

SERVICE MANUAL

**KING
SERIES**

ASH-18AK, ASH-24AK



① Summary and features



18 Outdoor unit:



24 Outdoor unit:



Model	Remarks
ASH-18AK ASH-24AK	1Ph 220~240V 50Hz R410a

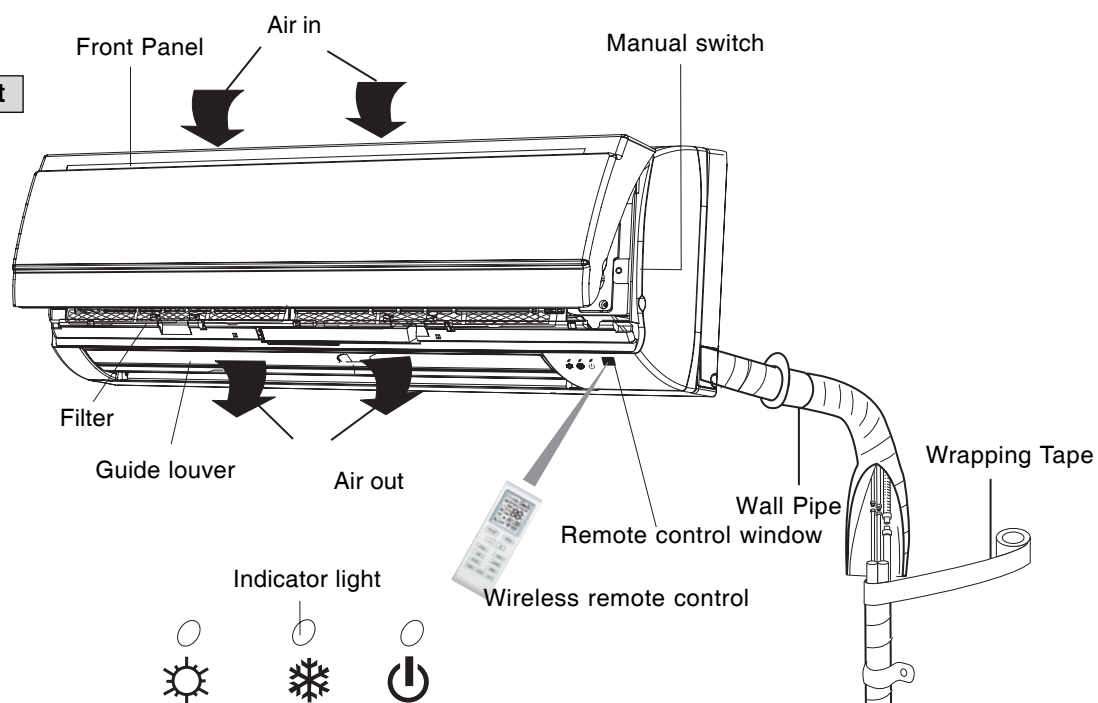
2 Technical specifications

Model		ASH-18AK		ASH-24AK	
Function		COOLING	HEATING	COOLING	HEATING
Rated Voltage		220-240V~		220-240V~	
Rated Frequency		50Hz		50Hz	
Total Capacity (Btu/h)		18000	19500	22000	23200
Power Input (W)		1640	1670	2120	2120
Rated Input (W)		2500	2550	3000	3000
Rated Current (A)		10.9	11.1	13	13
Air Flow Volume (m ³ /h) (H/ML)**		830/670/600		830/670/620	
Dehumidifying Volume (l/h)		3		4	
EER / C.O.P (W/W)		3.21		3.01	
Energy Class		A		B	
Indoor unit	Model of Indoor Unit	ASH-18AK		ASH-24AK	
	Fan Motor Speed (r/min) (H/ML)	1200/1050/900		1200/1050/950	
	Output of Fan Motor (w)	20		20	
	Input of Heater (w)	/		/	
	Fan Motor Capacitor (uF)	1		1	
	Fan Motor RLA(A)	0.4		0.4	
	Fan Type-Piece	Cross flow fan – 1		Cross flow fan – 1	
	Diameter-Length (mm)	φ96 X 797		φ96 X 797	
	Evaporator	Aluminum fin-copper tube		Aluminum fin-copper tube	
	Pipe Diameter (mm)	Φ7		Φ7	
	Row-Fin Gap(mm)	2-1.6		2.5-1.6	
	Coil length (l) x height (H) x coil width (L)	785X340.51X25.4		785X340.51X25.4	
	Swing Motor Model	MP35XX		MP35XX	
	Output of Swing Motor (W)	2.5		2.5	
	Fuse (A)	PCB 3.15A Transformer 0.2A		PCB 3.15A Transformer 0.2A	
	Sound Pressure Level dB (A) (H/ML)	48/45/42/38		48/45/42/39	
	Sound Power Level dB (A) (H/ML)***	58/55/52/48		58/55/52/49	
	Dimension (W/H/D) (mm)	1020X228X310		1020X228X310	
	Dimension of Package(W/H/D)(mm)	1078X390X325		1078X390X325	
	Net Weight /Gross Weight (kg)	14/19		15/20	

Outdoor unit	Model of Outdoor Unit		ASH-18AK	ASH-24AK
	Compressor Manufacturer/trademark		Shanghai Hitachi Electrical Appliances Co.,Ltd./Highly	Shanghai Hitachi Electrical Appliances Co.,Ltd./Highly
	Compressor Model		ASH210SV-C8LU	ASH264SV-C8LU
	Compressor Type		rotary compressor	rotary compressor
	L.R.A. (A)		40	60
	Compressor RLA(A)		7.5	10.3
	Compressor Power Input(W)		1725	2215
	Overload Protector			
	Throttling Method		Capillary	Capillary
	Starting Method		Capacitor	Capacitor
	Working Temp Range (℃)		-7℃≤T≤43℃	-7℃≤T≤43℃
	Condenser		Aluminum fin-copper tube	Aluminum fin-copper tube
	Pipe Diameter (mm)		7	Φ9.52
	Rows-Fin Gap(mm)		2-1.4	2-1.4
	Coil length(l) x height(H) x coil width(L)		806×660×25.4	804X660X44
	Fan Motor Speed (rpm) (H/ML)		860	780
	Output of Fan Motor (W)		48	68
	Fan Motor RLA(A)		0.62	1.2
	Fan Motor Capacitor (uF)		3.5	2.5
	Air Flow Volume of Outdoor Unit		2790m3/h	3400m3/h
	Fan Type-Piece		Axial fan –1	Axial fan –1
	Fan Diameter (mm)		Φ473	Φ472
	Defrosting Method		Auto defrost	Auto defrost
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side(MPa)		3.8	3.8
	Permissible Excessive Operating Pressure for the Suction Side(MPa)		1.2	1.2
	Sound Pressure Level dB (A) (H/ML)		56/54/52	56/54/52
	Sound Power Level dB (A) (H/ML)		66/64/62	66/64/62
	Dimension (W/H/D) (mm)		913X680X378	950X700X412
	Dimension of Package (L/W/H)(mm)		994X720X428	1100X755X450
	Net Weight /Gross Weight (kg)		46/50	59/64
	Refrigerant Charge (kg)		R410/1.6	R410/1.85
Connecti on Pipe	Length (m)		4	4
	Gas additional charge(g/m)		50	50
	Outer Diameter	Liquid Pipe (mm)	φ 6	φ 9.52
		Gas Pipe (mm)	φ 12	φ 16
	Max Distance	Height (m)	5	5
Length (m)		10	10	
The above data is subject to change without notice. Please refer to the nameplate of the unit.				

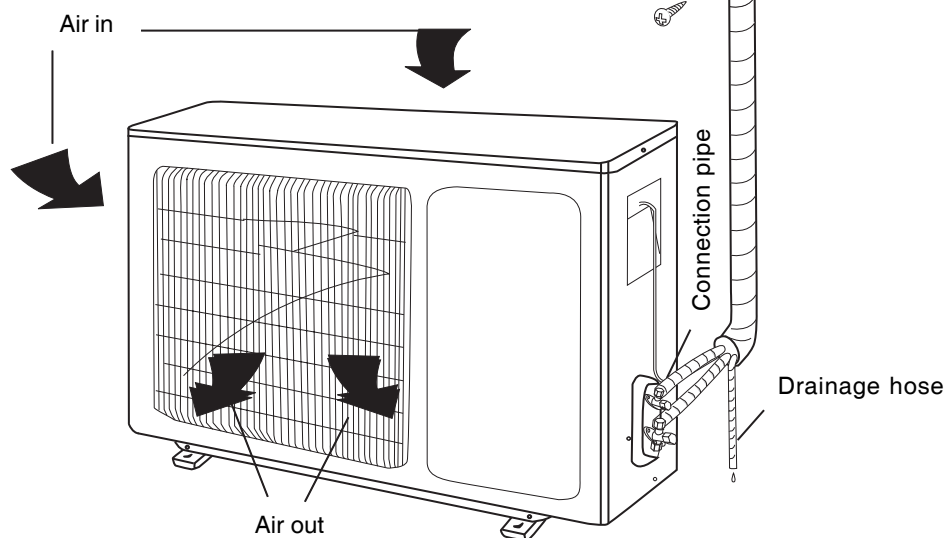
3 Part name

Indoor unit



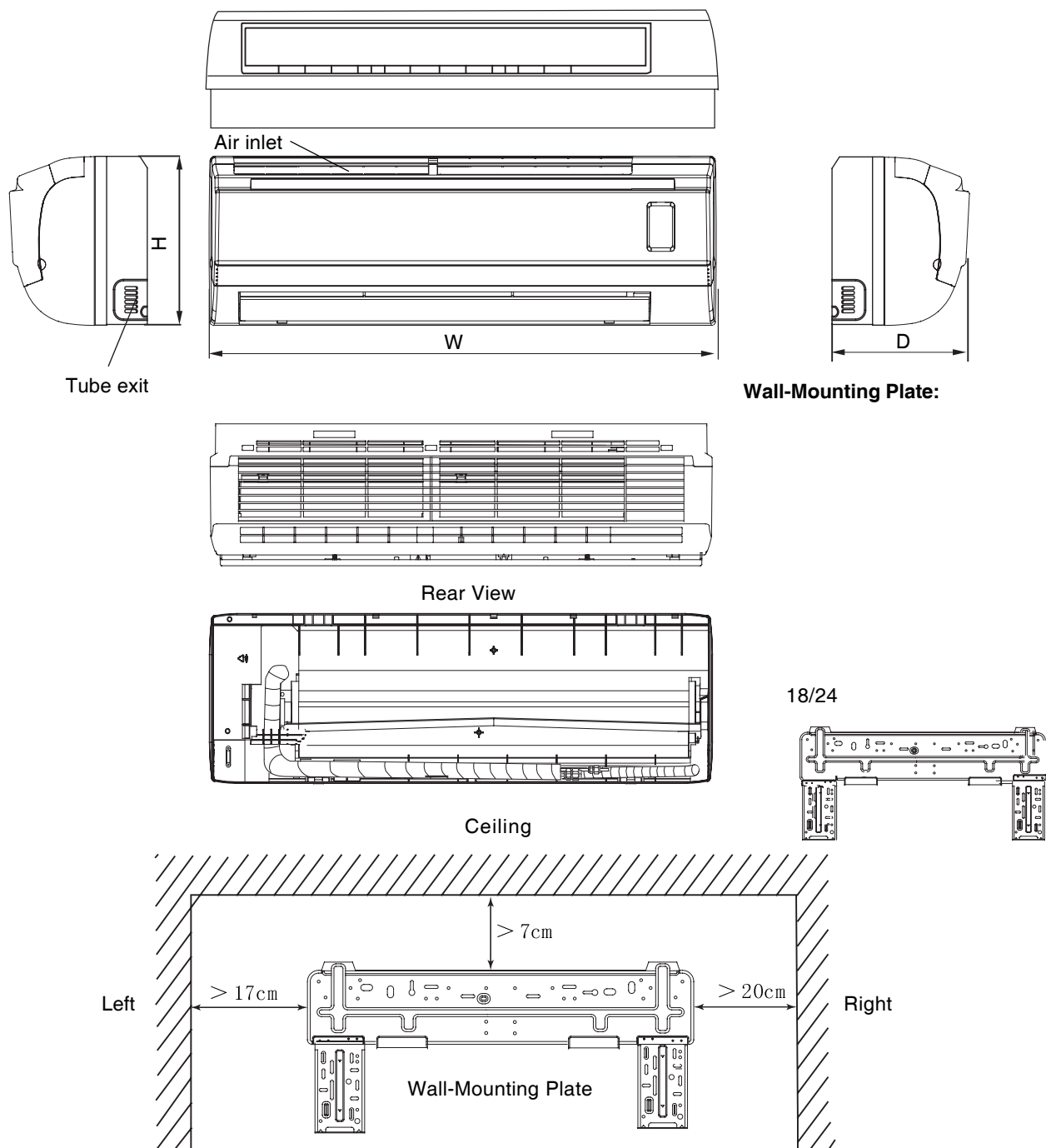
- Heat
- Cooling
- Run

Outdoor unit



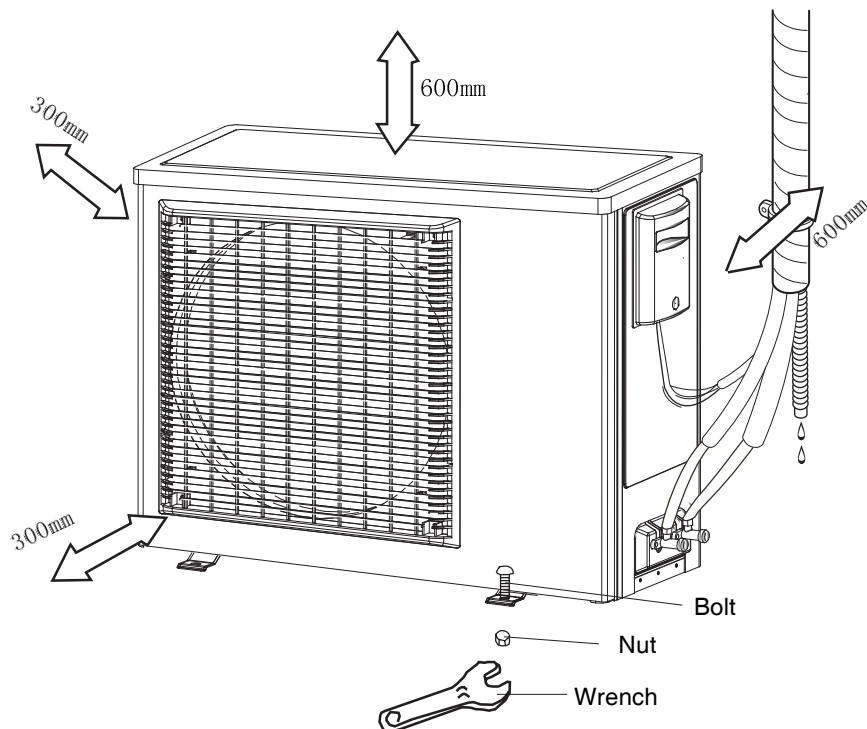
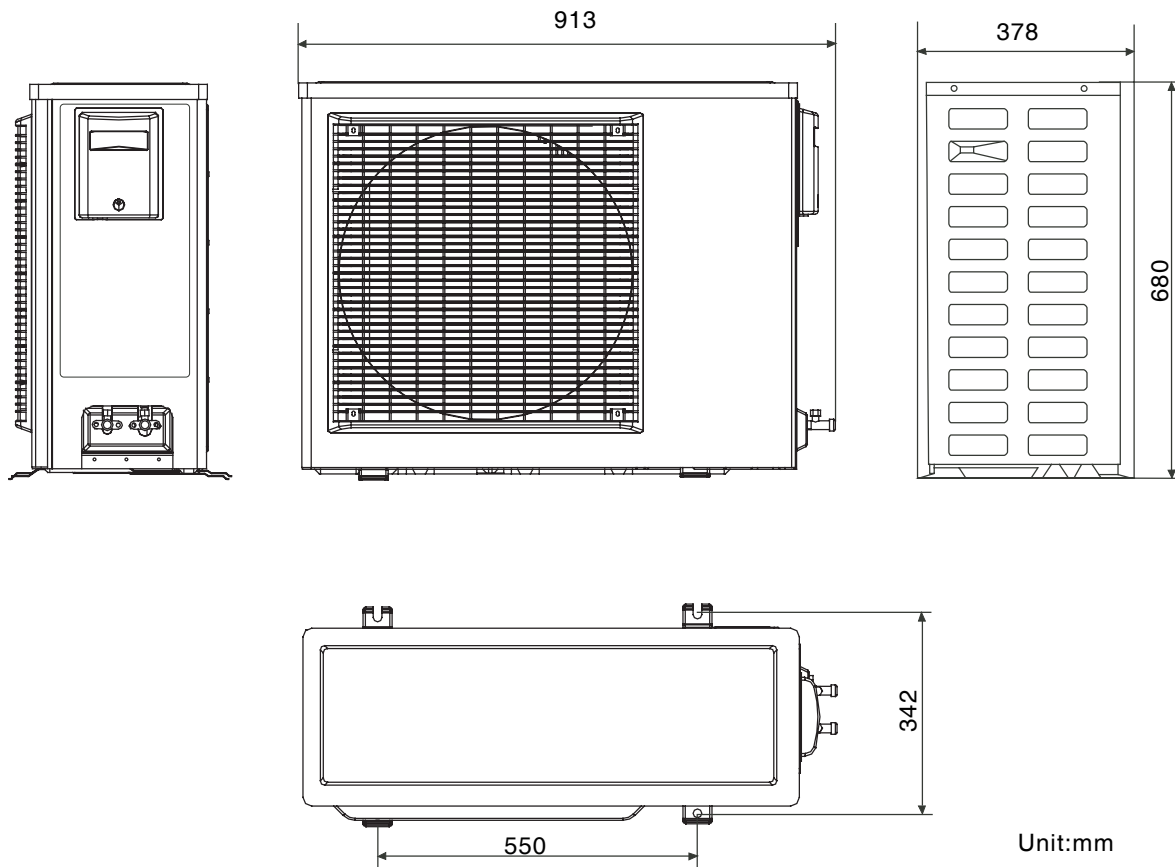
4 Outline and installation dimension

4.1 Outline and installation dimensions of indoor unit

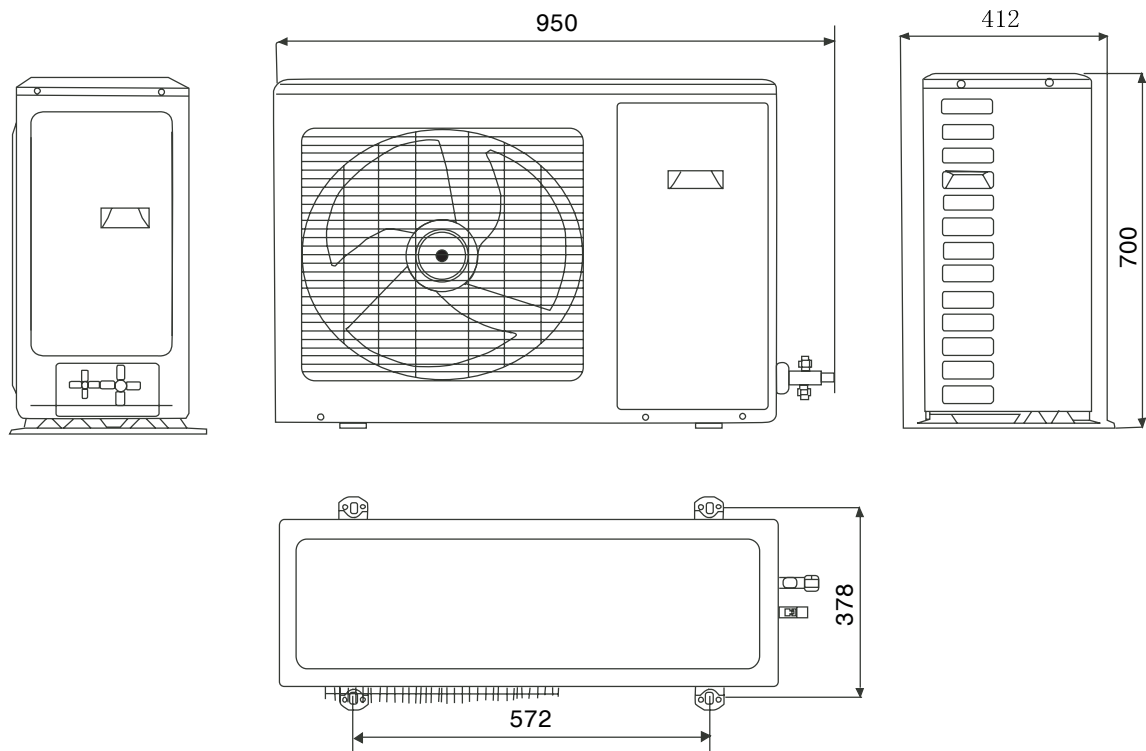


4.2 Outline and installation dimensions of outdoor unit

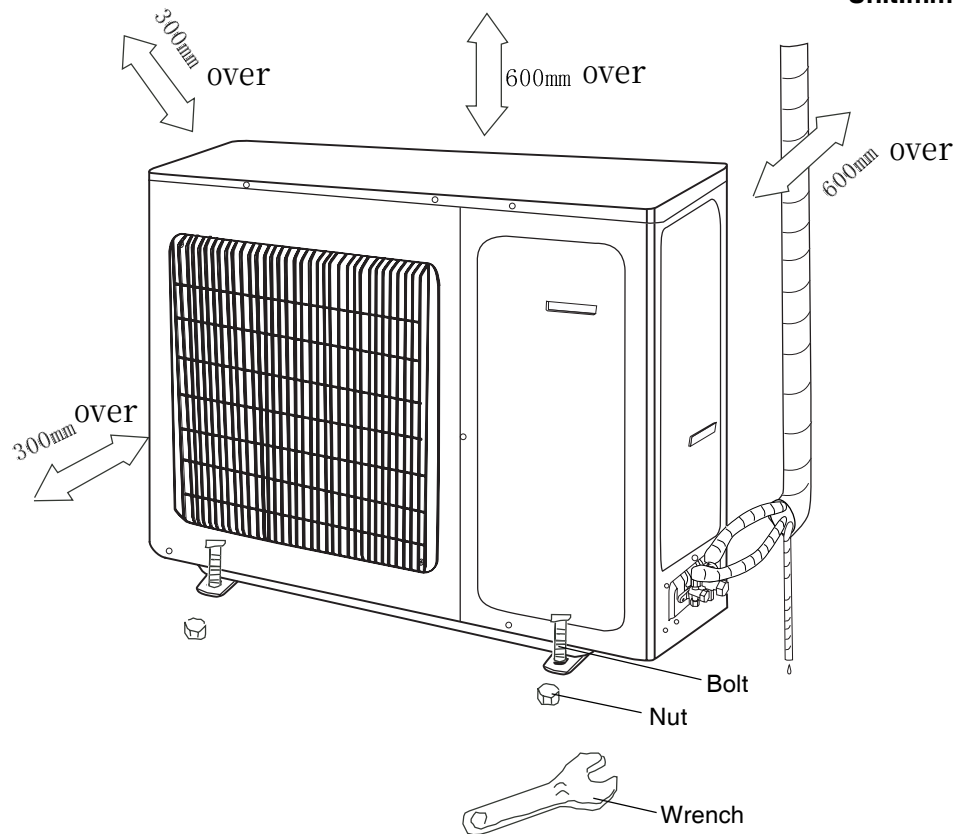
ASH-18AK



ASH-24AK

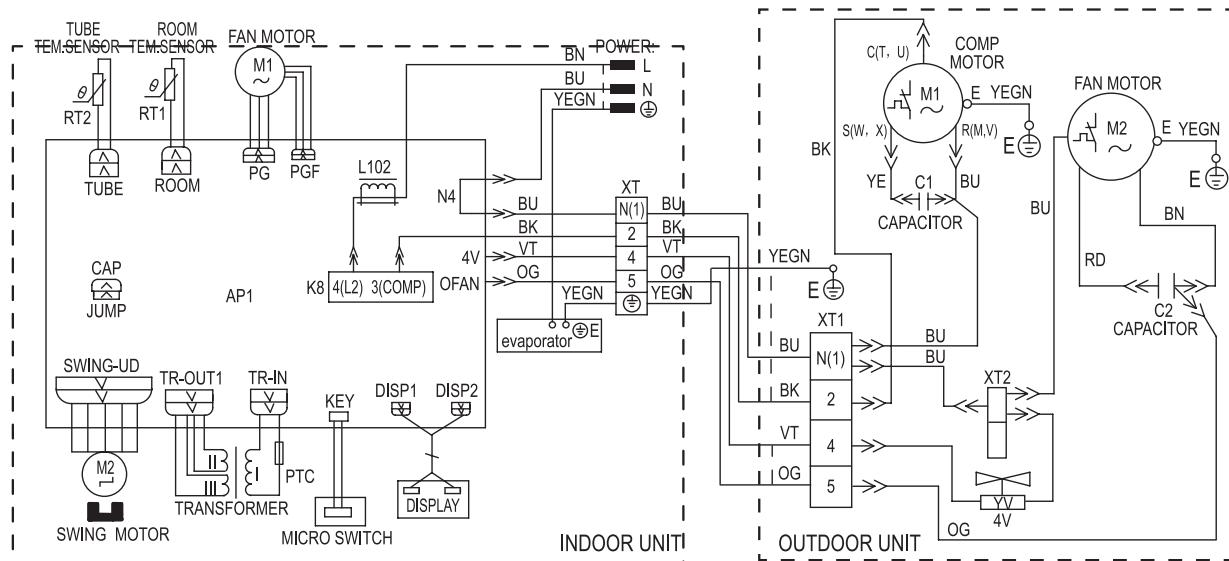


Unit:mm

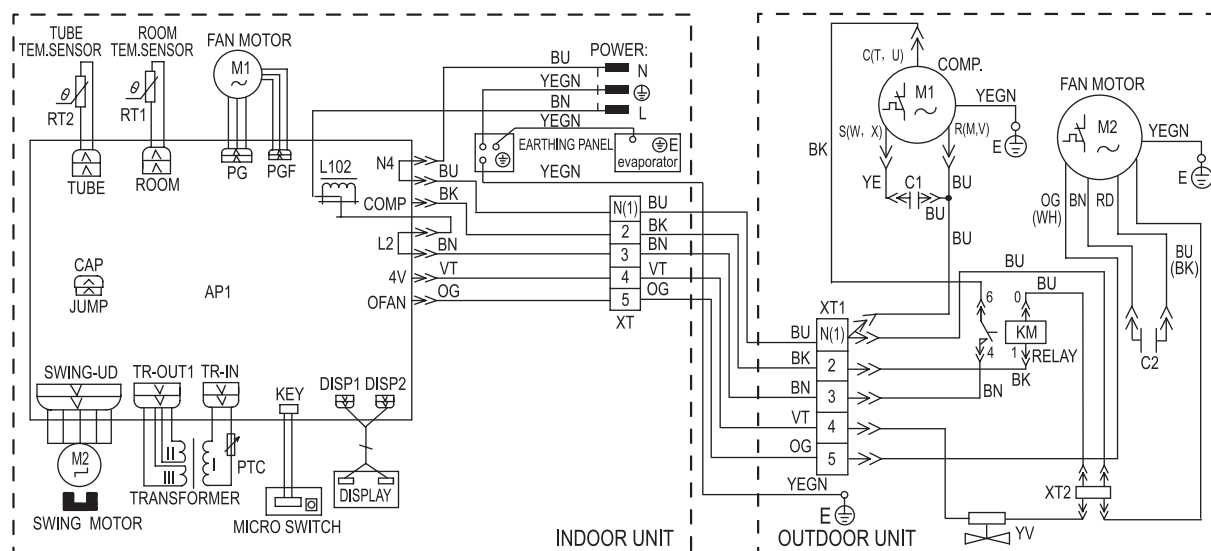


5 Electrical circuit diagram

ASH-18AK



ASH-24AK



These circuit diagrams are subject to change without notice, please refer to the one supplied with the unit.

6

Manual of functions of remote controller and operation method

6.1 Manual 1 of functions of remote controller

6.1.1 Temperature parameter

- ◆ The room setting temperature(T_{preset})
- ◆ The room ambient temperature (T_{amb})

6.1.2 Basic Functions

Once energized, the compressor should in no way be restarted unless after 3-minute time interval at least. For the first energization, the compressor will be started without 3-minute lag. The compressor, once started, will not be stopped within 6 minutes with the change of room temperature.

6.1.2.1 Cooling Mode

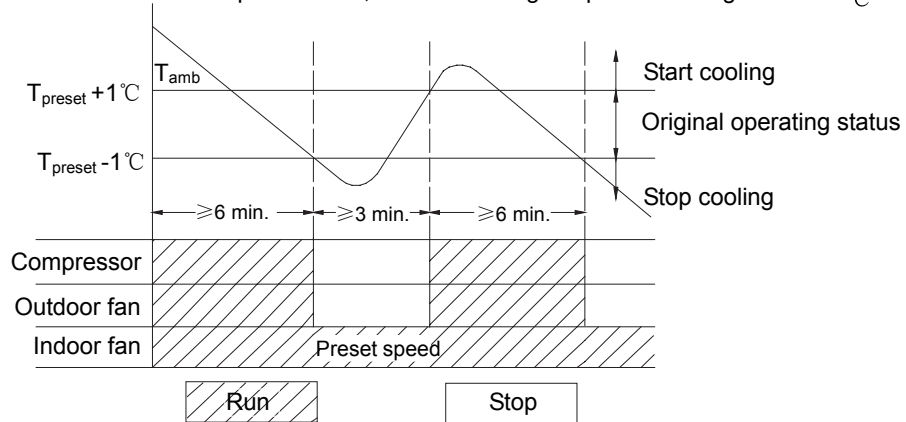
6.1.2.1.1 Cooling Conditions and Process

When $T_{\text{amb}} \geq T_{\text{preset}} + 1^\circ\text{C}$, the unit will run under cooling mode, in which case the compressor and outdoor fan will start and the indoor fan will run at setting speed.

When $T_{\text{amb}} \leq T_{\text{preset}} - 1^\circ\text{C}$, the compressor and the outdoor fan will stop, the indoor fan will run at setting speed.

When $T_{\text{preset}} - 1^\circ\text{C} < T_{\text{amb}} < T_{\text{preset}} + 1^\circ\text{C}$, the unit will maintain its original operating status.

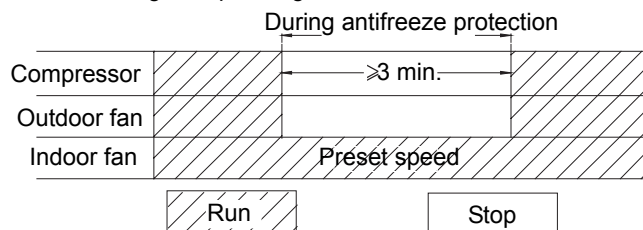
➤ Under this mode, the switchover valve will not be powered on, and the setting temperature range is $16 \sim 30^\circ\text{C}$.



6.1.2.1.3 Protection

◆ Antifreeze Protection

If it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at setting speed. When antifreeze protection is released and the compressor has stopped for 3 minutes, the unit will resume its original operating status.



6.1.2.2 DRY Modes

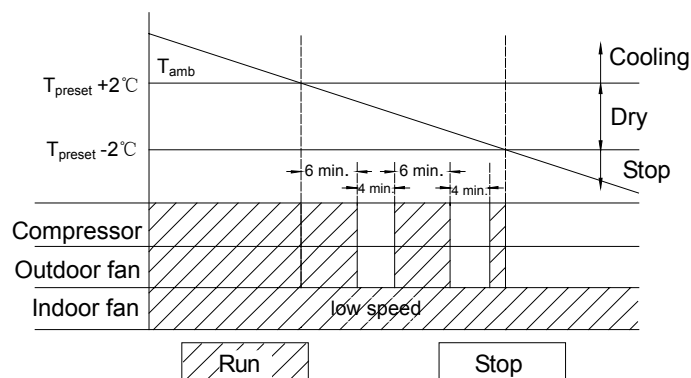
6.1.2.2.1 The conditions and process of DRY

When $T_{\text{amb}} > T_{\text{preset}} + 2^\circ\text{C}$, the unit will run under DRY cooling mode, in which case the compressor and outdoor fan will be started and the indoor fan will run at low speed.

When $T_{\text{preset}} - 2^\circ\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}} + 2^\circ\text{C}$, the unit will run under DRY mode, in which case the indoor fan will keep run at low speed, the compressor and the outdoor fan will be stopped after 6 minutes. After 4 minutes, the compressor and the outdoor fan will be restarted. The dehumidifying process is so repeated in cycle.

When $T_{\text{amb}} < T_{\text{preset}} - 2^\circ\text{C}$, the compressor and outdoor fan will be stopped, the indoor fan will run at low speed.

➤ Under this mode, the switchover valve will not be powered on, and the setting temperature range is $16 \sim 30^\circ\text{C}$.



6.1.2.2.3 Protection

◆ Antifreeze Protection

Upon meeting the cooling condition, if it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at low speed. When antifreeze protection is released and the compressor has stopped for 3 minutes, the complete unit will resume its original operating status.

Upon meeting the dehumidify condition, if it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at low speed. When antifreeze protection is released and the compressor has stopped for 4 minutes, the complete unit will resume its original operating status.

6.1.2.3 HEAT Mode (there is no this mode for cooling only unit)

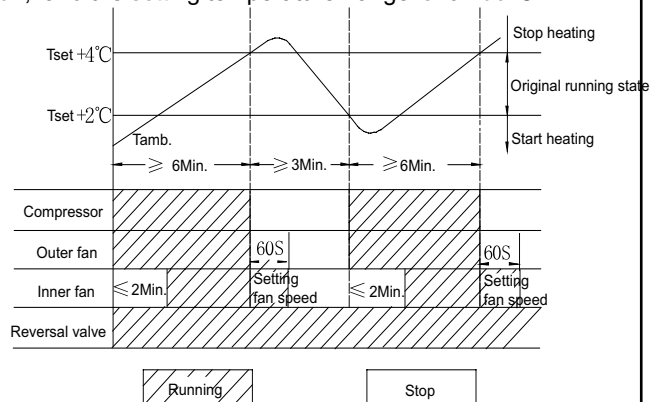
6.1.2.3.1 The conditions and process of heating

When $T_{amb} \leq T_{set} + 2^\circ\text{C}$, the system enters heating running, in this case, the reversal valve, compressor, outer fan enter simultaneously running. The indoor fan will delay at most for 2min to run.

When $T_{amb} \geq T_{set} + 4^\circ\text{C}$, the compressor and outdoor fan will stop, but the reversal valve is still with power on, the indoor unit will run at setting fan speed for 60s then will stop.

When $T_{set} + 2^\circ\text{C} < T_{amb} < T_{set} + 4^\circ\text{C}$, the unit will maintain its original operating status.

➤ Under this mode, the switchover valve will be powered on, and the setting temperature range is $16 \sim 30^\circ\text{C}$.



6.1.2.3.3 Conditions and processes of defrost

This unit adopts intelligent defrosting, it can defrost according to the frosting conditions, dual 8 display H1

6.1.2.3.4 Protection

◆ High Temp. Protection

If it is detected that the evaporator tube temperature is too high, the outdoor fan will be stopped. When the tube temperature resumes to normal, the outdoor fan will be restarted.

◆ **Noise Silencing Protection:** If the unit is stopped by pressing ON/OFF, the reversal valve will be stopped after 2-minute lag; or 2 minutes will be delayed upon mode switching.

6.1.2.4 Fan mode

Under FAN mode, only the indoor fan runs at setting speed. The RUN indicator will be bright. Double 8 module indicator will display the setting temperature. When stand by, the power indicator is bright but the unit does not run.

6.1.2.5 Auto Mode

Under this mode, the system will automatically select its run mode (cool, dehumidify, heat or fan) with the change of ambient temperature. For protection function, same as under cooling and heating mode.

3. Other controls

1. Memory function

Memory contents: Mode, up and down swing, Light, Setting temp., Setting fan speed, Ordinary setting Fahrenheit/Centigrade, after powered off, and powered on, it will run at the memory contents.

If no timer setting function in last remote control order, the system will memorize the last remote control order, the system will memorize the last remote control order and work with last remote control setting.

In the last remote control order, there is ordinary timer function, if power off happen before the timer arrived, the system will memorize the last remote control timer function, and will recalculate.

If there is timer function in last remote control order, but timer has arrived, system will run at timer on or timer off and power off, after repowered on, the system will run at the mode before power off.

(2) Timer function

1. Ordinary Timer setting:

Timer on: Under unit off, the timer on function could be set up, if timer on has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs.

Timer off: Under unit off, the timer off function could be set up, if timer off has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs.

② Timer setting for hour:

Timer on: if system is running, to set timer on, the system will continue to run, if unit is off to set up timer on, when timer on has arrived, the system will run at presetting mode.

Timer off: If system is off to set up the timer off, when to set up timer off, the unit will stand by, when unit is on, to set up timer off, when the timer off arrived, the system will stop to work.

Timer setting change:

When system is in Timer status, can set up timer on and timer off by wireless remote control, to reset up Timer also, the system will run at last setting status.

When system is running, at the same time to set up Timer on and Timer off, the system will keep the present setting status, when time arrived, system will stop to work.

When system stop, at the same time to set up Timer on and Timer off, the system will stop, until the timer arrived, the system will start to work.

Hereafter, when timer of timer on in every day arrived, it will run the presetting modes, after timer off arrived, the system will stop.

(3) Auto button

After powered on, press this button, it will run at Auto mode, when repressed, the unit will turn off.

(4) Buzzer

The controller is powered on and detect the signal received, the buzzer will beep.

(5) Sleep function

Under cooling or dehumidifying mode, the preset temperature will automatically rise by 1°C, one hour after setting of sleep program and rise by 1°C after 2 hours.

Under heating mode, the preset temperature will automatically decrease by 1°C one hour after setting of sleep program and decrease by another 1°C after 2 hours.

(6) Turbo function

The turbo function is available in Cool and Heat modes.

(7) Dry function

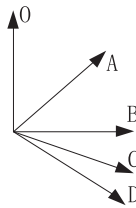
Dry function is available in Cool and Dehumidifying modes.

(8) Auto fan speed control

In this mode, indoor fan can run with Hig, Mid, Low speeds.

(9) Up and down swing control

After powered on, the lower swing motor will firstly rotate the guide louver to position 0, close up the air outlet vent; After unit turned on, if to set up swing function, when indoor fan stop running, the guide louver will stop at current position, inner fan motor is running, guide louver will resume to swing. From Cool, Dry, Fan modes to Heat mode, the guide louver will be opened at D position, when turn on swing will run at (A-D); from Heat mode to Cool, Dry, Fan mode, the fan louver will turn to B position, if turn on the swing, it will run at (A-C).



(10) Displayer

① Running figure and mode figure display

After powered on, the figure will be displayed, then only Power/running indicator turn on. When using remote controller to open the unit, it will turn on, at the same time to display current setting running modes.

② Dual 8 display

When the unit is turned on, after powered on, the nixie tube will display the setting temp. (setting range is 16-30°C). Under Auto mode, cooling and fan will display 25°C, heating will display 20°C, cooling only control display 25°C.

③ LCD Display

When cooling and dehumidifying, the Cool and indicator will turn on, when heating, the Heat and Run indicator will turn on, when in fan mode, the indicator will turn on.

(11) PG motor lock protection

When turn on the fan motor, if motor continuously run for a while and the running speed is very slow, in order to prevent motor automatically self-protection, it will stop running and display lock; If currently turns unit on, that dual 8 will display lock error code H6; If current is unit off, will not display the block error information.

6. 2 Manual 2 of functions of remote controller

This manual is applicable to ASH-18AK, 24AK models, the centigrade is used for the following function manual, if there will be the Fahrenheit degree, that will be $TF = TC \times 1.8 + 32$.

1. Temperature parameter

◆ The room setting temperature(T_{preset})

◆ The room ambient temperature (T_{amb})

2 Basic Functions

Once energized, the compressor should in no way be restarted unless after 3-minute time interval at least for the first energization, the compressor will be started without 3-minute lag. The compressor, once started, will not be stopped within 6 minutes with the charge of room temperature.

(1) Cooling Mode

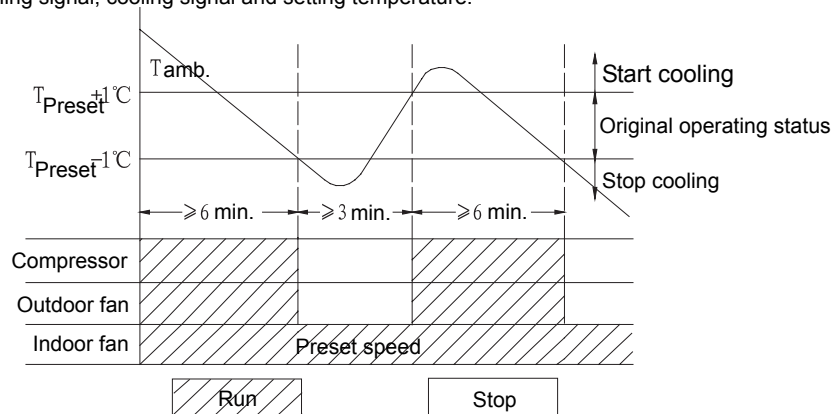
① Cooling Conditions and Process

When $T_{\text{amb}} \geq T_{\text{preset}} + 1^{\circ}\text{C}$, the unit will run under cooling mode, in which case the compressor and outdoor fan will start and the indoor fan will run at setting speed.

When $T_{\text{amb}} \leq T_{\text{preset}} - 1^{\circ}\text{C}$, the compressor and the outdoor fan will stop, the indoor fan will run at setting speed.

When $T_{\text{preset}} - 1^{\circ}\text{C} < T_{\text{amb}} < T_{\text{preset}} + 1^{\circ}\text{C}$, the unit will maintain its original operating status.

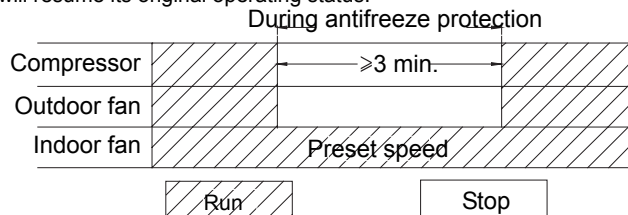
➤ Under this mode, the four-way valve will not be powered on and the setting temperature range is $16\text{--}30^{\circ}\text{C}$.
The displayer displays running signal, cooling signal and setting temperature.



② Protection

◆ Antifreeze Protection

If it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at setting speed. When antifreeze protection is released and the compressor has stopped for 3 minutes, the unit will resume its original operating status.



③ Over current protection

If it is detected that the system amperage exceeds the specified value (about 22 A), the main unit will enter into the status that only the fan is running. After 3 minutes and overcurrent protection is released, the main unit will resume its original operating status. If it is 6 times continuously detected overcurrent protection (if the compressor has run over 6 mins continuously, the times of protection will be cleared), the main unit will be stopped on standby, the nixietube will display error code "E5", power indicator will blink and it is need to restart the unit by the wireless remote control.

(2) DRY Modes

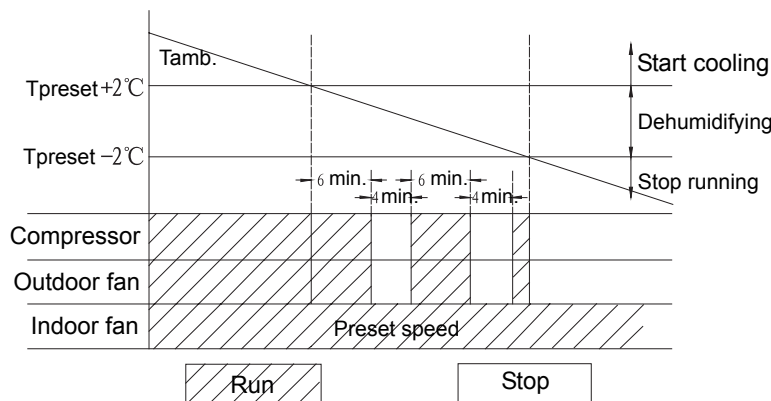
① DRY Modes

When $T_{amb} > T_{preset} + 2^{\circ}\text{C}$, the unit will run under DRY cooling mode, in which case the compressor and outdoor fan will be started and the indoor fan will run at low speed.

When $T_{preset} - 2^{\circ}\text{C} \leq T_{amb} \leq T_{preset} + 2^{\circ}\text{C}$, the unit will run under Dry mode, in which case the indoor fan will keep run at low speed, the compressor and outdoor fan will be stopped after 6mins. After 4 minutes, the compressor and outdoor fan will be restarted. The dehumidifying process is so repeated in cycle.

When $T_{amb} < T_{preset} - 2^{\circ}\text{C}$, the compressor and outdoor fan will be stopped, the indoor fan will run at low speed.

➤ Under this mode, the switchover valve will not be powered on and the setting temperature range is 16-30 $^{\circ}\text{C}$.



② Protection

◆ Antifreeze Protection

Under dehumidifying and cooling mode, if it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at low speed. When antifreeze protection is released and the compressor has stopped for 3 minutes, the complete unit will resume its original operating status.

Upon meeting "run 6 mins and stop 4 mins" dehumidify condition, if it is detected that the system is under antifreeze protection, the compressor and outdoor fan will be stopped, and the indoor fan will run at low speed. When antifreeze protection is released and the compressor has stopped for 4 minutes, the complete unit will resume its original operating status.

The other protections are the same with that under Cool mode.

(3) HEAT Mode (there is no this mode for cooling only unit)

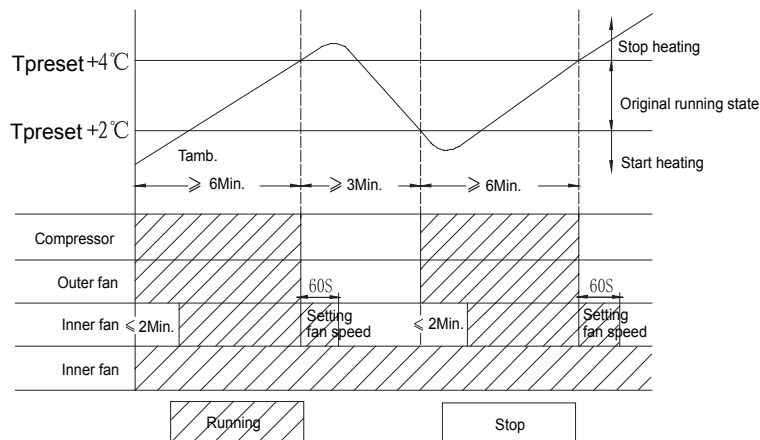
① The conditions and process of heating

When $T_{amb} \leq T_{set} + 2^{\circ}\text{C}$, the system enters heating running, in this case, the reversal valve, compressor, outdoor fan enter simultaneously running. The indoor fan will delay at most for 2min to run.

When $T_{amb} \geq T_{set} + 4^{\circ}\text{C}$, the compressor and outdoor fan will stop, but the reversal valve is still with power on, the indoor unit will run at setting fan speed for 60s then will stop.

When $T_{set} + 2^{\circ}\text{C} < T_{amb} < T_{set} + 4^{\circ}\text{C}$, the unit will maintain its original operating status.

➤ Under this mode, the switchover valve will be powered on and the setting temperature range is 16-30 $^{\circ}\text{C}$.



② Conditions and processes of defrost

This unit adopt intelligent defrosting, it can defrost according to the frosting conditions, dual 8 display H1

③ Protection

◆ Anti-high temperature protection

If it is detected that the evaporator tube temperature is too high, the outdoor fan will be stopped. When the tube temperature resumes to normal, the outdoor fan will be restarted.

◆ Noise Silencing Protection

If the unit is stopped by pressing ON/OFF, the reversal valve will be stopped after 2-minute lag; or 2 minutes will be delayed upon mode switching.

④ Over current protection

The overcurrent protection is the same with the over current protection under cool mode.

(4) Fan mode

Under FAN mode, only the indoor fan runs at setting speed. The RUN indicator will be bright. Double 8 module indicator will display the setting temperature. When stand by, the power indicator is bright but the unit does not run.

(5) Auto Mode

Under this mode, the system will automatically select its run mode (cool, dehumidify, heat or fan) with the change of ambient temperature. For protection function, same as under cooling and heating mode.

3 Other controls

(1) Timer function

① Ordinary Timer setting:

timer on: Under unit off, the timer on function could be set up, if timer on has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs.

Timer off: Under unit off, the timer off function could be set up, if timer off has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs.

② Timer setting for hour:

Timer on: if system is running, to set timer on, the system will continue to run, if unit is off to set up timer on, When timer on has arrived, the system will run at presetting mode.

Timer off: If system is off to set up the timer off, when to set up timer off, the unit will stand by, when unit is on, to set up timer off, when the timer off arrived, the system will stop to work.

Timer setting change:

When system is in Timer status, can set up timer on and timer off by wireless remote control, to reset up Timer also, the system will run at last setting status.

When system is running, at the same time to set up Timer on and Timer off, the system will keep the present setting status, when time arrived, system will stop to work.

When system stop, at the same time to set up Timer on and Timer off, the system will stop, until the timer arrived, the system will start to work.

Hereafter, when timer of timer on in every day arrived, it will run the presetting modes, after timer off arrived, the system will stop.

(2) Auto button

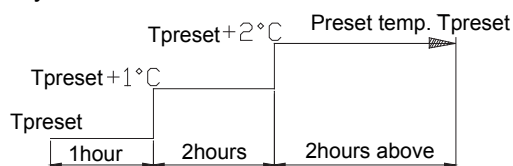
After powered on, press this button, it will run at Auto mode, when repressed, the unit will turns off.

(3) Buzzer

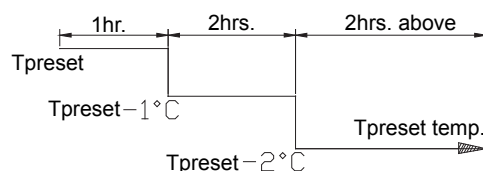
The controller is powered on and detect the signal received, the buzzer will beep.

(4) Sleep function

Under cooling or dehumidifying mode, the preset temperature will automatically rise by 1°C, one hour after setting of sleep program and rise by 1°C after 2 hours.



Under heating mode, the preset temperature will automatically decrease by 1°C one hour after setting of sleep program and decrease by another 1°C after 2 hours.



(5) Turbo function

The turbo function is available in Cool and Heat modes.

(6) Dry function

Dry function is available in Cool and Dehumidifying modes.

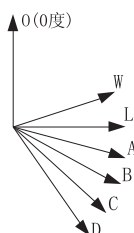
(7) Auto fan speed control

In this mode, indoor fan can run with Hig, Mid, Low speeds.

(8) Up and down swing control

After powered on, the lower swing motor will firstly rotate the guide louver to position 0, close up the air outlet vent; After unit turned on, if to set up swing function, when indoor fan stop running, the guide louver will stop at current position, inner fan motor is running, guide louver will resume to swing. From Cool, Dry, Fan modes to Heat mode, the guide louver will be opened at D position, when turn on swing will run at (A-D); from Heat mode to Cool, Dry, Fan mode, the fan louver will turn to B position, if turn on the swing, it will run at (A-C). When unit is turned off, the guide louver will turn to position 0, the swing is only available after preset the swing function, and indoor unit is running.

Note: When to set up at position L to B, A to C, B to D, the guide louver will swing between position W to D.



(9) Displayer

① Running figure and mode figure display

After powered on, the figure will be displayed, then only Power/running indicator turn on. When using remote controller to open the unit, it will turn on, at the same time to display current setting running modes.

② Dual 8 display

When the unit is turned on, after powered on, the nixie tube will display the setting temp. (setting range is 16-30 °C). When the preset temperature display signal has been received, the nixie tube will display the preset temperature; If the display ambient temperature signal has been received, the nixie tube will display the current indoor ambient temperature, if to set up others by remote controller that the display will maintain its status. At displaying ambient temperature, the unit received the remote control signal, it will display 5s preset temperature then turn to ambient temperature display. The ambient temperature sensor malfunction will display F1; Indoor tube sensor will display F2, wire jumper cap protection displays C5.

(10) PG motor lock protection

When turn on the fan motor, if motor continuously run for a while and the running speed is very slow, in order to prevent motor automatically self-protection, it will stop running and display lock; If currently turns unit on, that dual 8 will display lock error code H6; If current is unit off, will not display the block error information.

(11) Power-off Memory

Memory contents: Mode, UP/DOWN Swing, light, Set temp, Set fan speed.

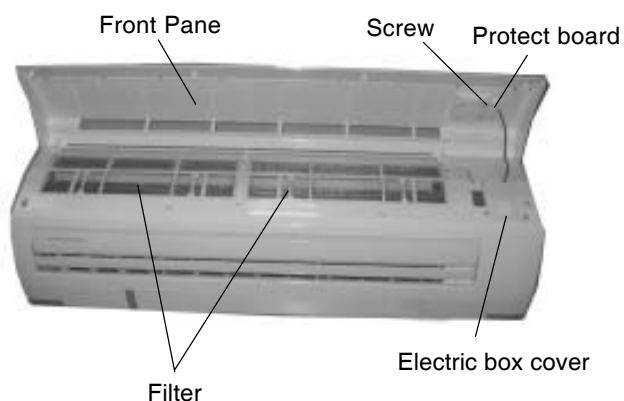
After de-energized, and re-energized, the unit will start to run with the memory function automatically. The system, if the last remote control signal do not set timer function, will memorize the last remote control signal and run according to it. If the last remote control signal has set timer function, the system is de-energized before the set time, when re-energized, the system will memorize the timer function, the set time will recalculate. If the last remote control signal has set timer function and the system is de-energized after the set time, when re-energized, the system will memorize the running status before de-energized.

7. 3 (18/24) Disassembly procedures for indoor unit

Operating Procedures / Photos

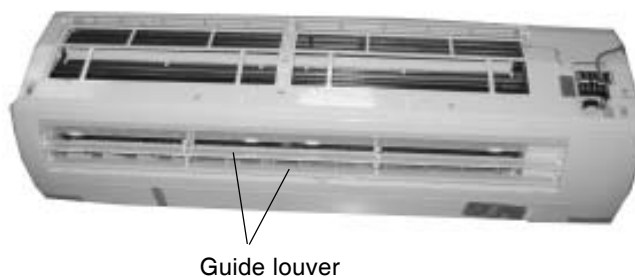
1. Disassemble the front panel, Filter, Electric box cover

Open the front panel ,Push the filter upwards to unloose the clasp, and then pull out the two filters. Screw off the screws fixing the electric box cover remove the cover out.



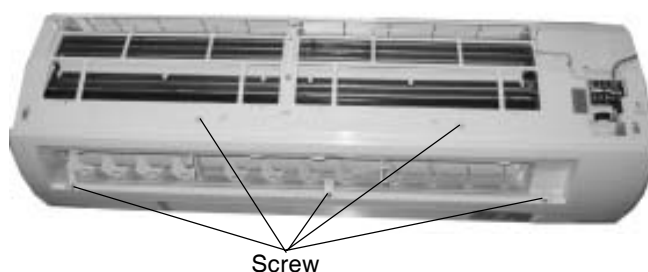
2. Disassemble the guide louver

Bend the guide louver so that the movable lock of guide louver is released to remove the guide louver.



3. Disassemble the front case

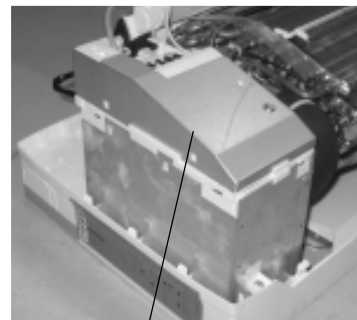
Open the 3 screw covers at the front case and screw off 5 screws. Pull out the movable latch at the front case with hand and then pull it backwards to disassemble the front case.



Operating Procedures / Photos

4. Disassemble the electric box cover

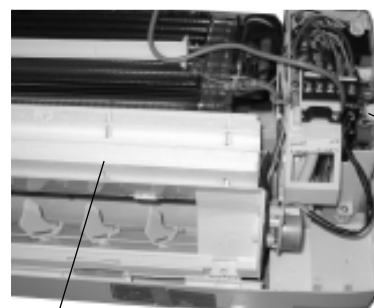
Screw off the screws fixing the electric box cover and then open the cover, next unscrew the screws fixing the toggle switch on the cover, at last remove the cover out.



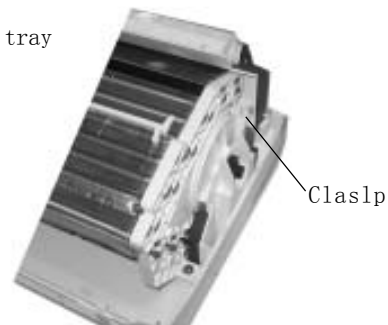
Electric box cover

5. Disassemble water tray

Loosen the clasp of the front and rear of water tray sub-assy and lift them up, pull out of the connection wire of swing motor, then can take out the water tray sub-assy.
Note: Due to water tray is connected with the water drainage pipe, please pay more attention do not hurt the fin on evaporator.



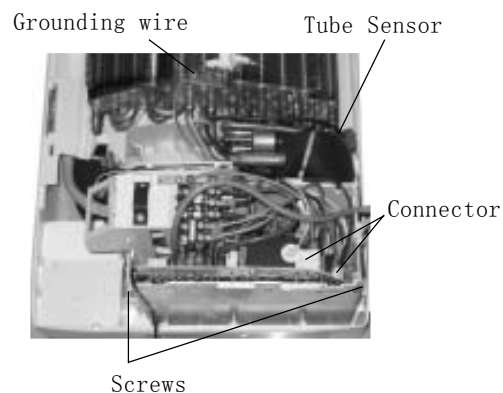
Water tray



Clasp

5. Disassemble the electric box

Screw off the grounding wire of the evaporator, remove the temperature sensor for the pipe, put out the connection lines for the indoor motor. Screw off the screws fixing the electric box. Remove the electric box.



Grounding wire

Tube Sensor

Connector

Screws

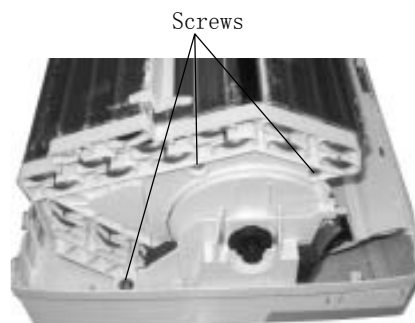
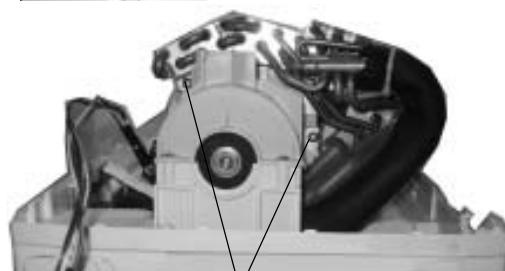
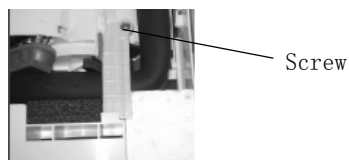
Operating Procedures / Photos

6. Disassembling the evaporator

Screw off 5 screws fixing the left and right side of the evaporator, then elevate left side the evaporator to remove it backward.

CAUTION:

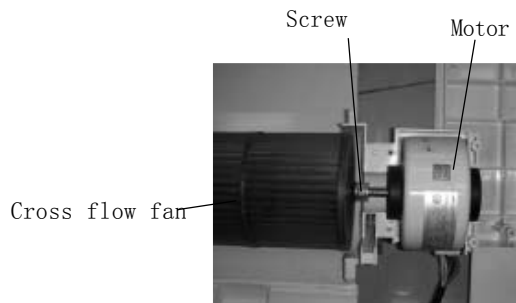
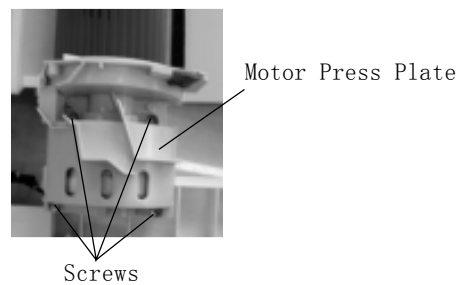
When repair, Carefully take out the evaporator and pay attention to protect the connecting pipe. Screw off one screw which fix the connection board clamp. Take down the connection board clamp.



7. Disassembling motor and cross flow fan

Screw off 4 screws fixing the motor cover and then take the motor cover out.

Screw off the screw connecting the cross flow fan and motor, then pull out the motor and remove the cross flow fan.



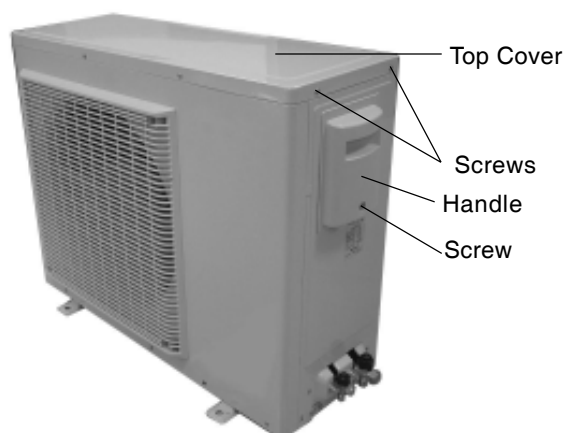
7. 5 (18) Disassembly Procedures for Outdoor Unit

Operating Procedures / Photos

1. Disassemble Handle and Top Cover

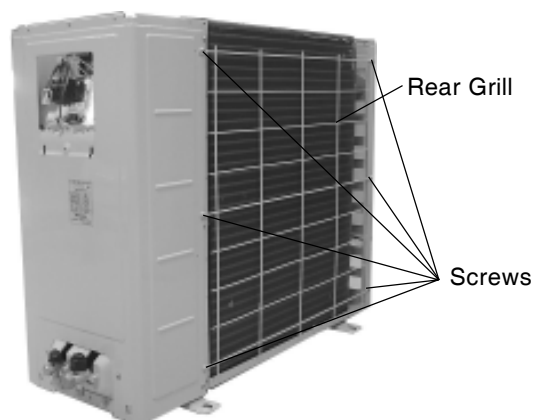
Unscrew the screw fixing the handle, then push it downwards to take it out.

Unscrew the screws fixing the top cover, and then lift the top cover to remove it.



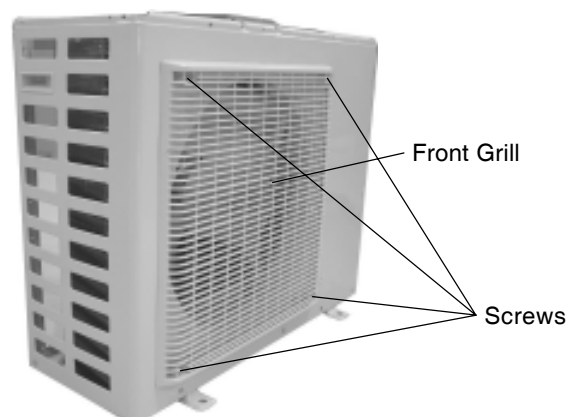
2. Disassemble Rear Grill

Unscrew the screws fixing the rear grill to remove it.



3. Disassemble Front grill

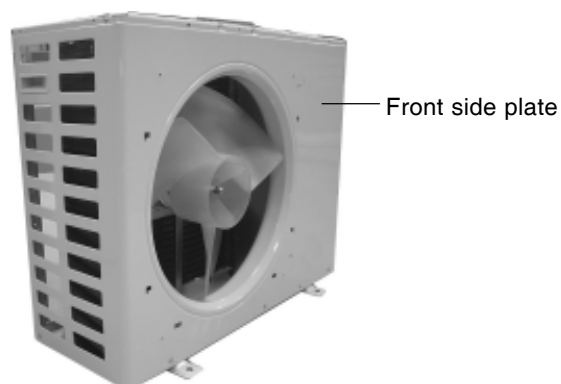
Unscrew the screws fixing the front grill, and then lift it upwards to remove it.



Operating Procedures / Photos

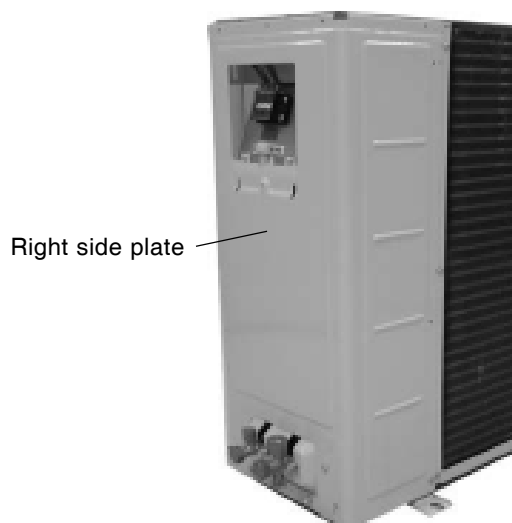
4. Disassemble Front plate

Unscrew the screws fixing the cabinet to remove it.



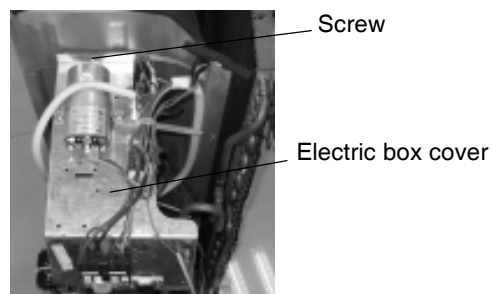
5. Disassemble Right side plate

Unscrew the 9 screws of the right side plate, then take down the right side plate.



5. Disassemble Electric Box Sub-assy

unscrew the screw of electric box, pull out the lead out insert of compressor, four-way valve and motor, then take down the electric box.

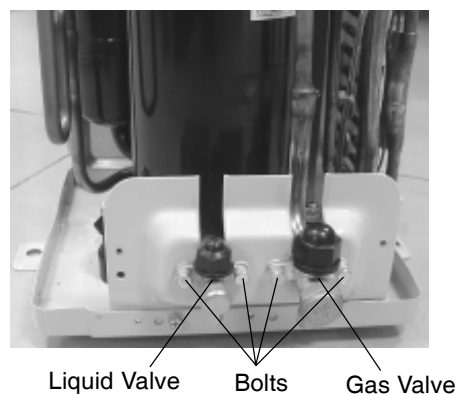


Operating Procedures / Photos

7. Disassemble Gas and Liquid Valves

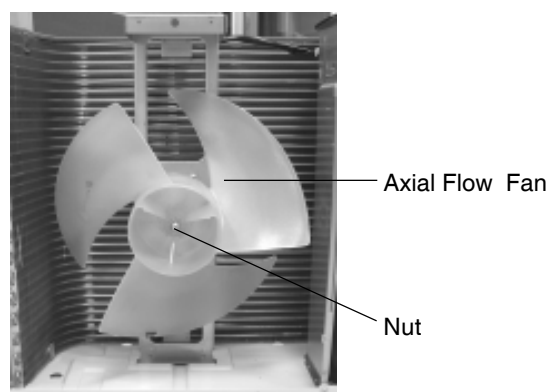
Unsolder the pipeline connecting with valves (to prevent soldering gun from burning out the chassis).Unscrew 2 bolts fixing gas valve ,and then unsolder the weld spot between pipeline and gas valve to remove gas valve. Unscrew the 2 bolts fixing liquid valve, and then unsolder the weld spots between pipeline and liquid valve to remove liquid valve.

(Note:During unsoldering ,wrap the valves with wet cloth to avoid damage for high temperature.)



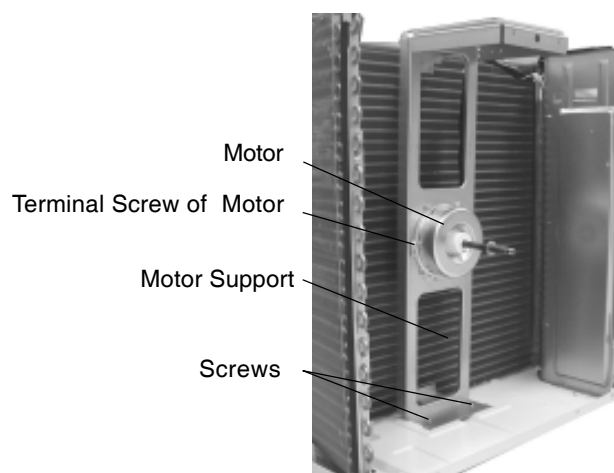
8. Disassemble Axial Flow Fan

Unscrew the nut fixing the fan with a spanner to take out the fan.



9. Disassemble Outdoor Motor

Unscrew the screws fixing the motor support, and then lift it upwards to remove it. Unscrew the screws fixing the motor and pull out the connection line between it and electric box to remove it.

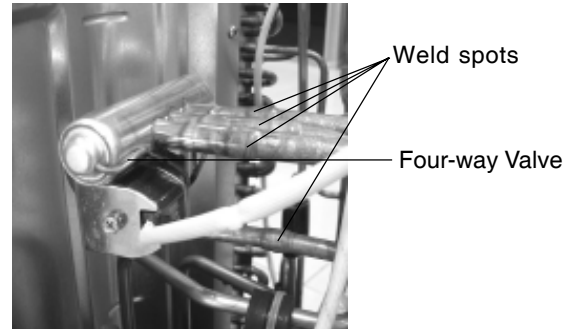


Operating Procedures / Photos

10. Disassemble Four-way Valve

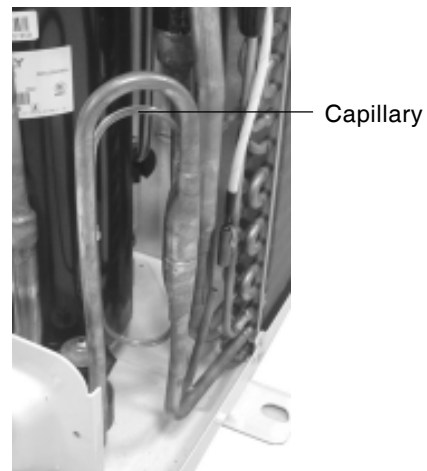
Only for cooling and heating unit

Unscrew the fixing nut of the four-way valve coil and remove the coil. Wrap the four-way valve with wet cotton and unsolder the 4 weld spots connecting the four-way valve to take it out. Welding process should be as quick as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.



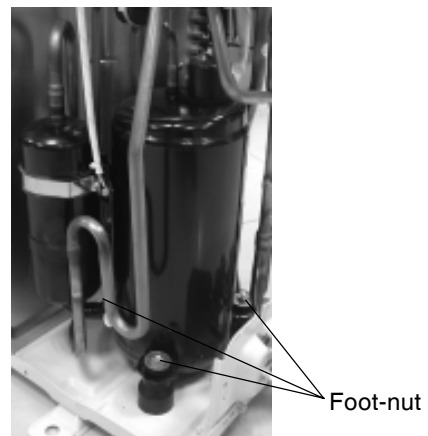
11. Disassemble Capillary

Unsolder the weld spots of capillary, valve and outlet pipe of condenser to remove the capillary. Prevent welding slag from blocking the capillary.



12. Disassemble Compressor

Unsolder the pipeline connecting the compressor, and then unscrew the 3 foot-nuts fixing compressor to remove it.



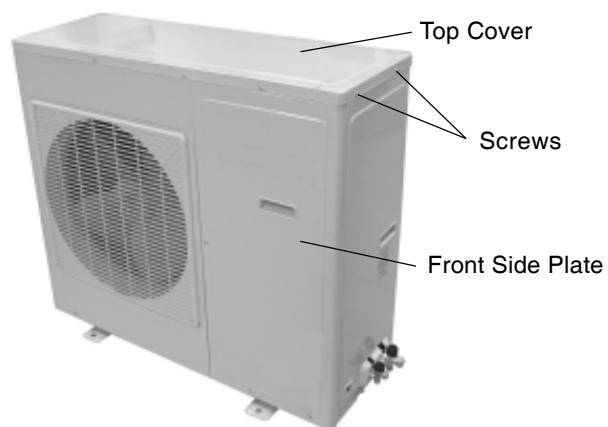
7. 6 (24) Disassembly Procedures for Outdoor Unit

Operating Procedures / Photos

1. Disassemble Top Cover and Front Side Plate

Unscrew the screws fixing the top cover, and then lift the top cover to remove it.

Unscrew the 3 screws fixing the front side plate to remove it.



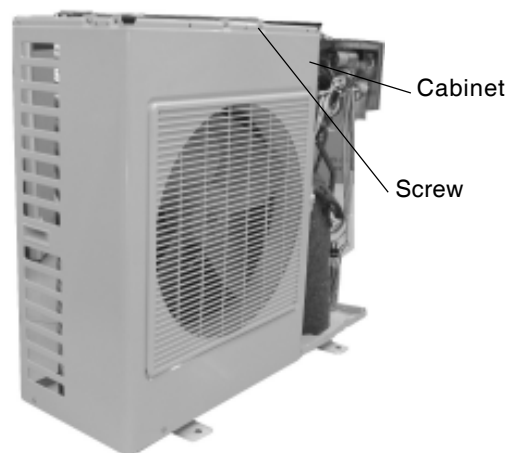
2. Disassemble Rear Grill

Unscrew the 4 screws fixing the rear grill to remove it.



3. Disassemble Cabinet

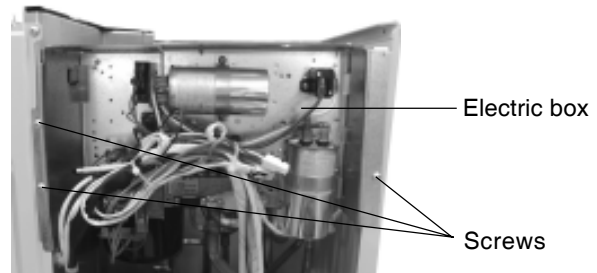
Unscrew the screws fixing the cabinet to remove it.



Operating Procedures / Photos

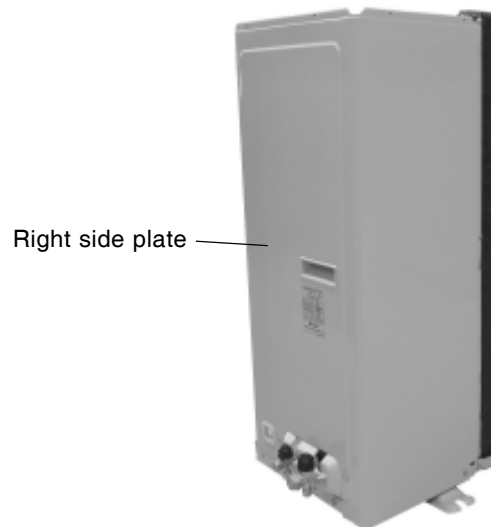
4. Disassemble Electric Box Sub-assy

Unscrew the 2 screws fixing electric box to pull out the connection line between fan motor, compressor, four-way valve, and then lift the electric box to take it out.



5. Disassemble Right side plate

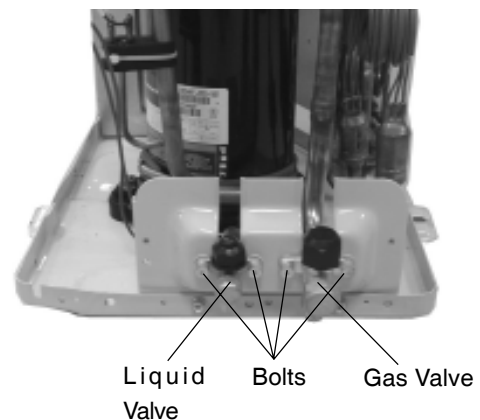
Unscrew the screw of the right side plate, then take down the right side plate.



6. Disassemble Gas and Liquid Valves

Unsolder the pipeline connecting with valves (to prevent soldering gun from burning out the chassis). Unscrew 2 bolts fixing gas valve ,and then unsolder the weld spot between pipeline and gas valve to remove gas valve. Unscrew the 2 bolts fixing liquid valve, and then unsolder the soldering spot between pipeline and liquid valve to remove liquid valve.

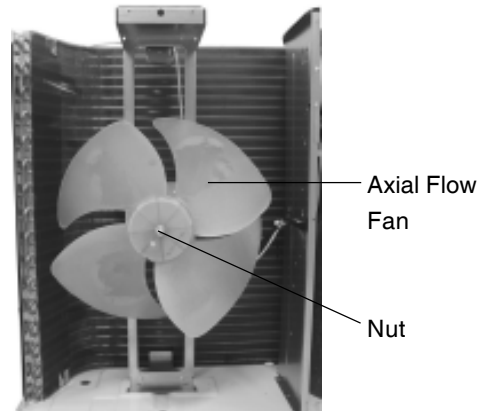
(Note:During unsoldering ,wrap the valves with wet cloth avoid damage for high temperature.)



Operating Procedures / Photos

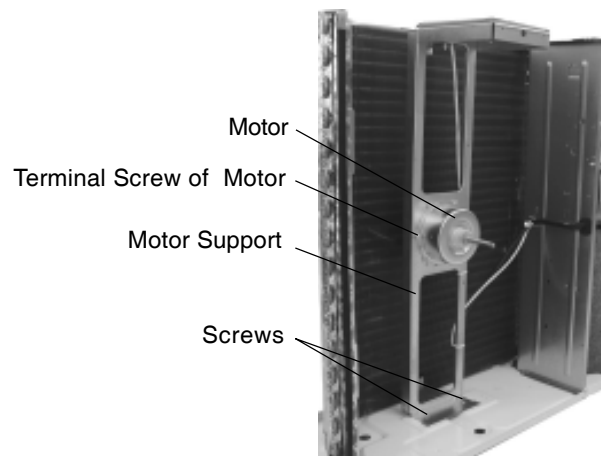
7. Disassemble Axial Flow Fan

Unscrew the nut fixing the fan with a spanner to take out the fan.



8. Disassemble Outdoor Motor

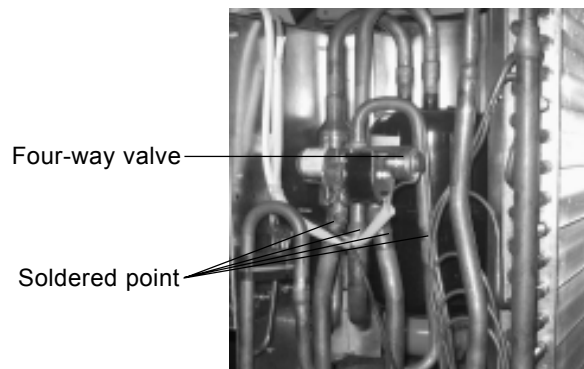
Unscrew the screws fixing the motor support, and then lift it upwards to remove it. Unscrew the screws fixing the motor and pull out the connection line between it and electric box to remove it.



9. Disassemble Four-way Valve

Only for cooling and heating unit

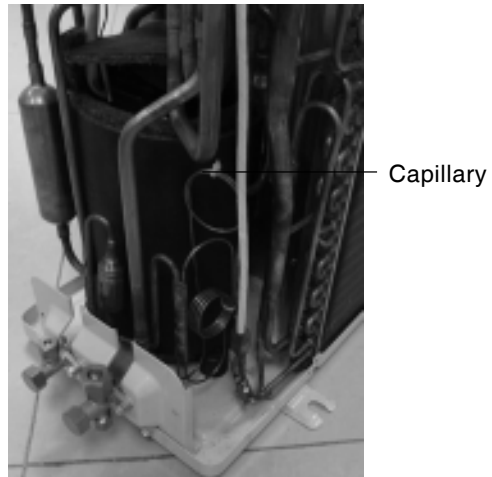
Unscrew the fixing nut of the four-way valve coil and remove the coil. Wrap the four-way valve with wet cotton and unsolder the 4 weld spots connecting the four-way valve to take it out. Welding process should be as quick as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.



Operating Procedures / Photos

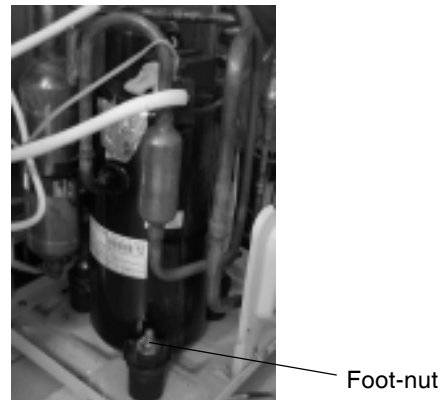
10. Disassemble Capillary

Unsolder the weld spots of capillary, valve and outlet tube of condenser to remove the capillary. Prevent welding slag from blocking the capillary.



11. Disassemble Compressor

Unsolder the pipeline connecting the compressor, and then unscrew the 3 foot-nuts fixing compressor to remove it.



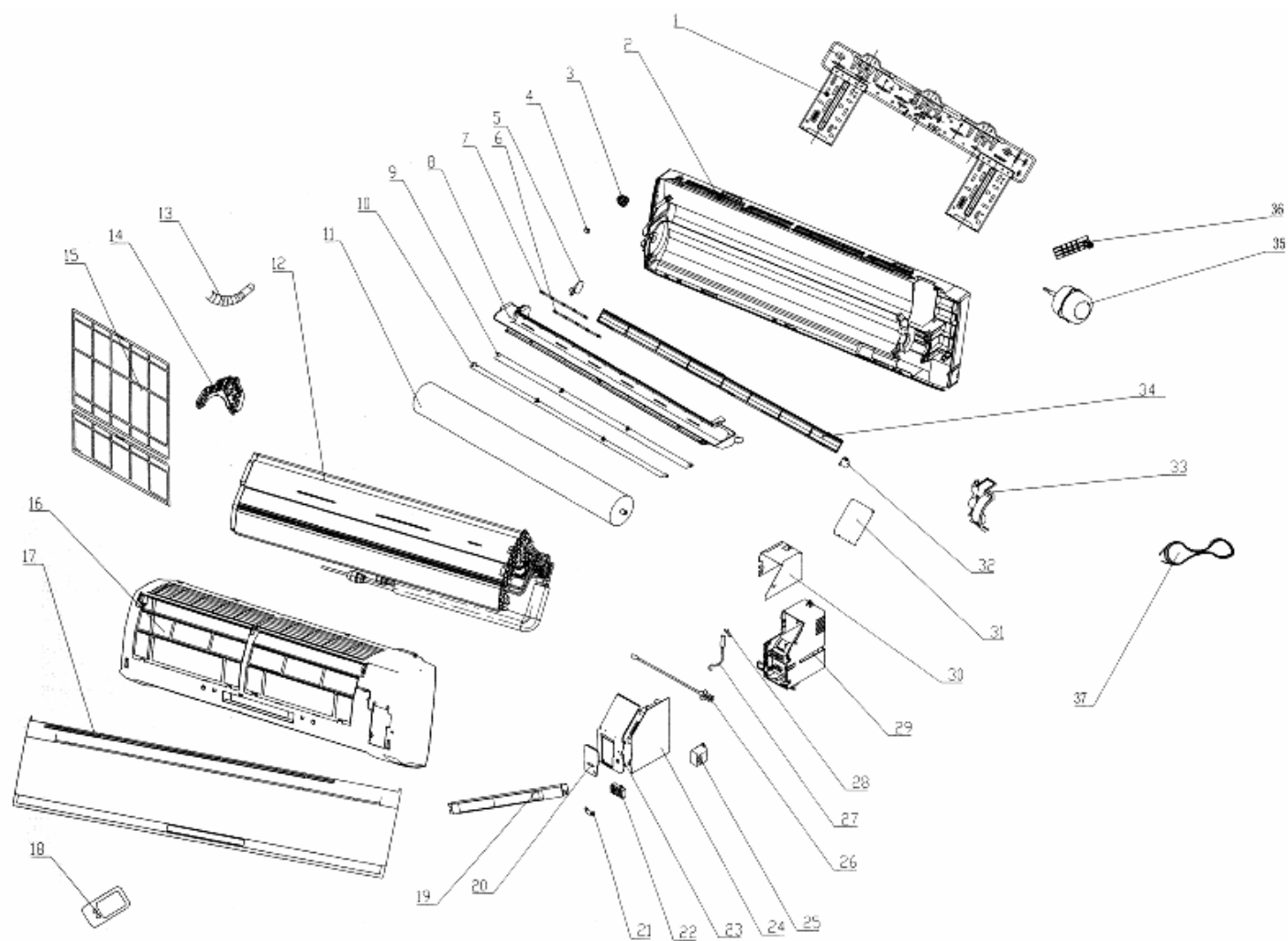
PARTS GUIDE

KING SERIES

ASH-18AK, ASH-24AK



8. (18/24) Exploded View of Components and Parts of Indoor unit



Parts List for ASH-18AK Indoor unit

No.	Description	Parts No.	Qty	Price rank
ASH-18AK Indoor unit				
1	Wall Mounting Frame	01252004	1	AK
2	Rear Case	22202329	1	AW
3	O-Gasket of Cross Fan Bearing	76512203	1	AC
4	Screw Cap	24252015	3	AA
5	Round Louver	10512429	11	AB
6	Swing Lever	10582057	1	AC
7	Swing Lever	10582058	1	AC
8	Water Tray	20182057	1	AW
9	Upper Air Deflector	10512085	1	AF
10	Lower Guide Louver	10512086	1	AF
11	Cross Flow Fan	10352022	1	AN
12	Evaporator Assy	0100224502	1	BD
13	Drain Pipe	05230014	1	AD
14	Evaporator Support	24212067	1	AF
15	Filter Sub-Assy	11122048	2	AD
16	Front Case Assy	20002652	1	AU
17	Front Panel Assy	20002843	1	AM
18	Remote Controller	30510041	1	AT
19	Displaying Light Board	30545033	1	AZ
20	Electric Box Cover	20112019	1	AE
21	Fixed Clamp	71010103	1	AB
22	Terminal Board	42010262	1	AD
23	Electric Box Cover	20112020	1	AE
24	Main PCB	30135096	1	BA
25	Transformer 57X25C	43110237	1	AM
26	Ambient Temperature Sensor	390000451	1	AD
27	Tube Sensor	390000591	1	AD
28	Sensor Insert	42020063	1	AD
29	Electric Box	20112018	1	AK
30	Lower Shield of Electric Box	01592037	1	AE
31	Upper Shield of Electric Box	01592038	1	AD
32	Stepping Motor	15213001	1	AK
33	Motor Press Plate	26112095	1	AE
34	Helicoid tongue	26252009	1	AH
35	Fan Motor	15012077	1	AX
36	Pipe Clamp	26112096	1	AD
37	Connecting Cable	400205402	1	AN

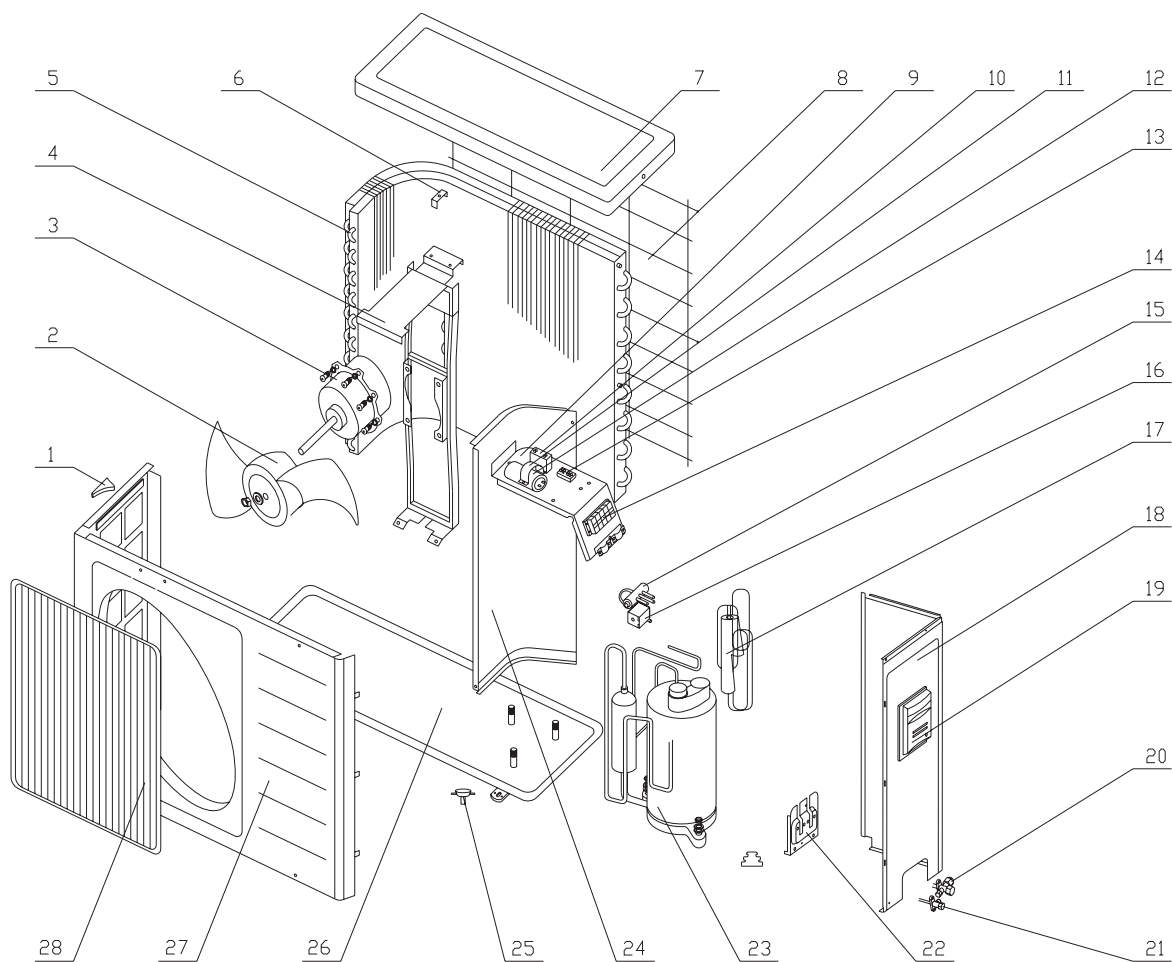
The data are subject to change without notice.

Parts List for ASH-24AK Indoor unit

No.	Description	Parts No.	Qty	Price rank
ASH-24AK Indoor unit				
1	Wall Mounting Frame	01252004	1	AK
2	Rear Case	22202329	1	AW
3	O-Gasket of Cross Fan Bearing	76512203	1	AC
4	Screw Cap	24252015	3	AA
5	Round Louver	10512429	11	AB
6	Swing Lever	10582057	1	AC
7	Swing Lever	10582058	1	AC
8	Water Tray	20182057	1	AW
9	Upper Air Deflector	10512085	1	AF
10	Lower Guide Louver	10512086	1	AF
11	Cross Flow Fan	10352022	1	AN
12	Evaporator Assy	010022365	1	BF
13	Drain Pipe	05230014	1	AD
14	Evaporator Support	24212067	1	AF
15	Filter Sub-Assy	11122048	2	AD
16	Front Case Assy	20002652	1	AU
17	Front Panel Assy	20002843	1	AM
18	Remote Controller	30510041	1	AT
19	Displaying Light Board	30545033	1	AZ
20	Electric Box Cover	20112019	1	AE
21	Fixed Clamp	71010103	1	AB
22	Terminal Board	4201026201	1	AD
23	Electric Box Cover	20112020	1	AE
24	Main Board	30135163	1	BB
25	Transformer 57X25C	43110237	1	AM
26	Ambient Temperature Sensor	390000451	1	AD
27	Tube Sensor	390000591	1	AD
28	Sensor Insert	42020063	1	AD
29	Electric Box	20112018	1	AK
30	Lower Shield of Electric Box	01592037	1	AE
31	Upper Shield of Electric Box	01592038	1	AD
32	Stepping Motor	15213001	1	AK
33	Motor Press Plate	26112095	1	AE
34	Helicoid tongue	26252009	1	AH
35	Fan Motor	15012077	1	AX
36	Pipe Clamp	26112096	1	AD
37	Connecting Cable	400205382	1	AN

The data are subject to change without notice.

8. (18) Exploded View of Components and Parts of outdoor unit

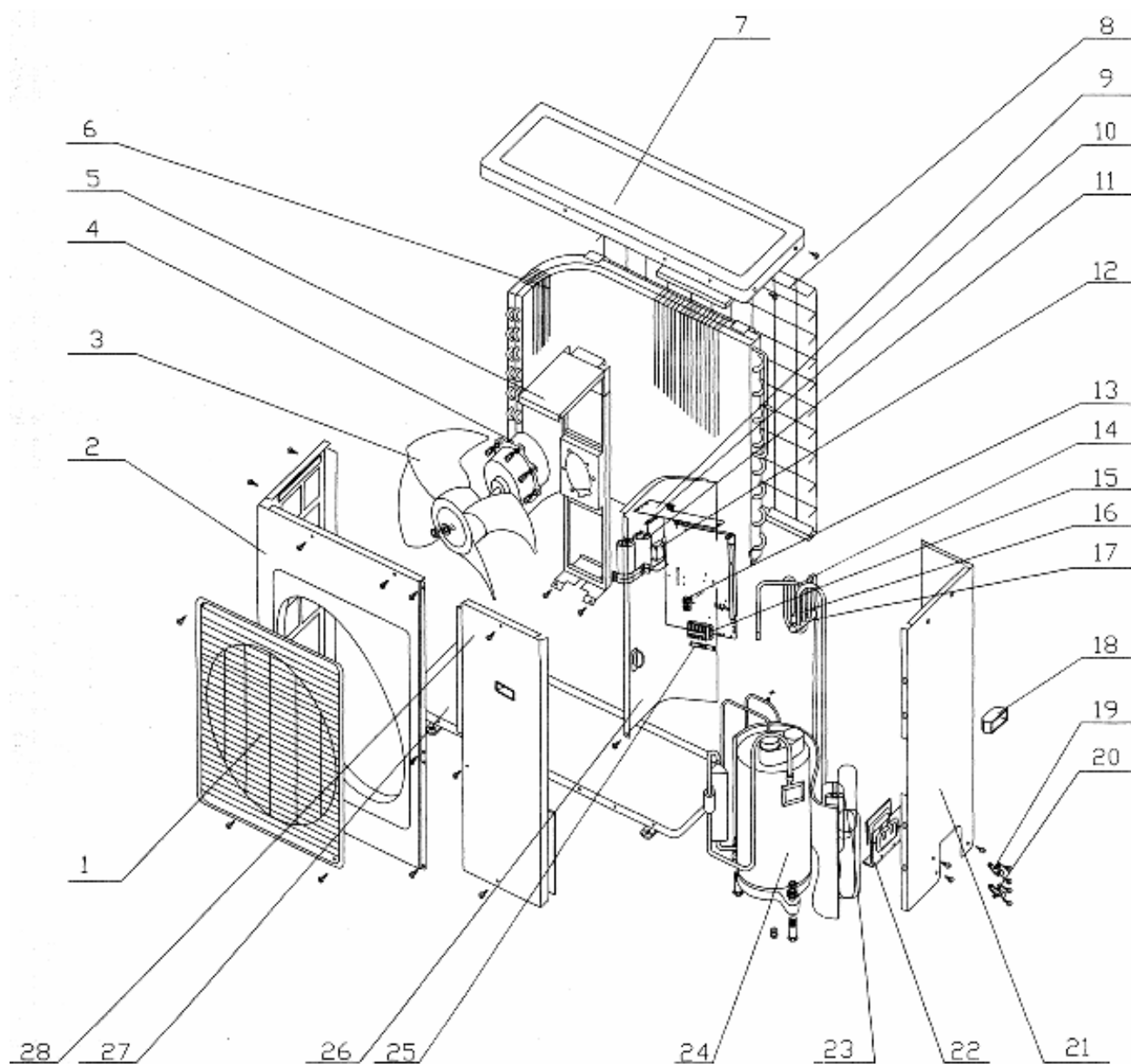


Parts List for ASH-18AK Outdoor unit

No.	Description	Parts No.	Qty	Price rank
ASH-18AK Outdoor unit				
1	Small Handle	26235401	1	AC
2	Axial Flow Fan	10333426	1	AR
3	Fan Motor	15013070	1	AZ
4	Motor Support	01703059	1	AF
5	Condenser Assy	01113033	1	BK
6	Condenser Clamp	01175202	2	AB
7	Top Cover	01255001	1	AH
8	Rear Grill	014730371	1	AG
9	Electrical Box	01403835	1	AF
10	Capacitor CBB61 3.5kuF/450V	33010010	1	AG
11	Capacitor Clamp	02141375	1	AB
12	Capacitor	33000039	1	AM
13	Terminal Board 2-8	42011103	1	AD
14	Terminal Board	42010265	1	AE
15	4-way Valve	430004032	1	BA
16	4-way Valve Accessary	430004002	1	AM
17	Capillary Assy	03103555	1	AZ
18	Right Side Plate	01305013	1	AH
19	Handle	26235254	1	AC
20	Gas Valve Assy	07130213	1	AH
21	Cut-off Valve	07100003	1	AG
22	Valve support	01713076	1	AD
23.1	Compressor and Fittings	00103007	1	BW
23.2		Build in		
23.3	Compressor Gasket 4CYC00008	76710202	3	AE
24	Clapboard Sub-Assy	01233035	1	AK
25	Drainage Connector	06123401	1	AA
26	Chassis	0120362602P	1	AU
27	Front Side Plate	01305015	1	AW
28	Front Grill	22415001	1	AL

The data are subject to change without notice.

8. (24) Exploded View of Components and Parts of outdoor unit



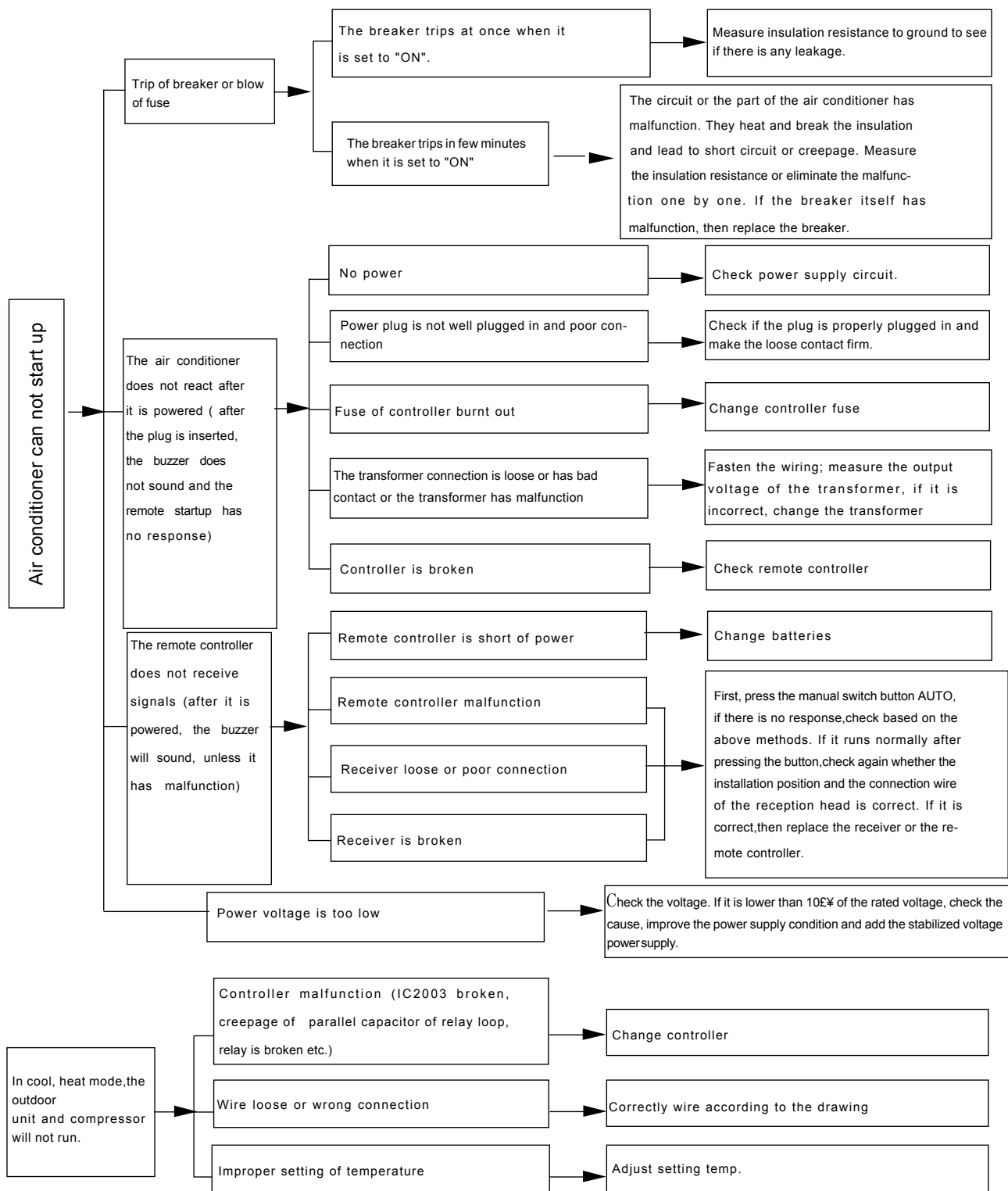
Parts List for ASH-24AK Outdoor unit

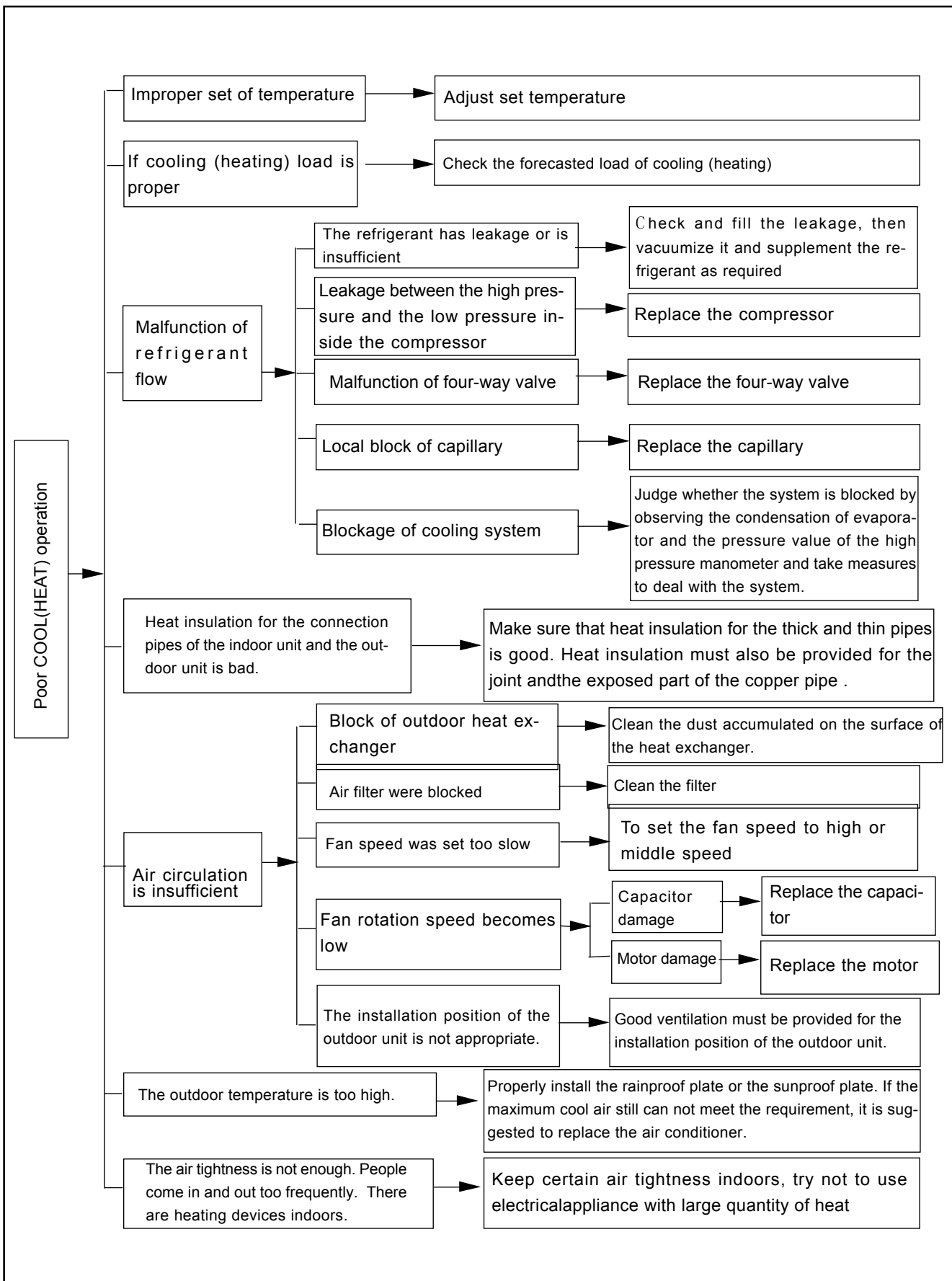
No.	Description	Parts No.	Qty	Price rank
ASH-24AK Outdoor unit				
1	Panel Grille	22414102	1	AL
2	Front Plate	01433017	1	AW
3	Axial Flow Fan $\phi 472 \times 165$	10338731	1	AR
4	Fan Motor	15015421	1	BA
5	Motor Support	01703027	1	AE
6	Condenser Assy	01113034	1	BL
7	Top Cover	01255262	1	AQ
8	Mesh Enclosure	01473028	1	AG
9	Electric Box Cover Plate	01413047	1	AF
10	Electric Box Sub-Assy	01403248	1	AF
11	Capacitor CBB65 50uF/450V $\phi 50 \times 120$	33000001	1	AL
12	Capacitor CBB61 3.5kuF/450V	33010010	1	AG
13	Terminal Board	42010194	1	AD
14	4-way Valve	03023724	1	AY
15	Terminal Board 2-8	42011103	1	AD
16	4-way Valve Accessary	430004002	1	AM
17	4-way Valve	430004032	1	BA
18	Handle	26235253	1	AC
19	Gas Valve Sub-Assy	07103030	1	AV
20	Liquid Valve Assy	07133024	1	AU
21	Rear Side Plate Sub-Assy	01303115	1	AM
22	Valve Support Sub-Assy	01715001	1	AD
23	Capillary Assy	03103556	1	AZ
24.1	Compressor and Fittings	00100525	1	CA
24.2	Build in			
24.3	Compressor Gasket 4CYC00008	76710202	3	AE
25	Isolation Washer	70410523	1	AC
26	Mid Clapboard Sub-Assy	01233024	1	AK
27	Underpan Sub-Assy	01205073	1	AU
28	Front Side Plate	01303023	1	AG

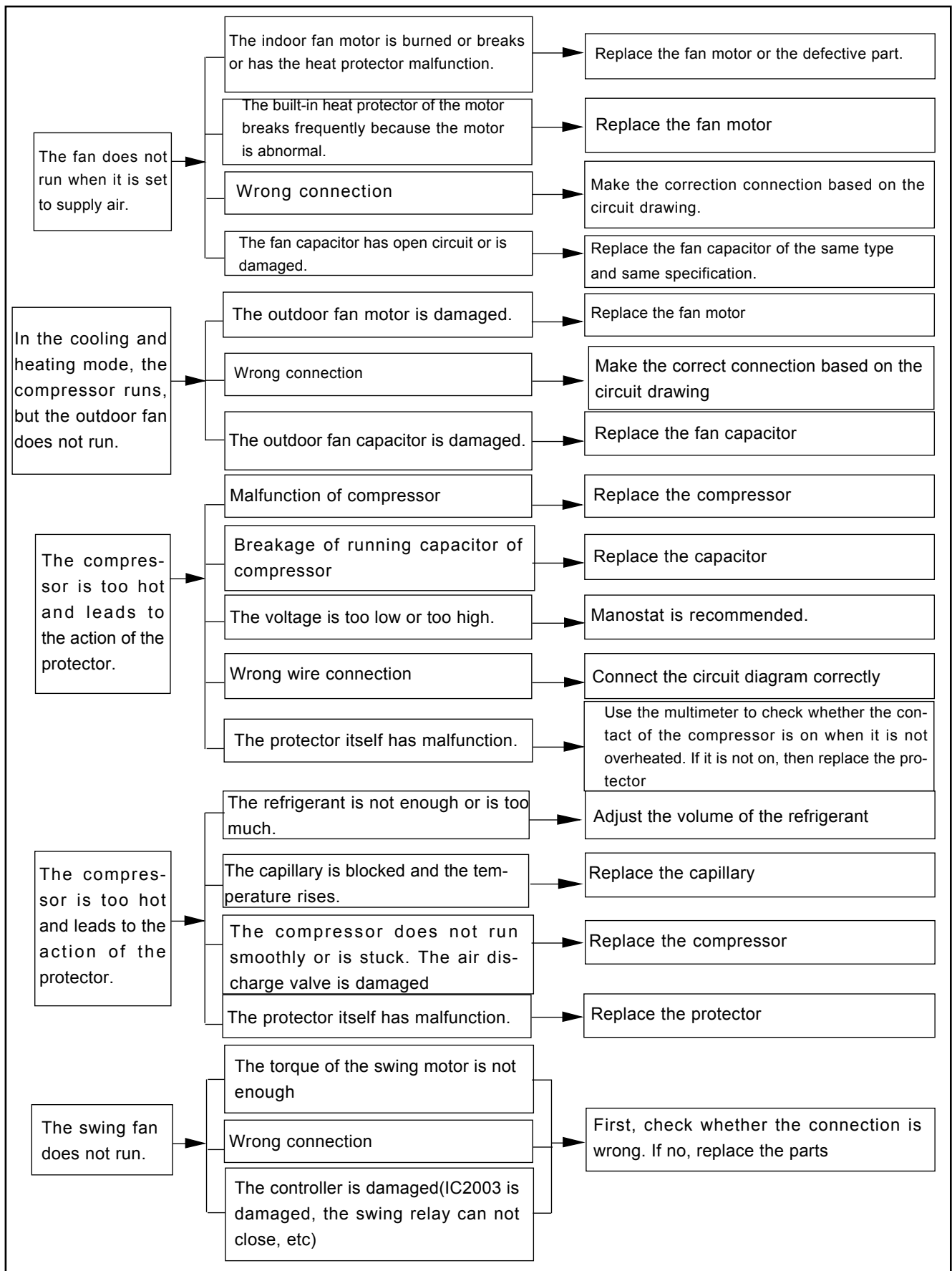
The data are subject to change without notice.

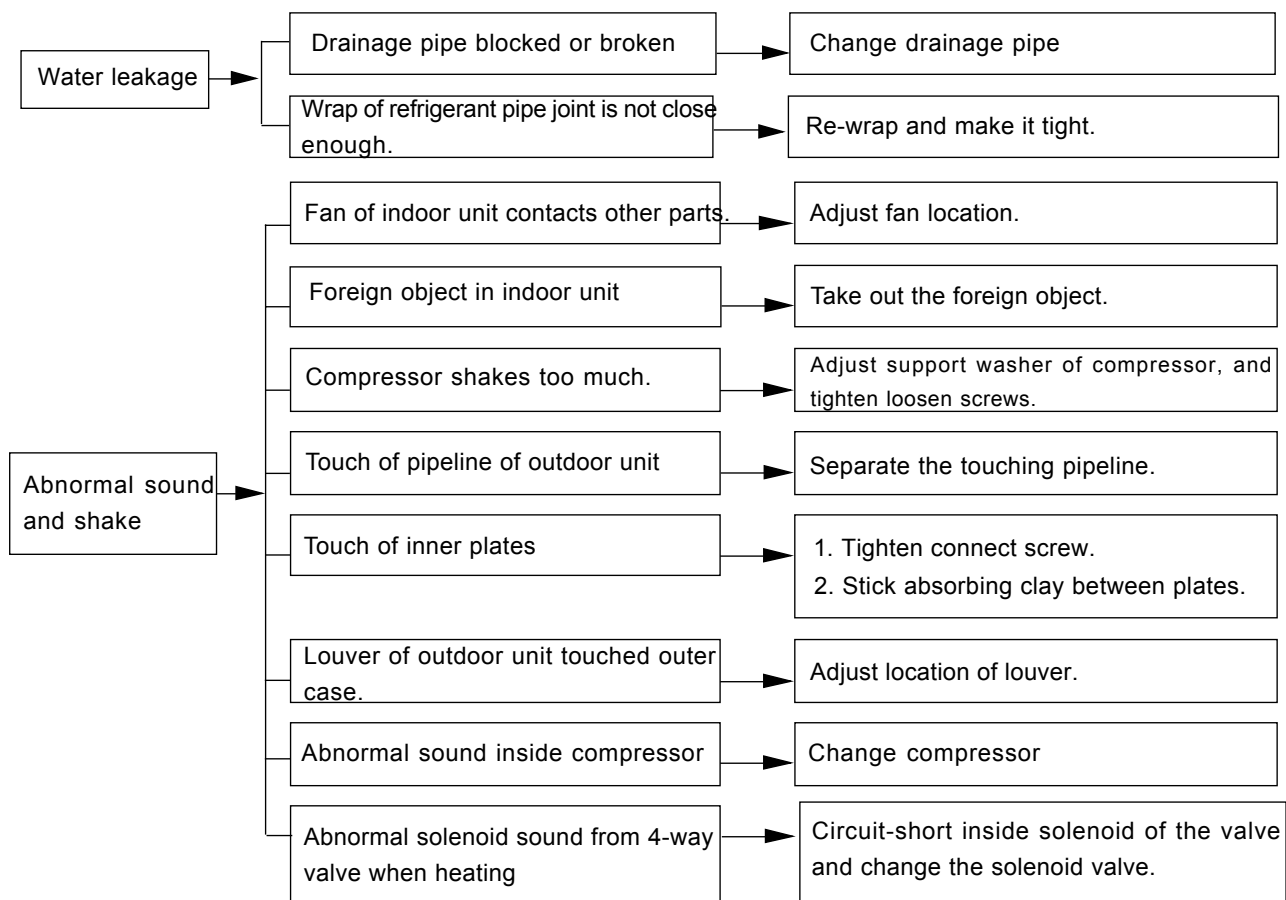
9 Failure and analysis

Note: When replacing the controller, make sure insert the wire jumper into the new controller, otherwise, the running indicator off 3s, blink 15 times, (the dual eight will display C5) but cannot turn on the unit.









There are no heating malfunctions in the above for the cooling only unit.

PG motor locked protection H6:

Probable reasons:

1. Air vents were blocked which may cause the fan speed is too slow;
2. Fan blade locked;
3. Motor locked;
4. Fan motor capacitor damaged;
5. Motor damaged (orders, winding, open circuit or shortcircuit are not normal, when testing the winding, pls distinguish whether the motor body cause temperature is too high so that bring on the thermal protector starts up)
6. IC board damaged (during normally running, there are voltage at both capacity input and output)
7. Mainboard damaged.
8. Motor thermal protection.

Disposal methods:

1. Remove the obstruction;
2. Reassembling;
3. Replace motor;
4. Replace capacitor;
5. Replace motor;
6. Replace circuit board;
7. Replace mainboard;

8. Under the normal circumstances, the motor will not act, but in other circumstances, such as evaporator is very dirty, too much dust attached on the fan blade that will cause the motor overload running, so that during the operation, frequent thermal protection will happen, so it is need to be cleaned or replaced.