SAMSUNG

ERV (Energy Recovery Ventilator)

Basic : RHF025EE/035EE/050EE/080EE/100EE

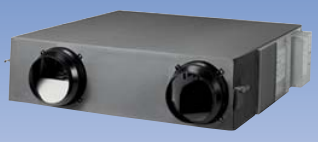
Model : AN026JSKLKN
AN035JSKLKN
AN050JSKLKN
AN080JSKLKN
AN100JSKLKN

Model Code : AN026JSKLKN/EU
AN035JSKLKN/EU
AN050JSKLKN/EU
AN080JSKLKN/EU
AN100JSKLKN/EU

SERVICE Manual

ERV(Energy Recovery Ventilator)

AN026JSKLKN



AN035JSKLKN, AN050JSKLKN
AN080JSKLKN, AN100JSKLKN

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1. Precautions

1-1 Installing the Ventilator

- **Consult a dealer or a qualified installer.**
  – Incorrect installation of the unit could cause injury due to fire, electric shock and water leakage or from the unit falling.

- **Hang down a blockage for bird in front of outdoor air suction duct.**
  – If something such as bird's nest blocks the air suction duct, it may result in oxygen shortage in indoors.

- **Check if the voltage and the frequency of the main power supply are required for the unit to be installed.**
  – Defective voltage and power supply could cause injury due to fire or from the unit falling.

- **Ground the unit. Do not connect the ground to a gas pipe, water pipe, lighting rod or telephone grounding.**
  – Defective grounding could cause electric shock.

- **Install the unit in a place where it is strong enough to hold the product weight.**
  – When installed in place where it is not strong enough to withhold the product weight, the unit may fall and cause injury.

- **The electric work must be done by service agent or similarly qualified person according to national wiring regulations and use only rated cable.**
  – If the capacity of the electric work is not properly completed, unit falling, electric shock or fire may occur.

- **Do not attempt to repair, move, modify or reinstall the unit on your own.**
  – Make sure that these installations are carried out by qualified personnel to avoid electric shock or fire.

- **Perform the installation securely referring to the installation manual.**
  – Incomplete installation could cause personal injury due to fire, electric shock or the unit falling.

- **Do not install the product in a place where it is or might be exposed to inflammable gas leakage.**
  – When the unit is exposed to inflammable gas leakage, it could catch fire or cause explosion.

- **Make sure to use the part provided or specified parts for the installation work.**
  – The use of defective parts could cause fire or electric shock.

- **Do not install the product in the place where generates toxic gas from machinery or chemical factory such as alkali solution, organic solvent, or paints.**
  – It may cause fire or gas poisoning.

- **Do not install the product in a place where it might be exposed to petroleum, steam, or sulphuric acid.**
  – When the unit is exposed to petroleum, steam, or sulphuric acid, unit falling or malfunction may take place.

- **Make sure the air intake is located far from an exhaust port of a burner.**
  – It may cause indoor oxygen shortage.

- **Install the product inside heat insulation over the ceiling not to be contacted with the outside air.**
  – If the product is installed out of the insulation, it may result in electric shock or malfunction due to moisture generated in the product.

- **Do not install the product in humid place such as bathroom.**
  – It may cause electric shock or malfunction.

1-2 Power supply and circuit breaker

- **Turn off the sub power supply when you don't use the product for a long period.**
  – If not, it may cause power consumption or fire.

- **Install a ground leakage breaker depending on the installation place.**
  – If not, it may cause electric shock.

- **Ensure that the national safety code requirements have been followed for the main supply circuit. Ensure that a properly sized and connected ground wire is in place.**
  – Inappropriate wire may cause overheating of fire.

- **Turn the power off before repairing the product.**
  – If not, it may cause electric shock.

- **Do not install the electric wire to get tension.**
  - The electric wire may disconnect and cause fire.

- **Do not utilize ERV wired remote control with wet hands.**
  – It may cause electric shock.

- **If the power cable is damaged, replace it by the manufacturer or qualified personnel to avoid the risk.**

1-3 During operation

- **Open windows for air circulation when a burner or other product leaks inflammable gas.**
  – If not, it may cause fire or explosion.

- **Make sure to keep winds from the product away from a burner.**
  – It may cause incomplete combustion.

- **Do not utilize the ventilator to preserve machinery, foods, animals, plants or cosmetic products.**
  – It may cause damage to the machinery, foods, animals, plants or cosmetic products.

- **Do not spray insecticide or other inflammable materials on the product.**
  – It may cause unit falling or fire.

- **Make sure to keep the product away from water.**
  – The product can cause electric shock or fire when it contacts water.

- **Do not put the product under a great pressure or reinstall the unit on your own.**
  – It may cause fire or malfunction.

- **Do not utilize the product for air exchange when an open type burner is used.**
  – Separate measures for air exchange must be prepared when a gas or oil stove is used.

- **Ensure that indoor air should not flow into the outdoor air suction duct of the product.**
  – If not, indoor air may be contaminated to have a bad influence on heath of people.

- **Stop operating the product as soon as any error is found.**
  – Stop operating and turn off the unit when it smells burning or any error in operation is found. Contact a dealer or a qualified installer. If continue operation of the unit, electric shock, fire or unit falling may occur.

- **Do not expose animals or plants to the winds from the unit for a long period of time.**
  – It may damage animals or plants.

- **Do not put hands or sticks into the air suction duct or air outlet of the product.**
  – It may cause injury as ventilator fan is rotating fast.

- **Do not attempt to modify or reinstall the unit on your own.**
  – It may cause unit falling, electric shock or fire. Consult a dealer or a qualified installer.

1-4 Others

- **The dust filter of the product must be inserted before operation. Dust filter is required to be cleaned about two times a year regularly.**
  – If not, the product function may fall.

- **Make sure wear gloves when cleaning dust filter or heat exchange element.**
  – If not, it may cause injury.

- **Make sure air fan stops rotating before cleaning and other treatment.**
  – If not, it may cause electric shock or injury.

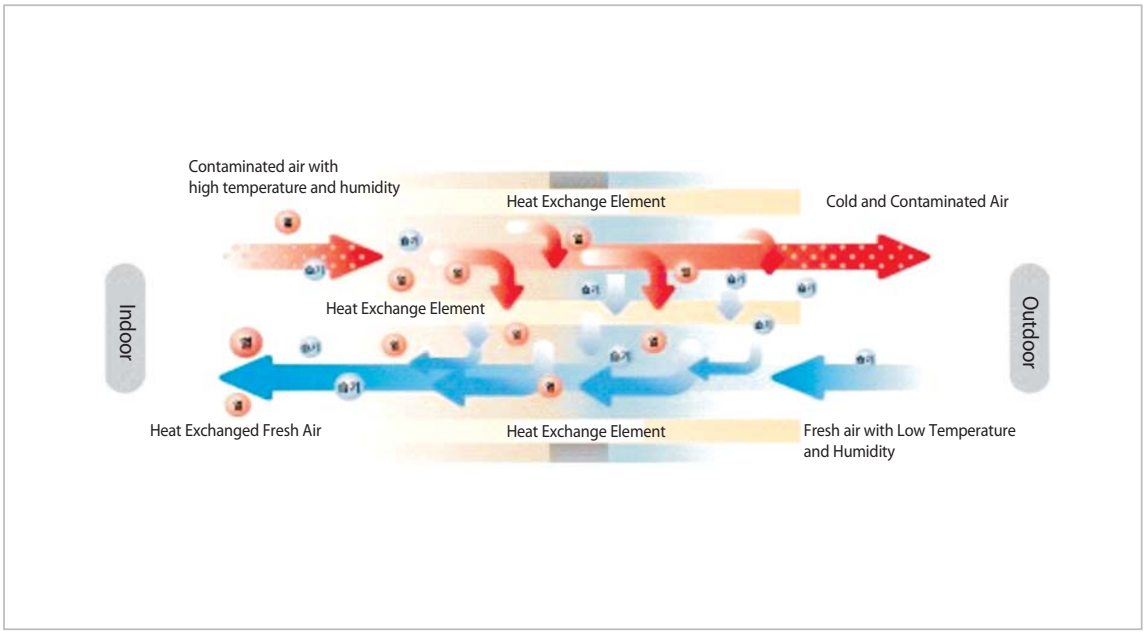
- **Do not utilize steel scrubber or chemicals such as benzene or thinner.**
  – It may cause discoloration or unit falling.

2. Product Specifications

2-1 The Feature of Product

■ Energy Recovery Ventilation

The product helps save energy and drive down operation costs of heaters and coolers by recycling thermal energy (energy load) efficiently.



■ Air Volume Control

Air volume control minimizes energy loss and cuts down on energy usage, even when duct resistance is low at the time of installation.

■ Automatic Operation

Operation mode and air volume are controlled automatically by sensing indoor and outdoor air conditions.

■ Exchange Mode

Heat-EX mode is utilized in summer and winter while usual ventilation mode is used in spring and autumn.

– Heat-Ex Mode : Energy loss is minimized by recycling energy exhausted when indoor heating and cooling.

– By-Pass Mode : The ventilation method is used when temperature gap of indoor and outdoor is not big. Outdoor air flows into indoor.

■ High Sensibility Sensor (Option)

An optimal air condition is maintained through Carbon Dioxide (CO_2) sensor and temperature sensor.

■ Humidity Control

Fresh air conditions are guaranteed by recovering moisture in winter while exhausting it in summer.

■ Operation at Cold Area

Optimized automatic ventilation operation is conducted to prevent condensation and air volume reduction.

■ Low Noise and Low Power

With highly efficient motor and optimized system design, operation noise and electric consumption is minimized.

2-2 Product Specifications

■ AN026JSKLKN

Power Source		220 - 240 V~, 50 / 60 Hz					
Ventilation Mode		Heat-Ex Ventilation			By-Pass Ventilation		
The Level of the Air Volume		Turbo	High	Low	Turbo	High	Low
Power Supply(W)		115	80	45	115	80	45
Air Volume(m^3/h)		260	250	180	250	250	180
External Static Pressure(Pa)		100	65	55	110	65	55
Temperature Exchange Efficiency(%)	Cooling	70	70	74	-	-	-
	Heating	70	70	74	-	-	-
Enthalpy Exchange Efficiency(%)	Cooling	50	50	55	-	-	-
	Heating	70	70	76	-	-	-
Size(widthxheightxdepth)(mm)		600 x 350 x 660					
Weight(kg)		28.5					
Duct Size(mm)		150					
Trial Operation Conditions		1. Air Volume/ External Static Pressure, Comply with KS Heat Exhaust Ventilation System Standards(KS B6879). 2. Heat Exchange/Temperature Exchange Efficiency, Comply with regulations to promote high efficiency energy devices, [Cooling], Indoor(24˚C DB/17˚C WB), Outdoor(35˚C DB/24˚C WB) [Heating], Indoor(22˚C DB/13.9˚C WB), Outdoor(2˚C DB/0.44˚C WB)					

■ AN035JSKLKN

Power Source		220 - 240 V~, 50 / 60 Hz					
Ventilation Mode		Heat-Ex Ventilation			By-Pass Ventilation		
The Level of the Air Volume		Turbo	High	Low	Turbo	High	Low
Power Supply(W)		115	80	50	115	80	50
Air Volume(m^3/h)		350	350	260	350	350	260
External Static Pressure(Pa)		155	100	85	155	100	85
Temperature Exchange Efficiency(%)	Cooling	70	70	74	-	-	-
	Heating	70	70	74	-	-	-
Enthalpy Exchange Efficiency(%)	Cooling	50	50	55	-	-	-
	Heating	70	70	76	-	-	-
Size(widthxheightxdepth)(mm)		1,012 X 270 X 1,000					
Weight(kg)		42.5					
Duct Size(mm)		200					
Trial Operation Conditions		1. Air Volume/ External Static Pressure, Comply with KS Heat Exhaust Ventilation System Standards(KS B6879). 2. Heat Exchange/Temperature Exchange Efficiency, Comply with regulations to promote high efficiency energy devices, [Cooling], Indoor(24˚C DB/17˚C WB), Outdoor(35˚C DB/24˚C WB) [Heating], Indoor(22˚C DB/13.9˚C WB), Outdoor(2˚C DB/0.44˚C WB)					

Product Specifications(cont.)

■ AN050JSKLKN

Power Source		220 - 240 V~, 50 / 60 Hz					
Ventilation Mode		Heat-Ex Ventilation			By-Pass Ventilation		
The Level of the Air Volume		Turbo	High	Low	Turbo	High	Low
Power Supply(W)		175	120	65	175	120	65
Air Volume(m^3/h)		500	500	360	500	500	360
External Static Pressure(Pa)		165	100	85	165	100	85
Temperature Exchange Efficiency(%)	Cooling	70	70	74	-	-	-
	Heating	70	70	74	-	-	-
Enthalpy Exchange Efficiency(%)	Cooling	50	50	55	-	-	-
	Heating	70	70	76	-	-	-
Size(widthxheightxdepth)(mm)		1,012 X 270 X 1,000					
Weight(kg)		42.5					
Duct Size(mm)		200					
Trial Operation Conditions		1. Air Volume/ External Static Pressure, Comply with KS Heat Exhaust Ventilation System Standards(KS B6879). 2. Heat Exchange/Temperature Exchange Efficiency, Comply with regulations to promote high efficiency energy devices, [Cooling], Indoor(24˚C DB/17˚C WB), Outdoor(35˚C DB/24˚C WB) [Heating], Indoor(22˚C DB/13.9˚C WB), Outdoor(2˚C DB/0.44˚C WB)					

■ AN080JSKLKN

Power Source		220 - 240 V~, 50 / 60 Hz					
Ventilation Mode		Heat-Ex Ventilation			By-Pass Ventilation		
The Level of the Air Volume		Turbo	High	Low	Turbo	High	Low
Power Supply(W)		330	230	125	330	230	125
Air Volume(m^3/h)		800	800	560	800	800	560
External Static Pressure(Pa)		155	90	80	155	90	80
Temperature Exchange Efficiency(%)	Cooling	70	70	74	-	-	-
	Heating	70	70	74	-	-	-
Enthalpy Exchange Efficiency(%)	Cooling	50	50	55	-	-	-
	Heating	70	70	76	-	-	-
Size(widthxheightxdepth)(mm)		1,220 × 340 × 1,135					
Weight(kg)		67					
Duct Size(mm)		250					
Trial Operation Conditions		1. Air Volume/ External Static Pressure, Comply with KS Heat Exhaust Ventilation System Standards(KS B6879). 2. Heat Exchange/Temperature Exchange Efficiency, Comply with regulations to promote high efficiency energy devices, [Cooling], Indoor(24˚C DB/17˚C WB), Outdoor(35˚C DB/24˚C WB) [Heating], Indoor(22˚C DB/13.9˚C WB), Outdoor(2˚C DB/0.44˚C WB)					

Product Specifications(cont.)

■ AN100JSKLKN

Power Source		220 - 240 V~, 50 / 60 Hz					
Ventilation Mode		Heat-Ex Ventilation			By-Pass Ventilation		
The Level of the Air Volume		Turbo	High	Low	Turbo	High	Low
Power Supply(W)		450	280	155	450	280	155
Air Volume(m^3/h)		1000	1000	690	1000	1000	690
External Static Pressure(Pa)		155	90	75	155	90	75
Temperature Exchange Efficiency(%)	Cooling	70	70	74	-	-	-
	Heating	70	70	74	-	-	-
Enthalpy Exchange Efficiency(%)	Cooling	50	50	55	-	-	-
	Heating	70	70	76	-	-	-
Size(widthxheightxdepth)(mm)		1220 × 340 × 1135					
Weight(kg)		67					
Duct Size(mm)		250					
Trial Operation Conditions		1. Air Volume/ External Static Pressure, Comply with KS Heat Exhaust Ventilation System Standards(KS B6879). 2. Heat Exchange/Temperature Exchange Efficiency, Comply with regulations to promote high efficiency energy devices, [Cooling], Indoor(24˚C DB/17˚C WB), Outdoor(35˚C DB/24˚C WB) [Heating], Indoor(22˚C DB/13.9˚C WB), Outdoor(2˚C DB/0.44˚C WB)					

2-3 Option Specifications

2-3-1. Accessories

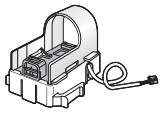
■ MOS-C1 (CO2 Sensor)

Item	Descriptions	Code-No	Q'TY	Remark
	ASS'Y CO_2 SENSOR	DB95-00740A	1	Separate Sale

■ MWR-VH12N (Wired Remote Controller)

Item	Descriptions	Code-No	Q'TY	Remark
	ASS'Y ERV REMOCON	DB93-14406C	1	Separate Sale

■ MSD-EAN1(Assy-SPI Device Option Kit)

Item	Descriptions	Code-No	Q'TY	Remark
	ASS'Y-SPi DEIVICE OPTION KIT	DB97-09494B	1	Separate Sale

2-3-2. Filter Specifications

Item	Descriptions	Code-No	Remark
	Duts Filter	DB63-01665A (AN026JSKLKN)	Basic/Cleaning Impossibility of Water Washing
		DB63-01665F (AN035JSKLKN, AN050JSKLKN)	
		DB63-01665G (AN080JSKLKN, AN100JSKLKN)	

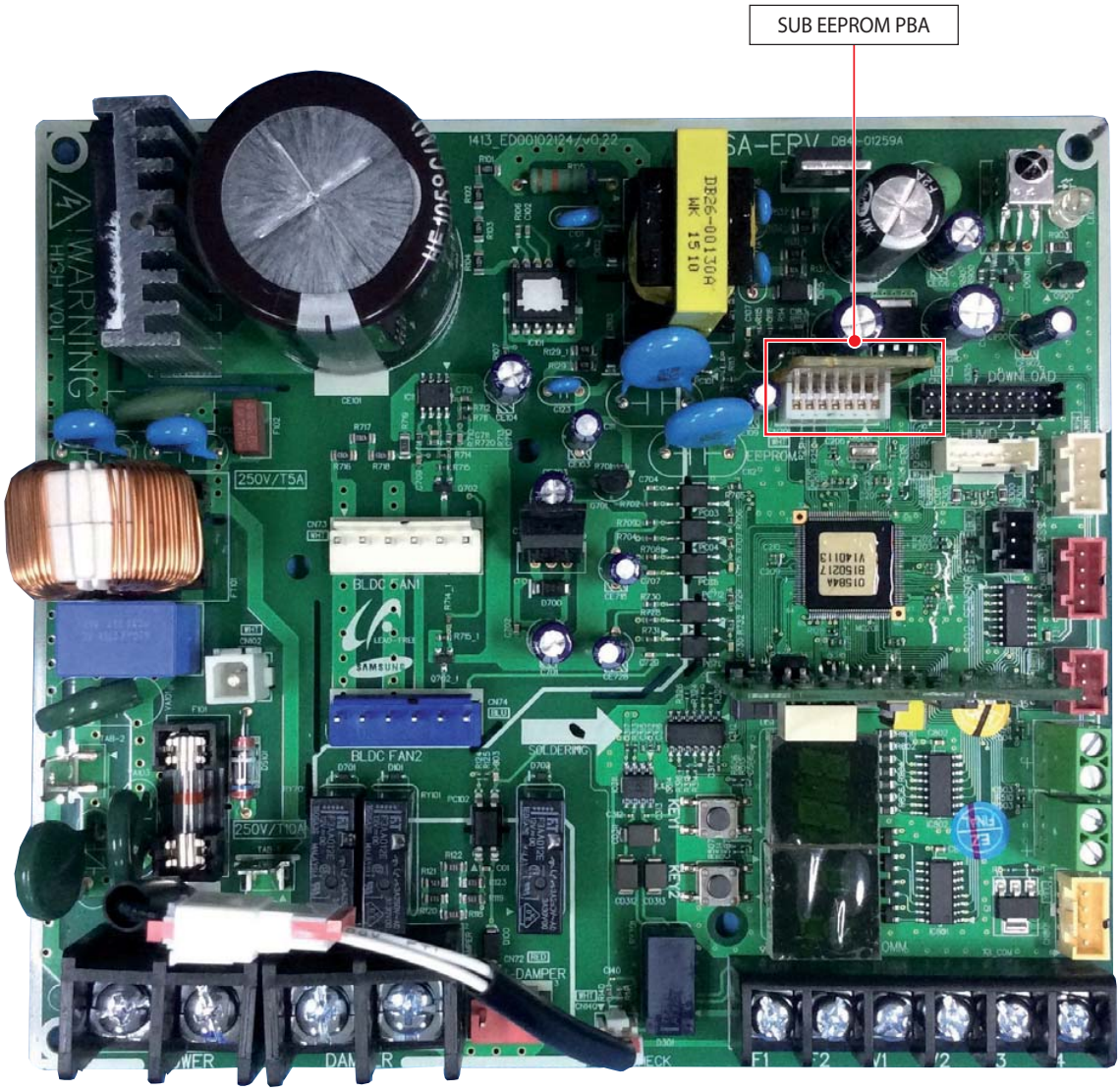
3. Alignment and Adjustments

3-1 Error Mode and Check Method

Error No	Error Mode	Measures
E108	Address setting duplication error	· Check the overlapping MAIN address within same repeater.
E121	Indoor temperature sensor error(SHORT/OPEN)	· Check connector disconnection of CN41 & connection conditions. Check a voltage of both ends CN41 PIN#1,2 (10 kΩ at 25 degrees) A Check of Indoor temperature is possible when KEY2 switch is entered 3 times.
E139	CO_2 sensor error(SHORT/OPEN)	· Check connector disconnection of CO_2 sensor and connection conditions. A Check of CO_2 sensor value is possible when KEY2 switch is entered 5 times.
E162	Indoor EEPROM H/W error	· Check connection conditions of EEPROM SUB PBA.
E163	Indoor option setting error	· Need to reset option.
E183	Outdoor Humidity Sensor Error(ERV)	· Check connector disconnection of humidity sensor and connection conditions. · A Check of outdoor humidity value is possible when KEY2 switch is entered 8 times. Set operates normall regardless of error.
E198	Thermal fuse open error in power terminal block	· Check wire connection conditions of CN140 connector. · Check conditions of wire connected power terminal block. (occurrence of error at open)
E202	System down caused by communication error	· Check disconnection of communication wire.
E221	Outdoor temperature sensor error(SHORT/OPEN)	· Check connector disconnection of CN41 and connection conditions. · Check a voltage of both ends CN41 PIN#3,4 (10 kΩ at 25 degrees). A Check of indoor temperature is possible when KEY2 switch is entered 4 times.
E490	Prohibition of operation under outside & indoor temperature 0 degrees	· Set stop operates normally when indoor and outdoor temperature is under 0 degrees. · Prohibition of operation for set protection.
E561	Supply air(SA) fan motor error	· Check connector disconnection of CN74 and connection conditions. · A Check of supply air fan rpm is possible when KEY2 switch is entered twice.
E562	Exhaust air(EA) fan motor error	· Check connector disconnection of CN73 and connection conditions. · A Check of exhaust air fan rpm is possible when KEY2 switch is entered once.
E654	Inside damper error	· Check connector disconnection of CN72,CN52 and connection conditions.

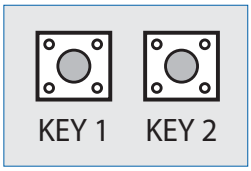
3-2 Option Switch & Key Function Address

● If you use a existing EEPROM after replace MAIN PBA, don't need to reset option.



3-2-1 Operation KEY and Display

1. KEY Function



Function / Input Time	KEY1	KEY2
1 time	Trial Operation of Heat Exchange	Data Display

- Trial Operation of Heat Exchange(KEY1) : The operation is to check whether the product operates properly after the installation.

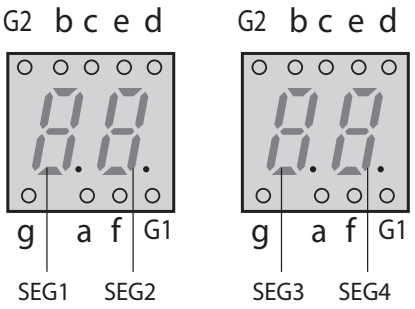
1) KEY 1 : Trial operation

- Operation condition : Heat exchange/Turbo wind
- Repeat on/off of trial operation whenever a key enters.
- Trial operation is stopped 30 minutes later, it returns to DISPLAY Default state 30 minutes later.

2) KEY 2 : Data display

- The marked contents is changed whenever you press KEY2 once.
- Press the KEY2 switch for more than 3 seconds to reset.

■ Display



Press times	Indication	Example	Display			
			SEG1	SEG2	SEG3	SEG4
1	Exhaust Air FAN RPM	1,350RPM	1	1	3	5
2	Supply Air FAN RPM	950RPM	2	Turn Off	9	5
3	Indoor Temperature	25℃	3	Turn Off	2	5
4	Outdoor Temperature	30℃	4	Turn Off	3	0
5	CO_2 Density	1,220ppm	5	1	2	2
6	Installed Unit Number	3 unit	6	Turn Off	Turn Off	3

■ Numbers and Alphabets on PCB Display

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H
0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F	G	h

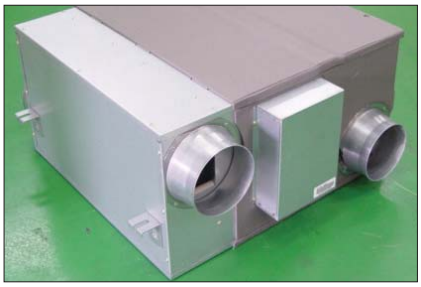
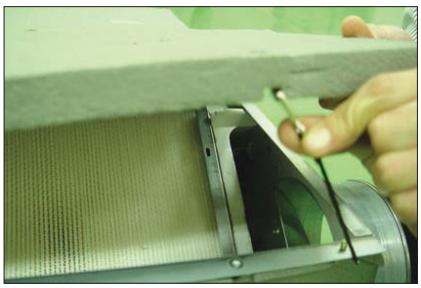
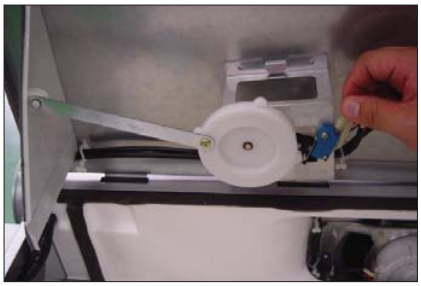
I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
I	J	k	L	M	n	o	P	q	r	S	t	U	v	W	X	Y	Z

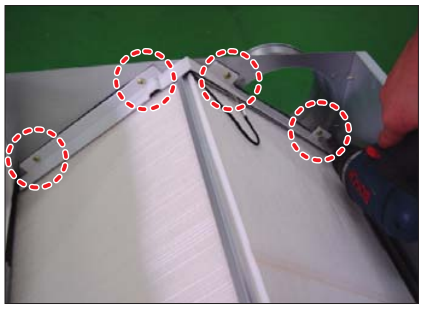
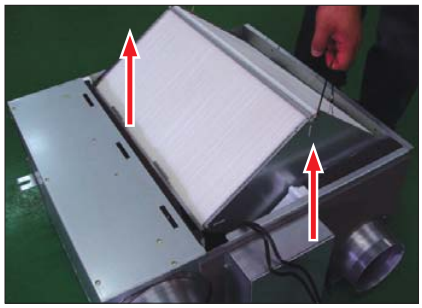
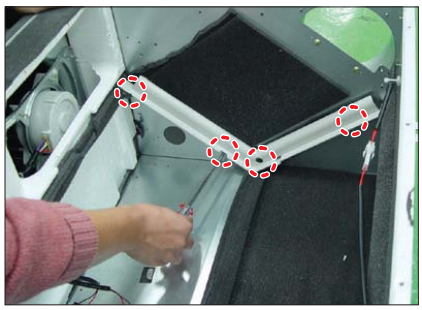
4. Disassembly and Reassembly

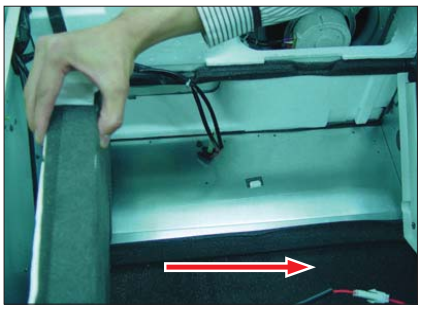
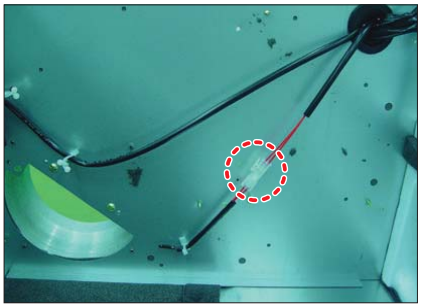
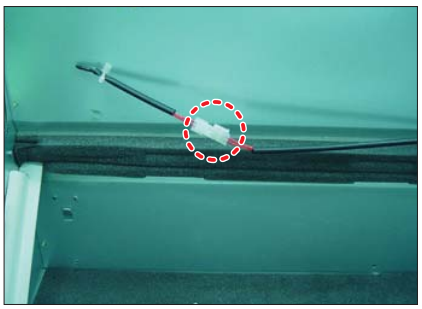
■ Necessary Tools

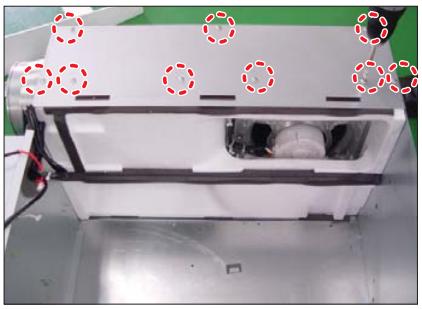
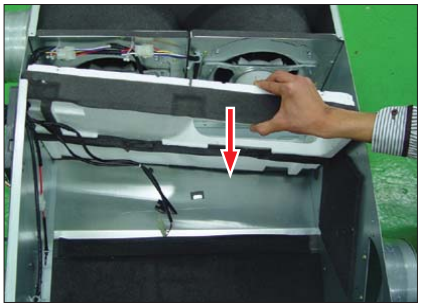
Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	

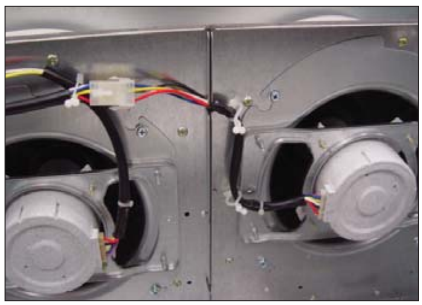
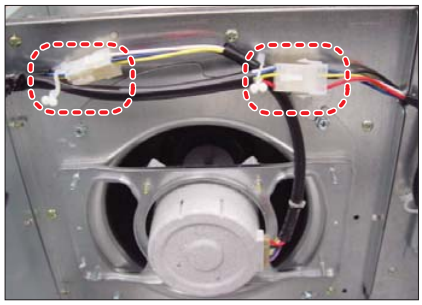
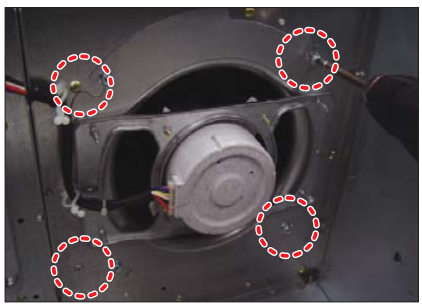
■ Disassembly before Installation

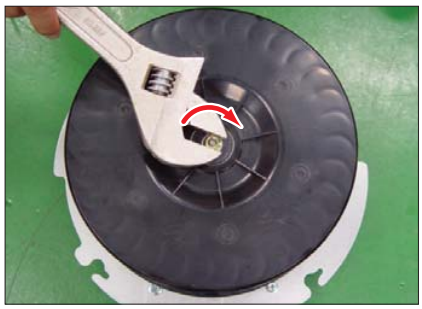
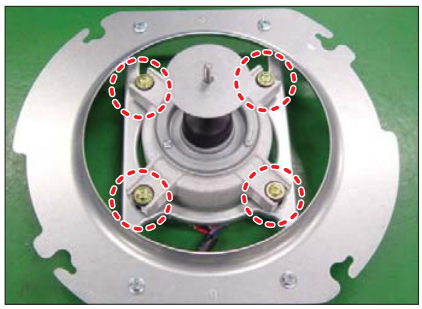
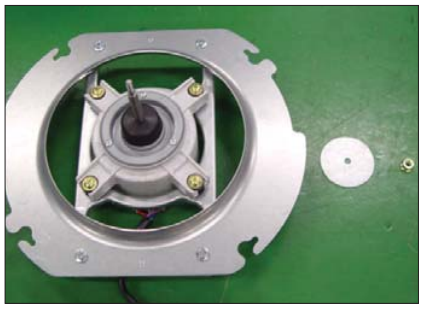
No	Parts	Procedure	Remark
1	ERV (Energy Recovery Ventilator)	1) Stop the air conditioner operation and shut off the main power. 2) Remove the unit from ceiling suspension. (Disassembly is not required when Fan, Motor, Element, Filter replacement or cleaning.)	
2	Ass'y Cabi Cover Element	1) Remove the 3 bolts on Cover Element to detach it.(Use +Screw Driver.)	
		2) Loosen the clips connected to the Cover.	
			
		3) Separate the connector connected to the Damper by pulling out the connector body.	

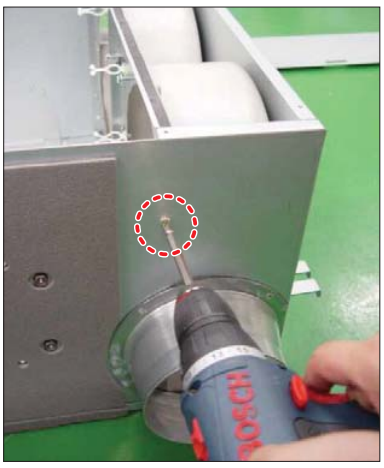
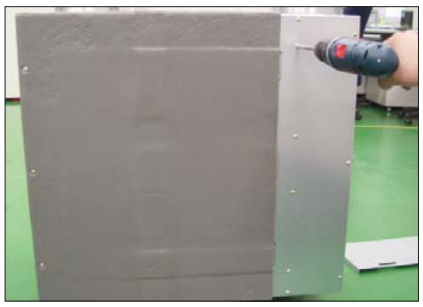
No	Parts	Procedure	Remark
3	Bracket Body Element, B	1) Remove the 4 bolts and separate Bracket Body Element, B. (Use +Screw Driver.)	
4	Ass'y Element	1) Pull up the 2 strings hanging out from the 2 ends of Element to detach the Element.	
5	Bracket Body Element, A	1) Remove the 4 bolts and separate Bracket Body Element, A. (Use +Screw Driver.)	

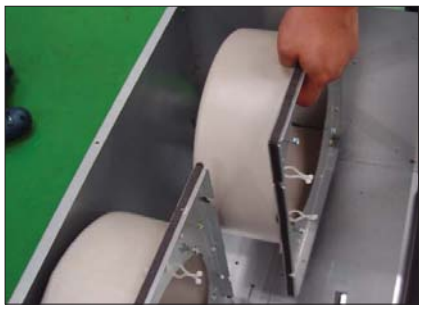
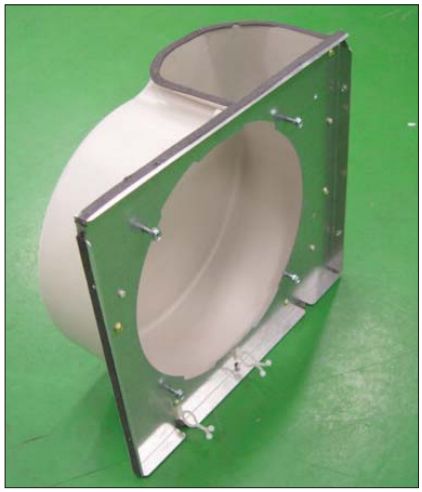
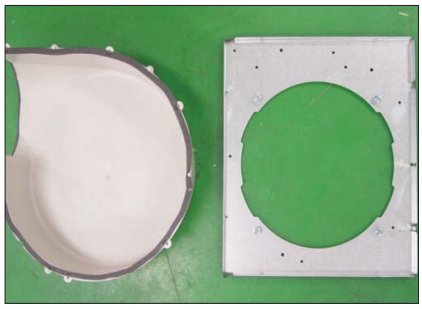
No	Parts	Procedure	Remark
6	Cushion Bypass	1) Slide Cushion Bypass to the direction seen in the picture besides. ⚠ Take caution not to break down EPS structure.	
		2) Find Wire connected to the temperature sensor. Separate the 2 temperature sensor connectors.	 

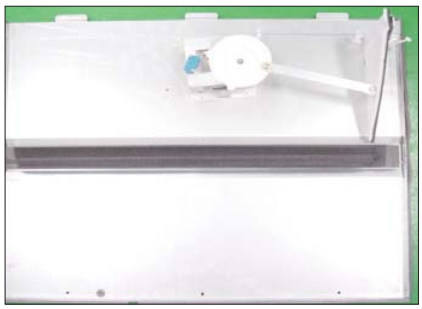
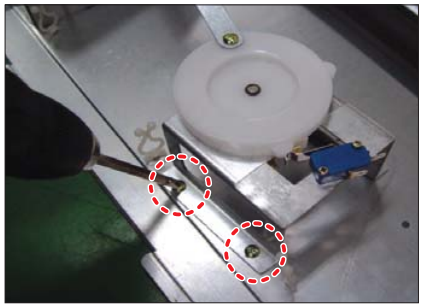
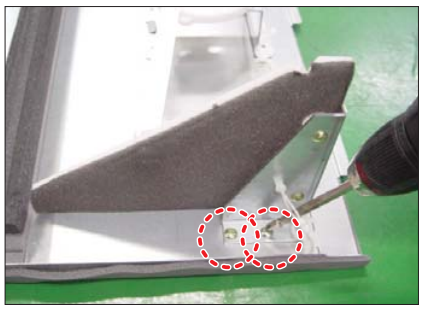
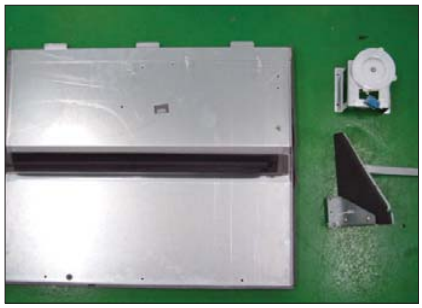
No	Parts	Procedure	Remark
7	Cabi Cover	1) Detach Cabi Cover by removing 9 bolts. (Use +Screw Driver.)	 
8	Cushion Mid	1) Slide Cushion Mid to the direction seen in the picture besides. ⚠ Take caution not to break down EPS structure.	

No	Parts	Procedure	Remark
9	Ass'y Blower Motor	1) Find Wire connected to the Motor. Separate the 2 motor connectors.	 
		2) Loosen the holders, fixing the motor wire by twisting them slightly.	
		3) Rotate bolts fixing the Bracket 5 turns. (Use +Screw Driver.) Supply air and exhaust air of the products have 4 bolts each. ⚠ The bolts are not required to be removed.	
		4) Detach the whole Ass'y Blower Motor (which is made up of Fan, Motor, Bracket Motor, and Cover Bell Mouse). 5) 2 Motors are placed within the unit for input and outlet.	

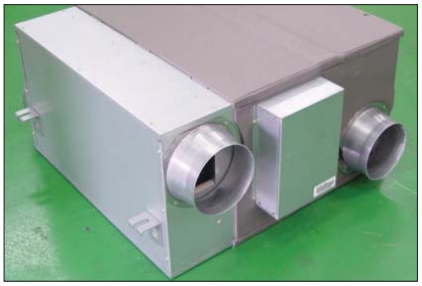
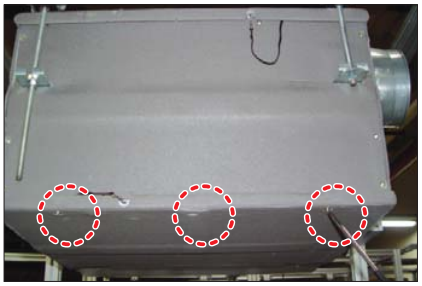
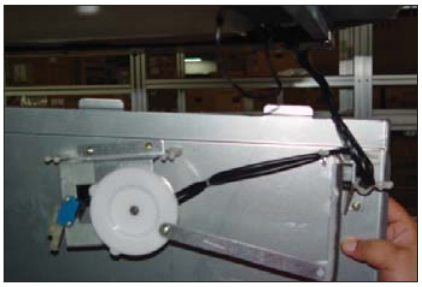
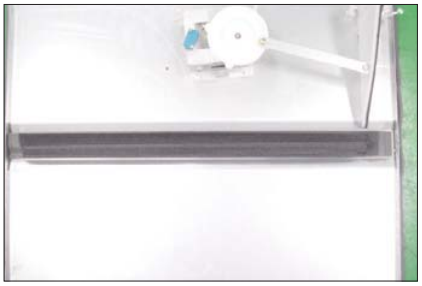
No	Parts	Procedure	Remark
10	Ass'y Blower	1) Unscrew the nuts fixing Fan by rotating them right. (Use Monkey Spanner.) ⚠ Do not touch the Fan. Its sharp edge may cause injury.	
		2) Detach the Motor with removing the 4 bolts fixing Bracket. (Use +Screw Driver.)	 

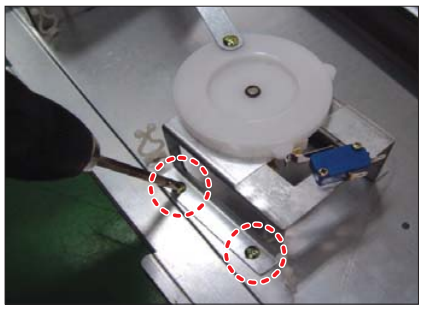
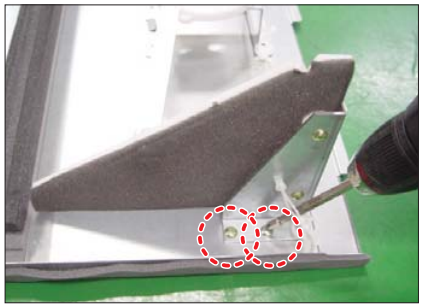
No	Parts	Procedure	Remark
11	Ass'y Case Blower	1) Remove the 2 bolts attached at the sides of the body. (Use +Screw Driver.)	
			
			
		2) Remove the 4 bolts on the other side of Cabi Cover to detach it. (Use +Screw Driver.)	

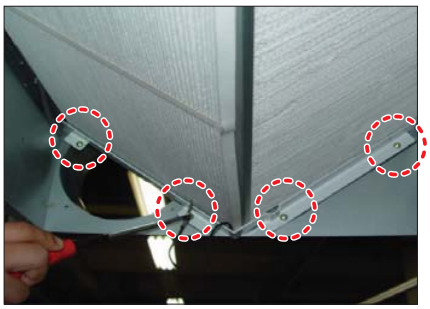
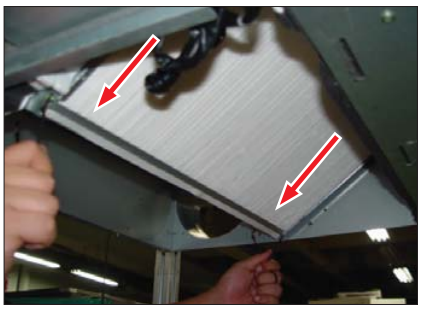
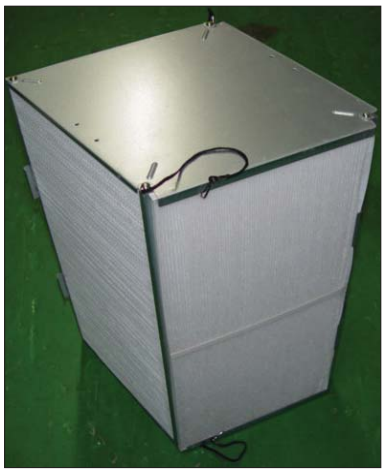
No	Parts	Procedure	Remark
		3) Detach the Ass'y Case Blower.	
		4) Unscrew the Bracket Case Blower and the Case Blower. (Use +Screw Driver.)	
			

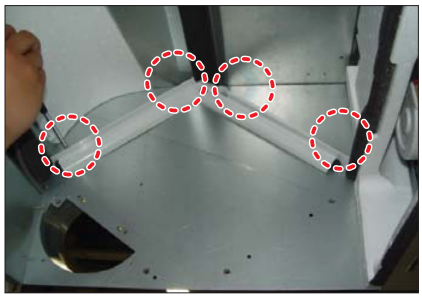
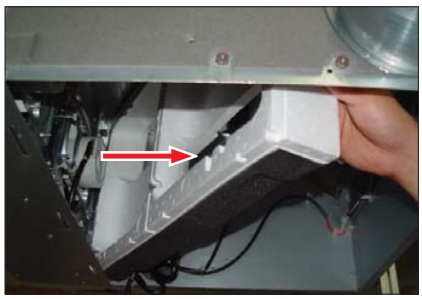
No	Parts	Procedure	Remark
12	Ass'y Damper/ Ass'y-Lever Bypass	1) Remove all bolts to separate Bracket and Cam. (Use +Screw Driver.)	   

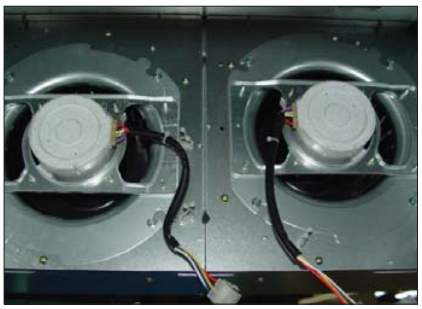
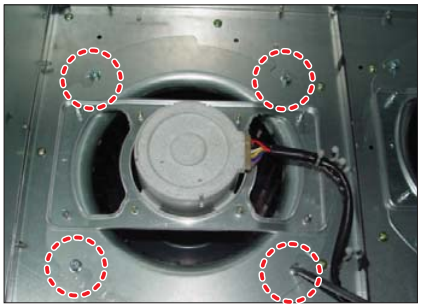
■ Product Disassembly (while still being installed)

No	Parts	Procedure	Remark
1	ERV (Energy Recovery Ventilator)	1) Stop the air conditioner operation and shut off the main power. 2) Remove the unit from ceiling suspension. (Disassembly is not required when Fan, Motor, Element, Filter replacement or cleaning.)	
2	Ass'y Cabi Cover Element	1) Remove the 3 bolts on Cover Element to detach it.(Use +Screw Driver.)	
		2) Loosen the clips connected to the Cover.	
			
		3) Separate the connector connected to the Damper by pulling out the connector body.	

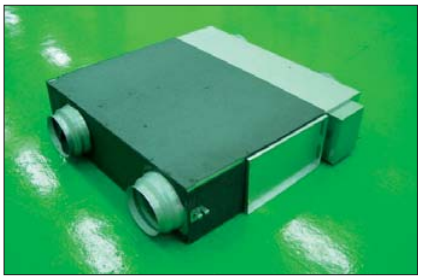
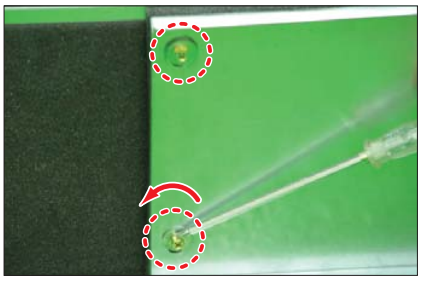
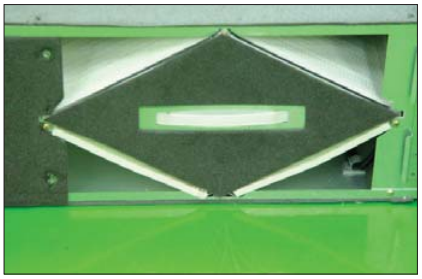
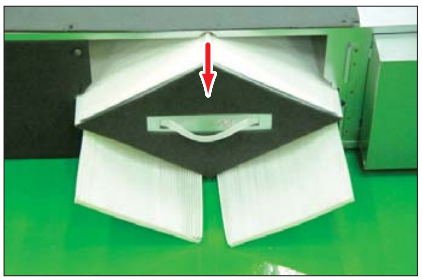
No	Parts	Procedure	Remark
			  

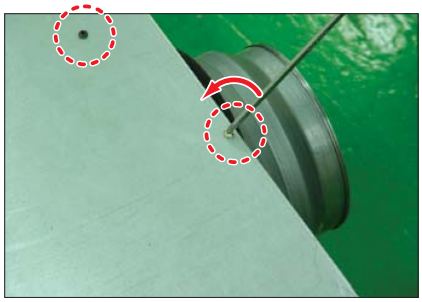
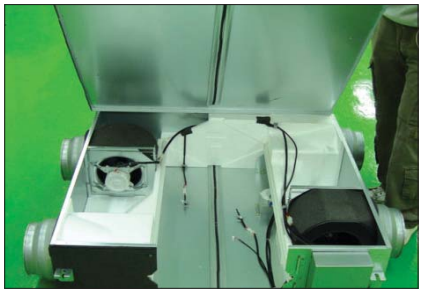
No	Parts	Procedure	Remark
3	Ass'y Element	1) Remove the 4 bolts and separate Bracket Body Element, B. (Use +Screw Driver.)	
			
		2) Pull down the 2 strings hanging out from the 2 ends of Element to detach the Element.	
			

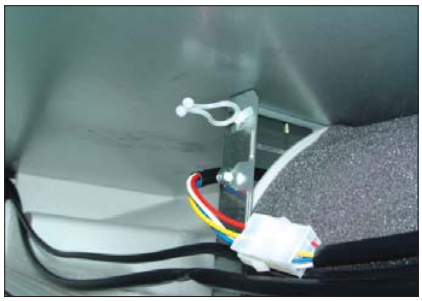
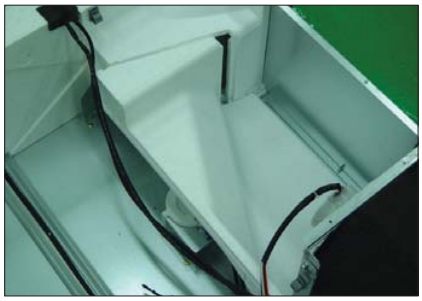
No	Parts	Procedure	Remark
4	Bracket Body Element, A	1) Remove the 4 bolts and separate Bracket Body Element, A. (Use +Screw Driver.)	 
5	Cushion Bypass	1) Slide Cushion Bypass to the direction seen in the picture besides. ⚠ Take caution not to break down EPS structure.	
6	Cushion Mid	1) Slide Cushion Mid to the direction seen in the picture besides. 2) Separate the 2 temperature sensor connectors. ⚠ Take caution not to break down EPS structure.	 

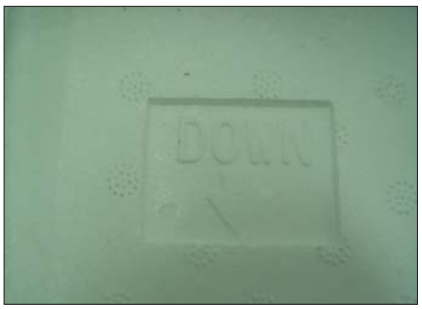
No	Parts	Procedure	Remark
7	Ass'y Blower Motor	1) Separate the 2 motor connectors. 2) Loosen the holders, fixing the motor wire by twisting them slightly.	
		3) Rotate bolts fixing the Bracket 5 turns. (Use +Screw Driver.) Supply air and exhaust air of the products have 4 bolts each. ⚠ The bolts are not required to be removed.	
		4) Detach the whole Ass'y Blower Motor (which is made up of Fan, Motor, Bracket Motor, and Cover Bell Mouse). 5) 2 Motors are placed within the unit for input and outlet.	

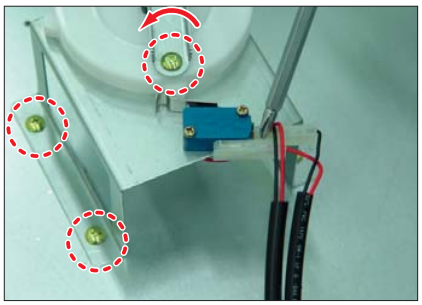
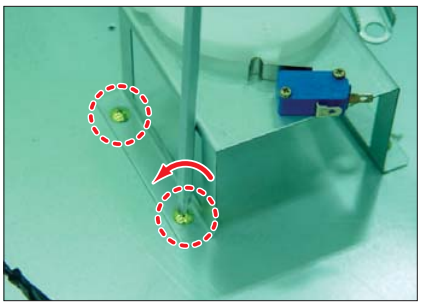
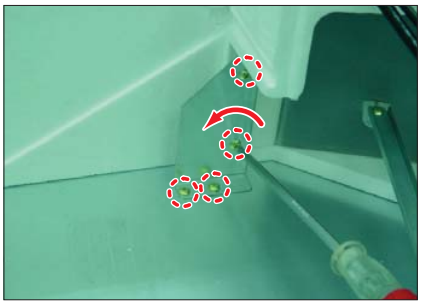
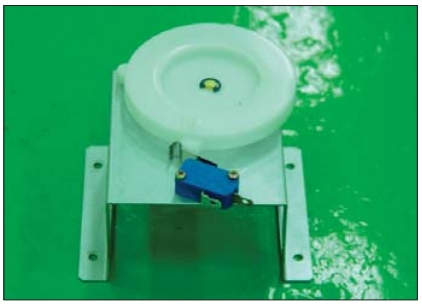
■ Disassembly before Installation

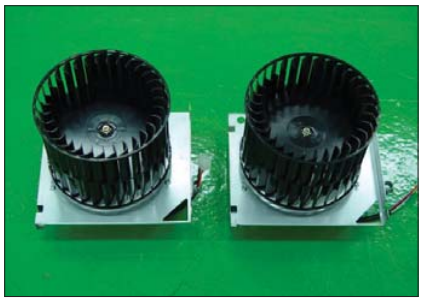
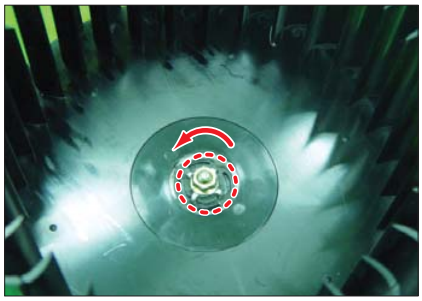
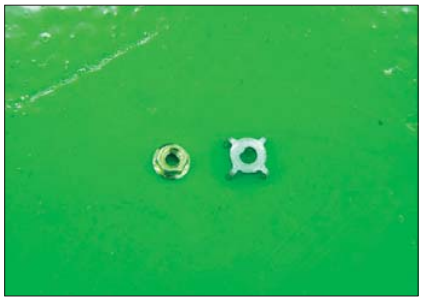
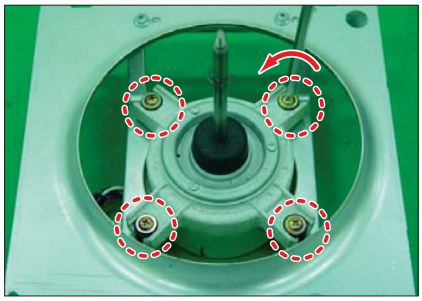
No	Parts	Procedure	Remark
1	ERV (Energy Recovery Ventilator)	1) Stop the air conditioner operation and shut off the main power. 2) Remove the unit from ceiling suspension. (Disassembly is not required when Fan, Motor, Element, Filter replacement or cleaning.)	
2	Cover Element	1) Remove the 2 bolts of the Cover Element. (Use +Screw Driver.)	
		2) Find the Element and 2 Dust Filters.	
3	Ass'y Element Ass'y Filter	1) Detach Element and Filter from the unit. Make sure detach the Filter before the Element.	
		2) There are 2 Element within the product.	

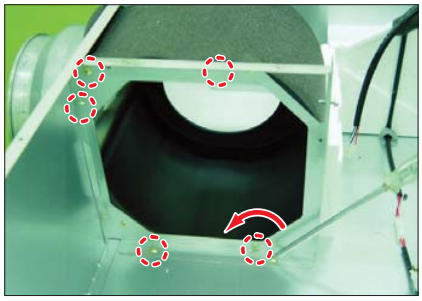
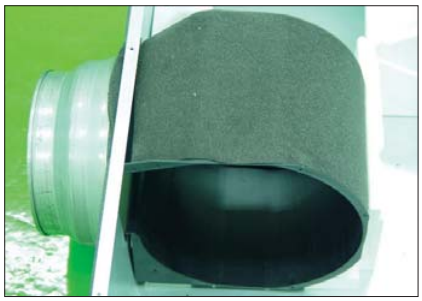
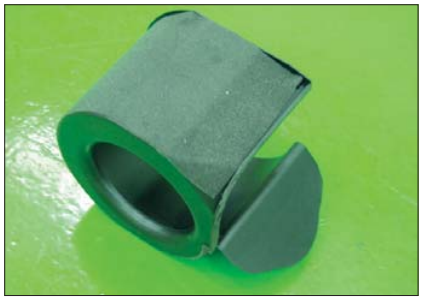
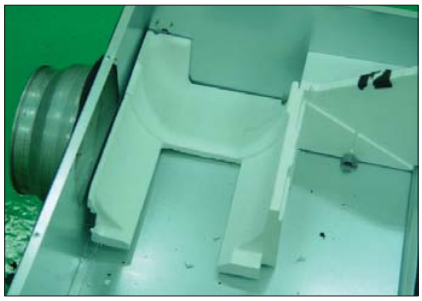
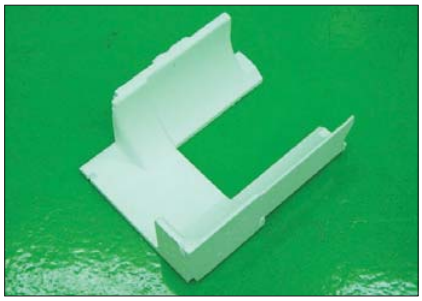
No	Parts	Procedure	Remark
4	Cabinet Top	1) Loosen 12 bolts located at the top of the product. (Use +Screw Driver.)	
		2) Locate the EPS structure, Fan, Motor and Wire.	
5	Guide Element	1) Separate the guides fixing Element. (Use +Screw Driver.) 1 Guide is located at each left and right end of the product. Each guide is attached to the product with 1 bolt.	 
6	Thermistor Ass'y Wire	1) Separate the Temperature Sensor from the fixed part. The Temperature Sensor is attached with wire clips. 2) The input and output channel has 1 Temperature Sensor each.	

No	Parts	Procedure	Remark
7	Ass'y Fan Parts	1) Separate motor connectors. 2) Loosen the holder fixing the motor wire by twisting it slightly. 3) 2 Motors are placed within the product for supply air and exhaust air.	 
8	Cushion Mid	1) Slide the EPS structure to the side and detach it, as seen in the picture besides. 2) Slide and pull the EPS structure to separate it, as seen in the picture besides.	  

No	Parts	Procedure	Remark
		3) Assemble the product by adjusting it with the direction, following the direction carved on the surface of Cushion Mid. Put the part written with "Down↓" downwards and put the part with "Motor→" towards the Motor when assembling the unit. ⚠ Make sure not to break down EPS structure.	  

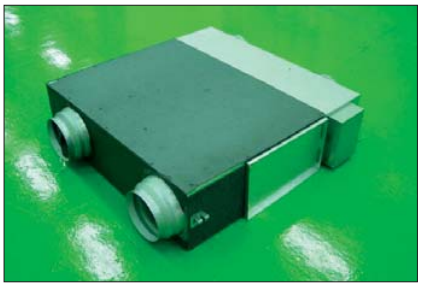
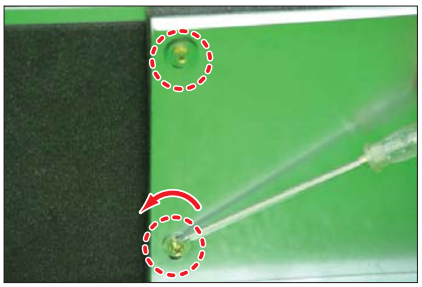
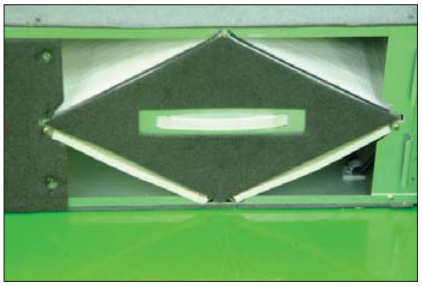
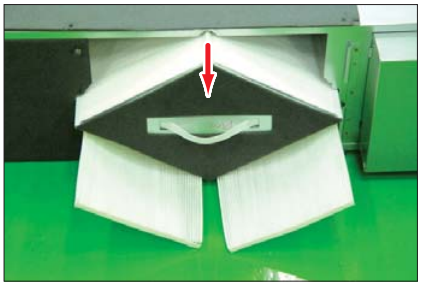
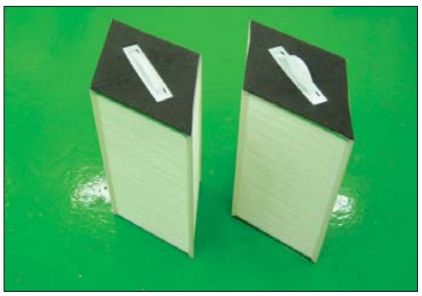
No	Parts	Procedure	Remark
9	Connector Damper Cam	1) Separate the Damper from the unit. (Use +Screw Driver.) 2) Separate the connectors by holding their bodies and pulling them out.	
		3) Unscrew bolts attached to Bracket and Cam. (Use +Screw Driver.)	
			
			
			

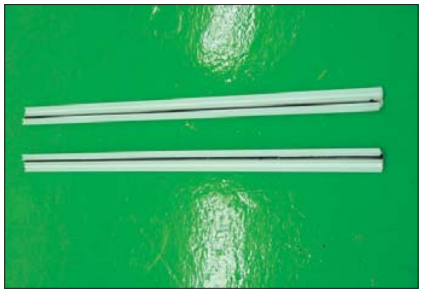
No	Parts	Procedure	Remark
10	Ass'y Fan Parts	⚠ Ensure to separate the Damper before the Fan. 1) Rotate bolts fixing the Bracket ten turns. Input and outlet of the products have 2 bolts each. (Use +Screw Driver.) ⚠ The bolts are not required to be removed.	 
11	Blower Motor-Fan	1) Unscrew the nuts fixing the Fan by rotating them left. (Use Monkey Spanner.) 2) Unscrew the bolts fixing Motor to detach if from the Motor Bracket. It has 4 bolts. (Use +Screw Driver.) ⚠ Do not touch the Fan. Its sharp edge may cause injury.	  

No	Parts	Procedure	Remark
12	Case Blower	1) Separate the Bracket from Case Blower. (Use +Screw Driver.) There are 5 bolts.	
		2) Separate the Case Blower by sliding the Case Blower upwards.	 
13	Cushion Blower-EA Cushion Blower-SA	1) Detach the EPS structure fixed to Case Blower by sliding the structure to the side. ⚠ Make sure not to break down the EPS structure.	 

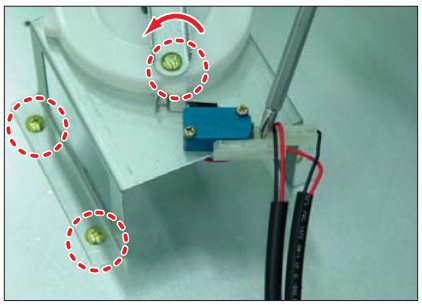
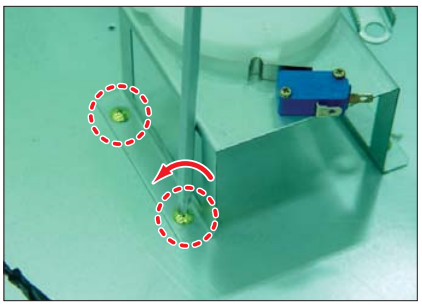
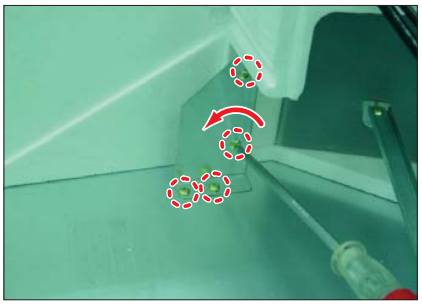
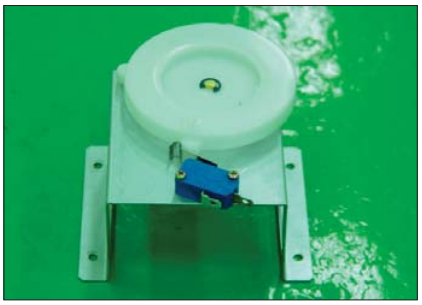
■ Product Disassembly (while still being installed)

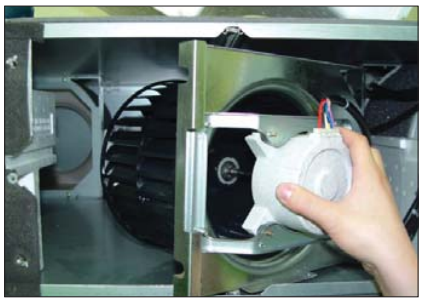
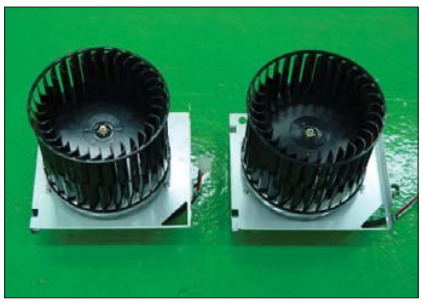
– All the procedure has to be verified because the cover should not open when the unit is installed.

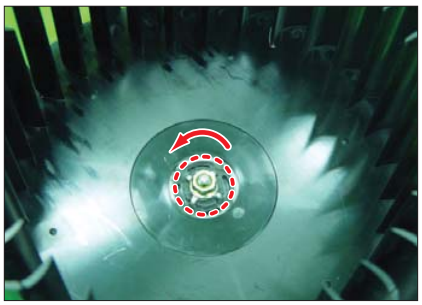
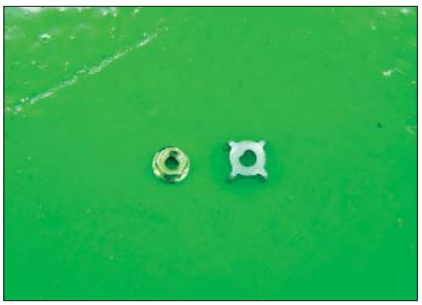
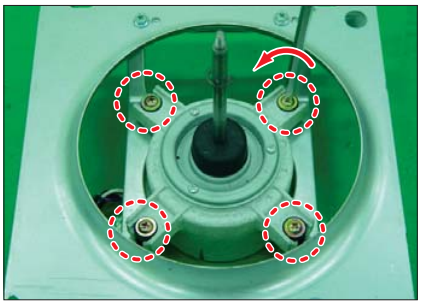
No	Parts	Procedure	Remark
1	ERV (Energy Recovery Ventilator)	1) Stop the air conditioner operation and shut off the main power. 2) Remove the unit from ceiling suspension. (Disassembly is not required when Fan, Motor, Element, Filter replacement or cleaning.)	
2	Cover Element	1) Remove the 2 bolts of the Cover Element. (Use +Screw Driver.)	
		2) Find the Element and 2 Dust Filters.	
3	Ass'y Element Ass'y Filter	1) Detach Element and Filter from the unit. Make sure detach the Filter before the Element.	
		2) There are 2 Element within the product.	

No	Parts	Procedure	Remark
4	Guide Element	1) Separate the guides fixing Element. (Use +Screw Driver.) 1 Guide is located at each left and right end of the product. Each guide is attached to the product with 1 bolt.	 
5	Ass'y Fan Parts	1) Separate motor connectors. 2) Loosen the holder fixing the motor wire by twisting it slightly. 3) 2 Motors are placed within the product for supply air and exhaust air.	 

No	Parts	Procedure	Remark
6	Cushion Mid	1) As seen in the picture besides, pull out the EPS structure located at the center of exhaust air and supply air.	
		2) Pull out the EPS structure through the inspection hole.	
		3) Assemble the product by adjusting it with the direction, following the direction carved on the surface of Cushion Mid. Put the part written with "Down↓" downwards and put the part with "Motor→" towards the Motor when assembling the unit. ⚠ Make sure not to break down EPS structure.	  

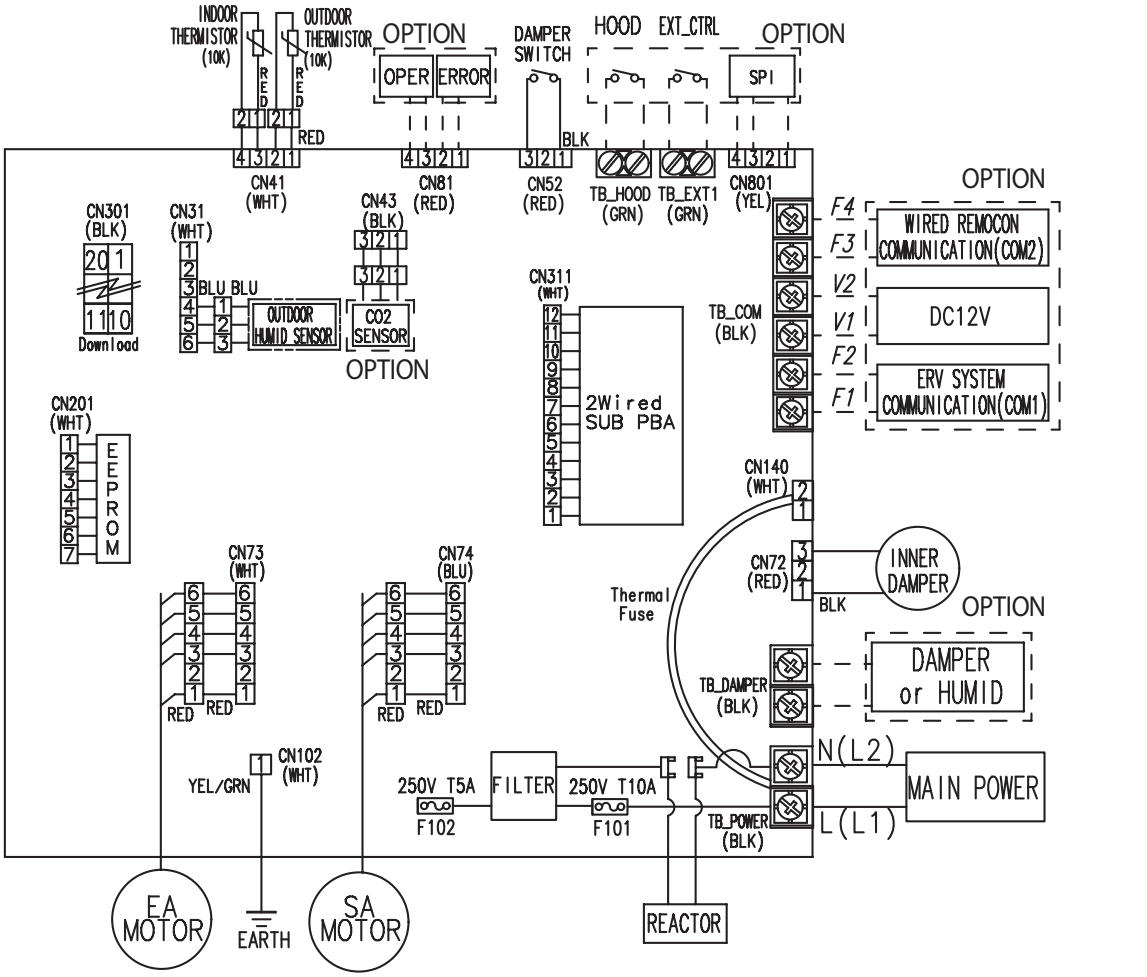
No	Parts	Procedure	Remark
7	Connector Damper Cam	1) Separate the Damper from the unit. (Use +Screw Driver.) 2) Separate the connectors by holding their bodies and pulling them out.	
		3) Unscrew bolts attached to Bracket and Cam. (Use +Screw Driver.)	
			
			
			

No	Parts	Procedure	Remark
8	Ass'y Fan Parts	⚠ Ensure to separate the Damper before the Fan. 1) Rotate bolts fixing the Bracket 10 turns. Input and outlet of the products have 2 bolts each. (Use +Screw Driver.) ⚠ The bolts are not required to be removed.	 
9	Ass'y Bracket Motor	1) Detach the whole Ass'y Blower Motor (which is made up of Fan, Motor, Bracket Motor, and Cover Bell Mouse) through the inspection hole. 2) 2 Motors are placed within the unit for supply air and exhaust air.	 

No	Parts	Procedure	Remark
10	Blower Motor-Fan	1) Unscrew the nuts fixing the Fan by rotating them left. (Use Monkey Spanner.)	
			
		2) Unscrew the bolts fixing otor to detach if from the Motor Bracket. It has 4 bolts. (Use +Screw Driver.) ⚠ Do not touch the Fan. Its sharp edge may cause injury.	

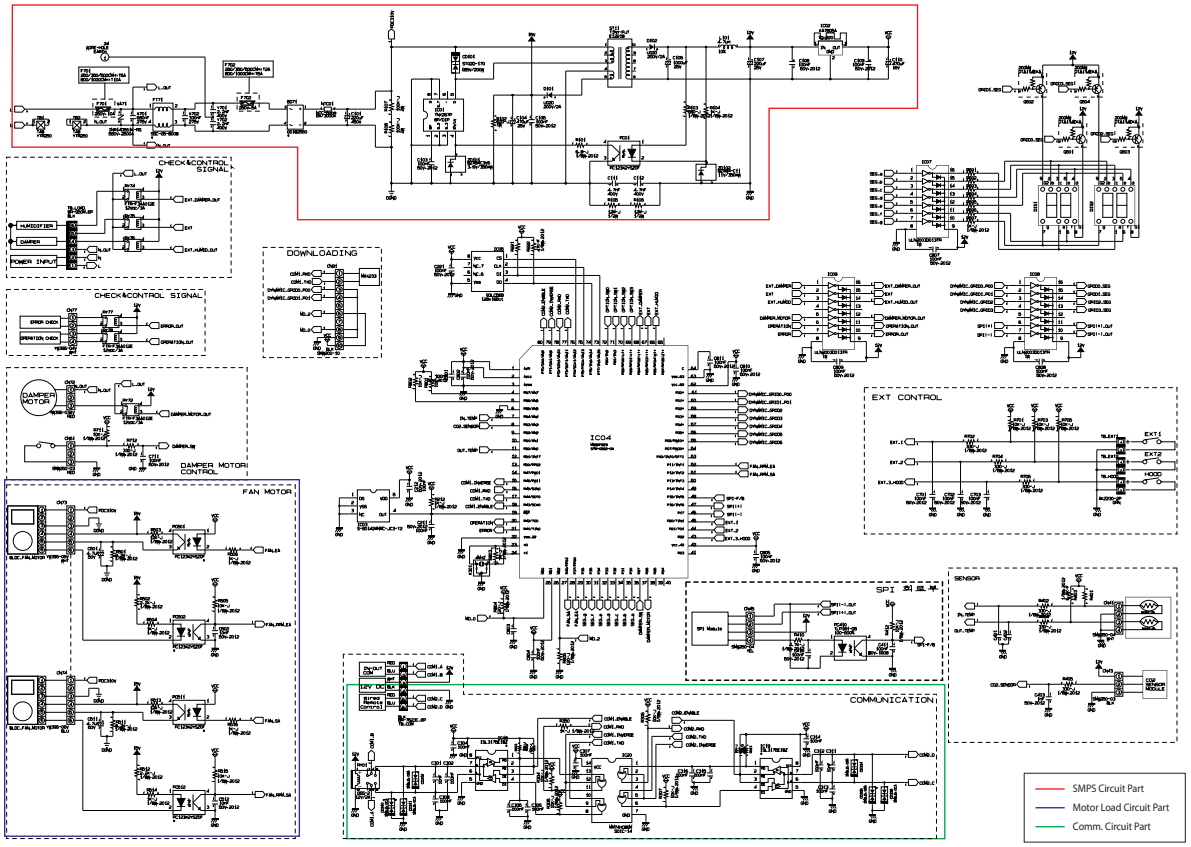
5. Wiring Diagram

■ AN026JSKLKN/AN035JSKLKN/AN050JSKLKN/AN080JSKLKN/AN100JSKLKN

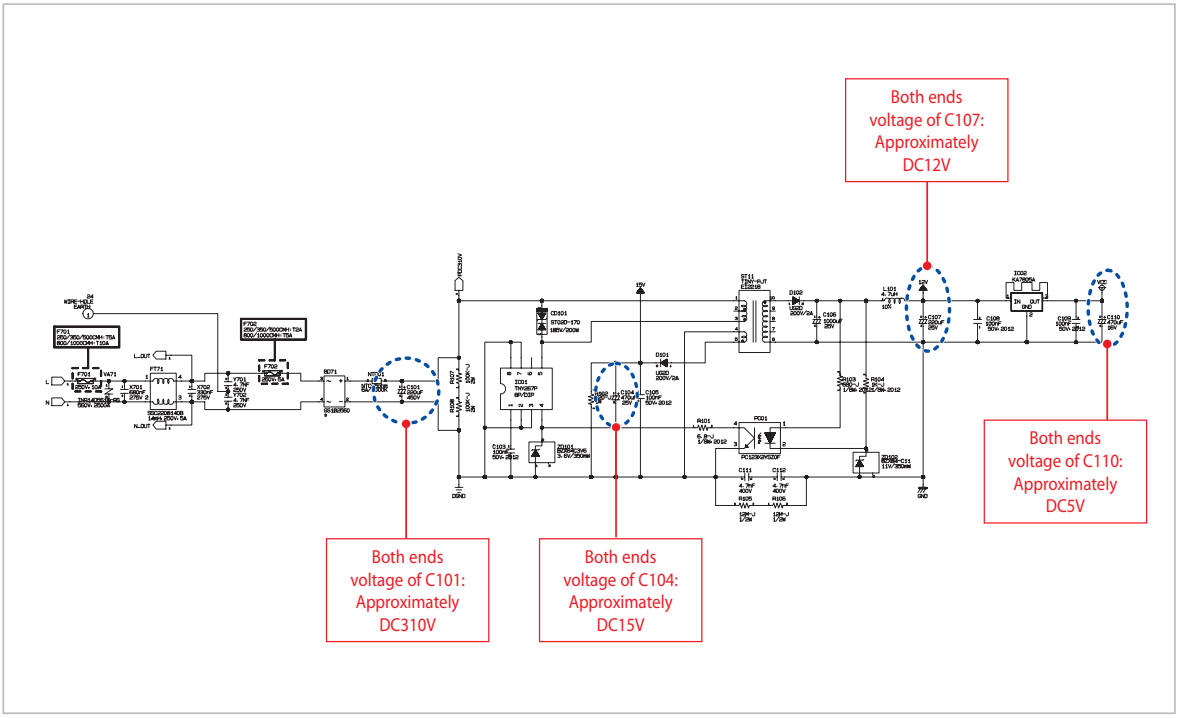


6. Circuit Descriptions

6-1 PCB Circuit Descriptions



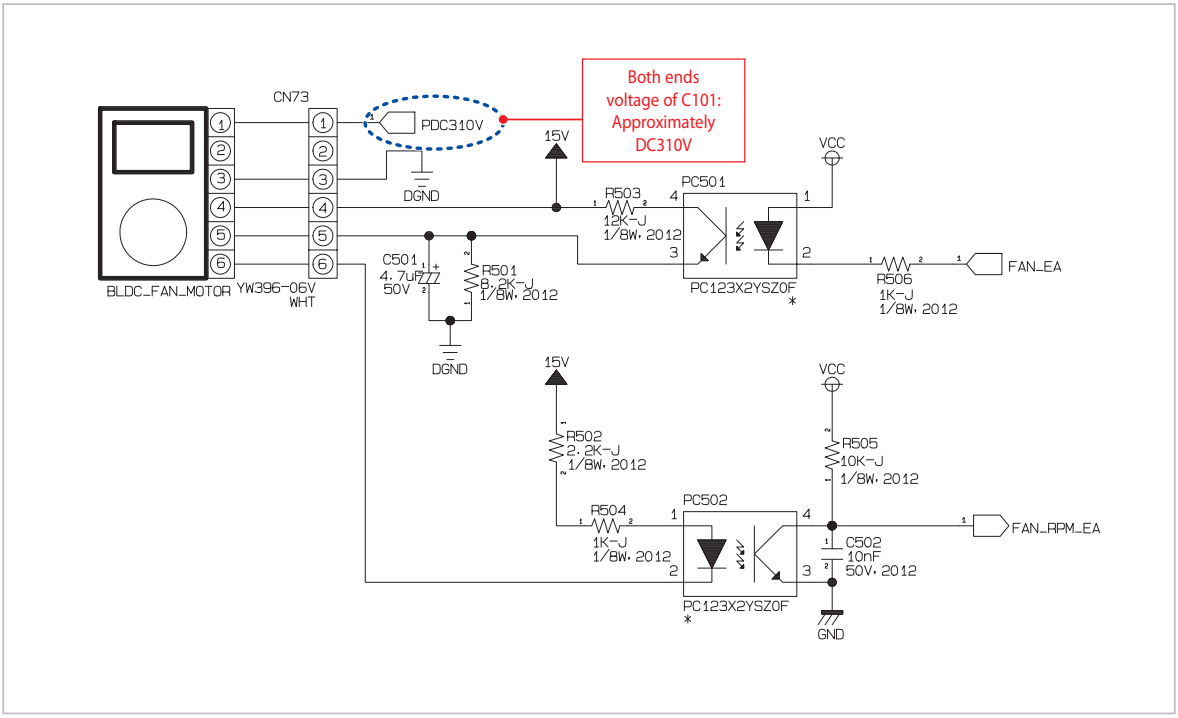
1. SMPS Part



■ SMPS(Switching Mode Power Supply) Part Description

1. BRIDGE DIODE (BD71) provides full wave reification from AC input. Then smooth it with Electrolytic Condenser(C101). Smooth voltage is similar to the results of AC input x1.414. (Ex: When AC220V is supplied, 220x1.414 = about DC310V)
2. The main power supply of ventilator is DC310V as it utilizes BLDC MOTOR.
3. PWMIC (IC01) switches smooth DC voltage, which is, in turn, induced to secondary side, so as to generate DC15V (C104) and DC12V(C107).
4. The voltage of secondary side is decided by TURN numbers of TRANS winding. DC 15V is utilized only for CONTROL power source of BLDC MOTOR while DC12V is used for power source of CO_2 sensor.
5. When BLDC MOTOR faulty takes place, DC 15V or DC 12V might not be generated.
6. SWITCHING DIODE of secondary side should not utilize usual rectification DIODE because SWITCHING speed of SMPS reaches 130kHz. High speed SWITCHING DIODE is required.
7. SMPS stops operation if SHORT occurs post voltage of DC12V because of FEEDBACK from DC12V.

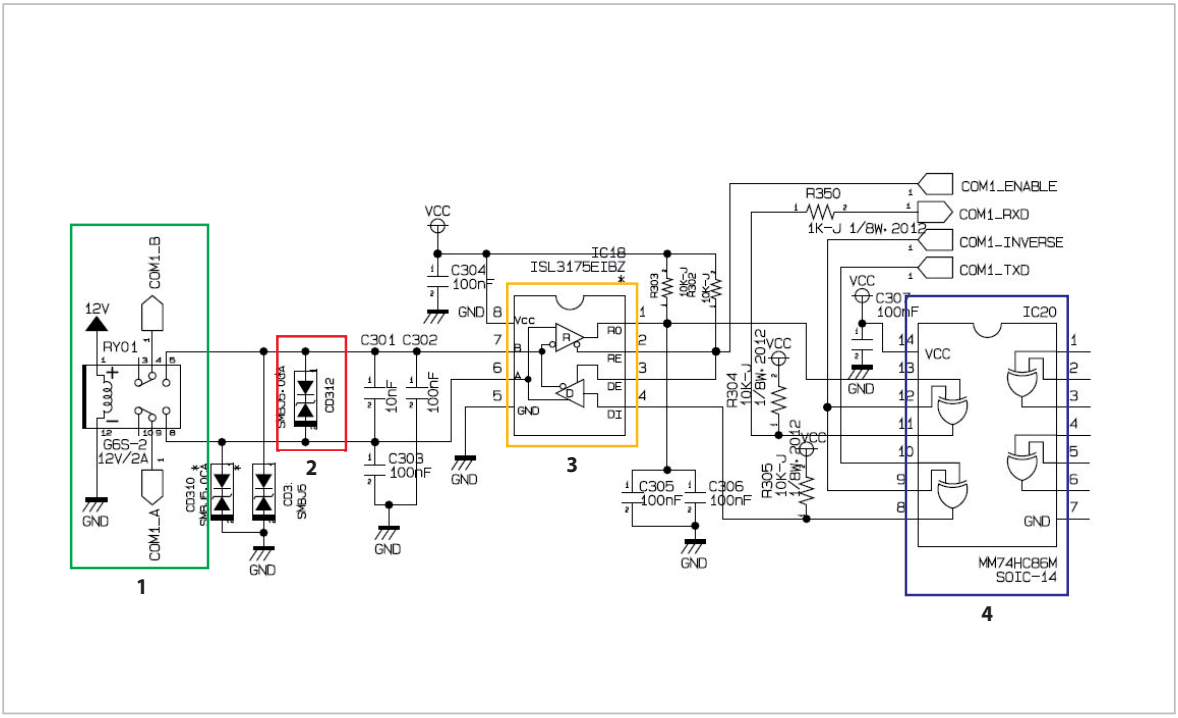
2. Motor Load Part



■ Motor Load(BLDC : BRUSHLESS MOTOR) Part Description

1. Smooth DC310V of electrolytic condenser (C101) is utilized for operation power source.
2. DC15V (C104) of secondary side of circulation is used for CONTROL voltage of MOTOR. BLDC CONTROL voltage must be lower than MAX DC18V.
3. CONTROL voltage is distributed through No.5 PIN of CN73 and is lower than MAX DC7V. MOTOR RPM is determined by DC0V~DC6V voltage.
4. No. 6 PIN of CN73 is the RPM FEEDBACK POINT, which delivers MOTOR rotation to MICOM. If DC15V continues to be found when measuring DC15V and No.6 PIN, FAN MOTOR ERROR occurs because FEEDBACK is not conducted.
5. CONNECTOR of CN73 is dislocated when PCB power source is authorized, DC310V voltage may flow into CONTROL IC within BLDC in a moment, damaging CONTROL IC of BLDC. It may cause SHORT of DC15V or DC310V.
6. If SHORT of DC15V or DC310V takes place, 2A FUSE (F702) opens and DC15V rectification DIODE may be damaged, which stops operation of SMPS.

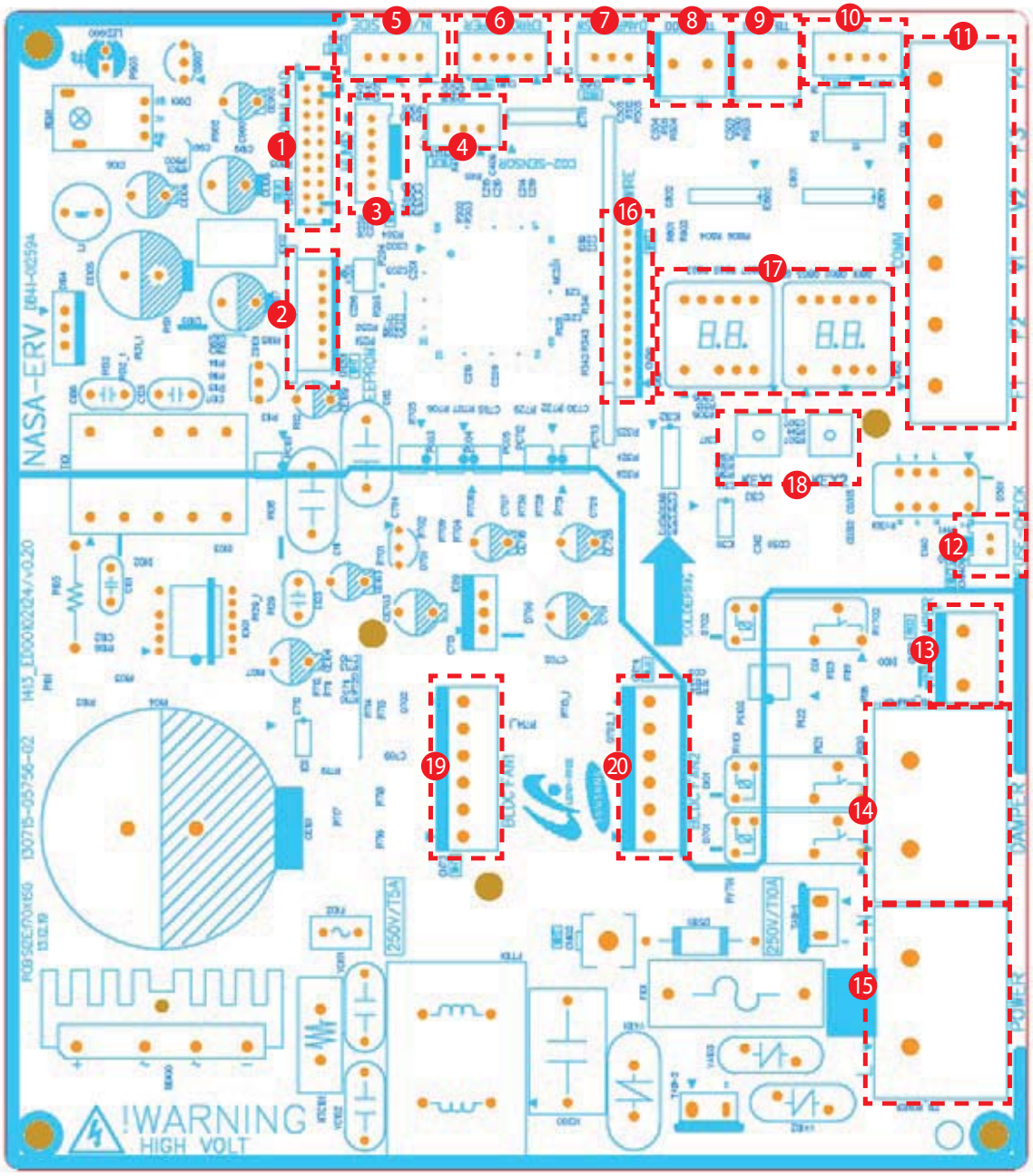
3. Communication (485 Communication) Part

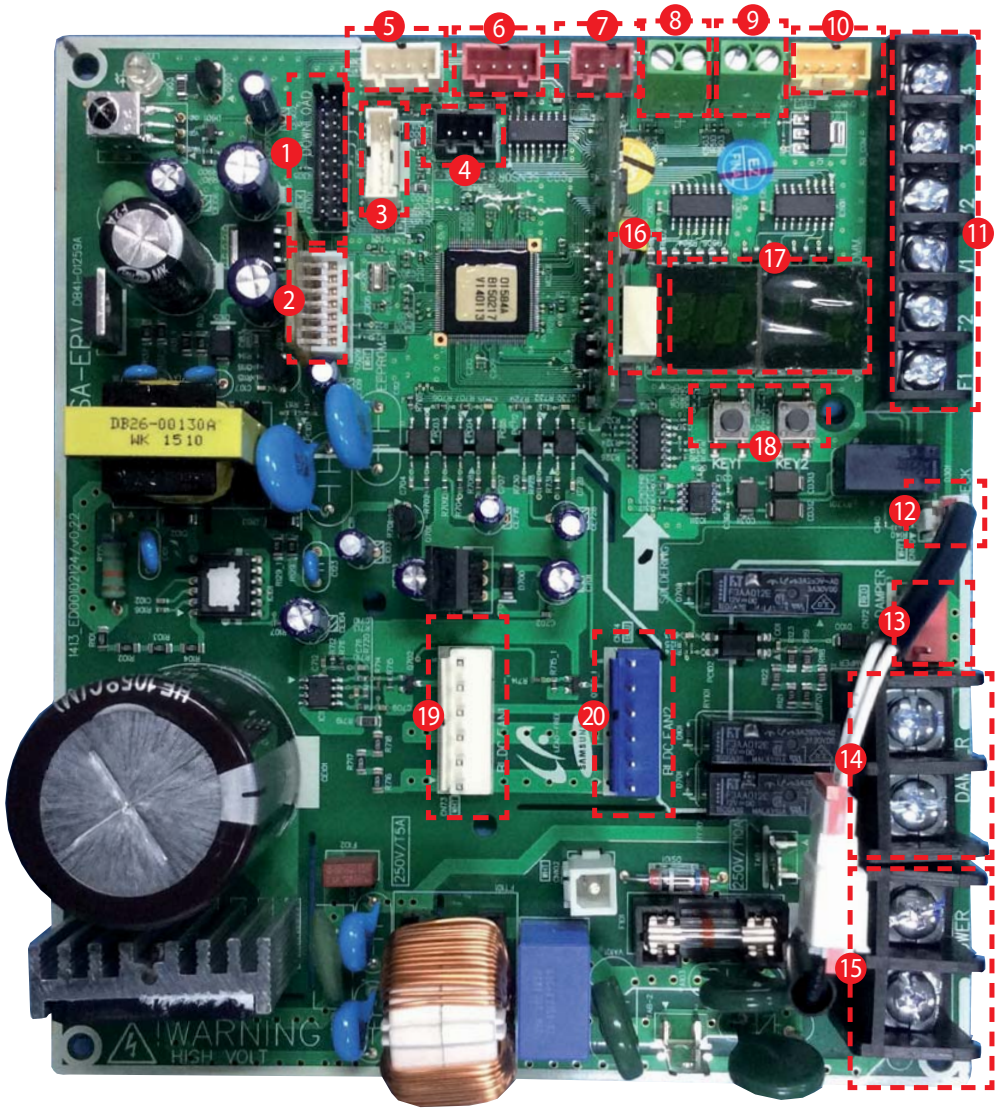


■ Communication (485 Communication) Part Description

1. **Faulty Connection Prevention RELAY**: When AC220-240V, 50Hz power is supplied to power source link, 12V voltage is provided to RELAY, so as to connect communication link. (Protect circulation in case of fault power source link or communication link.
2. **SNUBBER Circulation:** NOISE of over 5V is eliminated through SAC5.0 DIODE.
3. **485 IC (Line Driver/Reeceiver)**
   - HIGH / LOW is determined through voltage gap between the two electrodes of A and B.
     : A-B>200mV : HIGH, B-A>200mV : LOW
   - DATA is received and prepared with "R" PORT. When sending the DATA, HIGH is input at ENABLE.
4. **EXCLUSIVE GATE**
   Non-polar communication realization element to change signal LEVEL with utilizing INVERSE when connections is switched.

7. PCB Diagram



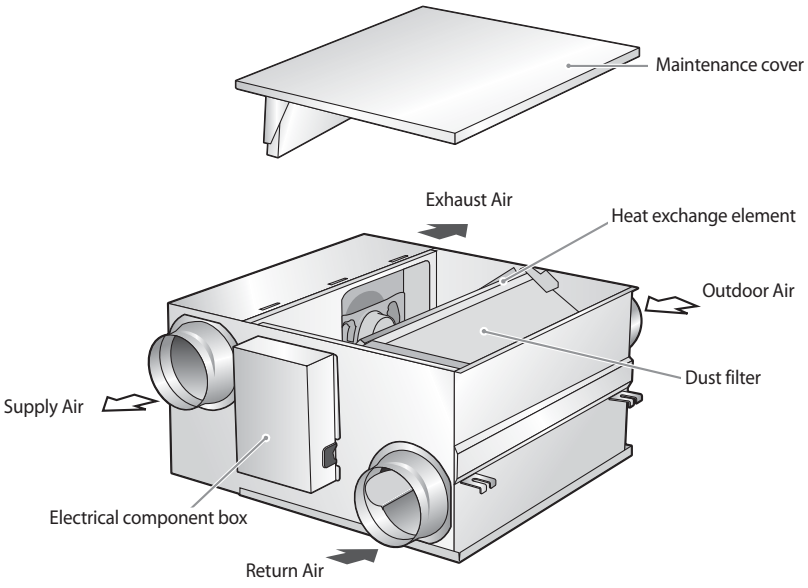


No.	Part name	Description	Part No.
①	Download	Program downloader connector	CN301(BLK)
②	EEPROM SUB PBA	-	CN201(WHT)
③	Humidity sensor	Outdoor humidity sensor connector	CN31(WHT)
④	CO_2 sensor	CO_2 (Carbon dioxide) sensor connector	CN43(BLK)
⑤	Temperature sensor	Indoor and outdoor temperature sensor connector	CN41(WHT)
⑥	Operation monitoring output	Outputs operation status (Error/Operation ON)	CN81(RED)
⑦	Internal damper switch	Inputs damper switch contact signal	CN52(RED)
⑧	External contact control part (HOOD)	Turn on/off the HOOD mode via external contact	TB_HOOD
⑨	External contact control part	Turn on/off the via external contact	TB_EXT1
⑩	Virus Doctor	Virus Doctor kit connector	CN801(YEL)
⑪	Communication connection part	F1, F2(Communication between ventilation systems, communicate with interface module) V1, V2(Power supply connector for interface module) F3, F4(Wired remote controller communication)	TB_COMM(BLK)
⑫	Thermal Fuse status input connector	Inputs status of Thermal Fuse within the power terminal block	CN140(WHT)
⑬	Internal damper power supply	Damper motor control part for switching ventilation mode	CN72(RED)
⑭	External damper / Humidity power supply	External damper and Humidity power supply connector	TB_DAMPER(BLK)
⑮	Power supply input	220 V/ 60 Hz	TB_POWER(BLK)
⑯	2 wire communication (wired remote controller) SUB PBA	-	CN311(WHT)
⑰	Display part	Display part	-
⑱	KEY input part	KEY input part to execute trial operation, reset or view mode	-
⑲	Exhaust motor	EA (Exhaust air) motor connector	CN73(WHT)
⑳	Supply motor	SA (Supplied air) motor connector	CN74(BLU)

8. Operating Instructions

8-1 Name of Each part

■ AN026JSKLKN



■ **Heat Exchange Element**

It refers the medium required to exchange temperature and humidity of exhaust air and supply air.

■ **Air Input and Outlet**

Air input is to supply air while outlet is for exhaust air.

■ **DAMPER**

It refers to separation shed to switch from heat exchange mode to Usual Ventilation mode or vice versa.

■ **Dust Filter**

Dust filter protects heat exchange element and filter supplied air.

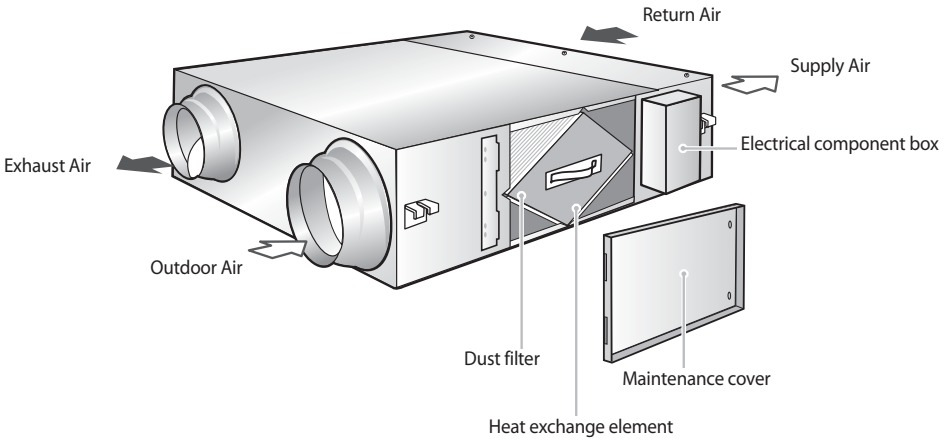
■ **Electric Component Box**

It is made up of circulation of the unit.

■ **Duct Connection Flange**

It refers to the pipe connected to the duct for supply air, outdoor air, indoor air and exhaust air.

■ AN035JSKLKN/AN050JSKLKN/AN080JSKLKN/AN100JSKLKN



■ **Heat Exchange Element**

It refers the medium required to exchange temperature and humidity of exhaust air and supply air.

■ **Air Input and Outlet**

Air input is to supply air while outlet is for exhaust air.

■ **DAMPER**

It refers to separation shed to switch from heat exchange mode to Usual Ventilation mode or vice versa.

■ **Dust Filter**

Dust filter protects heat exchange element and filter supplied air.

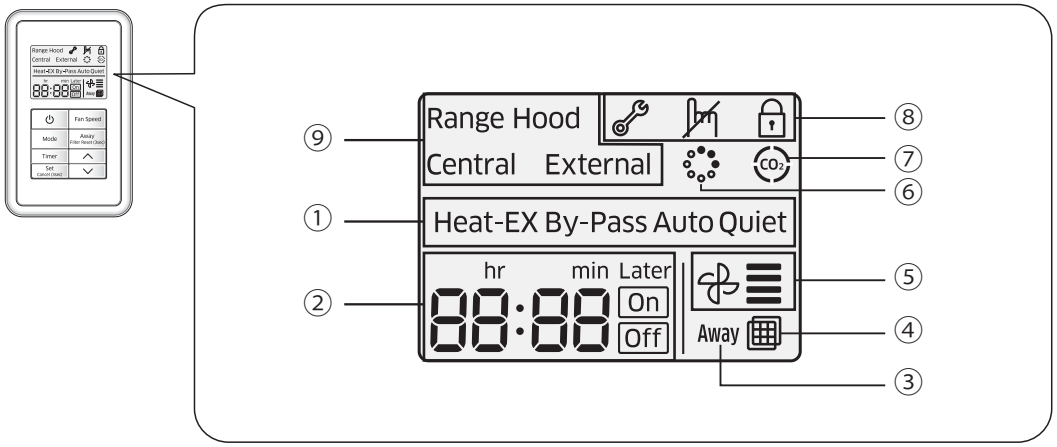
■ **Electric Component Box**

It is made up of circulation of the unit.

■ **Duct Connection Flange**

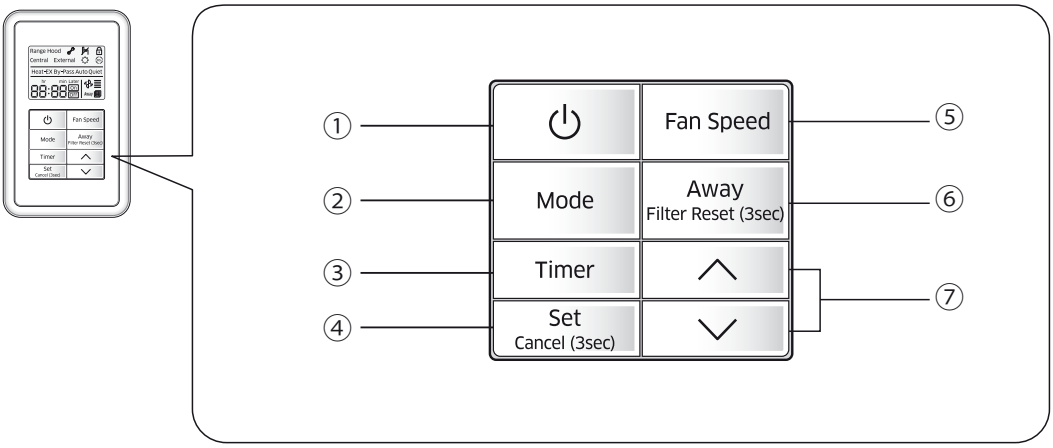
It refers to the pipe connected to the duct for supply air, outdoor air, indoor air and exhaust air.

■ Display



Classification	Indication	Function
①	Heat-EX By-Pass Auto Quiet	Displays operation mode
②	hr min Later 88:88 On Off	Displays set time
③	Away	Displays Away mode
④		Displays filter cleaning alarm
⑤		Displays fan speed
⑥		Displays SPI (Optional)
⑦		Displays CO_2 sensor (Optional)
⑧		Displays inspection, invalid, and lock
⑨	Range Hood Central External	Displays range hood, central control and external interlock

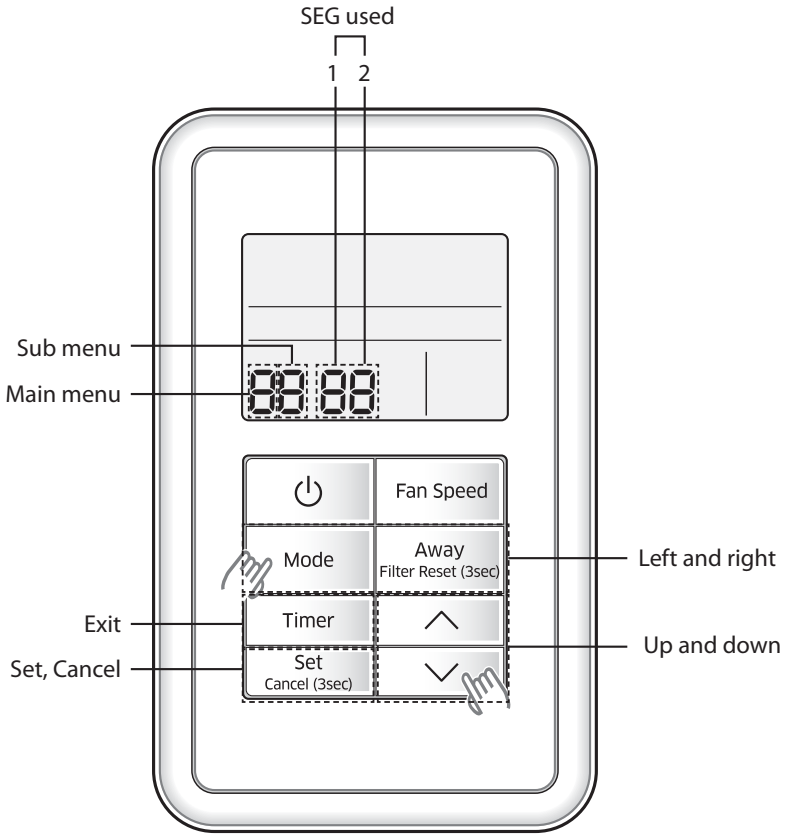
■ Buttons



Classification	Button	Function	
①	⏻	Power button	Turns on or off the wired remote controller.
②	Mode	Mode button	Selects the mode you want to operate
③	Timer	Schedule button	Sets the timer function.
④	Set cancel (3sec)	Set/Cancel button	Completes the timer function/ Cancels the timer function (Press the button for more than 3 seconds.)
⑤	Fan Speed	Fan speed button	Adjusts the fan speed.
⑥	Away Filter Reset (3sec)	Away/Filter reset button	Selects the Away mode/ Turns off the filter cleaning alarm indicator (Press the button for more than 3 seconds.)
⑦	∧ , ∨	Time control button	Sets the On/Off timer.

8-2 Using installation/service mode of ERV wired remote controller

■ Additional functions of ERV wired remote controller



1. If you want to use the various additional functions for the ERV wired remote controller, press the Mode and ∧ buttons at the same time for more than three seconds.
   - ▶ You will enter the additional function settings, and the main menu is displayed.

2. Refer to the list of additional functions for the ERV wired remote controller on the next page, and select the desired menu.
   - ▶ Using the ∨/∧ buttons, select a main menu number and press the **Away** button to enter the sub-menu setting screen.
   - ▶ Using the ∨/∧ buttons, select a sub-menu number and press the **Away** button to enter data setting screen.
   - ▶ When you enter the setting stage, the current setting is displayed.
   - ▶ Refer to the chart for data settings.
   - ▶ Using the ∨/∧ buttons, select the settings and press the **Away** button to move to the next setting.
   - ▶ Press the **Set** button to save the settings and exit to the sub-menu setting screen.
   - ▶ Press the **Timer** button to exit to normal mode.

Note

- While setting the data, press the **Mode** or **Away** button to move the digit of SEG.
- If you press the **Timer** button while your are setting data, you can exit to the sub-menu setting stage without saving your changes.

■ Installation/service setting mode

Note

- If communication initialization is needed after the setting, the system resets automatically and communication is initialized.

Main menu	Sub menu	Function		Factory setting	Page number	Range	Remarks
0	1	Reset	Reset to default value of ERV wired remote controller option setting	0	1	0-Disuse, 1-Reset	
	2		Reset to factory setting of ERV wired remote controller	0	1	0-Disuse, 1-Reset	
	3		Power Master Reset 3)*	0	1	0-Disuse, 1-Reset	
	4		Addressing Reset	0	1	0-Disuse, 1-Reset	
1	1	Information on ERV wired remote controller	Checking the number of connected indoor units	0	1	0~16 EA	
	2		Checking the number of connected ERVs	0	1	0~16 EA	
	3		Checking the Micom code of ERV wired remote controller	none	3	Micom code	
	4		Checking the program version information of ERV wired remote controller	none	3	Modified date	
2	1	Setting address/ option 2)*	Target	ERV View Master	3	Address of registerd devices / hexadecimal 5)*	
	2		Setting/checking main address	Main address of target	1	Main address (00H~4FH/ hexadecimal)	
	3		Setting/checking RMC address	RMC address of target	1	Group address (00H~FEH/ hexadecimal) 4*	
	4		Setting/checking product option	Basic option of target	10 1)*	Option code of indoor units or ERVs	
	5		Setting/Checking installation option 1	Installation option of target	10 1)*	Refer to the installation manual of connected indoor units or ERVs	
	6		Setting/Checking installation option 2	Installation(2) option of target	10 1)*	Refer to the installation manual of connected indoor units or ERVs	

Using installation/service mode of ERV wired remote controller(cont.)

Main menu	Sub menu	Function		Factory setting	Page number	Range	Remarks
3	1	Setting/ checking View Master	Setting/checking indoor unit View Master	Indoor unit View Master	3	Address of registered devices / hexadecimal 5)*	None
	2		Setting/checking ERV View Master	ERV View Master	3	Address of registered devices / hexadecimal 5)*	
4	1	Setting/ checking optional functions of ERV wired remote controller	ERV wired remote controller Master/Slave	0	1	0-Master, 1-Slave	
	2		Use of external interlock	0	1	0-Disuse, 1-Use	
5	1	Setting/ checking ERV	Exhaust RPM	none	2	0~9999	
	2		Intake RPM	none	2	0~9999	
	3		Indoor temperature	none	1	0~99	
	4		Outdoor temperature	none	1	0~99	
	5		Indoor humidity	none	1	0~99	
	4		Outdoor himidity	none	1	0~99	
	5		CO_2 sensor	none	2	0~9999	
	6		FAN Step 6)*	none	1	0~31	

1) * The total option codes are 24 digits. You can set six digits at a time and it is distinguished by page number.
Press the Timer button to go to the next page.

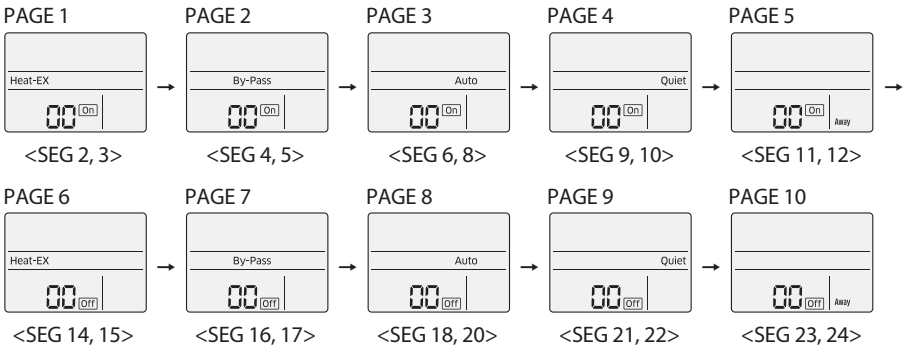
Caution

- Options can be set from SEG1 to SEG24
  - SEG1, SEG7, SEG13, and SEG19 are page option so they cannot be set nor be displayed
  - SEG2 is the option type which cannot be set
  - When SEG2~SEG6 and SEG8~SEG12 are set, "On" is displayed and when SEG14~18 and SEG20~24 are set, "Off" is displayed.

SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
0	X	X	X	X	X	1	X	X	X	X	X
SEG13	SEG14	SEG15	SEG16	SEG17	SEG18	SEG19	SEG20	SEG21	SEG22	SEG23	SEG24
2	X	X	X	X	X	3	X	X	X	X	X

On (SEG2~SEG6, SEG8~SEG12)	Off (SEG14~18, SEG20~24)
	

- The current SEG displayed can be distinguished by operation mode, On, and Off icon.
  SEG2~SEG6, SEG8~SEG12
  – On(Heat-EX → By Pass → Auto → Quiet → Away)
  SEG14~SEG18, SEG20~24
  – Off(Heat-EX → By Pass → Auto → Quiet → Away)



2) * When setting the address or option, you can set the target device with sub menu no.1.

3) * Power Master Reset is a setting needed to supply optimized power to ERV wired remote controller when multiple indoor units or ERVs are connected to ERV wired remote controller in a group.

4) * RMC(1) : 0~F / RMC(2) : 0~F (hexadecimal)
When RMC(1) is F, RMC(2) can be set up to E. (RMC(1) : Group channel, RMC(2) : Group address)

5) * Displaying address of ERVs (hexadecimal display) e.g. 30 00 0B

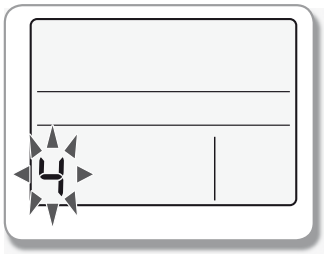
6) * Fan step setting is available only when one ERV is connected.

Note

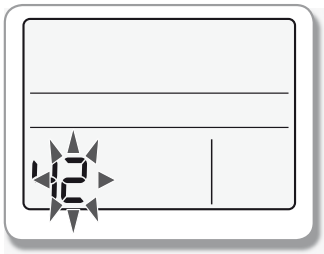
• Address is displayed in hexadecimal. Refer to the table below.

Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal
00	0	10	16	20	32	30	48	40	64
01	1	11	17	21	33	31	49	41	65
02	2	12	18	22	34	32	50	42	66
03	3	13	19	23	35	33	51	43	67
04	4	14	20	24	36	34	52	44	68
05	5	15	21	25	37	35	53	45	69
06	6	16	22	26	38	36	54	46	70
07	7	17	23	27	39	37	55	47	71
08	8	18	24	28	40	38	56	48	72
09	9	19	25	29	41	39	57	49	73
0A	10	1A	26	2A	42	3A	58	4A	74
0B	11	1B	27	2B	43	3B	59	4B	75
0C	12	1C	28	2C	44	3C	60	4C	76
0D	13	1D	29	2D	45	3D	61	4D	77
0E	14	1E	30	2E	46	3E	62	4E	78
0F	15	1F	31	2F	47	3F	63	4F	79

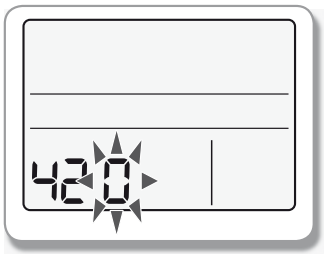
■ The example of setting ERV wired remote controller options



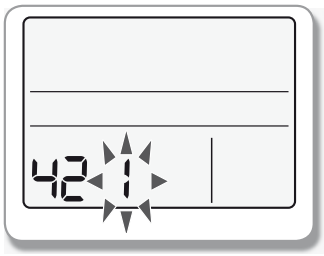
1. Press the Mode and ∨ buttons at the same time for more than 3 seconds.
   ▶ When main menu is displayed, press the ∧ or ∨ button to select no.5.



2. Press the Away button to select the number you will set on the sub menu.
   ▶ Press the ∧ or ∨ button to select no.1



3. Press the Away button to enter the data setting stage.
   ▶ When you enter the setting stage, the current setting is displayed .



4. Press the ∧ or ∨ button to select no.1
   ▶ The status of external interlock changes from "Disuse" to "Use" .

5. Press the Set button to complete the option settings.
   ▶ Save the setting value and exit to sub menu .

6. Press the Timer button to exit to normal mode.

9. Troubleshooting

9-1 Items to be checked first

1. Check the voltage. Power voltage must be within the range of AC187V~AC253V/60Hz.
2. Claims of the following table are not related to product disorder.

No.	Ventilator Operation	Explanation
1	Air volume is not controlled while sleeping mode is being operated.	Air volume is controlled automatically when sleep mode is selected.
2	The unit stops operation for a while when operation mode is changed.	While adjusting operation mode, MOTOR stops working. When mode change completes, MOTOR operation restarts.

9-2 When ventilator stops operation

Trouble	Cause	Solution	Remark
If the product is not turned on	Check electric power content and wire	Fix power supply	
	Check FUSE disconnection	Replace FUSE	A FUSE is provided in PBA
If the remote control is not working	Check remote control connection	Connect or replace connection wire of remote control	
If supply air fan or exhaust air fan are not working	Check fan motor	Check assembly or replace motor	
	Check whether outdoor temperature is below -15˚C	Wait until the outdoor temperature reaches -15˚C	Operation at cold places
	Check outdoor temperature sensor (SHORT/OPEN)	Replace sensor	

9-3 Errors and Solutions

■ Error codes appear on display of wired remote control and unit body as follows.

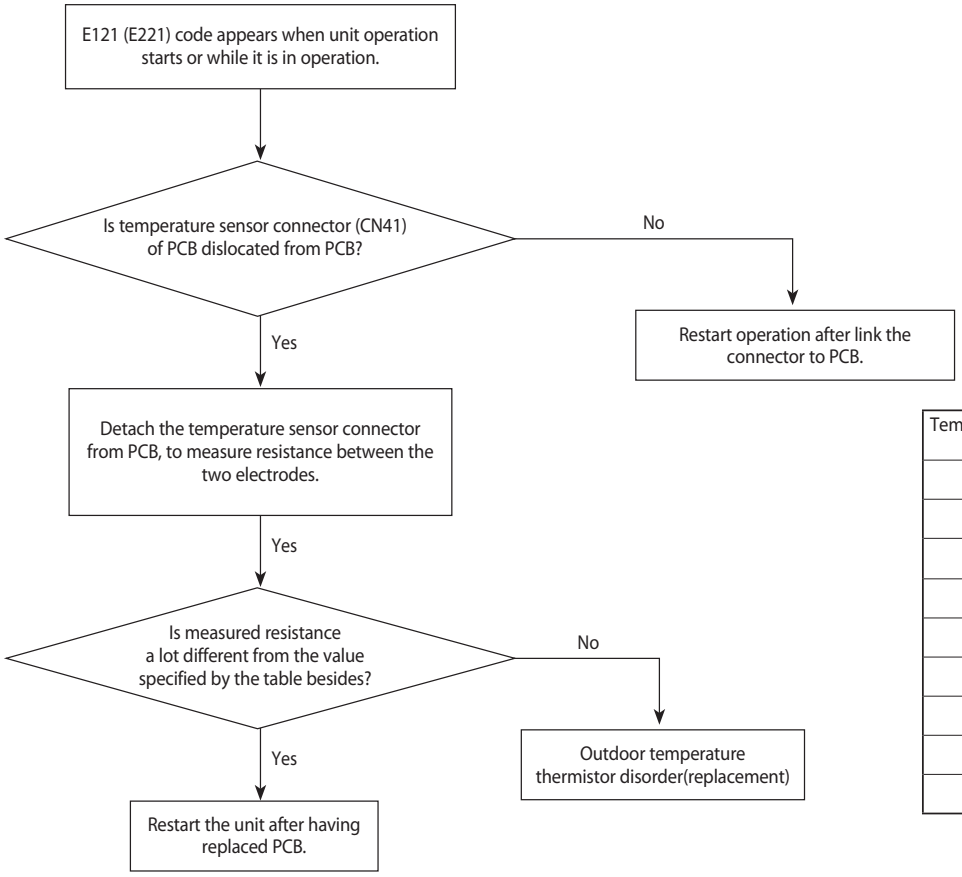
No	Error Mode	Error code
1	E 108	Address setting duplication error
2	E121	Indoor temperature sensor error(SHORT/OPEN)
3	E139	CO_2 sensor error(SHORT/OPEN)
4	E162	Indoor EEPROM H/W error
5	E163	Indoor option setting error
6	E198	Thermal fuse open error in power therminal block
7	E202	System down caused by communication error
8	E221	Outdoor temperature sensor error(SHORT/OPEN)
9	E490	Prohibition of operation under outside & indoor temperature 0 °
10	E561	Supply air(SA) fan motor error
11	E562	Exhaust air(EA) fan motor error
12	E654	Inside damper error

✳ 602~609 indicate errors due to ERV wired remote control. Refer to the ERV wired remote control installation manual.

9-4 Fault Diagnosis by Symptom

9-4-1 Temperature Sensor Error(CN41)

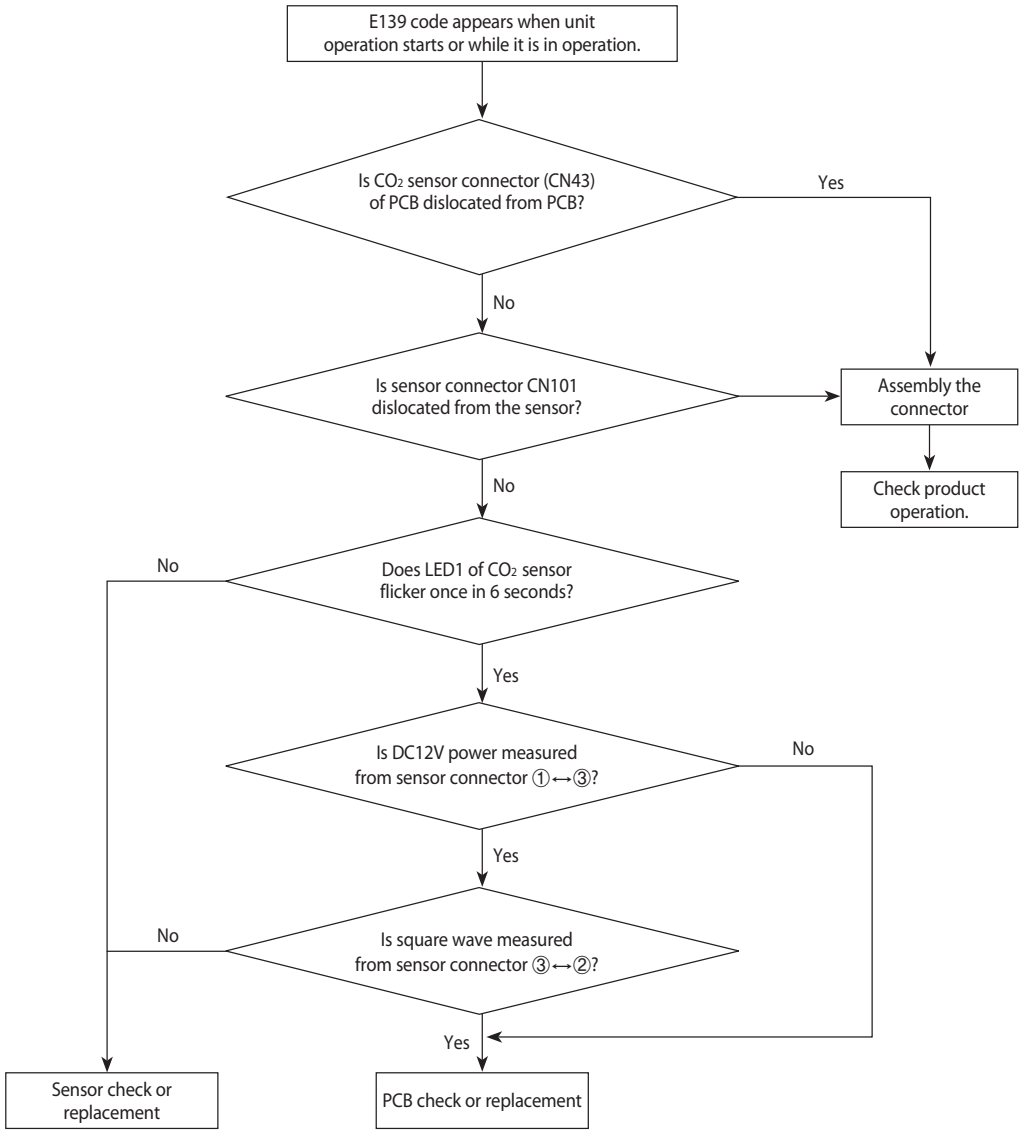
Error Mode	Indoor temperature sensor error (OPEN/SHORT)	Outdoor temperature sensor error (OPEN/SHORT)
Display	E121	E221
Check Method	Temperature sensor disconnection or dislocation	
Cause	Connection electrodes contact, sensor disconnection or electric leakage	
Sensor SPEC.	103 AT : 25˚C 10KΩ	



Temperature (˚C)	Resistance (kΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

9-4-2 CO_2 Sensor Error(CN43)

Error Mode	CO_2 sensor error (OPEN/SHORT)
Display	E 139
Check Method	When CO_2 input pulse maintains High status or Low status for longer than 2 minutes.
Cause	PCB check, CO_2 sensor check or replacement
Sensor SPEC.	Preheating time in case of power supply authorization (2 minutes), Authorized power supply DC12V, 400~2,000PPM

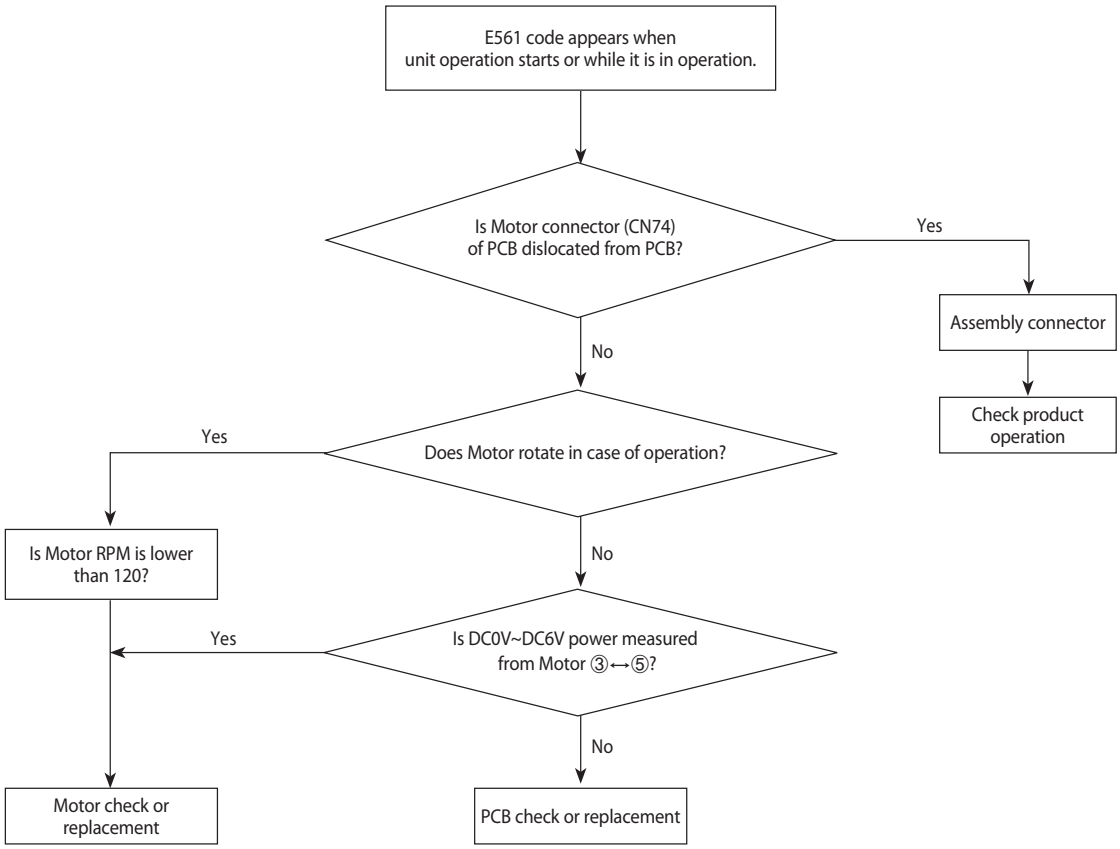


Remarks

- CO_2 sensor checks DATA once in six seconds. It waits for 5 seconds and conducts data check for one second.
- CO_2 sensor and LED 1 light up for 1 second when the sensor check DATA.
- CO_2 Sensor checks DATA ranges 400PPM~2,000PPM.
- The process requires 2 second of preheating, during which, DATA can changes.

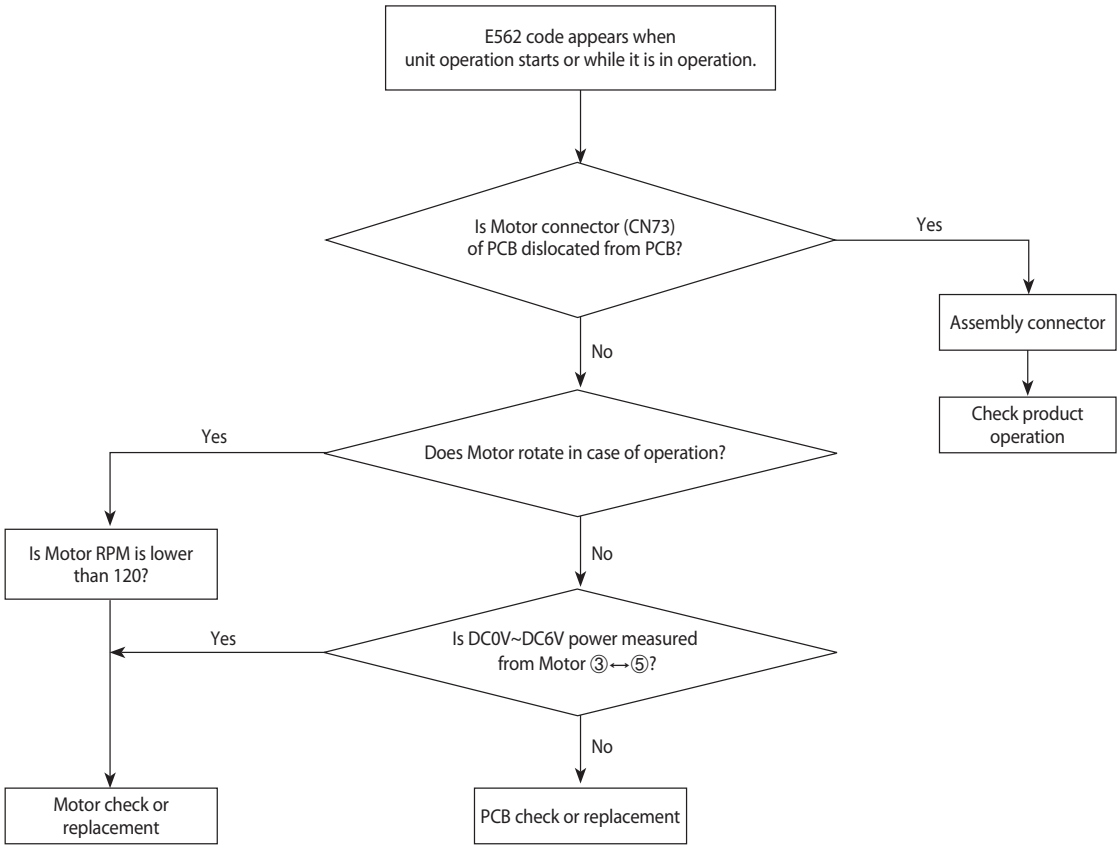
9-4-3 Supply Air Fan Error

Error Mode	Supply air fan error
Display	E561
Check Method	ERROR occurs, if Motor RPM is lower than 120 RPM for about 40 seconds.
Cause	PCB check, Motor check
Sensor SPEC.	Motor RPM outputs square wave.



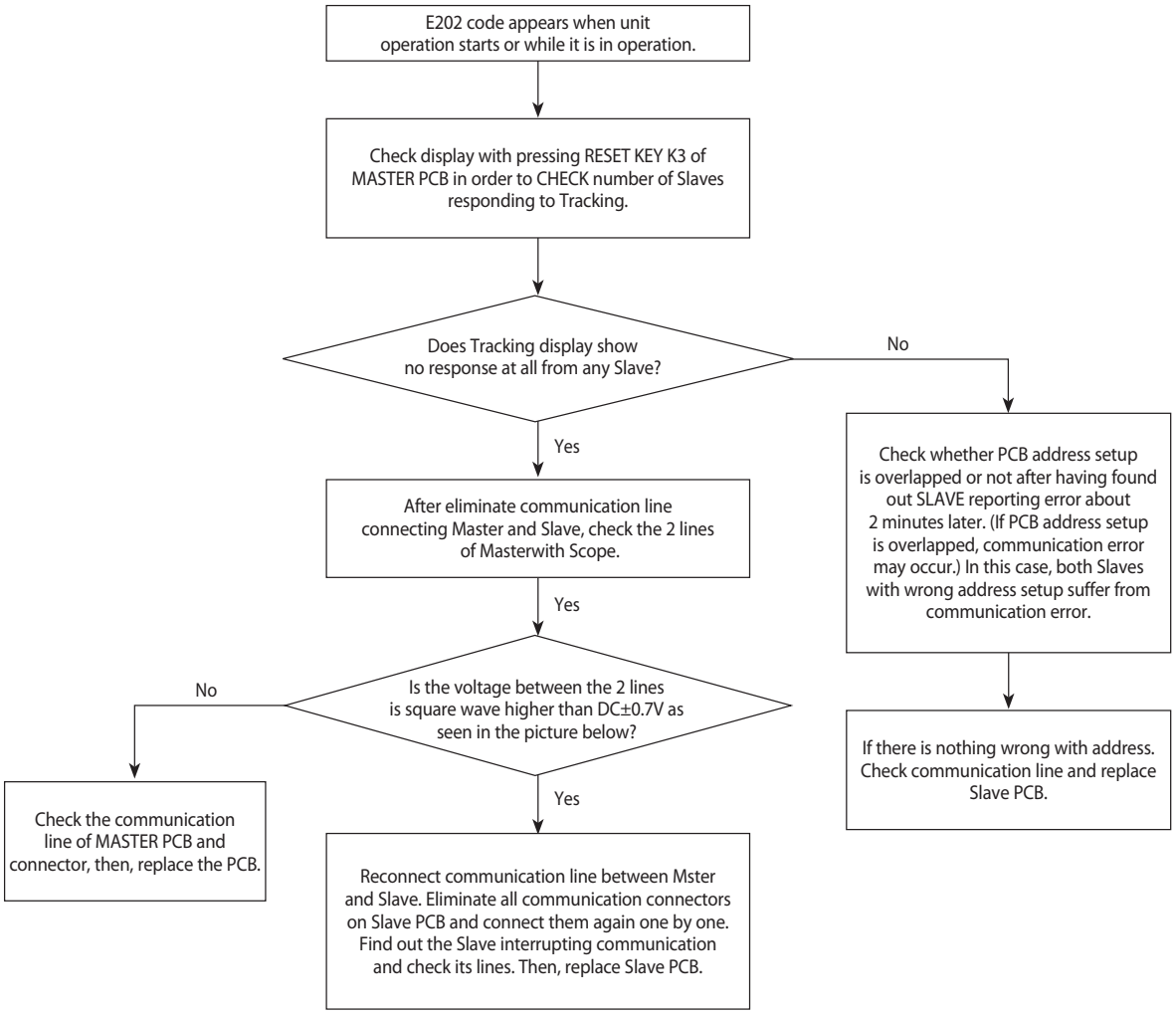
9-4-4 Exhaust Air Fan Error

Error Mode	Exhaust Air Fan error
Display	E562
Check Method	ERROR occurs, if motor RPM is lower than 120 RPM for about 40 seconds.
Cause	PCB check, Motor check
Sensor SPEC.	Motor RPM outputs square wave.



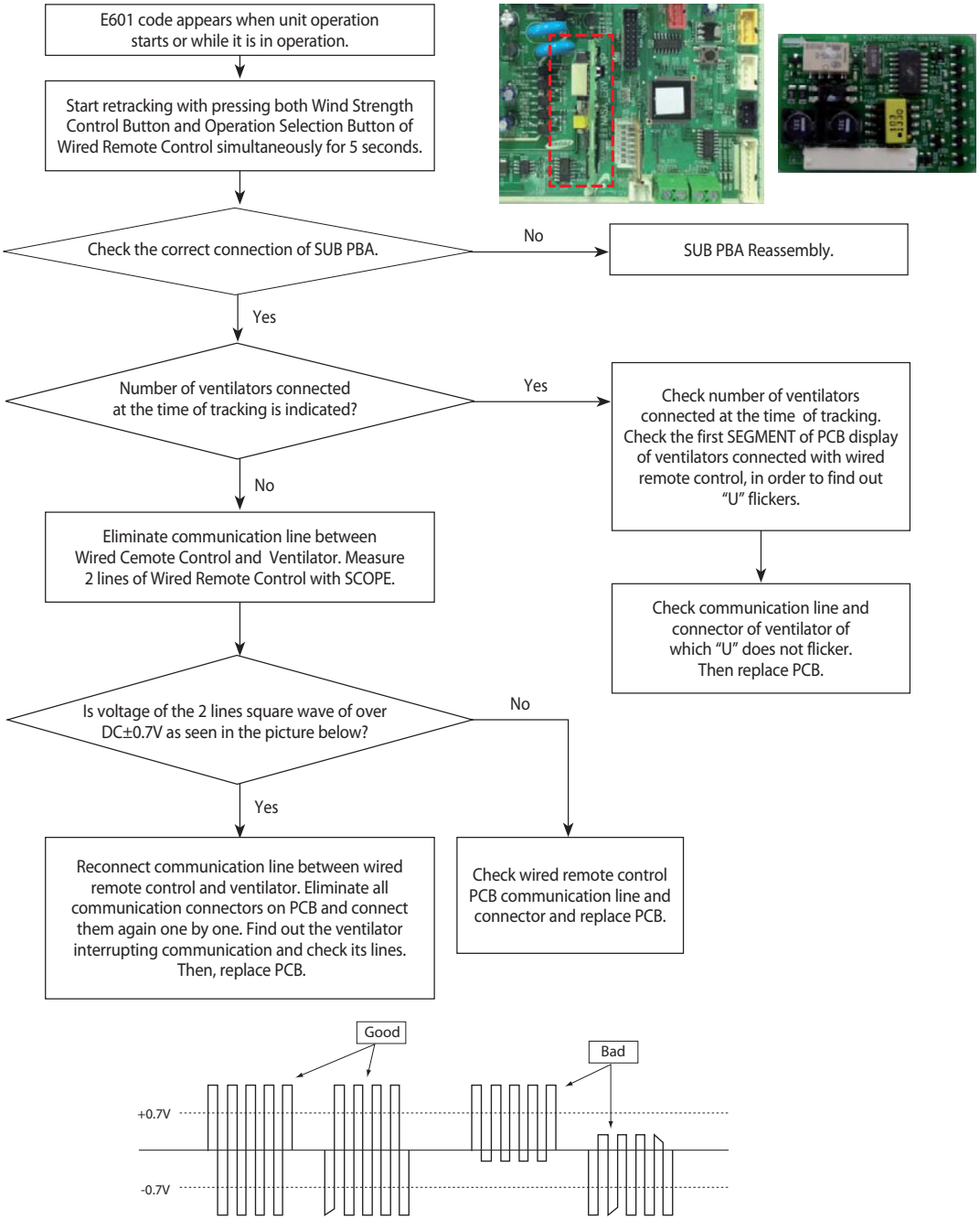
9-4-5 System Down Caused by Communication Error after Tracking

Error Mode	Communication error
Display	E202
Check Method	MASTER ↔ SLAVE Communication failure continues for 2 minutes after Tracking is completed.
Cause	OPTION setup, PCB check or replacement
Sensor SPEC.	Communication, F1, F2



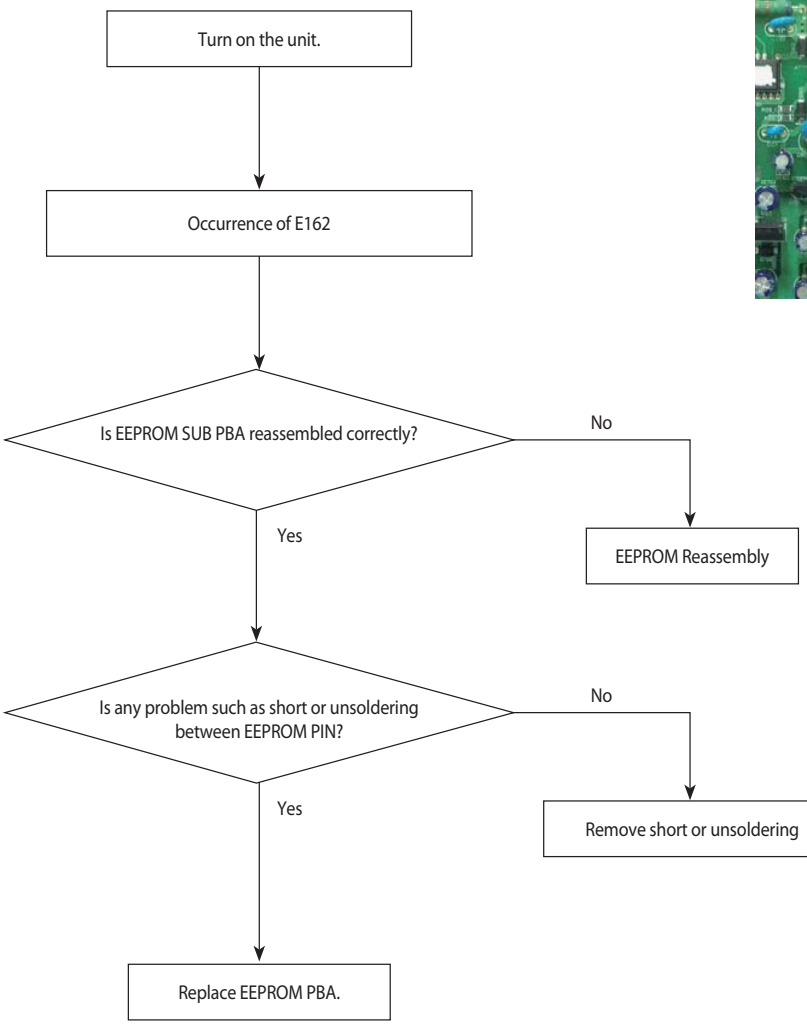
9-4-6 Wired Remote Control Communication Error

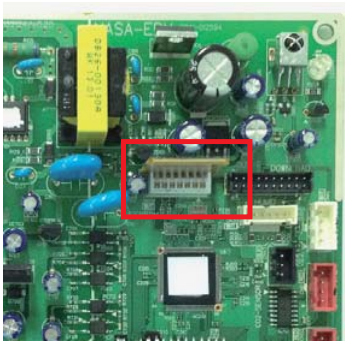
Error Mode	Communication error
Display	E601
Check Method	Communication between wired remote control and ventilator continues to fail for longer than two minutes.
Cause	OPTION setup, PCB check or replacement
Sensor SPEC.	Communication F3, F4

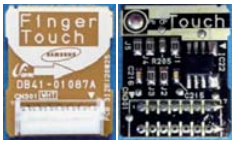


9-4-7 EEPROM Error

Error Mode	EEPROM Error
Display	E 162
Check Method	Communication Failure between EEPROM and Micom
Cause	Fault of EEPROM
Sensor SPEC.	



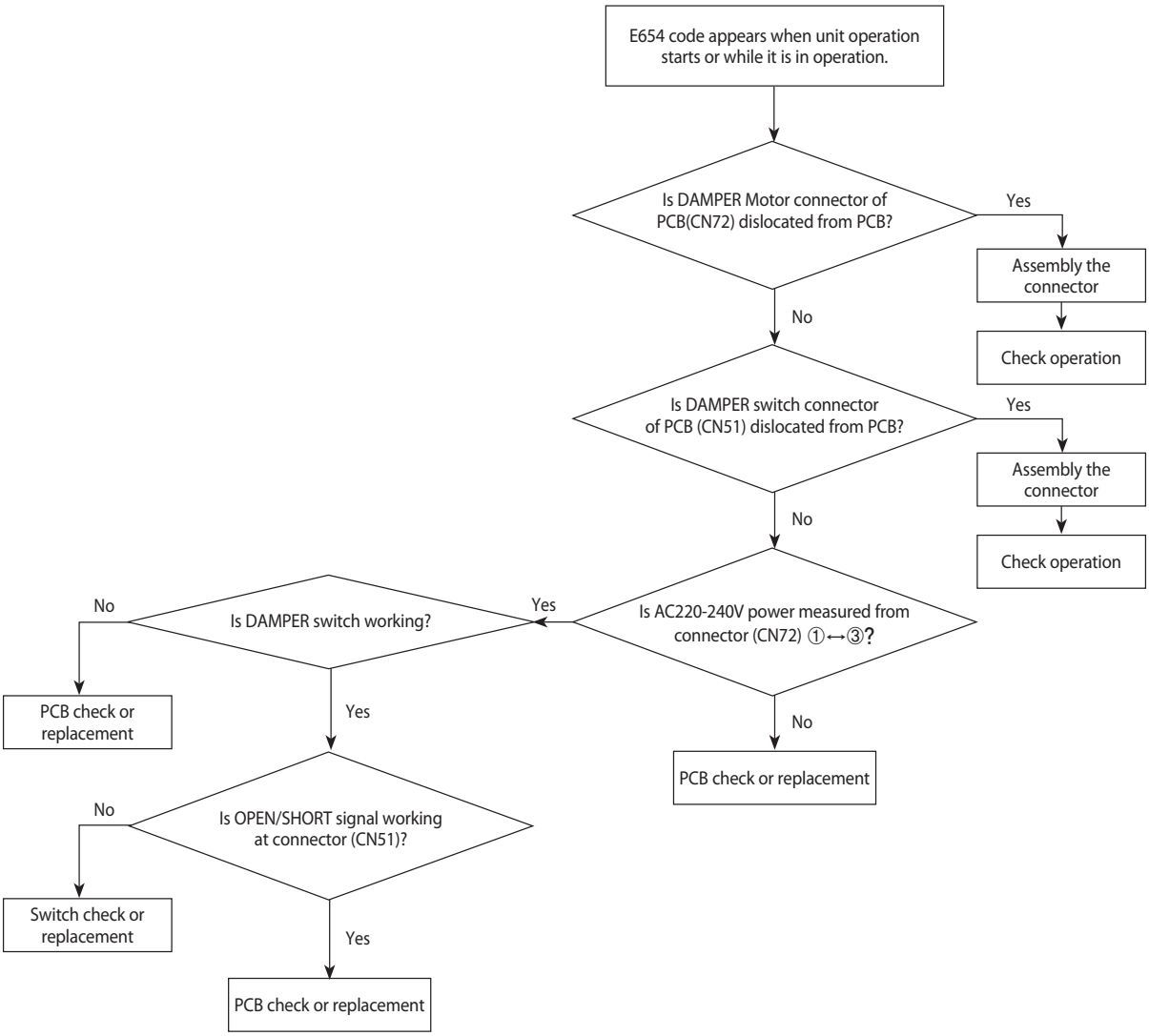




EEPROM PBA CODE
: DB93-12483A

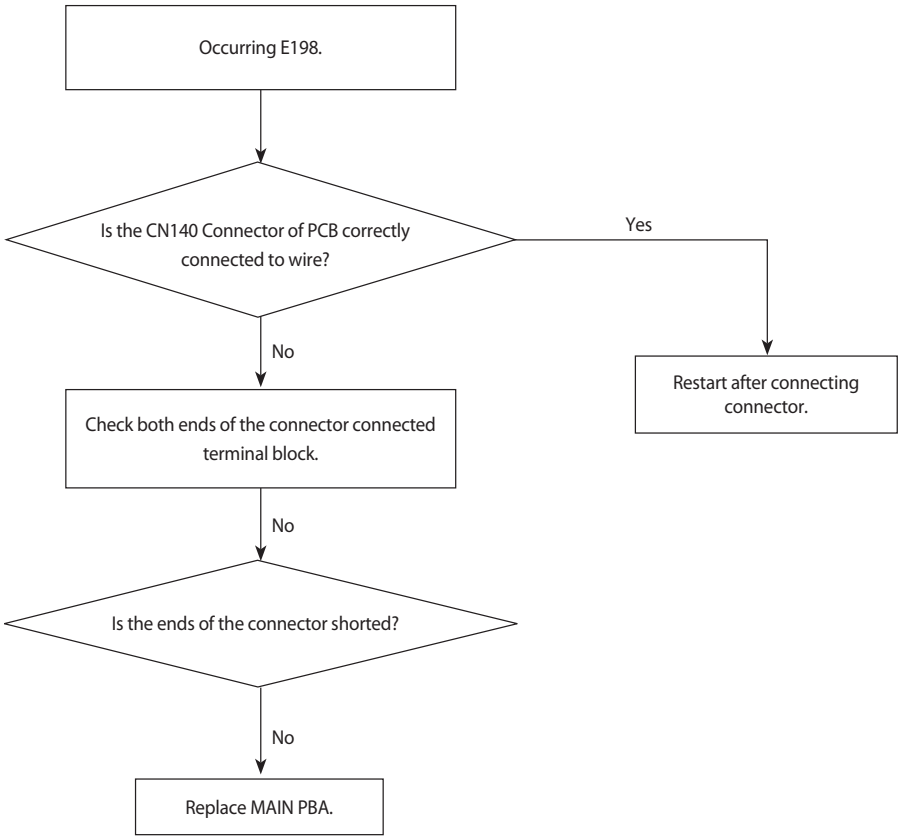
9-4-8 DAMPER Error

Error Mode	DAMPER Error
Display	E654
Check Method	Check error if there is no input in case of DAMPER output for 100 seconds (time required when it rotates 5 turns).
Cause	PCB check, Motor check, Switch check
Sensor SPEC.	



9-4-9 Thermal Fuse Open Error in Power Therminal Block

Error Mode	Thermal fuse open error in power therminal block
Display	E 198
Check Method	Scanning the error when thermal fuse in power therminal block is opened
Cause	Check the connection of terminal block(Temperature rise by screw loosening)
Sensor SPEC.	



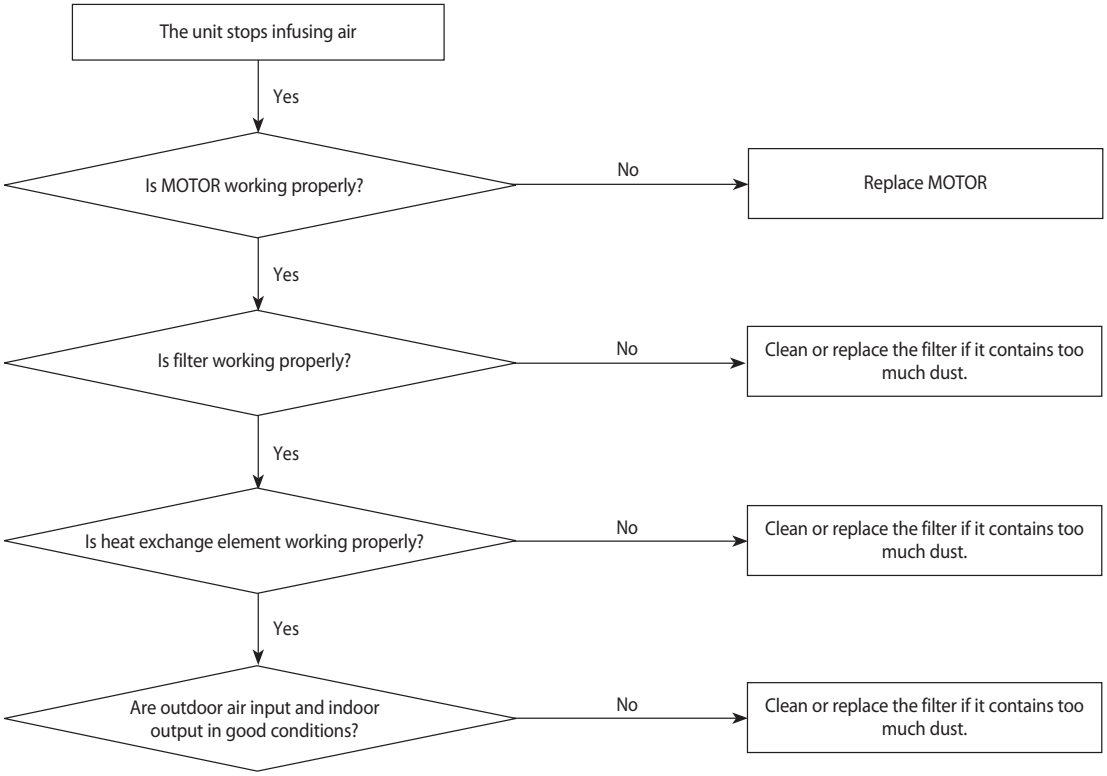
9-4-10 Option Setting Error

Error Mode	Option setting error
Display	E163
Check Method	Entering incorrect ERV option or entering no ERV option at all
Cause	Entering incorrect ERV option or entering no ERV option at all
Sensor SPEC.	

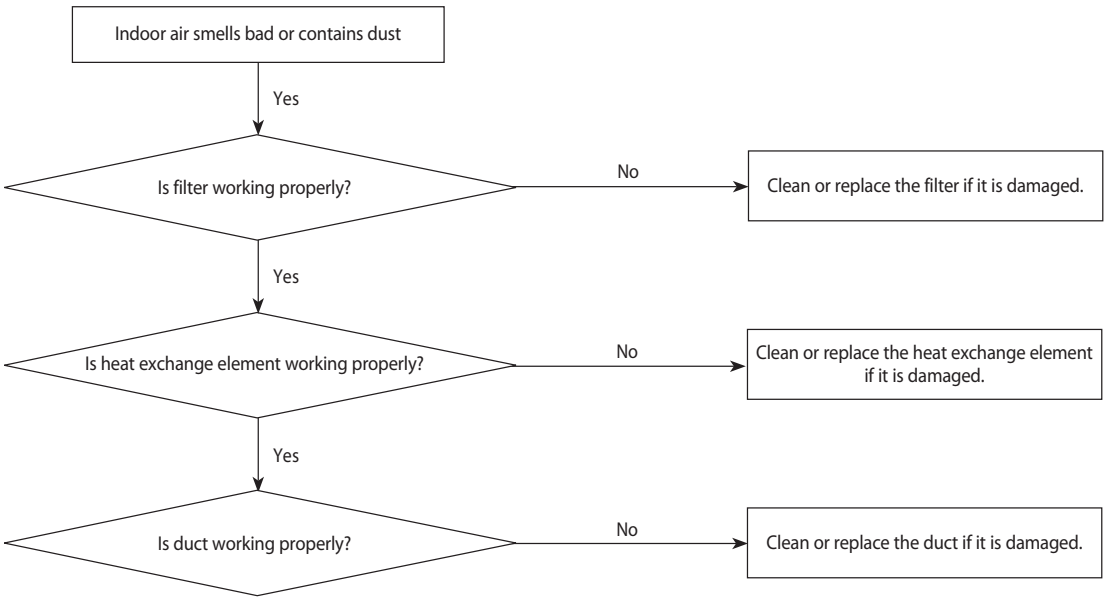
※ Progress re-input after reconfirming option by model attached below.
If you use a existing EEPROM after replace MAIN PBA, don't need to reset option.

AN026JSKLKN	0	1	0	3	4	0	1	1	6	4	4	4	2	1	4	4	4	0	3	0	2	0	0	3
AN035JSKLKN	0	1	0	3	4	0	1	1	4	4	3	4	2	1	3	4	3	0	3	0	2	0	0	5
AN050JSKLKN	0	1	0	3	4	0	1	1	6	4	4	4	2	1	5	4	4	0	3	0	2	0	0	6
AN080JSKLKN	0	1	0	3	4	0	1	1	5	4	4	2	2	1	4	4	4	0	3	0	2	0	0	7
AN100JSKLKN	0	1	0	3	4	0	1	1	6	4	4	3	2	1	5	4	4	0	3	0	2	0	0	8

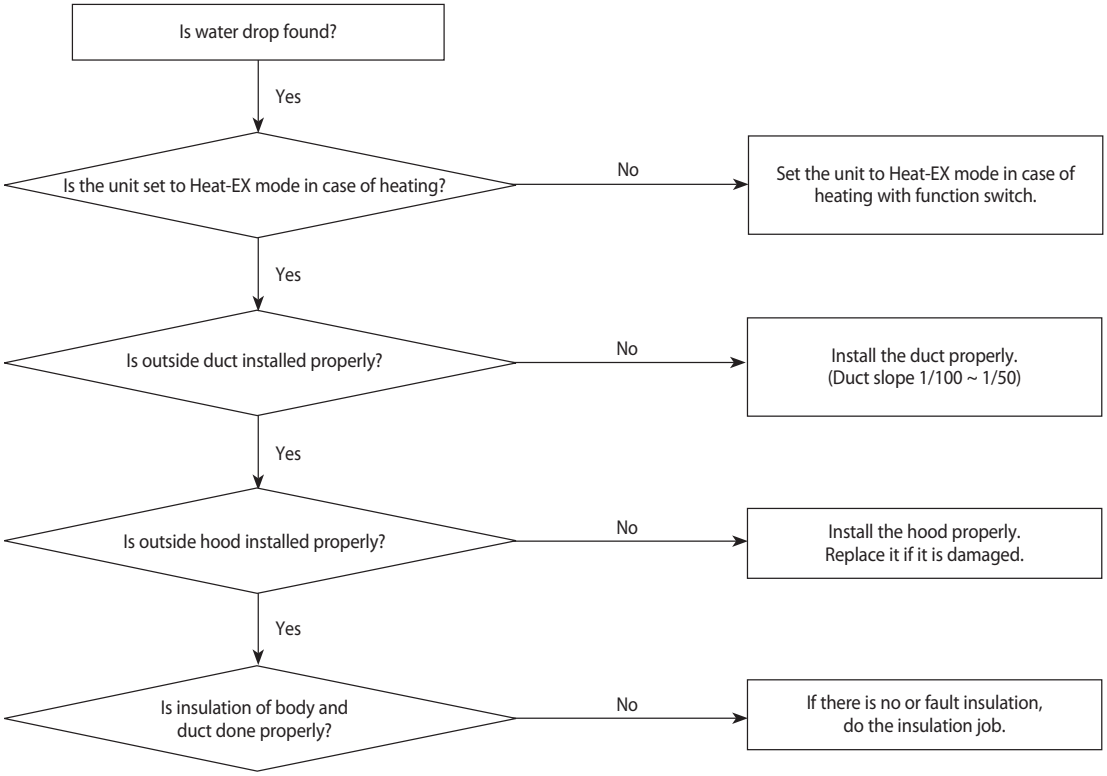
9-4-11 When the unit stops infusing air



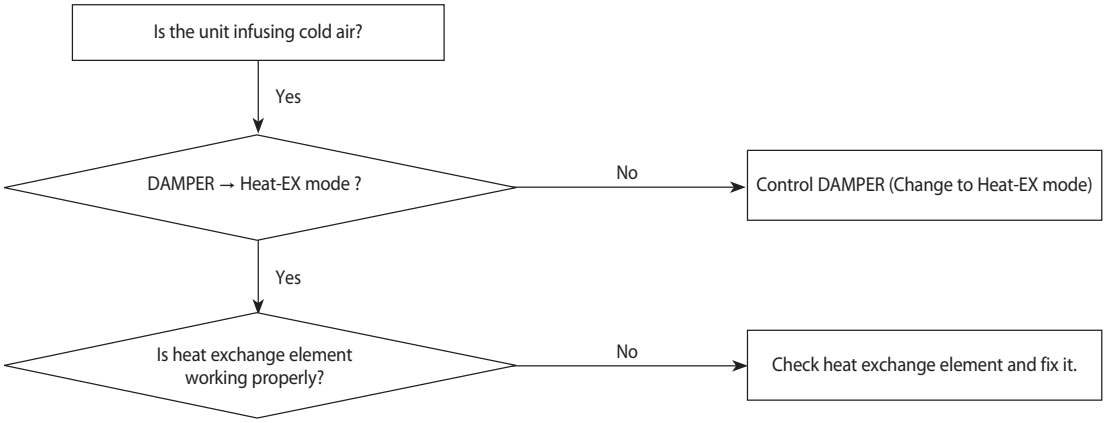
9-4-12 When indoor air smells bad or contains dust



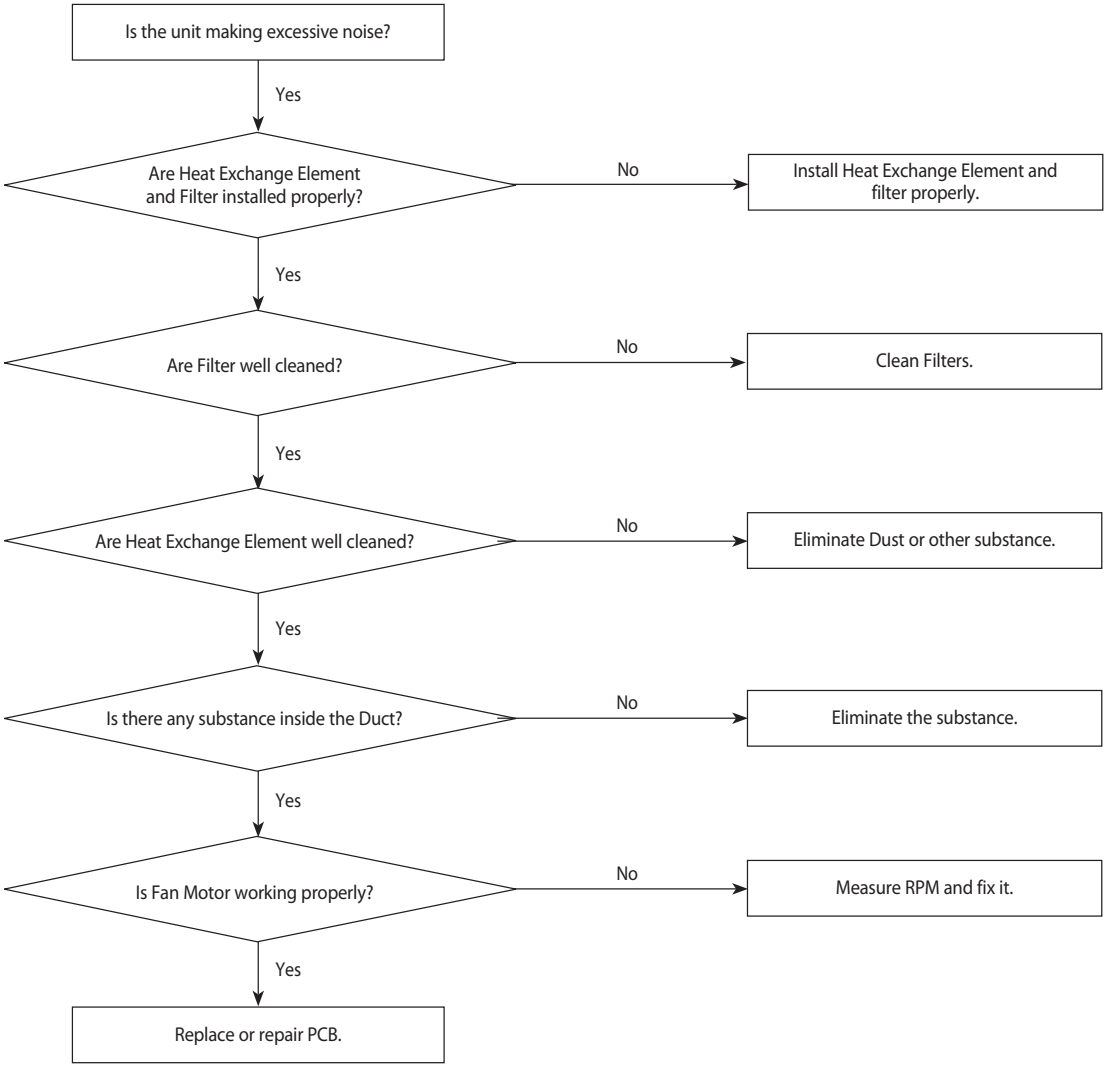
9-4-13 When water drop is found in the Return Air duct or on ceiling



9-4-14 When cold air is infused

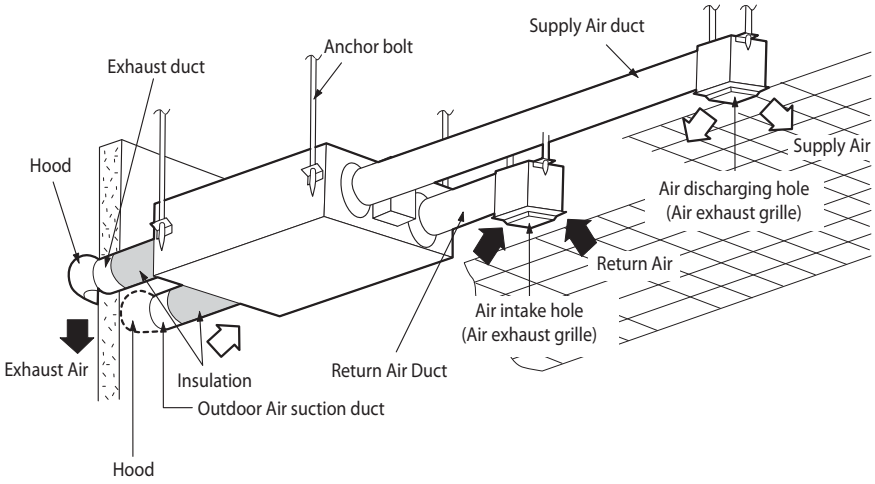


9-4-15 When excessive noise is heard



10. Reference Sheet

10-1 Ventilator Operation Principle



10-1-1 Operation Principle

■ **Purpose :** The ventilator aims at enhancing indoor air quality with utilizing fresh outdoor air. (At this section, only technological explanation is provided.)

■ **Process :** The ventilator supplies outdoor air and exhaust indoor air.

■ **Air Volume :** The volume is determined according to volume of supply air or exhaust air. It is indicated with CMH (Cubic Meter per Hour).

10-1-2 Additional Function

■ **The unit supports Heat-EX mode and By-Pass mode (selected by DAMPER).**

■ **Heat-EX mode :** Temperature and humidity of indoor air and outdoor air are exchanged (The function minimizes heat loss from the process of ventilation).

■ **By-Pass mode :** Ventilation process without exchanging heat of indoor and outdoor air.

Model Code

A	C	1	2	5	J	N	4	C	E	H	/	E	U
		Air Volume(CMH)										Buyer Name	

Product Type	
AM	DVM
AJ	PMA
AC	CAC (USD) / ASD
AE	EHS
AN	VTL
AK	PAK (Packaged System)
AG	CHR

Year	
E	2012
F	2013
G	2014
H	2015
J	2016

Separator	
S	General Set (NASA)
N	Indoor unit (NASA)
X	Outdoor unit (NASA)
A	General Set (Non-NASA)
B	Indoor unit (Non-NASA)
C	Outdoor unit (Non-NASA)

Separator		
K	FLAT(CEILING TYPE)_VTL	VTL
S	STAND(EXPOSURE TYPE)_VTL	

Rating Voltage	
A	A(115V, 60hz, 1Φ)
B	B(220V, 60Hz, 1Φ)
C	C(208~230V, 60Hz)
D	D(200~220V, 50Hz)
E	E(220~240V, 50Hz)
F	F(208~230V, 60Hz, 3Φ)
G	G(380~415V, 50Hz, 3Φ)
H	H(380V, 60Hz, 3Φ)
J	J(460V, 60Hz, 3Φ)
K	K(220~240V, 50/60Hz, 1Φ)
M	M(127V, 50Hz)
N	N (380~415V, 50/60Hz, 3Φ)

Chassis Category		
A	SLIM/HIGH VTL&FILTER	VTL
B	SLIM/HIGH VTL	
C	SLIM/STANDARD	
D	NORMAL/HIGH VTL&FILTER	
E	NORMAL/HIGH VTL	
F	NORMAL/STANDARD	
G	MOLD/HIGH VTL&FILTER	
H	MOLD/HIGH VTL	
J	MOLD/STANDARD	
K	COMMERICIAL/HIGH VTL&FILTER	
L	COMMERICIAL/HIGH VTL	
M	COMMERICIAL/STANDARD	
T	MINI/HIGH VTL	
V	ERV with DX coil	

Mode		
C	COOLING ONLY	R410a
H	HEAT PUMP	
R	HEAT RECOVERY	
D	COOLING ONLY	R22
E	HEAT PUMP	
A	Cooling only	R134A
B	Heat Pump	
N	N/A	

※ "/" can be removed from the buyer card if there are not enough digits.

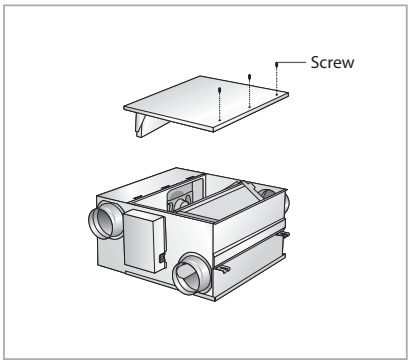
10-3 Cleaning the Dust Filter

■ AN026JSKLKN

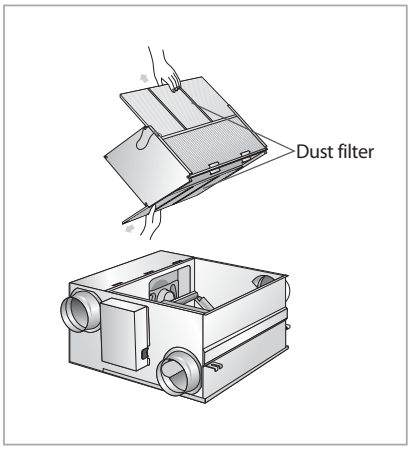
1. **Remove 3 screws on the maintenance cover.**

2. **Take off the maintenance cover from the ventilator.**

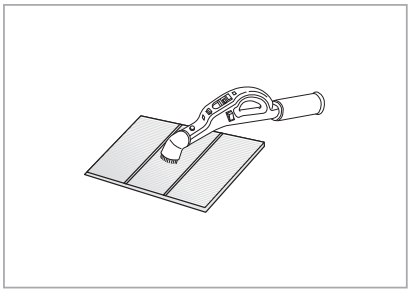
3. **Detach the dust filters by pulling them forward.**
   - There are totally 2 dust filters on both sides of the heat exchange element.



4. **Remove all dust on the dust filters with a vacuum cleaner or a brush.**



5. **Reassemble the dust filters and the maintenance cover.**
   - Make sure to insert the dust filters correctly. If not, dust may accumulate on the heat exchange element and decrease the efficiency.



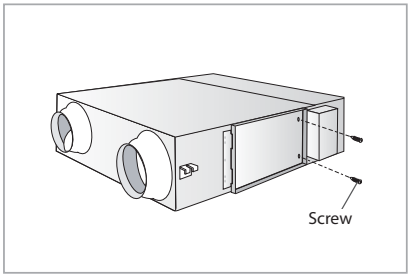
Remarks

- Change the dust filters in every two years. However, the period of filter replacement may vary according to the used period and condition.
- If the dust filter is damaged, purchase it individually in a service center or an agency that you bought the product.
- Make sure to turn off the sub power supply.

■ AN035JSKLKN/AN050JSKLKN/AN080JSKLKN/AN100JSKLKN

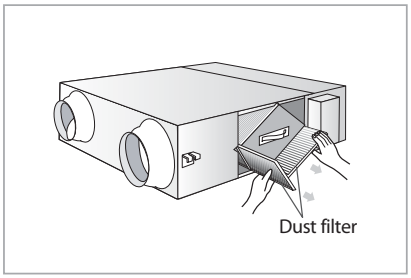
1. Remove 2 screws on the maintenance cover.

2. Take off the maintenance cover from the ventilator.

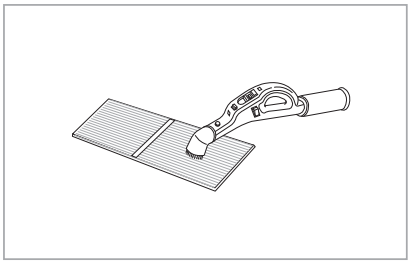


3. Detach the dust filters by pulling them forward.

● There are totally 4 dust filters on both sides of the heat exchange element.

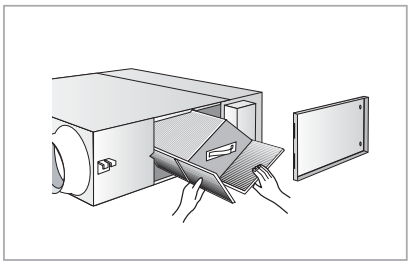


4. Remove all dust on the dust filters with a vacuum cleaner or a brush.



5. Reassemble the dust filters and the maintenance cover.

● Make sure to insert the dust filters correctly. If not, dust may accumulate on the heat exchange element and decrease the efficiency.



Remarks

- Change the dust filters in every two years. However, the period of filter replacement may vary according to the used period and condition.
- If the dust filter is damaged, purchase it individually in a service center or an agency that you bought the product.
- Make sure to turn off the sub power supply.

10-4 Cleaning the Heat Exchange Element

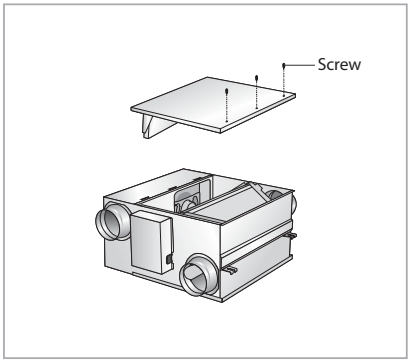
■ AN026JSKLKN

1. Remove 3 screws on the maintenance cover.

2. Take off the maintenance cover from the ventilator.

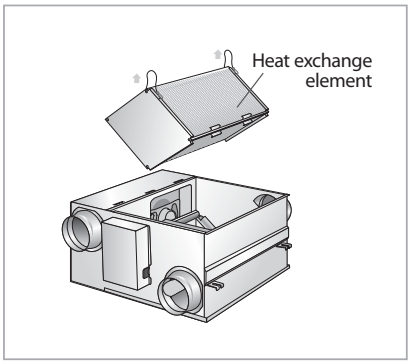
3. Detach the heat exchange element by pulling it upward.

● The heat exchange element is heavy. Take care not to drop it.

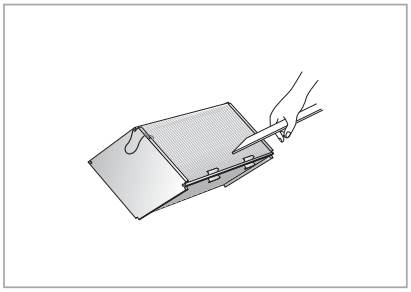


4. Remove all dust and particles on the heat exchange element with a nozzle of a vacuum cleaner.

● Take care not to attach the nozzle too close.
It may damage the heat exchange element.



5. Reassemble the heat exchange element and the maintenance cover.



Remarks

- If the heat exchange element is damaged, purchase it individually in a service center or an agency that you bought the product.
- Make sure to turn off the sub power supply.

- Do not wash the heat exchange element. It may decrease its efficiency.

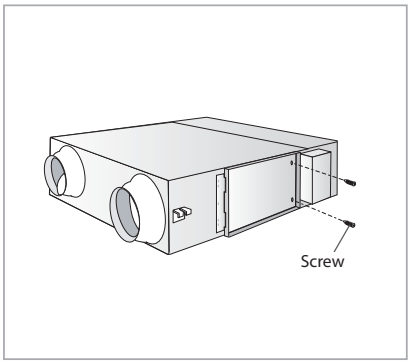
■ AN035JSKLKN/AN050JSKLKN/AN080JSKLKN/AN100JSKLKN

1. Remove 2 screws on the maintenance cover.

2. Take off the maintenance cover from the ventilator.

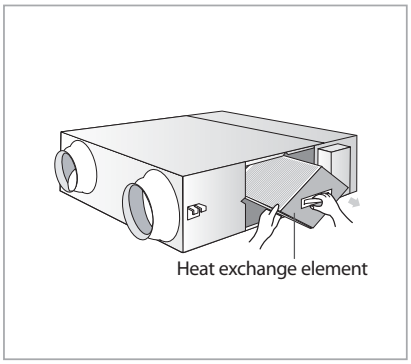
3. Detach the 2 heat exchange elements in order.

- The heat exchange element is heavy. Take care not to drop it.
- There are 2 heat exchange elements in the ventilator.
  Make sure clean them at once.

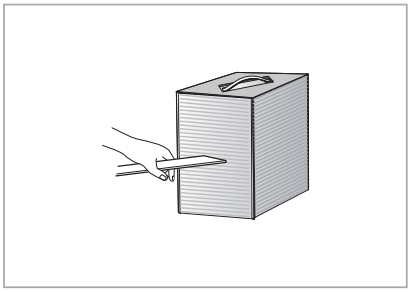


4. Remove all dust and particles on the heat exchange elements with a nozzle of a vacuum cleaner.

- Take care not to attach the nozzle too close.
  It may damage the heat exchange element.



5. Reassemble the heat exchange elements and maintenance cover.



Remarks

- If the heat exchange element is damaged, purchase it individually in a service center or an agency that you bought the product.
- Make sure to turn off the sub power supply.

- Do not wash the heat exchange element. It may decrease its efficiency.

10-5 Q & A for Non-trouble

Classification	Class	Description
Related to ventilate operation	Q	**Why is the ventilator required? (What is the difference between ventilator and air cleaner?)**
	A	- Definition : Ventilation is to supply fresh outdoor air to the inside of building and to exhaust indoor air. (The measures include technological method and natural method.) - Air cleaner cleans indoor air with system contained in the unit. On the other hand, ventilation enhances indoor air by replacing indoor air with outdoor air. They can be used according to the purpose and conditions.
	Q	**Has the effectiveness of ventilator been proved?**
	A	There is no scientific research to identify the effectiveness of ventilation. However, it is well known that opening windows can enhance indoor air quality. If windows open for a long period of time in summer and winter, it may cause huge heat loss. Thereby, the ventilator is required.
	Q	**Where are ventilators utilized?**
	A	Ventilator can be used in all spaces within buildings except places with ventilation system such as bathrooms or kitchens with hood.
	Q	**How the functions can be exchanged?**
	A	The unit supports manual and automatic operation which includes four function modes, according to air volume. Heat-EX (required in summer and winter) and usual ventilation (optional in spring and fall) are available
Others	Q	**What is the function and composition of filter?**
	A	- The unit is equipped with dust filter which protects heat exchange element and prevents dust from flowing into the inside of building. - Deodorizing filters and functional filters are optional. (However, air volume can change due to resistance blocking air flow of filter.)
	Q	**Replacement period of the Heat exchange element and the filter?**
	A	**Heat exchange element** - Cleaning method and period : clean the element with vacuum cleaner (once in six months) - Replacement period : If it is not damaged or modified, it can be used permanently because it is made of paper. **Filter** - Dust filter (Standard) : Clean the element with vacuum cleaner (once in 6 months) - Replacement period : • Once in 2 years (However, the replacement frequency varies according to environment.) • Remote control supports filter replacement alarm function

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