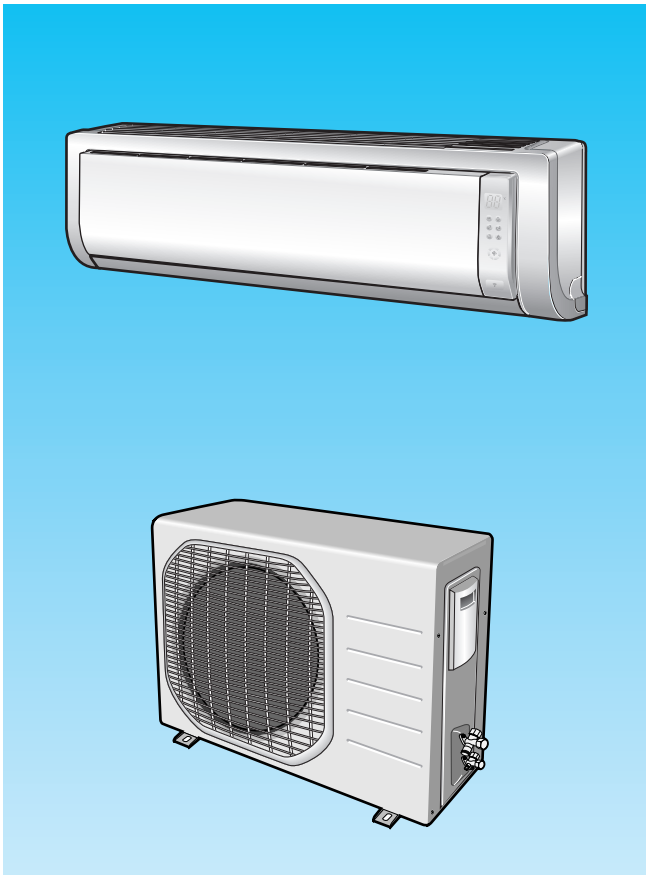
SAMSUNG

ROOM AIR CONDITIONER

AS09HPA
AS12HPA

SERVICE Manual

AIR CONDITIONER



CONTENTS

1. Product Specifications

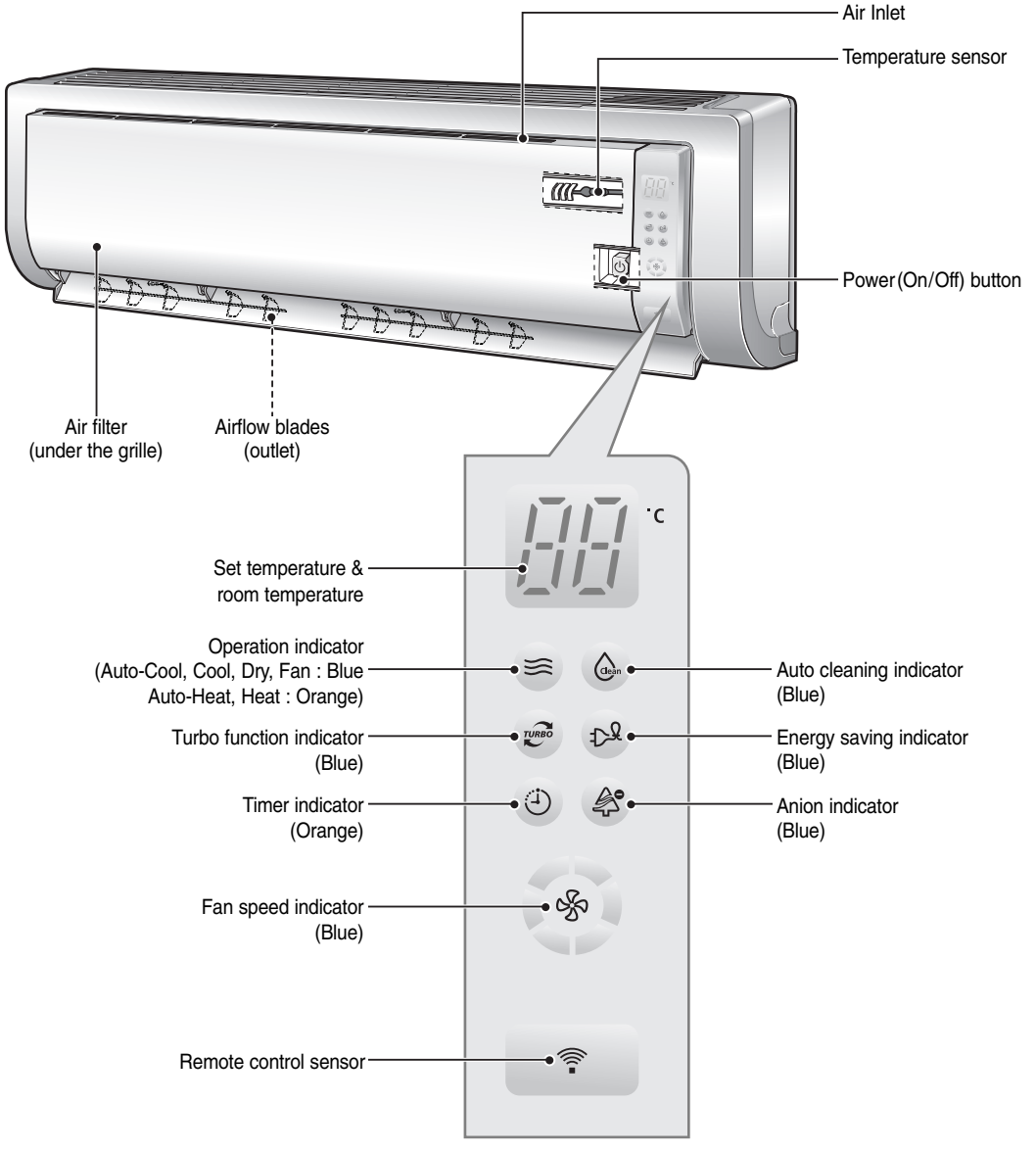
1-1 Table

Item \ Model					AS09HPA		AS12HPA	
					Indoor unit	Outdoor unit	Indoor unit	Outdoor unit
Type					Wall-mounted		Wall-mounted	
Perfor-mance	Cooling			kW	2.70		3.50	
	Heating			kW	2.90		3.80	
	Dehumidifying			ℓ/h	1.0		1.4	
	Air Volume	Cooling		m^3/min	7.5 / 6.9 / 6.3	25	8.3 / 7.0 / 5.7	25
		Heating			8.0 / 7.4 / 6.8	25	9.5 / 8.9 / 8.3	25
	Noise	Cooling		dB	40 / 36 / 32	51 / 51	43 / 38 / 34	53 / 53
		Heating			40 / 36 / 32	51 / 51	43 / 38 / 34	53 / 53
	Energy Efficiency Ratio	Cooling		W/W	3.21		3.21	
		Heating			3.41		3.22	
	Power			~~V-Hz~~	1-220 / 240-50		1-220 / 240-50	
Power	Power Consumption	Cooling		W	840		1,090	
		Heating			850		1,180	
	Operating Current	Cooling		A	3.9		5.0	
		Heating			3.7		5.4	
	Power Factor	Cooling		%	97.6		98.2	
		Heating			97.4		98.0	
	Starting Current			A	21		28	
	Power Cord	~~Length~~		m	~~2.1~~		~~2.1~~	
		Number of Core Wire			5G		5G	
		Capacity		A	250V-10A		250V-10A	
Size	Outer Dimension	Width x Height x Depth		mm	950 x 268 x 165	790 x 548 x 285	950 x 268 x 165	790 x 548 x 285
				~~inch~~	~~37.4 x 10.6 x 6.5~~	~~31.1 x 21.6 x 11.2~~	~~37.4 x 10.6 x 6.5~~	~~31.1 x 21.6 x 11.2~~
	Weight(Net)			kg	9.0	33.8	9.0	36.0
	Refrigerant Pipe	Liquid		mm ~~x L(m)~~	ø6.35 ~~x 7.5~~		ø6.35 ~~x 7.5~~	
		GAS		mm ~~x L(m)~~	ø9.52 ~~x 7.5~~		ø9.52 ~~x 7.5~~	
	Drain Hose			D x L(mm)	ø18 x 550		ø18 x 550	
	Compressor	Type			Rotary, G4A091JU		Rotary, G8C124JU	
		Motor	Type		Induction Motor(PSC)		Induction Motor(PSC)	
			Rated Output		930		1,267	
	Oil Type				DAPHNE FV68S(PVE)		DAPHNE FV68S(PVE)	
	~~Blower~~	Type			Cross-flow	Propeller	Cross-flow	Propeller
		Motor	Type		Resin / steel	steel	Resin / steel	steel
			Rated Output	W	15	50	15	50
Heat Exchanger					2ROW 12STEP	1ROW 24STEP	2ROW 12STEP	2ROW 24STEP
Refrigerant Control Unit					CAPILLARY TUBE		CAPILLARY TUBE	
Freezer Oil Capacity				cc	280		500	
Refrigerant ~~to Change~~(R410A)				g	730		950	
Protection Device(OLP)					RBC12054-12500		RBC12128-12500	
Cooling Test Condition					INDOOR UNIT : DB27˚C WB19˚C		OUTDOOR UNIT : DB35˚C WB24˚C	
Maximum Operation Condition					INDOOR UNIT : DB32˚C WB23˚C		OUTDOOR UNIT : DB43˚C WB26˚C	

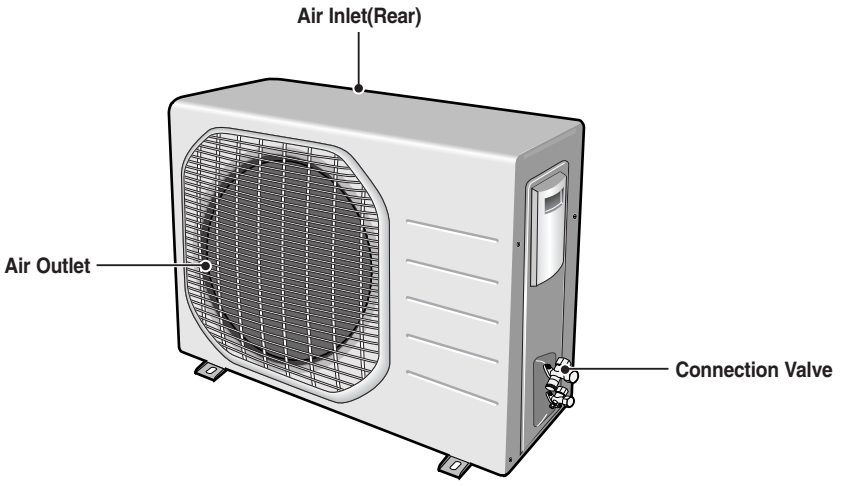
2. Operation Instruction & Installation

2-1 View of the Unit

2-1-1 Indoor Unit



2-1-2 Outdoor Unit

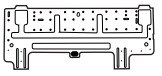
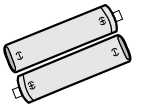


2-2 Air Conditioner and Accessories

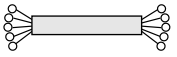
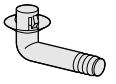
The following accessories are supplied with the air conditioner.

- The number of each accessory is indicated in parentheses.

2-2-1 Accessories in the Indoor Unit Case

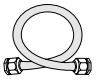
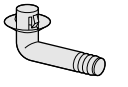
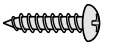
Installation Plate (1)	Remote Control (1)	Batteries for Remote Control (2)	User's Manual (1)	Installation Manual (1)
				

2-2-2 Accessories in the Outdoor Unit Case

5-wire Assembly Cable (1)	Drain Plug (1)	Rubber Leg (4)
		

- The flare nuts are attached to the end of each pipe of an evaporator or a service port.
  Use the nuts when connecting the pipes.
- The 5-wire assembly cable is optional. If it is not supplied, use the standard cable.
- The drain plug and rubber leg are only included when the air conditioner is supplied without the assembly pipe as seen in the picture below.

The following connection accessories are optional.
If they are not supplied, you should prepare them before installing the air conditioner.

Assembly Pipe, ø6.35mm by 7.5m (1)	Assembly Pipe, ø9.52mm by 7.5m (1)	PE T3 Foam Tube Insulation (1)	Vinyl Tape, Width 50mm (1)	Drain Plug (1)	Rubber Leg (4)
					
Pipe Clamps A (3)	**Pipe Clamps B (3)**	**Cement Nail (6)**	**M4 x 16 Tapping Screws (10)**	**Drain Hose, length 2m (1)**	**Putty 100g (1)**
					

- If these accessories are supplied, you can find them in the accessory box.

2-3 Installation

2-3-1 Before Installation

Keep the air conditioner drain hose outlet and inlet free from its surroundings.
In case of breakdown, keep the symmetry and fix it to prevent vibration.
The pipe length shall meet the standard as far as possible.

2-3-2 Installation Procedure

■ Location

Install the product in an area to guarantee the best cooling effect, convenience of piping and electric work, and inexistence of vibration or wind in the vicinity.

■ Wall Drilling

Drill the wall downward in a diameter of 60 to 65mm.

■ Fixing Indoor Unit & Outdoor Unit

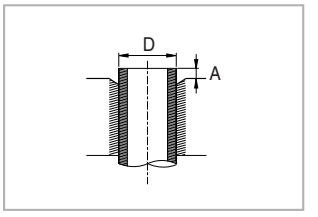
Fix the air conditioner hard enough so that it can not fall to the ground. On the roadside, the outdoor unit shall be installed 2m above ground and kept away from pedestrians to prevent direct exposure to hot wind.

■ Pipe Spooling & Connecting

You shall cut the pipe straightly with a pipe cutter and grind all the burrs of the cut surface.
Pipe expansion may continue until the pipe surface becomes uneven or torn apart.
Be sure to use a torque wrench to tighten pipes or flare nuts.

<Torque & Depth>

Outer Diameter(D)	Torque(kgf·cm)	Depth(A)
6.35mm(1/4")	140~170	1.3mm
9.52mm(3/8")	250~280	1.8mm



■ Leak Test

Put an inert gas like nitrogen in the outdoor unit pipe and put soap bubbles or other test liquids on the pipe surface for the leak test.

■ Drain Hose Connecting

Install the drain hose downward to drain water naturally. Be sure to pour water into the hose to check if it drains well.

■ Electric & Earth Work

Electric and earth work shall meet the "Electric Facility Technology Standard" and the "Internal Wire Regulation" of the Electric Business Laws.

■ Inspection & Trial Run

Upon completion of the tests, you shall make a trial run while you explain the main functions of the air conditioner to finish the installation.

2-4 Installation Diagram of Indoor Unit and Outdoor Unit

2-4-1 Air-Purge Procedure

1) Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.

2) Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port (3/8" Packed valve) as shown at the figure.

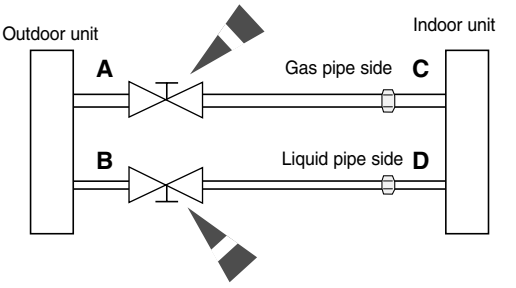
3) Open the valve of the low pressure side of manifold gauge counter-clockwise.

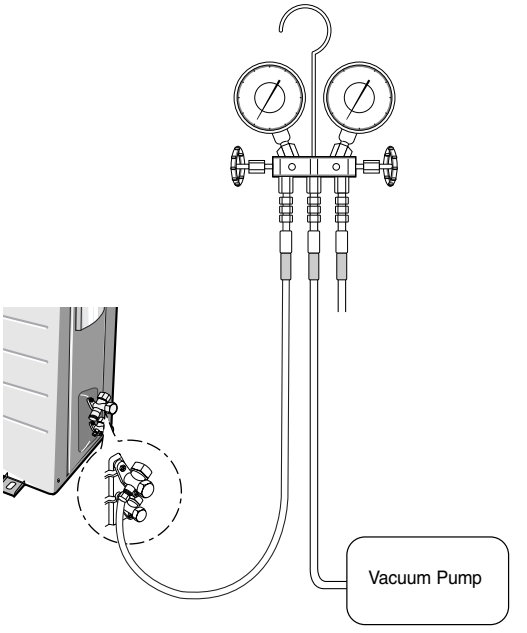
4) Purge the air from the system using vacuum pump for about 30 minutes.
   - After that, please recheck that pressure is ~~stabilization~~.
   - Close the valve of the low pressure side of manifold gauge clockwise.
   - Remove the hose of the low pressure side of manifold gauge.

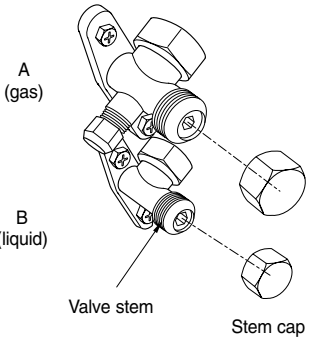
5) Set valve cork of both liquid side and gas side of packed valve to the open position.

6) Mount the valve stem nuts to the 2-Way and 3-Way valve. And mount the service port cap to 3-Way valve.

7) Check for gas leakage.
   - At this time, especially check for gas leakage from the 3-Way valve's stem nuts, and from the service port cap.







2-4-2 Refrigerant Refill(R410A)

Refill an air conditioner with refrigerant when refrigerant has been leaked at installing or using.

1) Purge air(for new installation only).

2) Turn the 3-Way valve clockwise to close, connect the pressure gauge (low pressure side) to the service valve, and open the 3-Way valve again.

3) Connect the tank to refill with refrigerant.

4) Set the unit to cool operation mode.

5) Check the pressure indicated by the pressure gauge(low pressure side).

   *** Standard pressure is should be 9.0~10.0kg/cm² in a regular, high operation mode.**

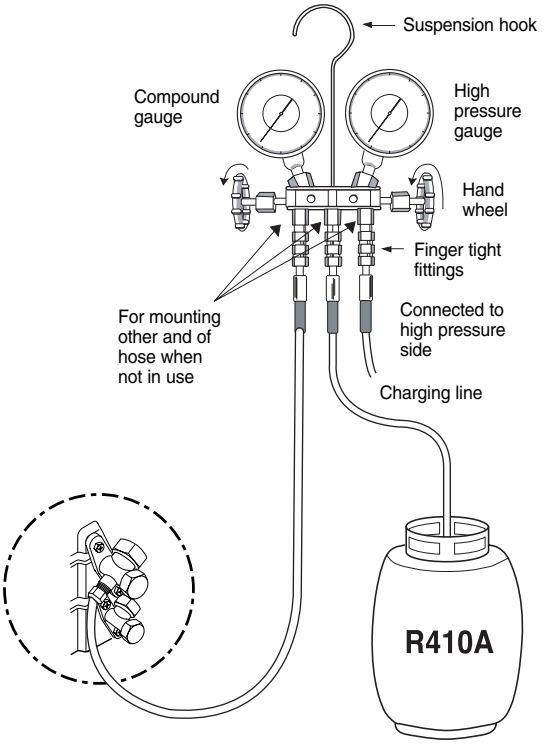
6) Open the refrigerant tank and fill with refrigerant until the rated pressure is reached.

   *** It is recommended not to pour the refrigerant in too quickly, but gradually while operating a pressure valve.**

7) Stop operation of the air conditioner.

8) Close the 3-Way valve, disconnect the pressure gauge, and open the 3-Way valve again.

9) Close the cap of each valve.



2-4-3 "Pump down" Procedure

Pump down will be carried out when an evaporator is replaced or when the unit is relocated in another area.

1) Remove the caps from the 2-Way valve and the 3-Way valve.

2) Turn the 3-Way valve clockwise to close and connect a pressure gauge (low pressure side) to the service valve, and open the 3-Way valve again.

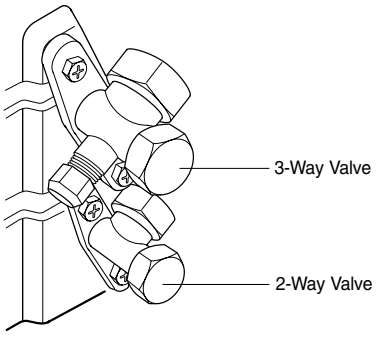
3) Set the unit to cool operation mode. (Check if the compressor is operating.)

4) Turn the 2-Way valve clockwise to close.

5) When the pressure gauge indicates "0" turn the 3-Way valve clockwise to close.

6) Stop operation of the air conditioner.

7) Close the cap of each valve.



Remarks

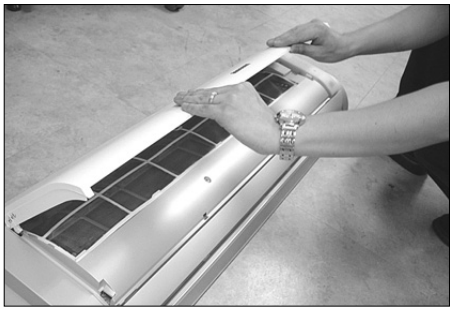
Relocation of the air conditioner

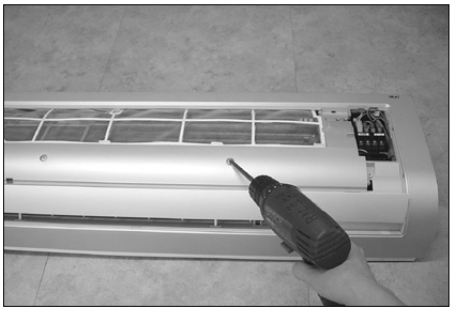
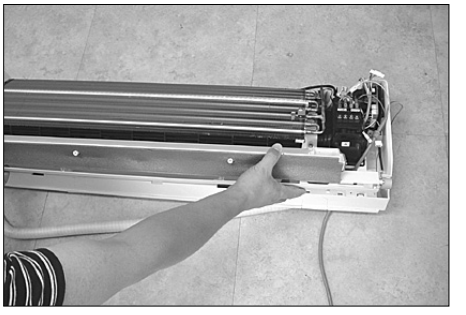
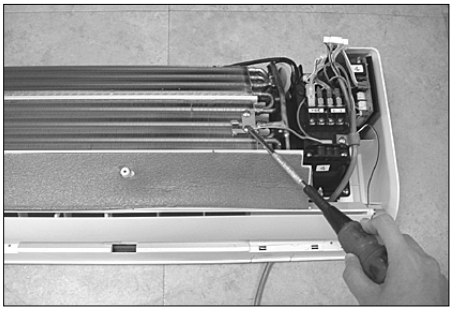
- Refer to this procedure when the unit is relocated.
- Carry out the pump down procedure (refer to the details of 'pump down').
- Remove the power cord.
- Disconnect the assembly cable from the indoor and outdoor units.
- Remove the flare nut connecting the indoor unit and the pipe.
- At this time, cover the pipe of the indoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Disconnect the pipe connected to the outdoor unit.
  At this time, cover the valve of the outdoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Make sure you do not bend the connection pipes in the middle and store together with the cables.
- Move the indoor and outdoor units to a new location.
- Remove the mounting plate for the indoor unit and move it to a new location.

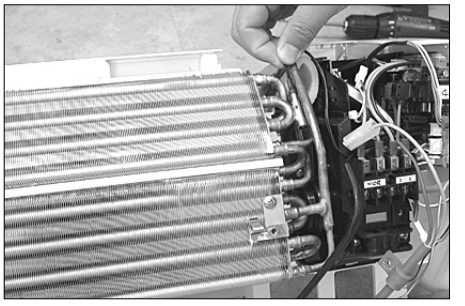
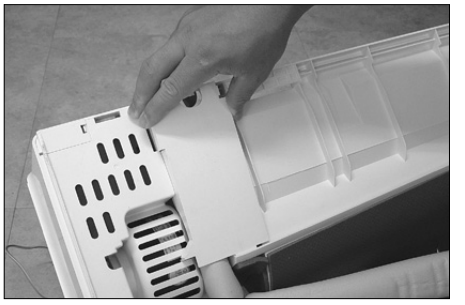
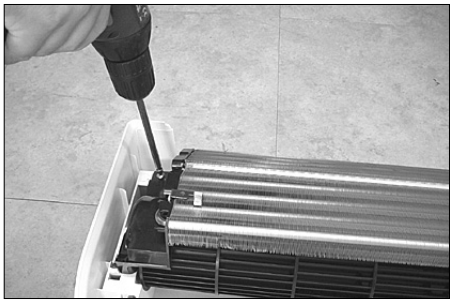
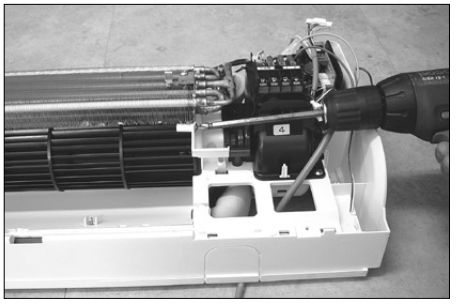
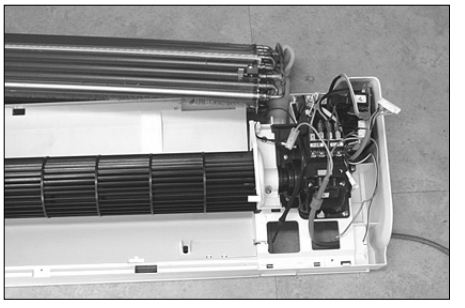
3. Disassembly and Reassembly

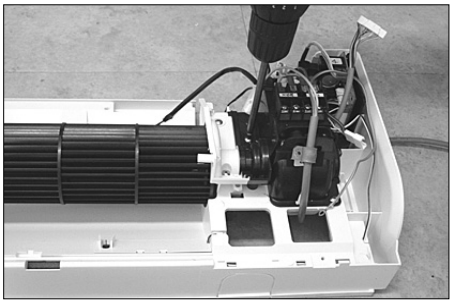
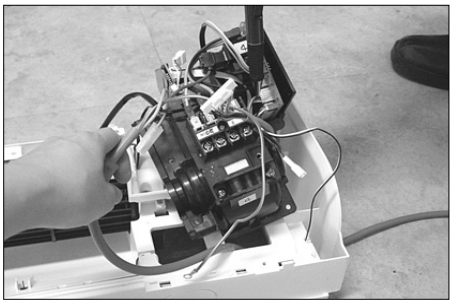
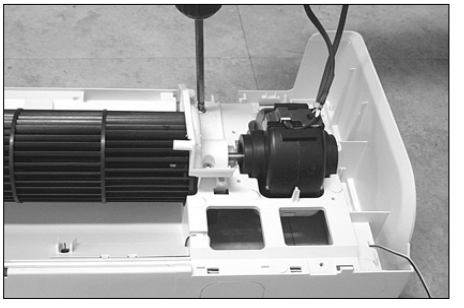
Stop operation of the air conditioner and ~~remove the power cord~~ before repairing the unit.

3-1 Indoor Unit

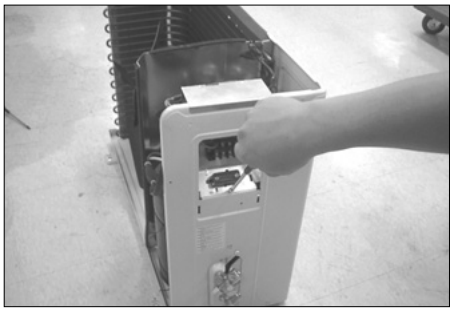
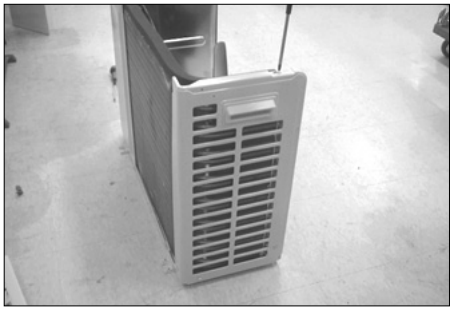
No	Parts	Procedure	Remark
1	Panel Front	1) Stop the air conditioner operation and shut off the main power.	
		2) Detach the Front Grille after pushing out it.	
		3) Loosen 1 of the right screw and detach the Ass'y display.	
		4) Loosen 1 of the right screw and detach the Terminal Cover. 5) Detach the cover PCB-DVM and thermistor from the Panel Front.	

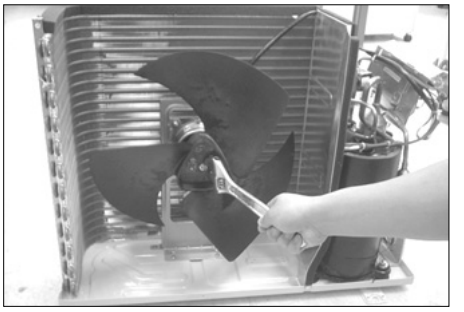
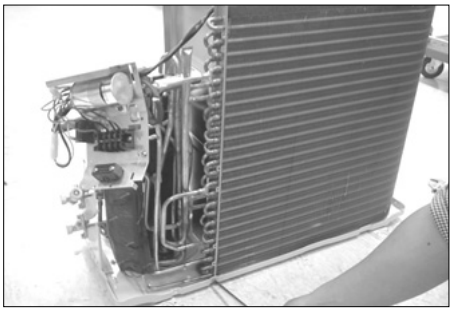
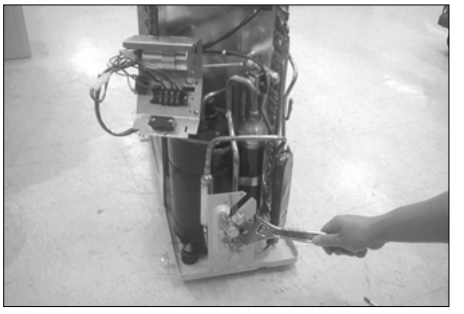
No	Parts	Procedure	Remark
		6) Loosen 5 fixing screws of Panel Front.	
		7) Unlock 2 hooks to fix Panel Front and Tray Drain. 8) Unlock 2 hooks to fix Panel Front and Back Body.	
2	~~Tray Drain~~	1) Detach the connected wire of Stepping Motor. 2) Pull ~~Tray Drain~~ out from the Back Body.	
3	Heat Exchanger	1) Loosen 1 fixing earth screw of right side.	

No	Parts	Procedure	Remark
		2) Detach the Connection Pipe.	
		3) Detach the Holder Pipe at the rear side.	
		4) Loosen 3 fixing screws of left Holder Evap.	
		5) Loosen 1 fixing screw of right Holder Motor.	
		6) Detach the Heat Exchanger from the indoor unit.	

No	Parts	Procedure	Remark
4	Electrical Parts (Main PCB)	1) Loosen 4 fixing screws of right Holder control. 2) Take all the connector of PCB upper side out.(Including Power Cord) 3) Detach the outdoor unit connection wire from the Terminal Block. 4) ~~If pulling the main PCB up, it will be taken out.~~	 
5	Fan Motor & Cross Fan	1) Loosen 2 fixing screws and detach the Motor Holder. 2) Loosen 1 fixing screw of Fan Motor. 3) Detach the Fan Motor from the Fan. 4) Detach the Fan from the left Holder Bearing.	

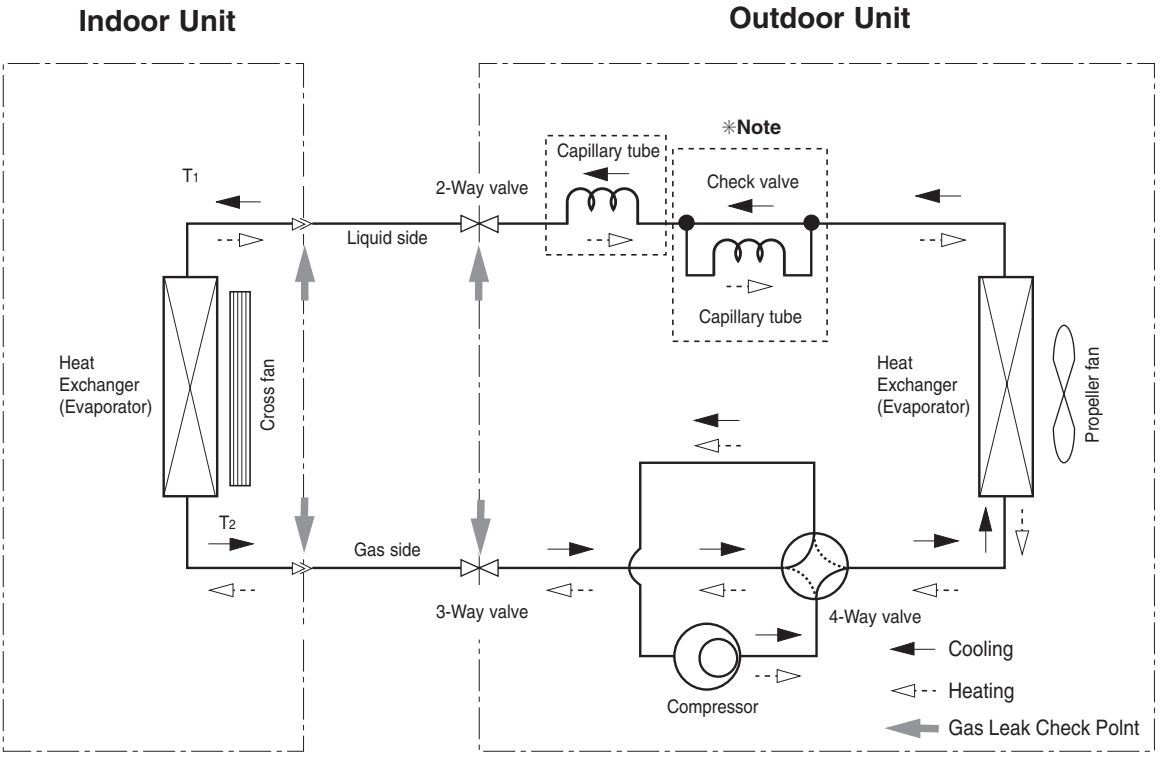
3-2 Outdoor Unit

No	Parts	Procedure	Remark
1	Common Work	1) Loosen each 3 fixing screws on both right and left Cabinet-Side edge and a fixing screw on the Cabinet-Front lower to detach the Cabinet-Front.	
		2) Loosen 1 fixing screw of the Ass'y-Control.	
		3) Loosen 6 fixing screws of the Cabinet-Side RH.	
		4) Loosen 2 fixing screws of the Cabinet-Side LF.	
			

No	Parts	Procedure	Remark
2	Fan & Motor	1) Detach the Nut Flange.(Turn counterclockwise because the screw is right-handed) 2) Detach the Fan. 3) Loosen 4 fixing screws to detach the Motor.	
3	Heat Exchanger	1) Loosen 2 fixing screws on both sides. 2) Disassemble the pipe in both inlet and outlet with welding torch. 3) Detach the Heat Exchanger.	 
4	Compressor	1) Loosen the Terminal Cover nut to open the Terminal Cover. 2) Disassemble the cloth sound felt. 3) Disassemble the pipe in both inlet and outlet of the Compressor with welding torch. 4) Disassemble the pipe in both inlet and outlet of the Condenser with welding torch. 5) Loosen the 3 bolts at the bottom. 6) Detach the Compressor.	

4. Refrigerating Cycle Diagram

4-1 Refrigerating Cycle Diagram



4-2 Refrigerant Cycle Characteristic

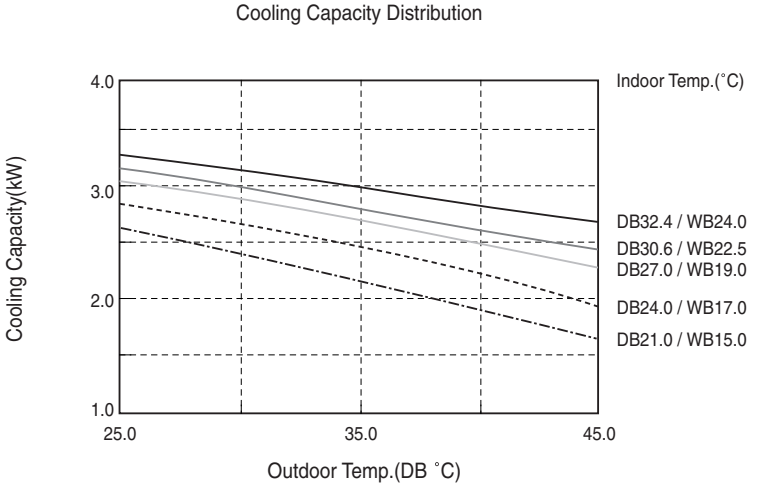
4-2-1 Capacity Distributions

Capacity Distributions according to indoor and outdoor temperature variation.

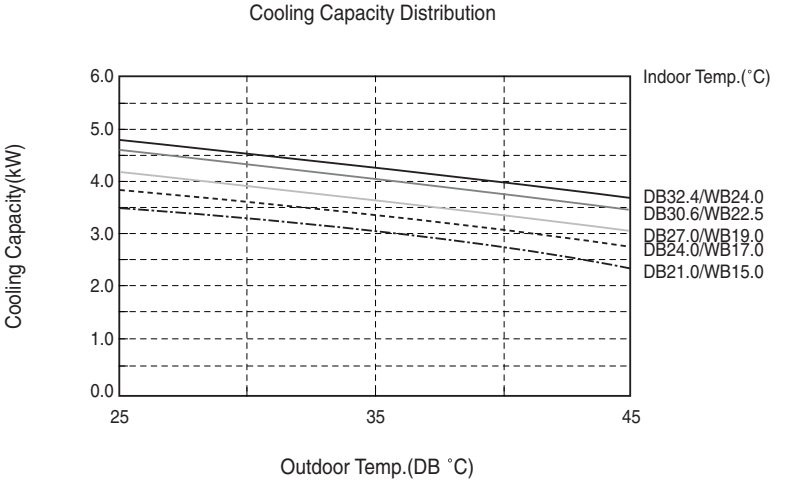
■ COOLING MODE

- Indoor Temp. Variation : 21.0˚C ~ 32.4˚C
- Outdoor Temp. Variation : 25.0˚C ~ 45.0˚C

■ **AS09HPA**



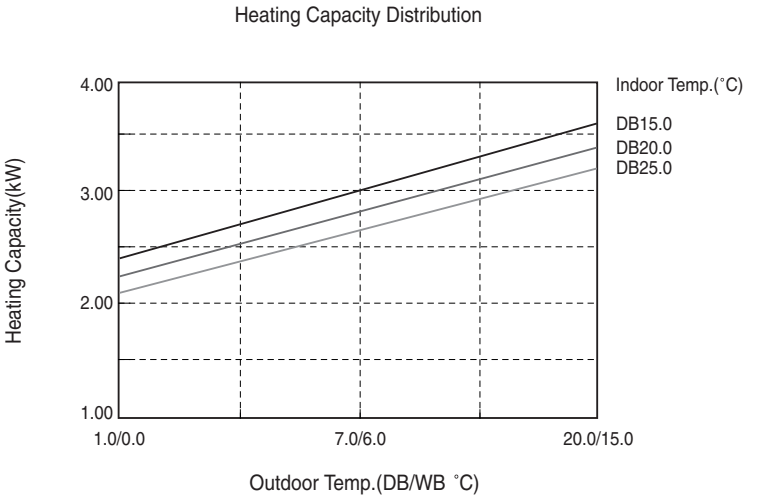
■ **AS12HPA**



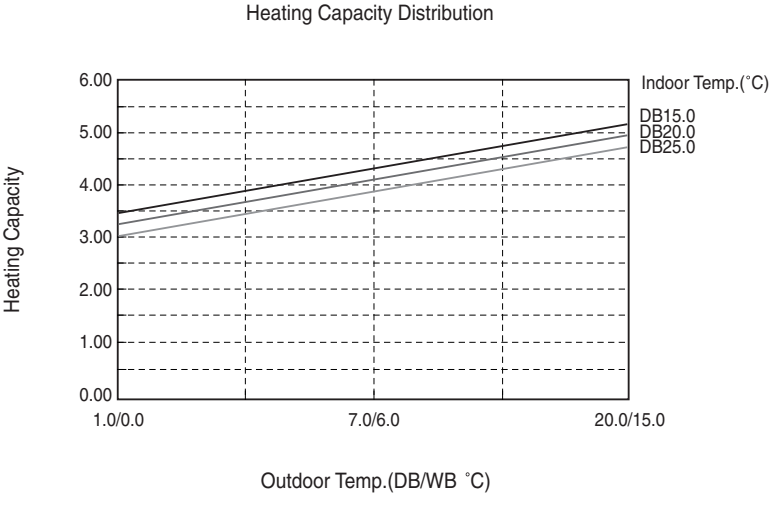
■ HEATING MODE

- Indoor Temp. Variation : 15.0˚C ~ 25.0˚C
- Outdoor Temp. Variation : 1.0˚C ~ 20.0˚C

■ AS09HPA



■ AS12HPA



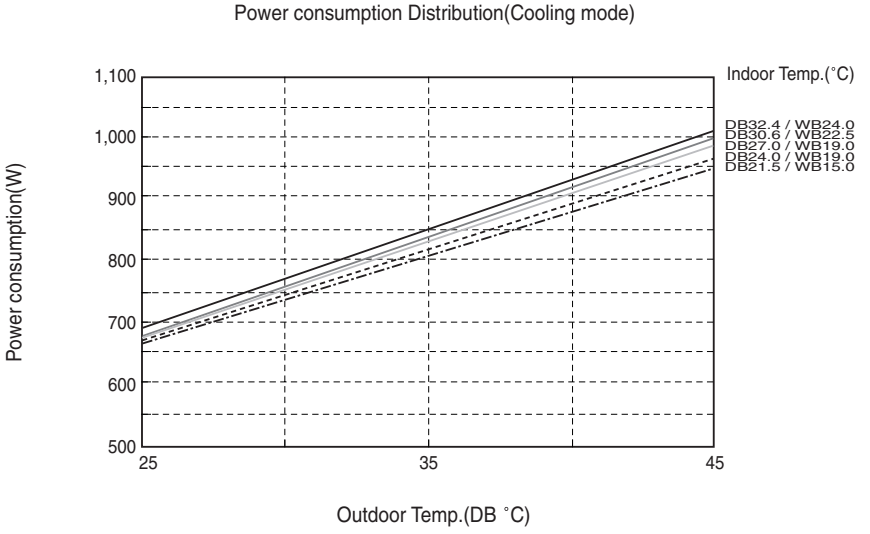
4-2-2 Power Consumption Distributions

Power Consumption Distributions according to indoor and outdoor temperature variation.

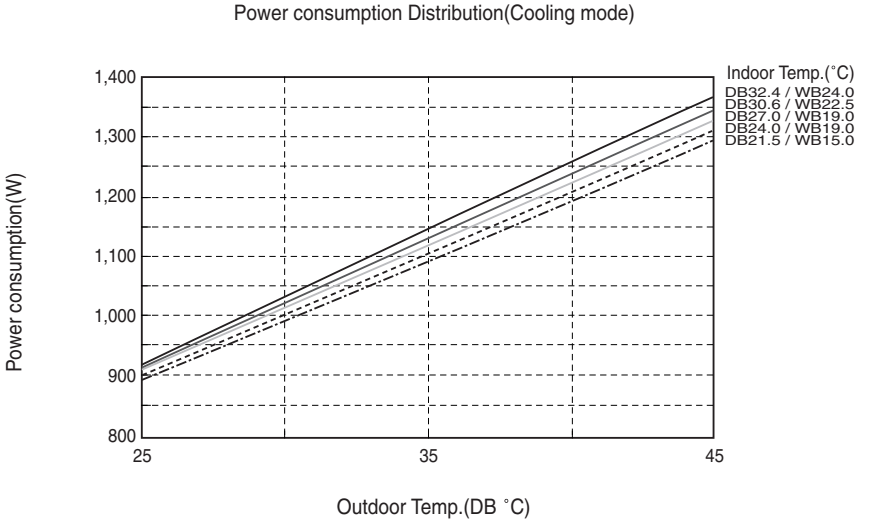
■ COOLING MODE

- Indoor Temp. Variation : 21.0˚C ~ 32.4˚C
- Outdoor Temp. Variation : 25.0˚C ~ 45.0˚C

■ AS09HPA



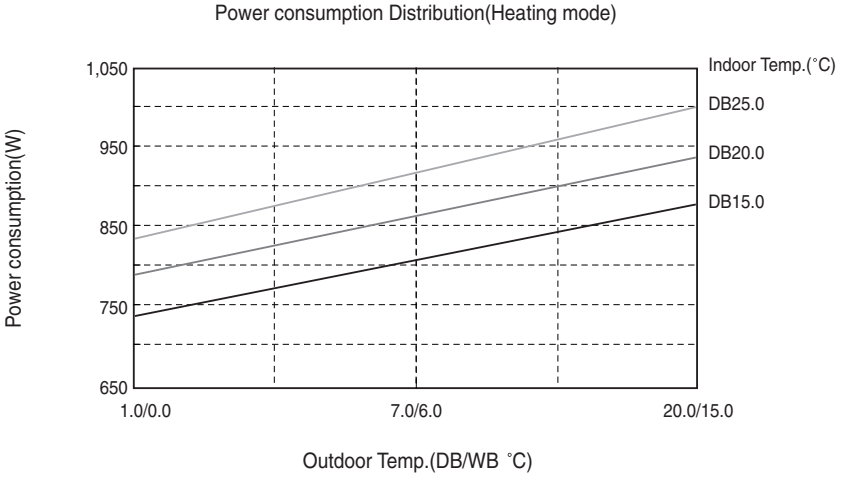
■ AS12HPA



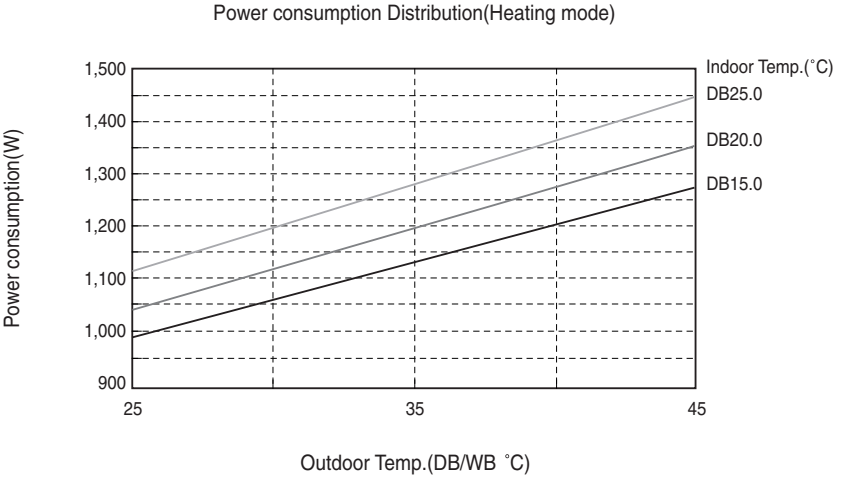
■ HEATING MODE

- Indoor Temp. Variation : 15.0˚C ~ 25.0˚C
- Outdoor Temp. Variation : 1.0˚C ~ 20.0˚C

■ AS09HPA



■ AS12HPA

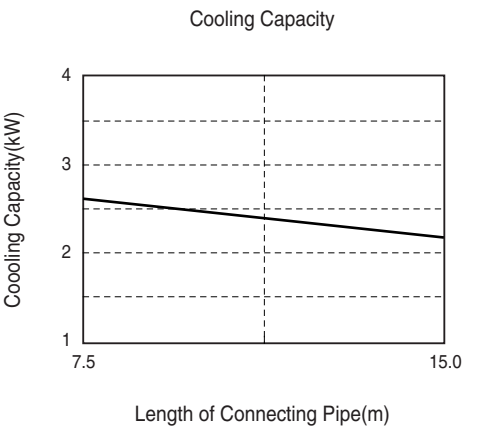


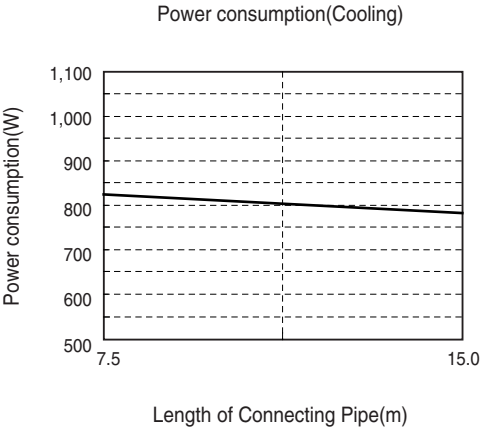
4-2-3 Capacity and Power Consumption Distributions

Capacity and power Consumption distributions according to the length of connecting Pipe between indoor unit and outdoor unit.

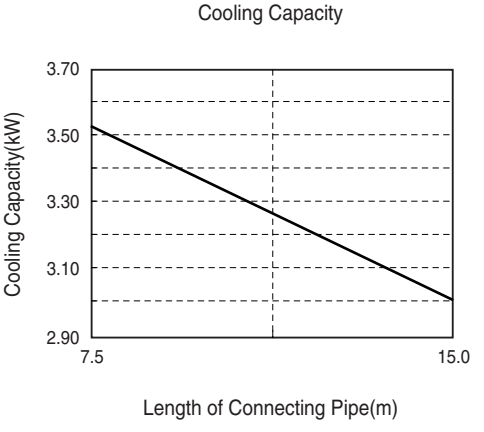
■ COOLING MODE

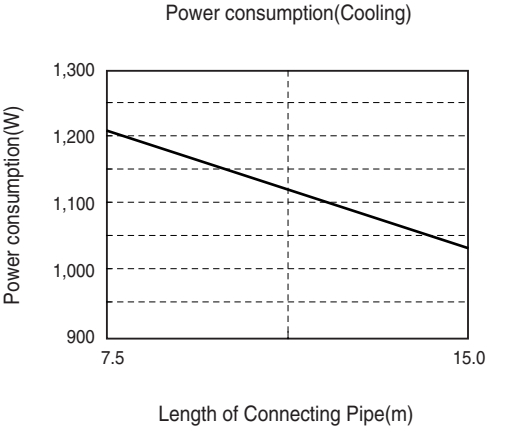
■ **AS09HPA**





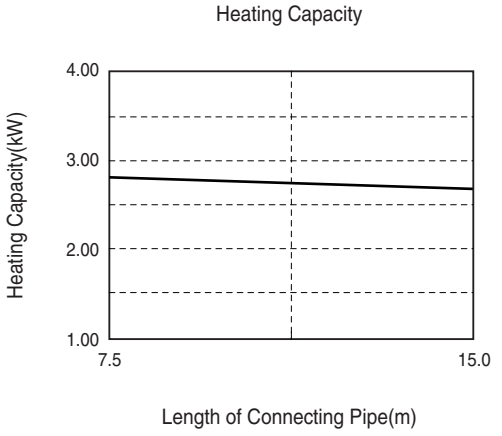
■ **AS12HPA**

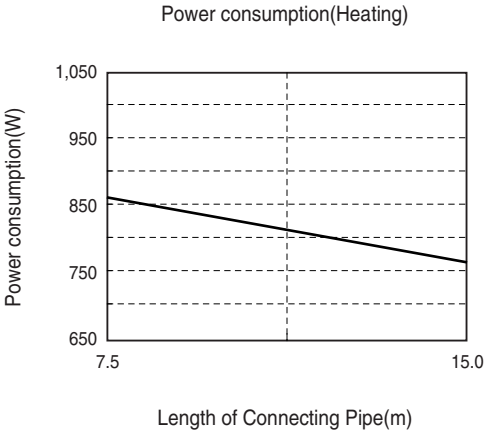




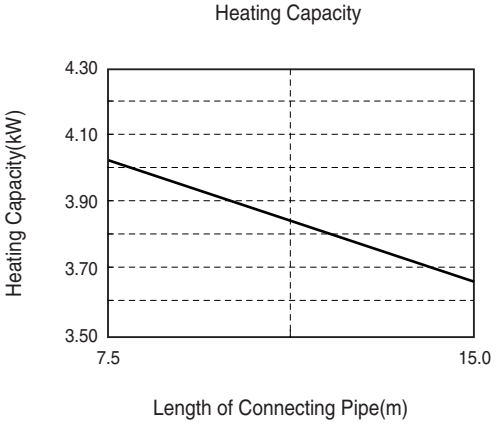
■ HEATING MODE

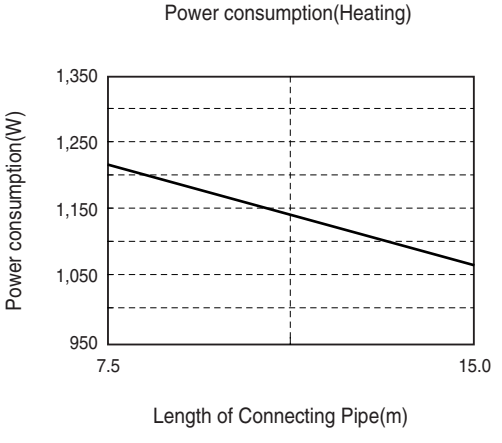
■ AS09HPA





■ AS12HPA



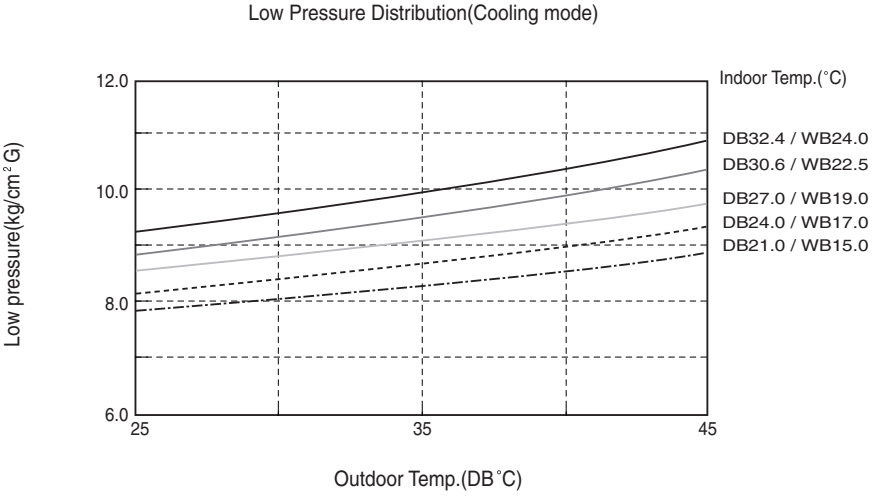


4-2-4 Low Pressure Distributions

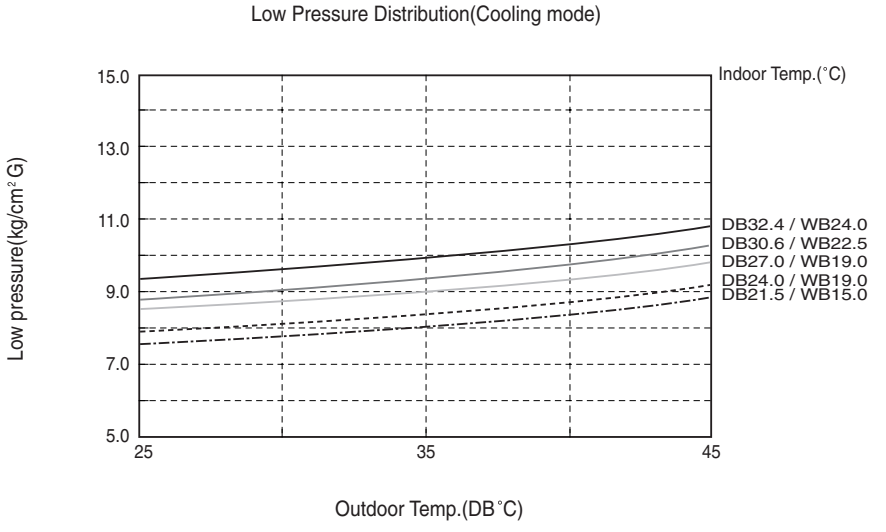
■ COOLING MODE

- Indoor Temp. Variation : 21.0˚C ~ 32.4˚C
- Outdoor Temp. Variation : 25.0˚C ~ 45.0˚C

■ AS09HPA

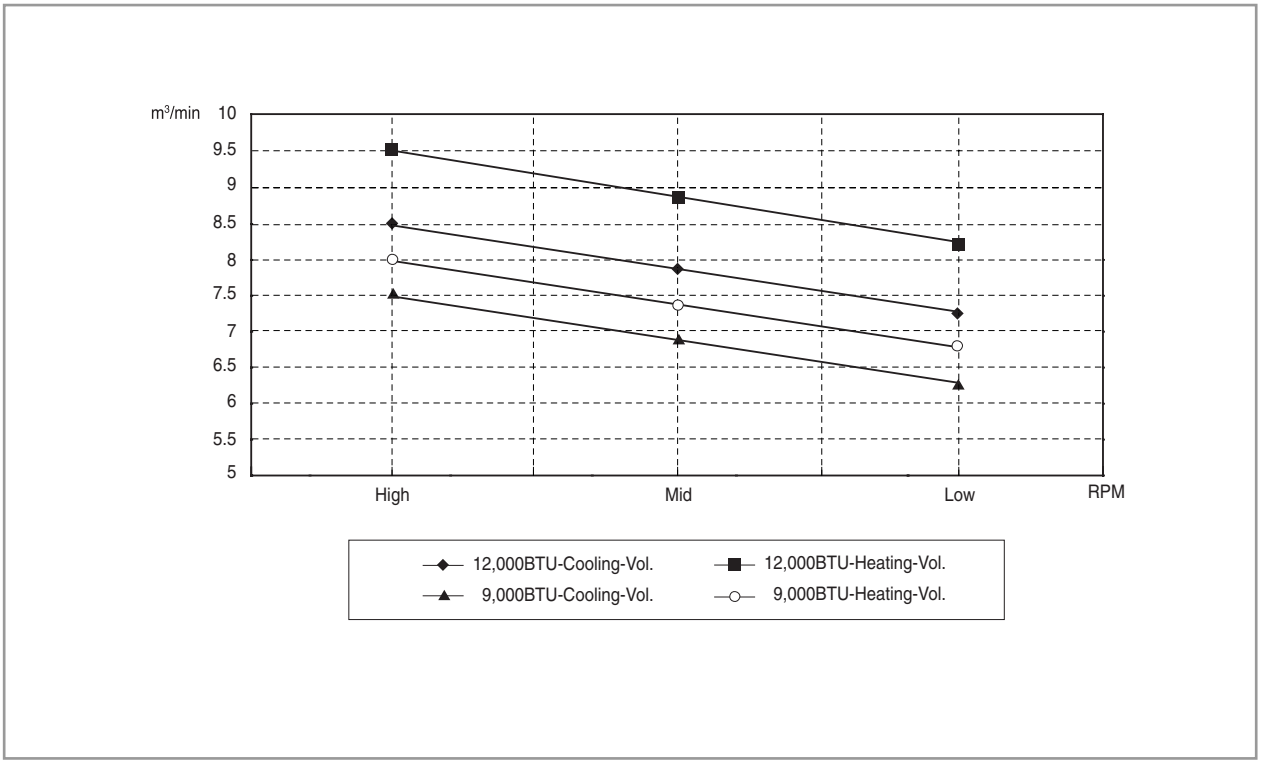


■ AS12HPA



4-2-5 Air Volume according to the RPM variation(High/Mid/Low)

■ Indoor Unit

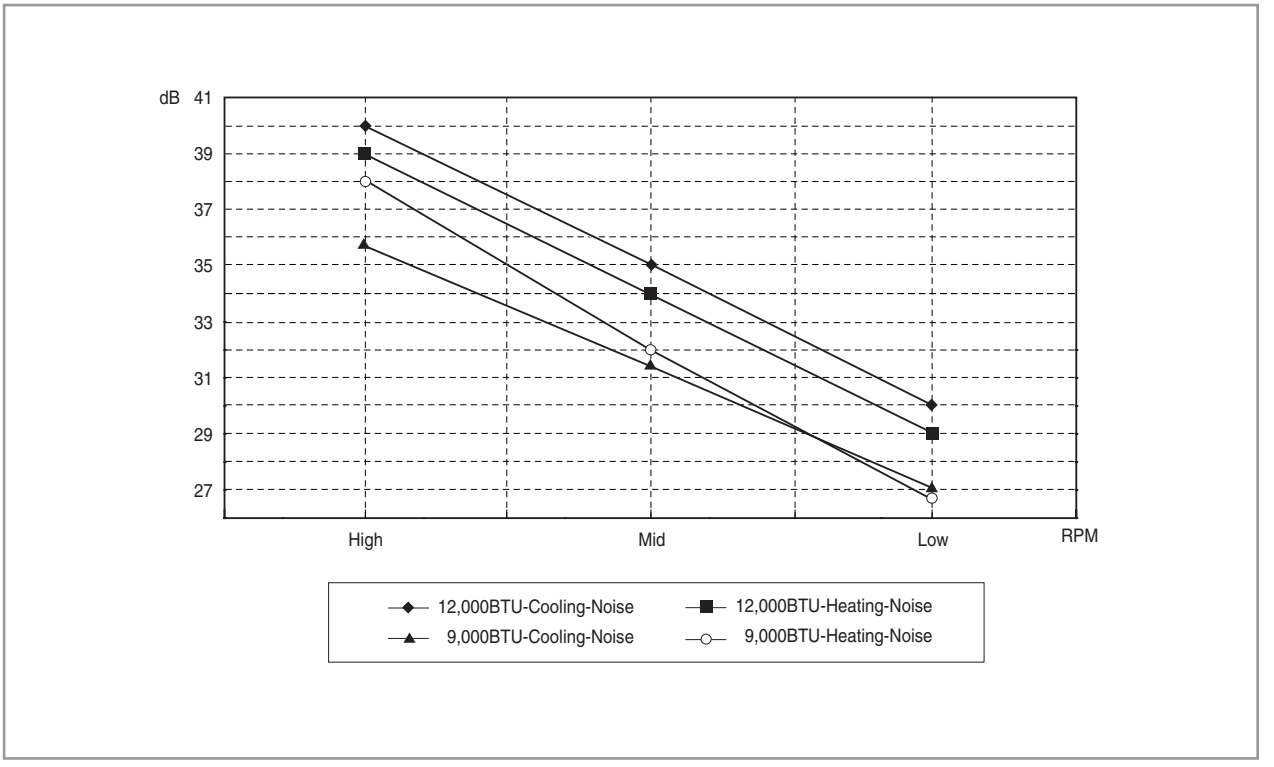


■ Outdoor Unit

The air volume is 25m³/min regardless of model.

4-2-6 Noise Level according to the RPM variation(High/Mid/Low)

■ Indoor Unit



■ Outdoor Unit

Section	Operation	Noise(dB)	Remark
AS09HPA	Cooling	51	
	Heating	51	
AS12HPA	Cooling	53	
	Heating	53	

4-3 Cautions Of using ~~for R410A~~

■ HFCs

1. When installing or removing or servicing an air conditioner, do not allow air or moisture to remain in the refrigeration cycle.
2. When evacuating an air conditioner, always use the vacuum pump ~~and~~ sufficiently evacuate an air conditioner.
3. ~~Certainly~~ use the specified lubricant(Polyol ester oil), valve and dryer.

■ Lubricants

1. Synthetic Oils : POE, PVE, PAG, AB

~~2. POE is made from Acid and Alcohol~~

~~RCOOH(Carboxylic Acid) + R'OH(Alcohol) ↔ RCOOR'(Ester) + H_2O(Water)~~

~~3. Hydrolysis causes Metallic Soap~~

~~$RCOOR' + H_2O \Rightarrow RCOOH + R'OH$~~

~~$FeO + 2RCOOH \Rightarrow Fe(COOR)_2$(Carboxylic Acid Iron(slurgy))~~

5. Set Up the Model Option

5-1 Setting Option Setup Method

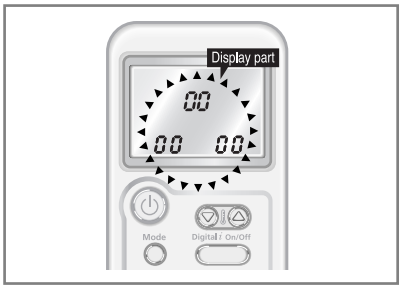
ex) Option No. : 066064- 170373

Step 1 : **Enter the Option Setup mode.**

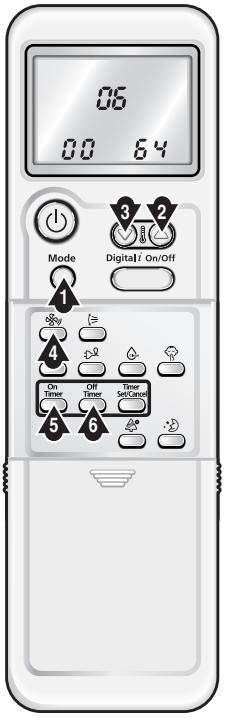
1st Take out the batteries of remote control.

2nd Press the temperature ▽ / △ button simultaneously and insert the battery again.

3rd Make sure the remocon display shown as 00 00 00.



Step 2 : **Enter the Option Setup mode and select your option according to the following procedure.**



✳ Setting is not required if you must 0 a value which has a 0 default.

1

The default value is 00 00 00.
Otherwise, push the Mode button to 0.
Every time you push the button, the display panel reads 1 or 0 repeatedly.

2

Push the △ button to set the display panel to 6.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ ··· 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

3

Push the ▽ button to set the display panel to 6.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ ··· 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

4

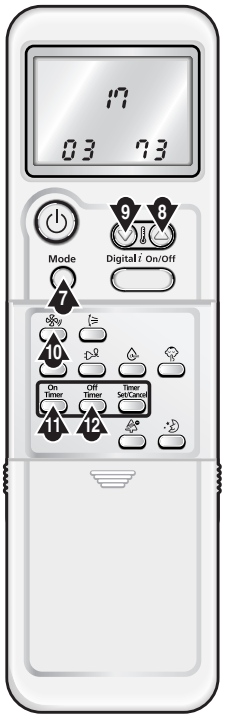
Push the button to set the display panel to 0.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ ··· 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

5

Push the On Timer button to set the display panel to 6.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ ··· 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

6

Push the Off Timer button to set the display panel to 4.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ ··· 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.



✳ Setting is not required if you must 0 a value which has a 0 default.

7 Press Mode button, then the default value is 00 10 00 .

8 Push the ▲ button to set the display panel to 7.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ · · · 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

9 Push the ▼ button to set the display panel to 0.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ · · · 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

10 Push the button to set the display panel to 3.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ · · · 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

11 Push the On Timer button to set the display panel to 7.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ · · · 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

12 Push the Off Timer button to set the display panel to 3.
Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ · · · 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.

Step 3 : Upon completion of the selection, check you made right selections.

Press the Mode Selection key, Mode to set the display part to 0 and check the display part.

➡ The display part shows 60 06 64 .

Press the Mode Selection key, Mode to set the display part to 1 and check the display part.

➡ The display part shows 03 17 73 .

Step 4 : Pressing the ON/OFF button ( )

When pressing the operation ON/OFF key with the direction of remote control for unit, the sound "Ding" or "Diriring" is heard and the OPERATION ICON( ) lamp of the display is flickering at the same time, then the input of option is completed. (If the diriring sound isn't heard, try again pressing the ON/OFF button.)

Step 5 : Unit operation test-run

First, Remove the battery from the remote control.

Second, Re-insert the battery into the remote control.

Third, Press ON/OFF key with the direction of remote control for set.

• Error Mode

1st If all lamps of indoor unit are flickering, plug out, plug in battery again and press the ON/OFF key to retry.

2nd If the unit is not working properly or all lamps are continuously flickering after setting the option code, see if the correct option code is set up for its model.

■ OPTION ITEMS

REMOCON / MODEL	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
AS09HPA	0	2	8	0	2	5	1	2	1	2	2	8
AS12HPA	0	2	7	3	2	7	1	7	1	2	6	c

6. Troubleshooting

6-1 Items to be checked first

1. The input voltage should be rating voltage ±10% range.
   The airconditioner may not operate properly if the voltage is out of this range.

2. Is the link cable linking the indoor unit and the outdoor unit linked properly?
   The indoor unit and the outdoor unit shall be linked by 5 cables.
   Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
   Otherwise the airconditioner may not operate properly.

3. When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

No	Operation of air conditioner	Explanation
1	The OPERATION indication LED(BLUE) blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. **[In case of heat pump model]** In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew.
3	Fan speed setting is not allowed in DRY( ) mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY( ) mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Timer LED(YELLOW) of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
6	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.
7	**[In case of heat pump model]** Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
8	**[In case of heat pump model]** The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
9	**[In case of heat pump model]** Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation

4. Indoor unit observes operation condition of the air conditioner, and displays self diagnosis details on the display panel.

Error Mode	LAMP	7-segment Display
Indoor unit room temperature sensor error (open or short)		E1
Indoor unit heat exchanger temperature sensor error (open or short)		E2
Indoor fan motor malfunction		E3
EEPROM error		E6
Option error (option wasn't set up or option data error)		Display Flickering

5. Operation with abnormal motion

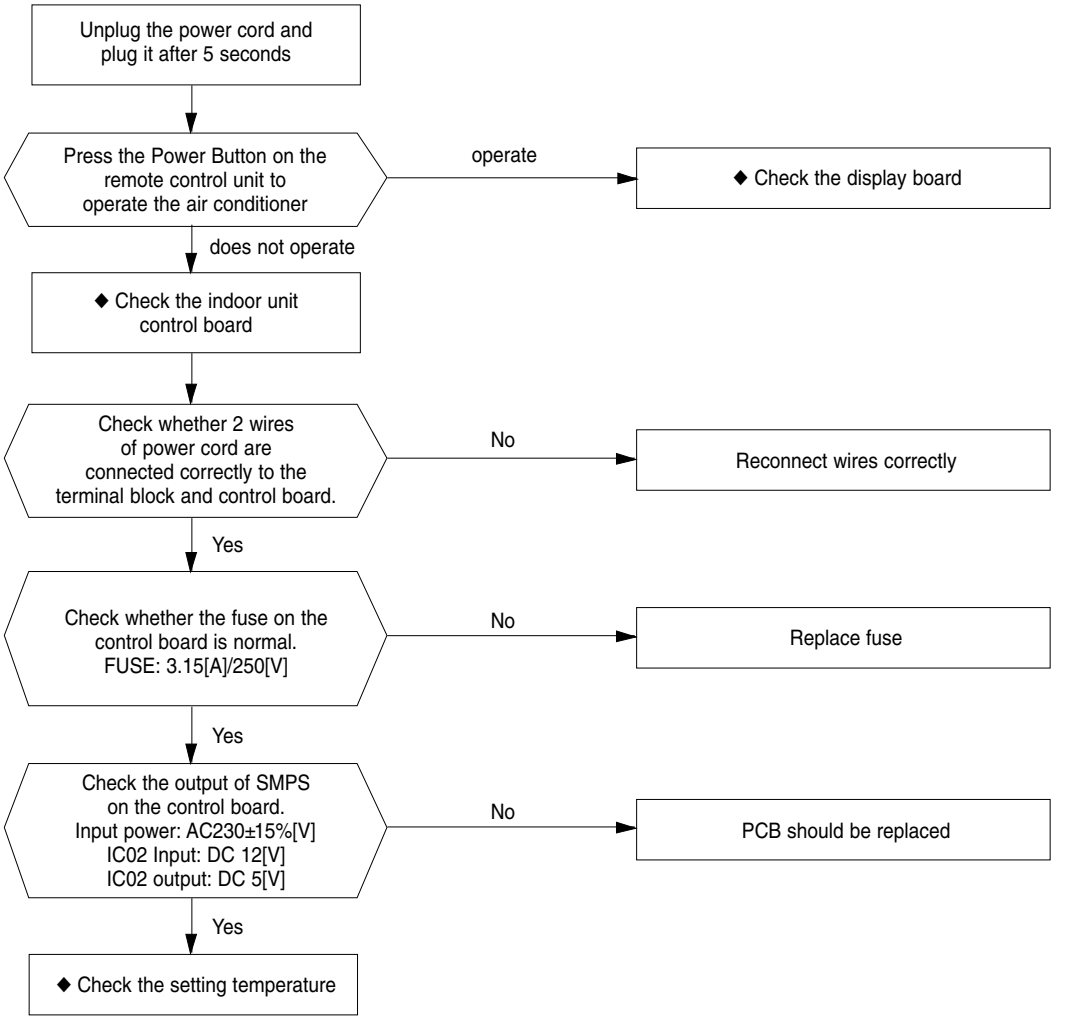
No	Abnormal condition	Inspection		Initial Diagnosis
1	No response from the remote control operation signal.	• Plug out and plug in 5 seconds later.	Able to operate the remote control.	OK
			Unable to operate the remote control.	Press the ⏻ (ON/OFF) button in the indoor unit. • If it operates, the remote control and indoor unit receiver are in trouble. • If not, the indoor unit is in trouble.
2	Unable to operate the outdoor unit	• Press the TURBO button with the remote control. • In 3 minutes, check the voltage between the indoor unit terminal block N(1) and 1.	AC198V ~ AC242V	Problem with the outdoor unit or PCB
			No power source displayed.	Problem with the relay (RY71) or PCB

6-2 Fault Diagnosis by Symptom

6-2-1 No Power (completely dead)-Initial diagnosis

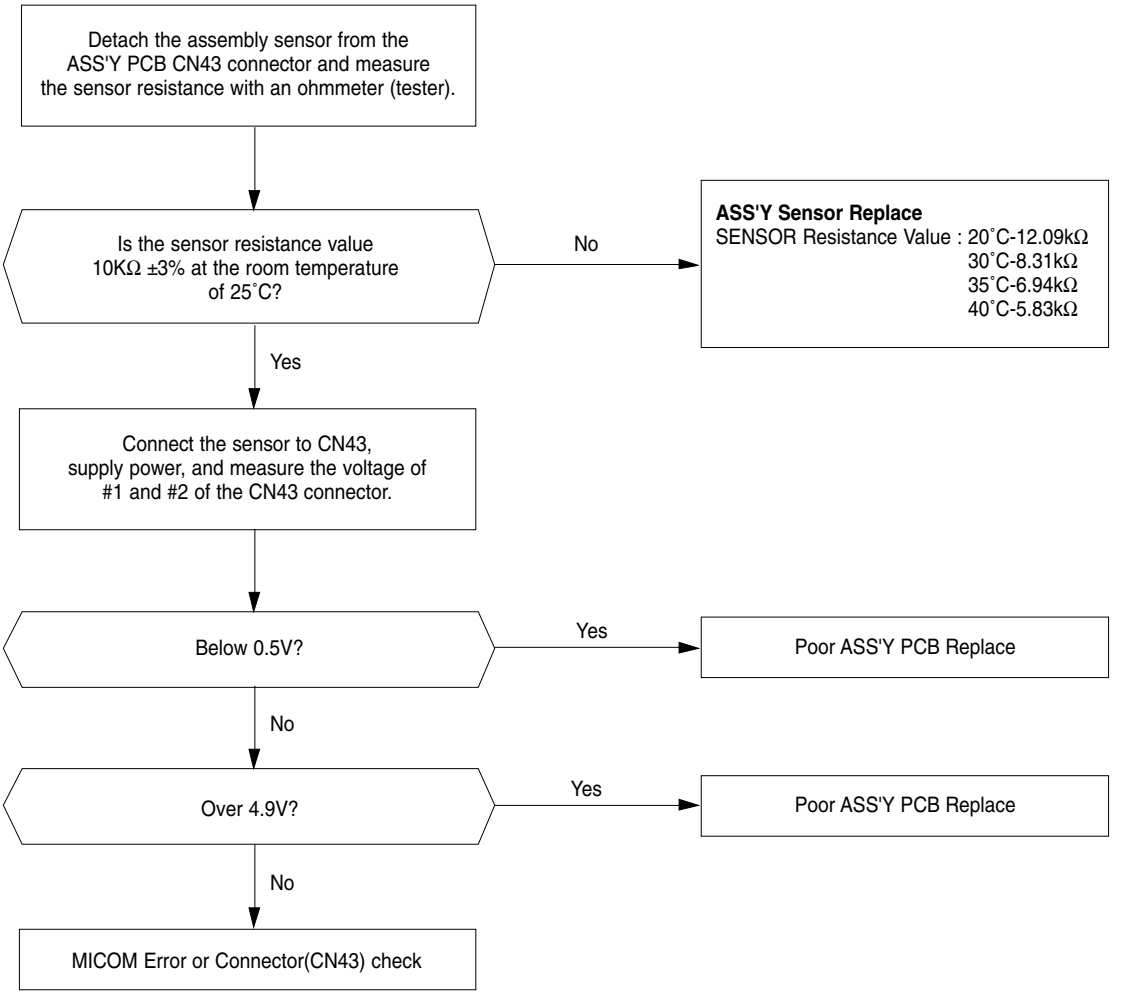
1. Checklist :
   1) Is input voltage normal?
   2) Is AC power linked correctly?
   3) Is input voltage of DC regulator IC KA7805 (IC02) normal? (11VDC-12.5VDC)
   4) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

2. Troubleshooting procedure



6-2-2 Room temperature sensor failure

Error Mode	LAMP	7-segment Display
Indoor unit room temperature sensor error(open or short)		E 1



6-2-3 Room Pipe sensor failure

Error Mode	LAMP	7-segment Display
Indoor unit heat exchanger temperature sensor error(open or short)		E2

1. Check the assembly condition of the sensor connector(CN43) on the indoor unit Main PCB and if not assembled, reassemble the connector accurately.

2. Detach the room pipe sensor connector(CN43) and check the resistance between connector 3 and 4.

Temperature(˚C)	Resistance Value(Kohm)	Temperature(˚C)	Resistance Value(Kohm)	Others
15	14.68	30	8.31	The data tolerance is ±3%.
20	12.09	35	6.94	
25	10	40	5.83	

   If the above data is not met, replace the room pipe sensor.

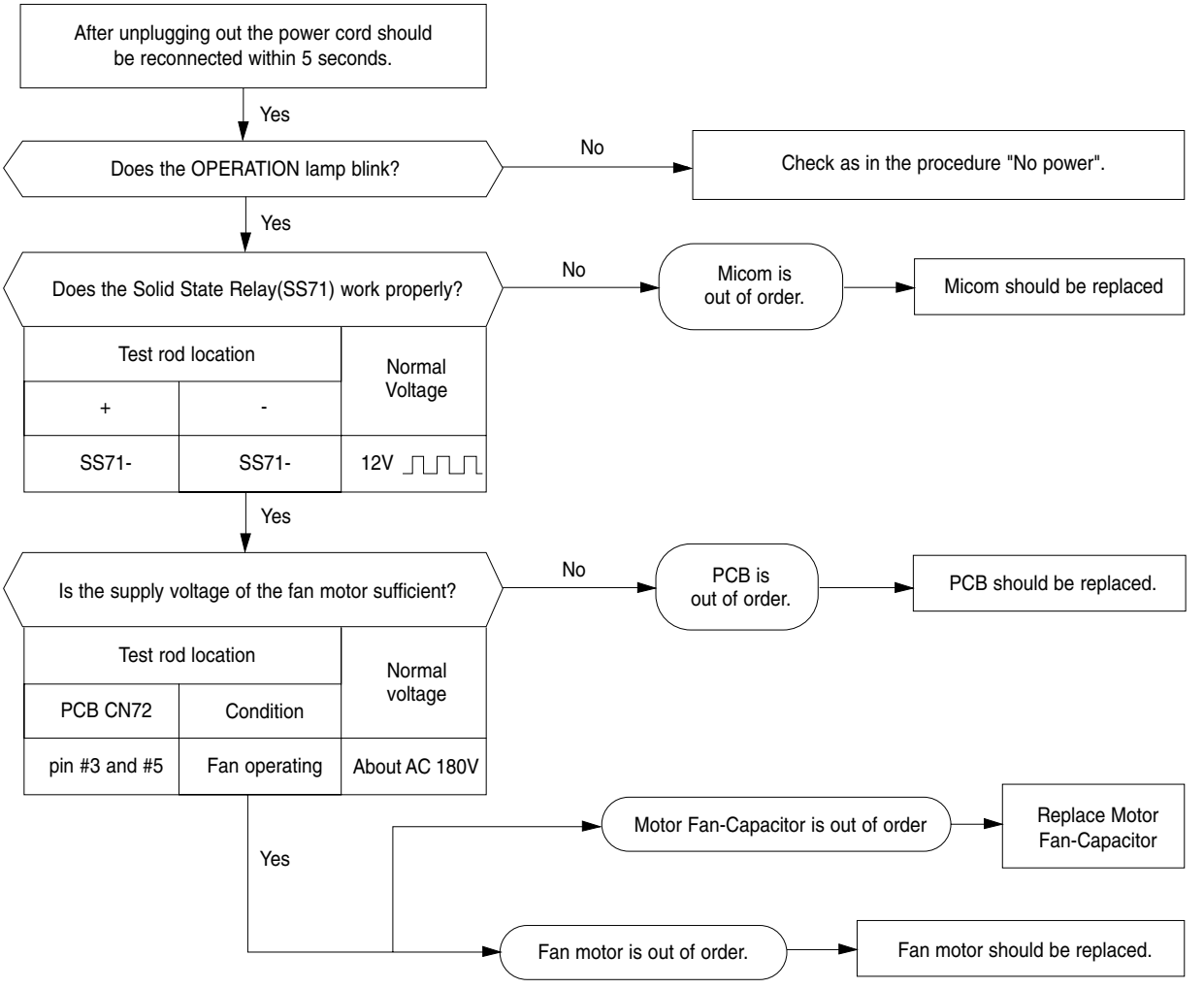
3. Assemble the room pipe sensor to PCB, plug in, and check the voltage of connector 3 and 4. If the resistance is below 0.5V or over 4.9V, replace the indoor Main PCB. (short or disconnected in the PCB board)

6-2-4 When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

Error Mode	LAMP	7-segment Display
Indoor unit heat exchanger temperature sensor error(open or short)		E3

1. Checklist :
   1) Is the indoor unit fan motor properly connected with the connector (CN72)?
   2) Is the AC voltage correct?
   3) Is HALL IC in indoor fan motor properly connected with the connector (CN44)?
   4) Is the running capacitor (CR71) properly connected with PCB board?

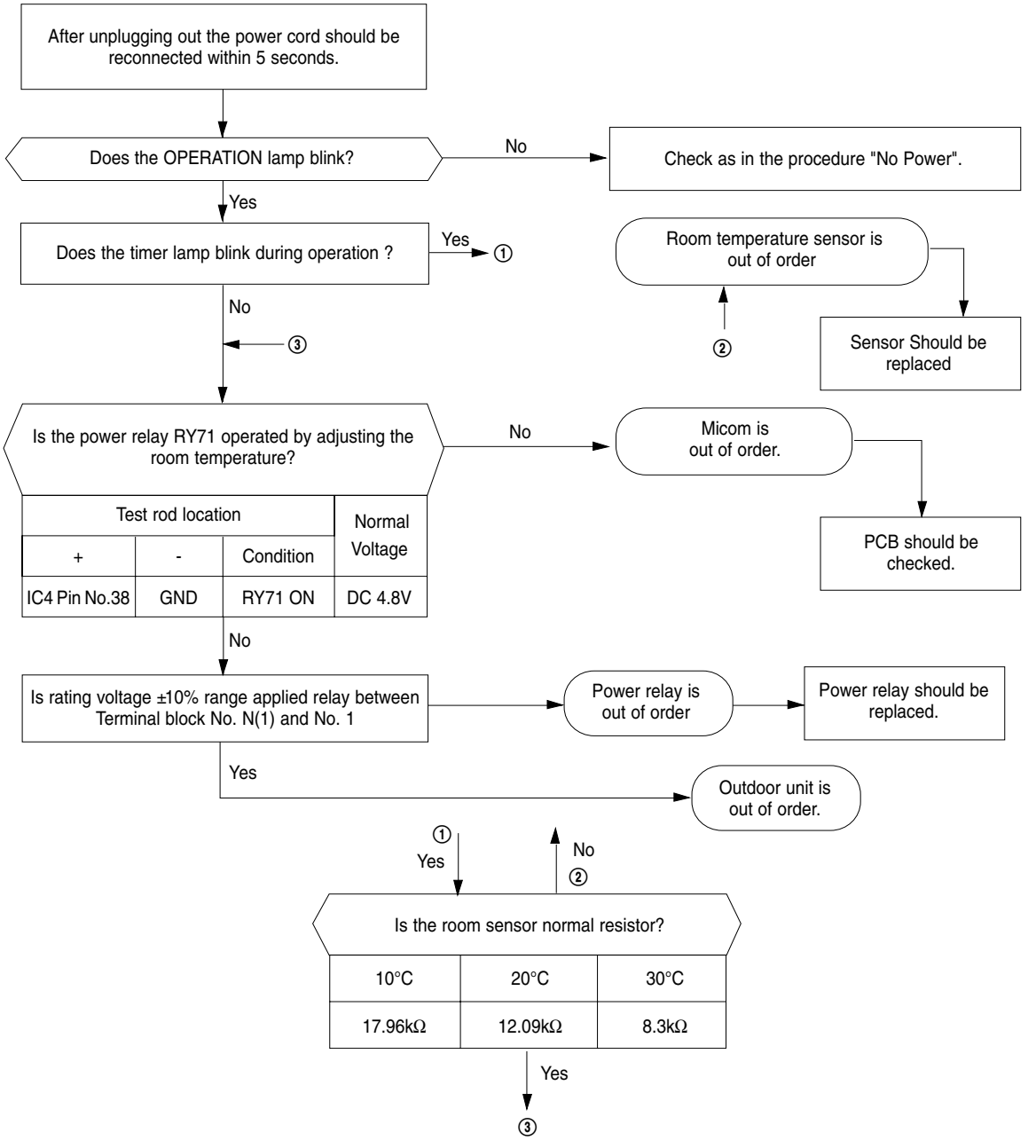
2. Troubleshooting procedure



6-2-5 When the Outdoor Unit Does Not Operate. (Initial Diagnosis)

1. Checklist :
   1) Is input voltage normal?
   2) Is the set temperature of the remote control higher than room temperature in COOL mode?
   3) Is the set temperature of the remote control lower than room temperature in HEAT mode?
   4) Is the POWER IN connector (CN71) linked correctly?
   5) Is the outdoor unit properly connected with the TERMINAL BLOCK connector(N(1), 1, 2, 3)?

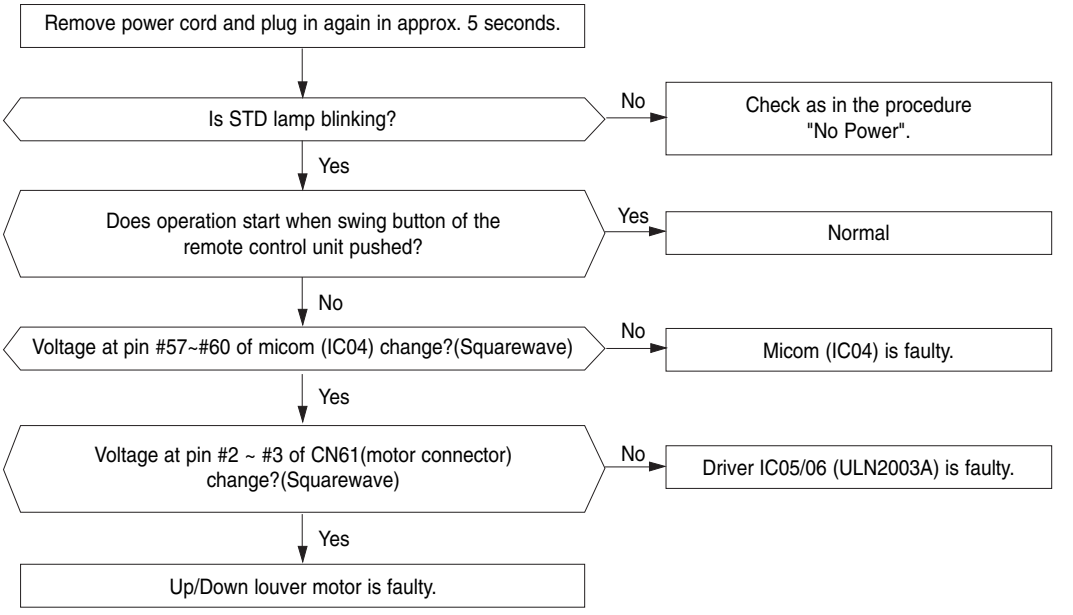
2. Troubleshooting procedure



6-2-6 When the Up/Down Louver Motor Does Not Operate. (Initial Diagnosis)

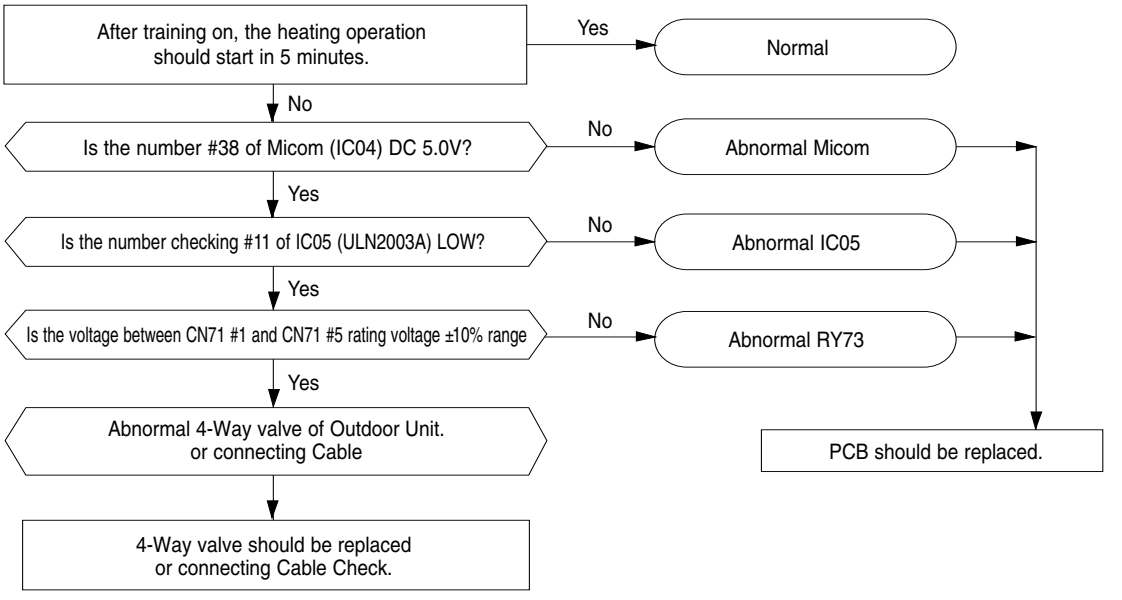
1. Checklist :
   1) Is input voltage normal?
   2) Is the Up/Down louver motor properly connected with the connector (CN61)?

2. Troubleshooting procedure



6-2-7 In the HEAT mode, When there is no warm air current. Check this first;

1. Is the set temperature of Remote Control lower than room temperature in Heat mode?
2. Is the Indoor PCB properly connected with the CN71 connector?



6-2-8 When the remote control is not receiving

1. Check if the connector was normally assembled.

2. Put the set in operation and check the voltage of No. 15(+) and No. 16(-) of the main PCB CN91 while operating the remote control. When the voltage descends below 3V, the assembly module PCB is normal and the main PCB is poor. Then replace the main PCB.

3. Replace the assembly display PCB because the module PCB is poor if the voltage between No. 15~16 of CN91 maintains 5V after the remote control starts operation.

6-3 PCB Inspection Method

6-3-1 Pre-inspection Notices

1. Check if you pulled out the AC power plug when you eliminate the PCB or front panel.
2. Don't hold the PCB side not impose excessive force on it to eliminate the PCB.
3. Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB.

6-3-2 Inspection Procedure

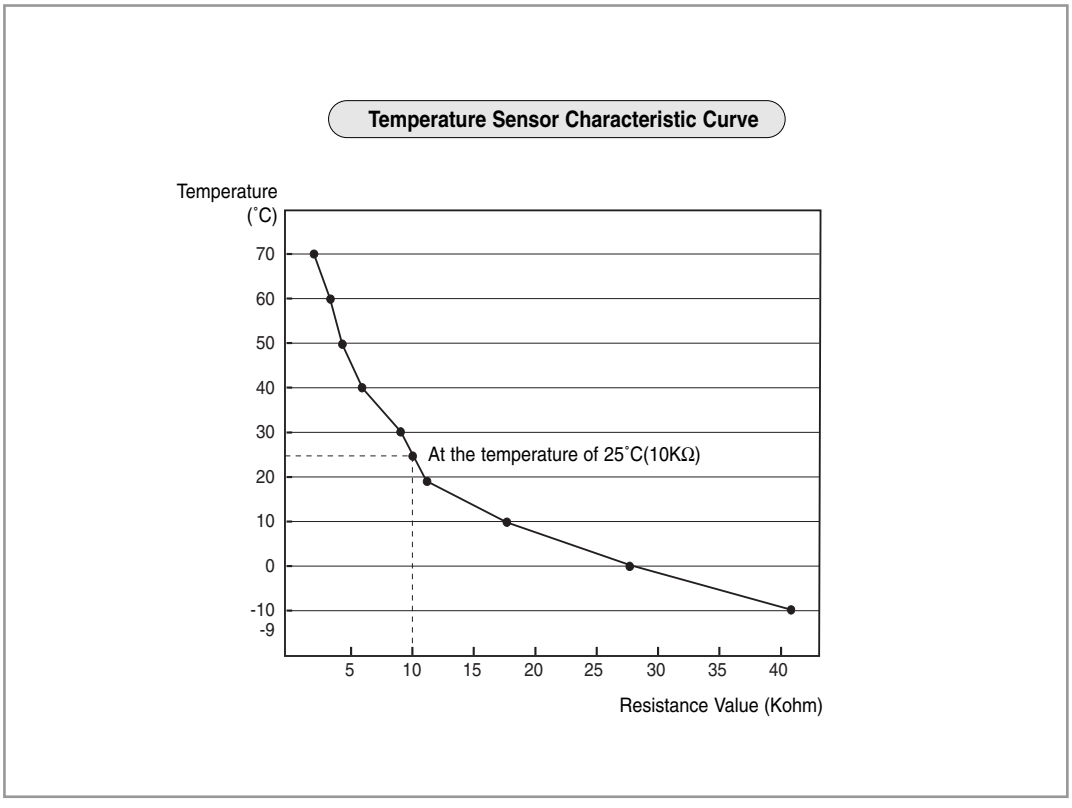
1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
2. The PCB is composed of the 3 parts.
   - **Main PCB Part** : MICOM and surrounding circuit, relay, room fan motor driving circuit and control circuit, sensor driving circuit, power circuit of DC12V and DC5V, and buzzer driving circuit.
   - **Display part** : LED lamp
   - **Switch part** : Switch

6-3-3 Detailed Inspection Procedure

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected? (F701)	• Overcurrent • Indoor Fan Motor Short • AC Part Pattern Short of the MAIN PCB
2	Supply power. If the operating lamp twinkles at this time, the above 1)~3) have no relation.	Checking the power voltage.	
		1) Is the DB71input voltage AC200V~AC240V?	• Power Cord is fault, Fuse open. Wrong Power Cable Wiring, AC Part is faulty.
		2) Is the voltage between both terminals of the C103 on the 2nd side of the transformer DC12V ±0.5V?	• Switching Trans or Power Circuit is faulty
		3) Is the voltage between both terminals of OUT and GND of IC02(KA78L05) DC5V ±0.5V?	• Power Circuit is faulty, Load Short
3	Press the ON/OFF button and operate TURBO mode. But, exclude the RESERVE operation.	Checking the power voltage.	
		1) Check the voltage of the relay(RY71) coil(IC05 PIN #11 and GND : 0V, PIN#6 and GND : 5V) during operation(3 minutes after TURBO operation).	• Relay(RY71) Coil Disconnection, IC05 is faulty
		2) Check the voltage of both terminals of terminal block 1 and N(1) after 3 minute operation.: AC220V	• Relay(RY71) Contact is faulty
4	Press the ON/OFF button. 1. FAN Speed [High] 2. Continuous Operation	1) Is the voltage over AC180V being imposed on terminal #3 and #5 of the fan motor connector(CN72)?	• Fan Motor of the indoor is faulty
		2) The fan motor of the indoor unit doesn't run.	• Fan Motor Connector(CN72) is faulty
		3) The power voltage between terminal #3 and #5 of the connector(CN72) is 0V.	• ASS'Y Main PCB is faulty • Connection is faulty

6-3-4 Temperature Sensor Feature Conversion Table(Room Temperature Sensor); 103AT

Temperature [˚C]	Sensor Resistance [Kohm]	Temperature [˚C]	Sensor Resistance [Kohm]	Temperature [˚C]	Sensor Resistance [Kohm]	Temperature [˚C]	Sensor Resistance [Kohm]
70	2.229						
69	2.296	49	4.300	29	8.622	9	18.700
68	2.365	48	4.444	28	8.944	8	19.480
67	2.437	47	4.594	27	9.281	7	20.290
66	2.512	46	4.749	26	9.632	6	21.150
65	2.589	45	4.912	25	10	5	22.050
64	2.669	44	5.080	24	10.380	4	22.990
63	2.752	43	5.256	23	10.780	3	23.900
62	2.838	42	5.439	22	11.200	2	25.030
61	2.928	41	5.630	21	11.630	1	26.130
60	3.021	40	5.828	20	12.090	0	27.280
59	3.116	39	6.033	19	12.560	-1	28.470
58	3.216	38	6.246	18	13.060	-2	29.720
57	3.319	37	6.468	17	13.570	-3	31.040
56	3.426	36	6.699	16	14.120	-4	32.430
55	3.537	35	6.941	15	14.680	-5	33.890
54	3.652	34	7.192	14	15.280	-6	35.430
53	3.772	33	7.455	13	15.900	-7	37.050
52	3.897	32	7.729	12	16.550	-8	38.760
51	4.026	31	8.015	11	17.240	-9	40.560
50	4.161	30	8.313	10	17.960		



6-4 Main Part Inspection Method

<table>
<tr><th>Part</th><th colspan="2">Breakdown Inspection Method</th></tr>
<tr><td rowspan="3">Room Temperature Sensor</td><td colspan="2">Measure resistance with a tester</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~ 8.3kΩ(-7˚C~+30˚C) *Refer to Table 8-4-4.</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Room Fan Motor</td><td colspan="2">Measure the resistance between terminals of the connector (CN72) with a tester.</td></tr>
<tr><td>Normal</td><td>At the normal temperature (10˚C ~ 30˚C)
<table>
<tr><th>Compare terminal</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>Yellow, Blue</td><td>404.4Ω ± 10%</td><td>Main</td></tr>
<tr><td>Yellow, Red</td><td>340Ω ± 10%</td><td>Sub</td></tr>
</table></td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Outdoor Fan Motor</td><td colspan="2">Measure the resistance between motor wires with a tester.</td></tr>
<tr><td>Normal</td><td>At the normal temperature (10˚C ~ 30˚C)
<table>
<tr><th>Compare terminal</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>Yellow, Red</td><td>360Ω ± 10%</td><td>Main</td></tr>
<tr><td>Black, Yellow</td><td>328Ω ± 10%</td><td>Sub</td></tr>
</table></td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
<tr><td rowspan="3">Stepping Motor</td><td colspan="2">Measure the resistance between the red wire and each terminal wire with a tester.</td></tr>
<tr><td>Normal</td><td>About 300Ω at the normal temperature (20˚C ~ 30˚C)</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω · · · Open or Short</td></tr>
</table>

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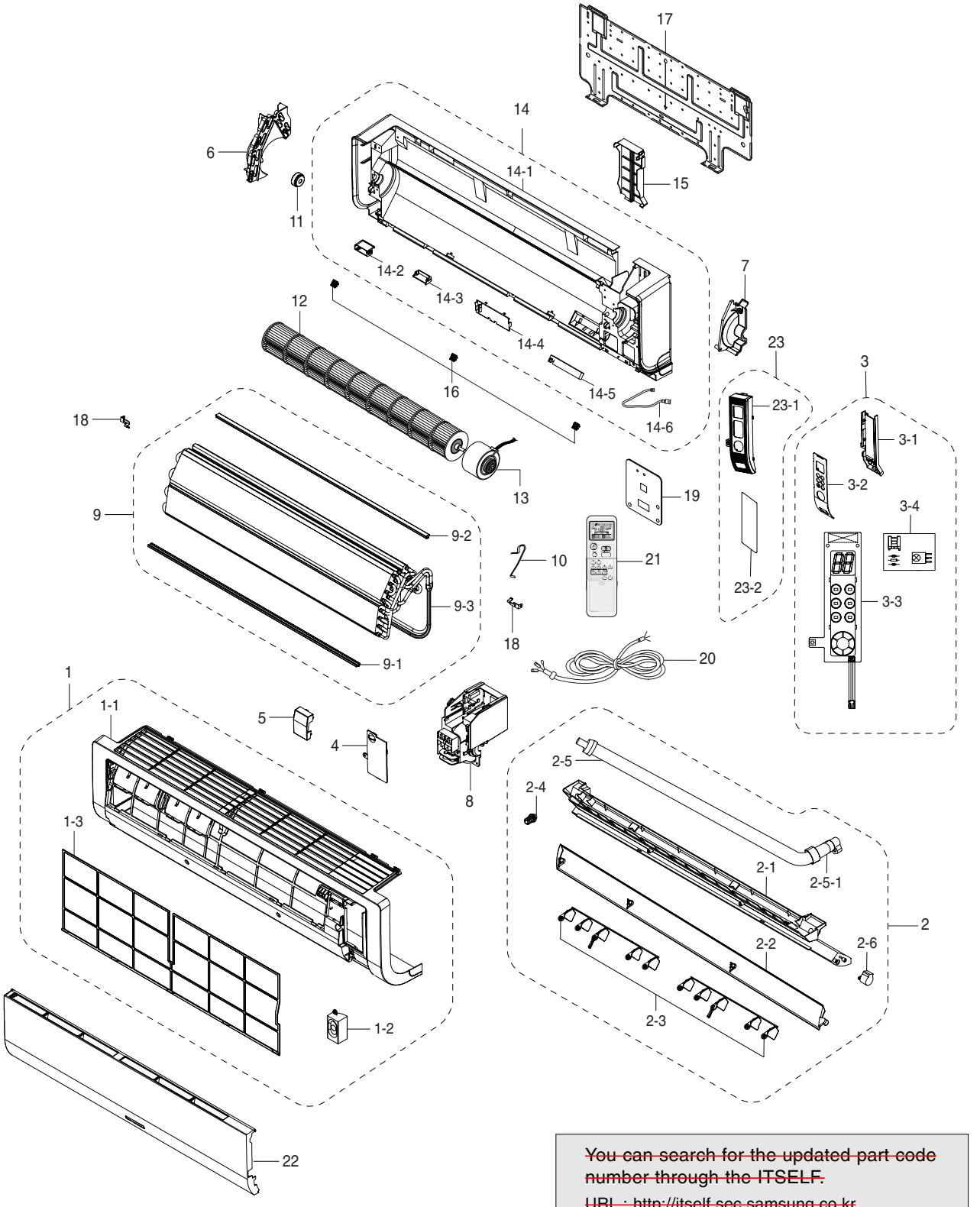
7. Exploded Views and Parts List

7-1 Indoor Unit



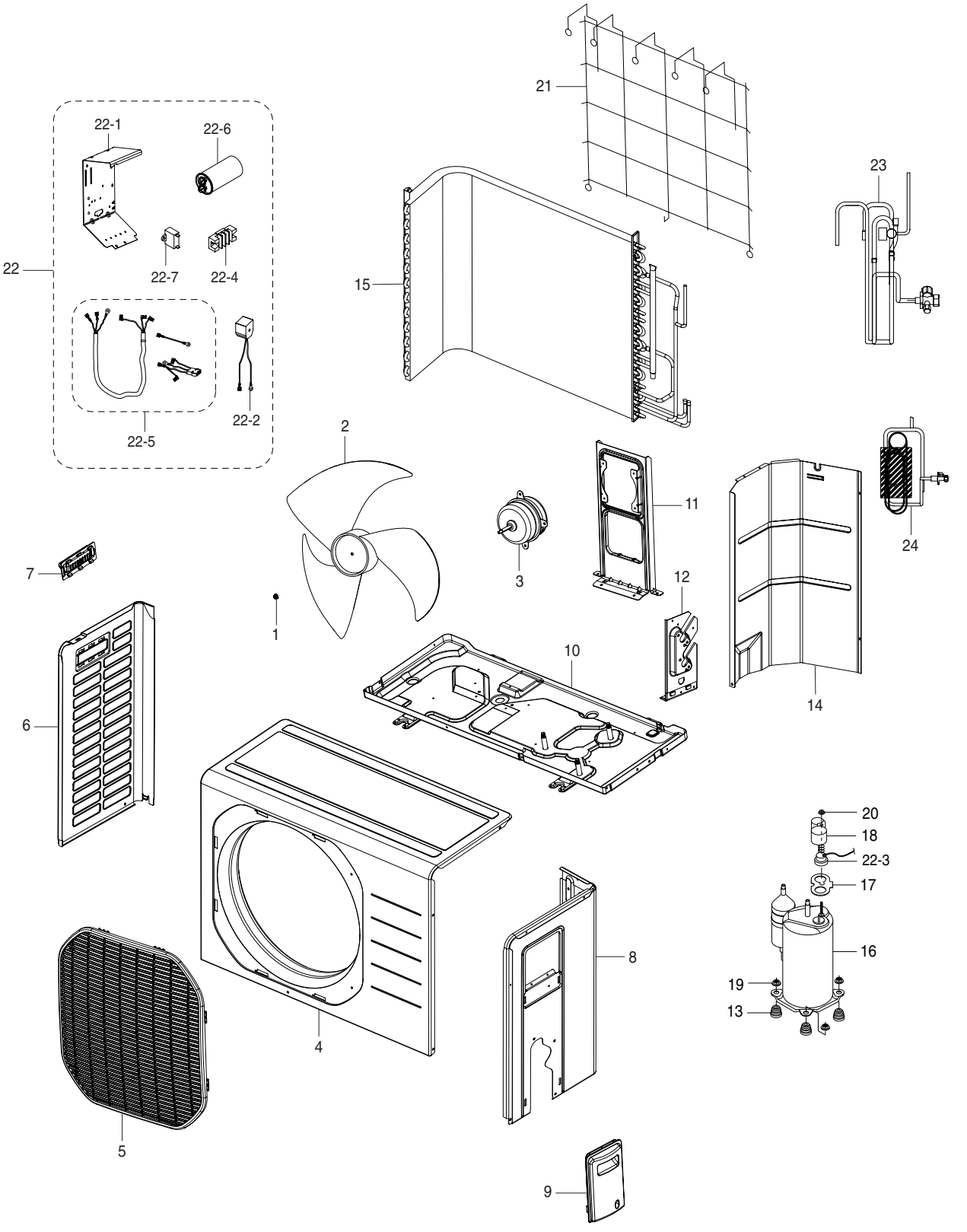
You can search for the updated part code number through the ITSELF.

URL : http://itself.sec.samsung.co.kr

■ **Parts List**

No.	Code No.	Description	Specification	Q'TY			
				AS09HPA (With Melody)	AS09HPA (Without Melody)	AS12HPA (With Melody)	AS12HPA (Without Melody)
1	DB92-00633A	ASS'Y PANEL FRONT	ASS'Y	1	-	1	-
	DB92-00633B	ASS'Y PANEL FRONT	ASS'Y	-	1	-	1
1-1	DB64-01210A	PANEL FRONT	HIPS	1	1	1	1
1-2	DB93-02831A	ASS'Y SPEAKER	ASS'Y	1	-	1	-
1-3	DB63-01103A	FILTER-PRE	PP	1	1	1	1
2	DB94-00629A	ASS'Y TRAY DRAIN	ASS'Y	1	1	1	1
2-1	DB63-01104A	TRAY DRAIN	ABS	1	1	1	1
2-2	DB61-02049A	BLADE-H	ABS	1	1	1	1
2-3	DB61-02053A	BLADE-V	PP	2	2	2	2
2-4	DB73-00234A	RUBBER-CAP DRAIN	CR	1	1	1	1
2-5	DB94-00062L	ASS'Y DRAIN-HOSE	ASS'Y	1	1	1	1
2-5-1	DB67-00510A	DRAIN-CUFF	ABS	1	1	1	1
2-6	DB95-20138A	ASS'Y MOTOR-STEPPING	24BYJ48	1	1	1	1
3	DB93-02960A	ASS'Y DISPLAY	ASS'Y	1	1	1	1
3-1	DB61-02056A	HOLDER DISPLAY	HIPS	1	1	1	1
3-2	DB64-01211A	WINDOW DISPLAY	HIPS	1	1	1	1
3-3	DB93-02806A	ASS'Y PCB DISPLAY	ASS'Y	1	1	1	1
3-4	DB93-01369A	ASS'Y MODULE PCB	ASS'Y	1	1	1	1
4	DB63-01106A	COVER TERMINAL	HIPS V0	1	1	1	1
5	DB63-01107A	COVER PCB-DVM	HIPS	1	1	1	1
6	DB61-02050A	HOLDER EVAP	ABS	1	1	1	1
7	DB61-02052A	HOLDER MOTOR	PP	1	1	1	1
8	DB93-02804A	ASS'Y CONTROL IN	ASS'Y	1	-	1	-
	DB93-02804B	ASS'Y CONTROL IN	ASS'Y	-	1	-	1
9	DB96-03835A	ASS'Y EVAP TOTAL	ASS'Y	-	-	1	1
	DB96-03951A	ASS'Y EVAP TOTAL	ASS'Y	1	1	-	-
9-1	DB60-00198A	SPACER-EVAP MID	PVC	1	1	1	1
9-2	DB60-00203B	SPACER-EVAP UP	PVC	1	1	1	1
9-3	DB96-03834A	ASS'Y EVAP	FP1.3, H-FIN, 2x12	-	-	1	1
	DB96-03952A	ASS'Y EVAP	FP1.5, H-FIN, 2x12	1	1	-	-
10	DB67-60030A	SPRING-SENSOR	STS 301	1	1	1	1
11	DB94-00455A	ASS'Y BEARING-RUBBER	ASS'Y	1	1	1	1
12	DB94-00627A	ASS'Y-CROSS FAN	ø83 x 719	1	1	1	1
13	DB31-00270A	MOTOR FAN-IN	YDK-20S4D8C-1	1	1	1	1
14	DB94-00626A	ASS'Y BACK BODY	ASS'Y	1	1	1	1
14-1	DB61-02057A	BODY BACK	HIPS	1	1	1	1
14-2	DB61-02047A	BUSH BODY LF	HIPS	1	1	1	1
14-3	DB61-02048A	BUSH BODY RH	HIPS	1	1	1	1
14-4	DB63-01105A	COVER-IONIZER	HIPS	1	1	1	1
14-5	DB91-00287A	ASS'Y ELECTRIC-IONIZER	ASS'Y	1	1	1	1
14-6	DB93-01383G	ASS'Y C/W ION	ASS'Y	1	1	1	1
15	DB61-02051A	HOLDER-PIPE	HIPS	1	1	1	1
16	DB67-00508A	CAP SCREW	HIPS	3	3	3	3
17	DB70-00514A	PLATE-HANGER	SGCC-M, T0.8	1	1	1	1
18	DB70-00515A	PLATE CONTACT	SUS 304	2	2	2	2
19	DB70-00516A	PLATE-CONTROL IN	SGCC-M	1	1	1	1
20	DB93-01549B	ASS'Y-CONNECTOR POWER	ASS'Y	1	1	1	1
21	DB93-02531S	ASS'Y REMOCON	ARH-1315	1	1	1	1
22	DB92-00643A	ASS'Y GRILLE	ASS'Y	1	1	1	1
23	DB90-01829A	ASS'Y COVER DISPLAY	ASS'Y	1	1	1	1
23-1	DB63-01108A	COVER DISPLAY	PC	1	1	1	1
23-2	DB64-01276A	INLAY DISPLAY	ACRYL	1	1	1	1

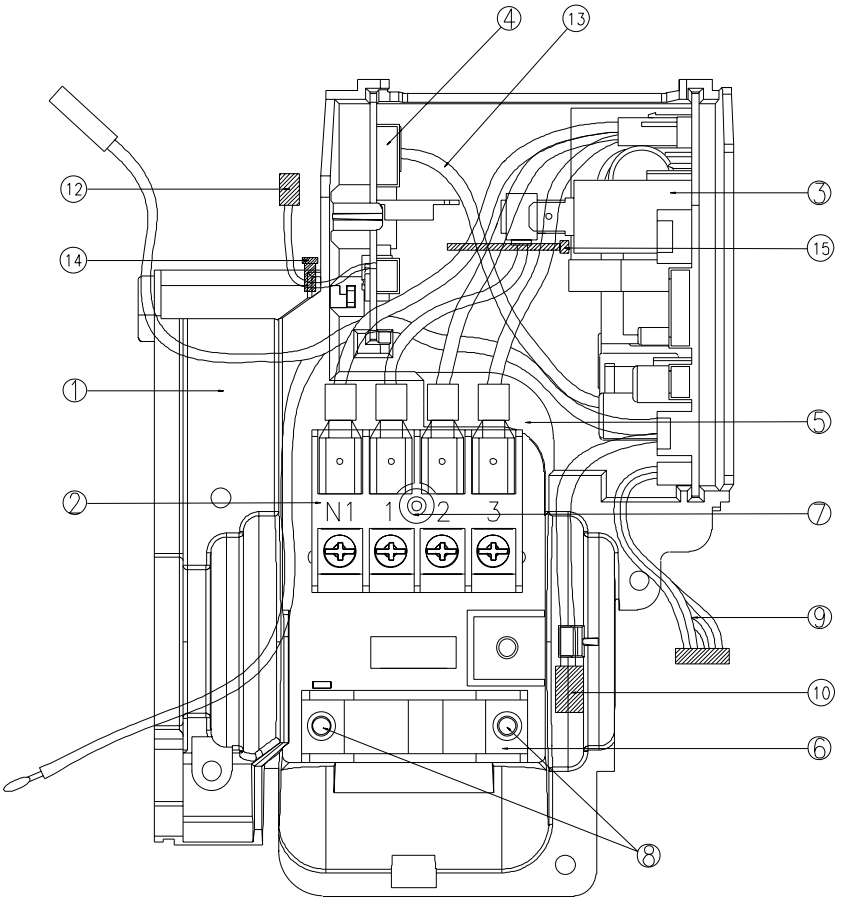
7-2 Outdoor Unit



■ **Parts List**

No.	Code No.	Description	Specification	Q'TY	
				AS09HPA	AS12HPA
1	6021-000281	NUT-HEXAGON	M6, ZPC, STS410	1	1
2	DB67-50063A	FAN-PROPELLER	AS+G/F 20%, ø405	1	1
3	DB31-10058C	MOTOR FAN OUT	220/240V, 50/60Hz	1	1
4	DB90-01524B	ASS'Y CABINET-FRONT	ASS'Y	1	1
5	DB63-00847A	GUARD FAN	PP	1	1
6	DB64-00982A	CABINET-SIDE LF	SECC-P	1	1
7	DB64-00992A	HANDLE-LF	PP	1	1
8	DB90-01525C	ASS'Y-CABI SIDE RH	ASS'Y	1	1
9	DB63-00853A	COVER-CONTROL	ABS	1	1
10	DB90-01295C	ASS'Y-BASE OUT	ASS'Y	1	1
11	DB61-02065A	BRACKET MOTOR	SGCC-M	1	1
12	DB61-02066A	BRACKET-VALVE	GALVANIZED STEEL	1	1
13	DB73-00067A	GROMMET-ISOLATOR	NR	-	3
	DB73-00070A	GROMMET-ISOLATOR	NR	3	-
14	DB94-00631A	ASS'Y PARTITION	ASS'Y	1	1
15	DB96-03836A	ASS'Y COND	ø7 FP1.5, LOUVER, 2x24	-	1
	DB96-03837A	ASS'Y COND	ø7 FP1.4, LOUVER, 2x24	1	-
16	G8C124JU1EL	COMPRESSOR	G8C124	-	1
	G4A091JU1EL	COMPRESSOR	G4A091	1	-
17	DB63-20002A	GASKET	EPDM	1	1
18	DB63-10165D	COVER TERMINAL	PBT	1	1
19	DB60-30028A	NUT-WASHER	HEX2C M8 ZPC	3	3
20	DB60-30018A	NUT-FLANGE	M5, SM20C	1	1
21	DB71-00093A	BAR-STEEL	HSWR	1	1
22	DB93-02916A	ASS'Y CONTROL OUT	ASS'Y	-	1
	DB93-02916B	ASS'Y CONTROL OUT	ASS'Y	1	-
22-1	DB70-00523A	PLATE-CONTROL OUT	SGCC-M	1	1
22-2	DB33-00049A	SOLENOID-ASS'Y	ASS'Y	1	1
22-3	DB35-00028B	RELAY PROTECTOR O/L	RBC12128-12500	-	1
	DB35-00028A	RELAY PROTECTOR O/L	RBC12054-12500	1	-
22-4	DB65-40049E	TERMINAL BLOCK	4P	1	1
22-5	DB93-01547D	ASS'Y LEAD WIRE	ASS'Y	1	1
22-6	2501-001237	CAPACITOR-COMP	35uF/450VAC	-	1
	2501-001238	CAPACITOR-COMP	40uF/450VAC	1	-
22-7	2301-001375	CAPACITOR-MOTOR	1.5uF/450VAC	1	1
23	DB96-03828A	ASS'Y VALVE 4WAY	ASS'Y	-	1
	DB96-03840A	ASS'Y VALVE 4WAY	ASS'Y	1	-
24	DB96-03829A	ASS'Y TUBE CAPILLARY	ASS'Y	-	1
	DB96-03839A	ASS'Y TUBE CAPILLARY	ASS'Y	1	-

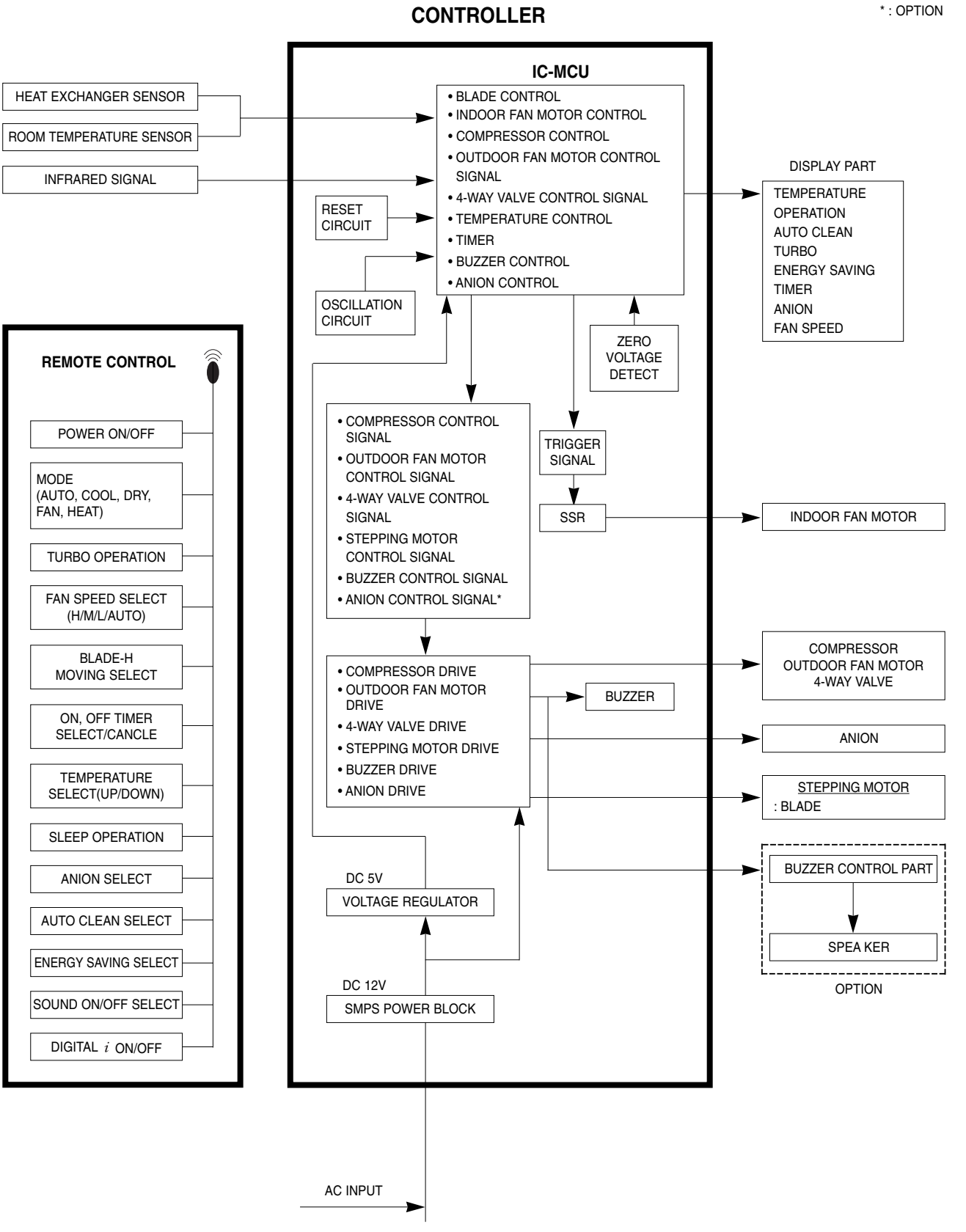
7-3 Ass'y-Control In : DB93-02804B



■ **Parts List**

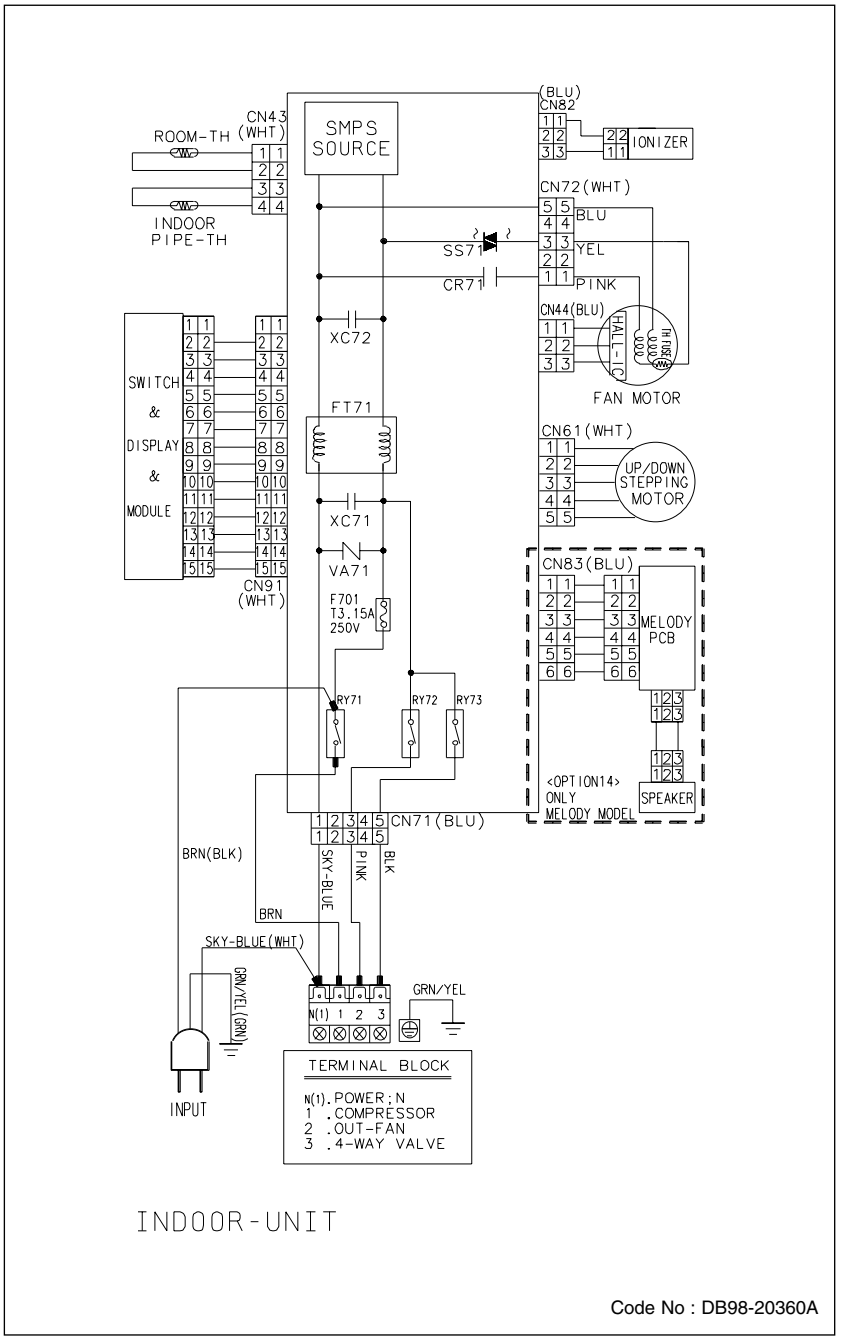
No.	Code No.	Description	Specification	Q'TY	Remark
1	DB61-02054A	CASE-CONTROL	ABS	1	
2	DB65-00103C	ASS'Y-TERMINAL BLOCK	ASS'Y	1	
3	DB93-02808B	ASS'Y-MAIN PCB	ASS'Y	1	
4	DB93-02809A	ASS'Y-MELODY PCB	ASS'Y	-	
5	DB70-00516A	PLATE-TERMINAL LOW	SGCC-M T1.2	1	
6	DB61-00171A	HOLDER-WIRE CLAMP	ABS	1	
7	6001-000929	SCREW-MACHINE	PH M3 x L22	1	
8	6001-001054	SCREW-MACHINE	TH M4 x L10	2	
9	DB93-02827A	C/W MAIN TO DISPLAY	ASS'Y	1	
10	DB39-00643N	C/W STEP MOTOR UP/DOWN	ASS'Y	1	
11	DB32-00020A	ASS'Y-THERMISTOR	4P(103AT)	1	
12	DB93-02881A	C/W MELODY TO SPEAKER	ASS'Y	-	
13	DB93-02828A	C/W MELODY TO MAIN	ASS'Y	-	
14		SPEAKER WIRE TIE	-	-	

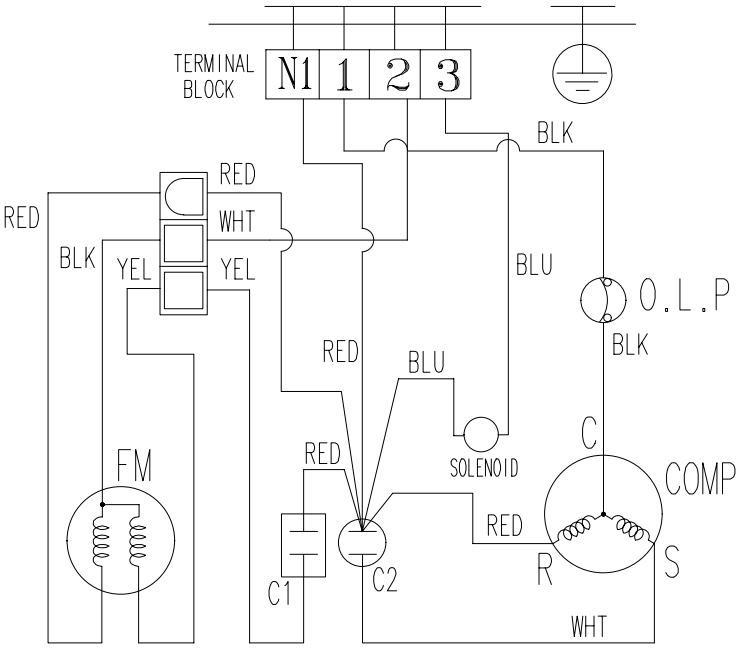
8. Block Diagram



9. Wiring Diagram

9-1 Indoor Unit





C1	MOTOR CAPACITOR	FM1	FAN MOTOR
C2	COMP CAPACITOR	O.L.P	OVER LOAD PROTECTOR

Code No : DB98-15123A

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Printed in Korea.
Code No. DB98-20429A(1)