temp.	Indoor fan speed
Indoor exchanger temp. up	T<25°C	Off
	25°C <T<32°C	Breeze
	T>32°C	Setting fan speed
Indoor exchanger temp. down	T> 30°C	Setting fan speed
	15°C <T<30°C	Breeze
	T<15°C	Off

During anti-cold air period, if indoor fan is shut down, then pre-heating/defrosting lamp is on. Once indoor fan starts, pre-heating/defrosting lamp will be off.

3.2.3.3 Auto fan of indoor fan under heating mode.

	Condition (T =Indoor Temp.-Setting Temp.)	Indoor fan speed
Room temp. up	T<3□	High
	T>3□	Low
Room temp. down	T> 1□	Low
	T<1□	High

3.3 Defrost (only available to heating mode)

3.3.1 The defrosting is processed by indoor control board.

3.3.1.1 Defrosting Conditions

3.3.1.1.1 Low temperature defrosting condition:

Accumulated operating time when temperature of outdoor heat exchanger coil T3 is below -2°C reaches up to over 40 minutes.

3.3.1.1.2 High temperature defrosting condition:

Under high temperature protection of evaporator, the time when outdoor fan is shut down but compressor is not has been accumulated for up to 90 minutes. It is considered that defrosting is performed when either 3.3.1.1 or 3.3.1.2 is met.

3.3.1.2 Defrosting Action

Four-way valve and outdoor fan are shut down. Indoor fan operates according to anti-cold air function. Compressor keeps on continuously.

3.3.1.3 Ending Of Defrosting Condition

It is considered that defrosting condition is ended when any of the conditions is met:

3.3.1.3.1 Operating current of compressor reaches 1.5Ie.

3.3.1.3.2 Time of defrosting reaches 10 minutes.

3.3.1.3.3 Temperature of outdoor coil T3 is up to 20°C.

3.3.1.4 Ending Action of Defrost

3.3.1.4.1 Outdoor fan and four-way valve are open.

3.3.1.4.2 Compressor keeps on continuously.

3.3.1.4.3 Indoor fan acts according to anti-cold air function.

3.3.1.4.4 Defrosting/pre-heating lamp continues to be on until indoor fan starts up.

3.4 Cooling Mode

3.4.1 Four-way valve is closed. If four-way valve is open before the machine enters cooling mode, then four-way valve will be closed at the first time the compressor starts under the cooling mode.

3.4.2 Conditions for the compressor and outdoor fan action (Ts = set temperature, Ta=room temperature)

	Condition	Compressor	Outdoor fan
Room Temp. up	Ta> Ts+1	On	On
	Ta<Ts+1	Off	Off
Room Temp. down	Ta> Ts	On	On
	Ta<Ts	Off	Off

3.4.3 Action of Indoor Fan

3.4.3.1 HIGH/LOW/AUTO fan can be switched over for your comfort.

3.4.3.2 Auto fan under cooling mode.

	Condition (T=Indoor Temp.-Setting Temp.)	Indoor fan speed
Temp. up	T<4□	Low
	T>4□	High
Temp. down	T> 1□	High
	T<1□	Low

3.5 Dehumidifying Mode

3.5.1 Dehumidifying mode is the cooling operation, under which the indoor fan is high and outdoor fan is low.

3.5.2 Protective condition is actived.

3.6 Auto Mode

3.6.1 Under auto mode, the indoor fan is set to be auto (refer to auto fan under cooling, heating).

3.6.2 When entering auto mode, the heating, fan only or cooling operation will be automatically chosen according to the room temperature Ta and the set temperature Ts.

3.6.2.1 When Ta < Ts - 1°c, it performs the heating operation with a set temperature of Ts - 1°c (refer to the heating mode). However the cool only model will be in low fan.

3.6.2.2 When Ts + 2°c ≥ Ta ≥ Ts - 1°c, control according to cooling auto fan with a set temperature of 23°c.

3.6.2.3 When Ta > Ts +2°c, it performs the cooling operation with a set temperature of Ts (refer to the cooling mode).

3.6.3 After one mode is chosen, if the condition Ta > Ts+1°c or Ta < Ts - 1°c lasts for 15 minutes, meanwhile the compressor doesn't start up within consecutive 15 minutes, the operation mode will be re-chosen according to the Ta and Ts.

3.6.4 Protective condition is actived.

3.7 Fan Only Mode

3.7.1 Under this mode, four-way valve, compressor and outdoor fan are shut down.

3.7.2 High/Low/Auto fan can be switched over through manual control. Auto fan will be controlled in line with cooling auto fan with temperature set to be 23°C.

3.7.3 After entering fan mode, the operating indicator is on. If the model is cooling only mode, fan indicator is on at the same time.

4. Other Functions

4.1 LED Display

Operation lamp, timer lamp, defrosting/pre-heating lamp, and water level alarm lamp.

4.1.1 Operation Lamp

When the operation is recovering, it will blink at 1 Hz.

After the air-conditioner is on, the lamp will keep on.

After the air-conditioner is off, the lamp will be off.

When the air-conditioner is switched over from manual cooling to remote control, the lamp will be off.

4.1.2 Timer Lamp

During timer operation, it will be on.

4.1.3 Defrosting/Pre-Heating Lamp

When heat pump model performs defrosting or anti-cold air, it will be on.

4.1.4 Water Level Alarm Lamp

When water level is above the alarm level, it will blink at 5Hz.

4.2 Timer

Refer to remote controller manual for detail operation.

Note: The timer is valid for one operation of the A/C.

4.3 Louver Action

It is controlled by relays.

4.4 Condensate Pump

4.4.1 The action of the water pump is controlled by water level switch.

4.4.2 Control procedures (check water level every 5 seconds)

4.4.2.1 When entering cooling mode, dehumidifying mode or forced cooling mode, condenser starts at once and operates continue until the above modes stop.

4.4.2.2 Under stand-by, heating or fan mode, if the water level in water receiver rises to the position of the water switch, the controller will make LED flashing to give warning signal, and at the same time forces compressor to stop and the drain pump start. The water level will be checked continuously. If the water level falls to warning water level, the warning signal will disappear(the drain pump delay 1 minute to be off), compressor starts again(3 minutes protection takes priority), and operation recovers according to former setting mode. On the other wise, after 3 minutes, the whole unit stops(including drain pump) and warning signal can”t disappear. It can”t recover unless out of power.

5. Trouble Shooting

5.1 Protective Function

5.1.1 3-minute delay for the compressor start-up.

At the beginning of energizing or after the stop of the compressor, 3-minute delay will be needed to start the compressor.

When switchover between cooling/heating mode, the compressor stops automatically.

5.1.2 The AC don”t check the compressor current through electric control system, but use compressor self current protection.

5.1.3 Evaporator protection against high temperature(heating mode)

Only available to heating mode, including heating mode, heating operation under auto mode.

※ Note: During protection, the indoor fan continues operating at a setting speed, while the anti-cold air function of heating and the compressor will be 3 minute delayed to shut down for protection.

5.1.4 Evaporator Protection against low temperature(cooling mode)

5.1.4.1 When the evaporator pipe temperature ≤ 3°c and this lasts for 3 minutes, the compressor and outdoor fan will be shut off.

5.1.4.2 When the evaporator pipe temperature ≥ 7°c, it recovers.

5.1.4.3 The restart of the compressor shall execute the delay protection.

5.1.5 Anti-cold air protection

Only available to heating mode, including heating mode, heating operation under auto mode.

5.1.6 Condenser high temperature protection

5.1.6.1Only available to cooling (incl. cooling mode, cooling operation under auto mode) and dehumidifying mode.

5.1.6.2 Delay protection should be performed when the compressor restarts.

5.1.7 Water level protection

5.2 Self-diagnosis

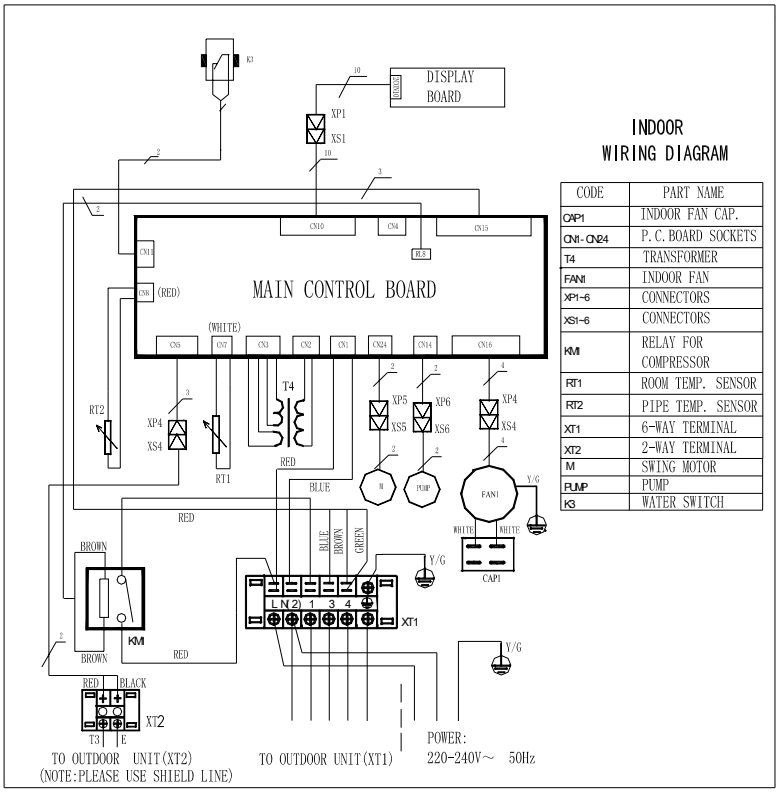
5.2.1 Indoor unit

No.	Type	Contents	LED Flashing	Remark
1	protection	Over current protection of the compressor occurs 4 times in 1h	Lamps of operation, timer, defrosting (only fan) flashing simultaneously at 5Hz.	Whole unit is shut down. It cannot recover unless power is cut off
2	protection	Outdoor protection (absent phrase, phrase sequence and temperature protection)	All lamps flashing at 5Hz	Recover automatically after errors are eliminated
3	error	Room temperature sensor checking channel is abnormal	Timer lamp flashing at 5Hz	
4	error	Evaporator sensor checking channel is abnormal	Operation lamp flashing at 5Hz	
5	error	Condenser sensor checking channel is abnormal	Defrosting lamp flashing at 5Hz	
6	error	Temperature fuse is melt(reserved)	Operation lamp and timer lamp flashing at 5Hz	

Part 9. Wiring Diagram

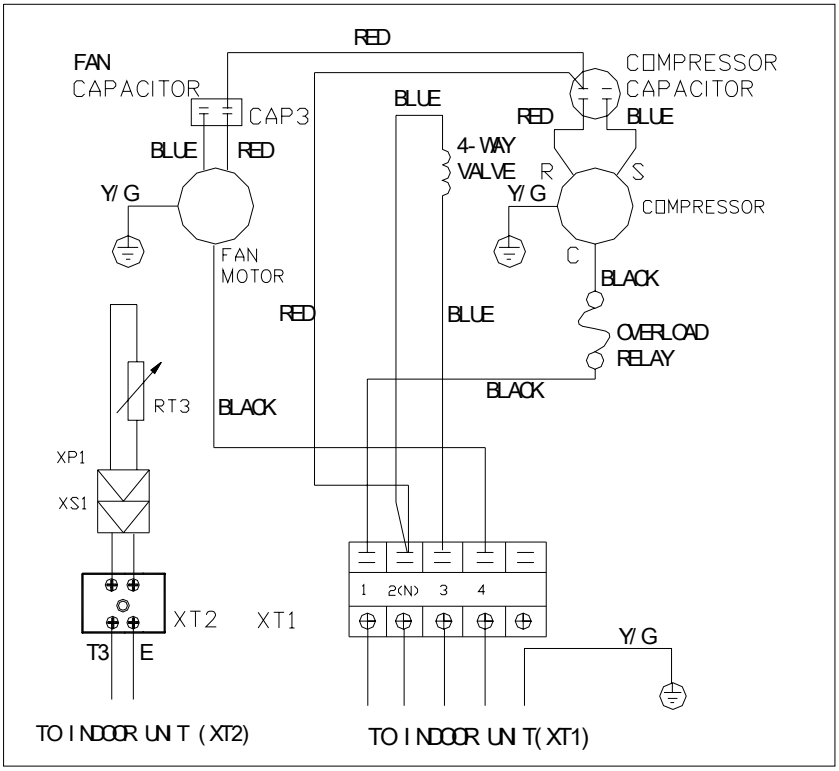
1. FSK-94HF

Indoor Unit



CODE	PART NAME
CAP1	INDOOR FAN CAP.
CN1-CN24	P.C.BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1-6	CONNECTORS
XS1-6	CONNECTORS
KM	RELAY FOR COMPRESSOR
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	6-WAY TERMINAL
XT2	2-WAY TERMINAL
M	SWING MOTOR
PUMP	PUMP
K3	WATER SWITCH

FSO-94HF Outdoor Unit



Part 10 Installation

1. Installation place

● A place where there is enough room for installation and maintenance.(Refer to Chart 1)

● The ceiling is structurally sound to hold the Indoor Unit.

● A place that is well ventilated and the influence of weather is the least.

● A place that the airflow can reach every corners of the room.

● A place where the drain pipe can reach out easily.

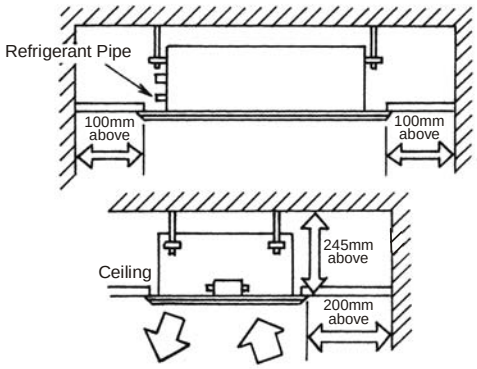


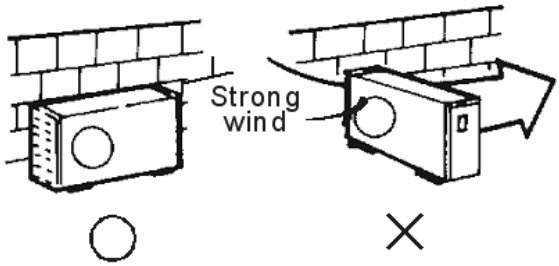
Chart 1

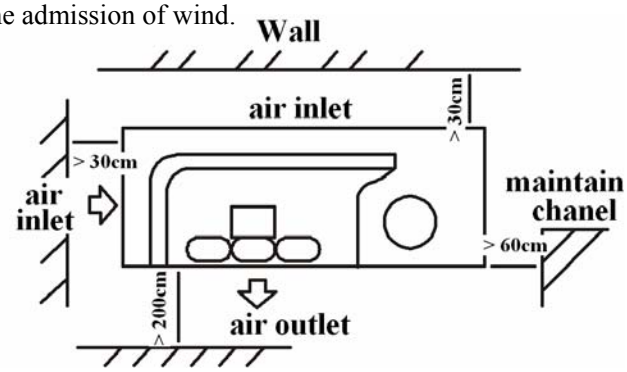
●Install the outdoor unit on a rigid base to prevent increasing noise level and vibration.

●Determine the air outlet direction where the discharged air is not blocked.

●In the case that the installation place is exposed to strong wind such as a seaside or high position, secure the normal fan operation by putting the unit length wise along the wall or using a duct or shield plates.

●Specially in windy area, install the unit to prevent the admission of wind.





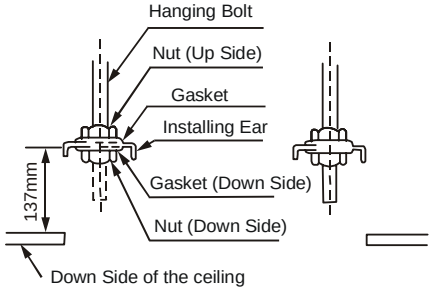
2. Indoor unit installation

Adjust the indoor unit and the ceiling hole with Installation Model Paper applied. Fix the Model Paper on the main body of the air conditioner with five screws (M4x16) applied.

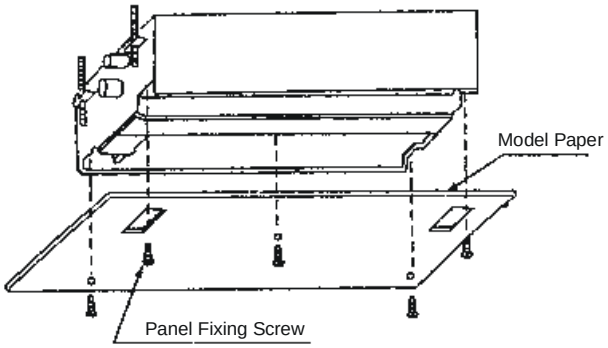
1. Installing ϕ10 hanging screw bolt. (4 bolts)
2. Overhanging the Indoor unit

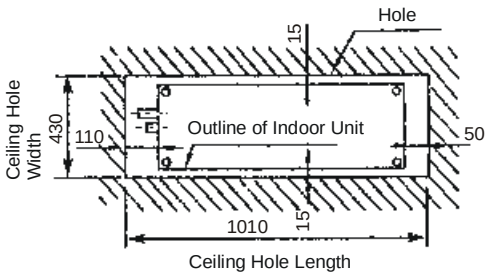
Note: Do not lean the air conditioner when overhanging it because drain pump and water lever switch are installed inside.

Adjust the gasket (down side) to 137mm over the ceiling.



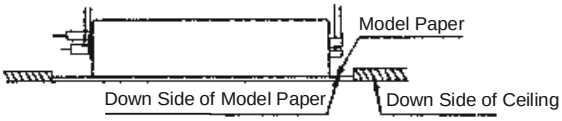
● Install the hanging bolt into U groove of the hanging tool. Overhang the indoor unit and ensure it is &&level using a level indicator.

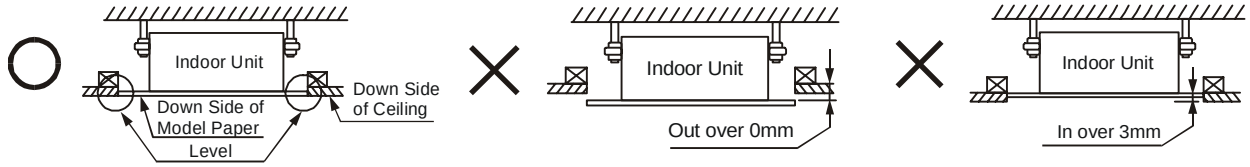




Install the ceiling with the screws used to install Model Paper.

●Secure the Model Paper to the down side of Indoor Unit with Screws used to fix panel.





●Fasten the nut to secure the Indoor Unit.

3. Panel installation

Make sure the following before installing the panel:

- Downside of Indoor Unit and Ceiling must be in the same plane.
- Indoor Unit must be parallel with the Ceiling Hole.
- Check if there is water in the drain pipe.

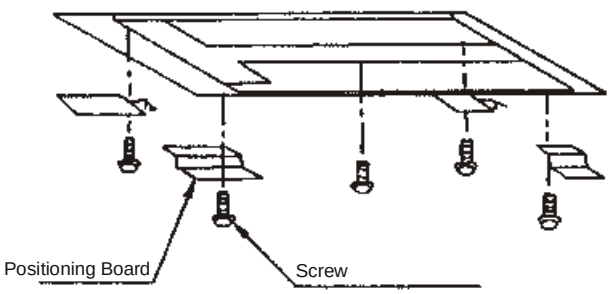
Installation Procedure

(1). Remove screws on panel

● Panel Screws (M4x16) include the four screws used to install Model Paper of the Indoor Unit and the one screw used to fix central of Indoor Unit temporarily.

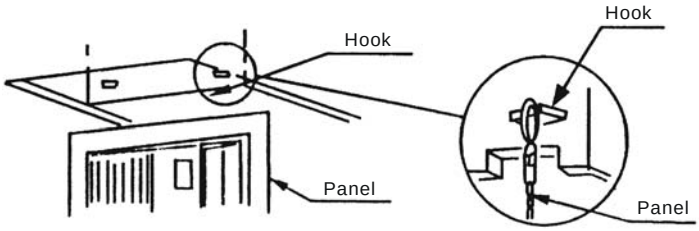
● Do not use Model Paper when installing the panel.

● Remove Panel Screws and Model Paper.

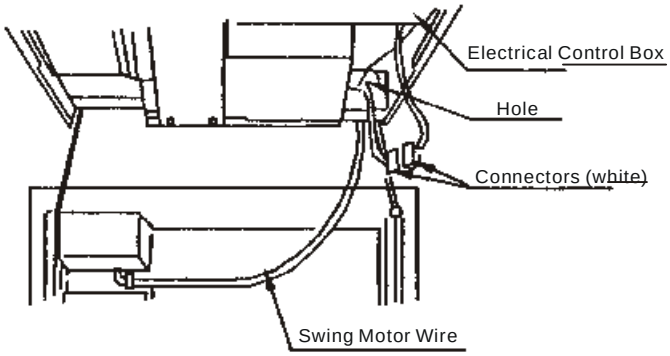


(2). Hang the Panel

● Hang the panel at the hook of Indoor Unit left side.

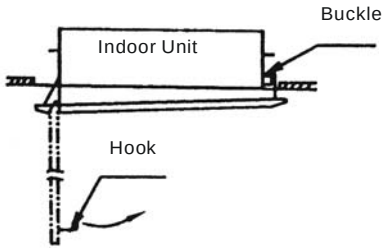


(3). Lead the Swing Motor Wire and Remote Controller Wire into the hole at Indoor Unit left side from outside.

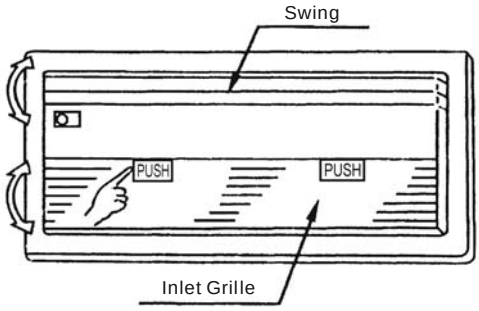


(4). Fasten the screws

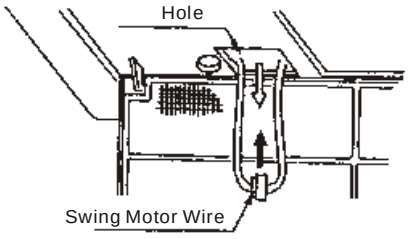
● Lift right side of the panel, then hang the hook of the panel into the buckle at right side of the &&&Indoor Unit.



● Push Inlet Grille (PUSH is marked), then open it.



● Connect Panel with Swing Motor Wire Connector (white) and Remote Controller Wire Connector after passing through a hole.



● Confirm the wires are not nipped between the panel and the Indoor Unit, or the panel and the &ceiling. Then fasten the screws according to the following.

1) Fix the panel at central point temporarily.

2) Confirm and adjust the position.

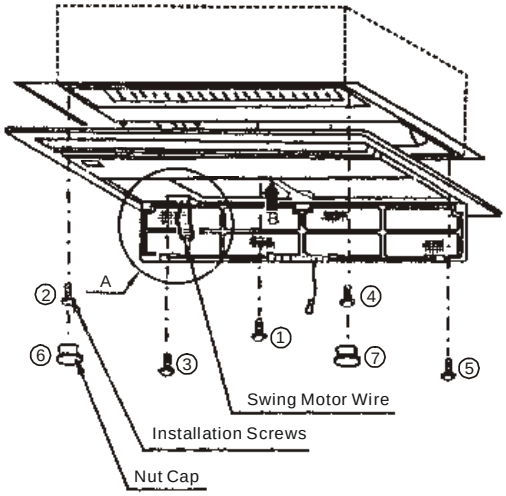
3) Fix left side of panel (from 2 to 3) temporarily.

4) Fix right side of panel (from 4 to 5) temporarily.

5) Confirm the installation position.

6) Fasten the 1,2,3,4,5 screws tightly.

● After tightening Panel Screws, install two screw caps to the screws at side of Air Outlet.



● Lead Swing Motor Wire into a hole.

● Hang the Strip Hook of Inlet Grille to the hole in the middle of Indoor Unit Air Inlet.

● Check if Air Filter is installed.

● Confirm the Strip Hook are not clipped between lnlet Grille and the Panel, then push the parts which marked "PUSH" and close the lnlet Grille.

Check after installation completed:

● Check there is no clearance between the panel and the Indoor Unit, or between the panel and the ceiling. (If clearance exists, leakage may come)

● Check if there is any wire or line clipped between the Panel, Indoor Unit and the Ceiling.

4. Install outdoor unit

5. Refrigerant pipe connecting

(1) Maximum pipe length

Model	Max. Length	Max. Elevation
FSK-94HF/FSO-94HF	15m	5m

(2) Piping sizes

Model	Liquid(mm/inch)	Gas(mm/inch)
FSK-94HF/FSO-94HF	6.35(1/4)	9.52(3/8)

(3) Piping connection

1). Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

CAUTIONS

● Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds

●With hands before fasten the flare nuts.

● Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Tubing size	Torque
6.35	1420~1720N.cm(144~176kgf.cm)
9.52	3270~3990N.cm(333~407kgf.cm)

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

2) Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

3) Connect the pipes.

4) Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

5) Be sure of no leakage by checking it with leak detector or soap water.

6) Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

(4) Additional charge

When the length of the one-way pipe is less than 5m, additional refrigerant charge after vacuuming is not necessary.

When the length of one-way pipe is over 5m, the quantity to be added is as follows (unit in gram):

Connective pipe length	Air purging method	Additional amount of refrigerant to be charged
Less than 5m	Use refrigerant of outdoor unit	
Over 5m	Use vacuum pump or refrigerant cylinder	30g(length-5m)

6. Connect the drain pipe

7. Wiring

Please refer to the Wiring Diagram.

8. Test operation

(1) The test operation must be carried out after the entire installation has been completed.

(2) Please confirm the following points before the test operation.

The indoor unit and outdoor unit are installed properly.

Tubing and wiring are correctly completed.

The refrigerant pipe system is leakage-checked.

The drainage is unimpeded.

The ground wiring is connected correctly.

The length of the tubing and the added stow capacity of the refrigerant have been recorded.

The power voltage fits the rated voltage of the air conditioner.

There is no obstacle at the outlet and inlet of the outdoor and indoor units.

The gas-side and liquid-side stop values are both opened.

The air conditioner is pre-heated by turning on the power.

(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.

(4) Test operation

Indoor unit

Whether the switch on the remote controller works well.

Whether the buttons on the remote controller works well.

Whether the air flow louver moves normally.

Whether the room temperature is adjusted well.

Whether the indicator lights normally.

Whether the drainage is normal.

Whether there is vibration or abnormal noise during operation.

Outdoor unit

Whether there is vibration or abnormal noise during operation.

Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.

Whether any of the refrigerant is leaked.

Part 11 Servicing and Maintenance

1. Troubles and Solutions

If any the following abnormal conditions occur, turn off the power supply immediately. Please contact our dealer.	
TROUBLES	Indicator lamps flash rapidly, after your disconnecting and connecting the unit, the situation is the same.
	Fuse or circuit breaker work frequently.
	Foreign matter or water has fallen into the unit.
	Remote controller is disabled or the switch is out of hand.
	Any other unusual conditioner is observed.

If any of the following conditions occur, check your unit and resolve corresponding problems referring to given remediation. If the trouble can't be settled contact our dealer.		
Trouble	Cause	Solutions
Unit does not start	Power failure.	Wait for the comeback of power
	Power switch is open.	Switch on the power
	Fuse of power switch may have blown.	Replace the fuse
	Batteries of remote controller are exhausted.	Replace the batteries
	The time is not start-up time you have set.	Wait or cancel the time set.
Air flowing normally with low cooling(heating) effect	Temperature is not set correctly.	Set the temperature properly.
	Door or window is open.	Close door and window.
	Air filter is blocked with dust or dirtiness.	Clean the air filter.
	Inlet/outlet of indoor/outdoor units are blocked.	Clear all blockages.
	Inlet/outlet of indoor/outdoor units are blocked.	Clear the blockage, then restart your operation.
	Be in 3 minutes protection of compressor	Wait

NOTE: Do not replace electric wire or repair the air conditioner by yourself to avoid possible danger.

2. Troubles and solutions concerning the remote controller

Please make the following check before asking for repair or maintenance.

Trouble	Cause	Solutions
CAN NOT CHANGE THE FAN SPEED SETTING	Check if the mode display on the LCD is AUTO	The lndoor Unit will select fan speed automatically when AUTO mode is selected.
	Check if the mode display on the LCD is DRY	The lndoor Unit will select fan speed automatically when the unit is on DRY mode.

The transmission symbol does not flash		
Symptom	Checking items	Cause
Press ON/OFF button, the remote controlling signals can not be transmitted	Check if the remote controller has run out of power	When the battery was out, transmission signals can not be sent

Temperature display disappear		
Symptom	Checking items	Cause
Temperature Display does not light.	Check if the mode display on the LCD is FAN ONLY	You can not set the temperature when the unit is on FAN ONLY mode.

The Display Goes Off		
Symptom	Checking items	Cause
The indication on the display disappears after a lapse of time.	Check whether the timer operation has come to an end when the OFF TIMER is indicated on the display.	The air conditioner operation stops since the set time elapsed.
The ON TIMER indicators go off after a lapse of certain time.	Check whether the timer operation is started when the ON TIMER is indicated on the display.	When the time set to start the air conditioner is reached, the air conditioner will automatically start and the appropriate indicator will go off.

The Signal Receiving Tone does Not Sound		
Symptom	Checking items	Cause
No receiving tone sounds from the indoor unit even when the ON/OFF button is pushed.	Check whether the signal transmitter of the remote controller is properly directed to the receiver of the indoor unit when the ON/OFF button is pushed.	Direct the signal transmitter of the remote controller to the receiver of the indoor unit, and then repeatly push the ON/OFF button twice.
Buttons on the remote controller don't work.		Press Reset button.

3. Clean

CAUTION: Please turn off your air conditioner and disconnect power supply before cleaning.

(1) CLEANING INDOOR UNIT

Use a dry to wipe the indoor unit.

A cloth dampened with cold water may be used if the indoor unit is too dirty.

It is allowed to remove the front panel of indoor unit and clean it with water, and ensure to wipe it up with a dry rag.

Note: Do not use a chemically treated duster for wiping or leave such materials near the unit for long.

Do not use benzene, thinner, polishing powder, or similar solvents for cleaning.

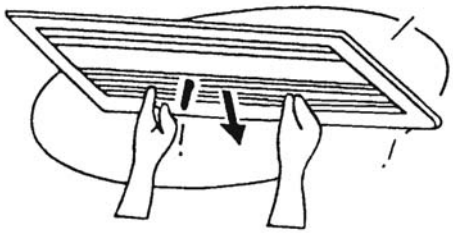
(2) CLEANING AIR FILTER

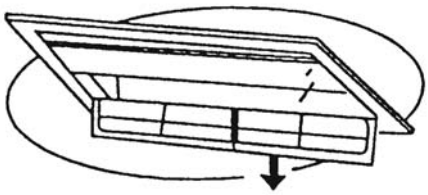
The air filter in unit can filter dust and other granules in air. It may reduce the cooling effect that the air filter is covered with dust. So clean the air filter often.

When the unit is located in a dusty place cleaning frequency should be increased.

If the dust too thick to clean, please replace the air filter. (Air filter for replacement is optional fittings).

1) Press the "PUSH" position in right-and-let sides of inlet, then open the inlet.
2) Lift the air filter, then take it out downwards.



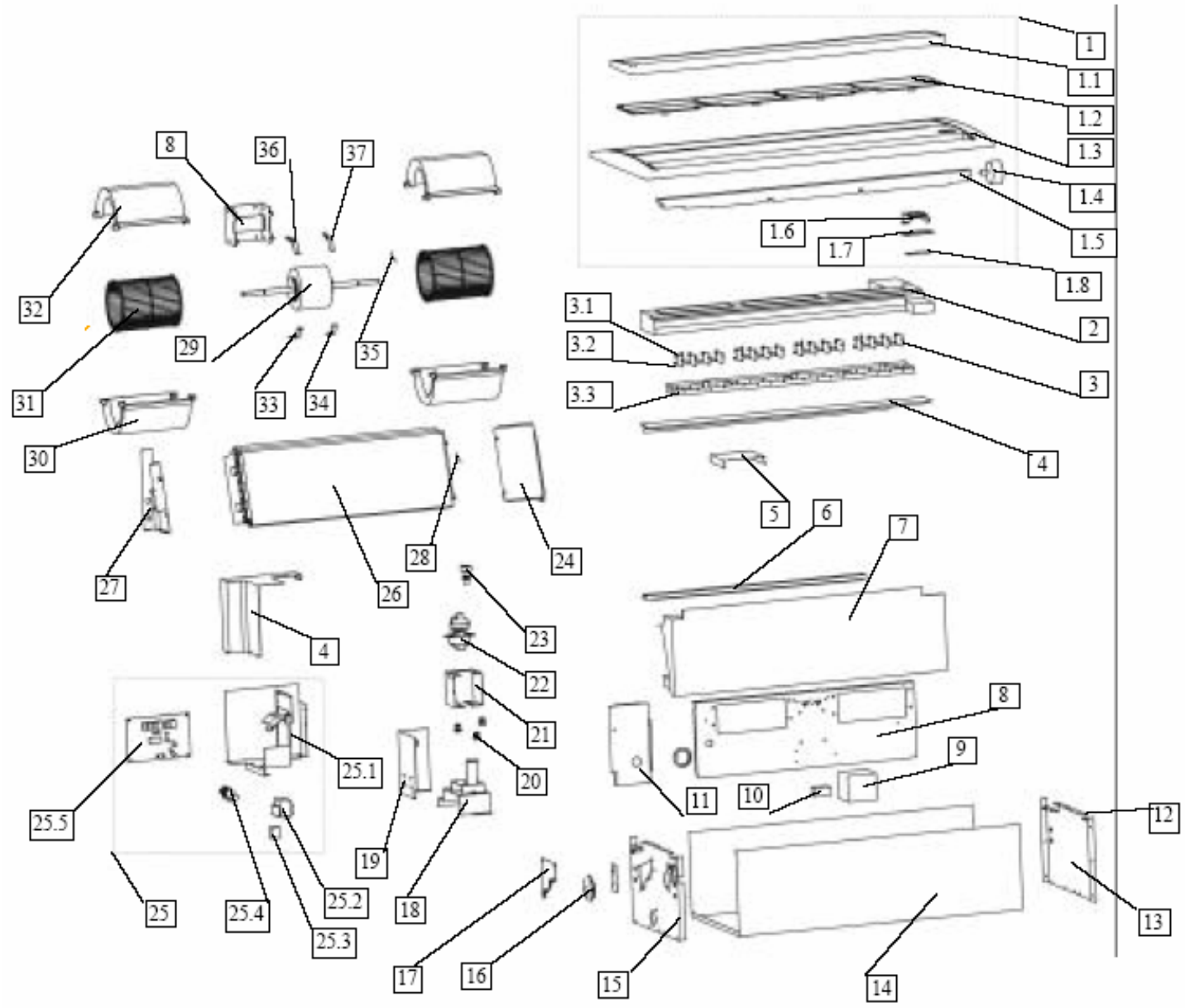


3) Clean the air filter with vacuum cleaner or water.
   a. Clean with vacuum cleaner. The inlet face is up.
   b. Clean with water. The inlet face is down.
   c. If the dust is too thick, please clean air filter with soft brush and neutral scour, then throw off the
   d. Water and dry it in cold place.

Part 12 Exploded view

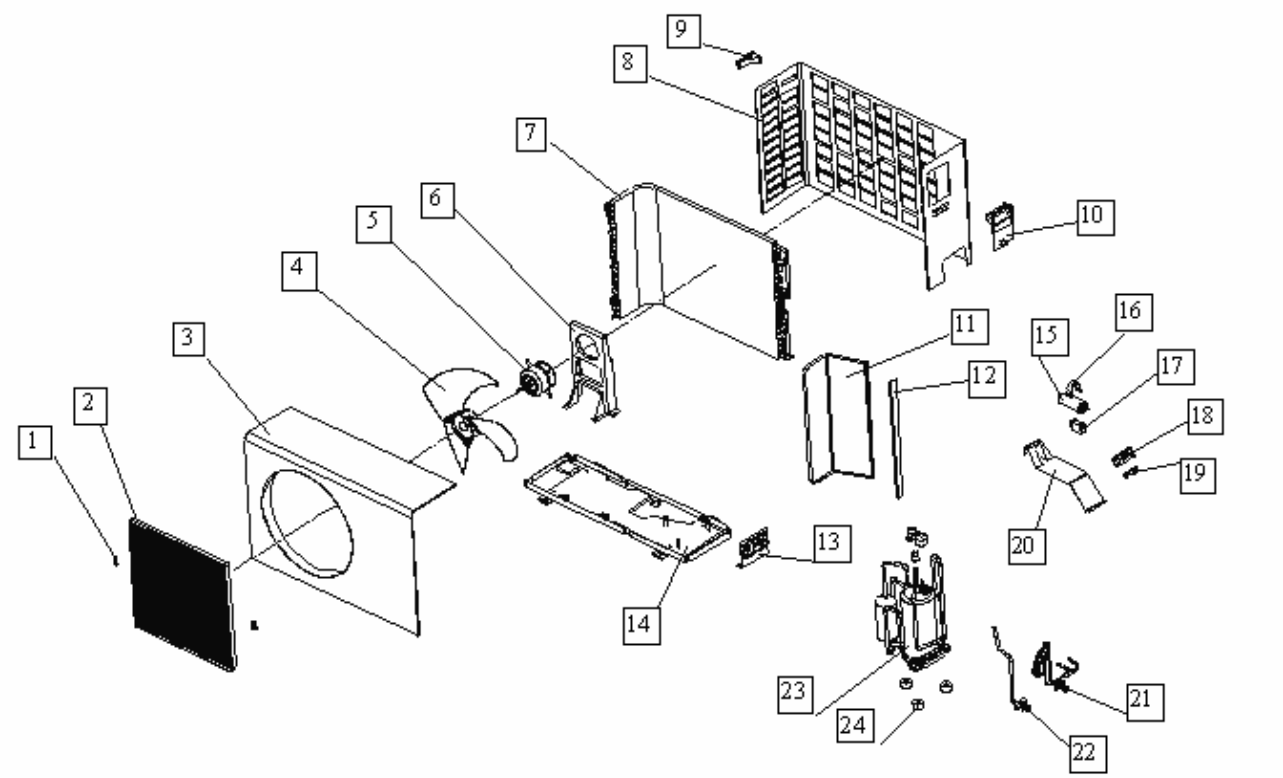
Indoor unit

FSK94HF



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Panel frame, assy	1	17	Seal Plate ,Ass'y	1
1.1	Grille	1	18	Water depth sensor holder	1
1.2	Air filter	2	19	Separating board, pump	1
1.3	Panel	1	20	Rubber washer, pump	4
1.4	Swing motor	1	21	Pump protecting board	1
1.5	Up louver	1	22	Drain Pump	1
	Below louver	1	23	Water depth sensor	1
1.6	Control box	1	24	Left evaporator cover	1
1.7	Display board， Ass'y	1	25	E-parts, assy	1
1.8	Control box cover	1	25.1	E-Parts box	1
2	Water collector, assy	1	25.2	Transformer	1
3	Air-out guide	1	25.3	Relay	1
3.1	Horizontal louver	16	25.4	Wire joint,6p	1
3.2	Connection bar	4	25.5	Main control board	1
3.3	Horizontal louver frame	1	25.6	Wire joint,2p	1
4	Cover board	1	26	Evaporator	1
	Cover for e-parts box	1	27	Right evaporator cover II	1
5	Motor cover	1	28	Evaporator temp sensor	1
6	Middle cover	1	29	Fan Motor	1
7	Heat-insulation foam	1	30	Volute Shell, below half	1
8	Fan Motor Holder	1	31	Fan	1
9	Capacity Box	1	32	Volute Shell, up half	2
10	Fan motor capacitor	1	33	Fixing Plate III for Fan Motor	2
11	Right evaporator cover	1	34	Fixing Plate IV for Fan Motor	2
12	Strengthen board	1	35	Indoor temp sensor	1
13	Left clapboard	1	36	Fixing Plate I for Fan Motor	1
14	Chassis	1	37	Fixing Plate II for Fan Motor	1
15	Plate clapboard	1			
16	Observation Hole Cover, Ass'y	1			

FSO-94HF
outdoor



No.	Part Name	Quantity	No.	Part Name	Quantity
1	Clamp for front net	6	18	Wire joint	1
2	Front net	1		Wire joint, 2p	1
3	Front clapboard	1		connector install board	1
4	Propeller fan	1	19	Clamp for wiring	1
5	Fan Motor	1		Washer for wire joint	1
6	Holder for fan motor	1	20	Installation board for E-parts	1
7	Condenser	1	21	Liquid pipe valve	1
8	Rear clapboard	1	22	Gas pipe valve	1
9	Small Handle	1		4-Ways valve	1
10	Big Handle	1	23	Compressor	1
11	Separating board	1	24	Rubber underlay for compressor	3
12	Right fixing board for condenser	1	25	Rear Net	1
13	Installation plate for valves	1	26	Water collector	1
14	Chassis	1	27	Pipe temperature sensor II ass'y	1
15	Compressor capacitor	1	28	Left support angle	1
16	Capacitor clamp	1	29	Cover	1
17	Fan motor capacitor	1			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