SERVICE MANUAL

Large Room 220V Portable Single Hose Air Conditioner

MODEL:
AP16000G

CAUTION: READ ALL SAFETY PRECAUTIONS IN THIS MANUAL BEFORE SERVICING THE UNIT

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*Warranty service should be performed by an authorized service representative only.

CONTENTS

SAFETY PRECAUTIONS

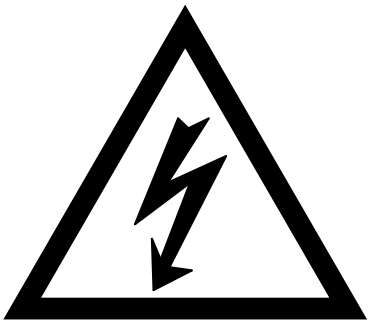
WARNING: This manual and the information contained herein is intended for use by certified technicians. The manufacturer or seller is not responsible for the interpretation or misuse of the information provided, nor does it assume any liability in connection with its use.

The safeguards and warnings indicated in this manual do not cover all possible conditions which may occur. Common sense, caution, and care must be exercised.

- To prevent electric shock, always unplug an appliance from the power supply before attempting any service.
- Disconnect the power cord by grasping the plug, not the cord.
- Do not bypass, cut, or remove the grounding plug.
- Prevent water from spilling onto electric elements or the machine parts.
- Always refer to the rating label on the appliance for rated current and voltage.
- Always check line voltage and amperage.
- Always use exact replacement parts.
- Any attempt to repair a major appliance may result in personal injury and property damage.

Electrical Safety

- Do not exceed the power outlet ratings.
- It is recommended that the unit be connected to its own circuit.
- A standard electrical supply that is properly grounded in accordance with the National Electrical Code and all state and local codes and ordinances is required.
- Do not use outlets that can be turned off by a switch or pull chain.
- Always turn the unit off and unplug it from the outlet when cleaning.
- Unplug the unit if it is not going to be used for an extended period of time.
- Do not operate the unit with a power plug missing the ground plug, a damaged cord, or a loose socket.
- Be sure the appliance is properly grounded.
- Do not bypass, cut, or remove the grounding plug.
- If the power cord is damaged, it must be replaced by the manufacturer or a qualified technician.
- Do not use extension cords or power strips with this unit. You may need to contact an electrician if it is necessary to use a longer cord or if you do not have a properly grounded outlet. Do not modify the power cord's length or share the outlet with other appliances.
- Do not start or stop the unit by switching the electrical circuit's power on and off.
- Immediately unplug the unit if it makes strange sounds, emits an odor or smoke and contact customer service.
- Do not remove any part of the casing unless instructed by an authorized technician.
- Before the appliance is removed from service or discarded, remove any doors and cut off the power cord.



General Safety

- Always unplug an appliance from the power supply before attempting any service. Disconnect the power cord by grasping the plug, not the cord.
- Do not allow children or pets to play on or in the appliance.
- This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the machine by a person responsible for their safety.
- Do not install or store this appliance where it will be exposed to the weather.
- Disconnect from the power socket before cleaning or maintenance.
- If the plug (power cord) is damaged, it must be replaced by the manufacturer or an authorized service representative.
- This machine shall be repaired only by an authorized service representative. Only genuine replacement parts should be used.
- If connected to a circuit protected by fuses, use time-delay fuses with this appliance.
- Do not lean items against the glass door.
- Please do not close the door with excessive force. If it is found difficult to close the door, please check for obstruction.
- When you plan to dispose of this unit in the future, please comply with the local waste disposal regulations. Remove any doors so that children and pets will not be trapped in the unit.

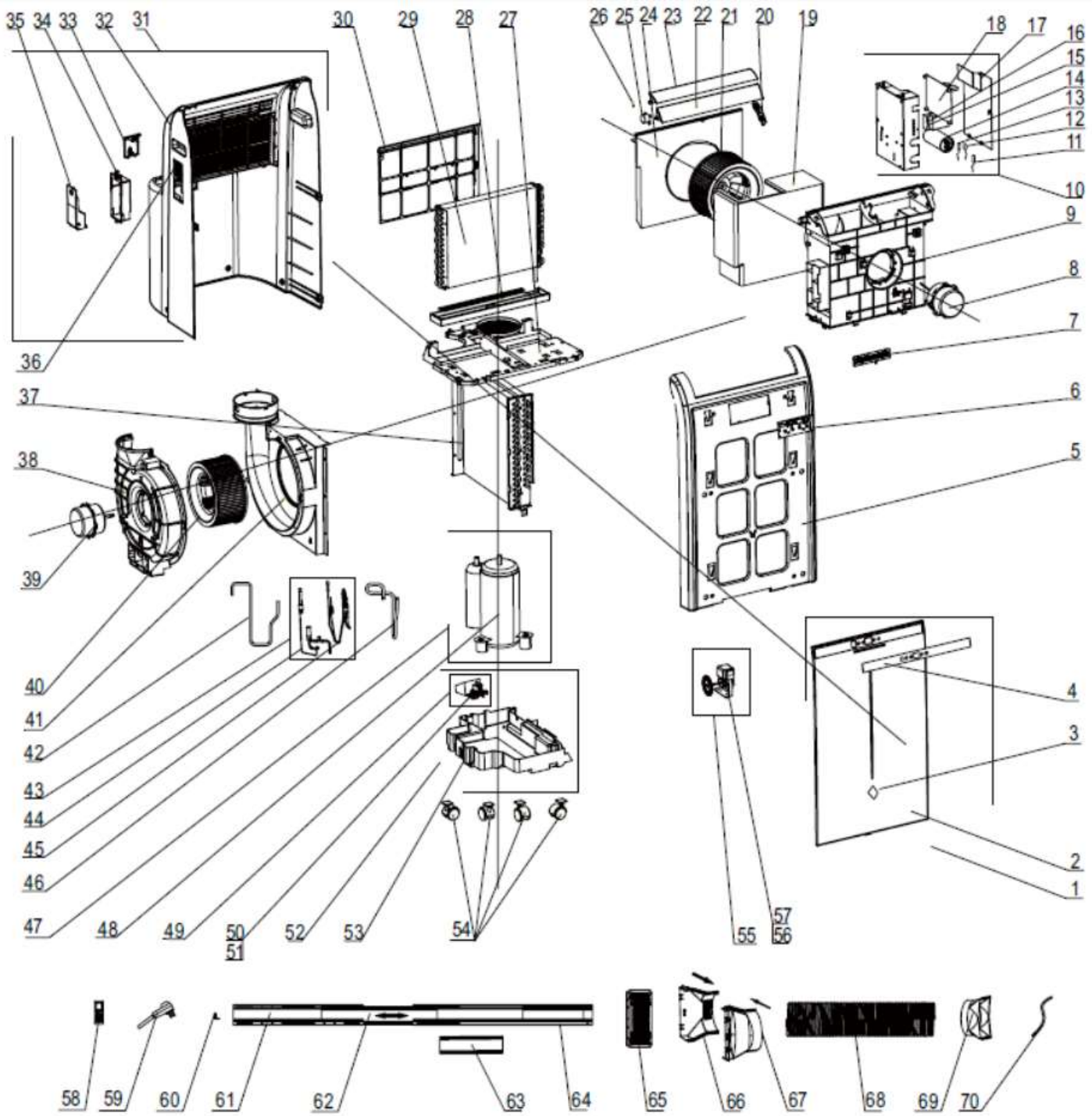
1 Specifications

Product Code			AP16000G
Power	Rated Voltage	V~	208/230
	Rated Frequency	Hz	60
	Phases		1
Cooling Capacity		W	4836
Heating Capacity		W	/
Cooling Power Input		W	2100
Heating Power Input		W	/
Cooling Power Current		A	9.70
Heating Power Current		A	/
Rated Input		W	2360
Rated Current		A	12.88
Input of Heater		W	/
Air Flow Volume(H/M/L)		CFM	259/224/200
Dehumidifying Volume		L/h	2
EER		W/W	2.30
COP		W/W	/
SEER		W/W	/
HSPF		W/W	/
Application Area		yd^2	19.1-28.7
Climate Type			T1
Isolation			I
Moisture Protection			IPX0
Permissible Excessive Operating Pressure for the Discharge Side		PSIG	551
Permissible Excessive Operating Pressure for the Suction Side		PSIG	174
Throttling Method			Capillary
Defrosting Method			/
Fuse		A	3.15
Operation Temp		ºF	60.8 86
Ambient Temp (Cooling)		ºF	60.8 95
Ambient Temp (Heating)		ºF	/
Sound Pressure Level (H/M/L)		dB (A)	57/55/53
Sound Power Level (H/M/L)		dB (A)	67/65/63
Dimension (WXHXD)		inch	19 11/16X33 1/16X18 1/8
Dimension of Carton Box (LXWXH)		inch	22 7/8X21 1/8X33 15/16
Dimension of Package (LXWXH)		inch	23X21 1/4X34 1/2
Net Weight		lb	101.4
Gross Weight		lb	119

Refrigerant			R410A
Refrigerant Charge		oz	29.6
Compress	Compressor Model		QXA-C165RC030
	Compressor Oil		RB68EP/FVC68D
	Compressor Type		Rotary
	L.R.A.	A	38
	Compressor RLA	A	7.9
	Compressor Power Input	W	1690
	Overload Protector		build in
	Fan Type		Centrifugal
Evaporator	Diameter Length(DXL)	inch	8 9/16X4 5/16
	Fan Motor Speed(H/ML)	r/min	810/710/610
	Output of Fan Motor	W	16
	Fan Motor RLA	A	0.28
	Fan Motor Capacitor	μF	2
	Form		Aluminum Fin-copper Tube
	Pipe Diameter	inch	ĭ1/4
	5RZ-¿Q *DS	inch	3-1 5/8
	Coil Length (LXDXW)	inch	14 5/16X1 1/2X11 1/4
	Swing Motor Model		MP28GA
	Output of Swing Motor	W	2
	Fan Type		Centrifugal
Condenser	Fan Diameter	inch	8 9/16
	Form		Aluminum Fin-copper Tube
	Pipe Diameter	inch	ĭ1/4
	5RZV-¿Q *DS	inch	4-1 5/8
	Coil Length (LXDXW)	inch	13 3/4X13 3/4X2
	Fan Motor Speed	rpm	1225/1020
	Output of Fan Motor	W	60
	Fan Motor RLA	A	0.62
	Fan Motor Capacitor	μF	3.5

The above data is subject to change without notice. Please refer to the rating label on the unit.

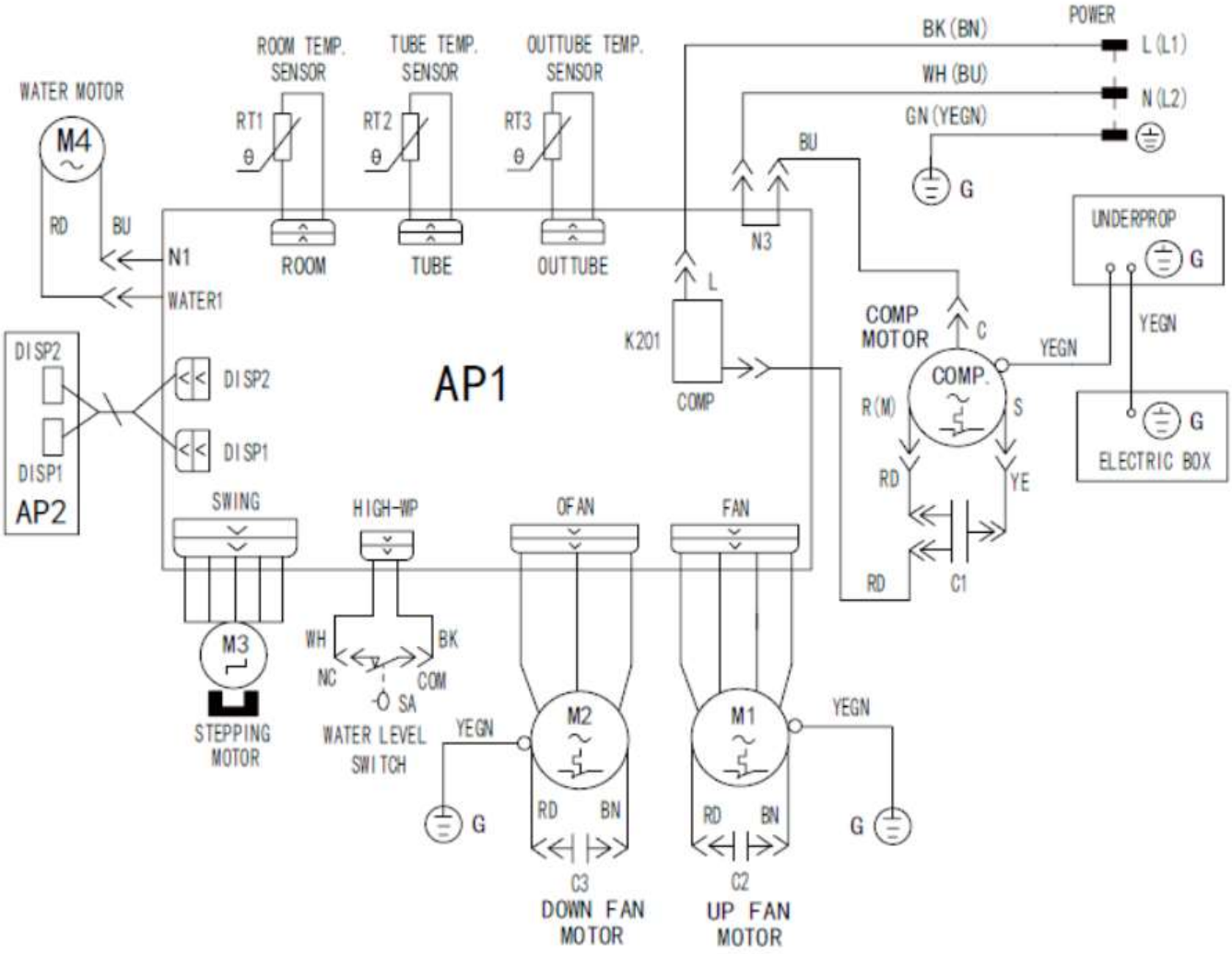
2 Exploded View and Parts List



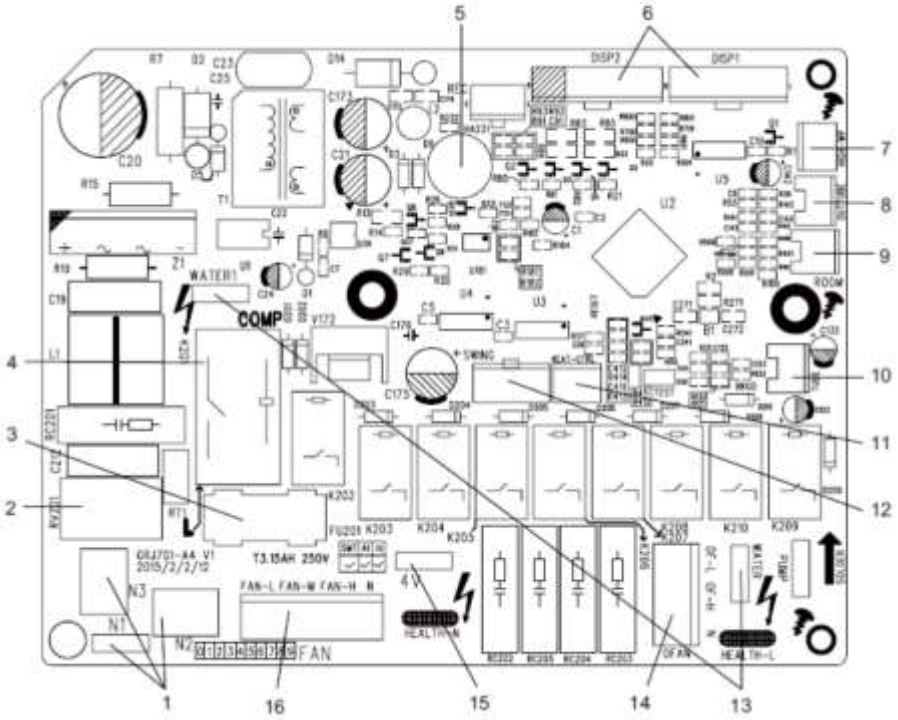
No.	Part Name	No.	Part Name
1	Decorative Board Sub-Assembly	36	Latch
2	Decorative Board	37	Condenser Assembly
3	Decorative Block	38	Motor Holder (Lower)
4	Decorative Strip	39	Fan Motor
5	Front Panel	40	Centrifugal Fan
6	Display Board	41	Diversion Circle (Lower)
7	Button	42	Discharge Tube Sub-Assembly
8	Fan Motor	43	Capillary Assembly
9	Motor Holder (Upper)	44	Discharge Charge Valve Sub-Assembly
10	Electric Box Assembly	45	Capillary Sub-Assembly
11	Temperature Sensor	46	Suction Tube Sub-Assembly
12	Temperature Sensor	47	Compressor and Fittings
13	Temperature Sensor	48	Compressor Gasket
14	Capacitor CBB65	49	Water Level Switch Sub-Assembly
15	Capacitor CBB61S	50	Water Level Switch Base
16	Capacitor CBB61S	51	Water Level Switch
17	Electric Box Cover	52	Water Tray Sub-Assembly
18	Main Board	53	Water Tray
19	Foam(Propeller Housing)	54	Castors
20	Gear Sub-Assembly	55	Motor Sub-Assembly (Flinger)
21	Centrifugal Fan	56	Flinger/Draw Water Motor
22	Guide Louver 1	57	Water Flywheel
23	Guide Louver 2	58	Remote Controller
24	Diversion Circle (Upper)	59	Power Cord
25	Stepping Motor	60	Window Locking Bracket
26	Left Axil Bush	61	Back Plate
27	Mid Clapboard	62	Adjusting Plate
28	Water Tray	63	Baffle Plate
29	Evaporator Assembly	64	Back Plate
30	Filter Sub-Assembly	65	Rear Grill
31	Rear Plate Sub-Assembly	66	Rear Clip (lower)
32	Backboard	67	Rear Clip (upper)
33	Cable Cross Plate	68	Pipe
34	Remote Control Box	69	Tie-in
35	Cover of Remote Control Box	70	Drain Hose

3 Wiring Diagram

Symbol	Symbol Color	Symbol	Symbol Color	Symbol	Name
WH	White	GN	Green	COMP	Compressor
YE	Yellow	BN	Brown	⏚	Grounding wire
RD	Red	BU	Blue	/	/
YEGN	Yellow/Green	BK	Black	/	/
VT	Violet	OG	Orange	/	/

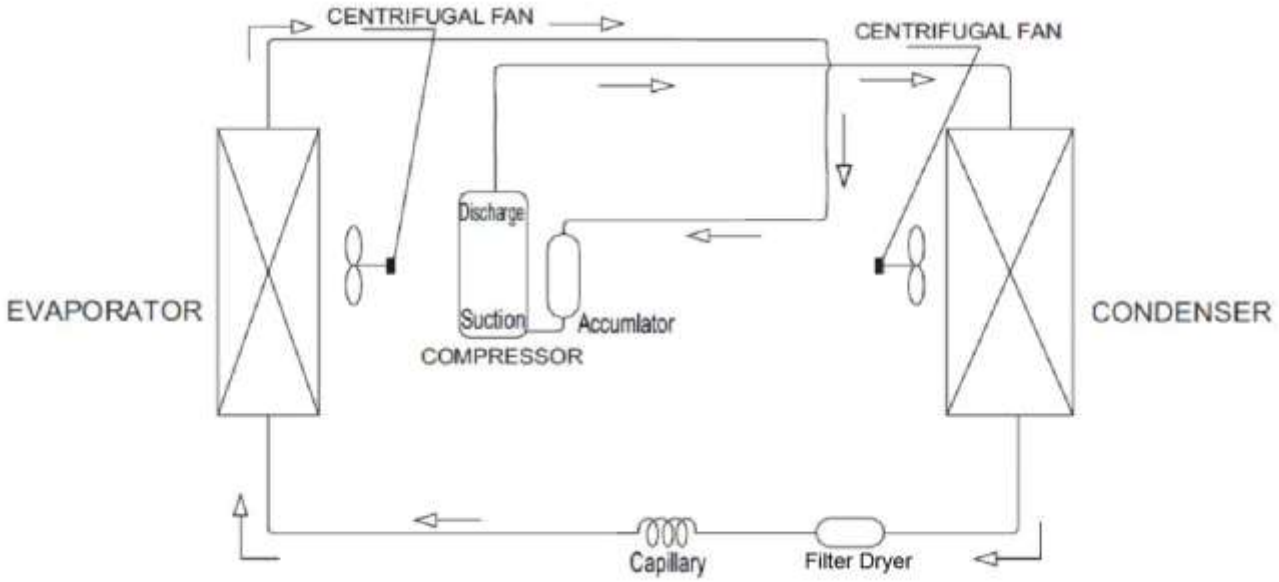


4 PCB Diagram



No.	Item
1	Neutral wire connectors
2	Varistor
3	Fuse
4	Compressor relay
5	Buzzer
6	Display board connectors
7	Water level switch connector
8	Condenser temperature sensor connector
9	Room/ambient temperature sensor connector
10	Frost sensor connector
11	NA for this model
12	Louver/Stepping motor connector
13	Flinger/Draw water motor connector
14	Condenser fan connector
15	NA for this model
16	Evaporator fan connector

5 Refrigerant System Diagram



6 Modes and Operating Conditions

6.1 Temperature Parameters Indoor

preset temperature (Tpreset)

Indoor ambient temperature (Tamb.)

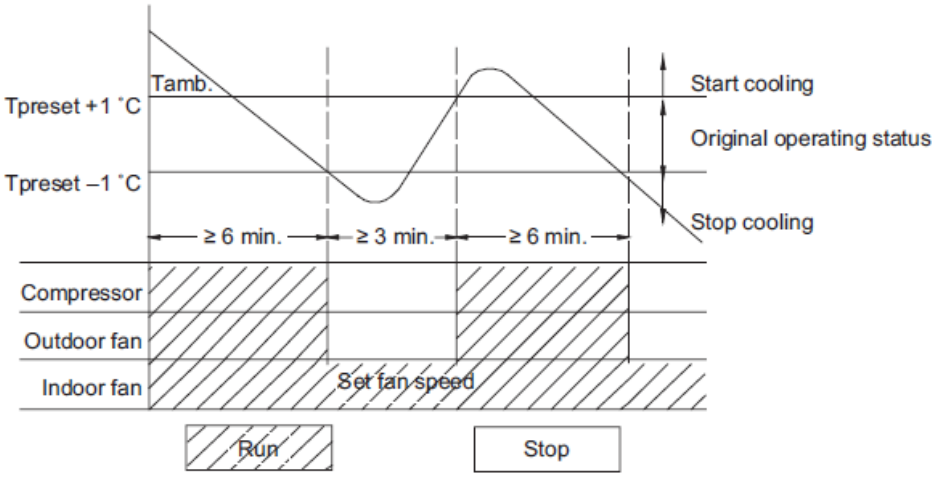
6.2 Cooling Mode

When Tamb ≥ Tpreset +1ºC(2ºF) the unit operates in cooling mode. The compressor runs and the indoor fan operates at the set fan speed.

When Tamb ≤ Tpreset -1ºC(2ºF) the compressor and outdoor fan stop, while the indoor fan operates at the set fan speed.

When Tpreset-1ºC(2ºF) < Tamb < Tpreset+1ºC(2ºF) the unit stays in its current operating mode.

Under cooling mode the temperature can be set between 61 and 86ºF (16-30ºC).



6.3 Dry Mode

Under this mode the set temperature and ambient temperature won't be displayed. The indoor fan operates at low fan speed. The compressor and outdoor fan operate continuously.

6.4 Fan Mode

In this mode the set temperature and ambient temperature won't be displayed. The indoor fan operates at the set fan speed.

6.5 Auto Mode

In auto mode standard cooling Tpreset=77ºF(25ºC); standard heating Tpreset=68ºF(20ºC)

- When Tamb > 79ºF(26ºC) the unit runs in auto cooling mode.

When Tamb < 68ºF(20ºC) the unit runs in auto fan mode.

If the unit is operating in fan mode and 68ºF(20ºC) ≥ Tambient ≥ 73ºF(23ºC), the unit will stay in fan mode. If the is not running in fan mode it will change to dry mode.

When 79ºF(26ºC) ≥ Tamb ≥ 74ºF(24ºC) the unit runs in auto dry mode

6.6 Timer Mode

- Timer ON is set with the unit OFF. The unit will turn ON when the set time is reached. The timer set range is 0.5-24hr in 30-minute increments.
- Timer OFF is set with the unit ON. The unit will turn OFF when the set time is reached. The timer set range is 0.5-24hr in 30-minute increments.

6.7 Sleep Mode

Press the Sleep Button to enter sleep mode. The Sleep Mode can be activated when in Cool Mode or Heat Mode and will not operate when in Fan Mode. When operating in Cool Mode, the Sleep function will slowly raise the Temp Control by 4° Fahrenheit over the initial 2 hour Sleep Mode period. When operating in Heat Mode (AP13500HG only), the Sleep function will slowly lower the Temp Control by 4° Fahrenheit over the initial 2 hour Sleep Mode period. When the Sleep Mode is active, the LCD will continue to display the Sleep Mode status.

6.8 Freeze Prevention Mode

Under freeze prevention mode the compressor stops running and the indoor fan operates at set fan speed. After the evaporator thaws the unit will return to normal operation.

6.9 Compressor Protection Mode

If power is interrupted, the compressor will only restart after a 3 minute delay.

6.10 Overflow Prevention Mode

When water is detected in the reservoir for 3 seconds overflow prevention will occur. The malfunction code H8 will be displayed.

7 Troubleshooting

7.1 Troubleshooting Guide

Problem	Possible Cause	Solution
Unit does not turn on.	Wall plug is disconnected.	Insert plug firmly into proper wall outlet.
	House fuse blown or circuit breaker tripped.	Replace fuse with time delay type or reset circuit breaker.
	Power cord is tripped.	Press the RESET button on the power cord. If power cord is damaged replace power cord.
	Unit is turned OFF.	Turn unit ON and set to desired setting.
	Ribbon cable to control panel is disconnected.	Remove outer shell and reconnect cable.
	Loose or disconnected wiring on main PCB.	Remove outer shell. Check all connections to the PCB and reconnect any loose or disconnected leads.
	Condensate water tray is full and/or display shows H8 error code.	Drain condensate water. Make sure water level switch is operating correctly and not stuck in “full” position or being interfered with.
	Ambient temperature sensor has malfunctioned and/or display shows F1 error code.	Check sensor wiring connection on PCB. Replace sensor if defective.
Poor cooling (or heating) performance.	Room temperature is below 61ºF(16ºC) or above 86ºF(30ºC).	Cooling will not occur until room temperature rises above 61ºF(16ºC.) Heating will not occur until room temperature falls below 86ºF(30ºC).
	Fan speed is set too low.	Increase fan speed to improve air flow.
	Set temperature is too high (or too low.)	Set to a Lower (or higher) temperature.
	Filter is dirty.	Clean filter.
	Refrigerant leak. Display shows F0 error.	Find leak and repair. Recharge with refrigerant.
	Evaporator is frosted.	The unit needs to defrost and will resume normal operation after defrost mode is finished.
Unit continues to operate after water tray is full or water full protection (H8 error) occurs frequently.	Water level switch is open or short circuited.	Check water level switch connections or replace water level switch if defective.
	Water level switch is stuck in “empty” position.	Make sure water level switch is operating correctly and not stuck or being interfered with.
	Water flinger motor is defective.	Replace water flinger motor.
Fan louvers do not swing.	Wire connections faulty.	Check wire connections. Repair or tighten any broken or loose connections.
	Fan swing motor damaged.	Replace motor.

Sounds or vibration.	When unit is turned on or off the outer shell “pops” or “clicks.”	Normal sound. Outer shell is contracting or expanding and will stop after a few minutes.
	When unit is turned on or off “boiling” or “running water” is heard.	Normal sound. The cause is refrigerant flowing inside the system and will stop after a few minutes.
	Foreign objects inside the unit are interfering with fans or other moving parts.	Remove foreign objects.
	Compressor vibration.	Tighten bolts holding compressor to chassis.
Room too cold (or too hot.)	Set temperature is too low (or high.)	Adjust the set temperature.

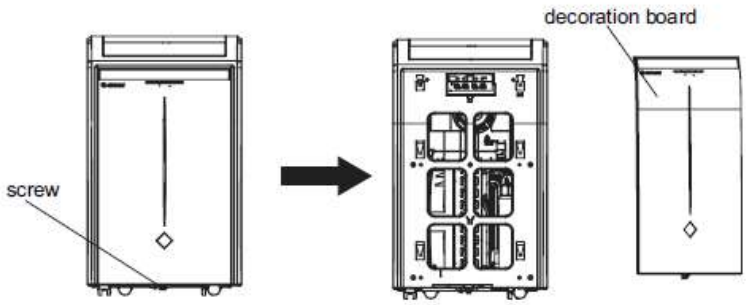
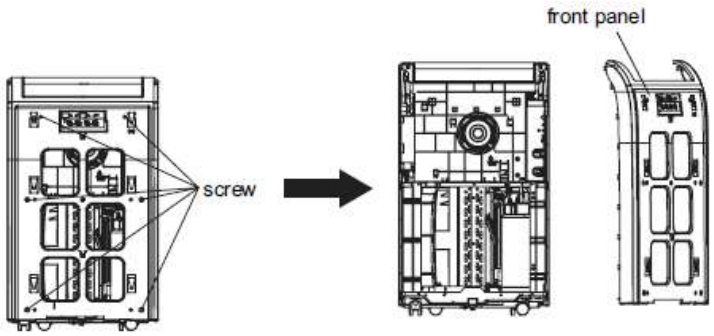
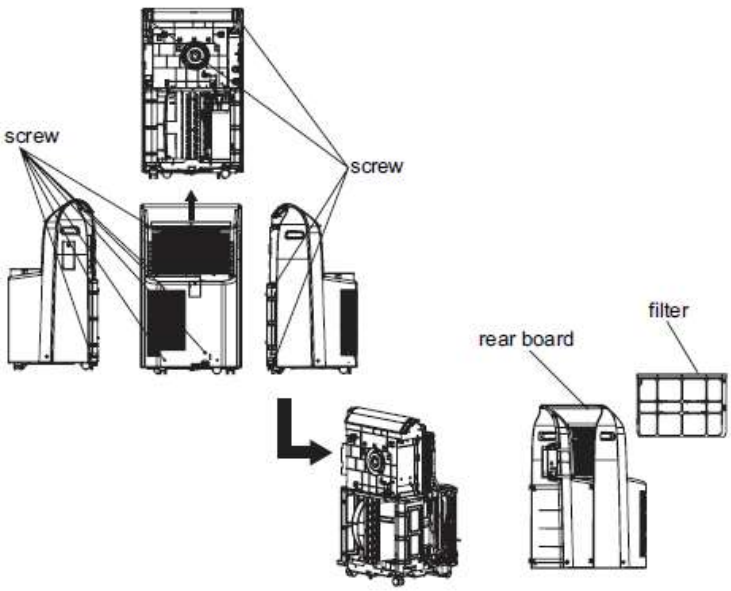
7.2 Error Codes

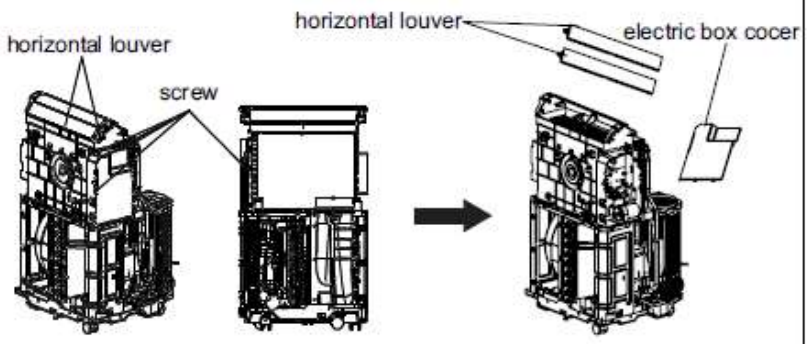
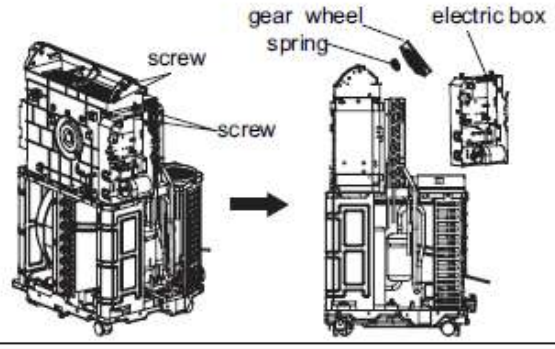
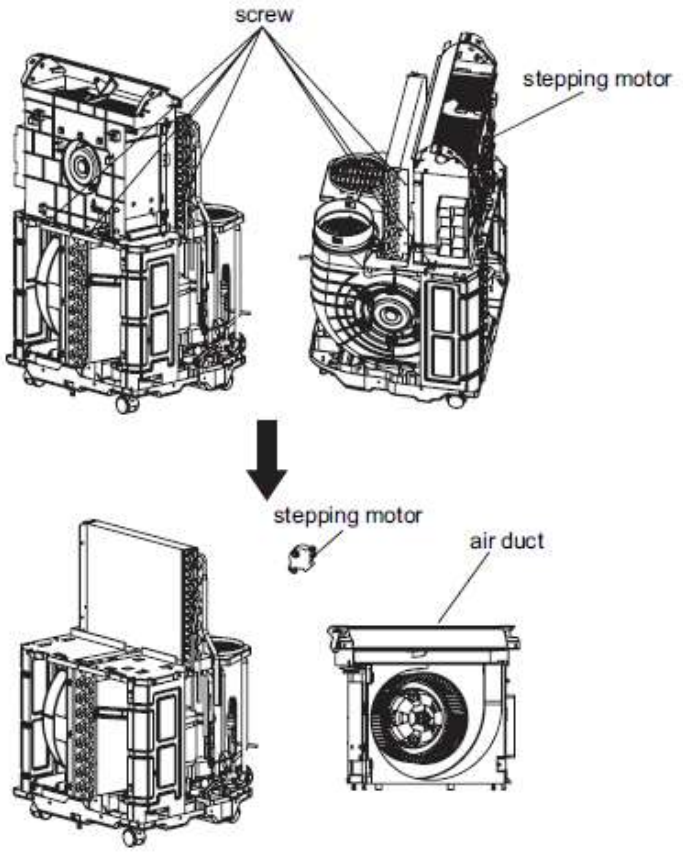
Code	LED Indication	Malfunction	Possible Causes and Solutions
F1	LED blinks once then off for 3 seconds.	Indoor ambient temperature sensor is open/short circuited.	Sensor connection is loose or disconnected. Reconnect any loose or disconnected wires. Sensor wire is damaged. Repair wire or replace sensor. Sensor is defective. Replace sensor. Main PCB is defective. Replace PCB.
F2	LED blinks twice then off for 3 seconds.	Evaporator temperature sensor is open/short circuited.	Sensor connection is loose or disconnected. Reconnect any loose or disconnected wires. Sensor wire is damaged. Repair wire or replace sensor. Sensor is defective. Replace sensor. Main PCB is defective. Replace PCB.
F4	LED blinks four times then off for 3 seconds.	Condenser temperature sensor is open/short circuited.	Sensor connection is loose or disconnected. Reconnect any loose or disconnected wires. Sensor wire is damaged. Repair wire or replace sensor. Sensor is defective. Replace sensor. Main PCB is defective. Replace PCB.
F0	NA	Low refrigerant charge due to leak or defect.	Find leak and repair. Recharge refrigerant.
H3	NA	Compressor overload protection.	The coils are dirty or the air inlet or outlet is blocked. Clean coils and/or move/remove obstructions. Fan is not running or set too low. Increase fan speed or replace fan if defective. Compressor is defective. Replace compressor. Refrigerant leak. Repair leak and recharge system.

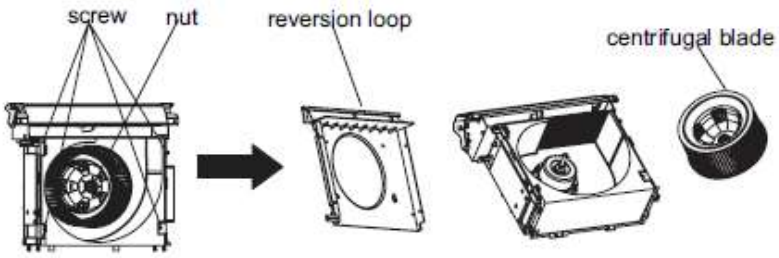
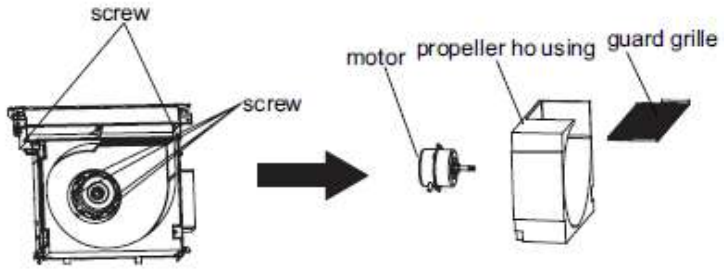
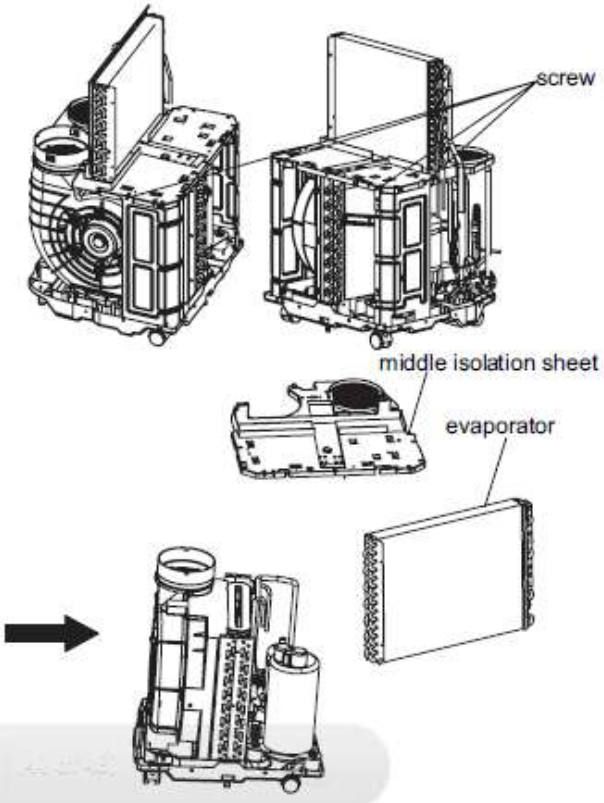
			Restriction in refrigeration system. Locate and clear restriction, then recharge refrigerant. Water flinger motor defective or fly wheel obstructed. Clear obstructions, repair alignment of motor or replace if defective.
H8	LED blinks eight times then off for 3 seconds.	Condensate water overflow protection. Water reservoir is full.	Water reservoir full. Drain water from unit. Level switch stuck or being interfered with. Remove any obstructions from water tray and/or unstick switch. Make sure switch is free to move as water level changes. Loose or disconnected switch wiring. Repair connections. Level switch is defective. Replace switch. Main PCB is defective. Replace PCB.
E5	LED blinks five times then off for 3 seconds.	Overload malfunction.	Unstable power supply voltage or supply voltage too low. Requires certified electrician to adjust supply voltage to within proper operating parameters. The coils are dirty or the air inlet or outlet is blocked. Clean coils and/or move/remove obstructions. Fan is not running or set too low. Increase fan speed or replace fan if defective. Compressor is defective. Replace compressor. Restriction in refrigeration system. Locate and clear restriction, then recharge refrigerant.
E8	NA	Overload protection.	The coils are dirty or the air inlet or outlet is blocked. Clean coils and/or move/remove obstructions. Fan is not running or set too low. Increase fan speed or replace fan if defective. Compressor is defective. Replace compressor. Restriction in refrigeration system. Locate and clear restriction, then recharge refrigerant. Ambient temperature is extreme.

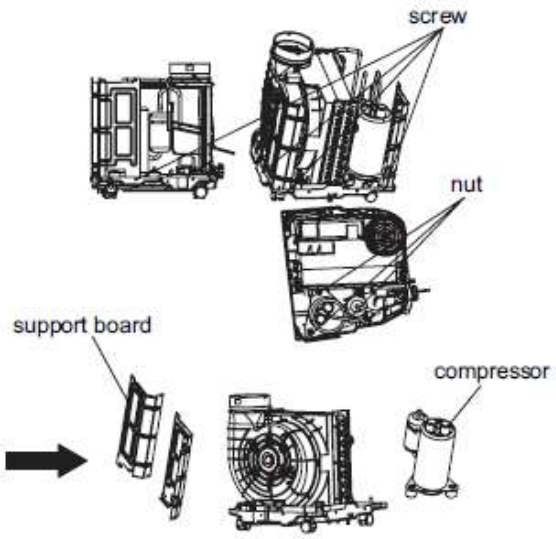
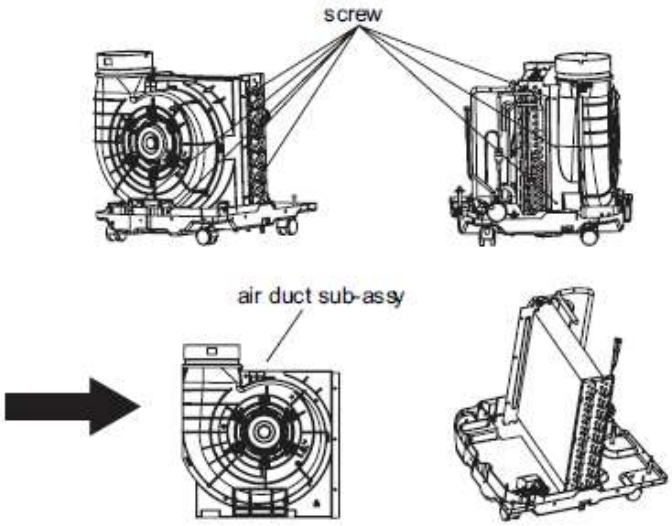
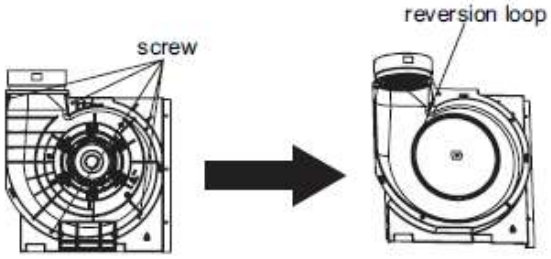
8 Unit Disassembly

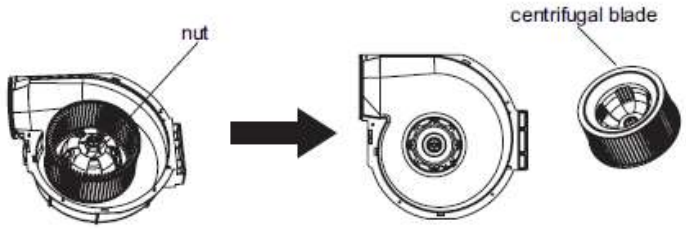
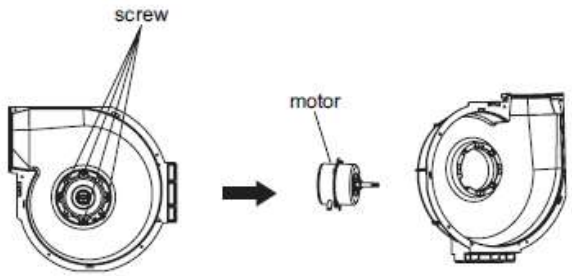
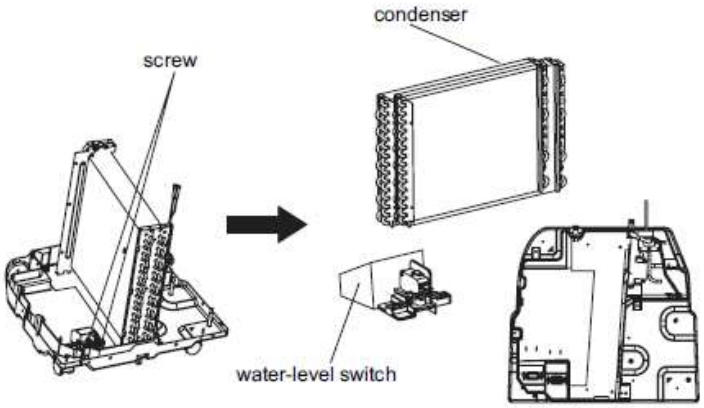
Warning: disconnect power supply before removal; discharge the refrigerant completely before unsoldering the pipes.

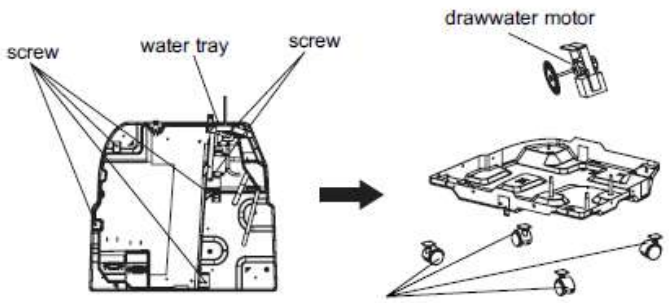
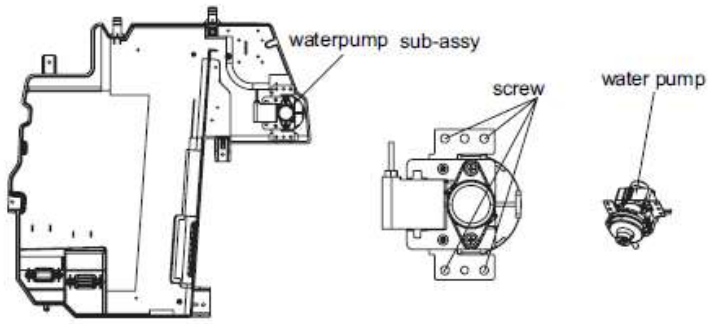
Steps	Produce	
1	Remove decoration board	
	Remove screws fixing decoration board and then lift the decoration board upwards to remove it.	
2	Remove panel	
	Remove screws on panel and then remove the panel.	
3	Remove rear board, filter	
	Remove screws fixing rear board and then remove the rear board. Lift up the filter along arrow direction and then draw out the filter.	

Steps	Produce	
4	Remove electric box cover, horizonta louver	
	Remove screws fixing electric box cover and then remove the electric box cover. Adjust the horizontal louver lightly and then remove the horizontal louver.	
5	Remove electric box , gear wheel and spring	
	Remove screws on electric box and gear wheel, pull out the wires and then remove electric box, gear wheel and spring.	
6	Remove stepp ing m otor and upper air duct	
	Remove screws fixing upper air duct and then remove the upper air dud. Remove screws fixing stepping m otor and then remove the stepping motor.	

Steps	Produce	
7	Remove reversion loop, centrifugal blade	
	Remove screws fixing reversion loop and then remove the reversion loop. Remove nuts fixing centrifugal blade, and then remove the centrifugal blade.	
8	Remove motor, propeller housing and guard grille	
	Remove screws fixing guard grille and motor, and then remove the guard grille and motor. Take out the propeller housing.	
9	Remove evaporator and middle isolation sheet	
	Unsolder the spotweld connectedwith evaporator and then remove the evaporator. Remove screws fixing middle isolation sheet and then remove the middle isolation sheet.	

Steps	Produce	
10	Remove support board and compressor	
	Twist off screws fixing support board and remove 2 support board. Unsolder the spotweld between compressor and condenser, remove 3 nuts fixing compressor and then remove the compressor.	
11	Remove air duct sub-assy	
	Remove screws fixing air duct sub-assy, and then remove the air duct sub-assy.	
12	Remove reversion loop	
	Remove screws fixing reversion loop, and then remove the reversion loop.	

Steps	Produce	
13	Remove centrifugal blade	
	Remove nuts fixing centrifugal bladeand then remove the centrifugal blade.	
14	Remove motor	
	Remove screws fixing motor and then remove the motor.	
15	Removewater-level switch and condenser	
	Remove screws fixingwater-level switch and then remove the water-level switch. Pull it upwardsto remove thecondenser.	

Steps	Produce	
16	Remove drawwater motor,water tray and castor	
	Remove screws fixing drawwater motor and water tray and then remove the draw water motor and water tray Remove screws fixing castor and then remove 4 castors.	
17	Remove waterpump	
	Remove screws fixingwater pump sub-assy and then remove the water pump sub-assy. And then remove the screws fixing water pump and the remove the water pump.	

DATE	REVISION NOTES
04/13/2018	INITIAL DOCUMENT

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**Warranty service should be performed by an authorized service representative only.*