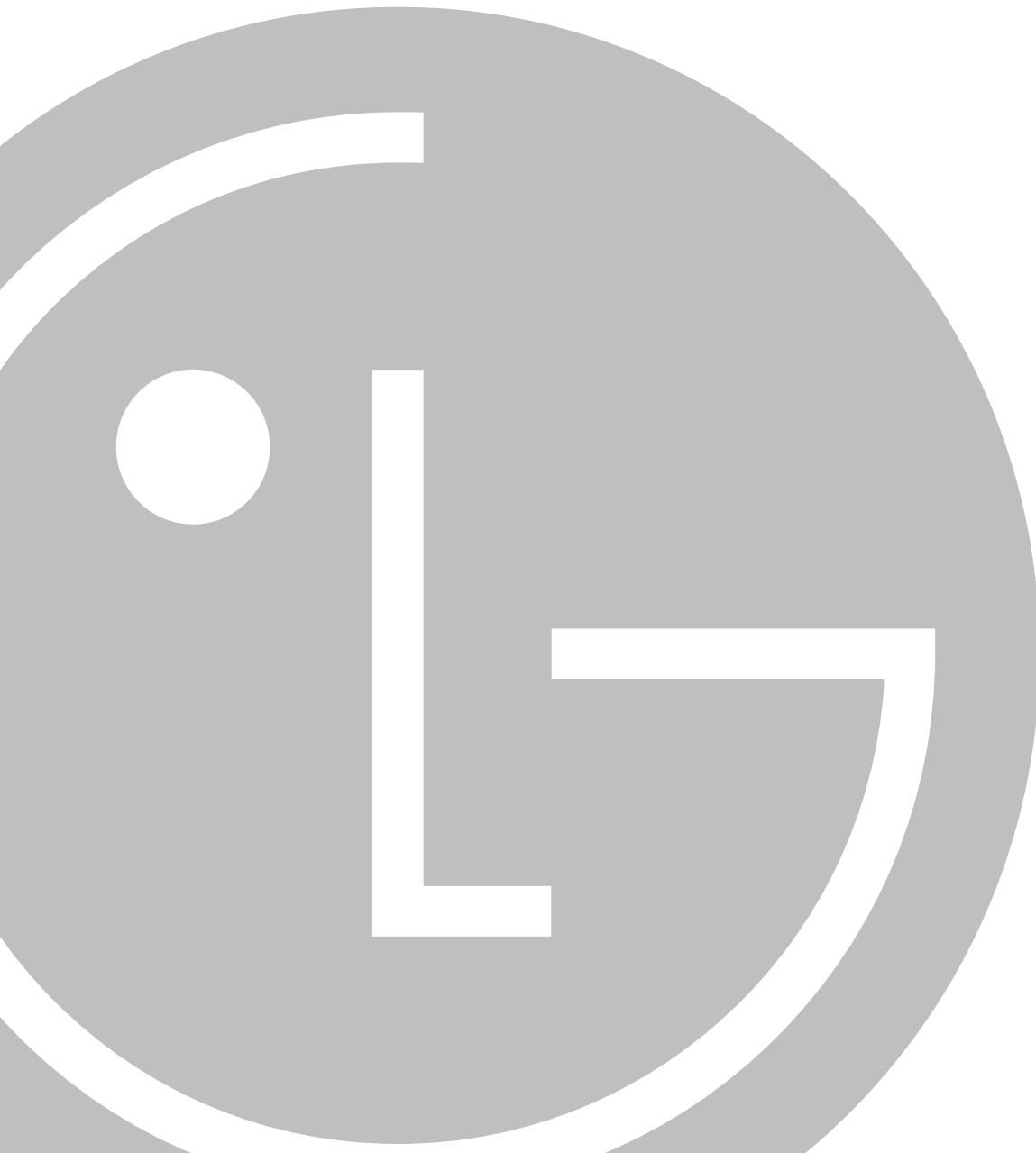




# **LG Large Duct-Type Air Conditioner**

## **SERVICE MANUAL**

**MODELS: AB-H1208VA0**



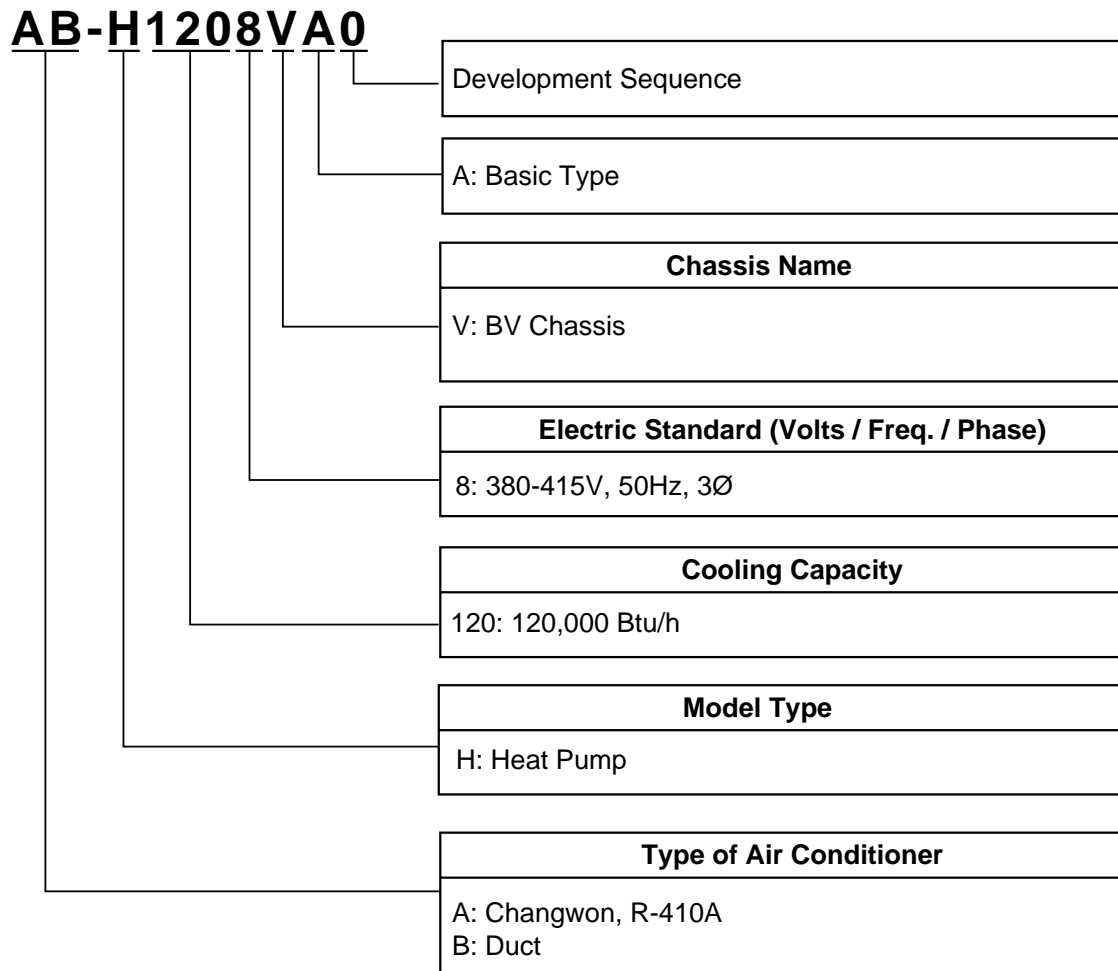
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## Model Number Nomenclature

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# General Data

## Indoor units

Indoor unit type			Ducted Type
Model			AB-H1208VA0 [B120AH SV0]
Power supply		Ø/V/Hz	3 / 380 - 415 / 50
Gross cooling capacity		kW	34.3
		Btu/h	117,000
Net cooling capacity		kW	32.8
		Btu/h	112,000
Heating capacity		kW	38.1
		Btu/h	130,000
Current	Rated running current	A	2.05
Fan	Motor type		BLDC
	Fan type		Sirocco fan
	Motor output (W) x Number of unit		1,491 x 1
	Air flow rate(H/M/L)	CMM	105/97/90
		CFM	3,708/3,426/3,179
	External static pressure	mmAq	20
	Capacitor	µF/V(ac)	-
Drive		Direct drive	
Coil	Rows x Column x FPI	mm	3R x 24C x 17
Dimensions(WxHxD)	Body	mm(inch)	1,600 x 720 x 800(63.0 x 28.3 x 31.5)
Weight	Body	kg(lbs)	130(287)
Air filter			prefilter
Sound level (H/M/L)		dB(A)+3	53/51/49
Piping connections	Liquid	mm(inch)	15.88(5/8)
	Gas	mm(inch)	28.58(11/8)
	Drain(OD/ID)	mm	34/28
Dehumidification rate		l/h	10
Safety devices			-
Temperature sensor			Thermistor
Refrigerant			R410A
Refrigerant control			LEV
Connectable outdoor unit			Single
Power supply cable (indoor)		No.x mm <sup>2</sup>	4 x 1.25
Transmission interunit cable(indoor to outdoor)		No.x mm <sup>2</sup>	2 x 1.25

### Note :

- Capacities are based on the following conditions:
  - Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB
  - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB
  - Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB
  - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB
  - Piping Length - Interconnecting Piping Length 7.5m
  - Level Difference of Zero.
- Gross cooling capacity = Net cooling capacity + Heat of evaporator fan motor.

### Conversion Formula

kW	= Btu/h × 0.0002931
CFM	= CMM × 35.3

# General Data

## Outdoor units

Outdoor unit			AB-H1208VA0 [B120AH SV0]
Rated capacity	Gross cooling	kW	34.3
		Btu/h	117,000
	Net cooling	kW	32.8
		Btu/h	112,000
	Heating	kW	38.1
		Btu/h	130,000
Rated input	Cooling	kW	14.5
	Heating	kW	12.5
Energy label			-
Running current	Cooling	A	24
	Heating	A	21
Starting current	Cooling	A	-
	Heating	A	-
Power supply		Ø / V / Hz	3 / 380 - 415 / 50
Power supply cable (outdoor)		No. x mm <sup>2</sup>	5 x 8.5
Transmission interunit cable (outdoor to indoor)		No. x mm <sup>2</sup>	2 x 1.25
Dimensions	W x H x D	mm(inch)	1,280 x 1,520 x 730(50.4 x 59.8 x 28.7)
Net weight		kg(lbs)	300(661)
Max. number of connectable indoor units			1
Compressor (Constant)	Type		Scroll
	Qty x model		1 x AR073YAB 1 x AR081YAB
	Motor type		PSC
	Oil charge volume	cc	2,325 x 2
	Oil type		FVC68D(PVE)
Refrigerant	Charge(at 7.5m)	g(oz)	8,000(282.2)
	Type		R410A
	Control		LEV
Heat Exchanger	Rows x Column x FPI		2R x 88C x 17
	Defrosting method		Reversing cycle
Fan	Capacitor	µF/V(ac)	10/450
	Drive		Direct drive
	Discharge direction	Side / Top	Top discharge
	Air flow rate x No. of fan	CMM(CFM)	180(6,400)
Sound level	Sound pressure at 1m	dB(A)+3	65
Piping connections	Liquid(Ø)	mm(inch)	15.88(5/8)
	Gas(Ø)	mm(inch)	28.58(11/8)
Max. piping length	Indoor unit~Outdoor unit	m	50
Max. elevation	Indoor unit~Outdoor unit	m	30

### Note :

- Capacities are based on the following conditions:  
 Cooling: - Indoor Temperature 27°C(80.6°F) DB /19°C(66.2°F) WB  
 - Outdoor Temperature 35°C(95°F) DB /24°C(75.2°F) WB  
 Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB  
 - Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB  
 Piping Length - Interconnecting Piping Length 7.5m  
 - Level Difference of Zero.

### Conversion Formula

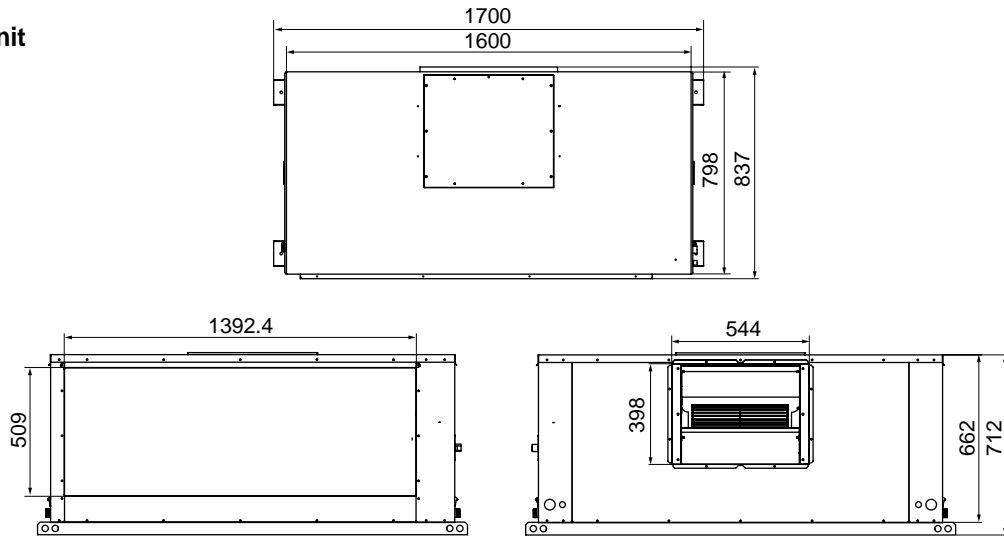
$$\begin{aligned} \text{kW} &= \text{Btu/h} \times 0.0002931 \\ \text{CFM} &= \text{CMM} \times 35.3 \end{aligned}$$

- Gross cooling capacity = Net cooling capacity + Heat of evaporator fan motor

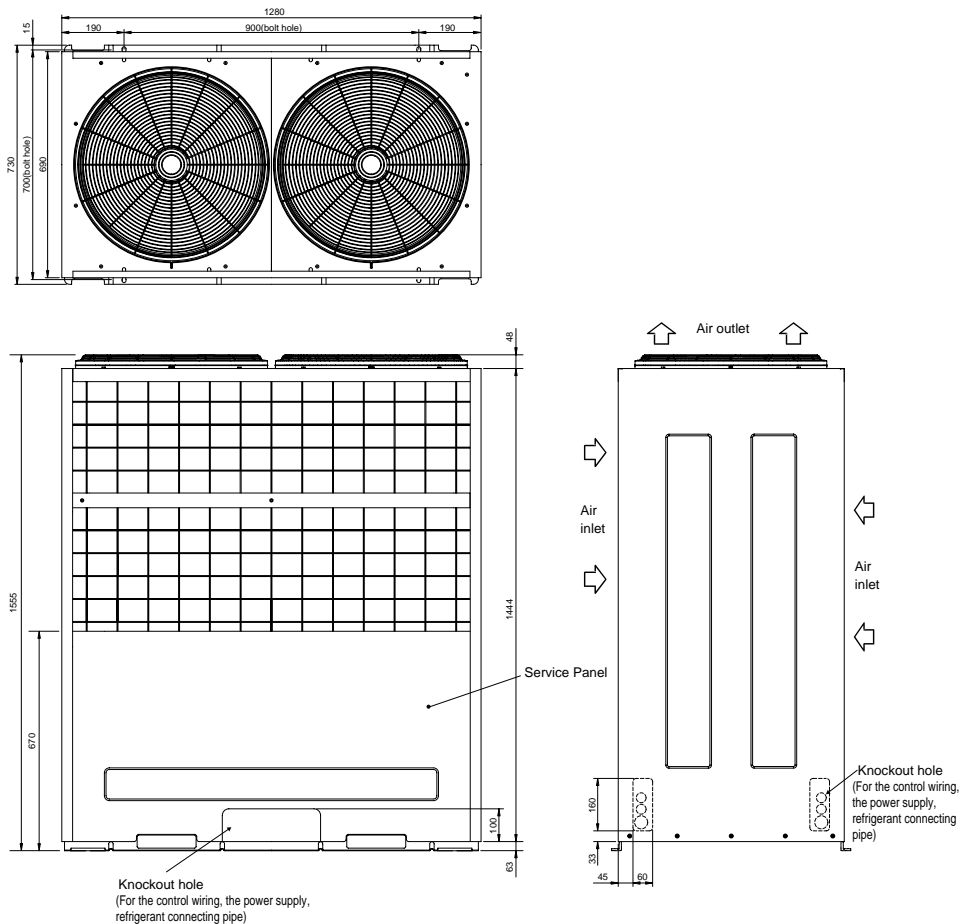
# Dimensions

**Model No.: AB-H1208VA0[B120 SV0]**

## 1. Indoor Unit

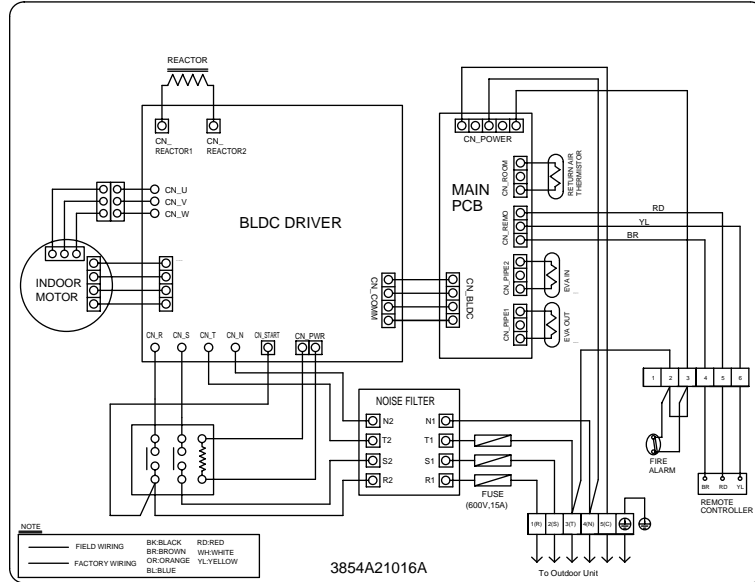


## 2. Outdoor Unit



# Wiring Diagram

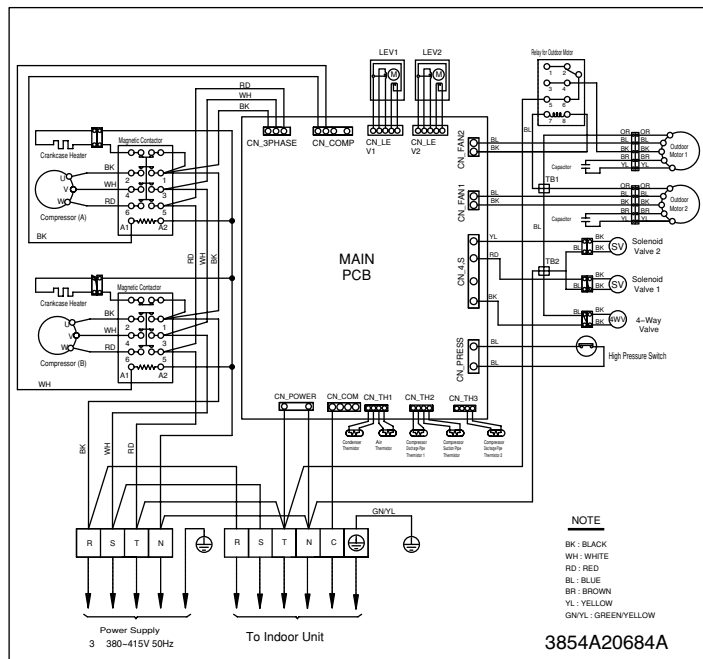
## 1. Indoor Unit



### Notes:

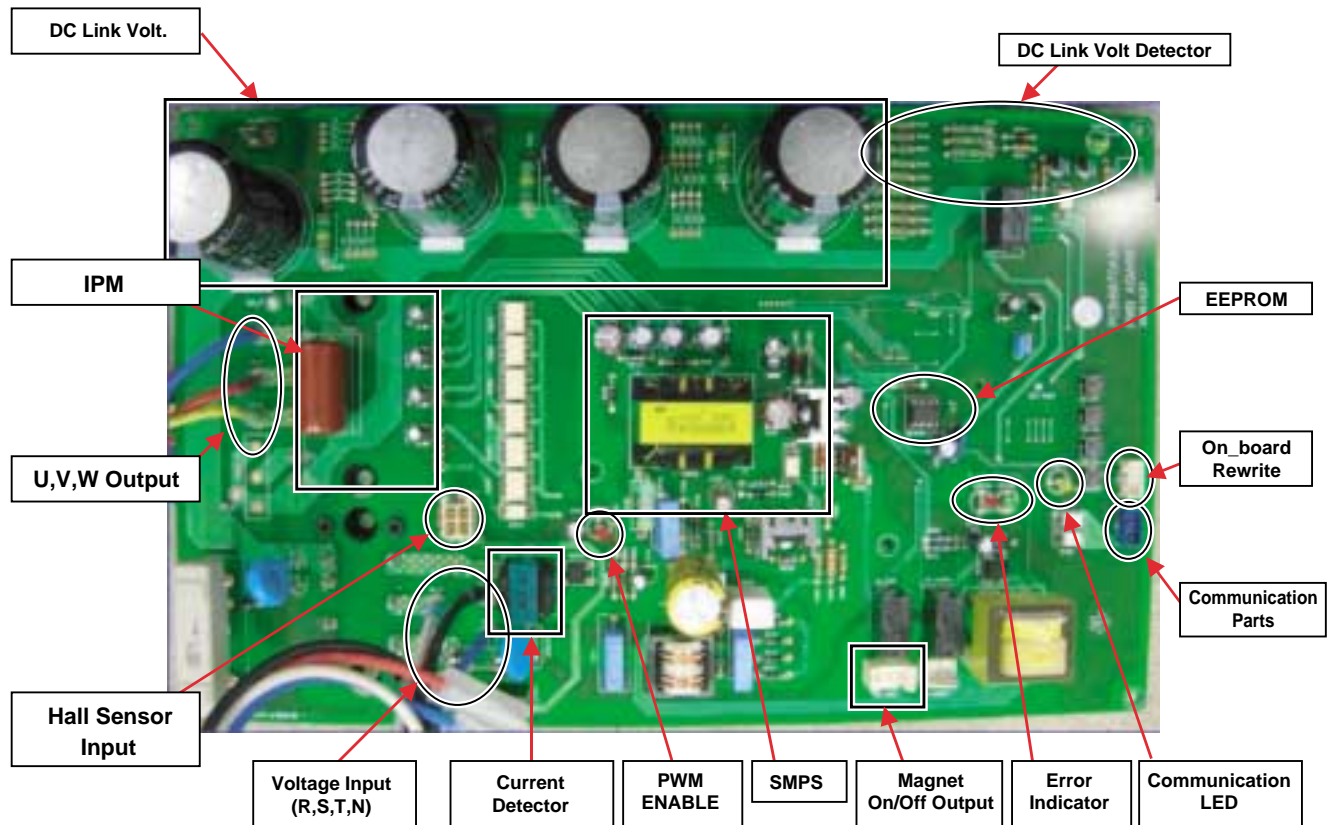
BK	BLACK	OR	ORANGE	YL	YELLOW
BR	BROWN	RD	RED	WH	WHITE
BL	BLUE	GN/YL	GREEN/YELLOW	COMP	COMPRESSOR
——	FACTORY WIRING	---	OPTIONAL WIRING	-----	FIELD WIRING

## 2. Outdoor Unit

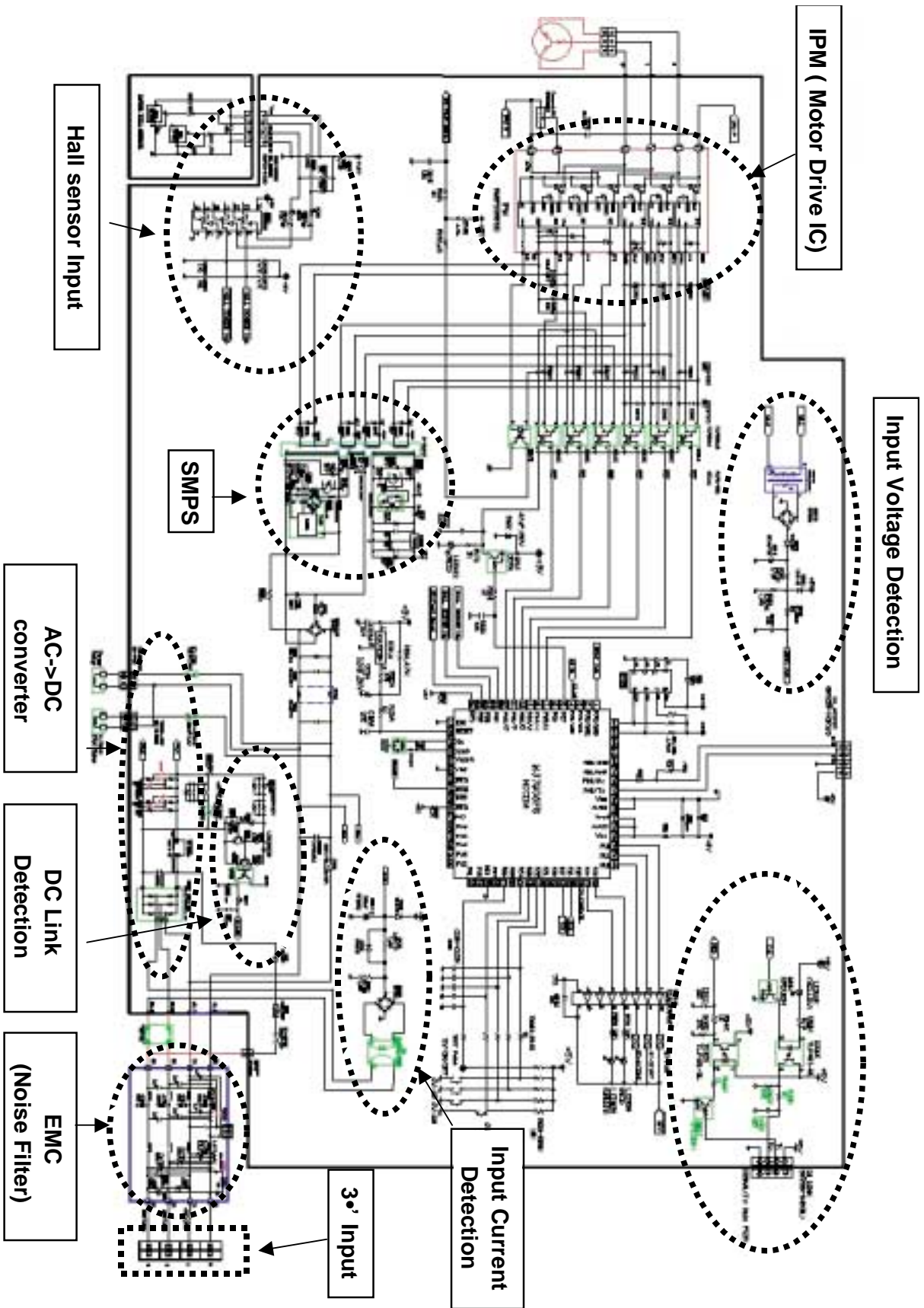


# Troubleshooting Guide

## 1-1. General Information



# Troubleshooting Guide





# Troubleshooting Guide

## 1. Error indicator

- The function is to self-diagnosis air conditioner and express the troubles if there is any trouble.
- Error mark is displayed on wired-remote controller and LED of outdoor unit control board.
- If more than two troubles occur simultaneously, lower number of error code is first displayed.
- **After error occurs, if error is released, error LED is also released simultaneously.**

### \* Indoor Error

Error Code	Contents	Case of error	Indoor Status
1	Air sensor (open/short)	Open / Short	Off
2	Inlet pipe sensor	Open / Short	Off
3	Communication(Indoor ↔ Wired R/Control)	Communication Poorly	Off
4	Drain pump/ Float switch	Float switch Open	Off
5	Communication(Indoor ↔ Outdoor)	Communication Poorly	Off
6	Outlet pipe sensor	Open / Short	Off
7	Different mode operation	Different mode operation	Off
9	EEPROM check sum	Check sum mismatching	Off
10	BLDC motor fan lock	Motor not operation	Off
15	Communication(indoor ↔ Fan)	Communication Poorly	Off

### \* Outdoor Error

Error Code	Contents	Case of error	Indoor Status
24	High Pressure Switch operation	High P/S operates 5times for1 hour	Off
33	D-Pipe Temp. High	D-Pipe Temp $\geq 120^{\circ}\text{C}$	Off
44	Air Sensor(open/short)	Open/Short	Off
45	Outlet Pipe Sensor(open/short)	Open/Short	Off
47	D-Pipe Sensor(open/short)	Open/Short	Off
48	S-Pipe Sensor(open/short)	Open/Short	Off
51	Excess Capacity	Indoor load excesses 120K	Off
54	Phase error	Continually 5times error	Off

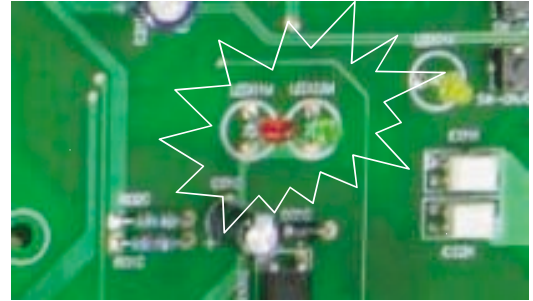
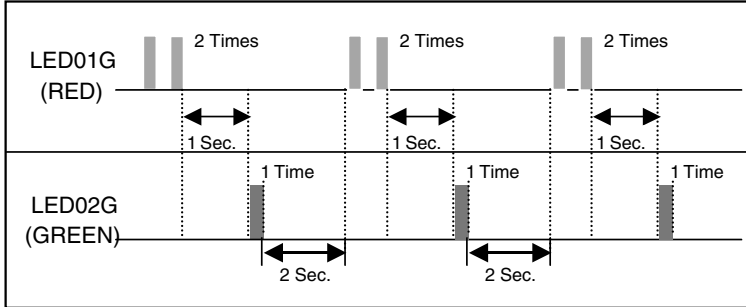
# Troubleshooting Guide

## 2. Error indicator(Fan Board)

When CH10 or CH15 error occurs, check error indication LED on fan board.

### \* Fan board Error

#### Ex) Error 21 (IPM fault)



Error Code	Contents	LED01G (Red)	LED02G (Green)	Case of error	Outdoor Status
10	Fan Lock	1time ●		Fan malfunction, Locking	Status
21	IPM Fault (Over current)	2time ●	1time ●	Fan malfunction, Over Current	Off
22	CT 2(Max. Current)	2time ●	2time ●	Current is 6A $\bar{E}$	Off
23	DC Link Low Volt.	2time ●	3time ●	DC Link volt. Is 280V	Off
40	CT Circuit	4time ●		CT Circuit malfunction (20A $\bar{E}$ )	Off
52	Communication Error	5time ●	2time ●	Communication Poorly	Off
60	EEPROM Check Sum Error	6time ●		Check sum mismatching	Off

# Troubleshooting Guide

## 3. Control Parts

### 1) Troubleshooting CH10

- When CH10 error occurs , check error indication LED on FAN BOARD.

Fan board Error LED	Title	Cause of error	Check point
10	BLDC Fan Lock	<ul style="list-style-type: none"> <li>• Mechanical Locking</li> <li>• Miss connection</li> </ul>	<ul style="list-style-type: none"> <li>• The abnormal connection of Hall sensor</li> <li>• The abnormal connection of U,V,W</li> <li>• Mechanical Locking of Fan</li> </ul>
21	IPM Fault (Over current)	<ul style="list-style-type: none"> <li>• Mechanical Locking</li> <li>• Miss connection</li> <li>• Instant over current</li> <li>• Over Rated current</li> <li>• Poor insulation of IPM</li> </ul>	<ul style="list-style-type: none"> <li>• Miss connection               <ul style="list-style-type: none"> <li>- The abnormal connection of Hall sensor</li> <li>- The abnormal connection of U,V,W</li> </ul> </li> <li>• Instant Overcurrent.               <ul style="list-style-type: none"> <li>- RMS current 20A<math>\pm</math></li> <li>- Peak current 24A<math>\pm</math></li> </ul> </li> <li>• Poor insulation of Fan</li> <li>• Overload               <ul style="list-style-type: none"> <li>- Mechanical Locking of Fan</li> </ul> </li> </ul>
22	CT 2 (Max.Current)	<ul style="list-style-type: none"> <li>• Over current (6A<math>\pm</math>)</li> </ul>	<ul style="list-style-type: none"> <li>• Check the overload condition               <ul style="list-style-type: none"> <li>- Mechanical Locking of Fan</li> </ul> </li> <li>• Check the drop of power source</li> </ul>
23	DC Link Low Volt	<ul style="list-style-type: none"> <li>• DC link volt. is 280Vdc<math>\pm</math>.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the power source.</li> <li>• Check the components.</li> </ul>
40	CT Circuit OPEN/SHORT	<ul style="list-style-type: none"> <li>• Faulty sensor ( CT Open/short )</li> <li>• Malfunction of External power</li> </ul>	<ul style="list-style-type: none"> <li>• Malfunction of current detection circuit. (Open / Short)</li> <li>• The voltage of "C01N" Is 4.0Vdc (20A)<math>\pm</math> .</li> <li>• Check the drop of power source .</li> </ul>
60	EEPROM Check Sum Error	<ul style="list-style-type: none"> <li>• Check sum error</li> </ul>	<ul style="list-style-type: none"> <li>• Check the connection port.</li> <li>• Check the poor soldering.</li> </ul>

### 2) Troubleshooting CH15

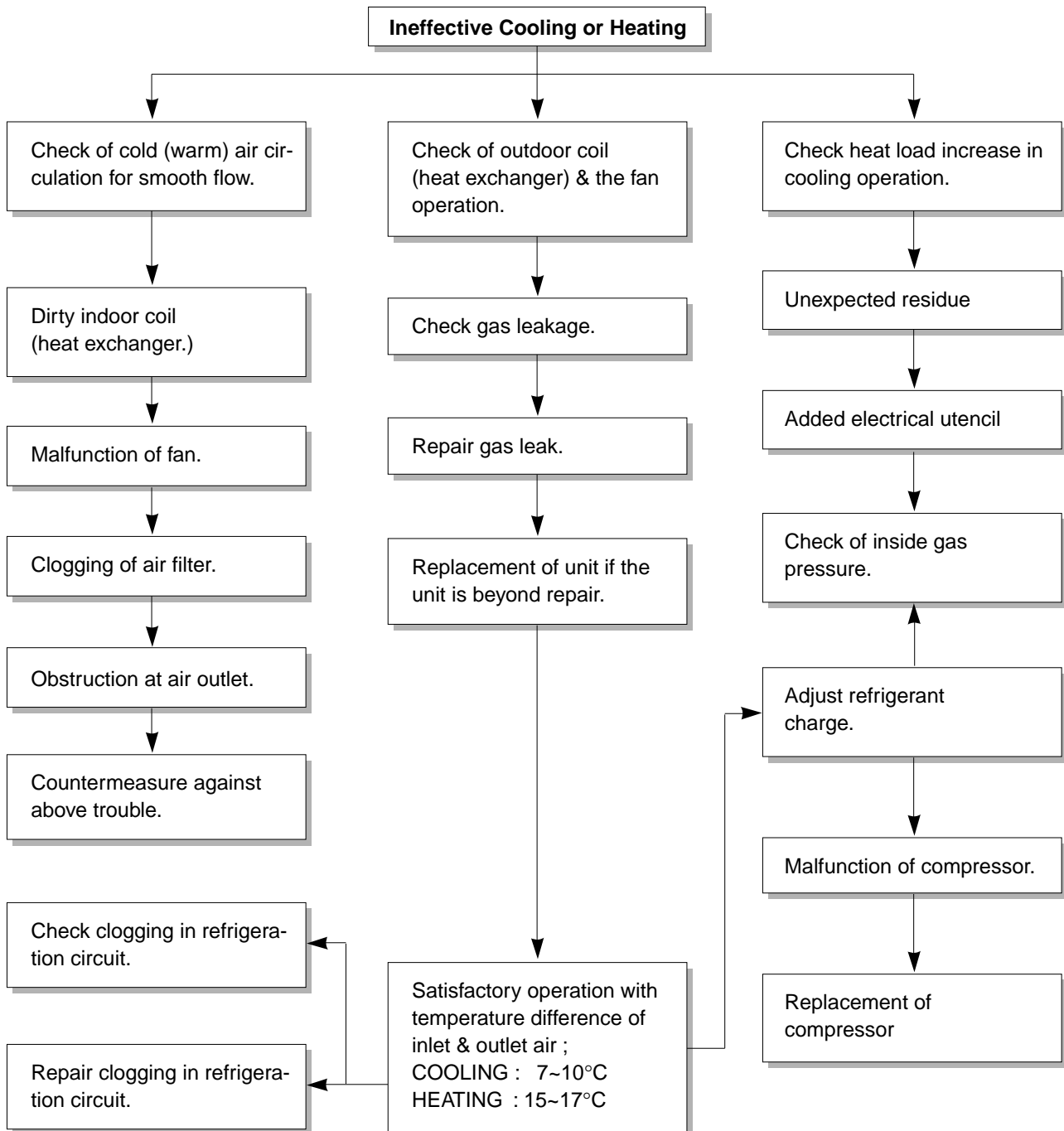
Fan board Error LED	Title	Cause of error	Check point
52	Communication Error	<ul style="list-style-type: none"> <li>• Connector connection error</li> <li>• Faulty PCB</li> <li>• Connection wire break</li> </ul>	<ul style="list-style-type: none"> <li>• Connection of wire</li> <li>• Noise interference</li> </ul>

# Troubleshooting Guide

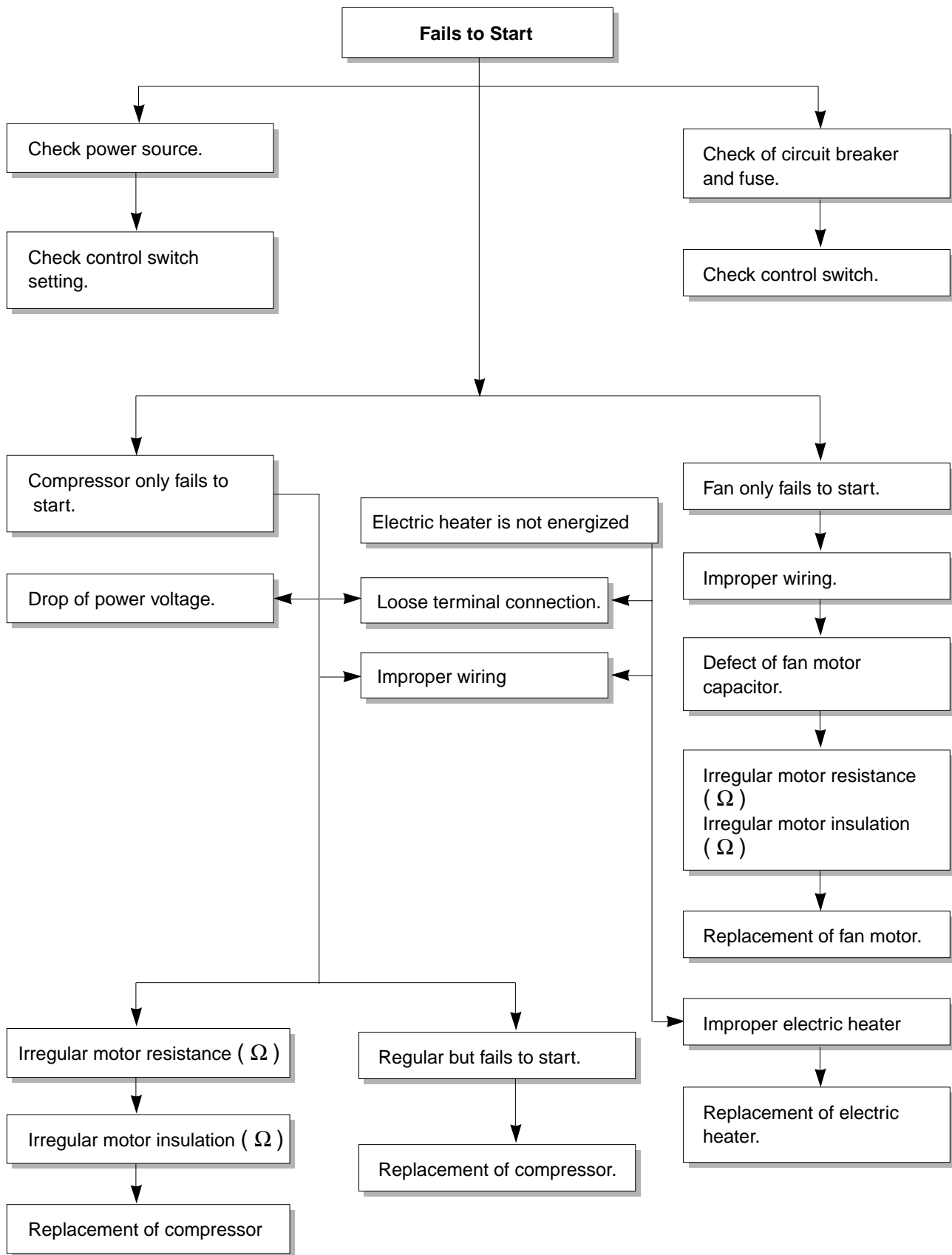
In general, possible trouble is classified in two causes.

The one is called **Starting Failure** which is caused from an electrical defect, and the other is **Ineffective Air Conditioning** caused by a defect in the refrigeration circuit and improper application.

## Unit runs but ineffective cooling



# Troubleshooting Guide



# Troubleshooting Guide

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## VOLTAGE LIMITS

NAME PLATE RATING	MINIMUM	MAXIMUM
380 - 415 V	342 V	456 V

## 1. No cooling and heating operation performed

### 1) Both the blower and the compressor do not work

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Other parts except the unit	<ul style="list-style-type: none"> <li>• Electric supply interrupted</li> <li>• Defective power wiring</li> <li>• Cut off power fuse</li> </ul>	Measure power supply with a tester in case that the same power source is supplied to other equipment except the unit, what and where troubled can be discovered by checking the operation of other equipment.	<ul style="list-style-type: none"> <li>• Repair a switch box and relative instrument.</li> <li>• Replacement of fuse</li> <li>• Request a power supplier to repair.</li> </ul>
	Too low voltage	Measure it with a tester.	Check the power source. Use a thick cable if necessary.
Magnetic switch for compressor & fan motor	Control point is on condition of "OFF" due to trouble.	Make short-circuit, then measure it with tester.	Replace it if necessary.
Operating switch	Troubled or defective contactor	Check it with the eyes or tester.	Repair or replace it.

### 2) Only Indoor blowers do not work

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Motor	<ul style="list-style-type: none"> <li>• Over heated</li> <li>• Wiring short</li> </ul>	Check it with tester	Repair or replace it.
Reactor	Defected	Check it with a tester.	Replace it.
Electric wiring	<ul style="list-style-type: none"> <li>• Cut- OFF of wiring</li> <li>• Short circuited on operation</li> </ul>	Check it with a tester.	Rewiring or Repair.

# Troubleshooting Guide

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## 3) Only outdoor fan does not work

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Motor	<ul style="list-style-type: none"> <li>• Over-heated</li> <li>• Wire short</li> </ul>	Check how it is insulated.	Repair or replace it.
Electric Wiring	Cut off of wiring	Check it with a tester.	Rewiring or repair.
	Short circuited on operation		

## 4) Only compressor does not work

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Magnetic switch for compressor motor	Defective contact, magnetic coil troubled.	Check it with the eyes on with a tester.	Repair or replace it.
Compressor motor	Troubled over-heated (layer short)	Check how it is insulated.	Replace or repair the compressor.
High pressure switch (Option part)	Troubled or defective contact or operating	Check it with a tester.	Replace it if necessary.
Electric circuit	Defective connection or disconnection of the circuit for compressor.	Check it with a tester.	Rewiring or push reset button.

# Troubleshooting Guide

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## 2. The Units discontinue after the operation started

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Outdoor coil	Coil is dirty *1	Checking	Wash it by means of something like chemical washing.
In-condensable gas blended.	Air intruded into the refrigerant pipe line *1	In the event that difference between the saturating temperature corresponding to high pressure and the temperature of air discharged from the outdoor coil is more than 15°C, incondensable gas may be blended.	Extract air by vacuum pump, then replenish (charge) the refrigerant.
High pressure switch (Option part)	Improper adjustment	Check it with a pressure gauge.	Read just it to normal operating pressure. (Note) Don't alternate the specified adjusting pressure. If the adjusted pressure exceed the specified range, it will cause a great accident.
Outdoor Fan	Reverse rotation of fan Obstacle Air short circuit *1	Confirm the wind blowing out upward. Check it with eyes.	If reversed, connect interchanged wires to each terminal. Power wirings.

**Note:** Use an appropriate measuring instrument for readjustment.

\*1: High-pressure switch moves.



# Troubleshooting Guide

## 3. The unit is working, but not cooling and heating sufficiently (Both blower and compressor are working)

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Load	Much Cooling or Heating load	Heat load increased. Window or door has many cracks or gaps.	Do necessary disposal respectively.
Air flow	Obstacle disturbs Intake of uniform airflow.	Checking	Correct it.
Short air volume	Reverse rotation of blower.	Checking	Correct it.
Refrigerant	Shortage in the charged refrigerant.	Coil inlet pipe is frosted	Recharge it. (Repair the leakage spot).
Air passage	Improper or foreign bodies	Checking	Correct or clear the foreign bodies.
Air filter	Clogged with dust	Checking	Cleaning

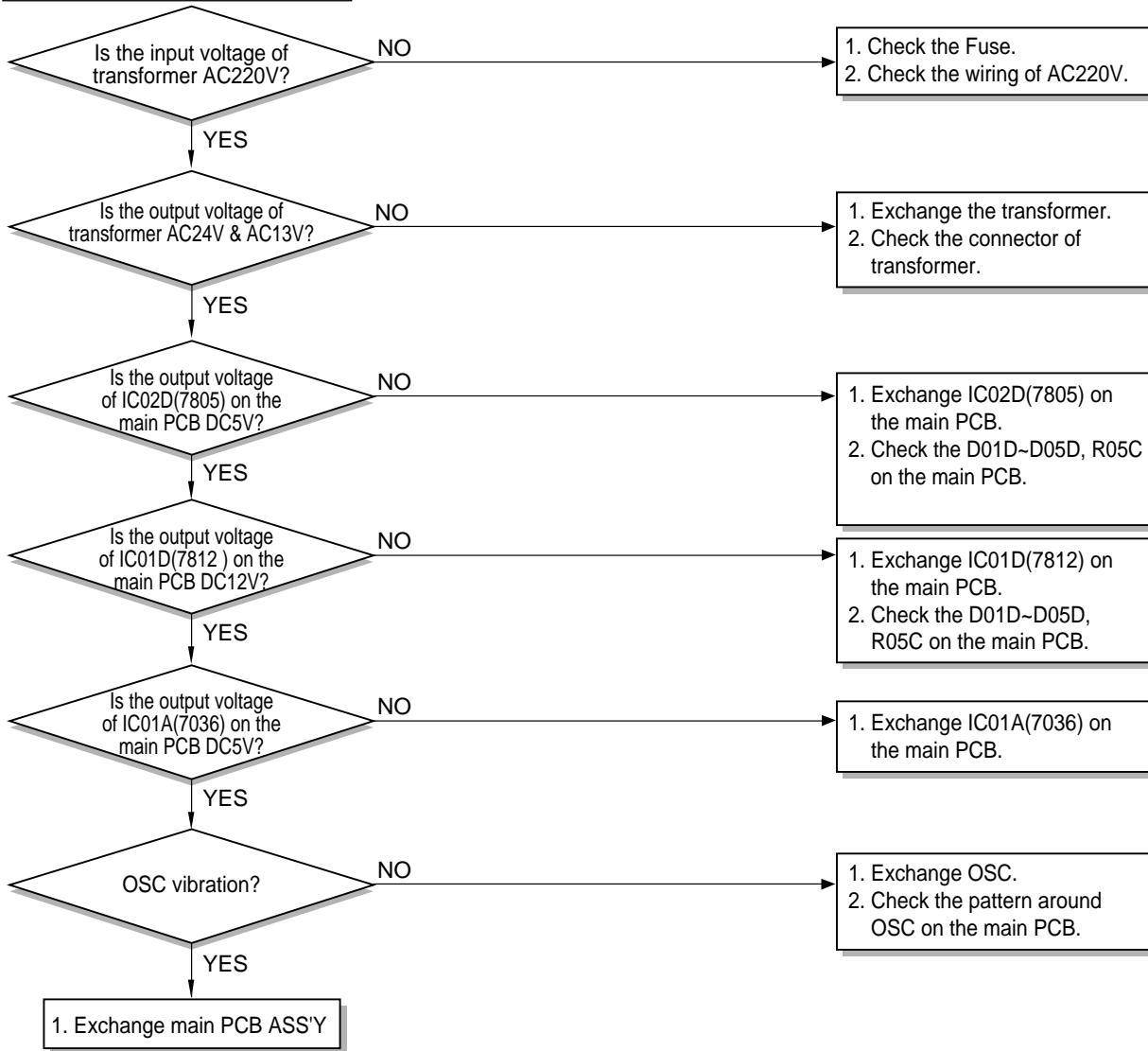
## 4. All the functions are performed as specified, but very noisy and vibrant

WHAT TROUBLED	COMPLAINTS	HOW TO CHECK	REMEDY
Compressor	Liquid refrigerant flooding back from the evaporator.	<ul style="list-style-type: none"> <li>• Check for refrigerant over-charge.</li> <li>• Check to see if the intake air temperature is extremely cold.</li> <li>• Check for insufficient air flow quantity.</li> </ul>	
	Faulty Discharge valve and suction valve.	• Checking	• Replace the compressor
Blower	Fan broken. Foreign matters intruded.	Checking	Repair or replace it. Clear the foreign bodies.
Screws	Looseness or fail-off of screws	Checking	Correct
Electric troubles (Magnetic contactor)	Defective contact. Defective contact point. Rusting and foreign matters in the iron core contact face. Defective contact of the operating switch.	Checking	Repair and clean or replace it.
Others	Improper installation	Checking	Correct it.

# Electronic parts Troubleshooting Guide

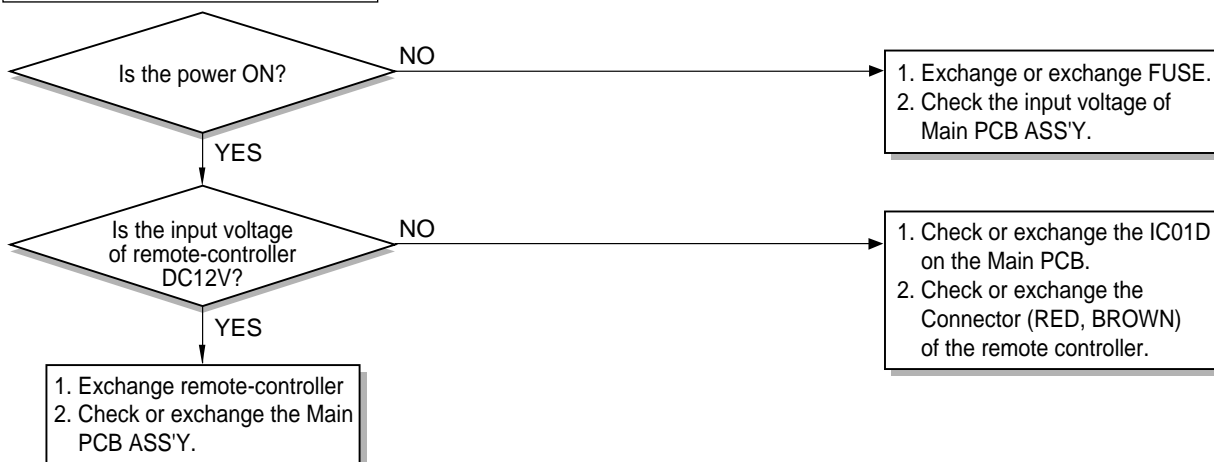
## Possible trouble 1

: The unit does not operate.



## Possible trouble 2

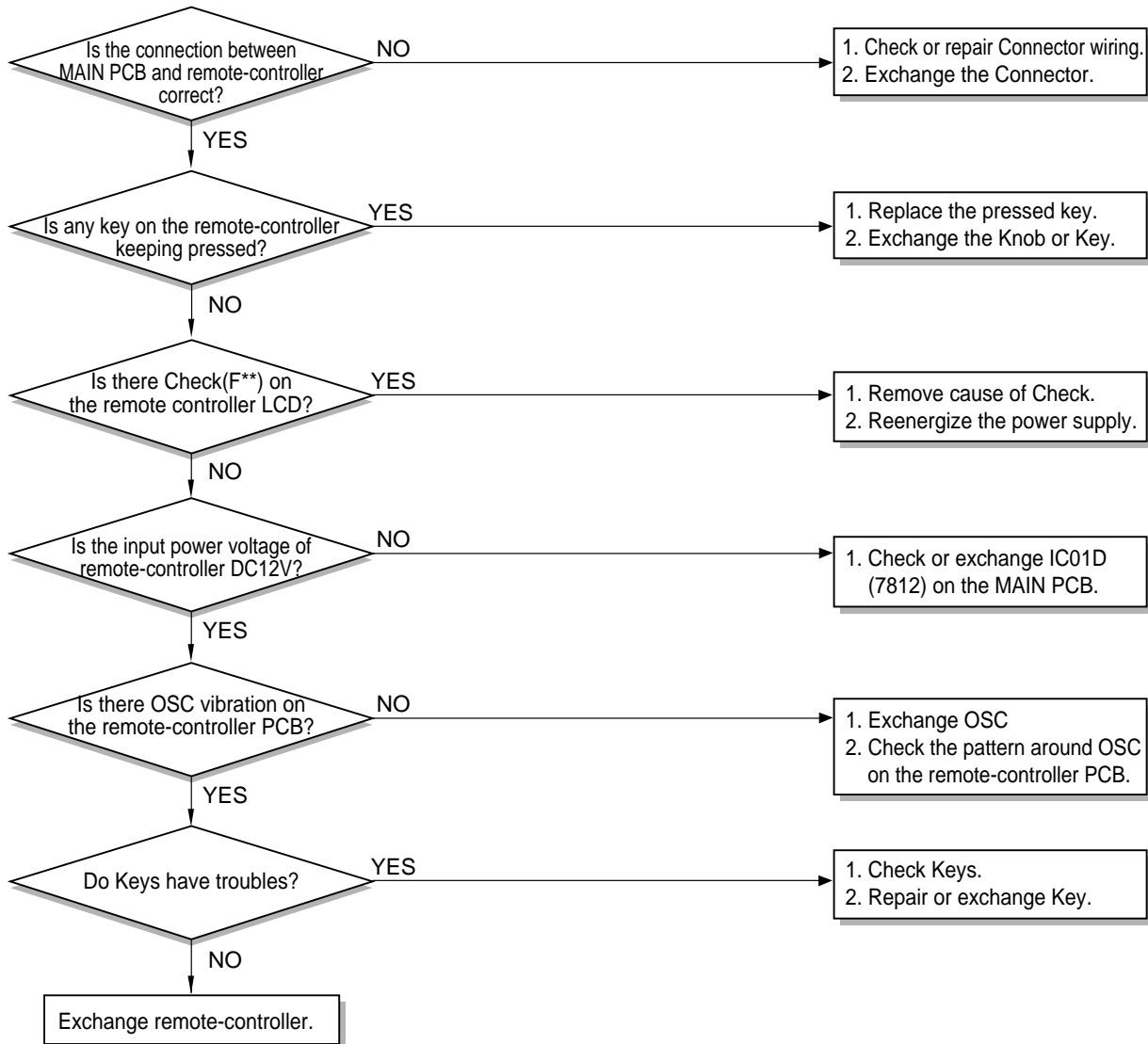
: The remote-controller does not operate.



# Electronic parts Troubleshooting Guide

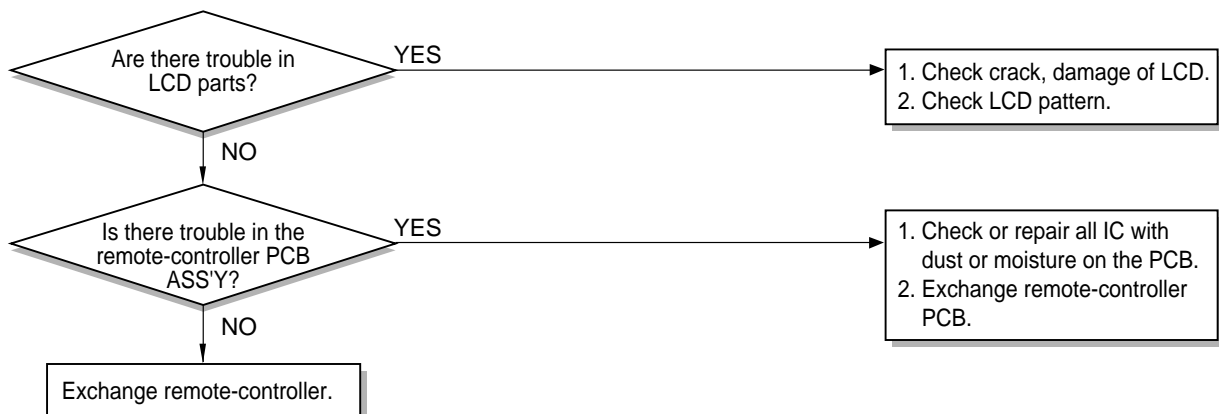
## Possible trouble 3

: Key input of remote-controller does not respond.



## Possible trouble 4

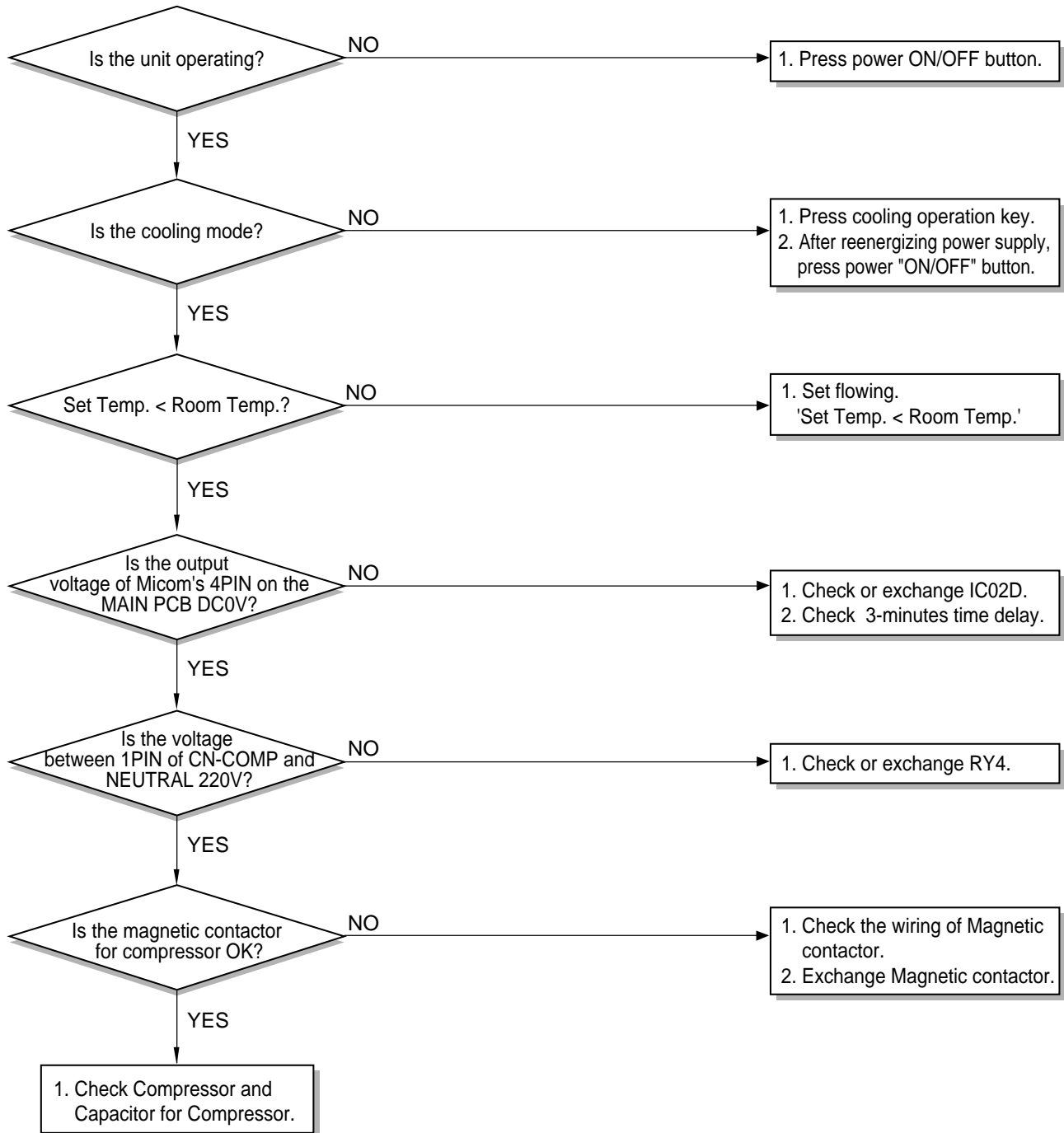
: LCD display on the remote-controller shows some trouble.



# Electronic parts Troubleshooting Guide

## Possible trouble 5

: No cooling operation performed.

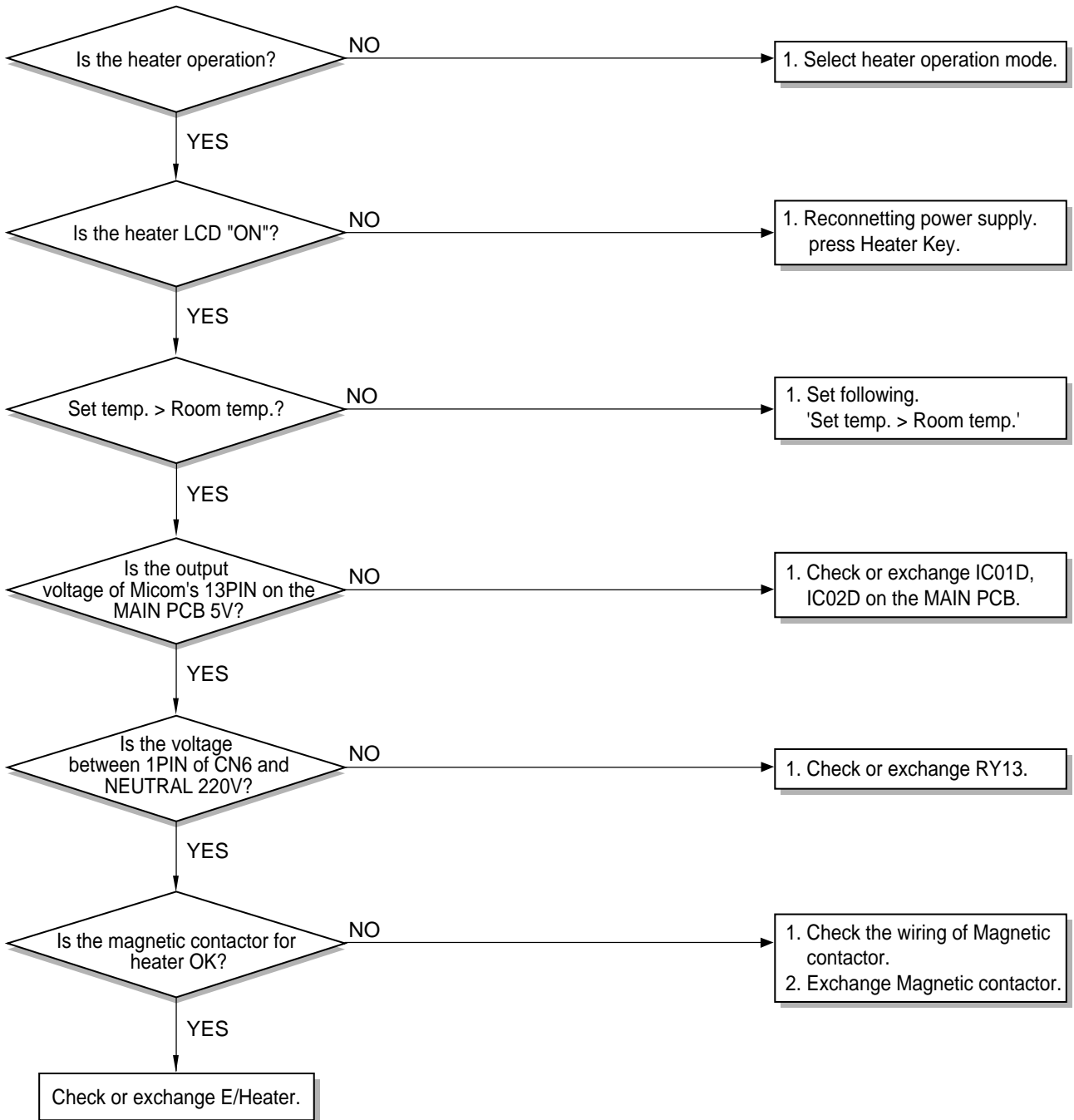


**NOTE:** 3ø model has not capacitor for compressor.

# Electronic parts Troubleshooting Guide

## Possible trouble 6

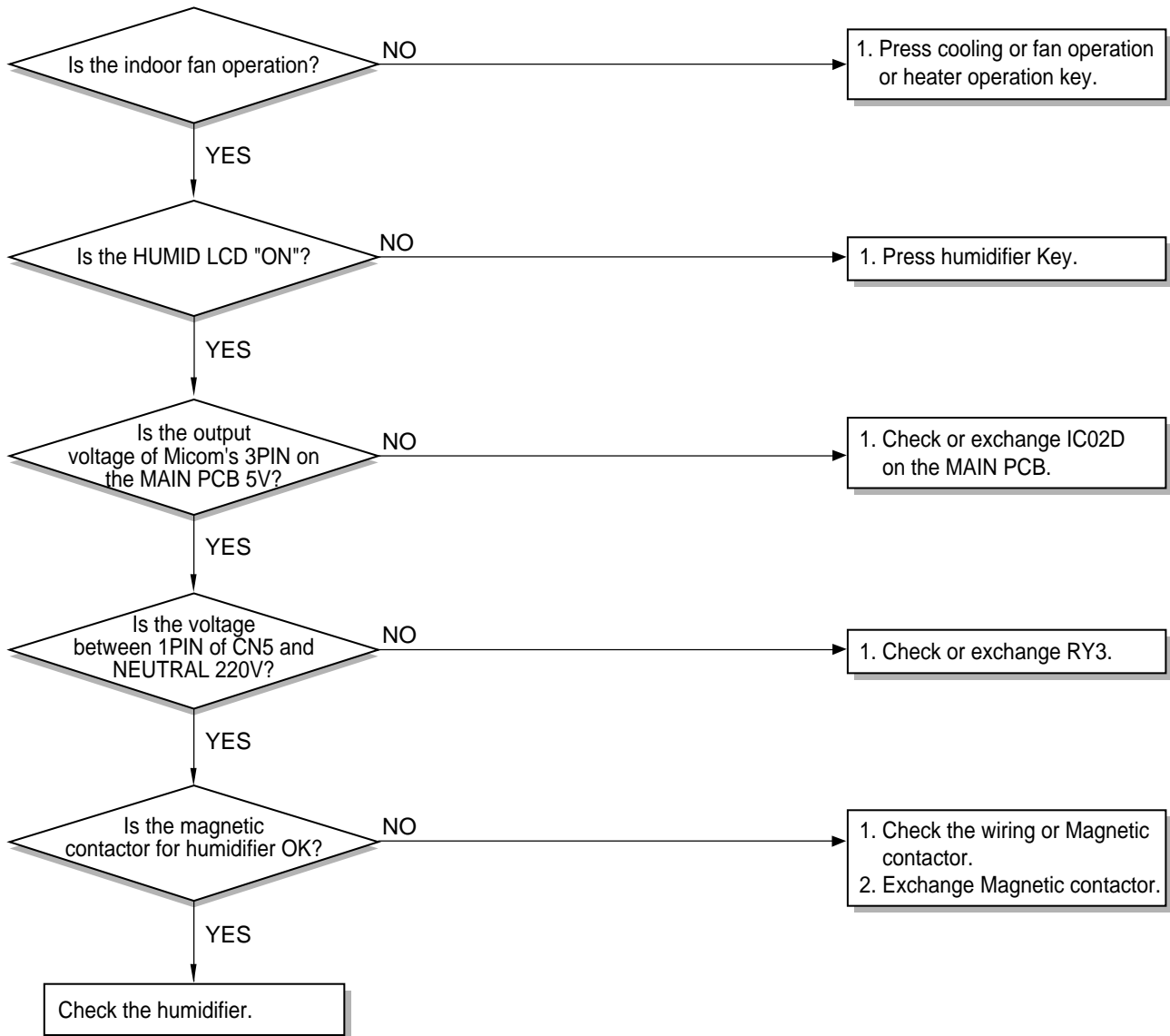
: No heater operation performed.



# Electronic parts Troubleshooting Guide

## Possible trouble 7

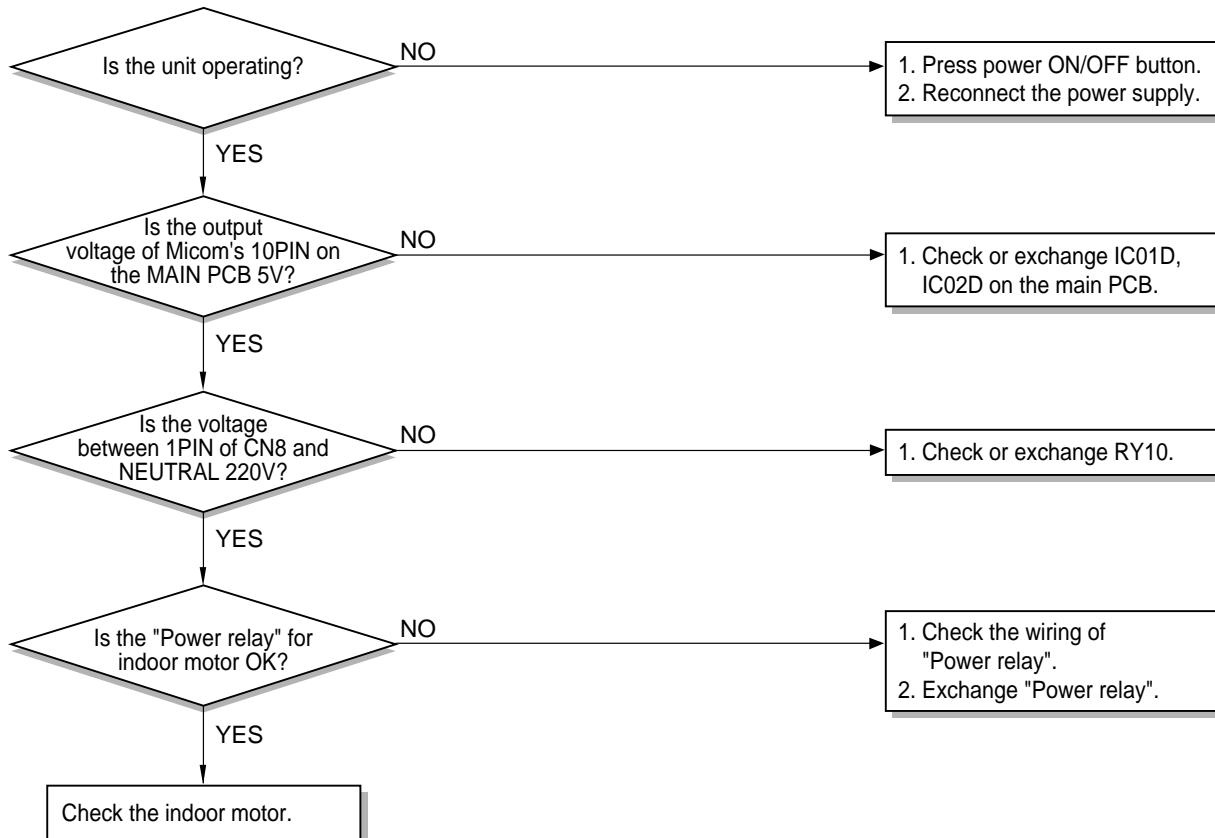
: No humidifier operation performed.



# Electronic parts Troubleshooting Guide

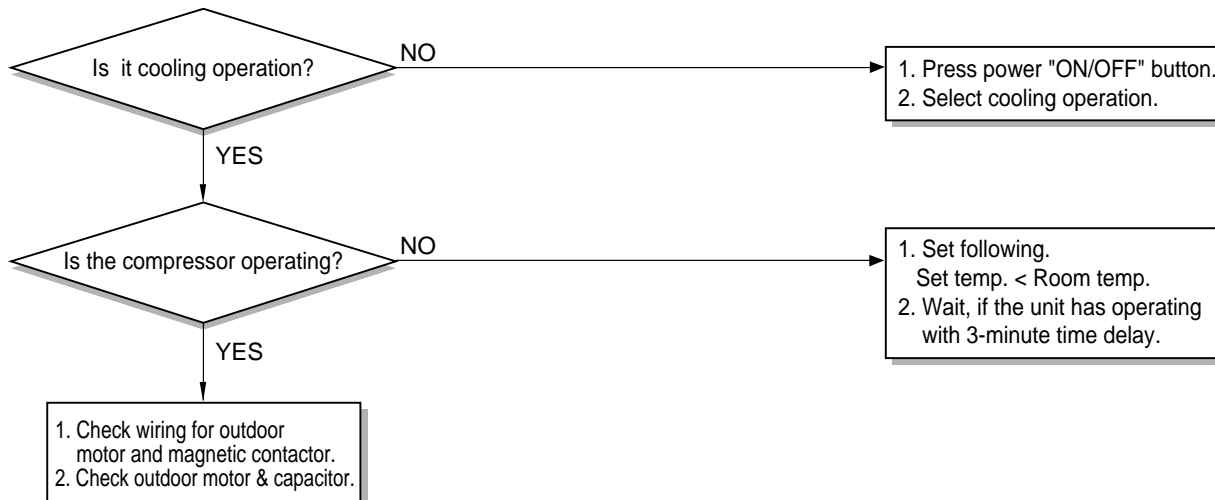
## Possible trouble 8

: Indoor motor does not operate.



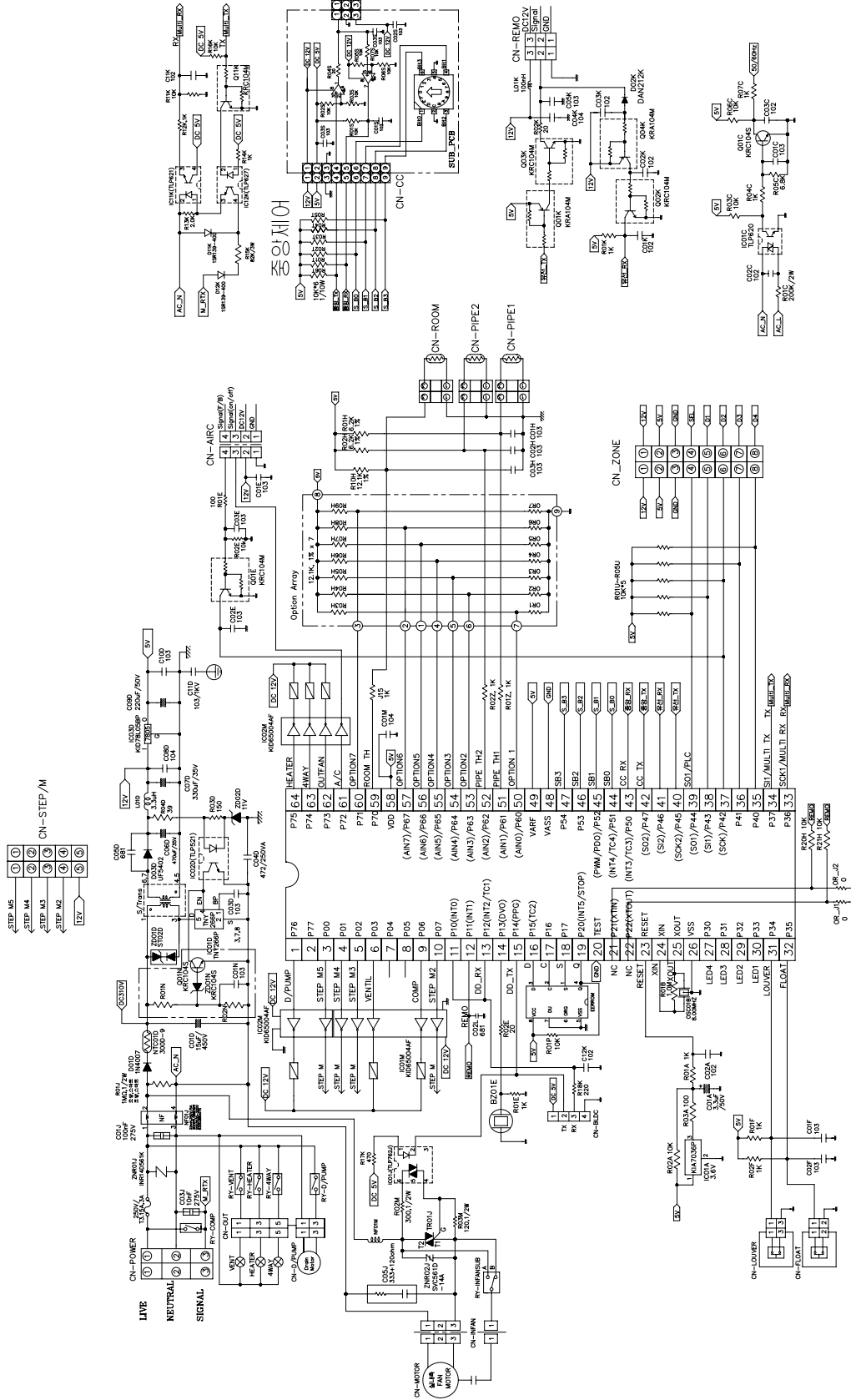
## Possible trouble 9

: Outdoor motor does not operate.



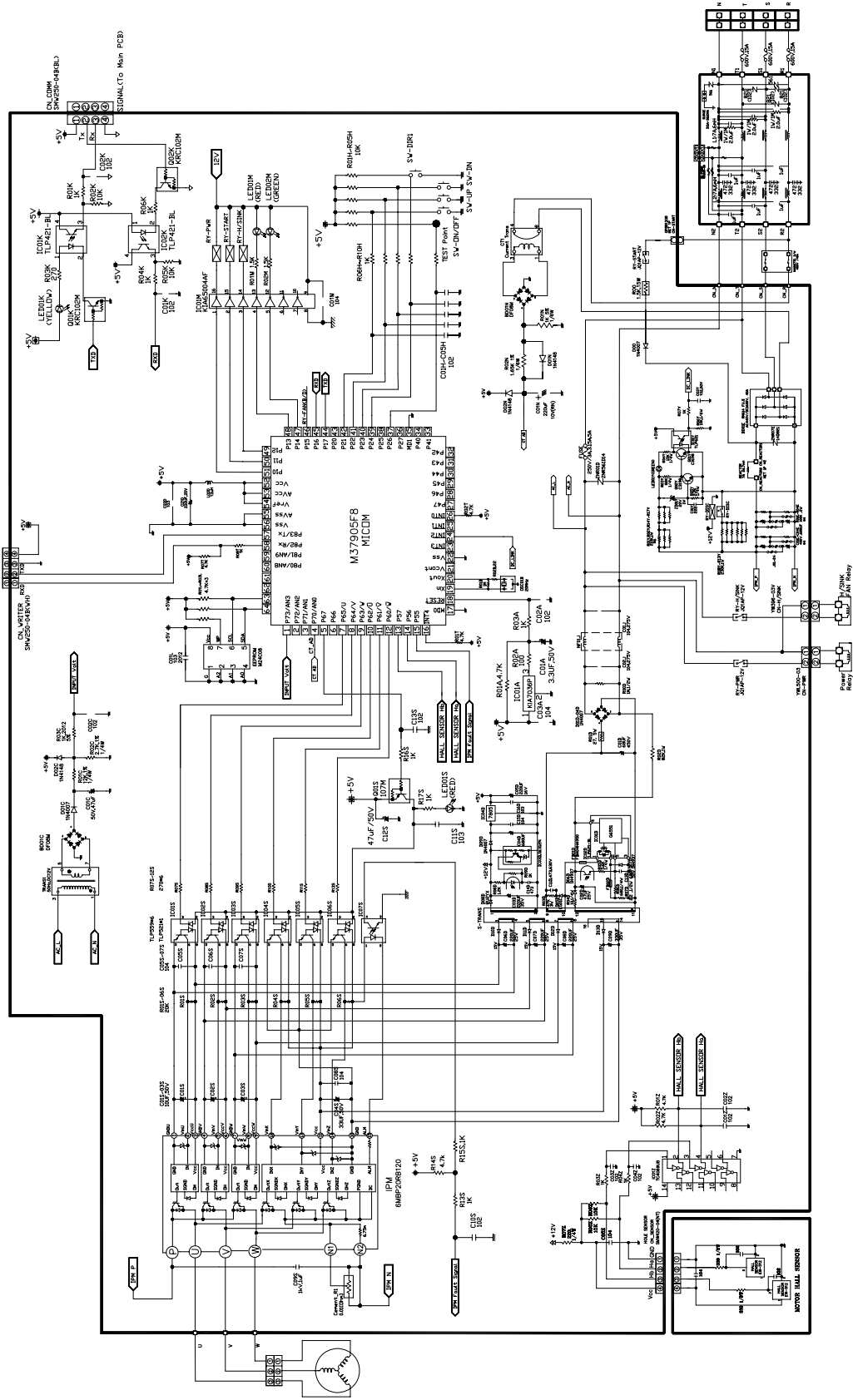
# Features of Controller

## 1. Circuit Diagram of Indoor PCB

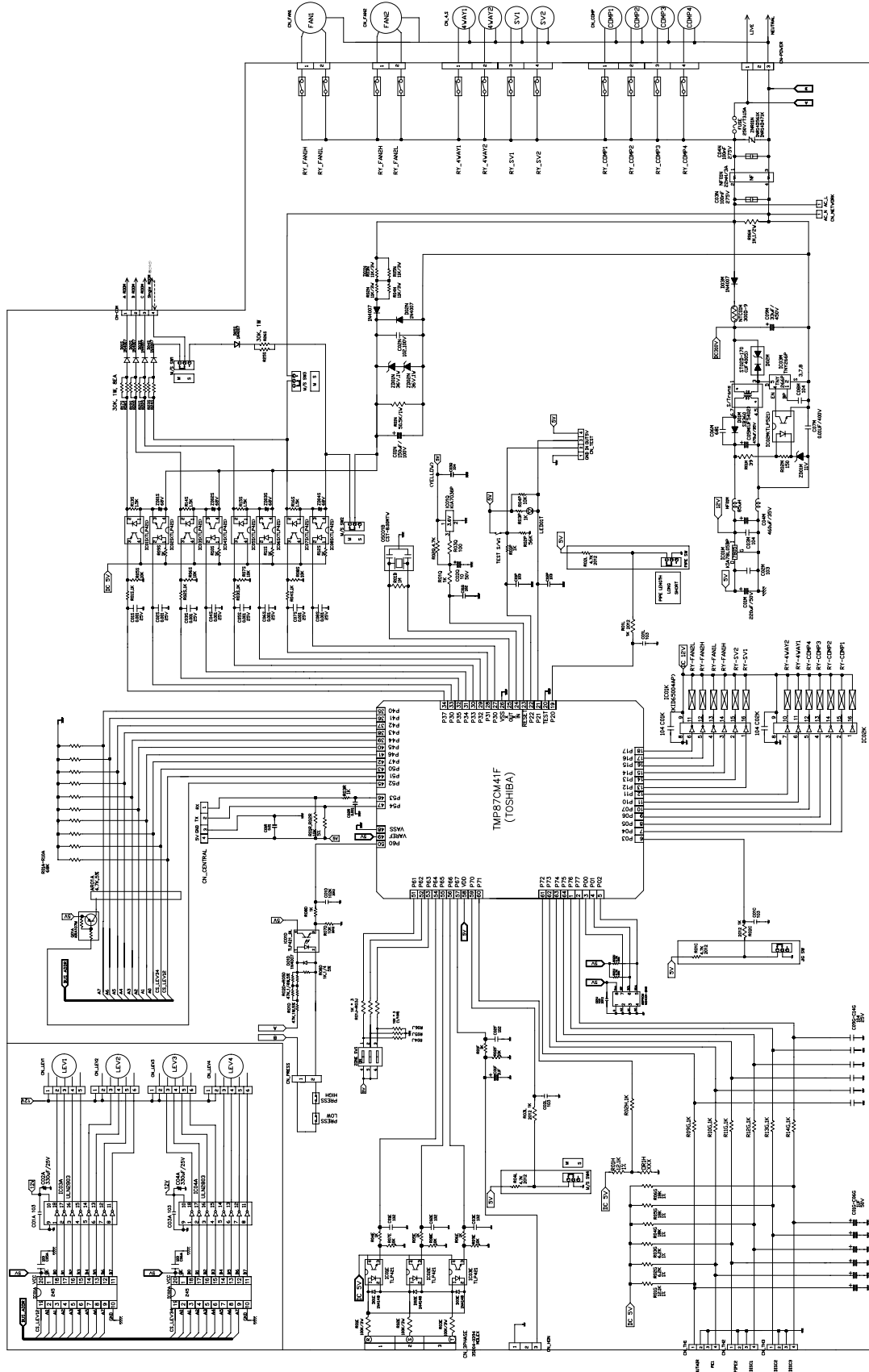




## 2. Circuit Diagram of BLDC Driver



### 3. Circuit Diagram of Outdoor PCB



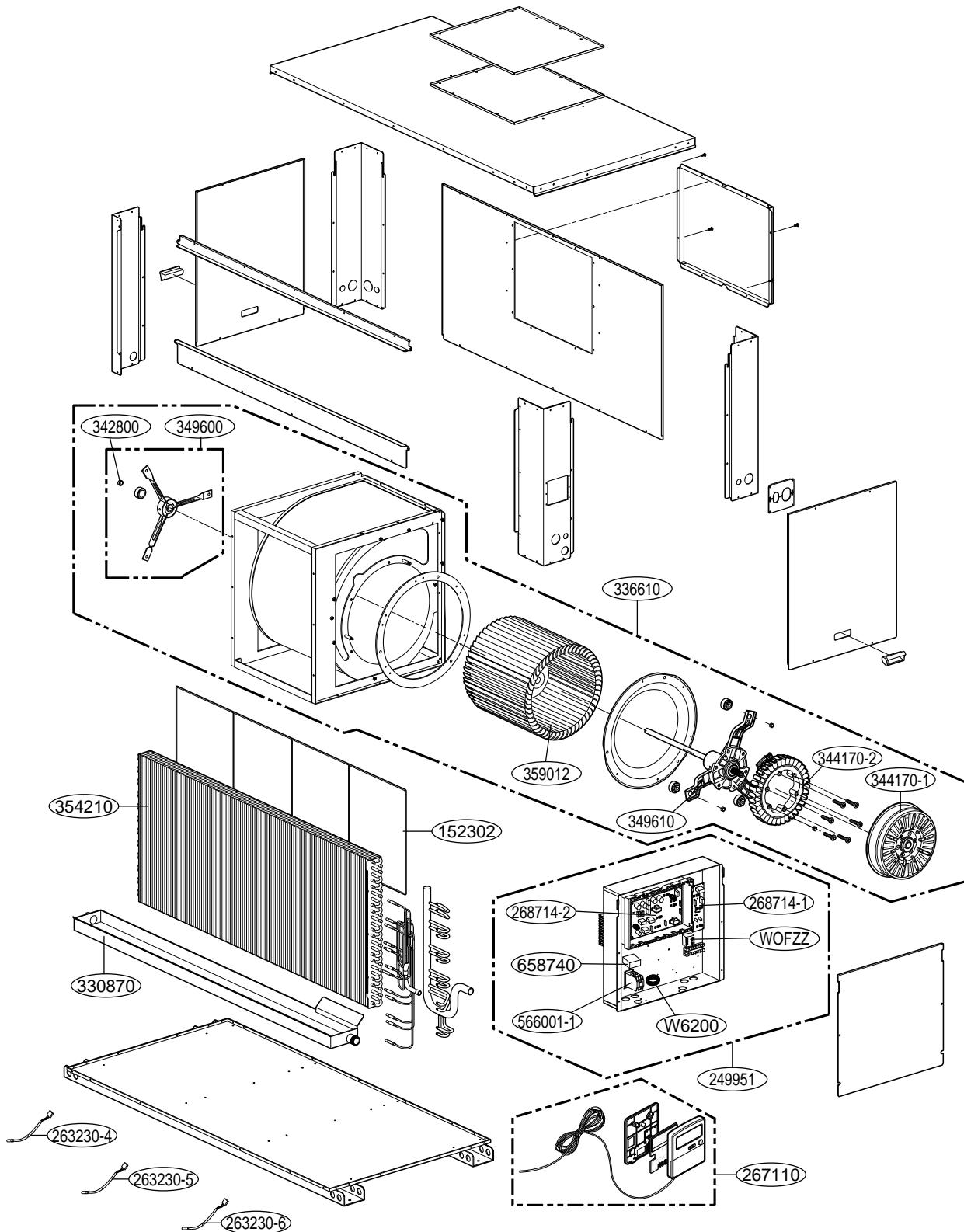
#### 4. Error Mode & Corrective Method

Error mode	Cause of error	Sensing condition of error	Method of SVC	Remark
<b>CH01</b>	OPEN/SHORT of Room Temp .sensor			
<b>CH02</b>	OPEN/SHORT of Indoor Pipe sensor			
<b>CH03</b>	Communication Error between indoor PCB and Remote controller			
<b>CH05</b>	Communication Error between indoor PCB & outdoor PCB			
<b>CH24</b>	High Pressure Switch Trip			
<b>CH33</b>				
<b>CH44</b>				
<b>CH45</b>				
<b>CH47</b>				
<b>CH48</b>				
<b>CH54</b>				

# Exploded View and Replacement Parts List

## 1. Indoor Unit

### • Exploded View (AB-H1208VA0)



# Exploded View and Replacement Parts List

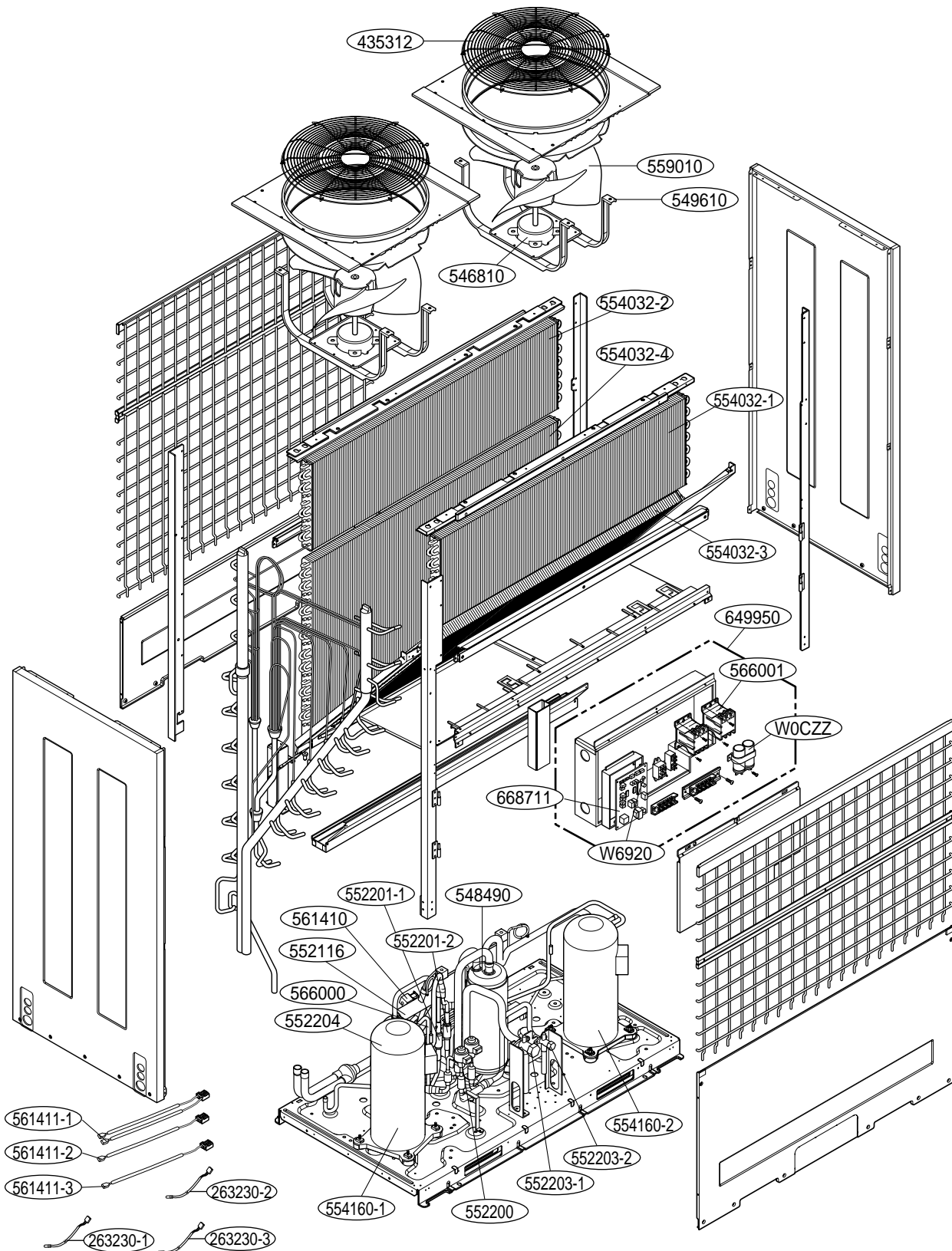
## • Replacement Parts List AB-H1208VA0

LOCATION No.	DESCRIPTION	PART No.	REMARK
		AB-H1208VA0	
336610	HOUSING ASSEMBLY	3661A10031A	
344170-1	ROTOR ASSEMBLY	4413A20001A	
344170-2	STATOR ASSEMBLY	4417A20001B	
349610	MOUNT ASSEMBLY, MOTOR	4961A10014A	
359012	FAN ASSEMBLY, BLOWER	5835A20003G	
349600	BRACKET ASSEMBLY	4811A10003B	
342800	BEARING	4A00131C	
330870	DRAIN PAN ASSEMBLY	3087A20032A	
354210	EVAPORATOR ASSEMBLY	5421A20217A	
152302	FILTER(MECH)	5230A30017B	
267110	REMOTE CONTROLLER ASSEMBLY	6711A20127B	
249951	CONTROL BOX ASSEMBLY, INDOOR	4995A20526A	
268714-1	PCB ASSEMBLY	6871A00012A	Main PCB
268714-2	PCB ASSEMBLY	6871A10222A	BLDC Motor
658740	REACTOR	5874A90003H	
566001-1	MAGNETIC CONTACTOR	6600B000039	
WOFZZ	FUSE	0FZZA90001M	15A , 600V
W6200	FILTER(CIRC),EMC	6200J000125	
263230-4	THERMISTOR ASSEMBLY	6323A30004L	RETURN AIR SENSOR
263230-5	THERMISTOR ASSEMBLY	6323AQ3226Y	PIPE(EVA.OUT) TEMP. SENSOR
263230-6	THERMISTOR ASSEMBLY	6323A30002C	PIPE(EVA. IN) TEMP. SENSOR

# Exploded View and Replacement Parts List

## 2. Outdoor Unit

### • Exploded View (AB-H1208VA0)



# Exploded View and Replacement Parts List

## • Replacement Parts List AB-H1208VA0

LOCATION No.	DESCRIPTION	PART No.	REMARK
		AB-H1208VA0	
559010	FAN ASSEMBLY, PROPELLER	5901A10029A	
435312	GRILLE ASSEMBLY, DISCHARGE	3531A20211F	
546810	MOTOR ASSEMBLY, OUTDOOR	4681A10014H	
549610	MOUNT ASSEMBLY, MOTOR	4960A10022A	
649950	CONTROL BOX ASSEMBLY	4995A10163A	
668711	PCB ASSEMBLY	6871A20583W	
566001-2	SWITCH, MAGNET	6600B000041	
W6920	RELAY	3A00261C	
W0CZZ	CAPACITOR	3A00988G	10 µF, 450VAC
554032-1	CONDENSER ASSEMBLY	5403A20160A	PCM
554032-2	CONDENSER ASSEMBLY	5403A20160B	PCM
554032-3	CONDENSER ASSEMBLY	5403A20159A	PCM
554032-4	CONDENSER ASSEMBLY	6711A20127B	PCM
554032-1	CONDENSER ASSEMBLY	5403A20160G	GOLD
554032-2	CONDENSER ASSEMBLY	5403A20160H	GOLD
554032-3	CONDENSER ASSEMBLY	5403A20159G	GOLD
554032-4	CONDENSER ASSEMBLY	5403A20159H	GOLD
554160-1	COMPRESSOR	2520UBBY2BA	AR081YAB
554160-2	COMPRESSOR	2520UBDY2AB	AR073YAB
548490	ACCUMULATOR	4849A10038A	
552203-1	VALVE, SERVICE	MJX30447401	Ø 28
552203-2	VALVE, SERVICE	5220A20035A	Ø 15.88
552116	TUBE ASSEMBLY, REVERSING	5211A12308C	
552200	VALVE, EXPANSION BODY	5220A90013A	
552201-1	VALVE, CHECK	3A01020H	
552201-2	VALVE, CHECK	3A01020L	
552204	VALVE, SOLENOID	5220A90002H	
561410	COIL ASSEMBLY, REVERSING VALVE	6141A20010R	
561411-1	COIL ASSEMBLY, EXPANSION	6141A20011W	
561411-2	COIL ASSEMBLY, SOLENOID	6141A20031L	
561411-3	COIL ASSEMBLY, SOLENOID	6141A20031M	
566000	SWITCH, PRESSURE	3A02524L	HIGH PRESSURE
263230-1	THERMISTOR	6323A20020P	CONDENSER, AMBIENT TEMP.
263230-2	THERMISTOR	6323A20020Q	COMP-A DISCHARGE, SUCTION
263230-3	THERMISTOR	6323A20020R	COMP-B DISCHARGE

