

## 15.3 Error Code Table

Diagnosis display	Abnormality / Protection control	Abnormality Judgment	Protection Operation	Problem	Check location
H00	No memory of failure	—	Normal operation	—	—
H11	Indoor/outdoor abnormal communication	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor/outdoor communication not establish	<ul style="list-style-type: none"> <li>Indoor/outdoor wire terminal</li> <li>Indoor/outdoor PCB</li> <li>Indoor/outdoor connection wire</li> </ul>
H12	Indoor unit capacity unmatched	90s after power supply	—	Total indoor capability more than maximum limit or less than minimum limit, or number of indoor unit less than two	<ul style="list-style-type: none"> <li>Indoor/outdoor connection wire</li> <li>Indoor/outdoor PCB</li> <li>Specification and combination table in catalogue</li> </ul>
H14	Indoor intake air temperature sensor abnormality	Continuous for 5s	—	Indoor intake air temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Indoor intake air temperature sensor lead wire and connector</li> </ul>
H15	Compressor temperature sensor abnormality	Continuous for 5s	—	Compressor temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Compressor temperature sensor lead wire and connector</li> </ul>
H16	Outdoor current transformer (CT) abnormality	—	—	Current transformer faulty or compressor faulty	<ul style="list-style-type: none"> <li>Outdoor PCB faulty or compressor faulty</li> </ul>
H19	Indoor fan motor mechanism lock	Continuous happen for 7 times	—	Indoor fan motor lock or feedback abnormal	<ul style="list-style-type: none"> <li>Fan motor lead wire and connector</li> <li>Fan motor lock or block</li> </ul>
H23	Indoor heat exchanger temperature sensor abnormality	Continuous for 5s	—	Indoor heat exchanger temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Indoor heat exchanger temperature sensor lead wire and connector</li> </ul>
H24	Indoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	—	Indoor heat exchanger temperature sensor 2 open or short circuit	<ul style="list-style-type: none"> <li>Indoor heat exchanger temperature sensor 2 lead wire and connector</li> </ul>
H25	Indoor ion device abnormality	Port is ON for 10s during ion device off	—	—	<ul style="list-style-type: none"> <li>ion device PCB</li> </ul>
H27	Outdoor air temperature sensor abnormality	Continuous for 5s	—	Outdoor air temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Outdoor air temperature sensor lead wire and connector</li> </ul>
H28	Outdoor heat exchanger temperature sensor 1 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 1 open or short circuit	<ul style="list-style-type: none"> <li>Outdoor heat exchanger temperature sensor 1 lead wire and connector</li> </ul>
H30	Outdoor discharge pipe temperature sensor abnormality	Continuous for 5s	—	Outdoor discharge pipe temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Outdoor discharge pipe temperature sensor lead wire and connector</li> </ul>
H32	Outdoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 2 open or short circuit	<ul style="list-style-type: none"> <li>Outdoor heat exchanger temperature sensor 2 lead wire and connector</li> </ul>
H33	Indoor / outdoor misconnection abnormality	—	—	Indoor and outdoor rated voltage different	<ul style="list-style-type: none"> <li>Indoor and outdoor units check</li> </ul>
H34	Outdoor heat sink temperature sensor abnormality	Continuous for 2s	—	Outdoor heat sink temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Outdoor heat sink sensor</li> </ul>
H36	Outdoor gas pipe temperature sensor abnormality	Continuous for 5s	Heating protection operation only	Outdoor gas pipe temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Outdoor gas pipe temperature sensor lead wire and connector</li> </ul>
H37	Outdoor liquid pipe temperature sensor abnormality	Continuous for 5s	Cooling protection operation only	Outdoor liquid pipe temperature sensor open or short circuit	<ul style="list-style-type: none"> <li>Outdoor liquid pipe temperature sensor lead wire and connector</li> </ul>
H38	Indoor/Outdoor mismatch (brand code)	—	—	Brand code not match	<ul style="list-style-type: none"> <li>Check indoor unit and outdoor unit</li> </ul>
H39	Abnormal indoor operating unit or standby units	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve abnormality, indoor heat exchanger sensor open circuit	<ul style="list-style-type: none"> <li>Check indoor/outdoor connection wire and connection pipe</li> <li>Indoor heat exchanger sensor lead wire and connector</li> <li>Expansion valve and lead wire and connector</li> </ul>

H41	Abnormal wiring or piping connection	—	—	Wrong wiring and connecting pipe, expansion valve abnormality	<ul style="list-style-type: none"> <li>• Check indoor/outdoor connection wire and connection pipe</li> <li>• Expansion valve and lead wire and connector</li> </ul>
H59	ECO sensor abnormality	Continuous for 70s	—	ECO sensor open or short circuit	<ul style="list-style-type: none"> <li>• ECO sensor</li> <li>• ECO and Indoor PCB</li> </ul>
H64	Outdoor high pressure sensor abnormality	Continuous for 1 minutes	—	High pressure sensor open circuit during compressor stop	<ul style="list-style-type: none"> <li>• High pressure sensor</li> <li>• Lead wire and connector</li> </ul>
H70	Light sensor abnormality	Continuous for 24 hours	—	Light sensor open or short circuit	<ul style="list-style-type: none"> <li>• Light sensor</li> <li>• Indoor PCB</li> </ul>
H97	Outdoor fan motor mechanism lock	2 times happen within 30 minutes	—	Outdoor fan motor lock or feedback abnormal	<ul style="list-style-type: none"> <li>• Outdoor fan motor lead wire and connector</li> <li>• Fan motor lock or block</li> </ul>
H98	Indoor high pressure protection	—	—	Indoor high pressure protection (Heating)	<ul style="list-style-type: none"> <li>• Check indoor heat exchanger</li> <li>• Air filter dirty</li> <li>• Air circulation short circuit</li> </ul>
H99	Indoor operating unit freeze protection	—	—	Indoor freeze protection (Cooling)	<ul style="list-style-type: none"> <li>• Check indoor heat exchanger</li> <li>• Air filter dirty</li> <li>• Air circulation short circuit</li> </ul>
F11	4-way valve switching abnormality	4 times happen within 30 minutes	—	4-way valve switching abnormal	<ul style="list-style-type: none"> <li>• 4-way valve</li> <li>• Lead wire and connector</li> </ul>
F17	Indoor standby units freezing abnormality	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve leakage, indoor heat exchanger sensor open circuit	<ul style="list-style-type: none"> <li>• Check indoor/outdoor connection wire and pipe</li> <li>• Indoor heat exchanger sensor lead wire and connector</li> <li>• Expansion valve lead wire and connector</li> </ul>
F90	Power factor correction (PFC) circuit protection	4 times happen within 10 minutes	—	Power factor correction circuit abnormal	<ul style="list-style-type: none"> <li>• Outdoor PCB faulty</li> </ul>
F91	Refrigeration cycle abnormality	2 times happen within 20 minutes	—	Refrigeration cycle abnormal	<ul style="list-style-type: none"> <li>• Insufficient refrigerant or valve close</li> </ul>
F93	Compressor abnormal revolution	4 times happen within 20 minutes	—	Compressor abnormal revolution	<ul style="list-style-type: none"> <li>• Power transistor module faulty or compressor lock</li> </ul>
F94	Compressor discharge overshoot protection	4 times happen within 30 minutes	—	Compressor discharge pressure overshoot	<ul style="list-style-type: none"> <li>• Check refrigeration system</li> </ul>
F95	Outdoor cooling high pressure protection	4 times happen within 20 minutes	—	Cooling high pressure protection	<ul style="list-style-type: none"> <li>• Check refrigeration system</li> <li>• Outdoor air circuit</li> </ul>
F96	Power transistor module overheating protection	4 times happen within 30 minutes	—	Power transistor module overheat	<ul style="list-style-type: none"> <li>• PCB faulty</li> <li>• Outdoor air circuit (fan motor)</li> </ul>
F97	Compressor overheating protection	3 times happen within 30 minutes	—	Compressor overheat	<ul style="list-style-type: none"> <li>• Insufficient refrigerant</li> </ul>
F98	Total running current protection	3 times happen within 20 minutes	—	Total current protection	<ul style="list-style-type: none"> <li>• Check refrigeration system</li> <li>• Power source or compressor lock</li> </ul>
F99	Outdoor direct current (DC) peak detection	Continuous happen for 7 times	—	Power transistor module current protection	<ul style="list-style-type: none"> <li>• Power transistor module faulty or compressor lock</li> </ul>

## 15.4 Self-diagnosis Method

### 15.4.1 H11 (Indoor/Outdoor Abnormal Communication)

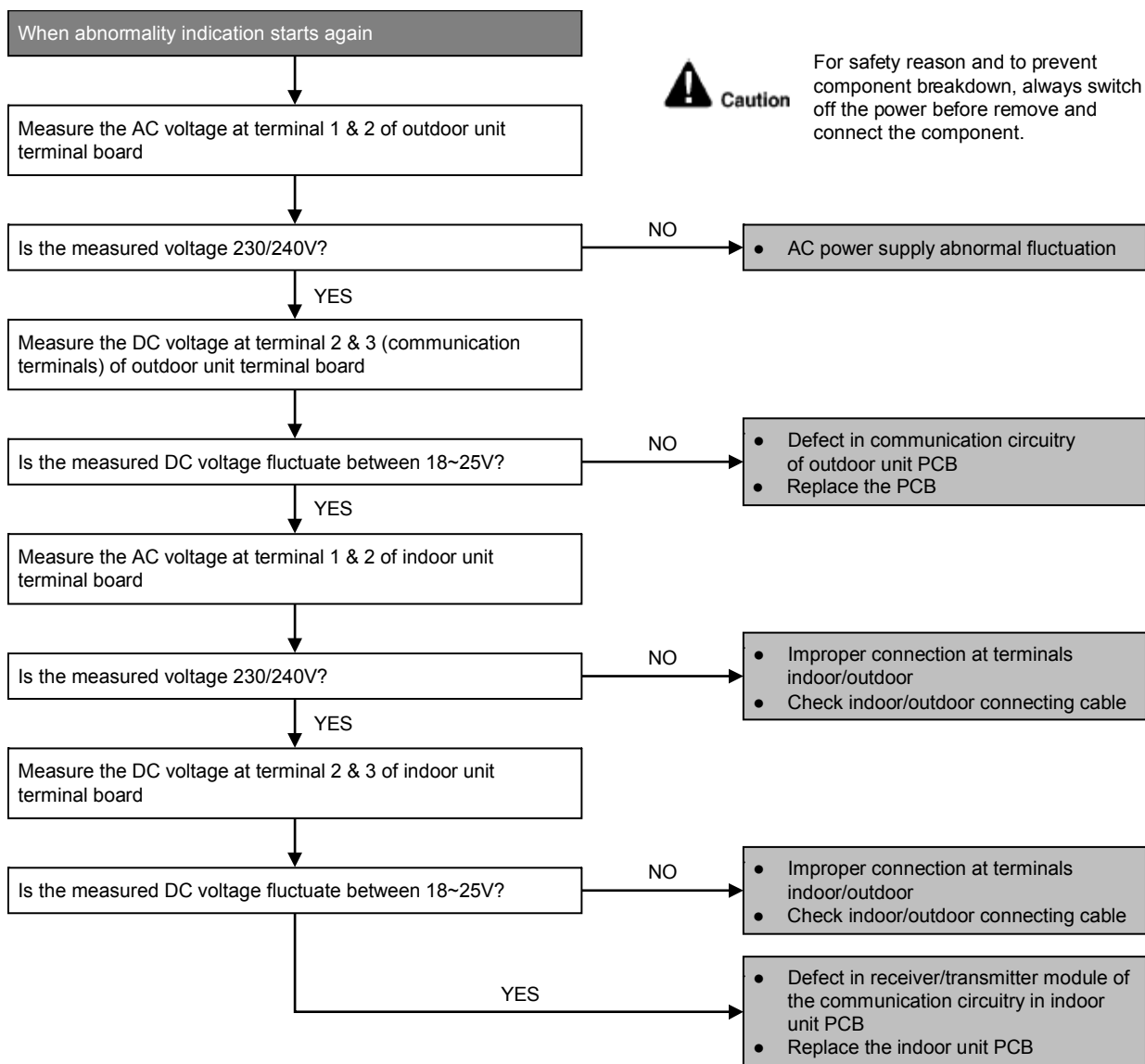
#### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the data received from outdoor unit in indoor unit signal transmission is checked whether it is normal.

#### Malfunction Caused

- Faulty indoor unit PCB.
- Faulty outdoor unit PCB.
- Indoor unit-outdoor unit signal transmission error due to wiring error.
- Indoor unit-outdoor unit signal transmission error due to breaking of wire in the connection wires between the indoor and outdoor units.

#### Troubleshooting



## 15.4.2 H12 (Indoor/Outdoor Capacity Rank Mismatched)

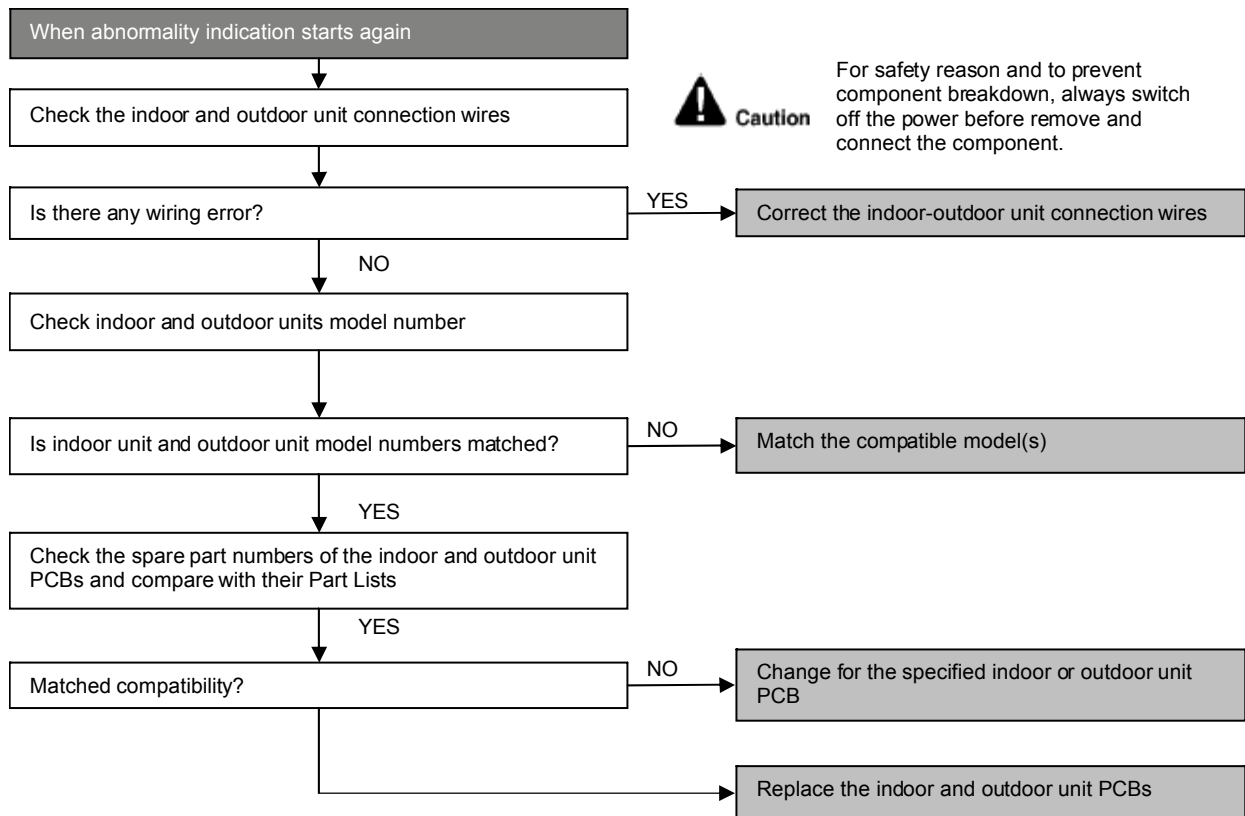
### Malfunction Decision Conditions

- During startup, error code appears when different types of indoor and outdoor units are interconnected.

### Malfunction Caused

- Wrong models interconnected.
- Wrong indoor unit or outdoor unit PCBs mounted.
- Indoor unit or outdoor unit PCBs defective.
- Indoor-outdoor unit signal transmission error due to wrong wiring.
- Indoor-outdoor unit signal transmission error due to breaking of wire 3 in the connection wires between the indoor and outdoor units.

### Troubleshooting



15.4.3 H14 (Indoor Intake Air Temperature Sensor Abnormality)

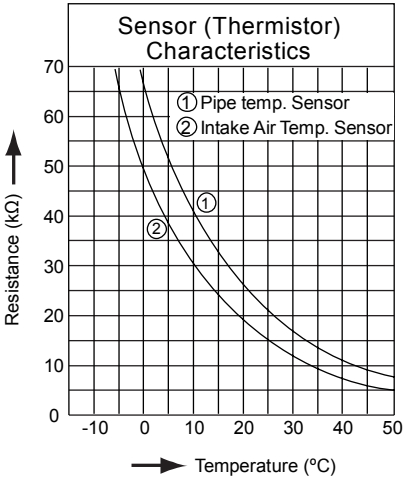
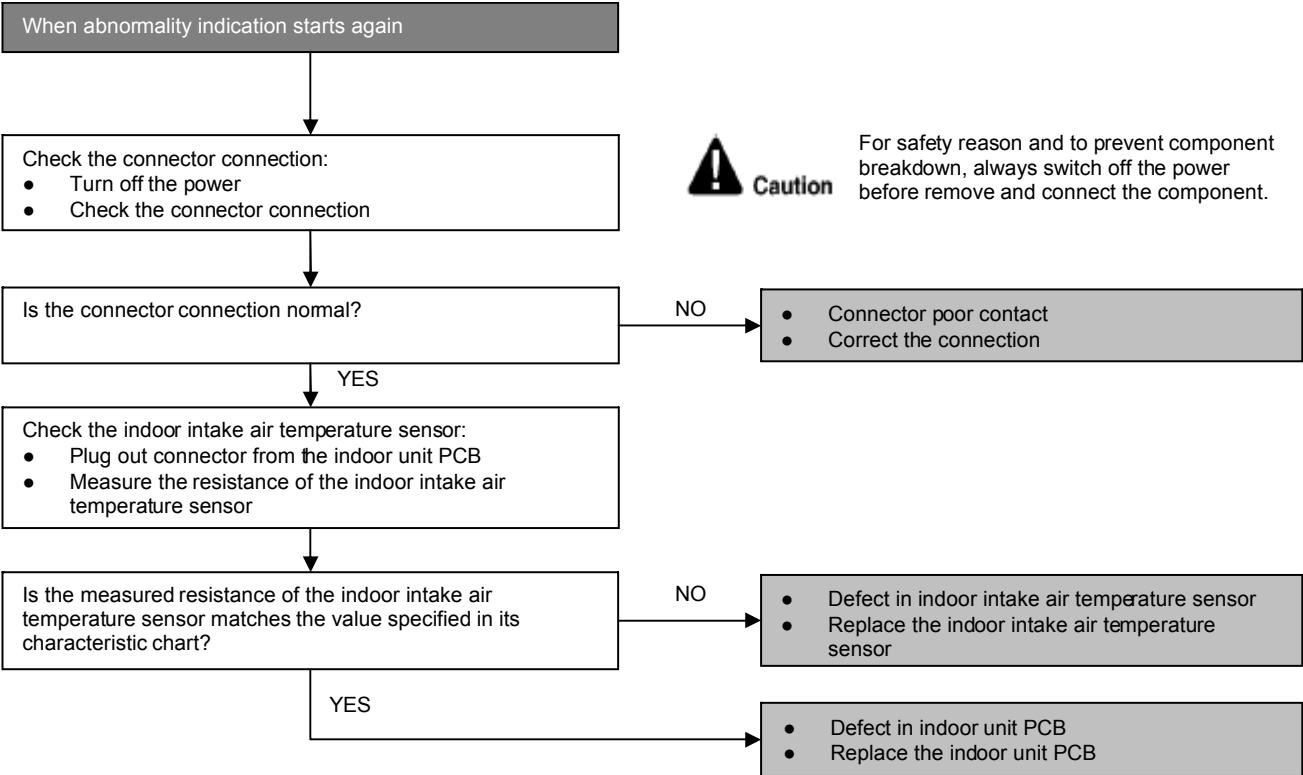
Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the indoor intake air temperature sensor are used to determine sensor errors.

Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

Troubleshooting



## 15.4.4 H15 (Compressor Temperature Sensor Abnormality)

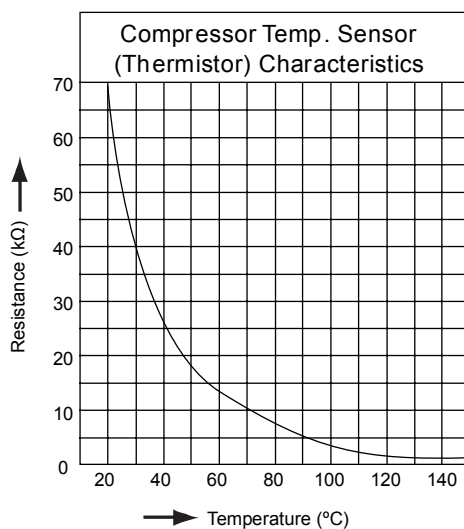
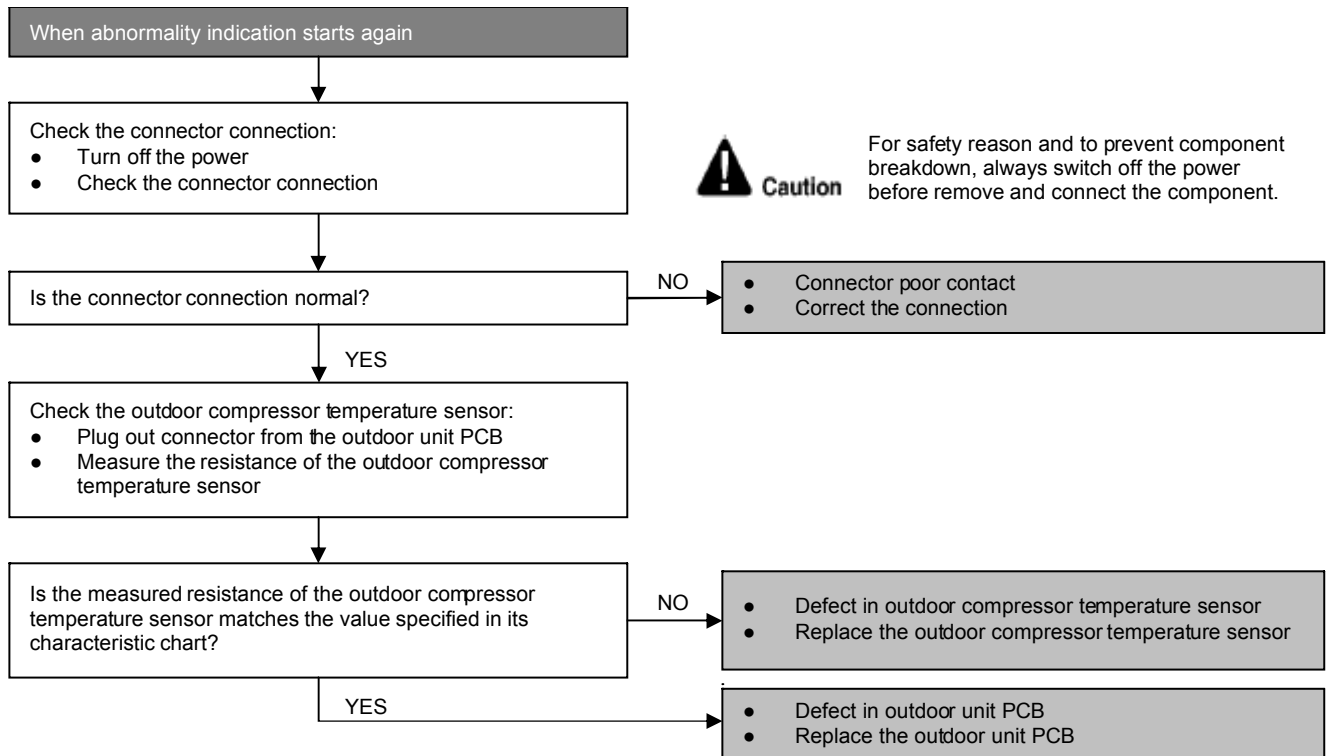
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor compressor temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.5 H16 (Outdoor Current Transformer)

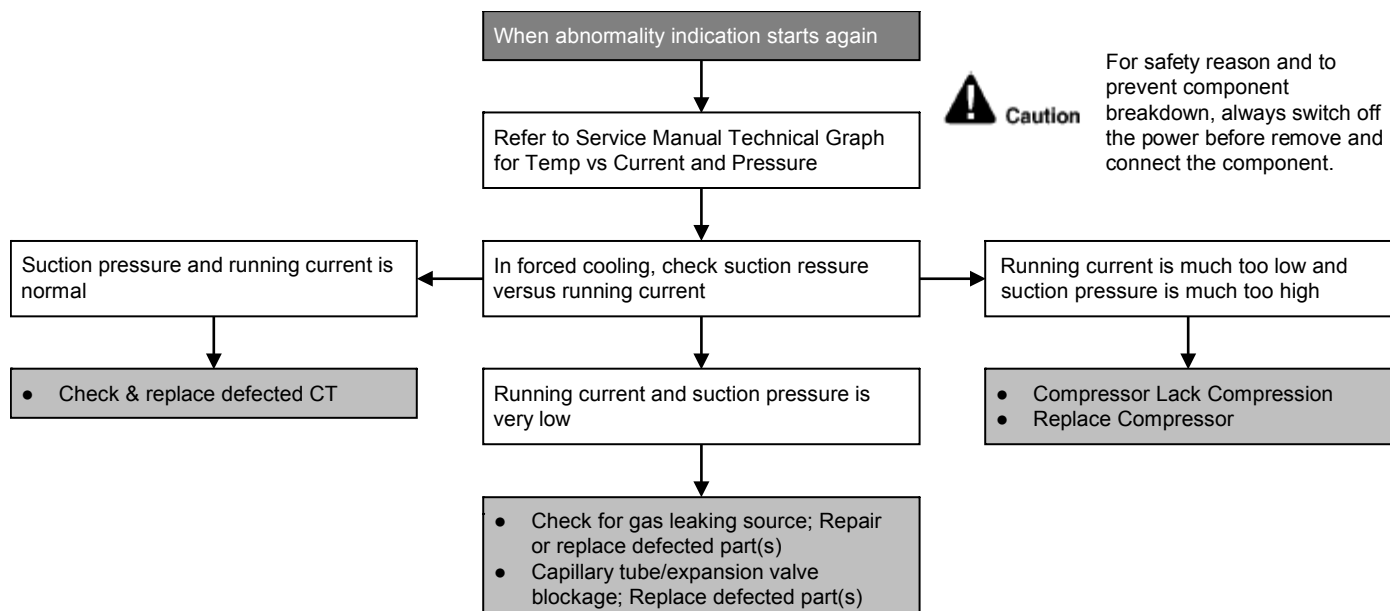
### Malfunction Decision Conditions

- An input current, detected by Current Transformer CT, is below threshold value when the compressor is operating at certain frequency value for 3 minutes.

### Malfunction Caused

- Lack of gas
- Broken CT (current transformer)
- Broken Outdoor PCB

### Troubleshooting



### 15.4.6 H19 (Indoor Fan Motor – DC Motor Mechanism Locked)

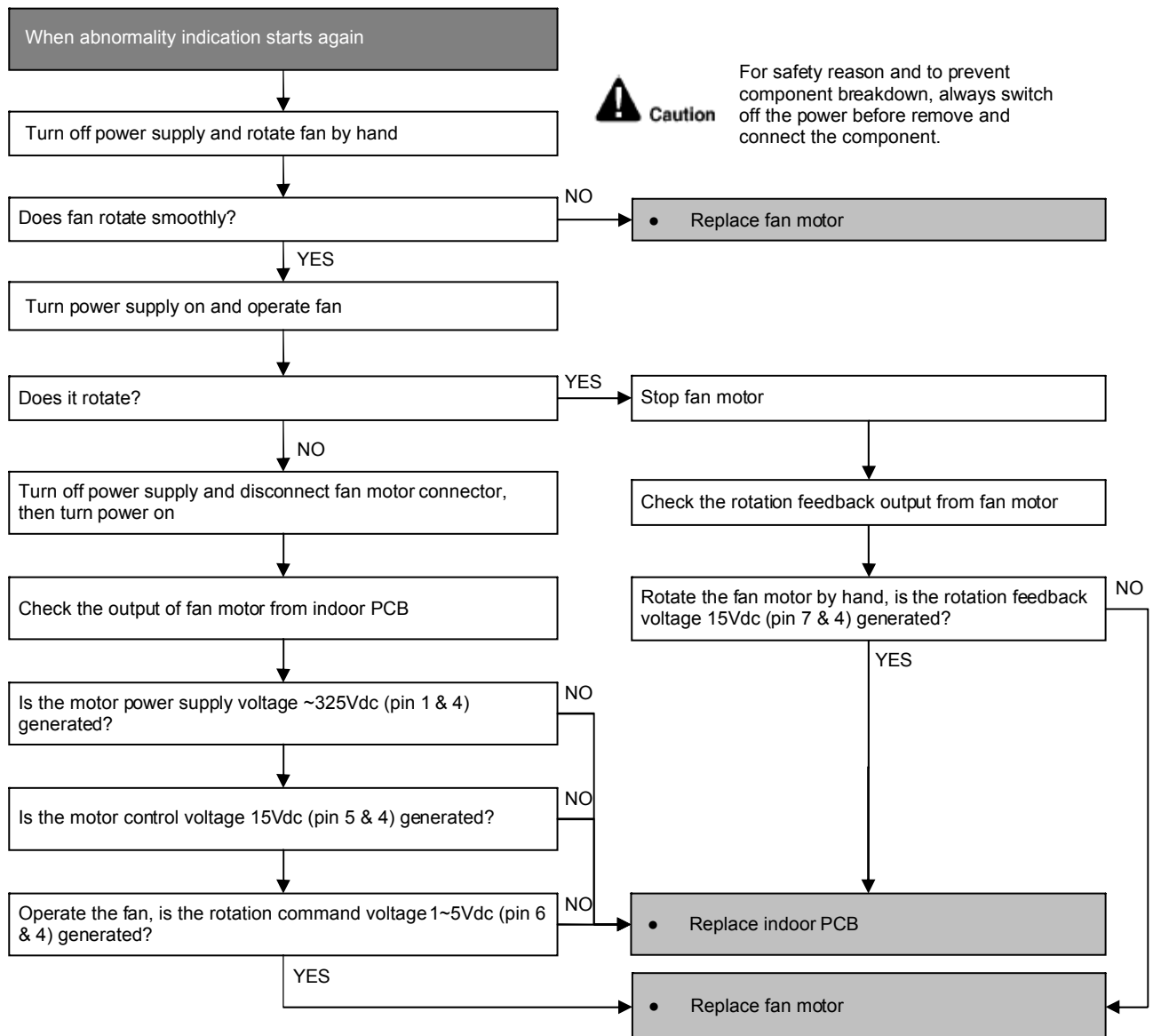
#### Malfunction Decision Conditions

- The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor (feedback of rotation > 2550rpm or < 50rpm)

#### Malfunction Caused

- Operation stops due to short circuit inside the fan motor winding.
- Operation stops due to breaking of wire inside the fan motor.
- Operation stops due to breaking of fan motor lead wires.
- Operation stops due to Hall IC malfunction.
- Operation error due to faulty indoor unit PCB.

#### Troubleshooting





## 15.4.7 H23 (Indoor Pipe Temperature Sensor Abnormality)

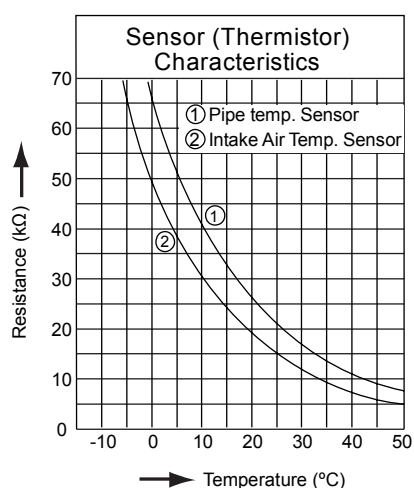
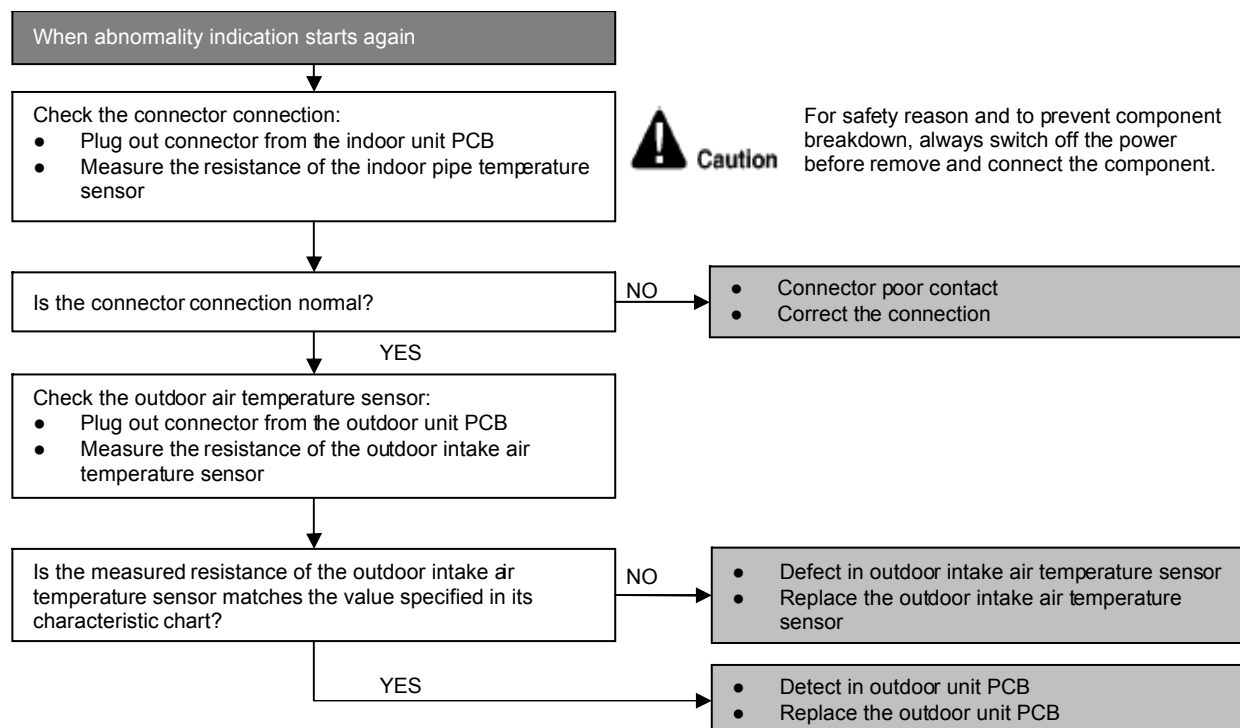
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the indoor heat exchanger temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.8 H27 (Outdoor Air Temperature Sensor Abnormality)

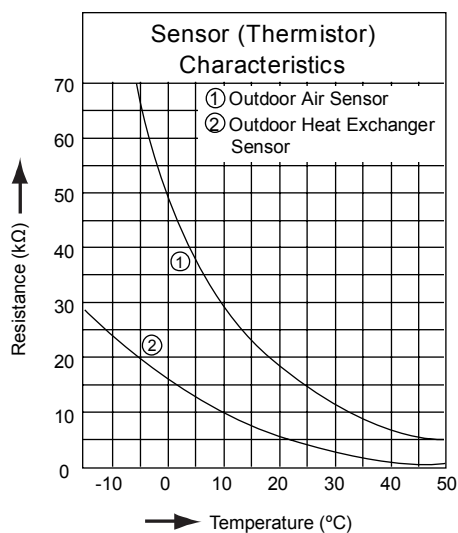
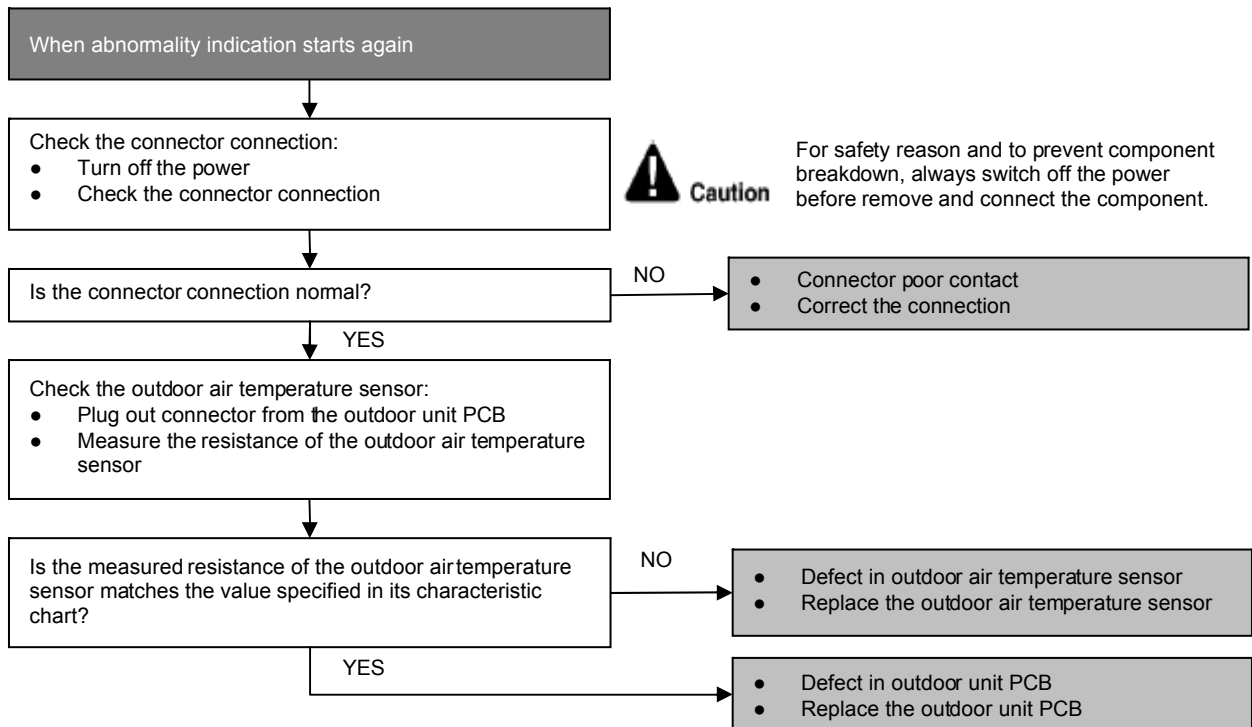
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor air temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.9 H28 (Outdoor Pipe Temperature Sensor Abnormality)

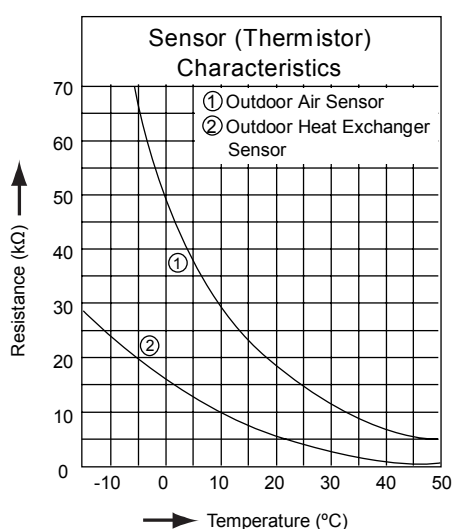
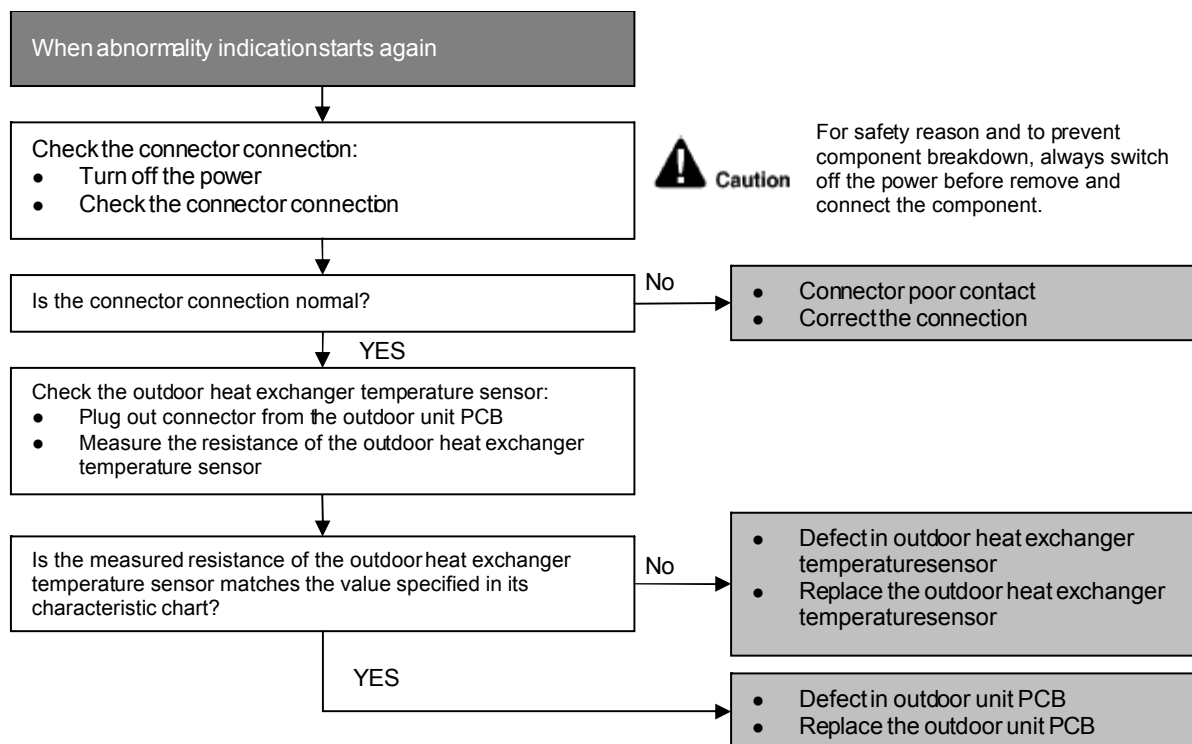
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor pipe temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.10 H30 (Compressor Discharge Temperature Sensor Abnormality)

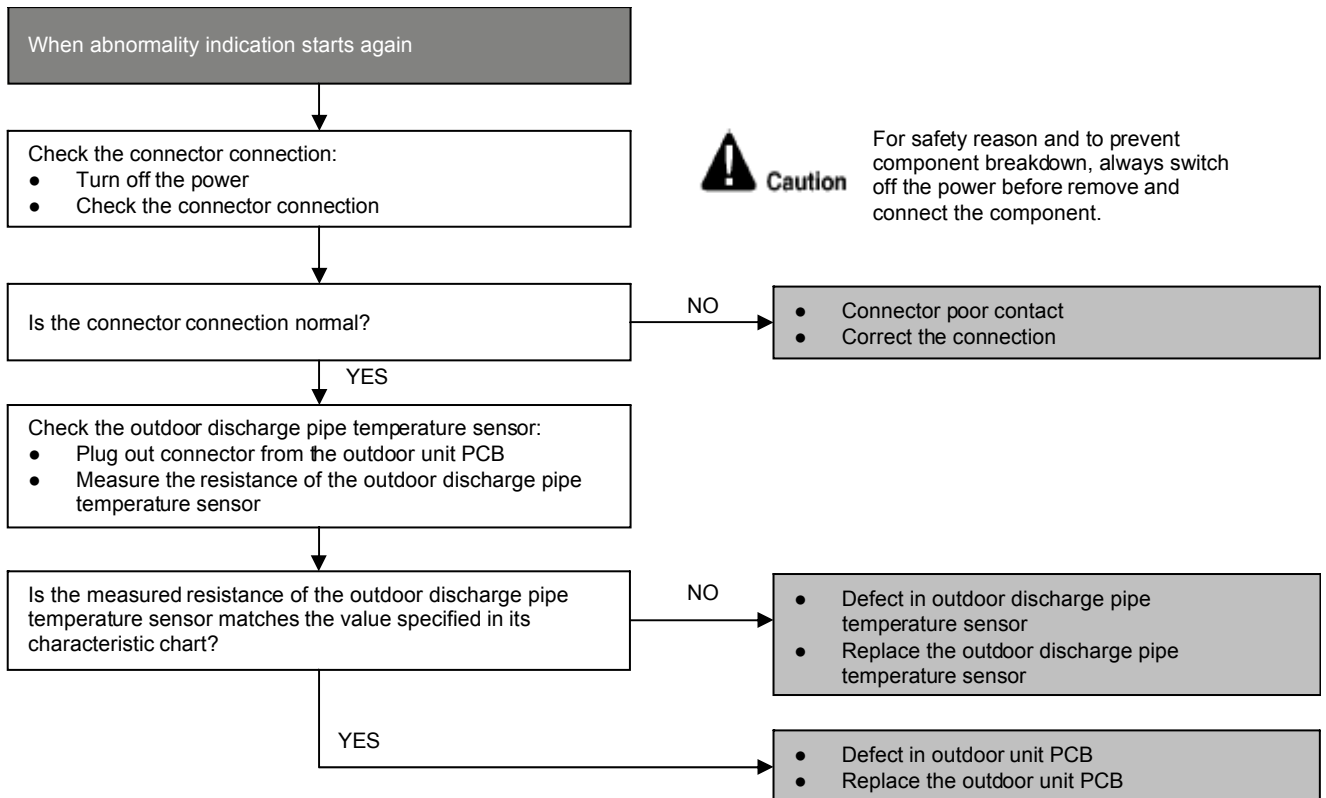
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor discharge pipe temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.11 H32 (Outdoor Heat Exchanger Temperature Sensor 2 Abnormality)

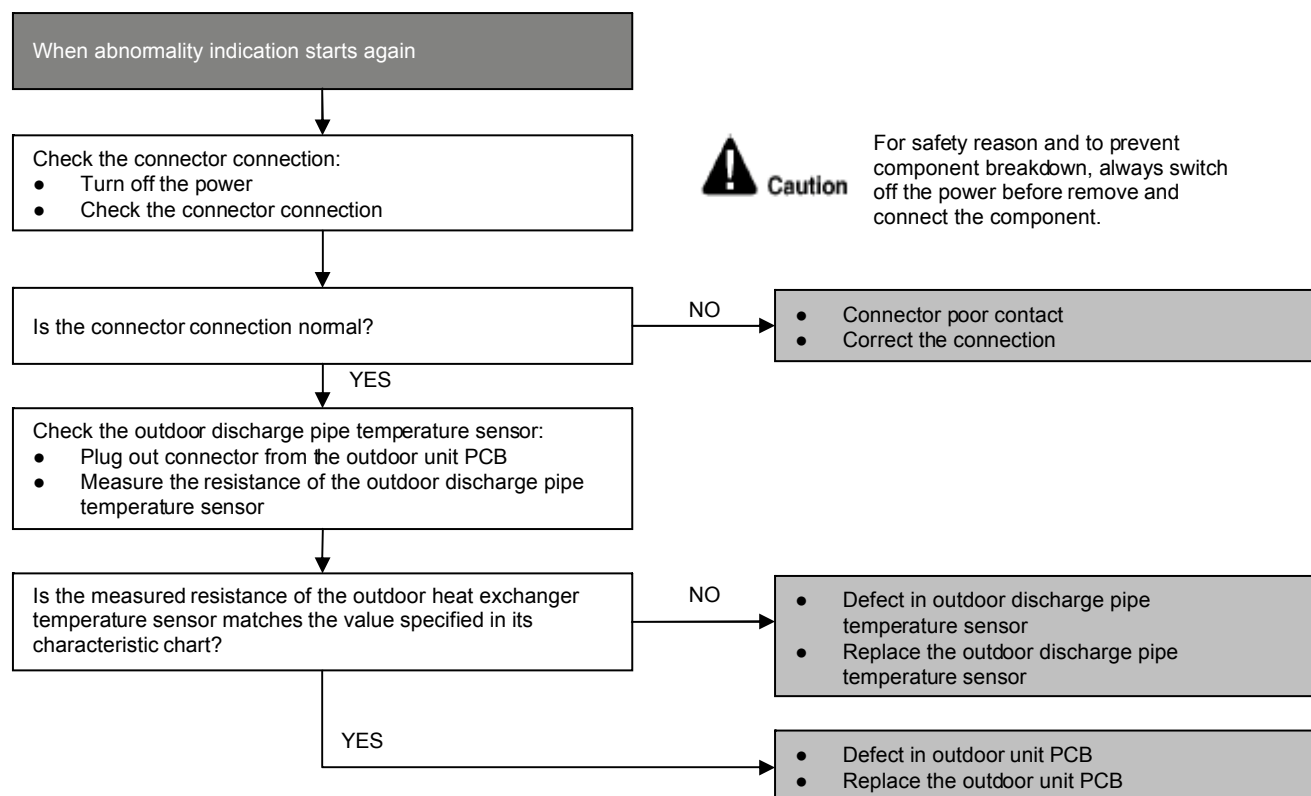
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor heat exchanger temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.12 H33 (Unspecified Voltage between Indoor and Outdoor)

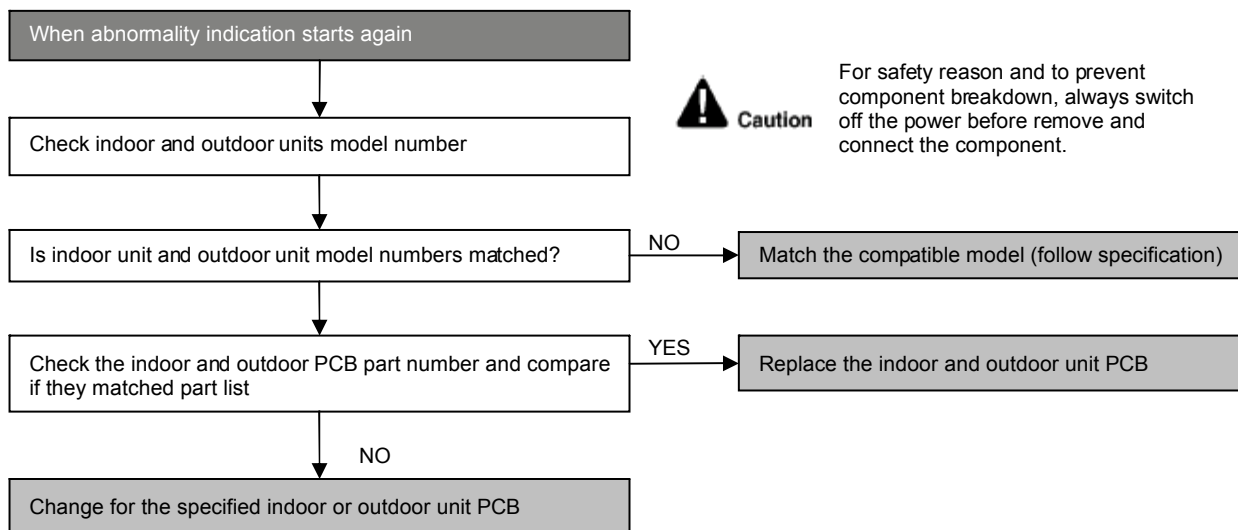
### Malfunction Decision Conditions

- The supply power is detected for its requirement by the indoor/outdoor transmission.

### Malfunction Caused

- Wrong models interconnected.
- Wrong indoor unit and outdoor unit PCBs used.
- Indoor unit or outdoor unit PCB defective.

### Troubleshooting



### 15.4.13 H34 (Outdoor Heat Sink Temperature Sensor Abnormality)

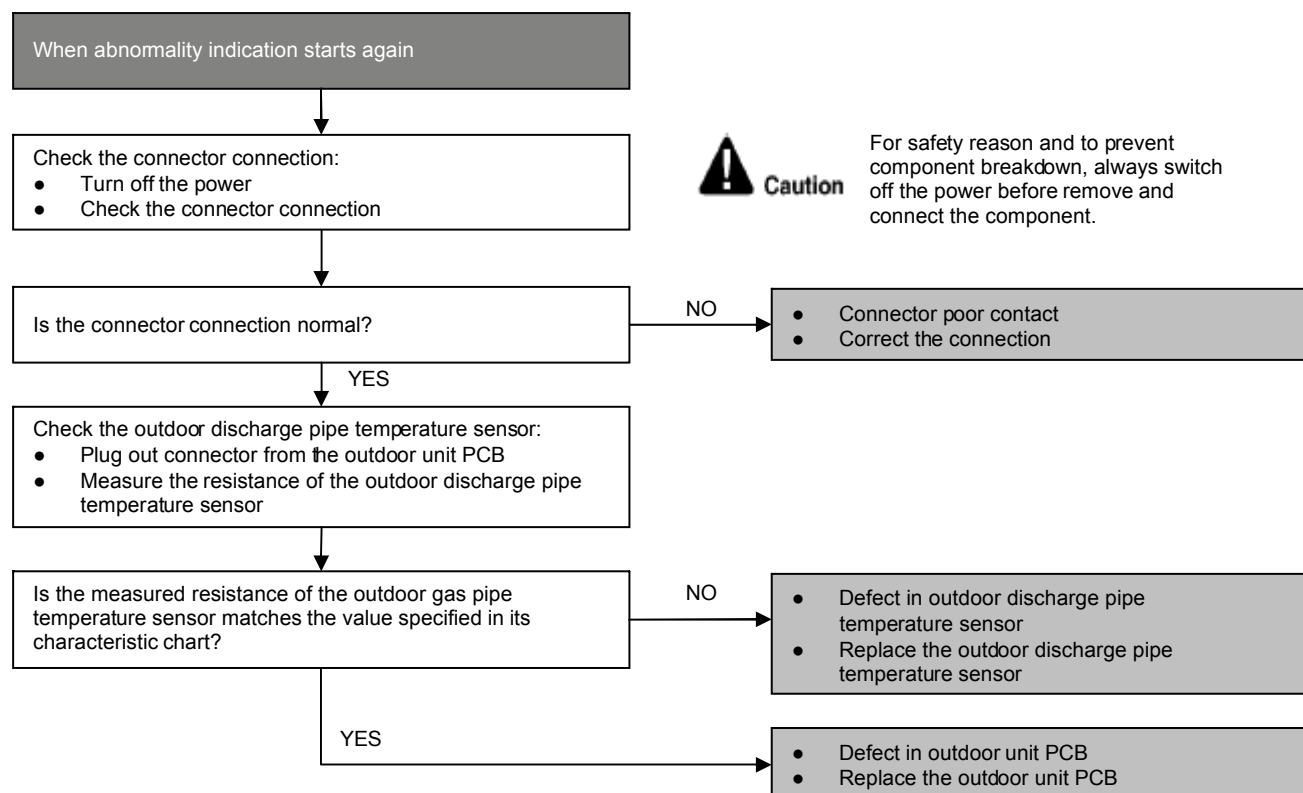
#### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor heat sink temperature sensor are used to determine sensor errors.

#### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

#### Troubleshooting



### 15.4.14 H36 (Outdoor Gas Pipe Sensor Abnormality)

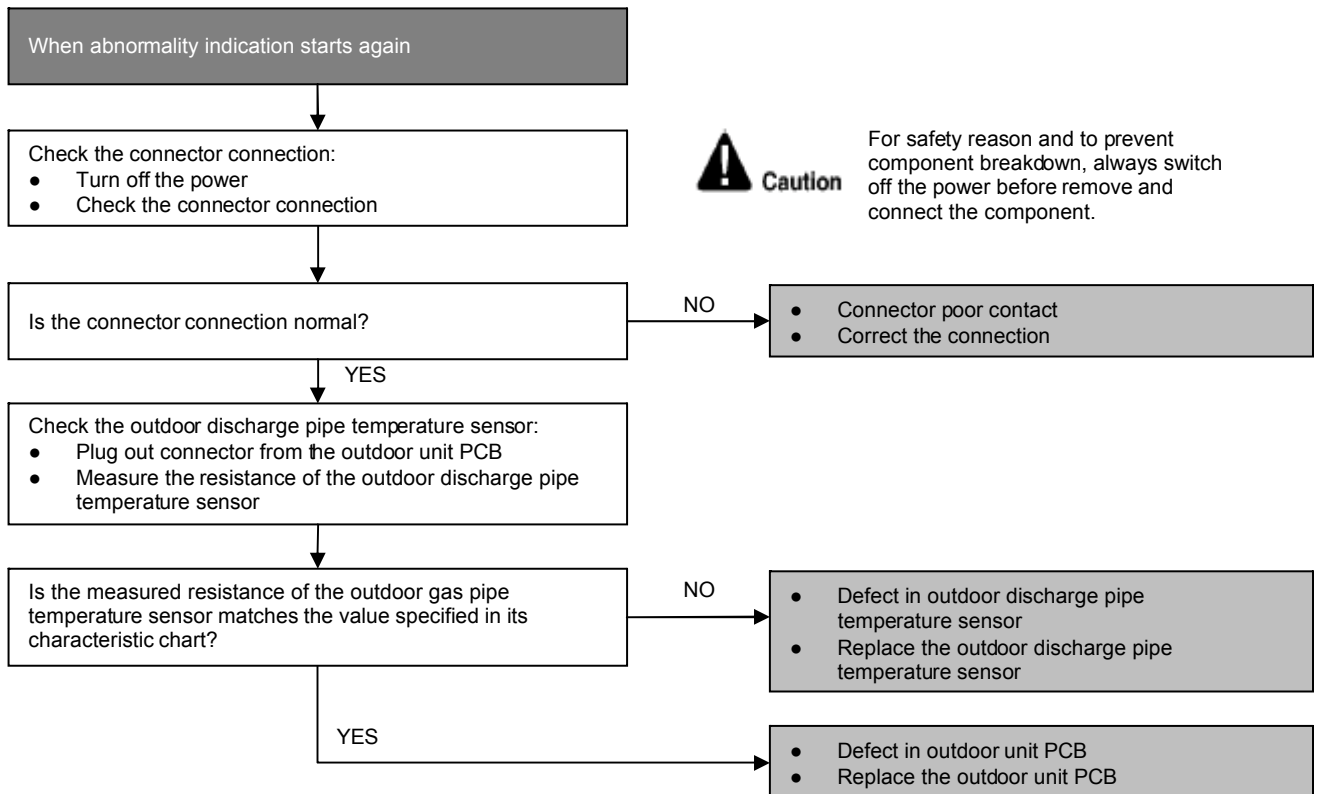
#### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor gas pipe temperature sensor are used to determine sensor errors.

#### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

#### Troubleshooting





## 15.4.15 H37 (Outdoor Liquid Pipe Temperature Sensor Abnormality)

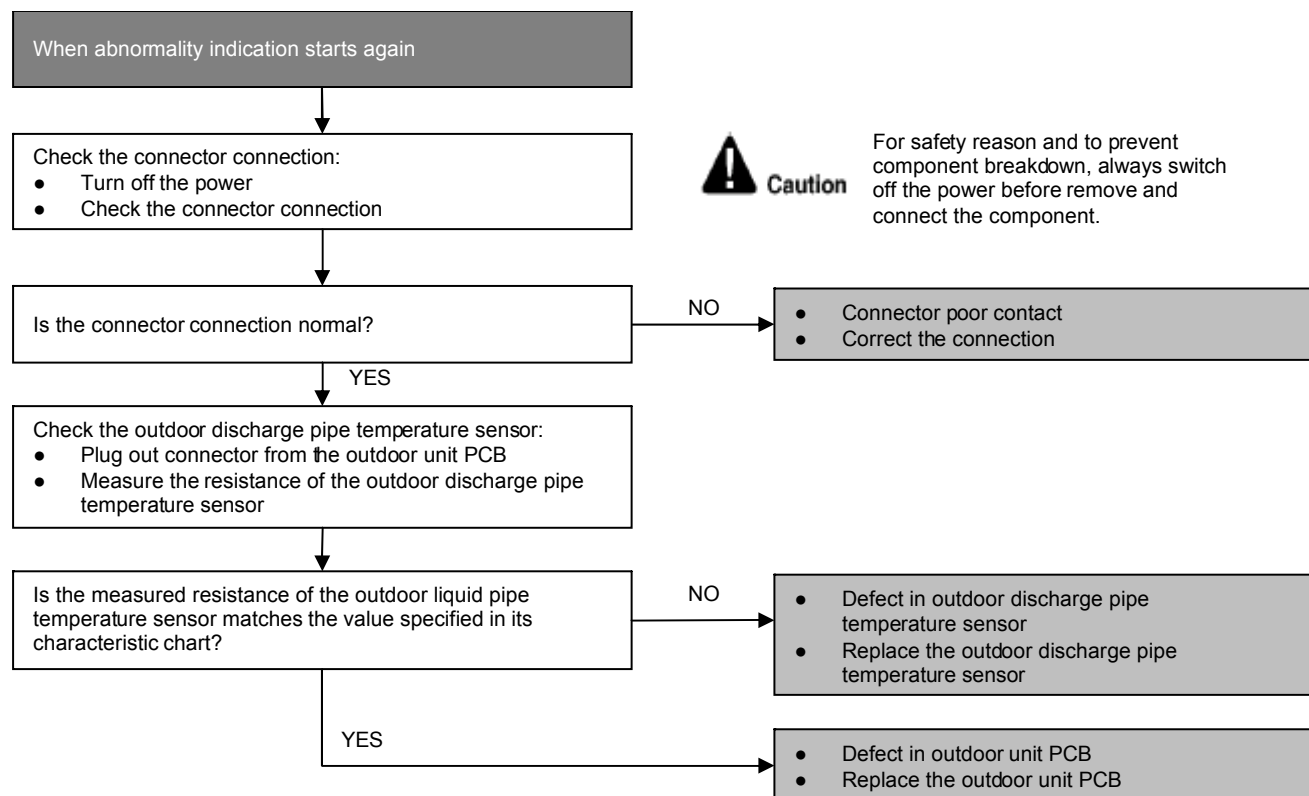
### Malfunction Decision Conditions

- During startup and operation of cooling and heating, the temperatures detected by the outdoor liquid pipe temperature sensor are used to determine sensor errors.

### Malfunction Caused

- Faulty connector connection.
- Faulty sensor.
- Faulty PCB.

### Troubleshooting



## 15.4.16 H97 (Outdoor Fan Motor – DC Motor Mechanism Locked)

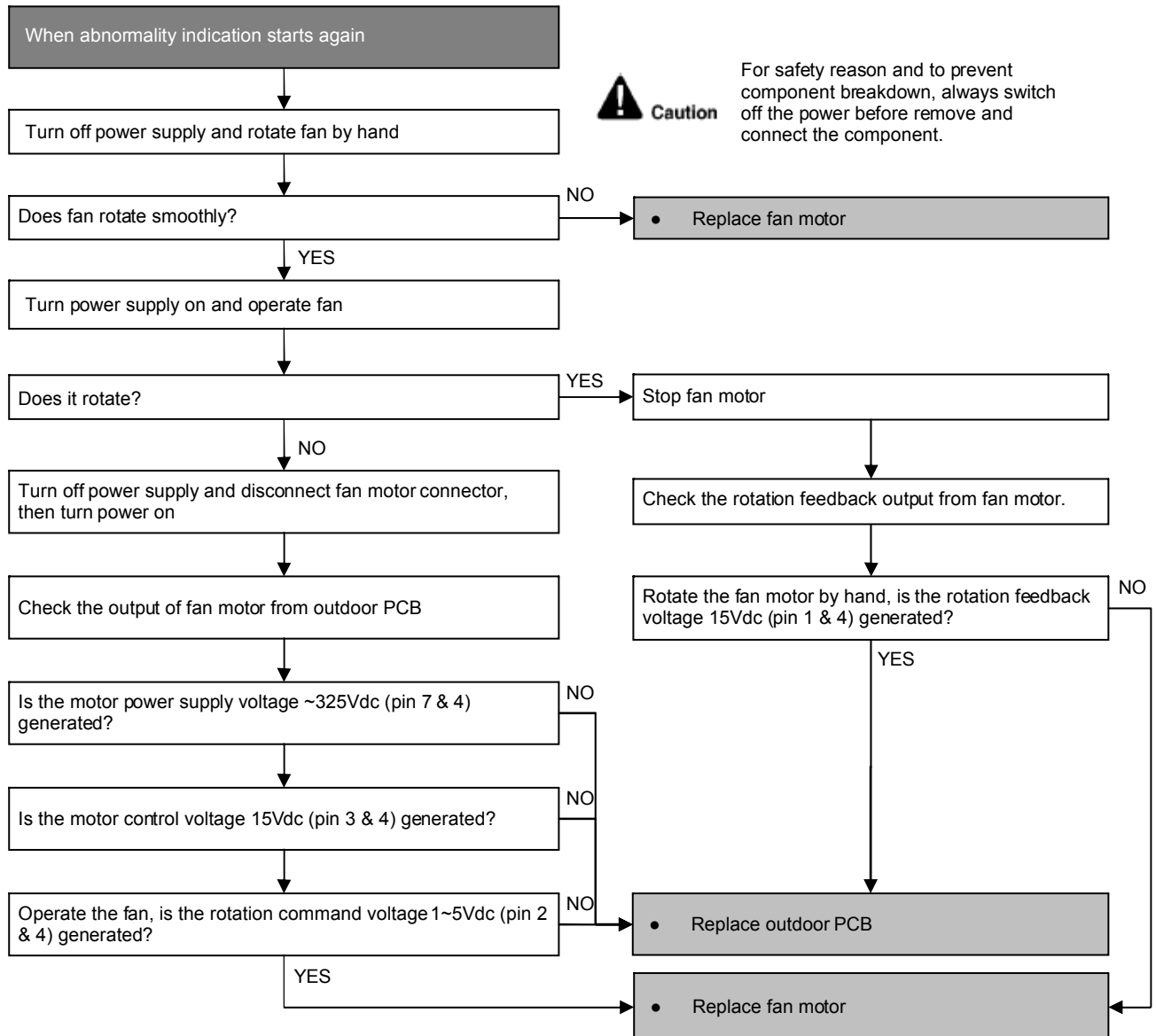
### Malfunction Decision Conditions

- The rotation speed detected by the Hall IC during fan motor operation is used to determine abnormal fan motor.

### Malfunction Caused

- Operation stops due to short circuit inside the fan motor winding.
- Operation stops due to breaking of wire inside the fan motor.
- Operation stops due to breaking of fan motor lead wires.
- Operation stops due to Hall IC malfunction.
- Operation error due to faulty outdoor unit PCB.

### Troubleshooting



## 15.4.17 H98 (Error Code Stored in Memory and no alarm is triggered / no TIMER LED flashing)

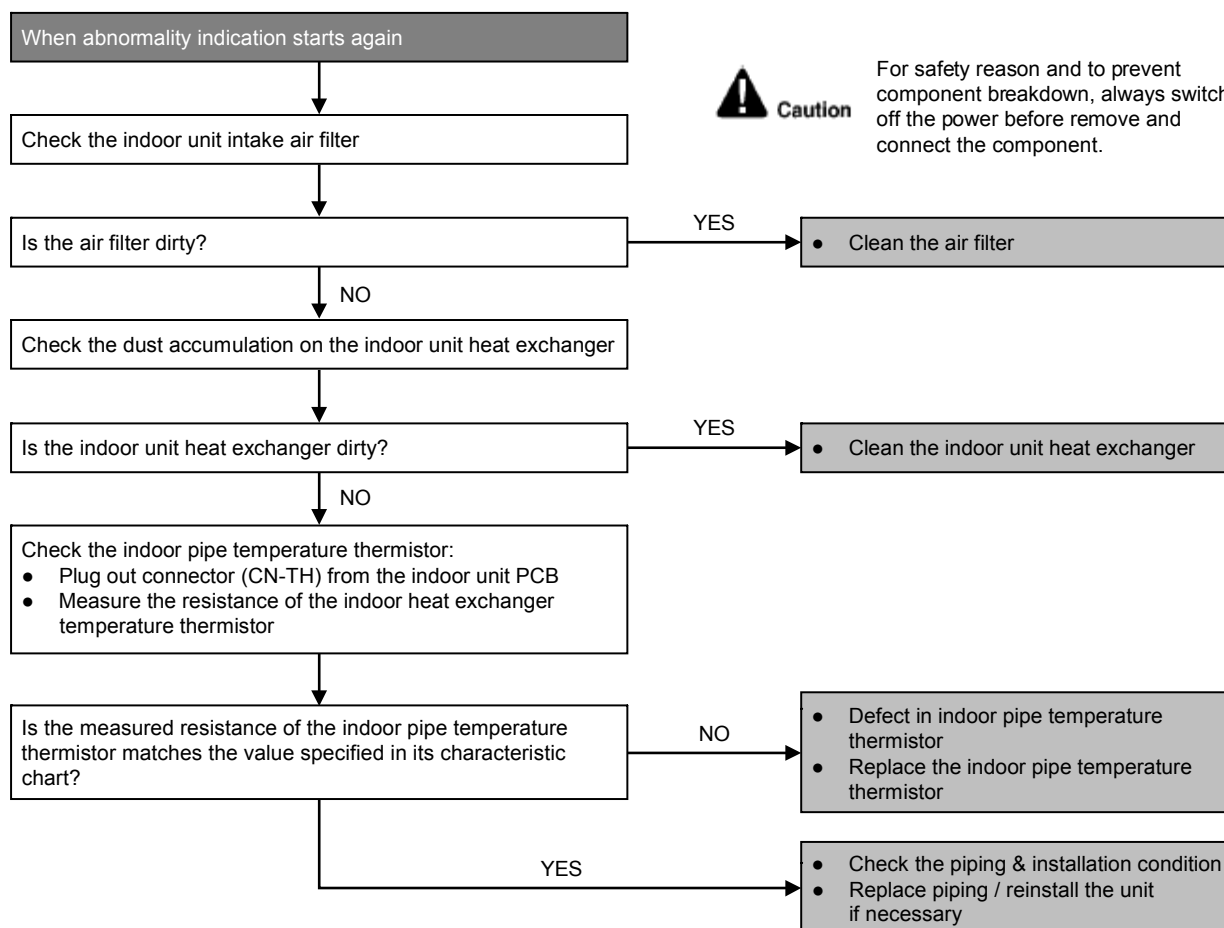
### Malfunction Decision Conditions

- Indoor high pressure is detected when indoor heat exchanger is detecting very high temperature when the unit is operating in heating operation.
- Phenomena: unit is stopping and re-starting very often in heating mode

### Malfunction Caused

- Indoor heat exchanger thermistor
- Clogged air filter or heat exchanger
- Over-bent pipe (liquid side)

### Troubleshooting



## 15.4.18 H99 (Indoor Freeze Prevention Protection: Cooling or Soft Dry)

Error Code will not display (no Timer LED blinking) but store in EEPROM

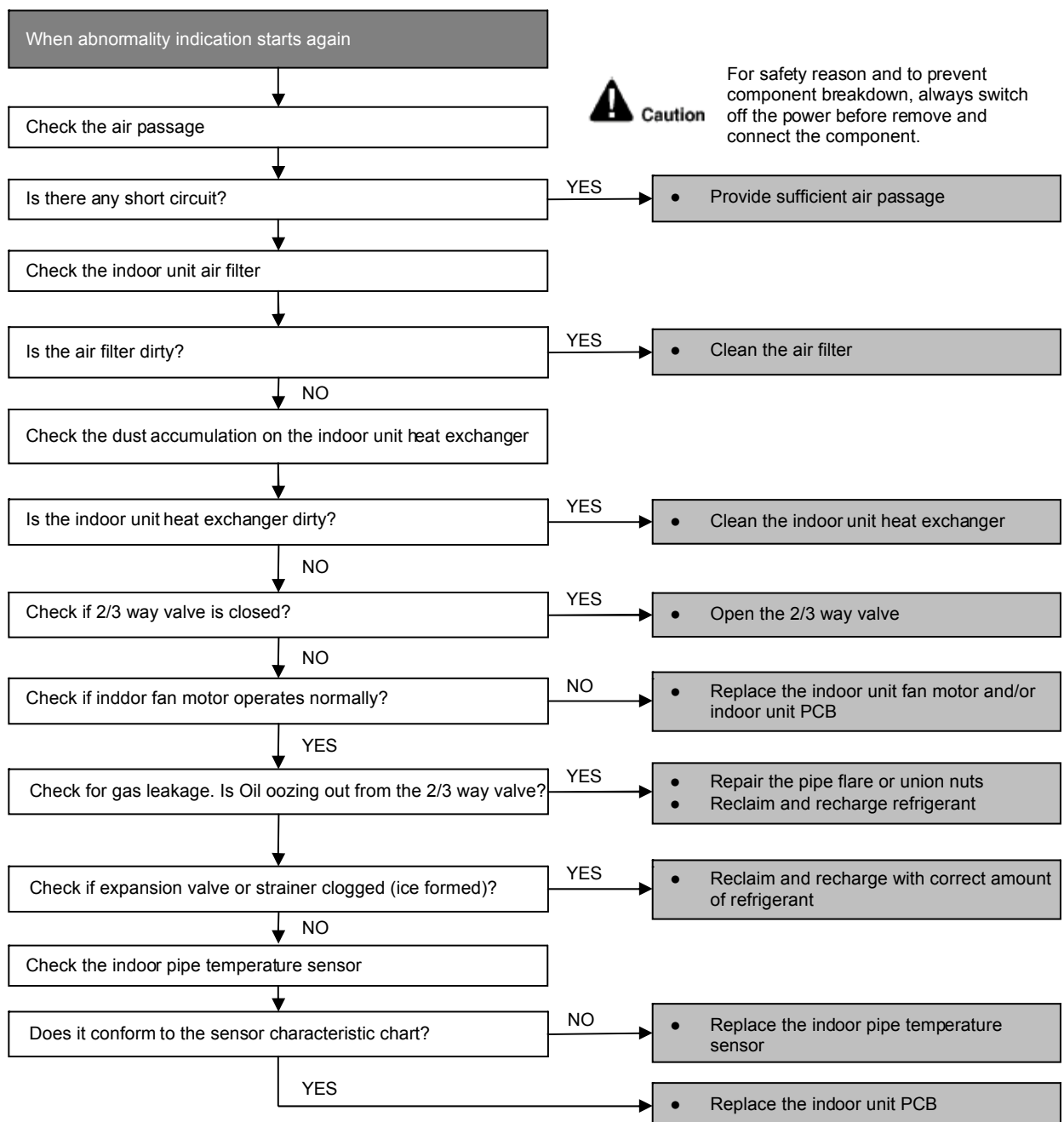
### Malfunction Decision Conditions

- Freeze prevention control takes place (when indoor pipe temperature is lower than 2°C)

### Malfunction Caused

- Air short circuit at indoor unit
- Clogged indoor unit air filter
- Dust accumulation on the indoor unit heat exchanger
- 2/3 way valve closed
- Faulty indoor unit fan motor
- Refrigerant shortage (refrigerant leakage)
- Clogged expansion valve or strainer
- Faulty indoor pipe temperature sensor
- Faulty indoor unit PCB

### Troubleshooting



## 15.4.19 F11 (4-way Valve Switching Failure)

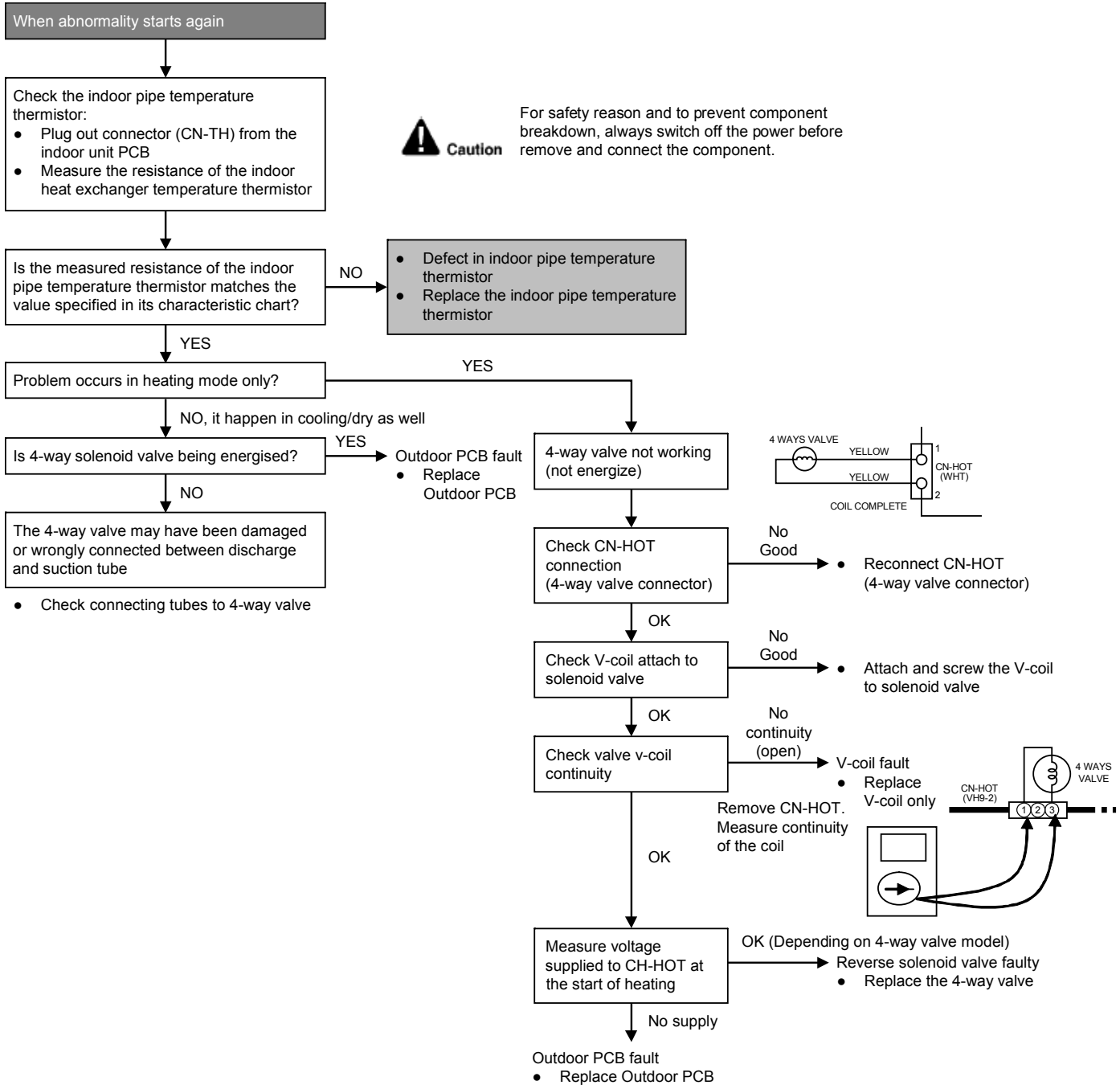
### Malfunction Decision Conditions

- When indoor heat exchanger is cold during heating (except deice) or when indoor heat exchanger is hot during cooling and compressor operating, the 4-way valve is detected as malfunction.

### Malfunction Caused

- Indoor heat exchanger (pipe) thermistor
- 4-way valve malfunction

### Troubleshooting



\* Check gas side pipe – for hot gas flow in cooling mode

## 15.4.20 F17 (Indoor Standby Units Freezing Abnormality)

### Malfunction Decision Conditions

- When the different between indoor intake air temperature and indoor pipe temperature is above 10°C or indoor pipe temperature is below -1.0°C.

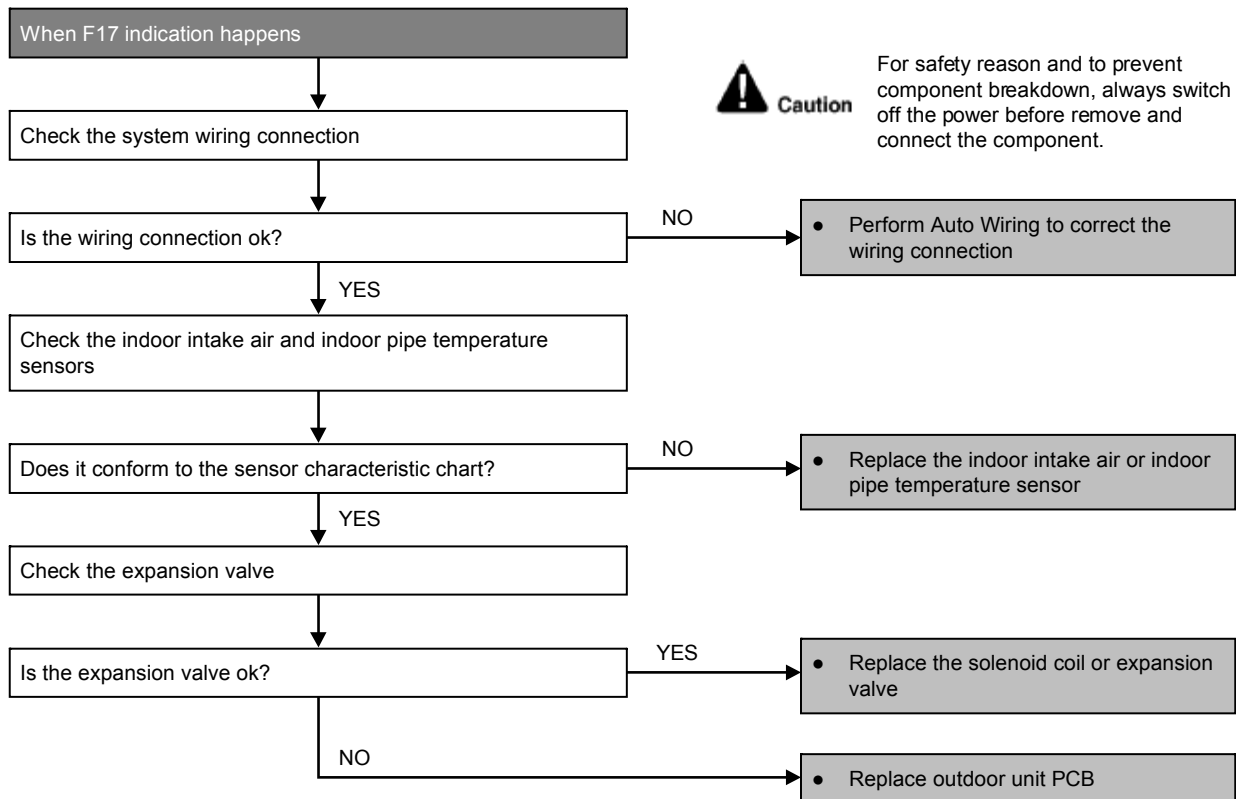
#### Remark:

When the indoor standby unit is freezing, the outdoor unit transfers F17 error code to the corresponding indoor unit and H39 to other indoor unit(s).

### Malfunction Caused

- Wrong wiring connection
- Faulty sensor
- Faulty expansion valve

### Troubleshooting



## 15.4.21 F90 (Power Factor Correction Protection)

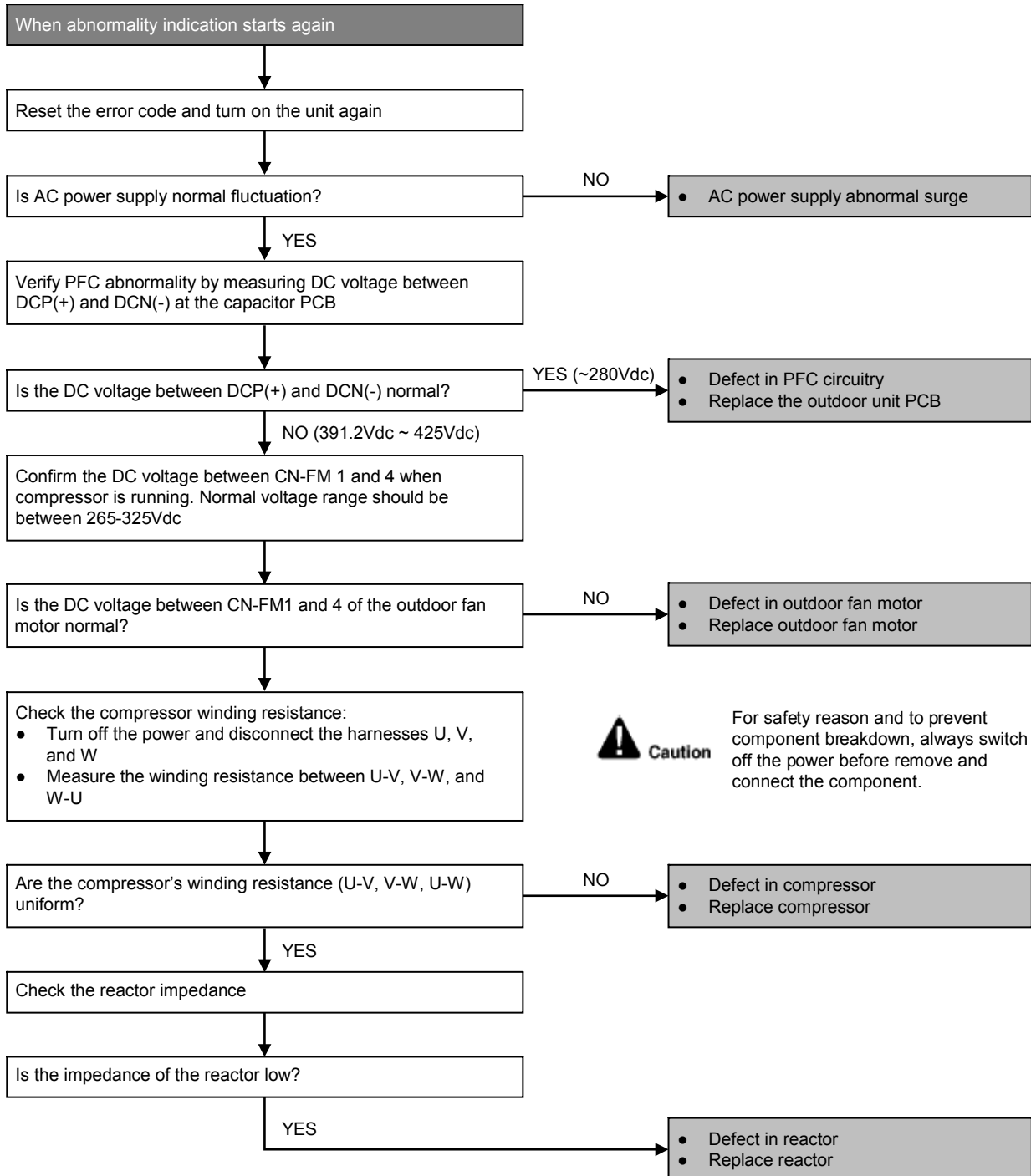
### Malfunction Decision Conditions

- To maintain DC voltage level supply to power transistor.
- To detect high DC voltage level after rectification.

### Malfunction Caused

- During startup and operation of cooling and heating, when Power Factor Correction (PFC) protection circuitry at the outdoor unit main PCB senses abnormal DC voltage level for power transistors.
- When DC voltage detected is LOW, transistor switching will turn ON by controller to push-up the DC level.
- When DC voltage detected is HIGH (391Vdc – 425Vdc), active LOW signal will send by the controller to turn OFF relay RY-C.

### Troubleshooting



## 15.4.22 F91 (Refrigeration Cycle Abnormality)

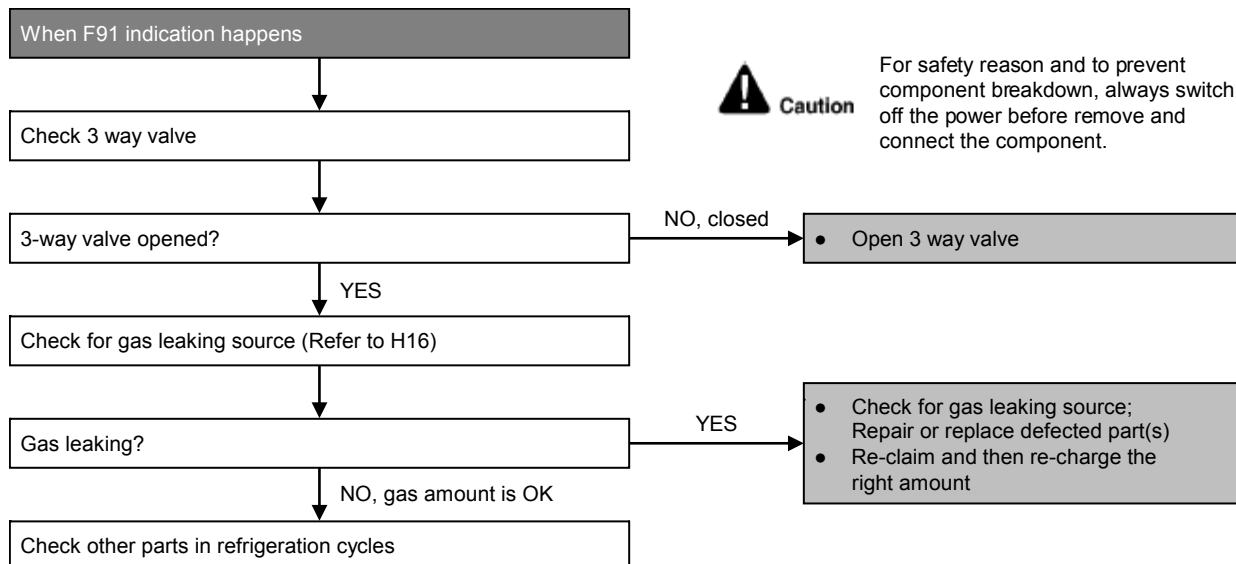
### Malfunction Decision Conditions

- The input current is low while the compressor is running at higher than the setting frequency.

### Malfunction Caused

- Lack of gas.
- 3-way valve close.

### Troubleshooting





## 15.4.23 F93 (Compressor Rotation Failure)

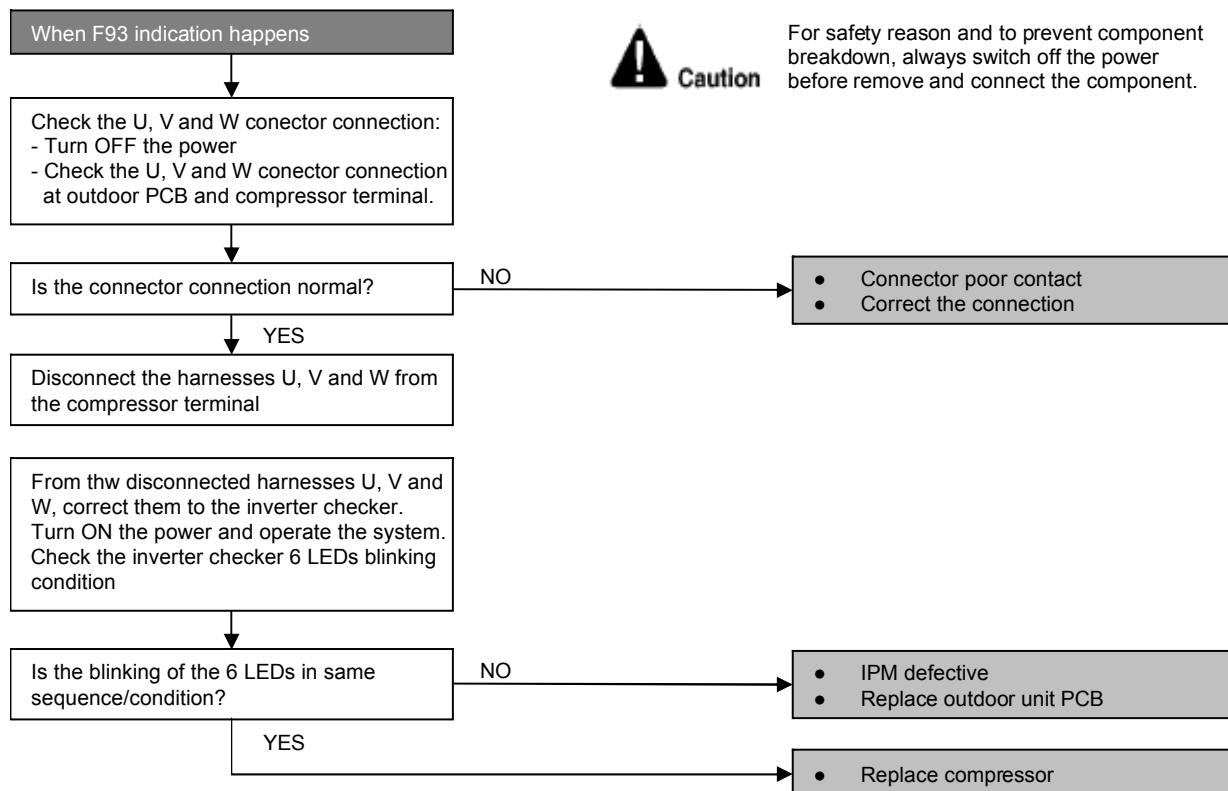
### Malfunction Decision Conditions

- A compressor rotation failure is detected by checking the compressor running condition through the position detection circuit.

### Malfunction Caused

- Compressor terminal disconnect
- Faulty Outdoor PCB
- Faulty compressor

### Troubleshooting



## 15.4.24 F95 (Outdoor High Pressure Protection: Cooling or Soft Dry)

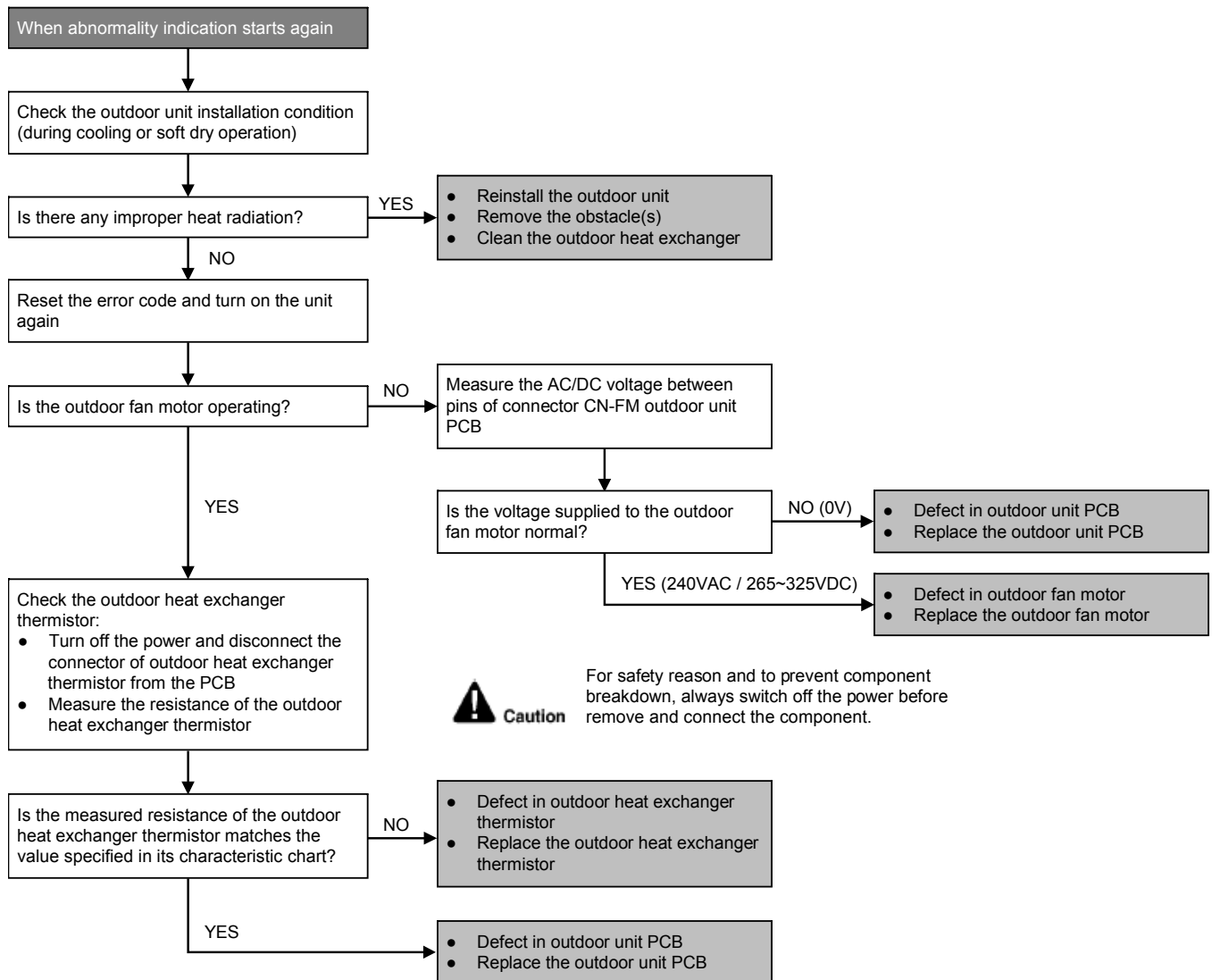
### Malfunction Decision Conditions

- During operation of cooling or soft dry, when outdoor unit heat exchanger high temperature data is detected by the outdoor unit heat exchanger thermistor.

### Malfunction Caused

- Outdoor heat exchanger temperature rise due to short-circuit of hot discharge air flow.
- Outdoor heat exchanger temperature rise due to defective of outdoor fan motor.
- Outdoor heat exchange temperature rise due to defective outdoor heat exchanger thermistor.
- Outdoor heat exchanger temperature rise due to defective of outdoor unit PCB.

### Troubleshooting



## 15.4.25 F96 (IPM Overheating)

### Malfunction Decision Conditions

- During operating of cooling and heating, when IPM temperature data (100°C) is detected by the IPM temperature sensor.

#### *Multi Models only*

- Compressor Overheating: During operation of cooling and heating, when the compressor OL is activated.
- Heat Sink Overheating: During operation of cooling and heating, when heat sink temperature data (90°C) is detected by the heat sink temperature sensor.

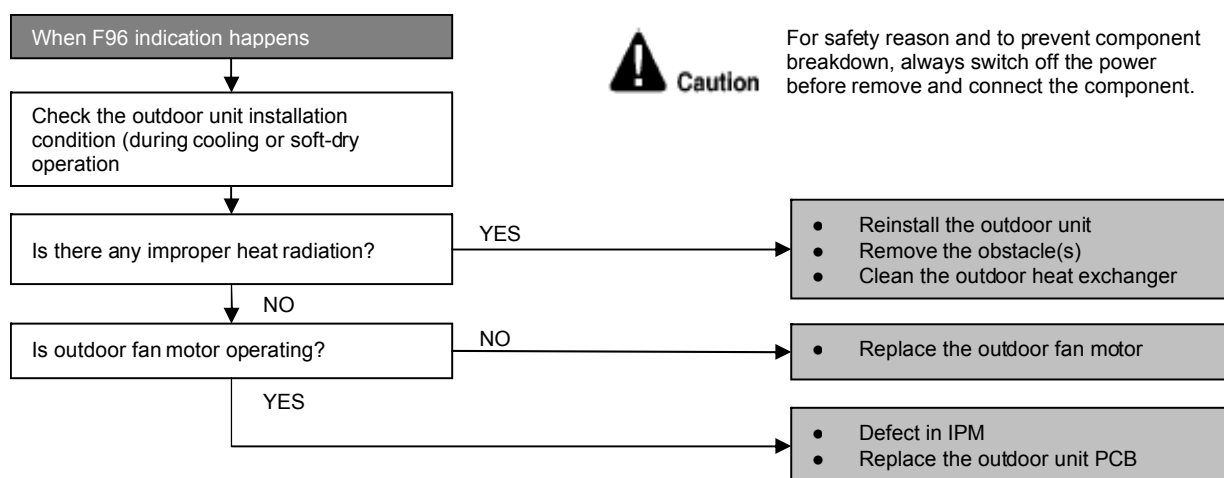
### Malfunction Caused

- IPM overheats due to short circuit of hot discharge air flow.
- IPM overheats due to defective of outdoor fan motor.
- IPM overheats due to defective of internal circuitry of IPM.
- IPM overheats due to defective IPM temperature sensor.

#### *Multi Models Only*

- Compressor OL connector poor contact.
- Compressor OL faulty.

### Troubleshooting



## 15.4.26 F97 (Compressor Overheating)

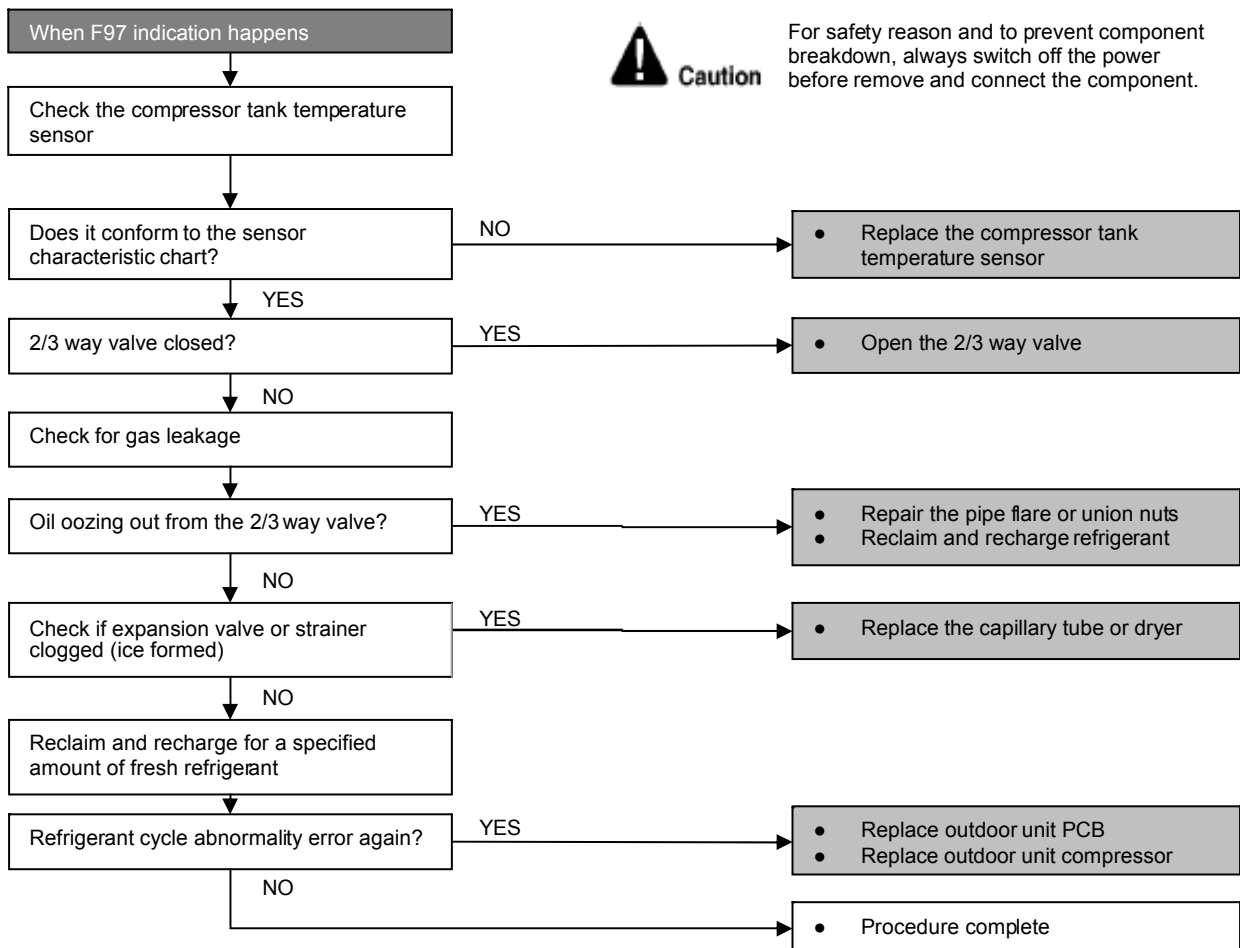
### Malfunction Decision Conditions

- During operation of cooling and heating, when compressor tank temperature data (112°C) is detected by the compressor tank temperature sensor.

### Malfunction Caused

- Faulty compressor tank temperature sensor
- 2/3 way valve closed
- Refrigerant shortage (refrigerant leakage)
- Faulty outdoor unit PCB
- Faulty compressor

### Troubleshooting



## 15.4.27 F98 (Input Over Current Detection)

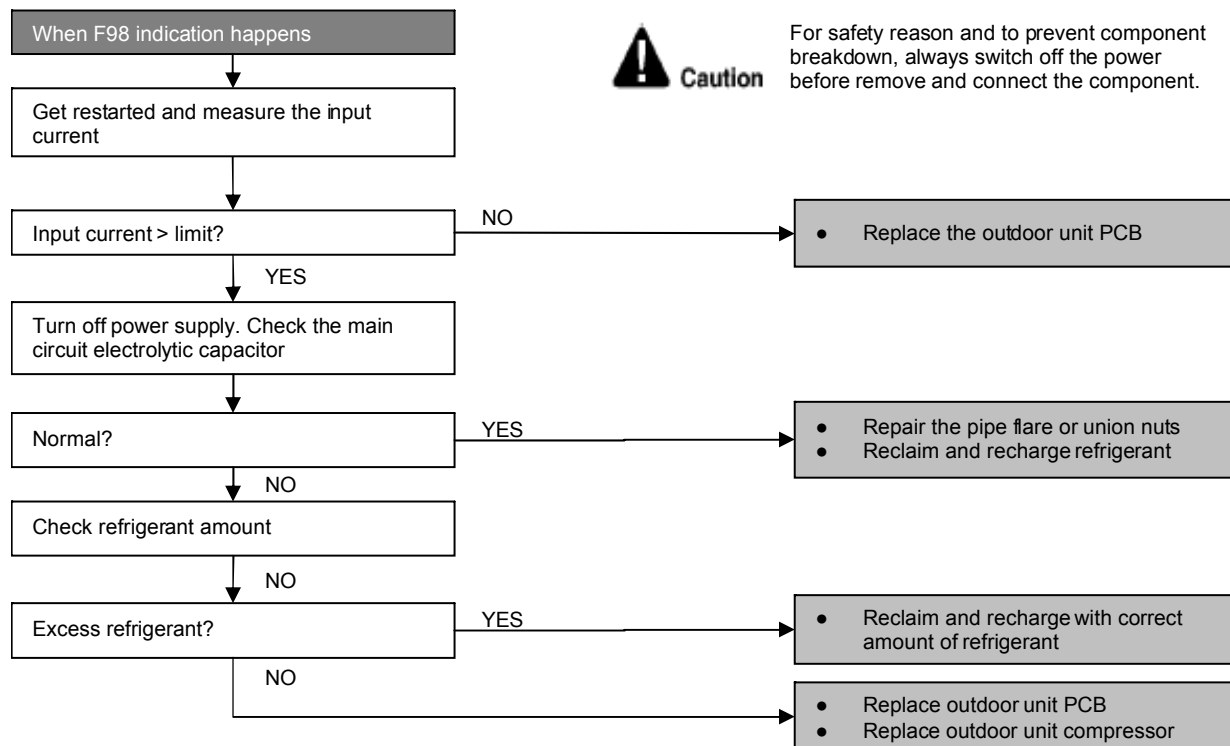
### Malfunction Decision Conditions

- During operation of cooling and heating, when an input over-current (X value in Total Running Current Control) is detected by checking the input current value being detected by current transformer (CT) with the compressor running.

### Malfunction Caused

- Excessive refrigerant.
- Faulty outdoor unit PCB.

### Troubleshooting



## 15.4.28 F99 (DC Peak Detection)

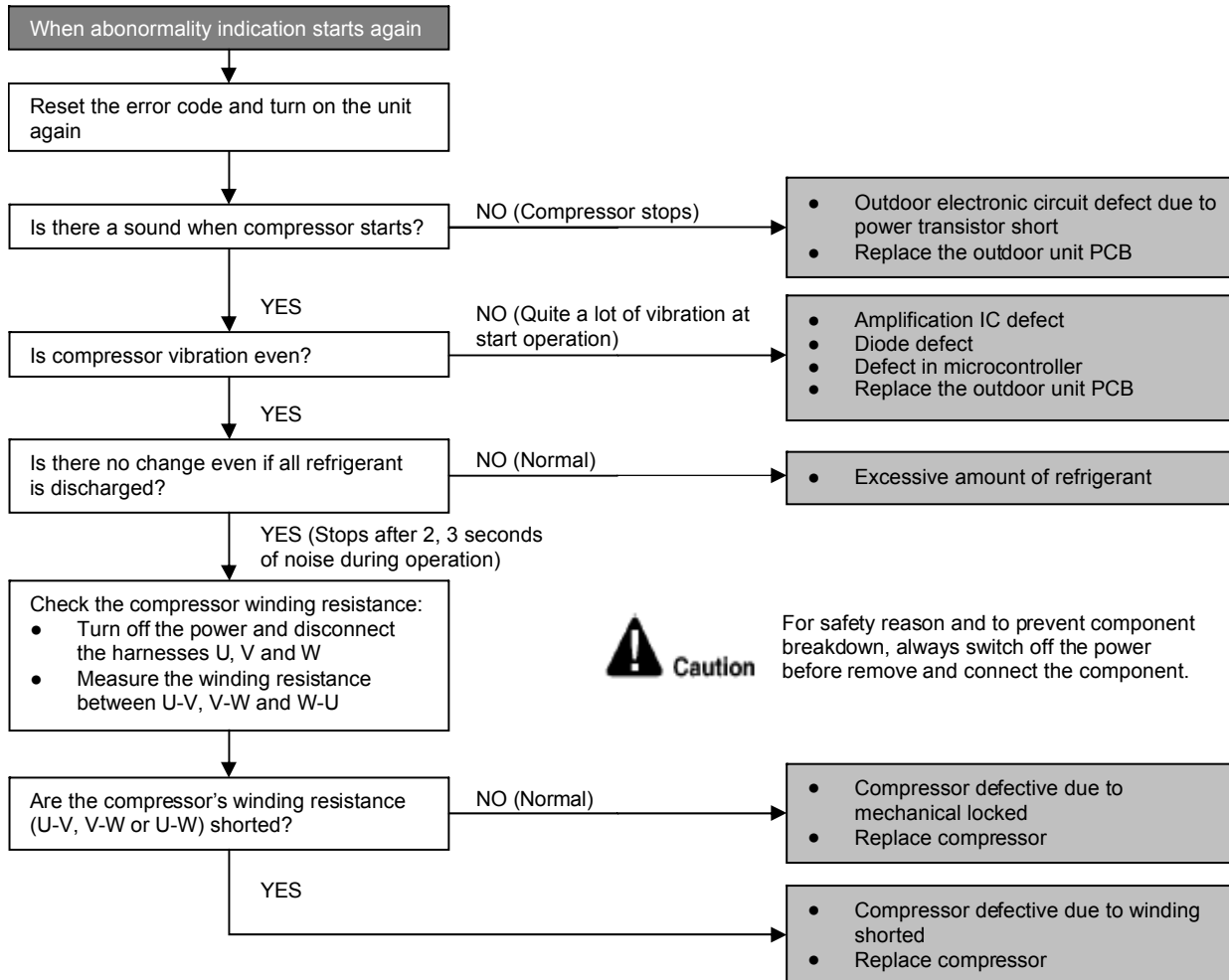
### Malfunction Decision Conditions

During startup and operation of cooling and heating, when inverter DC peak data is received by the outdoor internal DC Peak sensing circuitry.

### Malfunction Caused

- DC current peak due to compressor failure.
- DC current peak due to defective power transistor(s).
- DC current peak due to defective outdoor unit PCB.
- DC current peak due to short circuit.

### Troubleshooting



## 16. Disassembly and Assembly Instructions



### WARNING

High voltages are generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

### 16.1 Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

#### 16.1.1 To remove front grille

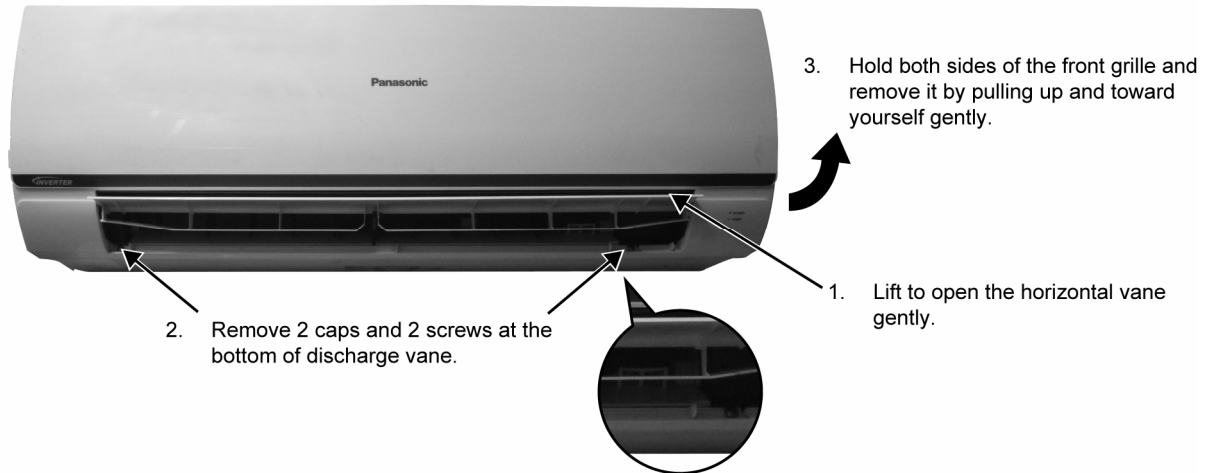


Figure 1

#### 16.1.2 To remove electronic controller

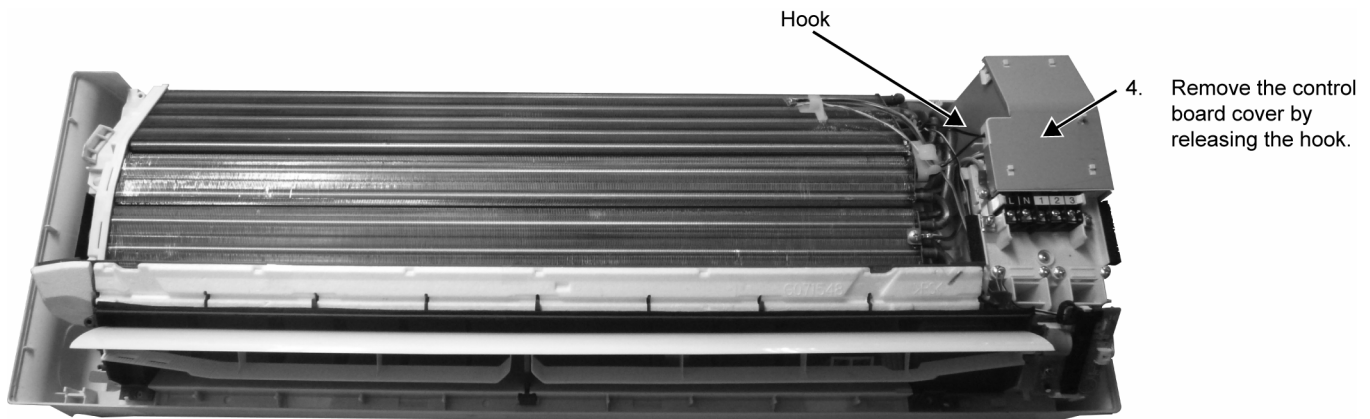


Figure 2

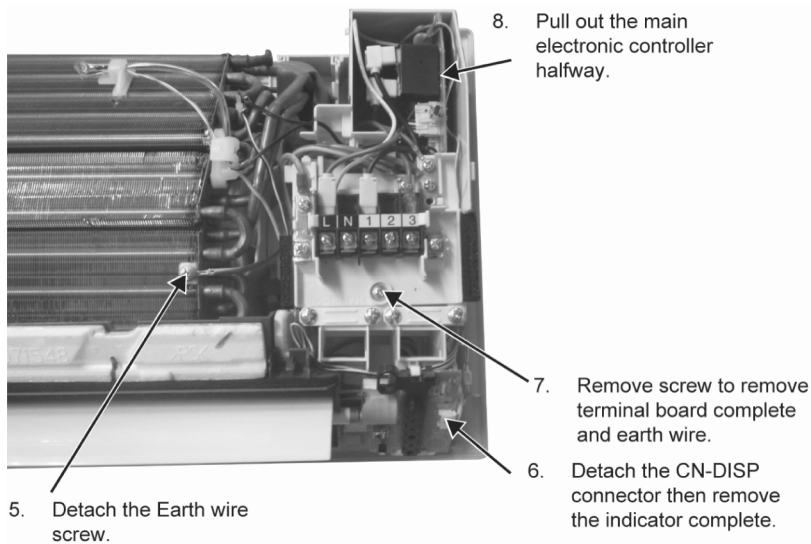


Figure 3

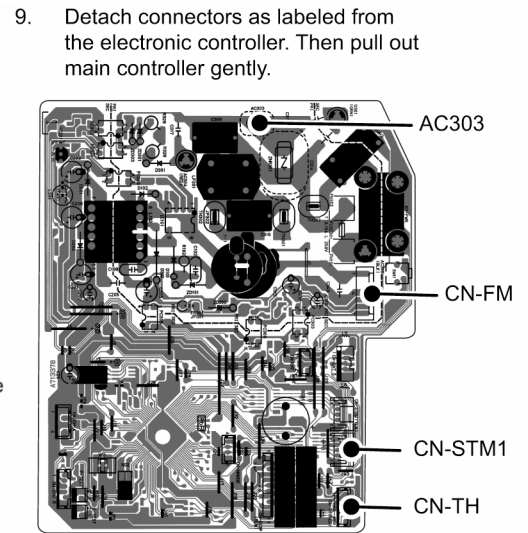


Figure 4

### 16.1.3 To remove discharge grille

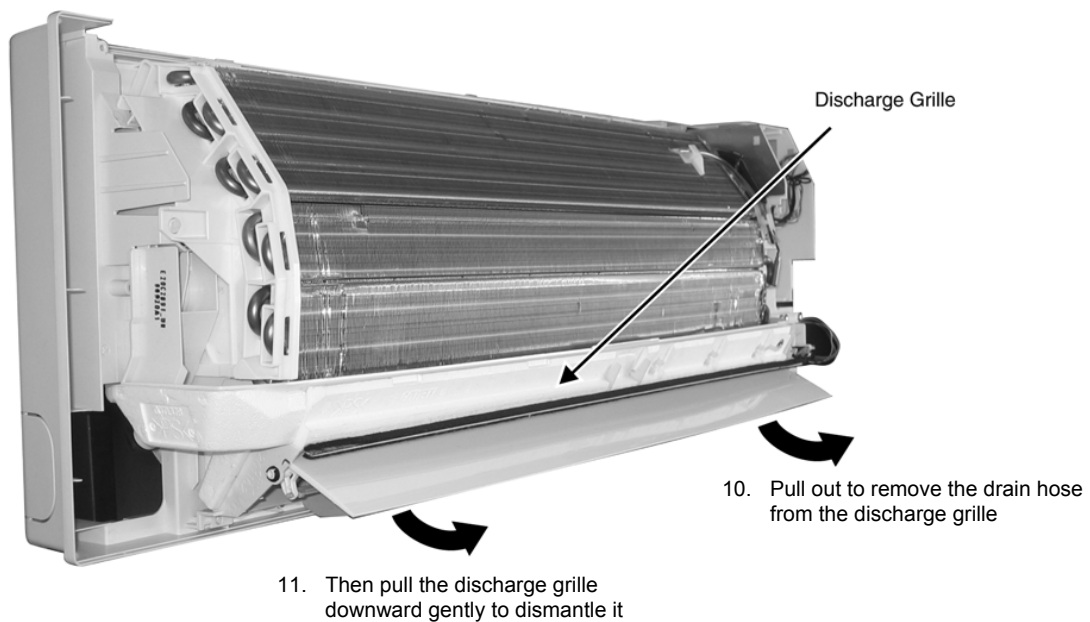


Figure 5



#### 16.1.4 To remove control board

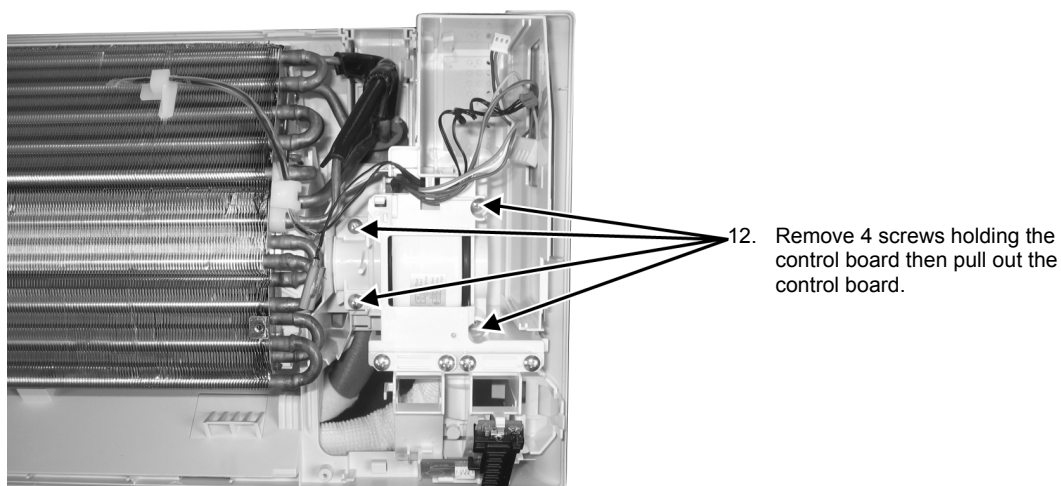


Figure 6

#### 16.1.5 To remove cross flow fan and indoor fan motor

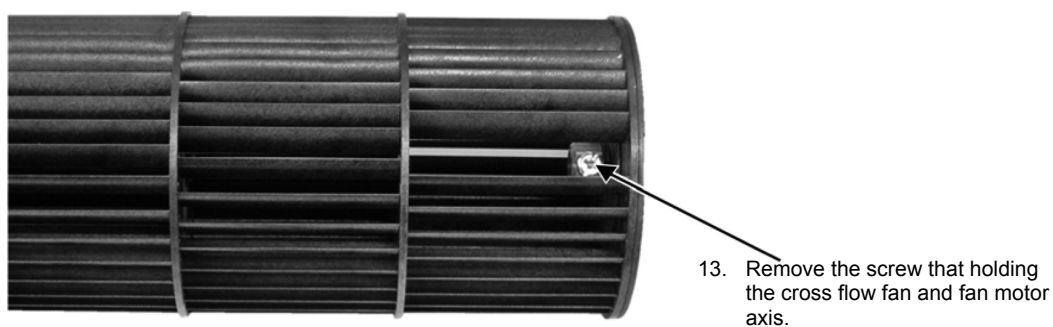


Figure 7

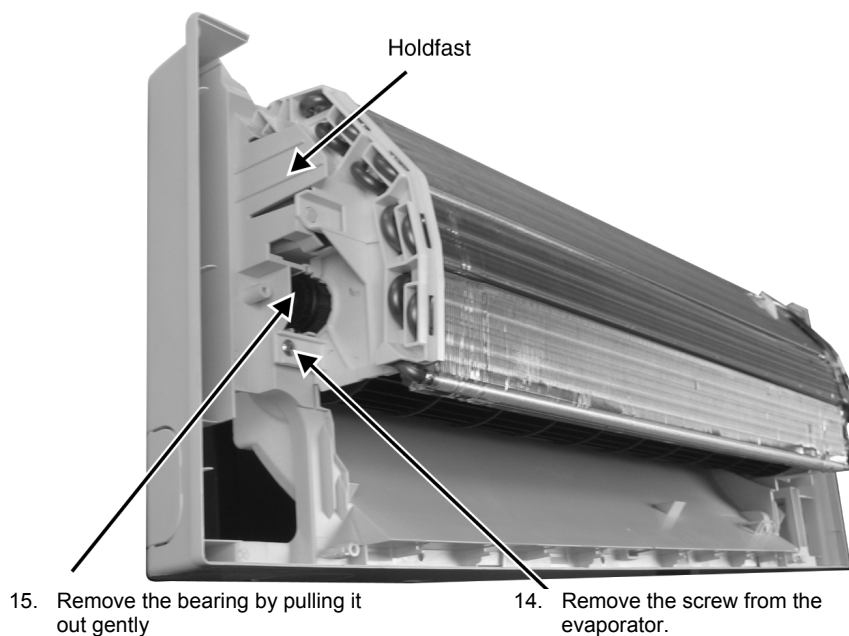
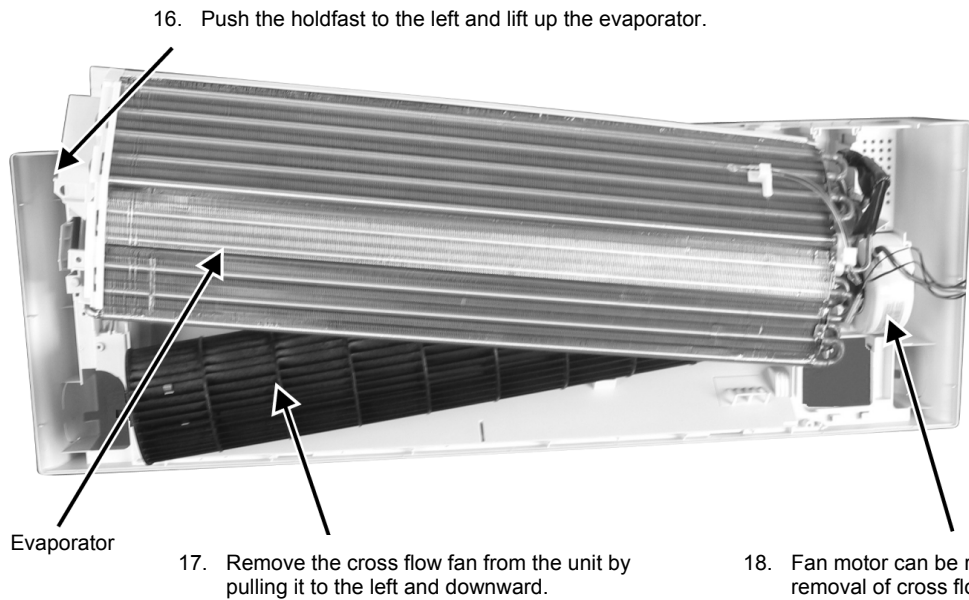
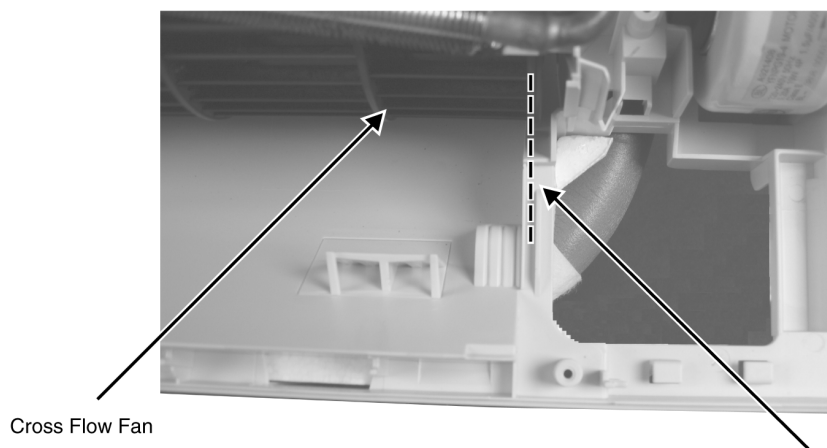


Figure 8



**Figure 9**



**Figure 10**

## 16.2 Outdoor Electronic Controller Removal Procedure

**⚠ Caution!** When handling electronic controller, be careful of electrostatic discharge.

- 1 Remove the 5 screws of the Top Panel.

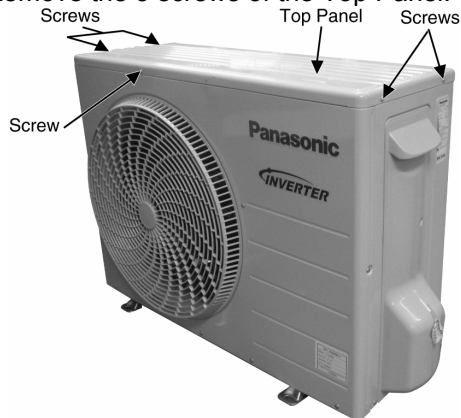


Fig.1

- 2 Remove the 8 screws of the Front Panel.

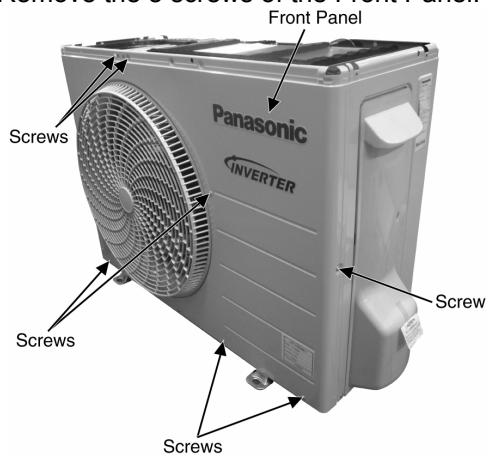


Fig.2

- 3 Remove the screw of the Terminal Board Cover.

- 4 Remove the Top Cover of the Control Board by 4 hooks.

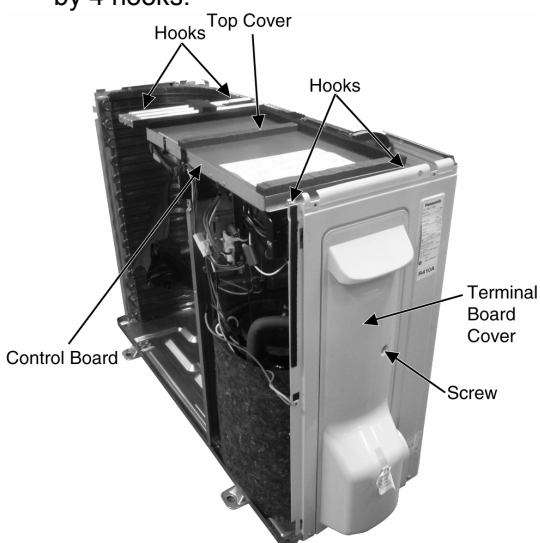


Fig.3

- 5 Remove the Control Board as follows:

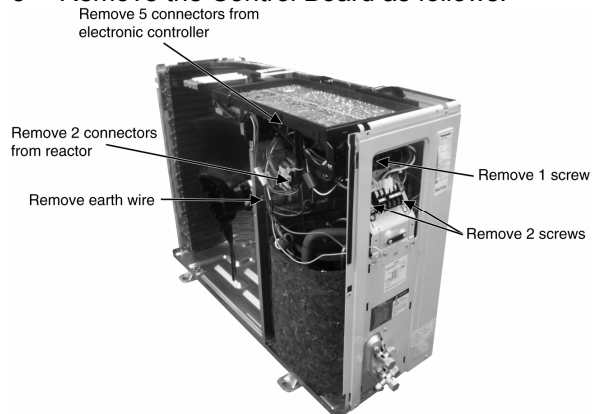


Fig.4

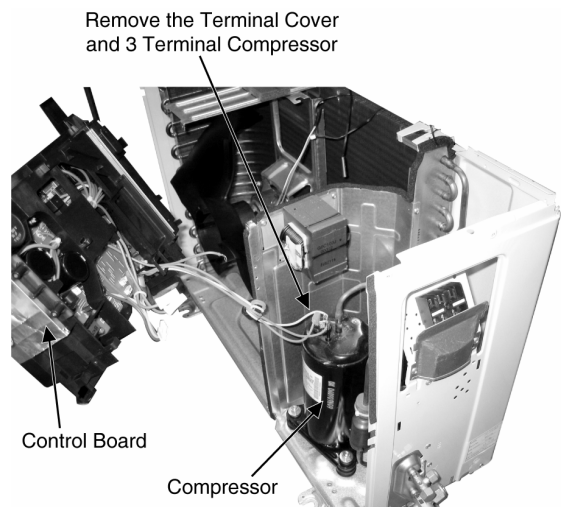


Fig.5

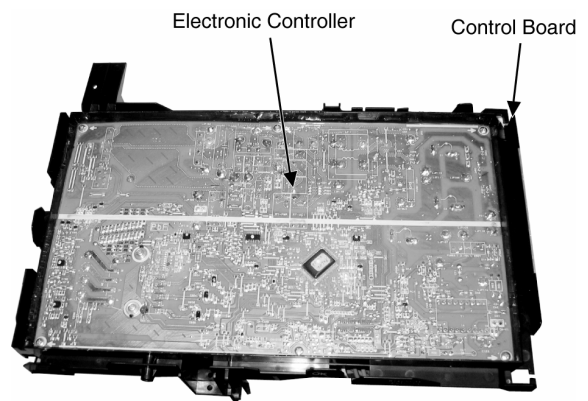


Fig.6

## 17. Technical Data

Technical data provided are based on the air conditioner running under free frequency.

### 17.1 Cool Mode Performance Data

Unit setting: Standard piping length, Hi Fan, Cool mode at 16°C

Voltage: 230V

#### 17.1.1 CS-CE9PKE / CU-CE9PKE

Indoor (°C)		Outdoor DB (°C)								
DB	WB	16			25			35		
		TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
27	19.0	3037	2366	329	2648	2169	425	2500	2006	545
	22.0	3257	1820	318	2887	1995	427	2675	1653	548
23	15.7	2783	2321	337	2349	2128	425	2264	2090	544
	18.4	2901	1781	331	2647	1570	427	2330	1569	539
20	13.3	2533	2229	342	2234	2011	432	1976	1872	535
	15.8	2655	1723	337	2373	1594	429	2066	1523	544

(Dry bulb value based on 46% humidity)

#### 17.1.2 CS-CE12PKE / CU-CE12PKE

Indoor (°C)		Outdoor DB (°C)								
DB	WB	16			25			35		
		TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
27	19.0	4252	3312	574	3707	3036	741	3500	2892	950
	22.0	4559	2548	555	4042	2793	745	3745	2314	955
23	15.7	3896	3249	588	3288	2979	741	3170	2926	948
	18.4	4062	2494	578	3706	2198	744	3263	2196	940
20	13.3	3546	3121	596	3128	2815	752	2767	2621	932
	15.8	3717	2413	587	3322	2232	748	2893	2132	948

(Dry bulb value based on 46% humidity)

### 17.2 Heat Mode Performance Data

Unit setting: Standard piping length, Hi Fan, Heat mode at 30°C

Voltage: 230V

#### 17.2.1 CS-CE9PKE / CU-CE9PKE

Indoor (°C)		Outdoor WB (°C)									
DB	-15/-16		-7/-8		2/1		7/6		12/11		
	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	
24	2355	1160	3175	1294	3607	1236	3356	790	3630	828	
20	2388	1103	3220	1230	3700	1190	3400	740	3773	770	
16	2459	1046	3316	1166	3729	1125	3658	742	4029	768	

#### 17.2.2 CS-CE12PKE / CU-CE12PKE

Indoor (°C)		Outdoor WB (°C)									
DB	-15/-16		-7/-8		2/1		7/6		12/11		
	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	
24	3173	1618	3944	1946	4660	1828	3948	1057	4271	1108	
20	3218	1538	4000	1850	4780	1760	4000	990	4439	1030	
16	3314	1458	4120	1754	4818	1664	4304	992	4740	1027	

TC - Total Cooling Capacity (kW)

SHC - Sensible Heat Capacity (kW)

IP - Input Power (kW)

# 18. Service Data

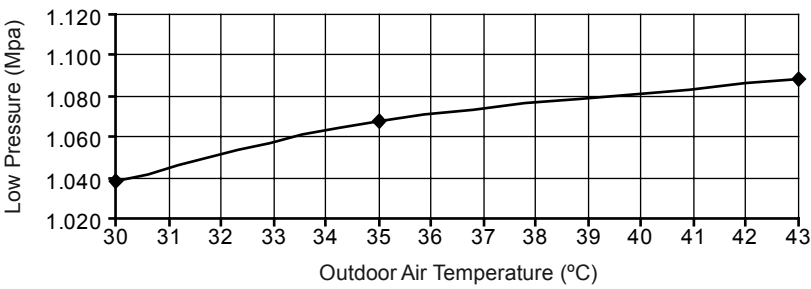
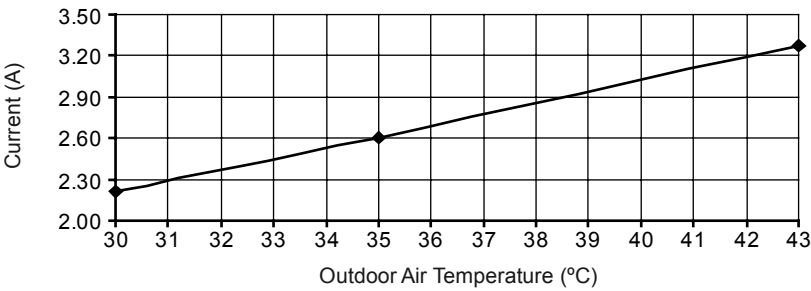
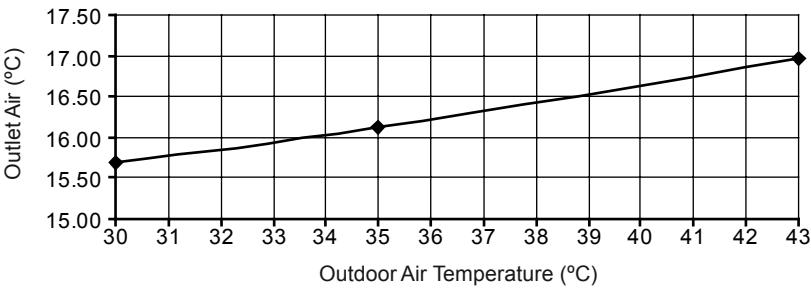
Service data provided are based on the air conditioner running under rated frequency during forced cooling / forced heating mode.

## 18.1 Cool Mode Outdoor Air Temperature Characteristic

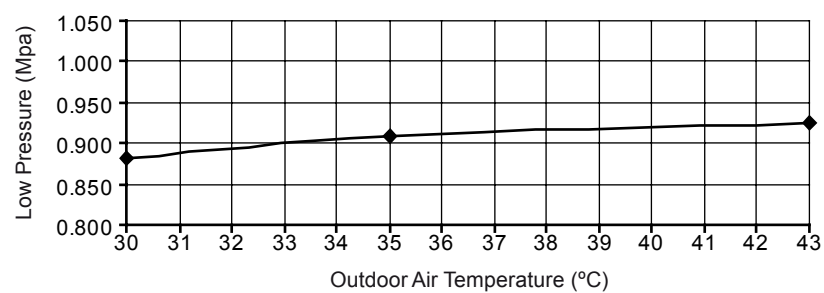
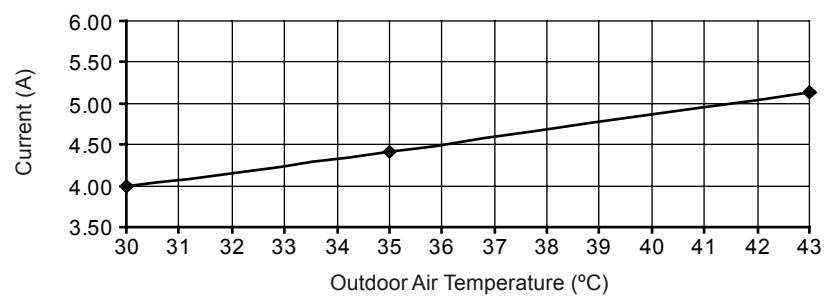
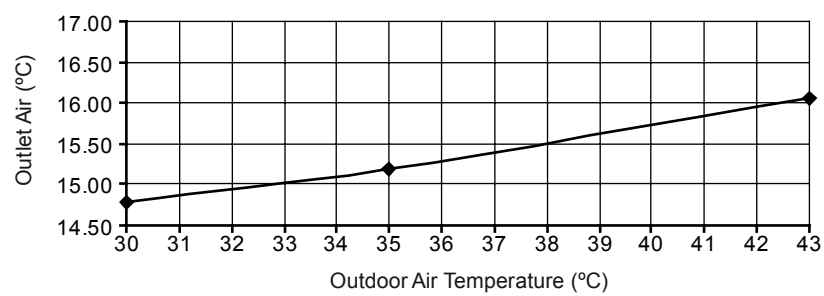
Condition

- Indoor room temperature: 27°C DryBulb/19°C Wet Bulb
- Unit setting: Standard piping length, forced cooling at 16°C, Hi fan
- Compressor frequency: Rated for cooling operation
- Voltage: 230V

### 18.1.1 CS-CE9PKE / CU-CE9PKE



## 18.1.2 CS-CE12PKE / CU-CE12PKE

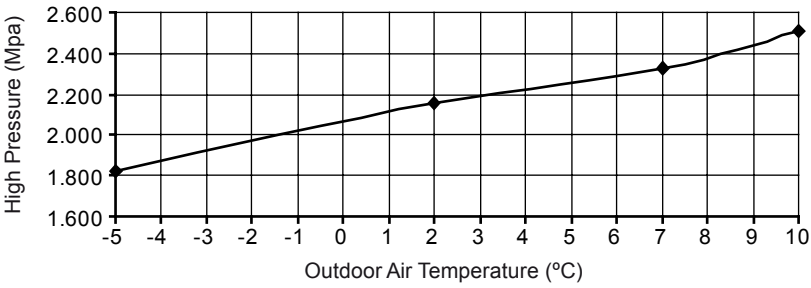
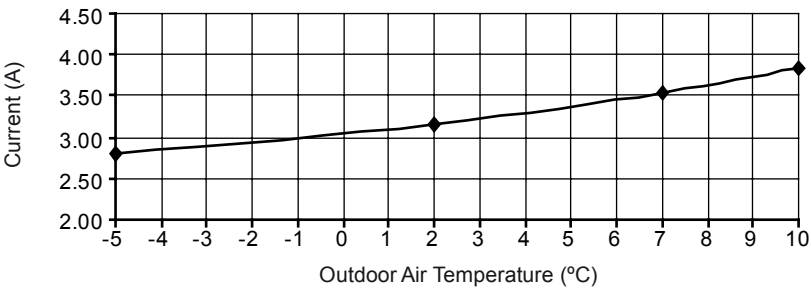
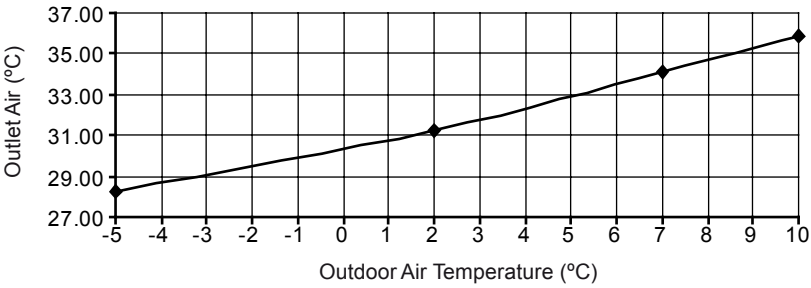


18.2 Heat Mode Outdoor Air Temperature Characteristic

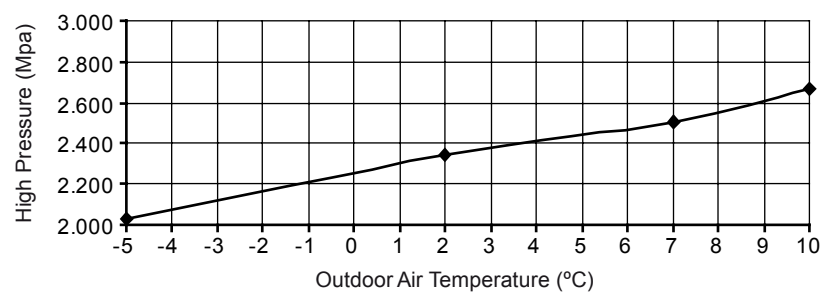
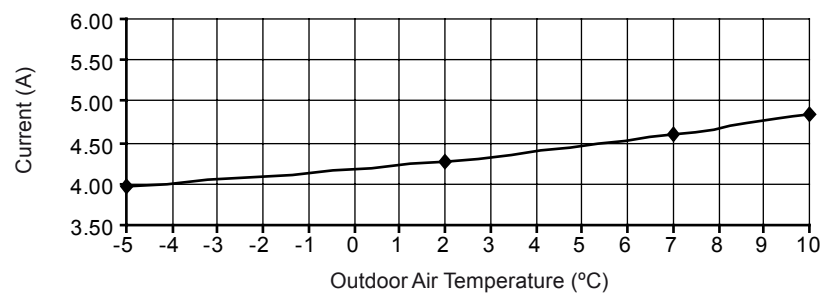
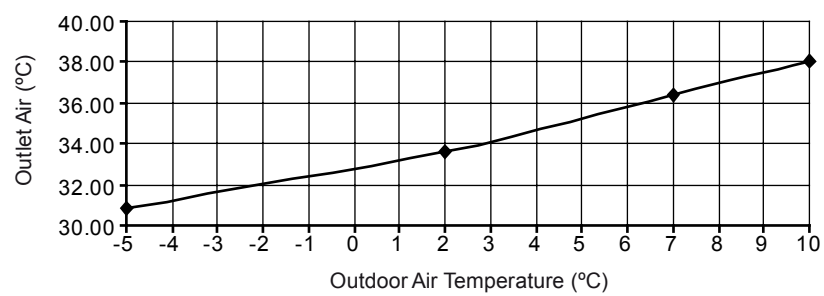
Condition

- Indoor room temperature: 20°C DryBulb/ -°C Wet Bulb
- Unit setting: Standard piping length, forced heating at 30°C, Hi fan
- Compressor frequency: Rated for Heating operation
- Voltage: 230V

18.2.1 CS-CE9PKE / CU-CE9PKE



## 18.2.2 CS-CE12PKE / CU-CE12PKE



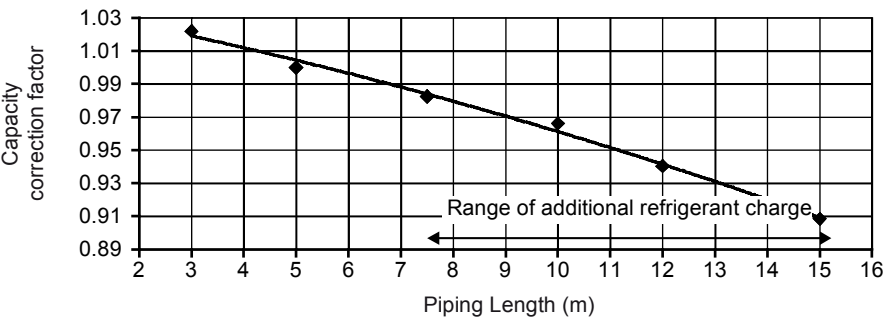


18.3 Piping Length Correction Factor

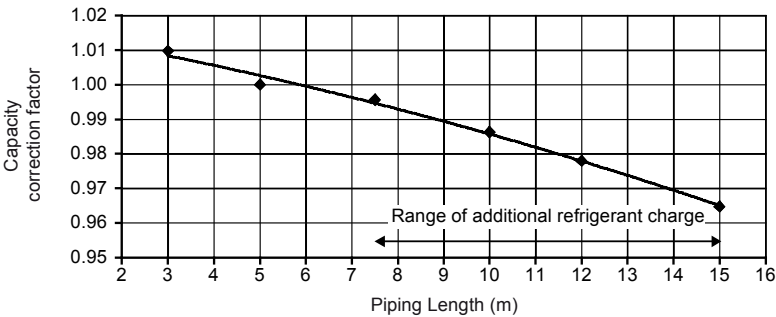
The characteristic of the unit has to be corrected in accordance with the piping length.

18.3.1 CS-CE9PKE / CU-CE9PKE

18.3.1.1 Cooling Capacity



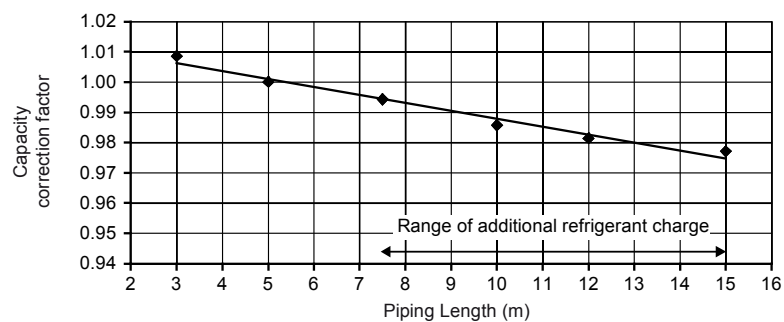
18.3.1.2 Heating Capacity



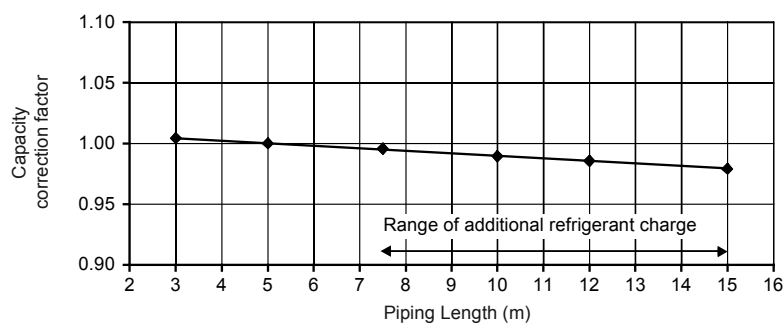
Note: The graphs show the factor after added right amount of additional refrigerant.

## 18.3.2 CS-CE12PKE / CU-CE12PKE

### 18.3.2.1 Cooling Capacity



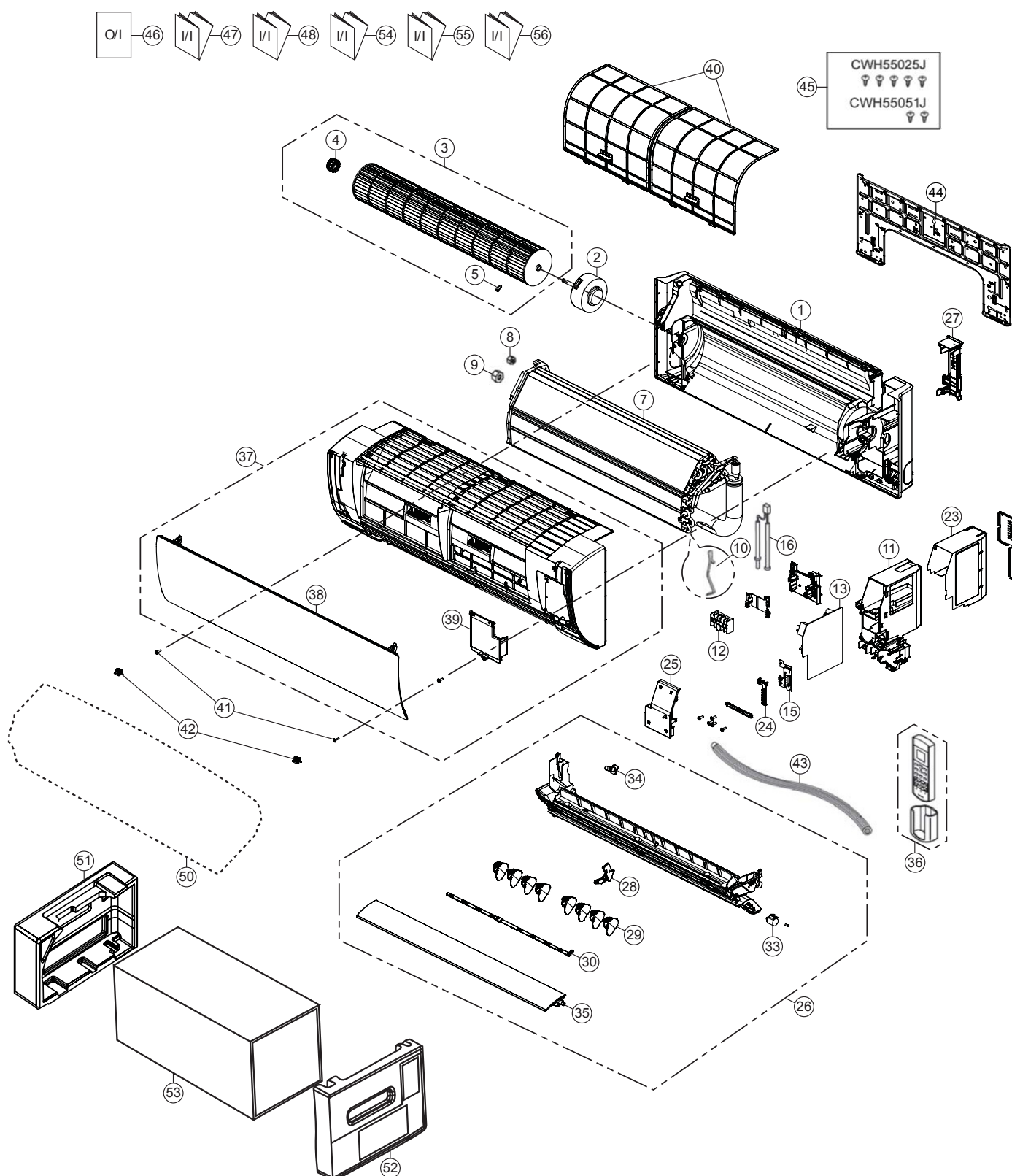
### 18.3.2.2 Heating Capacity



Note: The graphs show the factor after added right amount of additional refrigerant.

# 19. Exploded View and Replacement Parts List

## 19.1 Indoor Unit



### Note

The above exploded view is for the purpose of parts disassembly and replacement.  
The non-numbered parts are not kept as standard service parts.

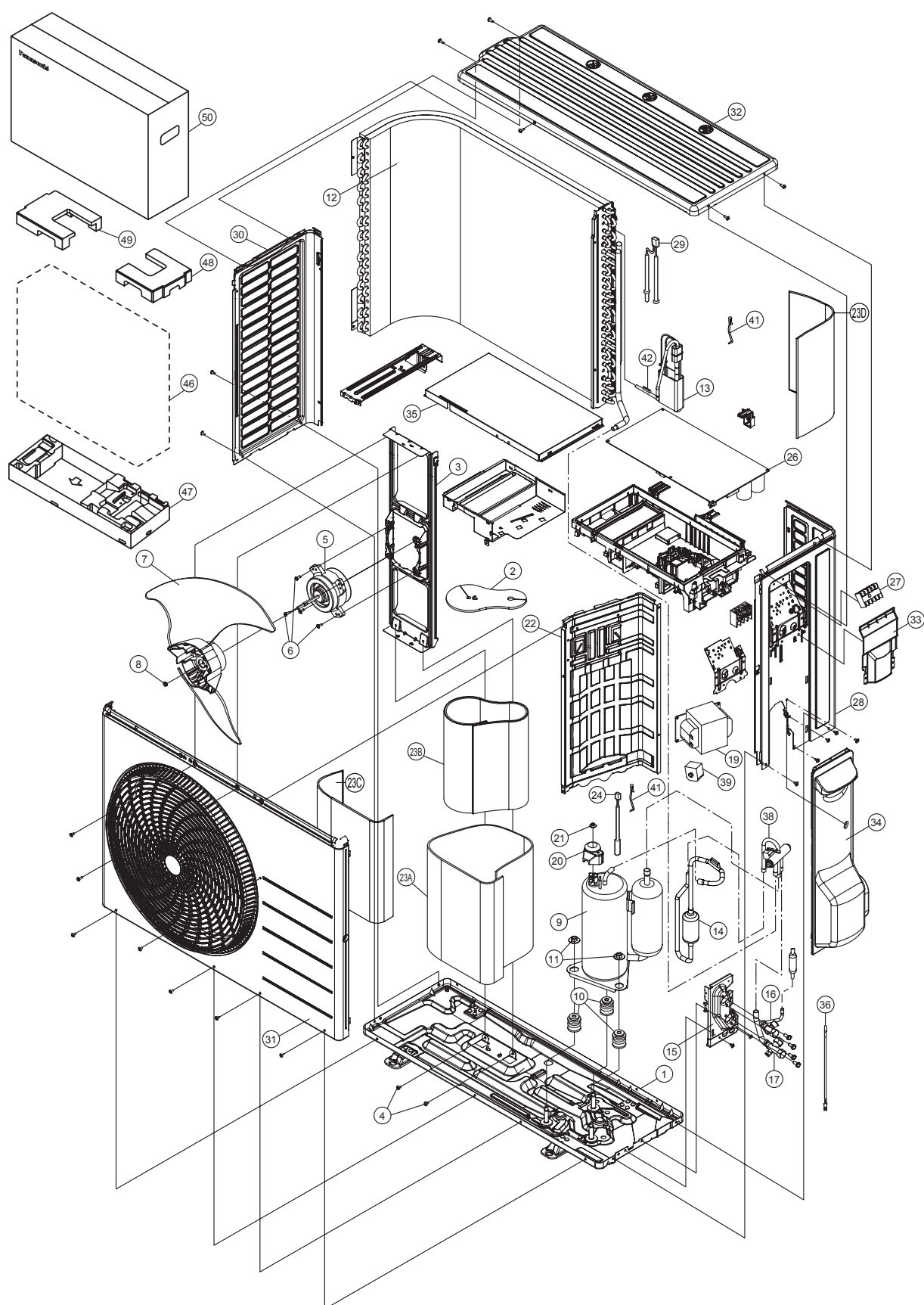
SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-CE9PKE	CS-CE12PKE	REMARK
	1	CHASSY COMPLETE	1	CWD50C1653	←	
⚠	2	FAN MOTOR	1	ARW7628ACCB	←	O
	3	CROSS FLOW FAN COMPLETE	1	CWH02C1076	←	
	4	BEARING ASS'Y	1	CWH64K007	←	O
	5	SCREW - CROSS FLOW FAN	1	CWH551146	←	
	7	EVAPORATOR	1	CWB30C4575	CWB30C4576	
	8	FLARE NUT (LIQUID)	1	CWT251030	←	
	9	FLARE NUT (GAS)	1	CWT251031	←	
	10	HOLDER SENSOR	1	CWH32143	←	
	11	CONTROL BOARD CASING	1	CWH102449	←	
⚠	12	TERMINAL BOARD COMPLETE	1	CWA28C2364	←	O
⚠	13	ELECTRONIC CONTROLLER - MAIN	1	CWA73C7896	CWA73C7897	O
⚠	15	ELECTRONIC CONTROLLER - INDICATOR	1	CWA746963	←	O
	16	SENSOR COMPLETE	1	CWA50C2401	←	O
	23	CONTROL BOARD TOP COVER	1	CWH131467	←	
	24	INDICATOR HOLDER	1	CWD933406	←	
	25	CONTROL BOARD FRONT COVER	1	CWH13C1247	←	
	26	DISCHARGE GRILLE COMPLETE	1	CWE20C3236	←	
	27	BACK COVER CHASSIS	1	CWD933233	←	
	28	FULCRUM	1	CWH621131	←	
	29	VERTICAL VANE	8	CWE241374	←	
	30	CONNECTING BAR	2	CWE261251	←	
⚠	33	A.S.MOTOR, DC SINGLE 12V 300OHM	1	CWA981264	←	O
	34	CAP - DRAIN TRAY	1	CWH521259	←	
	35	HORIZONTAL VANE	1	CWE24C1385	←	
	36	REMOTE CONTROL COMPLETE	1	CWA75C4412	←	O
	37	FRONT GRILLE COMPLETE	1	CWE11C5439	CWE11C5759	O
	38	INTAKE GRILLE COMPLETE	1	CWE22C1723	CWE22C1861	
	39	GRILLE DOOR	1	CWE14C1090	←	
	40	AIR FILTER	2	CWD001279	←	O
	41	SCREW - FRONT GRILLE	2	XTT4+16CFJ	←	
	42	CAP - FRONT GRILLE	2	CWH521227	←	
	43	DRAIN HOSE	1	CWH851173	←	
	44	INSTALLATION PLATE	1	CWH361134	←	
	45	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	←	
	46	OPERATING INSTRUCTION	1	CWF569257	←	
	47	INSTALLATION INSTRUCTION	1	CWF615526	←	
	48	INSTALLATION INSTRUCTION	1	CWF615527	←	
	50	BAG	1	CWG861497	←	
	51	SHOCK ABSORBER (L)	1	CWG713386	←	
	52	SHOCK ABSORBER (R)	1	CWG713387	←	
	53	C.C.CASE	1	CWG567354	←	
	54	INSTALLATION INSTRUCTION	1	CWF615528	←	
	55	INSTALLATION INSTRUCTION	1	CWF615529	←	
	56	INSTALLATION INSTRUCTION	1	CWF615530	←	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

## 19.2 Outdoor Unit

### 19.2.1 CU-CE9PKE



#### Note

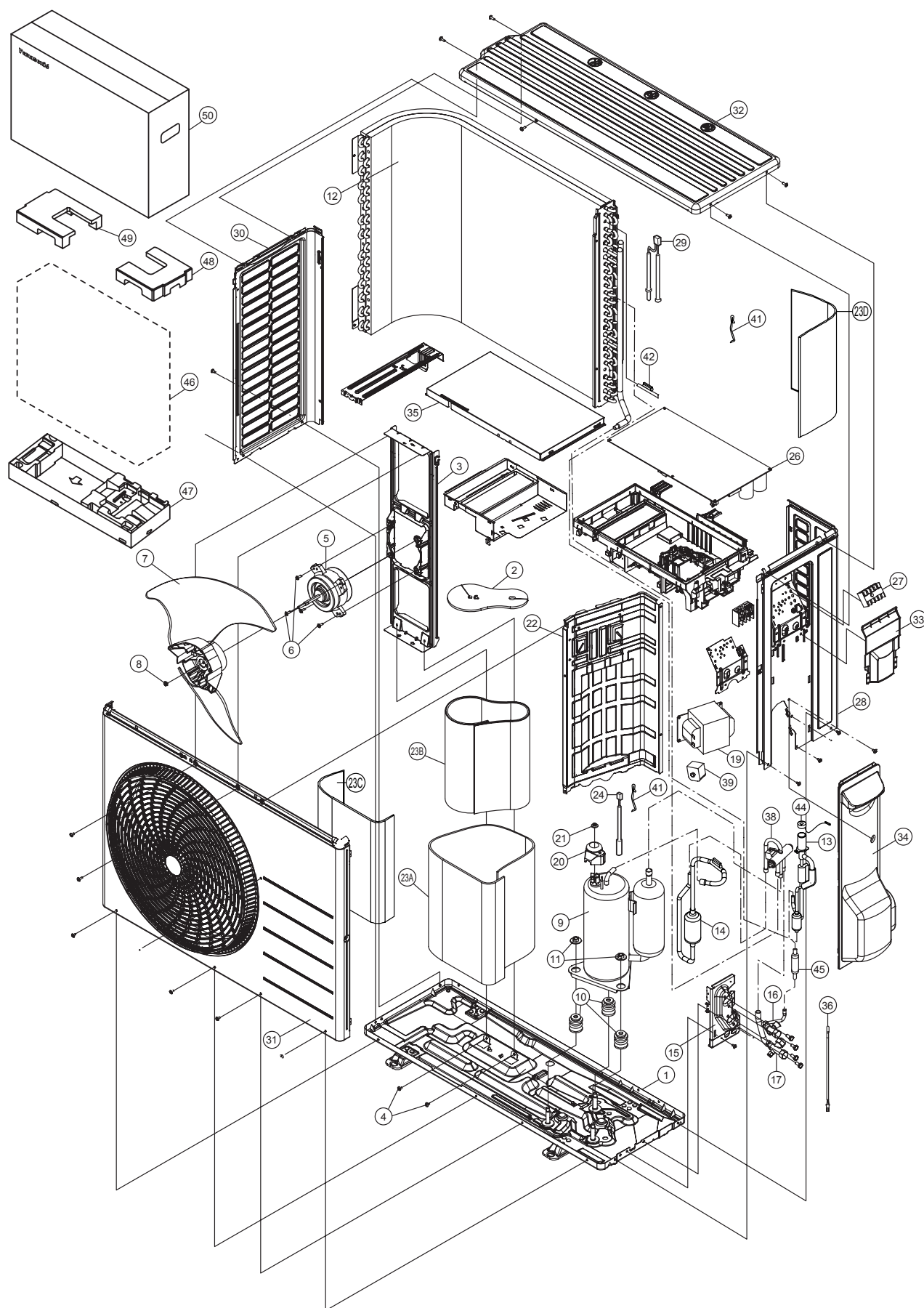
The above exploded view is for the purpose of parts disassembly and replacement.  
The non-numbered parts are not kept as standard service parts.

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-CE9PKE	REMARK
	1	CHASSY ASS'Y	1	CWD52K1310	
	2	SOUND PROOF MATERIAL	1	CWG302742	
	3	FAN MOTOR BRACKET	1	CWD541167	
	4	SCREW	2	CWH551217	
⚠	5	FAN MOTOR	1	CWA951853	O
	6	SCREW - FAN MOTOR MOUNT	4	CWH55252J	
	7	PROPELLER FAN ASSY	1	CWH03K1066	
	8	NUT - PROPELLER FAN	1	CWH56053J	
⚠	9	COMPRESSOR	1	5RD132XFD21	O
	10	ANTI - VIBRATION BUSHING	3	CWH50077	
	11	NUT - COMPRESSOR MOUNT	3	CWH561096	
	12	CONDENSER COMPLETE	1	CWB32C3560	
	13	TUBE ASS'Y CO. (CAP. TUBE& CHK VALVE)	1	CWT01C6150	
	14	DISCHARGE MUFFLER	1	CWB121010	
	15	HOLDER - COUPLING	1	CWH351233	
	16	2-WAYS VALVE (LIQUID)	1	CWB021400	O
	17	3-WAYS VALVE (GAS)	1	CWB011374	O
⚠	19	REACTOR	1	G0C193J00016	O
	20	TERMINAL COVER	1	CWH171039A	
	21	NUT - TERMINAL COVER	1	CWH7080300J	
	22	SOUND - PROOF BOARD	1	CWH151364	
	23A	SOUND PROOF MATERIAL	1	CWG302856	
	23B	SOUND PROOF MATERIAL	1	CWG302858	
	23C	SOUND PROOF MATERIAL	1	CWG302857	
	23D	SOUND PROOF MATERIAL	1	CWG302855	
	24	SENSOR - COMPLETE	1	CWA50C2894	O
⚠	26	ELECTRONIC CONTROLLER - MAIN	1	CWA73C7966R	O
⚠	27	TERMINAL BOARD ASS'Y	1	CWA28K1036J	
	28	CABINET SIDE PLATE CO.	1	CWE04C1482	
	29	SENSOR - COMPLETE	1	CWA50C2893	O
	30	CABINET SIDE PLATE (L)	1	CWE041617A	
	31	CABINET FRONT PLATE - CO.	1	CWE06C1441	
	32	CABINET TOP PLATE	1	CWE031148A	
	33	PLATE - C.B.COVER	1	CWH131470A	
	34	CONTROL BOARD COVER - COMPLETE	1	CWH13C1253	
	35	CONTROL BOARD COVER	1	CWH131473	
	36	BASE PAN HEATER	1	CWA341072	
	38	4-WAYS VALVE	1	CWB001063	O
⚠	39	V-COIL COMPLETE	1	CWA43C2431	O
	41	HOLDER - SENSOR	2	CWH32143	
	42	HOLDER - SENSOR	1	CWH32075	
	46	BAG	1	CWG861078	
	47	BASE BOARD / CC CASE - COMPLETE	1	CWG62C1162	
	48	SHOCK ABSORBER (RIGHT)	1	CWG713415	
	49	SHOCK ABSORBER (LEFT)	1	CWG713416	
	50	C.C.CASE	1	CWG566848	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

## 19.2.2 CU-CE12PKE



### Note

The above exploded view is for the purpose of parts disassembly and replacement.  
The non-numbered parts are not kept as standard service parts.

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-CE12PKE	REMARK
	1	CHASSY ASS'Y	1	CWD52K1310	
	2	SOUND PROOF MATERIAL	1	CWG302742	
	3	FAN MOTOR BRACKET	1	CWD541167	
	4	SCREW - FAN MOTOR BRACKET	2	CWH551217	
⚠	5	FAN MOTOR	1	CWA951854	O
	6	SCREW - FAN MOTOR MOUNT	4	CWH55252J	
	7	PROPELLER FAN ASSY	1	CWH03K1066	
	8	NUT - PROPELLER FAN	1	CWH56053J	
⚠	9	COMPRESSOR	1	5RD132XFD21	O
	10	ANTI - VIBRATION BUSHING	3	CWH50077	
	11	NUT - COMPRESSOR MOUNT	3	CWH56000J	
	12	CONDENSER COMPLETE	1	CWB32C3559	
	13	TUBE ASS'Y CO. (EXPAN. VALVE & STRAINER)	1	CWT01C6626	
	14	DISCHARGE MUFFLER	1	CWB121010	
	15	HOLDER - COUPLING	1	CWH351233	
	16	2-WAYS VALVE	1	CWB021590	O
	17	3-WAYS VALVE	1	CWB011374	O
⚠	19	REACTOR	1	G0C193J00016	O
	20	TERMINAL COVER	1	CWH171039A	
	21	NUT - TERMINAL COVER	1	CWH7080300J	
	22	SOUND - PROOF BOARD	1	CWH151364	
	23A	SOUND PROOF MATERIAL	1	CWG302856	
	23B	SOUND PROOF MATERIAL	1	CWG302858	
	23C	SOUND PROOF MATERIAL	1	CWG302857	
	23D	SOUND PROOF MATERIAL	1	CWG302855	
	24	SENSOR - COMPLETE	1	CWA50C2894	O
⚠	26	ELECTRONIC CONTROLLER - MAIN	1	CWA73C7961R	O
⚠	27	TERMINAL BOARD ASS'Y	1	CWA28K1036J	
	28	CABINET SIDE PLATE CO.	1	CWE04C1482	
	29	SENSOR - COMPLETE	1	CWA50C2893	O
	30	CABINET SIDE PLATE (L)	1	CWE041617A	
	31	CABINET FRONT PLATE - CO.	1	CWE06C1441	
	32	CABINET TOP PLATE	1	CWE031148A	
	33	PLATE - C.B.COVER	1	CWH131470A	
	34	CONTROL BOARD COVER - COMPLETE	1	CWH13C1253	
	35	CONTROL BOARD COVER	1	CWH131473	
	36	BASE PAN HEATER	1	CWA341072	
	38	4-WAYS VALVE	1	CWB001063	O
⚠	39	V-COIL COMPLETE (4-WAYS VALVE)	1	CWA43C2431	O
	41	HOLDER - SENSOR	2	CWH32143	
	42	HOLDER - SENSOR	1	CWH32075	
⚠	44	V-COIL COMPLETE (EXP. VALVE)	1	CWA43C2257	
	45	DISCHARGE MUFFLER	1	CWB121058	
	46	BAG	1	CWG861078	
	47	BASE BOARD / CC CASE - COMPLETE	1	CWG62C1162	



SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-CE12PKE	REMARK
	48	SHOCK ABSORBER (RIGHT)	1	CWG713415	
	49	SHOCK ABSORBER (LEFT)	1	CWG713416	
	50	C.C.CASE	1	CWG566848	

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- “O” marked parts are recommended to be kept in stock.