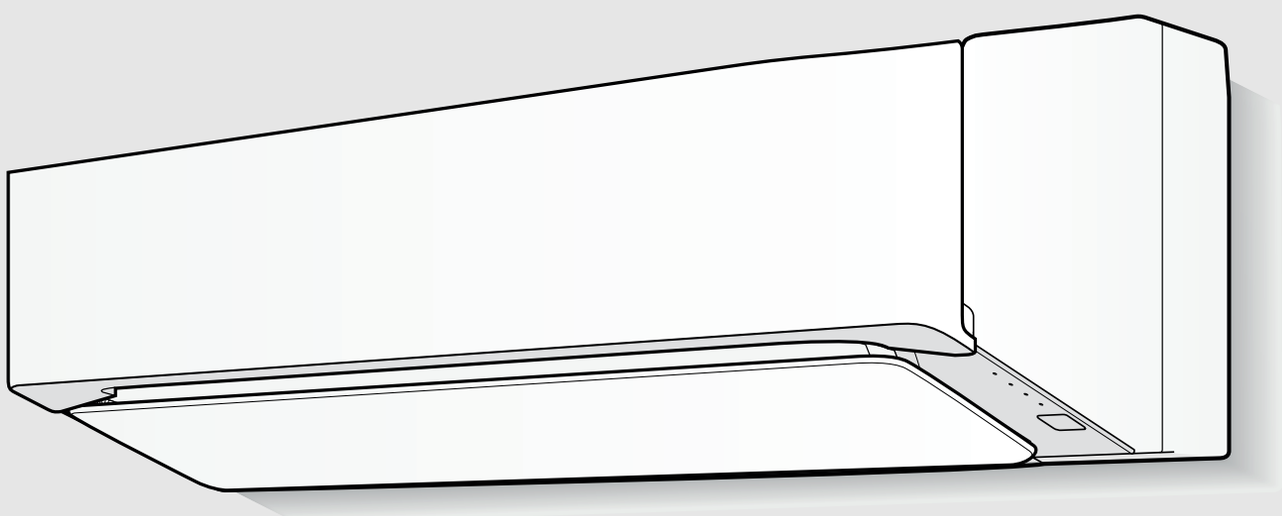
BOSCH

Service manual

Climate Class 6000i/6100i/8000i/8100i

CLC 6001i-Set 35 E, CLC 6001i-Set 25 E, CLC 6101i-Set 50 HE, CLC 6101i-Set 65 HE, CLC8001i-Set 25 E, CLC8001i-Set 35 E, CLC8101i-Set 65 HE



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1 Explanation of symbols and safety instructions

1.1 Explanation of symbols

Warnings

In warnings, signal words at the beginning of a warning are used to indicate the type and seriousness of the ensuing risk if measures for minimizing danger are not taken.

The following signal words are defined and can be used in this document:

DANGER

DANGER indicates that severe or life-threatening personal injury will occur.

WARNING

WARNING indicates that severe to life-threatening personal injury may occur.

CAUTION

CAUTION indicates that minor to medium personal injury may occur.

NOTICE

NOTICE indicates that material damage may occur.

Important information

The info symbol indicates important information where there is no risk to people or property.

1.2 General safety instructions

1.2.1 Overview

This service manual is intended for service engineers. All instructions must be observed. Failure to comply with instructions may result in material damage and personal injury, including danger to life

- Read the installation manuals (outdoor unit, indoor unit, etc) prior to maintenance.
- Observe the safety instructions and warnings.
- Follow national and regional regulations, technical regulations and guidelines.

⚠ Warning

- Do not touch the refrigerant piping, water piping or internal parts during operations or when the operation has just been completed. This is because the temperature may be too high or too low. Let them recover to the normal temperature first. Wear protective gloves if you must come in contact with these.
- Do not touch any refrigerant that has accidentally leaked.

⚠ Caution

- Please wear the appropriate personal protective tools during installation, maintenance or repair of the system (protective gloves, safety glasses, etc.).
- Do not touch the air inlet or aluminium fin of the unit.

⚠ Notice

- Improper installation or connection of equipment and accessories may cause electric shocks, short circuits, leaks, fires, or other damage to the equipment. Use only accessories, equipment and spare parts made or approved by the manufacturer.
- Do not place any object or equipment on top of the unit.
- Do not sit, climb, or stand on the unit.

1.2.2 Refrigerant

⚠ Warning

- Take appropriate precautions to prevent refrigerant leakage. If the refrigerant gas leaks, ventilate the area immediately. Possible risk: An excessively high concentration of refrigerant in an enclosed area can lead to anoxia (oxygen deficiency). The refrigerant gas may produce a toxic gas if it comes in contact with fire.
- Refrigerant must be recovered. Do not release it to the environment. Use the vacuum pump to draw the refrigerant out from the unit.

⚠ Notice

- Do not charge refrigerant before the wiring layout is completed.
- Only charge the refrigerant after the leak tests and vacuum drying have been completed.
- When charging the system with refrigerant, do not exceed the allowable charge.

1.2.3 Electricity

⚠ Warning

- Make sure you switch off the power of the unit before you open the electric control box, and access any circuit wiring or components inside. At the same time, this prevents the unit from being accidentally powered up during installation or maintenance work.
- Once you open the cover of the electric control box, do not let any liquid spill into the box, and do not touch the components in the box with wet hands.
- Cut off power supply more then 5 minutes prior to access the electrical parts. Measure the voltage of the main circuit capacitor or electrical component terminals to make sure the voltage is less than 36 V before you touch any circuit component. Refer to the connections and wiring on the nameplate for the master circuit terminals and connections.
- Make sure the wiring ends are not subjected to any external force. Do not pull or squeeze the cables and wires. At the same time, make sure the wiring ends are not in contact with the piping or sharp edges of the sheet metal.
- Make sure all terminals of the components are firmly connected before you close the cover of the electric control box. Before you power on and start the unit, check that the cover of the electric control box is seated correctly and secured with screws.

2 General information

2.1 External Dimension

2.1.1 Indoor Unit

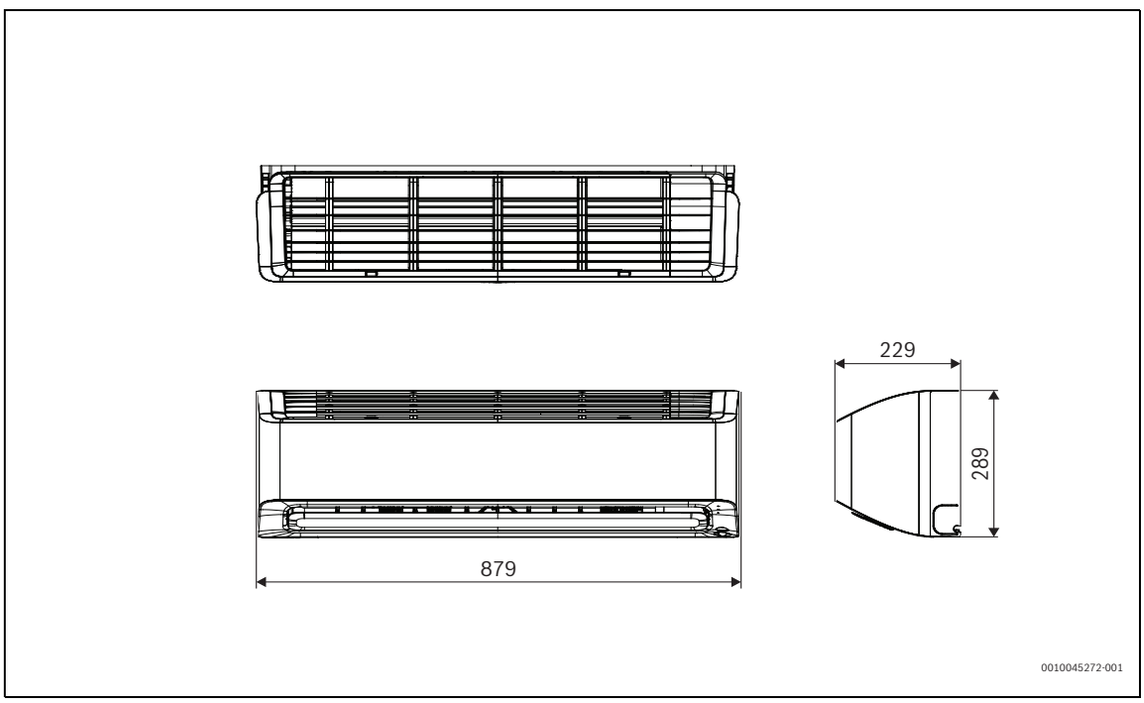


Fig. 1 Indoor unit dimensions (in mm)

2.1.2 Outdoor unit

For CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E and CLC6001i 35 E models

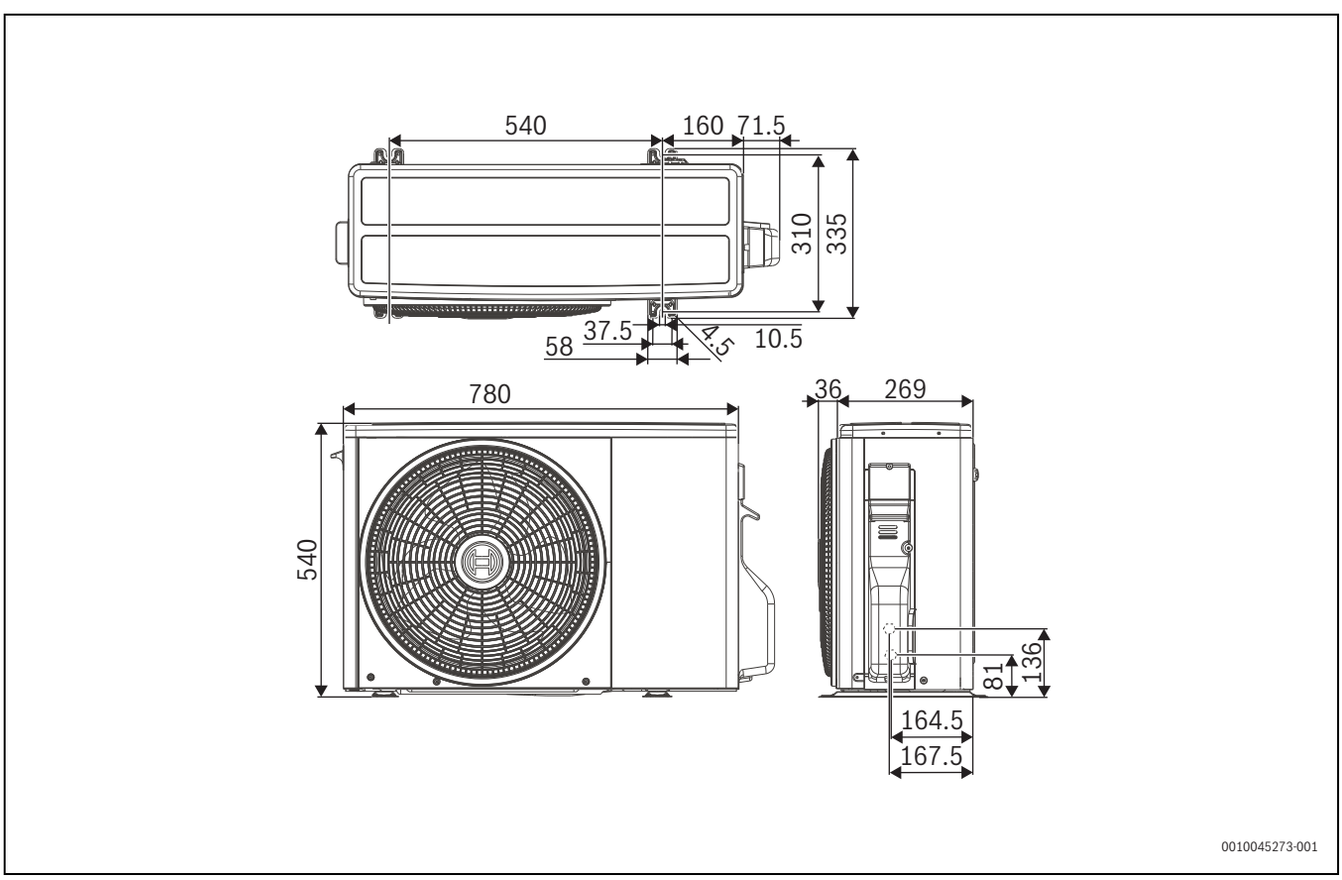


Fig. 2 Outdoor unit dimensions - (in mm)

For CL8101i 65 HE, CLC8001i 25 E and CL8001i 35 E models

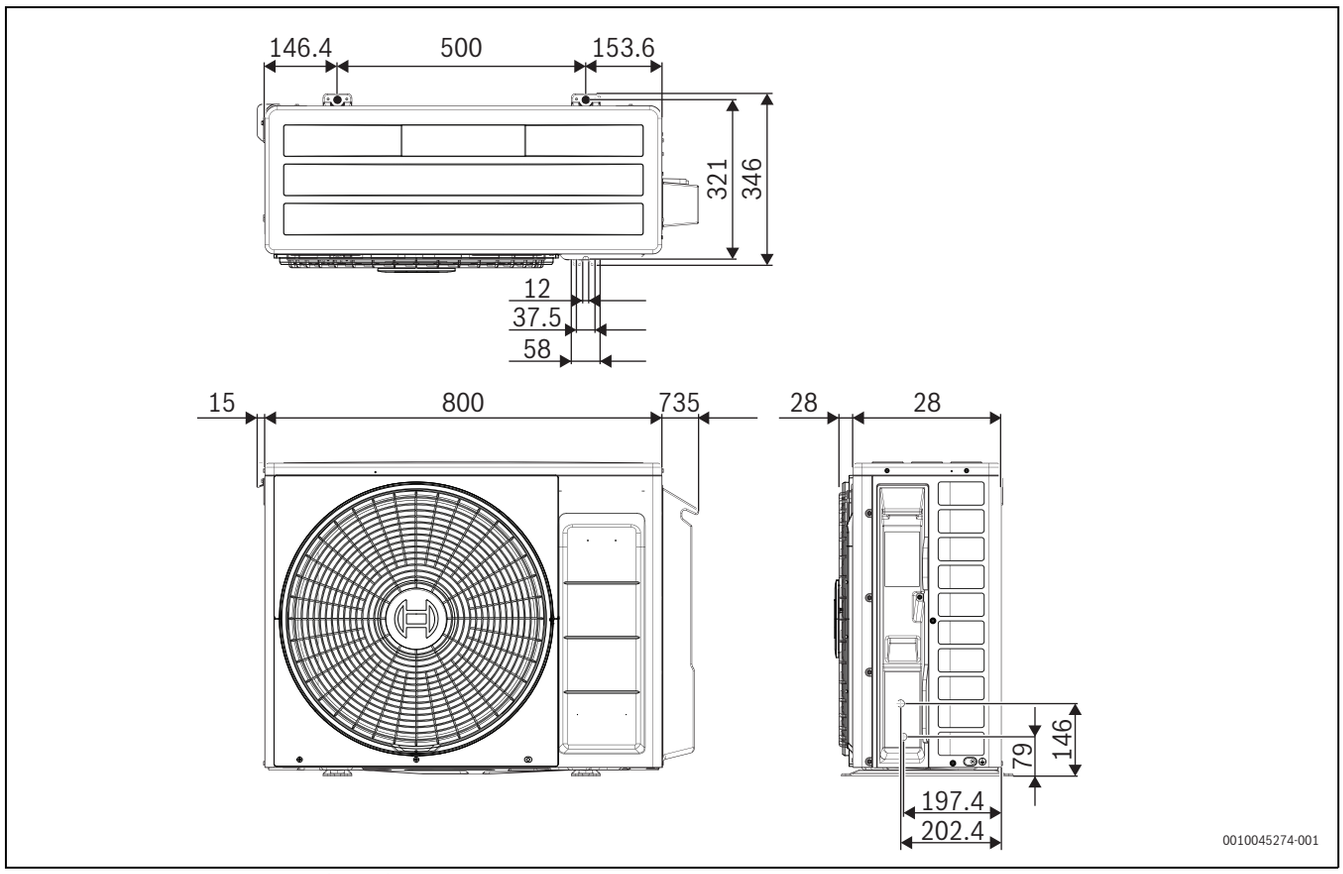


Fig. 3 Outdoor unit dimensions - (in mm)

2.2 Specification

2.2.1 CLC6101i models

Set Indoor unit Outdoor unit	Unit	CLC6101i-Set 50 HE CLC6101i-W 50 HE CLC6101i 50 HE	CLC6101i-Set 65 HE CLC6101i-W 65 HE CLC6100i 65 HE
General			
Rated cooling capacity (Min. - Max.)	kW	2.5 (0.9 - 3.0)	3.5 (0.9- 4.2)
Rated heating capacity (Min. - Max.)	kW	3.2 (0.9 - 5.0)	4.2 (0.9 - 6.5)
Moisture removal (at cooling)	l/h	0.8	1.2
De-icing system		Micro-computer controlled reversed system	
Noise level (high/low/soft/silent) (IDU)	dB(A)	39 / 33 / 26 / 20	40 / 34/ 27 / 20
Noise level (high/low/soft/silent) (ODU)	dB(A)	48 / – / – / –	49 / – / – / –
Net dimensions (w/h/d) (IDU)	mm	879 / 289 / 229	879/ 289/ 229
Net dimensions (w/h/d) (ODU)	mm	780/ 540 / 269	780 / 540 / 269
Net weight (IDU/ODU)	kg	9/31	10/31
Safety device		Fuse, Micro computer controlled	
Electrical data			
Phase		1	1
Rated frequency	Hz	50	50
Rated voltage	V	230	230
Rated current cooling (Min. - Max.)	A	2.9 (0.9 - 3.8)	4.5 (0.9 - 6.3)
Rated current heating (Min. - Max.)	A	3.6 (0.7 - 6.5)	4.7 (0.7 - 9.1)
Rated input cooling (Min. - Max.)	W	550 (170 - 710)	850 (170 - 1180)
Rated input heating (Min. - Max.)	W	750 (150 - 1350)	1000 (150 - 1950)
Power factor cooling	%	82	82
Power factor heating	%	91	93
Maximum operating current	A	7.0	10.2
Refrigerant system			
Evaporator		Slit Fin and Grooved tube type	
Condenser		Corrugate Fin and Grooved tube type	
Control		Expansion Valve	
Refrigerant type		R32	R32
Refrigerant charge	g	910	910
Compressor			
Type		Hermetically sealed rotary type	
Model		KSN98D42UFZA	
Oil type		Ester oil VG74	
Oil charge	ml	300	300
Safety device		Thermistor	
Fan system			
Type (IDU)		Cross flow fan	Cross flow fan
Type (ODU)		Propeller fan	Propeller fan
Air flow at cooling (high/low/soft/silent)(IDU)	m^3/min	10.6 / 8.0 / 6.1/ 4.7	11.5 / 8.1 / 6.6 / 4.4
Air flow at cooling (high/low/soft/silent)(ODU)	m^3/min	28.8 / – / – / –	31.2 / – / – / –
Drive		Direct drive	
Safety device in fan motor		Inherent thermistor	
Air filter		Polypropylene net (washable)	
Air flow quantity (high/low/soft/silent)	dB(A)	12.6 / 9.1 / 5.6 / 3.4	13.3 / 9.8 / 6.3 / 4.1
Connections			
Refrigerant coupling		Flare Type	
Refrigerant tube size for gases	in	3/8”	3/8”‘
Refrigerant tube size for liquids	in	1/4”	1/4”
Drain piping	mm	Ø 17 and Ø 20	Ø 17 and Ø 20

Table 1

2.2.2 CLC8101i and CLC6001i models

Set Indoor unit Outdoor unit	Unit	CLC8101i-Set 65 HE CLC8101i-W 65 HE (T/S/R) CL8101i 65 HE	CLC6001i-Set 25 E CLC6001i-W 25 E CL6001i 25 E
General			
Rated cooling capacity (Min. - Max.)	kW	3.5 (0.9 - 4.2)	2.5 (0.9- 3.0)
Rated heating capacity (Min. - Max.)	kW	4.2 (0.9 - 6.5)	3.2 (0.9 - 4.5)
Moisture removal (at cooling)	l/h	1.2	0.8
De-icing system		Micro-computer controlled reversed system	
Noise level (high/low/soft/silent) (IDU)	dB(A)	46 / 37 / 27 / 20	39 / 33 / 26 / 20
Noise level (high/low/soft/silent) (ODU)	dB(A)	48 / – / – / –	49 / – / – / –
Net dimensions (w/h/d) (IDU)	mm	879 / 289 / 229	879/ 289/ 229
Net dimensions (w/h/d) (ODU)	mm	800/ 630 / 300	780 / 540 / 269
Net weight (IDU/ODU)	kg	10/40	9/30
Safety device		Fuse, Micro computer controlled	
Electrical data			
Phase		1	1
Rated frequency	Hz	50	50
Rated voltage	V	230	230
Rated current cooling (Min. - Max.)	A	3.7 (0.7 - 5.2)	2.9 (0.9 - 3.8)
Rated current heating (Min. - Max.)	A	4.2 (0.7 - 8.6)	3.6 (0.7 - 5.6)
Rated input cooling (Min. - Max.)	W	780 (150 - 1100)	550 (170 - 710)
Rated input heating (Min. - Max.)	W	910 (150 - 1750)	750 (150 - 1180)
Power factor cooling	%	92	82
Power factor heating	%	88	91
Maximum operating current	A	8.7	6.2
Refrigerant system			
Evaporator		Slit Fin and Grooved tube type	
Condenser		Corrugate Fin and Grooved tube type	
Control		Expansion Valve	
Refrigerant type		R32	R32
Refrigerant charge	g	1100	910
Compressor			
Type		Hermetically sealed rotary type	
Model		KSN98D42UERA	KSN98D42UFZA
Oil type		Ester oil VG74	
Oil charge	ml	300	300
Safety device		Thermistor	
Fan system			
Type (IDU)		Cross flow fan	Cross flow fan
Type (ODU)		Propeller fan	Propeller fan
Air flow at cooling (high/low/soft/silent)(IDU)	m^3/min	14.2 / 9.8 / 6.3/ 4.4	10.6 / 8.1 / 6.1 / 4.7
Air flow at cooling (high/low/soft/silent)(ODU)	m^3/min	32.5/ – / – / –	38.8 / – / – / –
Drive		Direct drive	
Safety device in fan motor		Inherent thermistor	
Air filter		Polypropylene net (washable)	
Air flow quantity (high/low/soft/silent)	dB(A)	12.6 / 9.1 / 5.6 / 3.4	13.3 / 9.8 / 6.3 / 4.1
Connections			
Refrigerant coupling		Flare Type	
Refrigerant tube size for gases	in	3/8”	3/8”‘
Refrigerant tube size for liquids	in	1/4”	1/4”
Drain piping	mm	Ø 17 and Ø 20	Ø 17 and Ø 20

Table 2

2.2.3 CLC6001i and CLC8001i models

Set Indoor unit Outdoor unit	Unit	CLC6001i-Set 35 E CLC6001i-W 35 E CLC6001i 35 E	CLC8001i-Set 25 E CLC8001i-W 25 E (T/S/R) CLC8001i 25 E
General			
Rated cooling capacity (Min. - Max.)	kW	3.5 (0.9 - 4.2)	2.5 (0.9- 3.0)
Rated heating capacity (Min. - Max.)	kW	4.0 (0.9 - 5.5)	3.2 (0.9 - 5.0)
Moisture removal (at cooling)	l/h	1.2	0.8
De-icing system		Micro-computer controlled reversed system	
Noise level (high/low/soft/silent) (IDU)	dB(A)	40 / 34 / 27 / 20	44 / 35 / 26 / 20
Noise level (high/low/soft/silent) (ODU)	dB(A)	49 / – / – / –	47 / – / – / –
Net dimensions (w/h/d) (IDU)	mm	879 / 289 / 229	879/ 289/ 229
Net dimensions (w/h/d) (ODU)	mm	780/ 540/ 269	800 /630/ 300
Net weight (IDU/ODU)	kg	9/30	10/39
Safety device		Fuse, Micro computer controlled	
Electrical data			
Phase		1	1
Rated frequency	Hz	50	50
Rated voltage	V	230	230
Rated current cooling (Min. - Max.)	A	4.6 (1.0 - 6.6)	2.3 (0.7 - 2.9)
Rated current heating (Min. - Max.)	A	4.9 (0.7 - 7.6)	2.9 (0.7 - 5.6)
Rated input cooling (Min. - Max.)	W	870 (180 - 1250)	480 (150 - 600)
Rated input heating (Min. - Max.)	W	1000 (150 - 1550)	610 (150 - 1170)
Power factor cooling	%	82	91
Power factor heating	%	89	91
Maximum operating current	A	8.0	6.7
Refrigerant system			
Evaporator		Slit Fin and Grooved tube type	
Condenser		Corrugate Fin and Grooved tube type	
Control		Expansion Valve	
Refrigerant type		R32	R32
Refrigerant charge	g	910	1100
Compressor			
Type		Hermetically sealed rotary type	
Model		KSN98D42UFZA	KSN98D42UERA
Oil type		Ester oil VG74	
Oil charge	ml	300	300
Safety device		Thermistor	
Fan system			
Type (IDU)		Cross flow fan	Cross flow fan
Type (ODU)		Propeller fan	Propeller fan
Air flow at cooling (high/low/soft/silent)(IDU)	m^3/min	11.3 / 8.6 / 6.9/ 5.4	13.1 / 9.3 / 6.0 / 4.4
Air flow at cooling (high/low/soft/silent)(ODU)	m^3/min	31.2/ – / – / –	32.5 / – / – / –
Drive		Direct drive	
Safety device in fan motor		Inherent thermistor	
Air filter		Polypropylene net (washable)	
Air flow quantity (high/low/soft/silent)	dB(A)	12.6 / 9.1 / 5.6 / 3.4	13.3 / 9.8 / 6.3 / 4.1
Connections			
Refrigerant coupling		Flare Type	
Refrigerant tube size for gases	in	3/8”	3/8”‘
Refrigerant tube size for liquids	in	1/4”	1/4”
Drain piping	mm	Ø 17 and Ø 20	Ø 17 and Ø 20

Table 3

2.2.4 CLC8001i models

Set Indoor unit Outdoor unit	Unit	CLC8001i-Set 35 E CLC8001i-W 35 E (T/S/R) CL8001i 35 E
General		
Rated cooling capacity (Min. - Max.)	kW	3.5 (0.9 - 4.2)
Rated heating capacity (Min. - Max.)	kW	4.2 (0.9 - 6.5)
Moisture removal (at cooling)	l/h	1.2
De-icing system		Micro-computer controlled reversed system
Noise level (high/low/soft/silent) (IDU)	dB(A)	46 / 37 / 27 / 20
Noise level (high/low/soft/silent) (ODU)	dB(A)	48 / – / – / –
Net dimensions (w/h/d) (IDU)	mm	879 / 289 / 229
Net dimensions (w/h/d) (ODU)	mm	800/ 630/ 300
Net weight (IDU/ODU)	kg	10/39
Safety device		Fuse, Micro computer controlled
Electrical data		
Phase		1
Rated frequency	Hz	50
Rated voltage	V	230
Rated current cooling (Min. - Max.)	A	3.7 (0.7 - 5.2)
Rated current heating (Min. - Max.)	A	4.5 (0.7 - 8.6)
Rated input cooling (Min. - Max.)	W	780 (150 - 1100)
Rated input heating (Min. - Max.)	W	910 (150 - 1750)
Power factor cooling	%	92
Power factor heating	%	88
Maximum operating current	A	8.7
Refrigerant system		
Evaporator		Slit Fin and Grooved tube type
Condenser		Corrugate Fin and Grooved tube type
Control		Expansion Valve
Refrigerant type		R32
Refrigerant charge	g	1100
Compressor		
Type		Hermetically sealed rotary type
Model		KSN98D42UERA
Oil type		Ester oil VG74
Oil charge	ml	300
Safety device		Thermistor
Fan system		
Type (IDU)		Cross flow fan
Type (ODU)		Propeller fan
Air flow at cooling (high/low/soft/silent)(IDU)	m^3/min	14.2 / 9.8/ 6.3/ 4.4
Air flow at cooling (high/low/soft/silent)(ODU)	m^3/min	32.5/ – / – / –
Drive		Direct drive
Safety device in fan motor		Inherent thermistor
Air filter		Polypropylene net (washable)
Connections		
Refrigerant coupling		Flare Type
Refrigerant tube size for gases	in	3/8”
Refrigerant tube size for liquids	in	1/4”
Drain piping	mm	Ø 17 and Ø 20

Table 4

2.2.5 Electrical Specifications Indoor Unit

Description	Unit	
Indoor fan motor		
Type	DAI239P-H030A-3207	
Rated voltage	V	310
Rated capacity	W	30
Class		E
Transformer		
Type		TE20SMSW-G08V
Voltage		DC 5V, 12V, 19V
Fuse		
Type	2010 T 3.15A 250A	
FU1		250 V / 3.15 A

2.2.6 Electrical Specifications Outdoor Unit

For CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E and CLC6001i 35 E models

Description	Unit	
Compressor		
Type	KSN98D42UFZA	
Outdoor fan motor		
Type	DBI445P-L041A-AL01-1	
Rated voltage	V	280
Rated capacity	W	41
Poles		8
Fuse		
FU1, FU5		250 V / 20 A
FU2		250 V / 3.15 A
FU3		250 V / 2 A

For CL8101i 65 HE, CLC8001i 25 E and CL8001i 35 E models

Description	Unit	
Compressor		
Type	KSN98D42UERA	
Outdoor fan motor		
Type	ZKFN-41-8-23	
Rated voltage	V	280
Rated capacity	W	41
Poles		8
Fuse		
FU1, FU5		250 V / 20 A
FU2		250 V / 3.15 A
FU3		250 V / 2 A

2.3 Functions

2.3.1 ON timer

The ON timer can be activated by pressing the ON timer button. When the ON timer is activated, the operation start time is adjusted based on fuzzy logic calculations 2 hours before the set time so that the room temperature reaches the set temperature at the set time.

2.3.2 OFF timer

The OFF timer can be activated by pressing the OFF timer button. When the OFF timer is activated, the internal timer starts to count down the remaining time from set time. The unit will turn off automatically when it reaches zero.

2.3.3 Power ON start

If the connecting wire HAJP is put on the PCB assembly when the power is supplied by turning on a circuit breaker, the air conditioner automatically starts operation in “AUTO” (Refer to Indoor side PCB).

2.3.4 AUTO mode

AUTO mode of remote control (only for CLC6101i-W 50 HE and CLC6101i-W 65 HE models)
AUTO mode of AUX button (for all models)

In AUTO mode, the temperature setting and mode are automatically selected according to the room temperature and outdoor temperature when the unit is turned on.

AUTO mode of remote control (only for CLC6001i-W 35 E and CLC6001i-W 25 E models)

In the AUTO mode the unit selects operating mode (Heating/Cooling) according to temperature setting, which set by the user and room temperature.

Automatic mode does not switch between cooling or heating. Only the set temperature changes automatically.

▶ Press the **Auto** button twice to reavaluate this automatic setting.

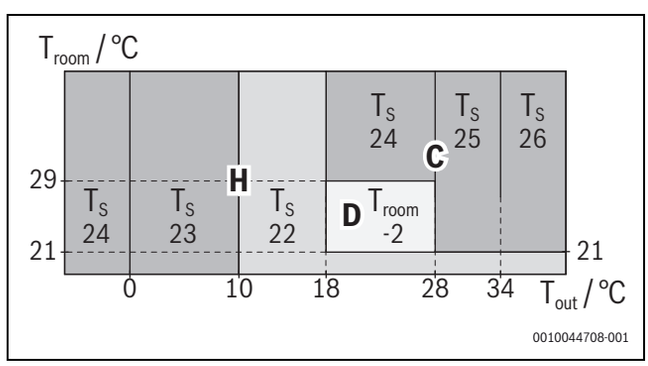


Fig. 4

C Turning on auto mode selects cooling
H Turning on auto mode selects heating
D Turning on auto mode selects drying
T_{out} Outside temperature
T_{room} Room temperature
T_S Automatically set temperature in °C

▶ For further information on auto mode check the user manual.

2.3.5 Auto restart

When power failure occurs during operation, the unit will automatically restart in the same setting which were active before the power failure.

Setting

- Operating mode (Heat, Cool, Dry, PCI)
- Temperature adjustment (within 2 °C range) automatic operation.
- Temperature setting

- Fan setting
- Air flow direction
- Power ON/OFF
- Automatic operation mode setting
- Plasmacluster mode
- OD SILENT setting
- SPOT setting

Settings not memorised

- Timer setting
- Full power setting
- Self cleaning
- Multi space setting
- ECO setting

Disabling auto restart function

By removing (cutting) jumper (JP0) on the printed circuit board (PCB), the auto restart function can be disabled.

2.3.6 Save operation

This control is valid only in AUTO mode.

In addition, average models (CLC6001i-W 35 E, CLC6001i-W 25 E, CLC8001i-W 25 E (T/S/R) and CLC8001i-W 35 E (T/S/R)) only when ECO mode is enabled. Nordic models (CLC6101i-W 50 HE, CLC6101i-W 65 HE, CLC8101i-W 65 HE (T/S/R)) only when another mode is disabled.

If there is no sign of a person, for 1 hour, the air conditioner will arise setting temperature. When the presence of a person is detected, correction temperature will be restored.

Cool	BOSCH Average	BOSCH Nordic
Correction Temperature Limit	+ 1.0ºC	+1.0ºC
Setting Temperature Limit	None	28.0ºC
Hot	BOSCH Average	BOSCH Nordic
Correction Temperature Limit	- 1.0ºC	-1.0ºC
Setting Temperature Limit	None	21.0ºC

Table 5 Limit of temperature

2.3.7 Activity Detection

This control is valid only in AUTO mode. If the amount of human activity increases for few minutes, setting temperature is lowered, fan rotation is increased by 100rpm when fan setting is AUTO, and horizontal louver (H-louver) is turned downward when the louver setting is AUTO. If human activity decreases, it returns to the original state.

Temperature correction table		Temperature correction degree		
		activity weak	activity mid	activity strong
Room temperature (ºC)	23/30	1	1.75	2.5
	27/28	1	1.5	2
	25/26	0.5	1	1.5
	23/24	0.25	0.75	1.25
	17~22	0.25	0.5	0.75
	16	0	0	0

Table 6 Limit of temperature

3 Electrical components and wiring diagrams

3.1 Wiring Diagram

3.1.1 Indoor Unit

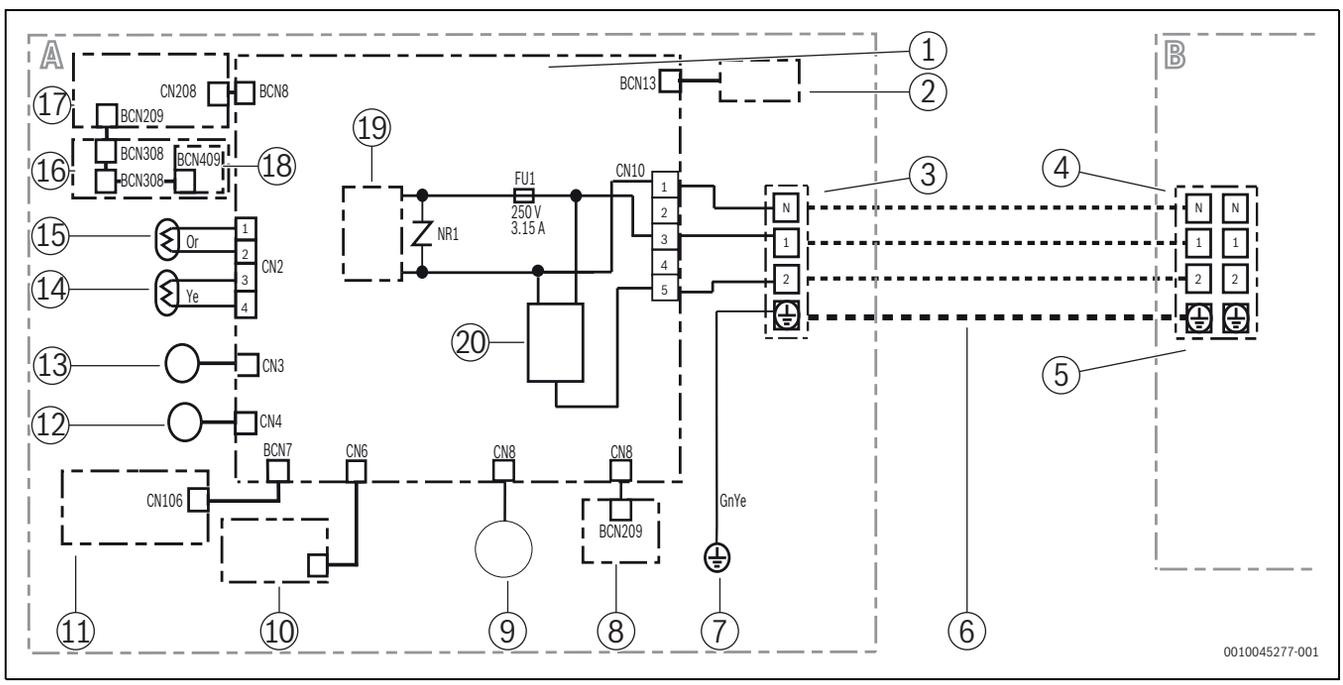


Fig. 5

A Indoor unit
B Outdoor unit

[1] Control board unit
[2] Adapter
[3] Terminal board (IDU)
[4] Terminal board (ODU)
[5] Control box
[6] IDU connection cable
[7] Evaporator
[8] PCI LED board
[9] Fan motor
[10] Plasmacluster
[11] Humidity sensor board
[12] Louver motor (horizontal)
[13] Louver motor (vertical)
[14] Thermistor (room temperature)
[15] Thermistor (heat exchanger)
[16] Receiver board
[17] Display board
[18] Motion board
[19] Power supply circuit
[20] Serial signal circuit

FU1... Fuse
Or Orange
Ye Yellow
Gn/Ye Green/Yellow

* some functions are optional (depending on model)

Number	Error
1	Short circuit of outdoor unit thermistor
2	Overheat error (compressor or cycle)
3	Temporary stop due to dehumidifying operation
5	Open circuit of outdoor unit hermistor
6	DC over current error
7	AC over current error/AC current abnormal
9	Thermistor installation error/4-way valve error or gas leak error
10	EEPROM/CPU error of outdoor unit
11	Abnormal outdoor fan motor
13	Abormal compressor rotation
14	DC voltage/power supply voltage error
17	Open-circuit of serial signal line/erroneous wiring
18	Short-circuit of serial signal line/erroneous wiring
19	Abormal indoor fan motor
20	EEPROM error of indoor unit
24	Abnormal wireless LAN
26	Open-circuit/short-circuit of indoor thermistor

Table 7 LED indication for self-diagnosis

Press down AUX button for 5 seconds while the unit is on stand-by.

Definition for error code:
Operation lamp (Gn): main no. (tens digit)
Timer lamp (Ye): main no. (units digit)
WIFI lamp/error lamp (Gn): sub no.
Example:

Lamp	Main no.		Sub no.	Error code
Color	Gn	Ye	Gn	
Blinking time	1	4	2	14-2
	0	9	4	9-4

Table 8

3.1.2 Outdoor unit

For CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E and CLC6001i 35 E models

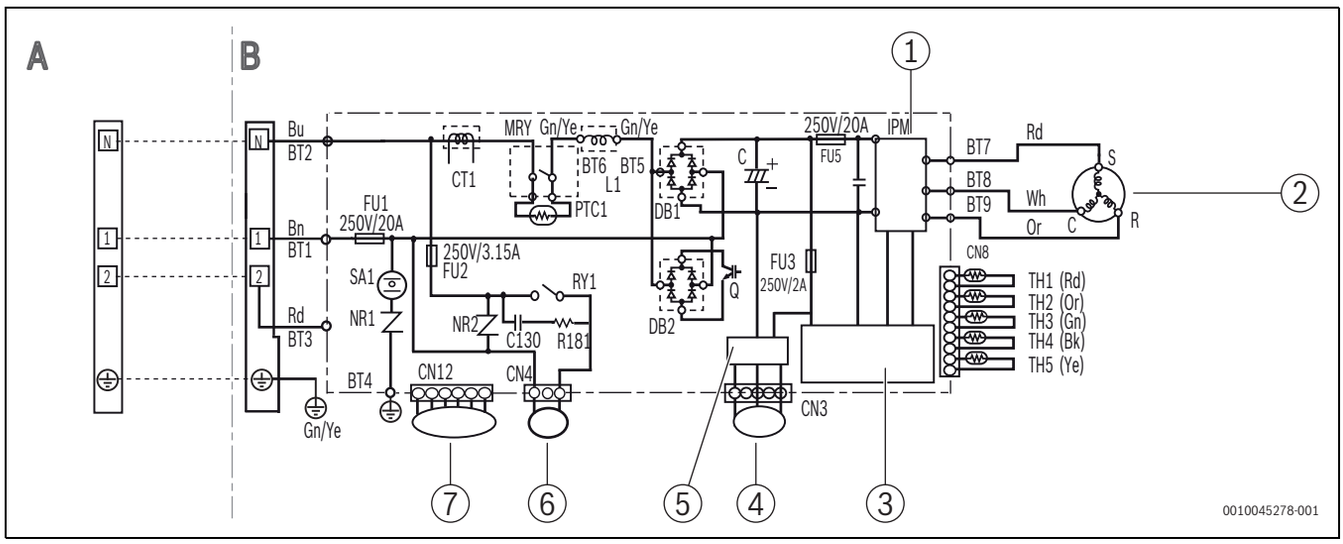


Fig. 6

A Room input (220 – 240 V, 1-phase, 50 Hz)
B Outdoor unit terminal board

[1] UVM
[2] Compressor
[3] SW power supply
[4] Fan motor
[5] IC
[6] 4-way valve
[7] Expansion valve

Bk Black
Bn Brown
Bu Blue
Gn Green
Or Orange
Rd Red
Ye Yellow
Gn/Ye Green/Yellow
Wh White

FU1... Fuse
TH1 Compressor temperature
TH2 Heat exchanger temperature
TH3 Outdoor temperature
TH4 Suction temperature
TH5 2-way valve temperature

WARNING

Damage to oscilloscope

Grounding may damage the oscilloscope.

▶ Do not ground.

DANGER

Danger - electric shock by high current

All components may be charged to high voltage as circuits share the same GND line.

▶ Do not touch electrical components.

CAUTION

High voltage at C (electrolytic capacitor) on outdoor unit

If the fuse FU5 has blown out, the voltage is kept high at C. Usually, Led shows that the charge of C is still high, too.

▶ For maintenance, discharge C to prevent electric shock.

Number	LED pattern	Diagnosis
	slow flashing (one time for 2 seconds)	Normal
1	LED turns on	Serial signal error
2	1x quick flashing (three times for 2 seconds)	Short circuit of the thermistor
3	2x quick flashing (three times for 2 seconds)	Overheat error (COMP or cycle)
4	5x quick flashing (three times for 2 seconds)	Open circuit of the thermistor
5	6x quick flashing (three times for 2 seconds)	DC current error
6	7x quick flashing (three times for 2 seconds)	AC current error
7	9x quick flashing (three times for 2 seconds)	Thermistor or 4-way valve error
8	10x quick flashing (three times for 2 seconds)	EEPROM error
9	11x quick flashing (three times for 2 seconds)	Outdoor fan motor error
10	12x quick flashing (three times for 2 seconds)	-
11	13x quick flashing (three times for 2 seconds)	Rotation error or lock of the compressor
12	14x quick flashing (three times for 2 seconds)	PAM voltage or PAM clock error

Table 9 LED indication self-diagnosis

For CL8101i 65 HE, CLC8001i 25 E and CL8001i 35 E models

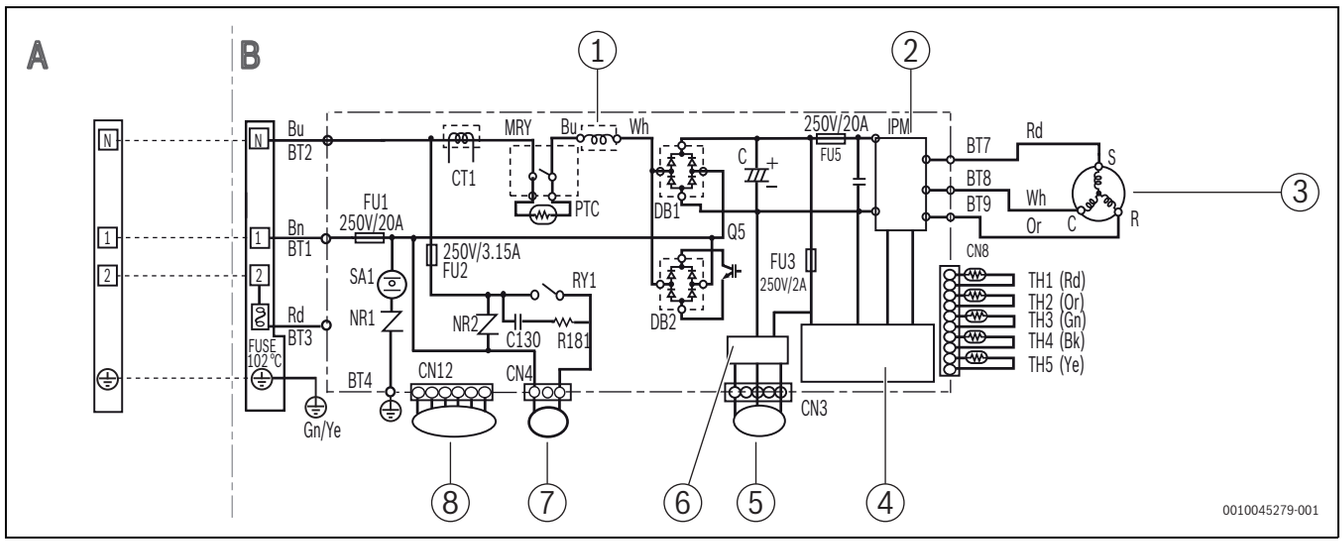


Fig. 7

A Room input (220 – 240 V, 1-phase, 50 Hz)
B Outdoor unit terminal board

[1] Reactor
[2] UVM
[3] Compressor
[4] SW power supply
[5] Fan motor
[6] IC
[7] 4-way valve
[8] Expansion valve

Bk Black
Bn Brown
Bu Blue
Gn Green
Or Orange
Rd Red
Ye Yellow
Gn/Ye Green/Yellow
Wh White

FU1... Fuse
TH1 Compressor temperature
TH2 Heat exchange temperature
TH3 Outdoor temperature
TH4 Suction temperature
TH5 2-way valve temperature

WARNING

Damage to oscilloscope

Grounding may damage the oscilloscope.

▶ Do not ground.

DANGER

Danger - electric shock by high current

All components may be charged to high voltage as circuits share the same GND line.

▶ Do not touch electrical components.

CAUTION

High voltage at C (electrolytic capacitor) on outdoor unit

If the fuse FU5 has blown out, the voltage is kept high at C. Usually, Led shows that the charge of C is still high, too.

▶ For maintenance, discharge C to prevent electric shock.

Number	LED pattern	Diagnosis
	slow flashing (one time for 2 seconds)	Normal
1	LED turns on	Serial signal error
2	1x quick flashing (three times for 2 seconds)	Short circuit of the thermistor
3	2x quick flashing (three times for 2 seconds)	Overheat error (COMP or cycle)
4	5x quick flashing (three times for 2 seconds)	Open circuit of the thermistor
5	6x quick flashing (three times for 2 seconds)	DC current error
6	7x quick flashing (three times for 2 seconds)	AC current error
7	9x quick flashing (three times for 2 seconds)	Thermistor or 4-way valve error
8	10x quick flashing (three times for 2 seconds)	EEPROM error
9	11x quick flashing (three times for 2 seconds)	Outdoor fan motor error
10	12x quick flashing (three times for 2 seconds)	-
11	13x quick flashing (three times for 2 seconds)	Rotation error or lock of the compressor
12	14x quick flashing (three times for 2 seconds)	PAM voltage or PAM clock error

Table 10 LED indication self-diagnosis

3.2 Micro computer control system

3.2.1 Indoor Unit

Electrical wiring

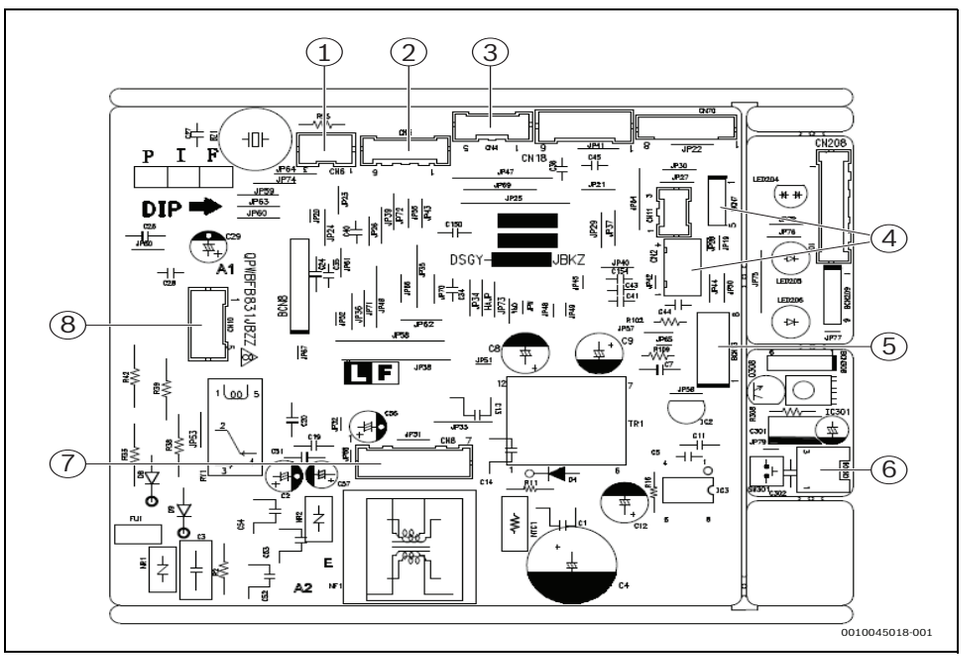


Fig. 8 Indoor unit wiring

[1] PCI unit
[2] Vertical louver (V-louver)
[3] Horizontal louver (H-louver)
[4] Thermistor
[5] WLAN module
[6] Human sensor
[7] DC fan motor
[8] Terminal board

3.2.2 Outdoor unit

Electrical wiring

For CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E and CLC6001i 35 E models

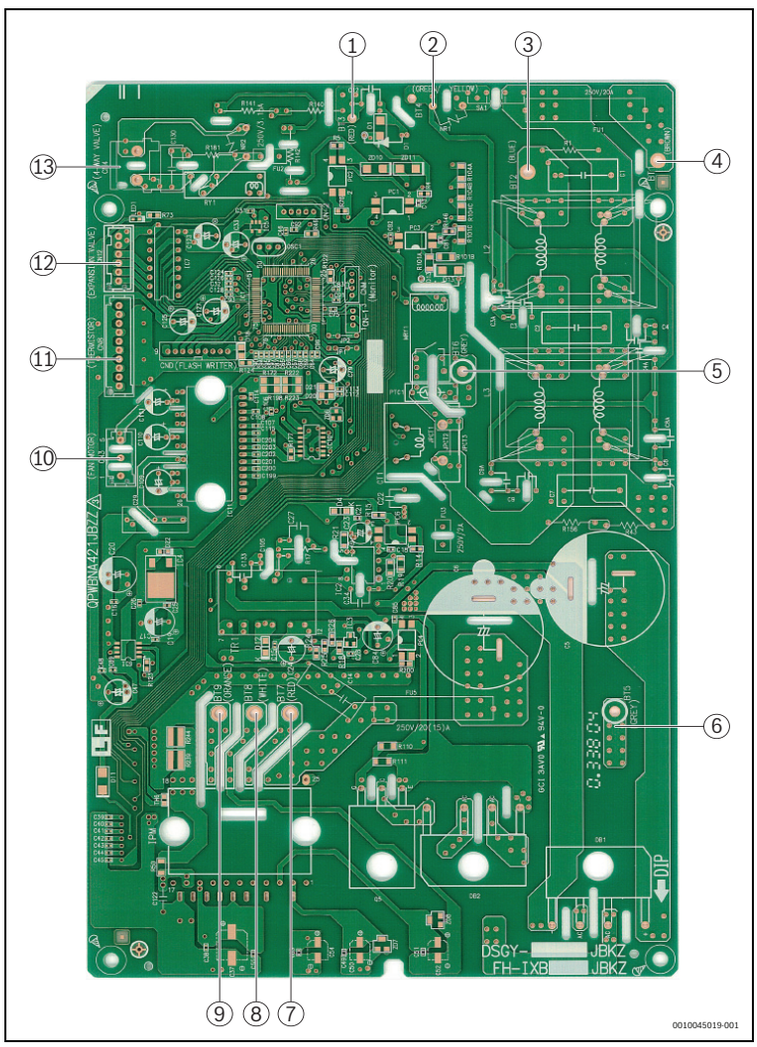


Fig. 9 Outdoor unit wiring

[1] To terminal board (2) (Red)
[2] To terminal board (⏚) (Green/Yellow)
[3] To terminal board (N) (Blue)
[4] To terminal board (1) (Brown)
[5] To reactor (Gray)
[6] To reactor (Gray)
[7] To compressor Red
[8] To compressor White
[9] To compressor Orange
[10] From fan motor
[11] From thermistor
[12] From expansion valve
[13] From 4-way Valve

For CL8101i 65 HE, CLC8001i 25 E and CL8001i 35 E models

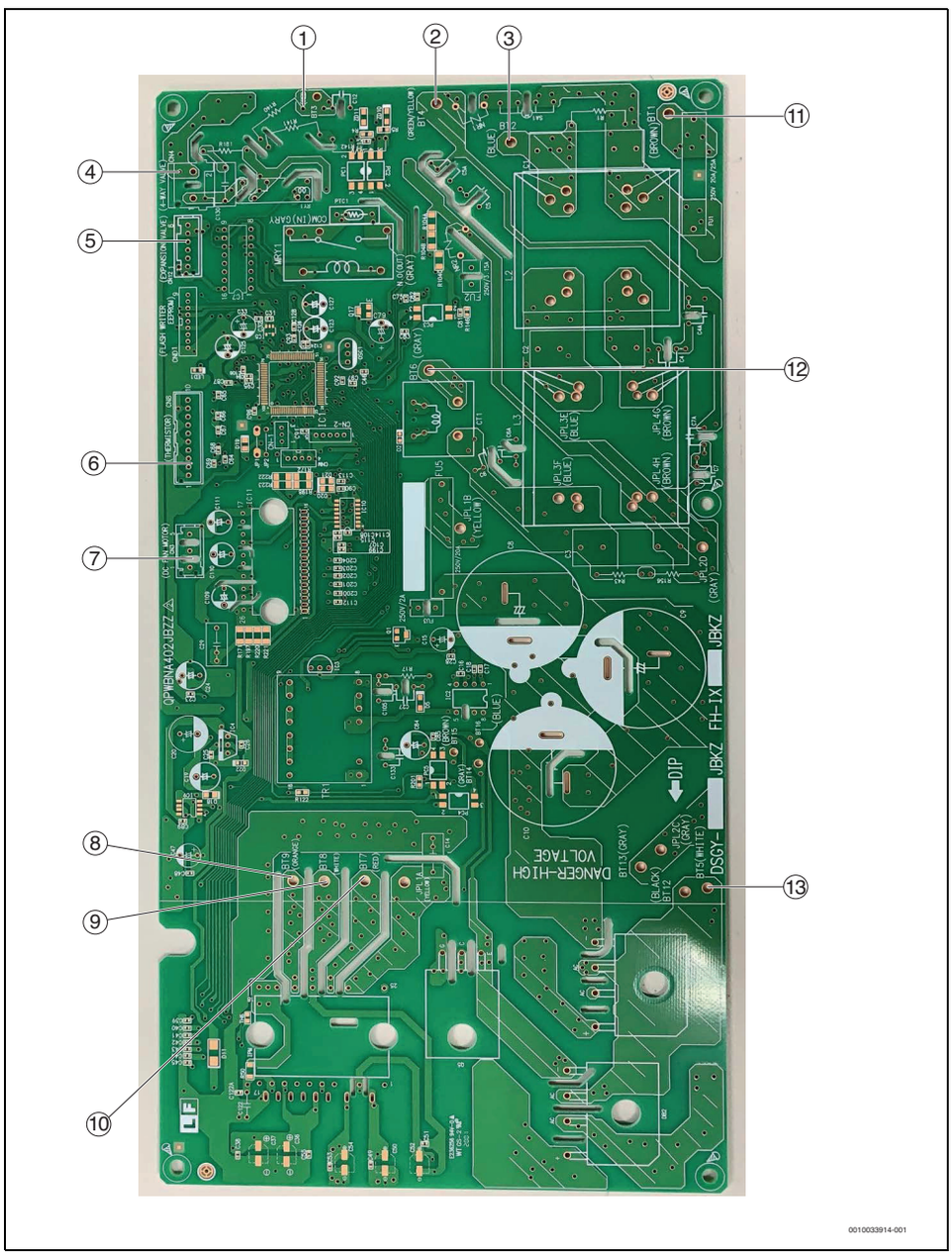


Fig. 10 Outdoor unit wiring

[1] To terminal board (2) (Red)
[2] To terminal board (⏚) (Green/Yellow)
[3] To terminal board (N) (Blue)
[4] From 4-way Valve
[5] From Expansion Valve
[6] From Thermistor
[7] From Fan motor
[8] To compressor Orange
[9] To compressor White
[10] To compressor Red
[11] To terminal board (1) (Brown)
[12] To reactor (Gray)
[13] To reactor (White)

4 Function and Operation of Protective Procedures

4.1 Control

4.1.1 Restart Control

Once the compressor stops operating, it will not restart for 180 seconds to protect the compressor.

Therefore, if the operating compressor is shut down from the remote control and then turned back on immediately after, the compressor will only restart after a delay time.

(The indoor unit will restart operation immediately after the ON switch is operated on the remote control.).

4.1.2 Indoor unit heat exchanger freeze prevention control

If the temperature of the indoor unit heat exchanger remains below 0 °C for 4 consecutive minutes during cooling or dehumidifying operation, the compressor operation stops temporarily in order to prevent freezing. When the temperature of the indoor unit heat exchanger rises to 2 °C or higher after about 180 seconds, the compressor restarts and resumes normal operation.

4.1.3 Outdoor unit overheat prevention control

During cooling operation, if the temperature of the outdoor unit heat exchanger exceeds the outdoor unit heat exchanger overheat prevention temperature (about 55 °C), the operating frequency is decreased by about 4 to 15 Hz.

Then, this operation is repeated every 60 seconds until the temperature of the outdoor unit heat exchanger drops to about 54 °C or lower. Once the temperature of the outdoor unit heat exchanger drops to about 54 °C or lower, the operating frequency is increased by about 4 to 10 Hz every 60 seconds until the normal operation condition resumes. If the temperature of the outdoor unit heat exchanger exceeds the outdoor unit heat exchanger overheat protection temperature for (120 seconds: outdoor temperature ≥ 40 °C • 60 second: outdoor temperature < 40 °C) at minimum operating frequency, the compressor stops operating and then restarts after about 180 seconds, and the above mentioned control is repeated.

4.1.4 Compressor overheat prevention control

If the temperature of the compressor exceeds the compressor overheat prevention temperature (110 °C), the operation frequency is decreased by about 4 to 10 Hz.

Then, this operation is repeated every 60 seconds until the temperature of the compressor drops below the overheat protection temperature (110 °C). Once the temperature of the compressor drops below the overheat protection temperature, the operating frequency is increased by about 4 to 10 Hz every 60 seconds until the normal operation condition resumes. If the temperature of the compressor exceeds the overheat protection temperature for a certain time (120 sec: outdoor temperature ≥ 40 °C • 60 seconds: outdoor temperature < 40 °C) at minimum operating frequency, the compressor stops operating and then restarts after about 180 seconds, and the above control is repeated.

4.1.5 Start up control

When the air conditioner starts in the cooling mode, if the room temperature is 2 °C higher than the set temperature the air conditioner operates with the operating frequency at maximum.

When the air conditioner starts in the heating mode, if the room temperature is 5.3 °C lower than the set temperature the air conditioner operates with the operating frequency at maximum. Then, when the set temperature is reached, the air conditioner operates at the operating frequency determined by fuzzy logic calculation, then enters the normal control.

4.1.6 Outdoor unit fan delay control

The compressor stops immediately after cooling or dehumidifying or heating operation is shut down, but the outdoor unit fan continues operation for 50 seconds.

4.2 Protection Device Functions and Operations

These models have following thermistors

- Indoor unit: TH1, TH2
- Outdoor unit: TH1, TH2, TH3, TH4, TH5

The errors for the thermistors that are not mentioned above are irrelevant.

These indoor units don't have power relay.

	Function	Operation				Self-diagnosis result display	
		Description	Detection period	Reset condition	Indoor unit error display	Indoor unit	Outdoor unit
1	Indoor unit fan lock	Operation stops if there is no input of rotation pulse signal from indoor unit fan motor for 1 minute.	When indoor unit fan is in operation	Operation OFF or ON	After a single error judgment (complete shutdown).	Yes	None
	Indoor unit fan rotation speed error	Operation stops if rotation pulse signal from indoor unit fan indicates abnormally low speed (about 300 rpm or slower).	When indoor unit fan is in operation	Operation OFF or ON	After a single error judgment (complete shutdown).	Yes	None
2	2-way valve freeze prevention	Compressor stops if temperature of outdoor unit 2-way valve remains below 0 °C for 10 continuous minutes during cooling or dehumidifying operation.	When in cooling or dehumidifying operation	Automatic reset when temperature of 2-way valve rises above 10 °C.	None	None	Yes
3	Outdoor unit heat exchanger overheat shut down	Operation frequency lowers if outdoor unit heat exchanger temperature exceeds about 55 °C during cooling operation. Compressor stops if outdoor unit heat exchanger temperature exceeds about 55 °C for 120 seconds at minimum frequency.	When in cooling or dehumidifying operation	Automatic reset after safety period (180 sec).	None	None	Yes

	Function	Operation				Self-diagnosis result display	
		Description	Detection period	Reset condition	Indoor unit error display	Indoor unit	Outdoor unit
4	Compressor discharge overheat shut down	Operating frequency lowers if temperature of compressor discharge thermistor (TH1) falls below about 110 °C. Compressor stops if temperature of compressor discharge thermistor (TH1) remains at about 110 °C (for 120 seconds in cooling operation, or 60 seconds in heating operation) at minimum frequency.	When compressor is in operation	Automatic reset after safety period (180 sec).	None	None	Yes
5	Dehumidifying operation temporary stop	Compressor stops if outside air temperature thermistor is lower than about 16 °C during dehumidifying operation.	When in dehumidifying operation	Automatic reset when outside air temperature rises above 16 °C.	None	None	Yes
6	DC over current error	Compressor stops if DC current of about 16 A or higher flows in IPM.	When compressor is in operation	Operation OFF or ON	Only after outdoor unit restarts eight times (complete shutdown).	Yes	Yes
7	AC over current error	Operating frequency lowers if outdoor AC current exceeds peak control current value. Compressor stops if compressor AC current exceeds peak control current value at minimum frequency.	When compressor is in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
8	AC over current error in compressor OFF status	Indoor and outdoor units stop if outdoor AC current exceeds about 3 A while compressor is in non-operation status.	When compressor is in non- operation	Replacement of defective parts such as IPM	After a single error judgment (complete shutdown).	Yes	Yes
9	AC maximum current error	Compressor stops if outdoor AC current exceeds 17 A.	When compressor is in operation	Operation OFF or ON	After a single error judgment (complete shutdown).	Yes	Yes
10	AC current deficiency error	Compressor stops if operating frequency is 50 Hz or higher and compressor AC current is about 2.0 A or lower.	When compressor is in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
11	Thermistor installation error or 4-way valve error	Compressor stops if high and low values of temperatures detected by outdoor unit heat exchanger thermistor (TH2) and 2-way valve thermistor (TH5) do not match operating cycle.	3 minutes after compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
12	Compressor high temperature error	Compressor stops if compressor discharge thermistor (TH1) exceeds about 114 °C, or if there is short-circuit in TH1.	When in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
13	Outdoor unit heat exchanger thermistor short-circuit error	Compressor stops if there is short circuit in outdoor unit heat exchanger thermistor (TH2).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
14	Outdoor unit outside air temperature thermistor short-circuit error	Compressor stops if there is short circuit in outdoor unit outside air temperature thermistor (TH3).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
15	Outdoor unit suction thermistor short-circuit error	Compressor stops if there is short circuit in outdoor unit suction thermistor (TH4).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes

Function		Operation				Self-diagnosis result display	
		Description	Detection period	Reset condition	Indoor unit error display	Indoor unit	Outdoor unit
16	Outdoor unit 2-way valve thermistor short-circuit error	Compressor stops if there is short circuit in outdoor unit 2-way valve thermistor (TH5).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
17	Outdoor unit heat exchanger thermistor open-circuit error	Compressor stops if there is open circuit in outdoor unit heat exchanger thermistor (TH2).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
18	Outdoor unit outside air temperature thermistor open-circuit error	Compressor stops if there is open circuit in outdoor unit outside air temperature thermistor (TH3).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
19	Outdoor unit suction thermistor open-circuit error	Compressor stops if there is open circuit in outdoor unit suction thermistor (TH4).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
20	Outdoor unit 2-way valve thermistor open-circuit error	Compressor stops if there is open circuit in outdoor unit 2-way valve thermistor (TH5).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
21	Outdoor unit discharge thermistor open-circuit error	Compressor stops if there is open circuit in outdoor unit discharge thermistor (TH1).	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
22	Serial signal error	Compressor stops if outdoor unit cannot receive serial signal from indoor unit for 30 seconds.	When in operation	Reset after reception of serial signal	None	None	None
23	Compressor start up error	Compressor stops if compressor fails to start up.	At compressor start up	Operation OFF or ON	Only after outdoor unit restarts eight times (complete shutdown).	Yes	Yes
24	Outdoor unit DC fan error	Operation stops if there is no input of rotation pulse signal from outdoor unit fan motor for 30 seconds.	When outdoor unit fan is in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
25	PAM over voltage error	Compressor stops if DC voltage is 400 V or higher.	When in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
26	PAM clock error	When power source frequency cannot be determined (at start up), or when power source clock cannot be detected for 1 continuous second (at start up).	At compressor start up, when in operation	Operation OFF or ON	Only after outdoor unit restarts four times (complete shutdown).	Yes	Yes
27	Outdoor unit thermal fuse blown in the Terminal board	Serial signal is lost. As a result, compressor stops if outdoor unit cannot receive serial signal from indoor unit for 30 seconds.	When in operation	Reset after reception of serial signal	None	None	None

Table 11 Protection device functions and operations

4.3 Air Conditioner Operation in Thermistor Error

These models have following thermistors

- Indoor unit: TH1, TH2
- Outdoor unit: TH1, TH2, TH3, TH4, TH5

The errors for the thermistors that are not mentioned above are irrelevant.

4.3.1 Indoor Unit

Item	Mode	Control Operation	When resistance is low (temperature judged higher than actual)	Short-circuit	When resistance is low (temperature judged higher than actual)	Open-circuit
Room temperature thermistor (TH1)	Auto	Operation mode judgment	Cooling mode is activated even if room temperature is low.	Cooling mode is activated in most cases.	Heating mode is activated even if room temperature is high.	Heating mode is always activated.
	Cooling	Frequency control	Room becomes too cold.	Air to air conditioner operates in full power even when set temperature is reached.	Room does not become cool.	Compressor does not operate.
	Dehumidifying	Room temperature memory Frequency control	Normal operation.	Room temperature is stored in memory as 31.0 °C, and compressor does not stop.	Normal operation.	Room temperature is stored in memory as 18.5 °C, and compressor does not operate.
	Heating	Frequency control	Room does not become warm.	Hot keep status results immediately after operation starts. Frequency does not increase above 30 Hz (40 Hz).	Room becomes too warm.	Air conditioner operates in full power even when set temperature is reached.
Heat exchanger thermistor (TH2)	Cooling Dehumidifying	Freeze prevention	Indoor unit evaporator may freeze.	Indoor unit evaporator may freeze.	Compressor stops occasionally.	Compressor does not operate.
	Heating	Cold air prevention Cold	Cold air prevention deactivates too soon and cold air discharges.	Compressor operates at low speed or stops, and frequency does not increase.	Cold air prevention deactivates too slow.	Cold air prevention does not deactivate, and indoor unit fan does not rotate.

Table 12 Air conditioner operation in thermistor error - IDU

4.3.2 Outdoor Unit

Item	Mode	Control Operation	When resistance is low (temperature judged higher than actual)	Short-circuit	When resistance is low (temperature judged higher than actual)	Open-circuit
Compressor discharge thermistor (TH1)	Cooling Dehumidifying Heating	Expansion valve control and compressor protection	Compressor operates, but room does not become cool or warm (expansion valve is open).	Compressor high temperature error indication.	Layer short-circuit or open-circuit may result in compressor in normal operation.	Outdoor unit thermistor open-circuit error indication.
Heat exchanger thermistor (TH2)	Cooling Dehumidifying	Outdoor unit heat exchanger overheat prevention	Compressor operates at low speed or stops.	Outdoor unit thermistor short-circuit error indication.	Normal operation.	Outdoor unit thermistor open-circuit error indication.
	Heating	Expansion valve control Defrosting	Defrosting operation is not activated as needed, and frost accumulates on outdoor unit (expansion valve is closed).	Outdoor unit thermistor short-circuit error indication.	Defrosting operation is activated unnecessarily, and room does not become warm (expansion valve is open).	Outdoor unit thermistor open-circuit error indication.

Item	Mode	Control Operation	When resistance is low (temperature judged higher than actual)	Short-circuit	When resistance is low (temperature judged higher than actual)	Open-circuit
Outside air temperature thermistor (TH3)	Auto	Operation mode judgment	Cooling mode is activated even if room temperature is low.	Outdoor unit thermistor short-circuit error indication.	Heating mode is activated even if room temperature is high.	Outdoor unit thermistor open-circuit error indication.
	Cooling Dehumidifying	Operation not affected	Normal operation.	Outdoor unit thermistor short-circuit error indication.	Normal operation.	Outdoor unit thermistor open-circuit error indication.
	Heating	Rating control Defrosting	Defrosting operation is activated unnecessarily.	Outdoor unit thermistor short-circuit error indication.	Defrosting operation is not activated, and frost accumulates on outdoor unit.	Outdoor unit thermistor open-circuit error indication.
Suction pipe thermistor (TH4)	Cooling Dehumidifying	Expansion valve control	Compressor operates, but room does not become cool (expansion valve is open).	Outdoor unit thermistor short-circuit error indication.	Frost accumulates on evaporator inlet section, and room does not become cool (expansion valve is closed).	Outdoor unit thermistor open-circuit error indication.
	Heating	Expansion valve control	Compressor operates, but room does not become warm (expansion valve is open).	Outdoor unit thermistor short-circuit error indication.	Frost accumulates on expansion valve outlet section, and room does not become warm (expansion valve is closed).	Outdoor unit thermistor open-circuit error indication.
2-way valve thermistor (TH5)	Cooling Dehumidifying	Expansion valve control	Frost accumulates on indoor unit evaporator and room does not become cool (expansion valve is closed).	Outdoor unit thermistor short-circuit error indication.	Compressor operates, but room does not become cool (expansion valve is open).	Outdoor unit thermistor open-circuit error indication.
	Heating	Operation not affected	Normal operation.	Outdoor unit thermistor short-circuit error indication.	Normal operation.	Outdoor unit thermistor open-circuit error indication.

Table 13 Air conditioner operation in thermistor error - ODU

4.4 Thermistor Temperature Characteristics

4.4.1 Indoor Unit

To measure the resistance, first remove the connector from the board.

Thermistor	No.	Connector	Colour
Room temperature	TH1 (BCN7)	1 – 5	-
Pipe temperature	TH2 (CN2)	1 – 2	Orange

Table 14

Before measuring resistance, disconnect connectors as shown above.

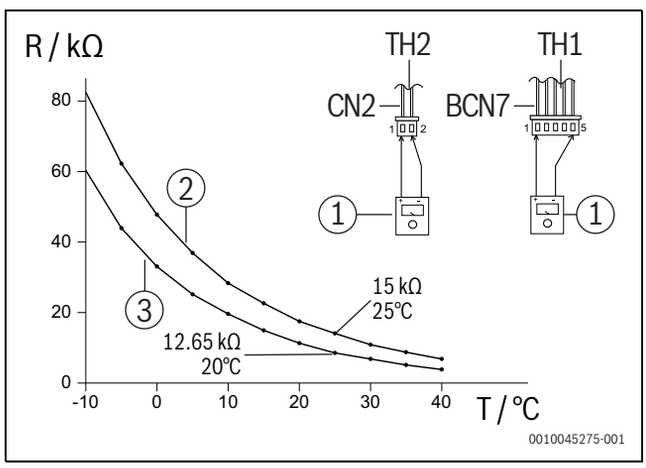


Fig. 11

CN.. Connector
R Resistance
T Temperature
TH.. Thermistor

[1] Tester
[2] Heat exchange temperature thermistor TH2 (orange)
[3] Room temperature thermistor TH1

4.4.2 Outdoor unit

To measure the resistance, first remove the connector from the board.

Thermistor	No.	Connector	Colour
Compressor thermistor	TH1	1 – 2	Red
Heat exchanger pipe thermistor	TH2	3 – 4	Orange
Outdoor temp. thermistor	TH3	5 – 6	Green
Suction thermistor	TH4	7 – 8	Black
2-way valve thermistor	TH5	9 – 10	Yellow

Table 15

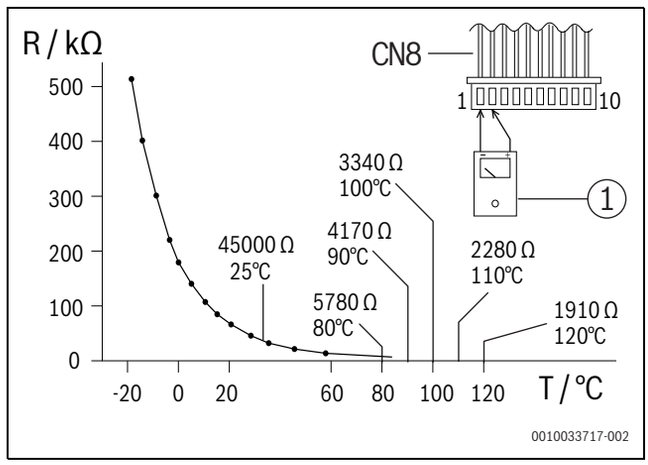


Fig. 12 TH1 resistances

CN.. Connector
R Resistance
T Temperature

[1] Tester

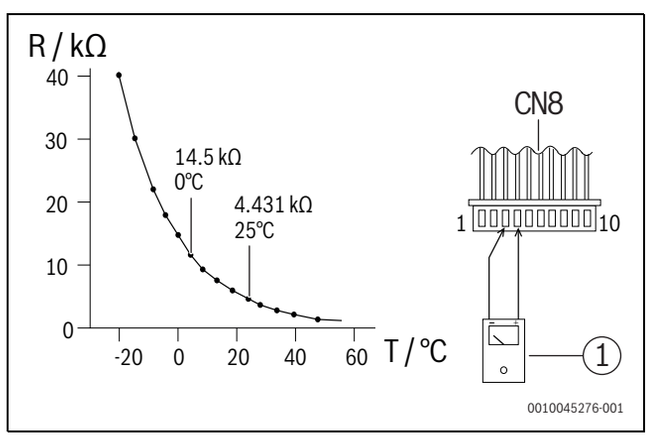


Fig. 13 TH2, TH3, TH4, TH5 resistances

CN.. Connector
R Resistance
T Temperature

[1] Tester

4.5 General troubleshooting chart

These models have following thermistors

- Indoor unit: TH1, TH2
- Outdoor unit: TH1, TH2, TH3, TH4, TH5

The errors for the thermistors that are not mentioned above are irrelevant.

4.5.1 Indoor unit does not turn on

Main cause	Inspection method	Normal value/condition	Short-circuit
Cracked PCB (Cracked pattern).	Check visually.	There should be no cracking in PCB or pattern.	Replace PCB.
Open-circuit in FU1 (250 V, 3.15 A).	Check melting of FU1.	There should be no open-circuit.	Replace PCB.

Table 16

4.5.2 Indoor unit fan does not operate

Main cause	Inspection method	Normal value/condition	Short-circuit
Open-circuit in heat exchanger thermistor (TH2) (in heating operation).	Measure thermistor resistance (dismount for check).	See section 4.4 "Thermistor Temperature Characteristics".	Replace thermistor.
		There should be no open-circuit or faulty contact.	Replace thermistor.
Disconnected heat exchanger thermistor (TH2) (in heating operation). Inspect connector on PCB.	Inspect connector on PCB. Check thermistor installation condition.	Thermistor should not be disconnected.	Install correctly.

Table 17

4.5.3 Indoor unit fan speed does not change

Main cause	Inspection method	Normal value/condition	Short-circuit
Remote control not designed to allow fan speed change.	Check operation mode.	Fan speed should change except during dehumidifying operation, ventilation, light dehumidifying operation, internally normal operation.	Explain to user.

Table 18

4.5.4 Remote control signal is not received

Main cause	Inspection method	Normal value/condition	Short-circuit
Batteries at end of service life.	Measure battery voltage.	2.5 V or higher (two batteries in series connection).	Install new batteries.
Batteries installed incorrectly.	Check battery direction.	As indicated on battery compartment.	Install batteries in indicated direction.
Lighting fixture is too close, or fluorescent lamp is burning out.	Turn off light and check.	Signal should be received when light is turned off.	Change light position or install new fluorescent lamp.
Operating position/angle are inappropriate.	Operate within range specified in manual.	Signal should be received within range specified in manual.	Explain appropriate handling to user.
Open-circuit or short-circuit in wiring of light receiving section.	Check if wires of light receiving section are caught.	Wires of light receiving section should not have any damage caused by pinching.	Replace wires of light receiving section.
Defective light receiving unit.	Check signal receiving circuit (measure voltage between terminals 5and 9of connector BCN8).	Tester indicator should move when signal is received.	Replace PCB.
Dew condensation on light receiving unit.	Check for water and rust.	Signal should be received within range specified in manual.	Take moisture-proof measure for lead wire outlet of light receiving section.

Table 19

4.5.5 Louvers do not move

Main cause	Inspection method	Normal value/condition	Short-circuit
Caught in sliding section.	Operate to see if louvers are caught in place.	Louvers should operate smoothly.	Remove or correct catching section.
Disconnected connector.	Inspect connectors.	Connectors or pins should not be disconnected.	Install correctly.
Contact of solder on PCB (connector section on PCB).	Check visually.	There should not be solder contact.	Correct contacting section.

Table 20

4.5.6 There is noise in TV/radio

Main cause	Inspection method	Normal value/condition	Short-circuit
Grounding wires not connected properly.	Check grounding wire connections.	Grounding wires should be connected properly.	Connect grounding wires properly.
TV/radio is placed too close to outdoor unit.	Check distance between TV/radio and outdoor unit.	If TV/radio is placed too close, it may become affected by noise.	Move TV/radio away from outdoor unit.
Other than above.	Check for radio wave interference.		

Table 21

4.5.7 Malfunction occurs

Main cause	Inspection method	Normal value/condition	Short-circuit
Malfunction caused by noise.	Check for radio wave interference.		

Table 22

4.5.8 Compressor does not start

Main cause	Inspection method	Normal value/condition	Short-circuit
Erroneous inter-unit connection.	Check wiring between indoor and outdoor units.	Terminal board 1-N: 230 VAC, 50 Hz. Terminal board 2: serial signal.	Correct wiring.
Damaged IPM.	Check IPM continuity.	–	Replace outdoor unit PCB.
Dried-up electrolytic capacitor.	Check electrolytic capacitor.	–	Replace outdoor unit PCB.
Blown outdoor unit fuse.	Check 20-A fuse.	Fuse should not be blown.	Replace fuse. Replace outdoor unit PCB.
Power supply voltage is too low.	Measure power supply voltage during start up.	230±10 VAC, 50 Hz	Make sure that power supply voltage is 180 V or higher.
Compressor lock.	Supply current and touch compressor cover (sound absorbing material) to check if operation starts.	Compressor should start normally.	Apply external impact to compressor. Replace compressor.

Table 23

4.5.9 Operation stops after a few minutes and restarts, and this process repeats

Main cause	Inspection method	Normal value/condition	Short-circuit
Dried-up electrolytic capacitor.	Measure 290-VDC line voltage.	250 V or higher.	Replace outdoor unit PCB.
Layer short-circuit in expansion valve coil.	Measure resistance.	46±3Ω in each phase (at 20 °C).	Replace coil.

Table 24

CAUTION

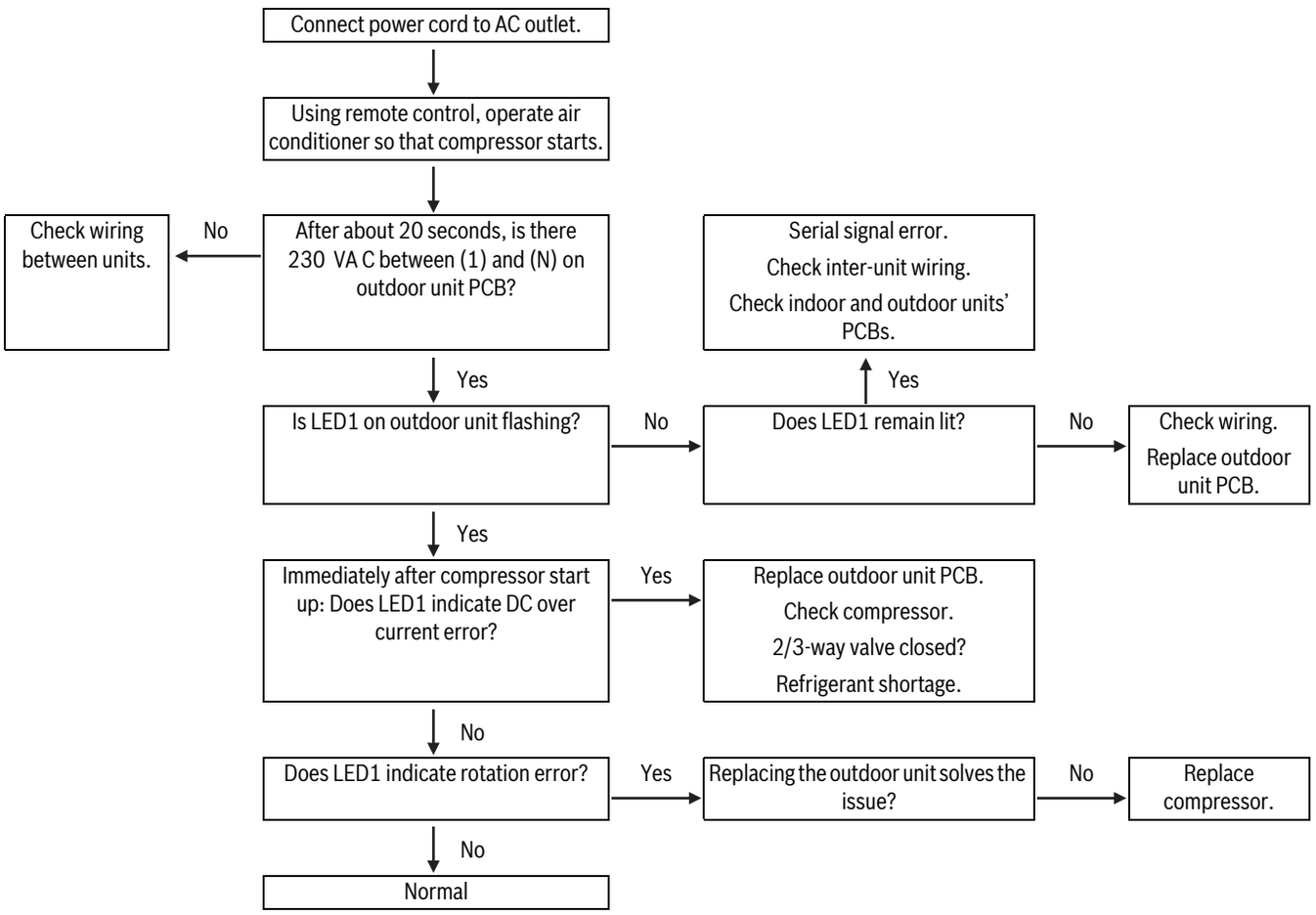
If fuse FU1/FU5 (outdoor unit control circuit board) is blown, be careful of charging voltage in the inverter electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9).

- To discharge stored electricity, unplug the power cord and connect the plug of a soldering iron (230VAC, 30W) between the positive and negative terminals of the inverter electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9).

4.6 Malfunction (Parts) Check method

4.6.1 Procedure for determining defective outdoor unit IPM/compressor

The following flow chart shows a procedure for locating the cause of a malfunction when the compressor does not start up and a DC over current indication error occurs.



4.6.2 Diode bridge check method

Turn off the power and let the inverter electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9) discharge completely. Then use a tester and check continuity by connecting two poles and measuring the resistance between them. The minimum resistance must at least be several mega-Ohm.

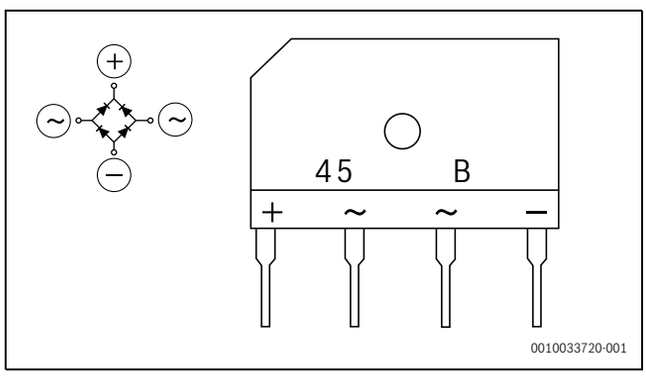


Fig. 14

Needle-type tester		Normal resistance value
+	-	∞(several MΩ)
~	+	
-	~	

Table 25

4.6.3 Inverter electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9) check method

Turn off the power, let the inverter electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9) discharge completely, and remove the capacitor from the control printed circuit board (PCB). First, check the case for cracks, deformation and other damages. Then, using a needle-type tester, check continuity.

Determination of normal condition

The tester needle should move on the scale and slowly return to the original position. The tester needle should move in the same way when polarities are reversed. (When measurement is taken with the polarities reversed, the tester needle exceeds the scale range. Therefore, let the capacitor discharge before measurement).

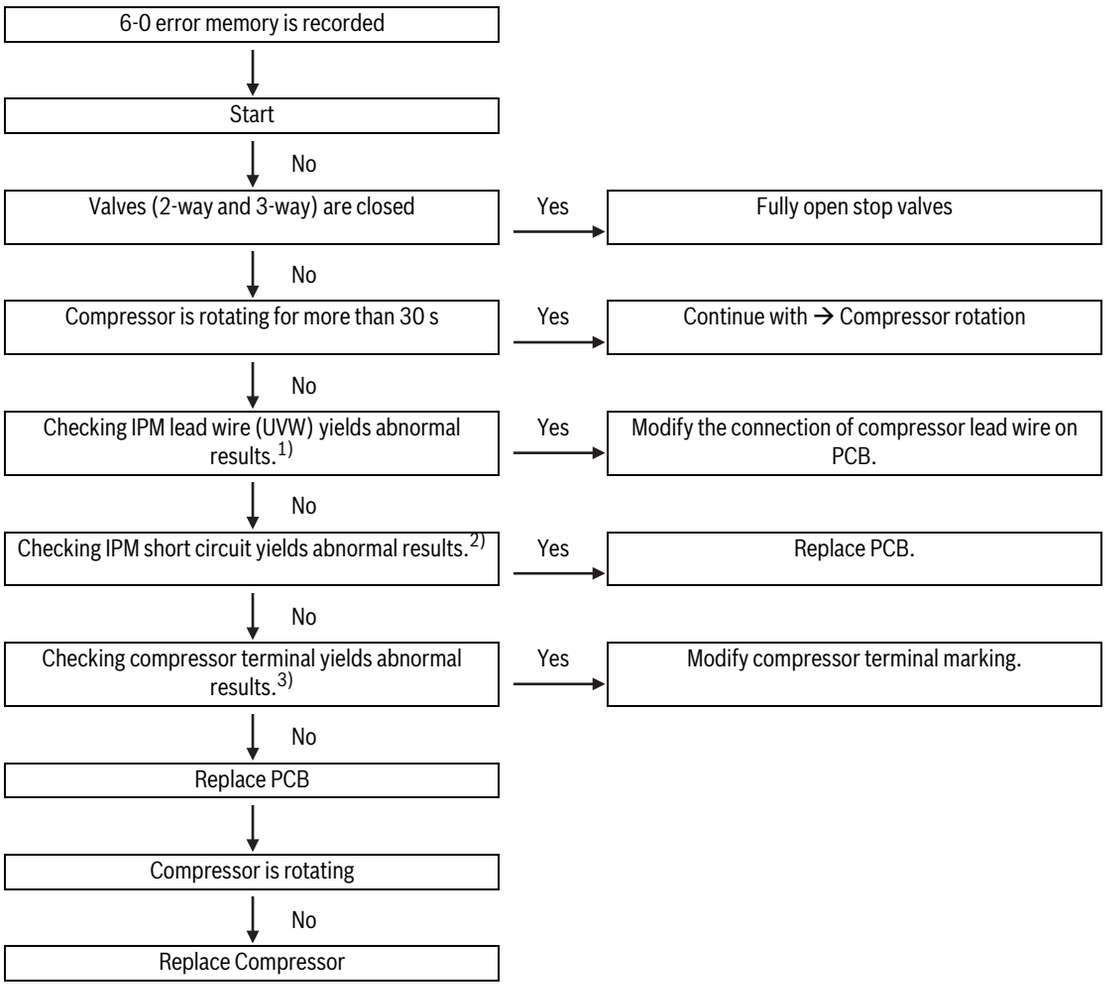
4.6.4 IPM check method

Turn off the power, let the large capacity electrolytic capacitor (C5, C6 for CLC6101i 50 HE, CLC6100i 65 HE, CLC8001i 25 E and CLC6001i 35 E models; C8, C9) discharge completely, and dismount the IPM. Then, using a tester, check leak current between C and E.

Measure the resistance between P and N, U, V, W and between N and U, V, W. The normal resistance between P and either of them is infinite or - when using a digital tester - several mega-Ohm.

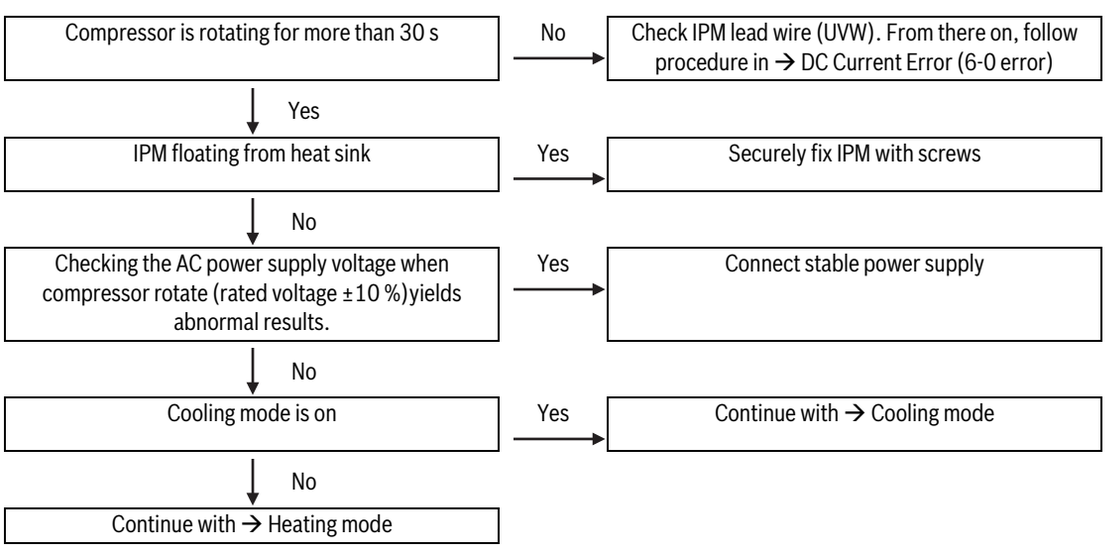
When using a digital tester, the (+) and (-) tester lead wires must be reversed.

4.6.5 DC Current Error (6-0 error)

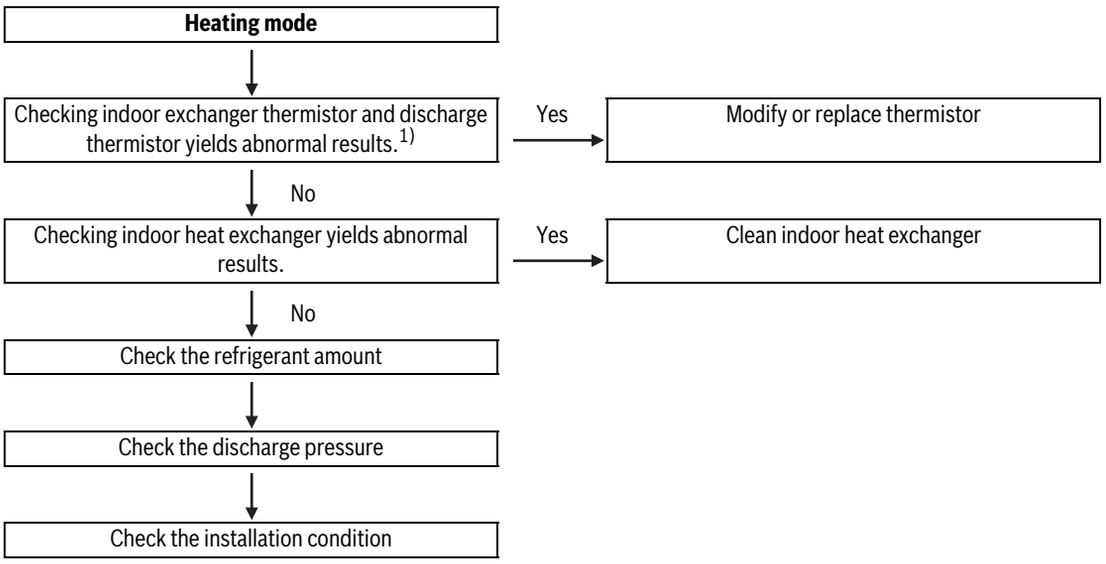


1) Check the connection of compressor lead wire on PCB.
2) See section IPM check method.
   TU : RED
   TV : WHITE
   TW : ORANGE
3) Check the connection of compressor terminal marking. See section 6.2 "Outdoor Unit (CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E, CLC6001i 35 E)".

Compressor rotation

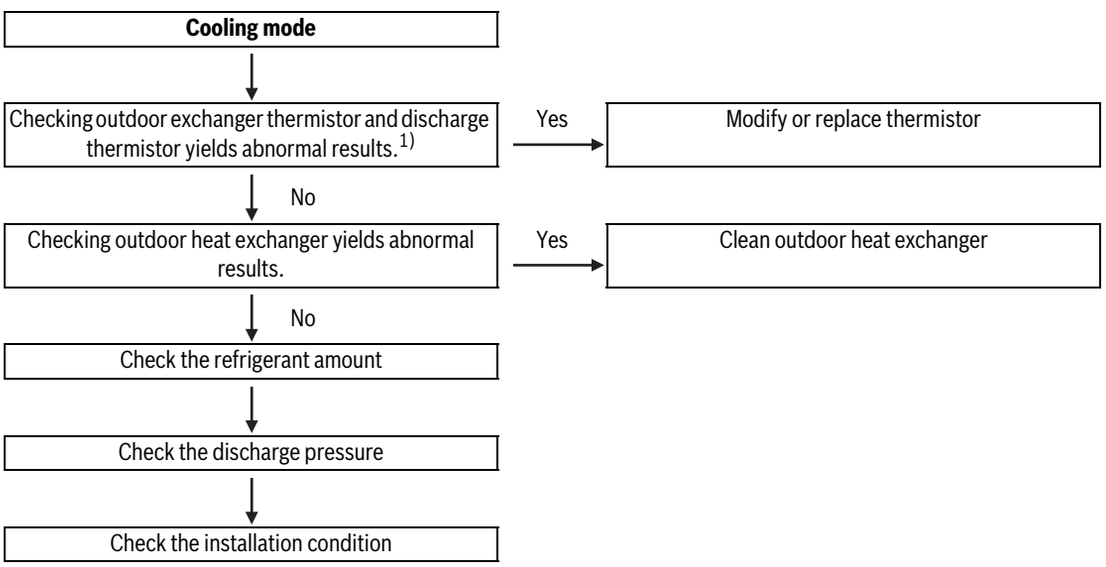


Heating mode



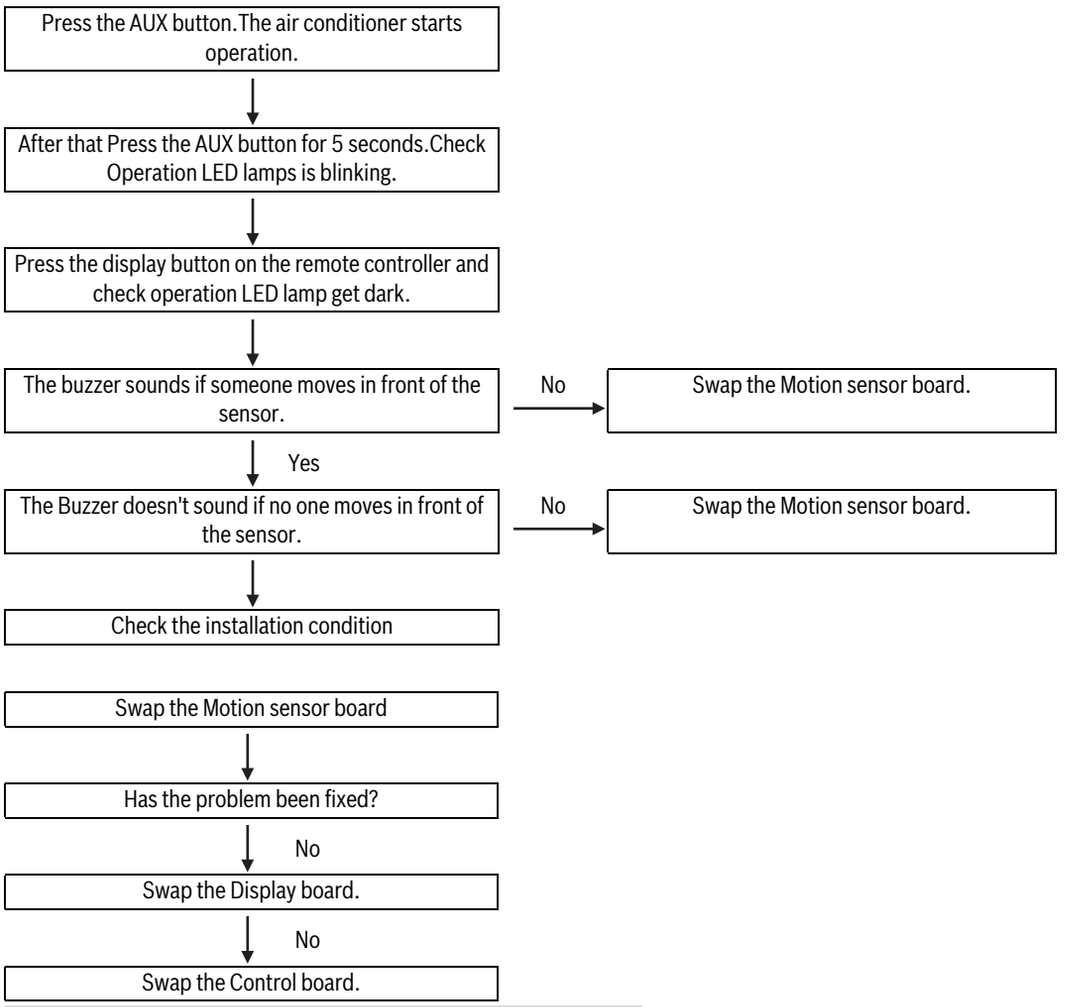
1) Check to make sure thermistors are installed in correct portions. See section 4.4 "Thermistor Temperature Characteristics".

Cooling mode



1) Check to make sure thermistors are installed in correct portions. See section 4.4 "Thermistor Temperature Characteristics".

Motion sensor troubleshooting

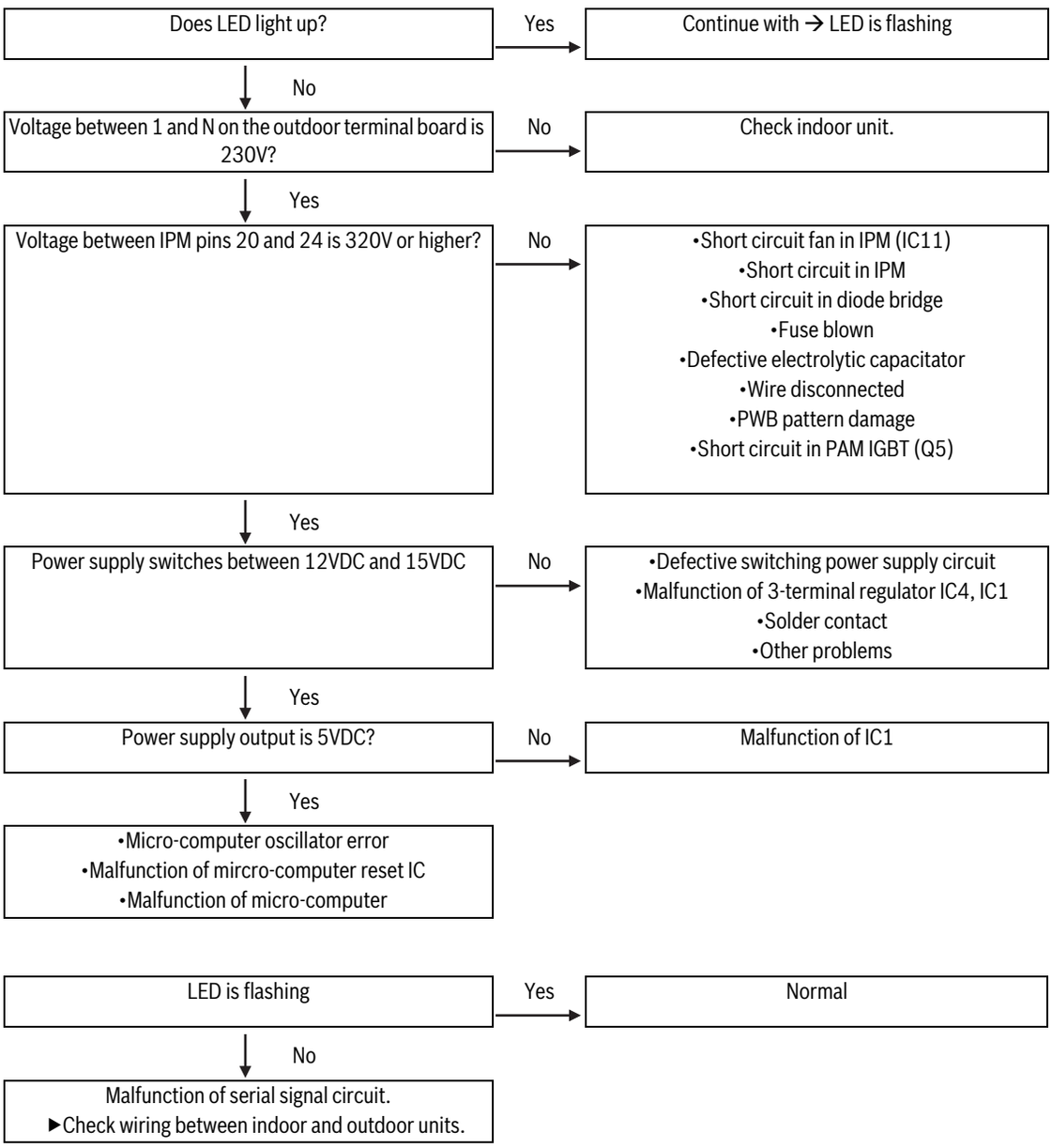


CAUTION

Sometimes, the buzzer sound is not stable for 3 minutes just after pluging the power supply.
Sometimes, the buzzer sound lags behind movement.

4.6.6 Outdoor unit check method

After repairing the outdoor unit, conduct the following inspection procedures to make sure that it has been repaired completely. Then, operate the compressor for a final operation check.



4.7 Troubleshooting Guide

4.7.1 Self-Diagnosis Function

Indoor Unit

WARNING

Risk to life from electric shock!

Touching live electrical parts can cause an electric shock.

- ▶ Before working on electrical parts, disconnect all phases of the power supply (fuse/circuit breaker) and lock the isolator switch to prevent unintentional reconnection.

A fault on the device can also be indicated by the sequential flashing of the following ON indicator.

- ON indicator ⏻ (green)
- Timer lamp 🕒 (orange)
- Plasmacluster lamp (blue)

The number of flashing signs specify the number of the fault codes.For example in case of error **23 – 4** the green lamp flashes 2 times, then the orange lamp flashes 3 times then the blue lamp flashes 4 times.

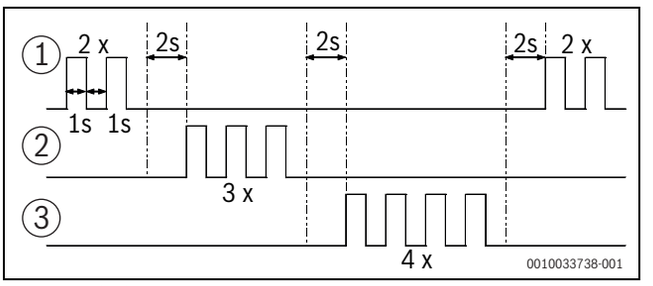


Fig. 15 Flashing patterns

[1] Operation lamp
[2] Timer lamp
[3] Plasmacluster lamp

When the unit stops all operation by itself due to a malfunction, the error will be indicated.

When unit is not operating,

- ▶ Press the **Stop** button on the remote control more than 5 times to indicate the newest error. The buzzer will “beep” shortly every time you press the button. When you press the 5th time, it will beep 3 x.
- ▶ Press and hold the **Temp.** button on the remote control for a time. The error will be indicated
- ▶ Press and hold the **AUX** button for more than 5 seconds on the indoor unit when the indoor unit is off.

Step		Indication on unit	Buzzer (Beep sound)
1	Hold down the **AUX** button for over 5 seconds on the indoor unit when the indoor unit is not operating.	Indicate the newest error information	Beep (when you hold the button) 3 × Beep (after 5 seconds)
2	Hold down the **AUX** button for over 5 seconds again.	Indicate the second newest error information	Beep (when hold the button) 2 × Beep (after 5 seconds)
3	Hold down the **AUX** button for over 5 seconds again.	Indicate the third newest error information	Beep (when you hold the button) 3 × Beep (after 5 seconds)
4	Hold down the **AUX** button for over 5 seconds again.	Indicate the fourth newest error information	Beep (when hold the button) 4 × Beep (after 5 seconds)
5	Hold down the **AUX** button for over 10 seconds.	Delete the memory of below 4 error information.	Beep (when hold the button) Beep (after 10 seconds)

Table 26

- ▶ When service is finished, make sure the error information is deleted so old errors and new error can be distinguished.

The indication on the unit will stop,

- after indicating for 3 minutes (when you pressed the **Stop** or **Temp.** button).
- after indicating for 5 minutes (when you pressed **AUX**).
- when unit receives signal of operation start.
- when unit receives signal of operation stop.

Outdoor Unit

- The self-diagnosis indicates the error information by flashing LED1 on the outdoor unit.
- The self-diagnosis of outdoor unit is displayed for about 3 – 10 minutes. Then LED1 returns to the normal display.

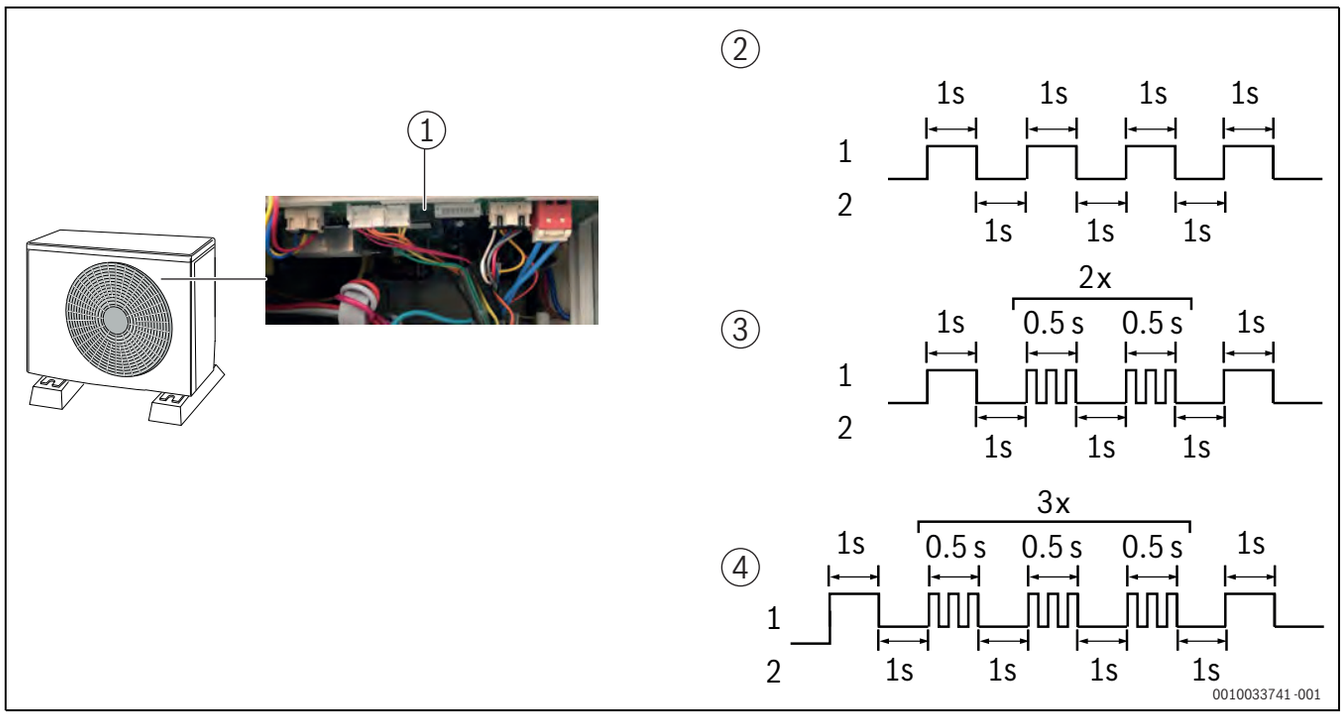


Fig. 16 LED1 self diagnosis

[1] LED 1
[2] Normal blinking pattern
[3] 2 x blinking pattern
[4] 3 x blinking pattern

1 ON
2 OFF

4.7.2 Self-Diagnosis Function (by remote control)

Error code are shown as they are displayed on the remote control.

Example: Error **23 -4**.

- Press ∨ on the **Temp.** button for over 5 seconds when the indoor unit and remote control is off.
  The remote control displays 00.
- Press ∧ or ∨ on the **Temp.** button to change the number step by step between 00 and 31.
  The buzzer makes a short beep sound on every step. When it displays 23, the buzzer will make a long beep sound to indicate that error code 23 is the main error code.
- Press the Fan button once
  The remote control will display – 0.
- Press ∧ or ∨ on the **Temp.** button to change the number step by step from – 0 and – 7.
  The buzzer makes a short beep sound on every step. When it displays – 4, the buzzer will make a long beep sound to indicate that error code – 4 is the sub error code

4.8 Chart for reading Self-Diagnosis Results

Main malfunction		Sub malfunction		LED1 (outdoor unit)	Problem symptom	Check Point	Action
No.	Diagnosis	No.	Diagnosis				
0	Normal	0	Normal	Normal blinking	Normal condition		
1	Outdoor unit thermistor short-circuit	0	Heat exchanger thermistor short circuit error.	1-time	Indoor and outdoor units do not operate.	▶ Measure the resistance of the outdoor unit thermistors. ▶ Check the lead wire of the outdoor unit thermistor for torn sheath and short circuit. ▶ No abnormality found in above inspections (1) and (2).	▶ Replace the outdoor unit thermistor assembly. ▶ Replace the outdoor unit thermistor assembly. ▶ Replace the outdoor unit control PCB assembly.
		1	Outdoor temperature thermistor short circuit error.				
		2	Suction thermistor short circuit error.				
		3	2-way valve thermistor short circuit error.				
		4	Heatsink thermistor error.			–	Replace the outdoor unit control PCB

Main malfunction		Sub malfunction		LED1 (outdoor unit)	Problem symptom	Check Point	Action
No.	Diagnosis	No.	Diagnosis				
2	Cycle temperature	0	Compressor high temperature error.	2-time	Indoor and outdoor units do not operate.	▶ Check the outdoor unit air outlet for blockage.	▶ Ensure unobstructed air flow from the outdoor unit air outlet.
						▶ Check if the power supply voltage is AC 230V at full power.	▶ Connect power supply of proper voltage.
						▶ Check the pipe connections for refrigerant leaks.	▶ Charge the specified amount of refrigerant.
						▶ Measure resistance of the outdoor unit compressor thermistor.	▶ Replace the outdoor unit compressor thermistor assembly.
						▶ Check the expansion valve for proper operation.	▶ Replace the expansion valve coil, expansion valve or outdoor unit control PCB assembly
2	Cycle temperature	1	Compressor discharge overheat.	2-time	Indoor unit operates. Outdoor unit does not operate temporarily	▶ Temporary stop for cycle protection.	–
		2	Outdoor unit heat exchanger overheat.				–
		3	Indoor unit heat exchanger overheat.				–
		5	IPM high temperature error.		Indoor and outdoor units do not operate.	▶ Check the outdoor unit air outlet for blockage. ▶ Check the outdoor unit fan for proper rotation. ▶ No abnormality found in above inspections (1) and (2).	▶ Ensure unobstructed air flow from the outdoor unit air outlet. ▶ Check the outdoor unit fan motor. ▶ Replace the outdoor unit control PCB.
3	Dry operation	0	Temporary stop due to dehumidifying operation.	3-time	Indoor unit operates. Outdoor unit does not operate temporarily.	▶ Temporary stop for cycle protection.	–
5	Outdoor unit thermistor open-circuit.	0	Heat exchanger thermistor open circuit error.	5-time	Indoor and outdoor units do not operate.	▶ Check connector of outdoor unit thermistor for secure installation. ▶ Measure resistance of outdoor thermistors. ▶ Check the lead wires of thermistors on the outdoor unit control PCB for open-circuit. ▶ No abnormality found in above inspections (1) through (3).	▶ Correct the installation. ▶ Replace the outdoor unit thermistor assembly. ▶ Replace the outdoor unit thermistor assembly. ▶ Replace the outdoor unit control PCB assembly.
		1	Outdoor temperature thermistor open circuit error.				
		2	Suction thermistor open circuit error.				
		3	2-way valve thermistor open circuit error.				
		4	Discharge thermistor open circuit error.				
		5	Heat sink thermistor open circuit error.				
6	Outdoor unit DC Current	0	DC over current error.	6-time	Indoor and outdoor units do not operate.	▶ Go to “DC Over Current Error (6-0 error)”.	
		1	IPM pin level error.			▶ Check the IPM is attached correctly to the outdoor unit IPM PCB.	▶ Replace the outdoor unit PCB.

Main malfunction		Sub malfunction		LED1 (outdoor unit)	Problem symptom	Check Point	Action
No.	Diagnosis	No.	Diagnosis				
7	Outdoor unit AC Current	0	AC over current error.	7-time	Indoor and outdoor units do not operate.	▶ Check the outdoor unit air outlet for blockage.	▶ Ensure unobstructed air flow from the outdoor unit air outlet.
						▶ Check the outdoor unit fan for proper rotation.	▶ Check the outdoor unit fan motor.
		1	AC current error when OFF.			▶ IPM continuity check	▶ Replace the outdoor IPM PCB.
		2	AC maximum current error.			▶ Check the outdoor unit air outlet for blockage.	▶ Ensure unobstructed air flow from the outdoor unit air outlet.
						▶ Check the outdoor unit fan for proper rotation.	▶ Check the outdoor unit fan motor.
		3	AC current deficiency error.			▶ Check if there is an open-circuit in the secondary winding of the current transformer of the outdoor unit control PCB.	▶ Replace the outdoor unit control PCB assembly.
						▶ Check if the refrigerant volume is abnormally low.	▶ Charge the specified amount of refrigerant.
						▶ Check if the refrigerant flows properly.	▶ Correct refrigerant clogs (Stop valve, pipe, expansion valve).
9	Cycle temperature	0	Thermistor installation error or 4-way valve error.	9-time	Indoor and outdoor units do not operate.	▶ Check the thermistor (heat exchanger) and (2-way valve) are installed in correct positions.	▶ Correct the installation.
						▶ Check resistance of thermistors (heat exchanger and 2-way valve).	▶ Charge the specified amount of refrigerant.
						▶ Check the 4-way valve for proper operation.	▶ Replace the 4- way valve.
						▶ No abnormality found in above inspections (1), through (3).	▶ Replace the outdoor unit control PCB assembly.
		4	4 way valve error or Gas leak error.		Indoor and outdoor units do not operate.	▶ Check the indoor/ outdoor heat exchanger thermistors are installed in correct positions.	▶ Correct the installation.
						▶ Check if the refrigerant volume is abnormally low.	▶ Change the specified amount of refrigerant.
						▶ Check the 4-way valve for proper operation.	▶ Replace the 4-way valve.
10	EEPROM error	2	CPU (outdoor) RAM data error.	10-time	Indoor and outdoor units do not operate.	–	▶ Replace the outdoor unit control PCB assembly.
		3	CPU error			–	

Main malfunction		Sub malfunction		LED1 (outdoor unit)	Problem symptom	Check Point	Action
No.	Diagnosis	No.	Diagnosis				
11	Outdoor unit DC fan	1	Outdoor unit DC fan driver IC error.	11-time	Indoor and outdoor units do not operate.	▶ Check if the fan IPM terminal resistance values are uniform.	▶ Replace the outdoor unit control PCB assembly.
						▶ Outdoor unit fan motor continuity check.	▶ Replace the outdoor unit fan.
		2	Outdoor unit DC fan lock error.			▶ Check if the fan IPM terminal resistance values are uniform.	▶ Replace the outdoor unit control PCB assembly.
						▶ Normal	▶ Replace the outdoor unit fan.
	Outdoor unit DC fan	3	Detection error of DC fan negative rotation before compressor is driven.			▶ Temporary stop for DC fan circuit protection.	–
		4	Detection error of inverter current for DC fan.			–	▶ Replace the outdoor unit control PCB assembly.
		5	Outdoor unit DC fan open connector error.			▶ Check connector CN3 of the outdoor unit DC fan motor for secure installation.	▶ Correct the installation.
						▶ No abnormality found in above inspection 1).	▶ Replace the outdoor unit control PCB assembly.
13	DC compressor	0	Compressor start up error.	13-time	Indoor and outdoor units do not operate.	▶ Check the colours (red, white, orange) of the compressor cords for proper connection (PCB side, compressor side).	▶ Correct the installation. (U: Red, V: White, W: Orange).
		2	Compressor rotation error (at 180° energizing).			▶ Check if the IPM terminal resistance values are uniform (Refer to IPM check method).	▶ Replace the outdoor unit control PCB assembly.
						▶ Check if outdoor main relay (MRY1) turns on and DC voltage DB1 (+/-) has become DC290-330V.	▶ Replace the outdoor unit control PCB assembly.
						▶ No abnormality found in above inspections (1) through (3).	▶ Replace the compressor.
14	Outdoor unit PAM	0	PAM over voltage error.	14-time	Indoor and outdoor units do not operate.	▶ Check the AC power supply voltage for fluctuation.	▶ Correct the installation.
						▶ No abnormality found in above inspection.	▶ Replace the PCB assembly.
		1	PAM clock error.			▶ Check the PAM clock for proper input.	▶ Replace the outdoor unit control PCB assembly.
		2	DC low voltage			▶ Check the AC power supply voltage for fluctuation.	▶ Correct the installation.
						▶ No abnormality found in above inspection.	▶ Replace the PCB assembly.

Main malfunction		Sub malfunction		LED1 (outdoor unit)	Problem symptom	Check Point	Action
No.	Diagnosis	No.	Diagnosis				
17	Wiring between units	0	Serial open circuit	Lighting or OFF	Indoor unit operates. Outdoor unit does not operate.	▶ Check the wires between units.	▶ Connect stable power supply. Correct the wiring.
						▶ Check voltage between N and 1 the indoor/ outdoor unit terminal boards.	▶ Replace the outdoor unit control PCB assembly.
						▶ Check the outdoor unit fuse.	▶ Replace the fuse/ outdoor unit control PCB assembly.
						▶ Check voltages of 15V-0V,12V-0V and 5V-0V on the PCB. 15V-0V:15V 12V-0V:12V 5V-0V:5V Check resistance between IPM terminals.	▶ Replace the outdoor unit control PCB assembly.
						▶ No abnormality found in above inspections.	▶ Replace the outdoor unit control PCB board.
18	Wiring between units	0	Serial short-circuit	Lighting or OFF	Indoor unit operates. Outdoor unit does not operate.	▶ Check the wiring between units.	▶ Correct the wiring.
		1	Serial erroneous wiring		Indoor and outdoor units do not operate.	▶ Check the wiring between units.	▶ Correct the wiring.
19	Indoor unit fan	0	Indoor unit fan error.	Normal blinking or OFF	Indoor and outdoor units do not operate.	▶ Check the indoor fan motor for proper rotating operation (Check fan lock).	▶ Replace the indoor fan motor.
						▶ Check the lead wire of the indoor fan motor for open-circuit.	▶ Replace the indoor fan motor.
						▶ Check connector of the indoor unit fan motor for secure installation.	▶ Correct the installation of the indoor fan motor connector.
						▶ No abnormality found in above inspections.	▶ Replace the indoor unit control PCB.
20	Indoor unit control PCB	0	EEPROM data error.	Normal blinking or OFF	Indoor and outdoor units do not operate.	▶ (EEPROM read data error).	▶ Replace the indoor unit control PCB.
21	Vertical louver (V-louver) drop	0	L/R guide assembly error.	Normal blinking or OFF	Indoor and outdoor units do not operate.	▶ Check L/R guide around.	▶ Confirm assembly of guide. ▶ Confirm detection SW around.
24	Wireless LAN	0	WLAN module communication error.	Normal blinking or OFF	Indoor and outdoor units operate.	▶ Check WLAN module and related circuit.	▶ Confirm assembly. ▶ Confirm WLAN module.
		1	Wireless router connection error.			▶ Check Wireless router.	▶ Confirm connecting with wireless router. ▶ Confirm setting of wireless router.

Main malfunction No.	Main malfunction Diagnosis	Sub malfunction No.	Sub malfunction Diagnosis	LED1 (outdoor unit)	Problem symptom	Check Point	Action
26	Indoor unit room temperature thermistor	1	Indoor unit room temperature thermistor	Normal blinking or OFF	Indoor and outdoor units operate.	▶ Check connector of thermistor for secure installation. ▶ Check the temperature properties of the thermistor.	▶ Replace the thermistor.
	Indoor unit pipe temperature thermistor	2	Indoor unit pipe temperature thermistor				
	Indoor unit valve temperature thermistor	3	Indoor unit valve temperature thermistor				

Table 27 Self-diagnosis results chart

4.9 Other Malfunction Error Indications/Buzzers

Indoor unit indicator while not operating

Main error code	Malfcuntion	LEDs flashing	Description
21	Vertical louver (V-louver)	Operation lamp (green) and timer lamp (orange) on the indoor unit flash in a 1s cycle	The vertical louver (V-louver) L/R guide is either not assembled correctl, or unassembled.

Table 28 Indoor unit indicator while not operating

Indoor unit indicator during operation

Main error code	Malfcuntion	LEDs flashing	Description
17	Serial open circuit	Timer lamp flashes in a 2s cycle	
24	Adapter communication error (adapter not applicable)	LED lamps flashes for 5 seconds with buzzer, WLAN lamp (green) flashes in a 1s cycle, indicating an adapter communication error.→ Refer to WLan Guide Book	Adapter not connected
	PCI needs replacement soon	LED lamps flash for 10s after operation start, plasmacluster lamp (blue) flashes in a 1s cycle.	Over17,500 hours of operation[1)]
	Function of PCI stopped due to need of replacement	LED lamps flash for 1m after operation start, plasmacluster lamp (blue) flashes in a 1s cycle.	Over 19,000 hours of operation[2)]

1) Operation over 17,500 hours. After flashing,the plasmacluster lamp turns off, but plasmacluster still releases ions. Other operations (e.g. cooling and heating) can run as usual.

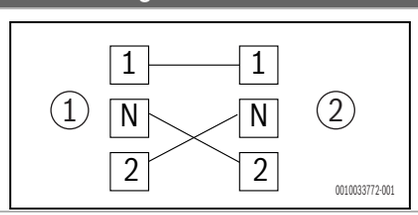
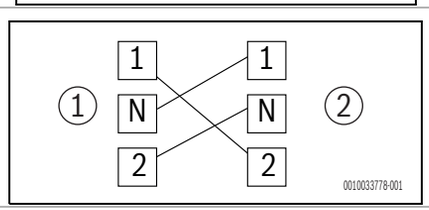
2) Operation over 19,000 hours. The unit will stop releasing ions.The LED lamp will flash when unit tries to start plasmacluster operation. Other operations (e.g. cooling and heating) can run as usual.

Table 29 Indoor unit indicator during operation

Error without indication

If EEPROM data has problem when power supply just connected, buzzer will sound continuously, but LED lamp remains off.

Malfunction indications due to erroneous wiring during air conditioner installation:

	Inter-unit wiring	Symptom	
1		Malfunction diagnosis display	“18-1”
2		Malfunction diagnosis display	None (Displays “17-0” when malfunction code is called out).

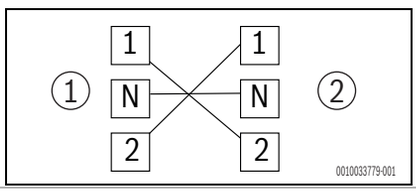
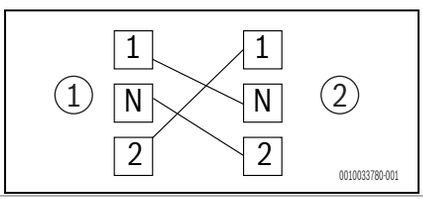
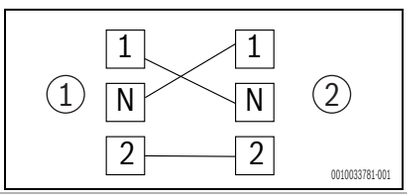
	Inter-unit wiring	Symptom	
3		Malfunction diagnosis display	None (Displays “17-0” when malfunction code is called out).
4		Malfunction diagnosis display	“18-1”
5		Malfunction diagnosis display	“18-1”

Table 30 Erroneous wiring

1 Indoor unit
2 Outdoor unit

5 Refrigeration Cycle

5.1 Schematic Diagram

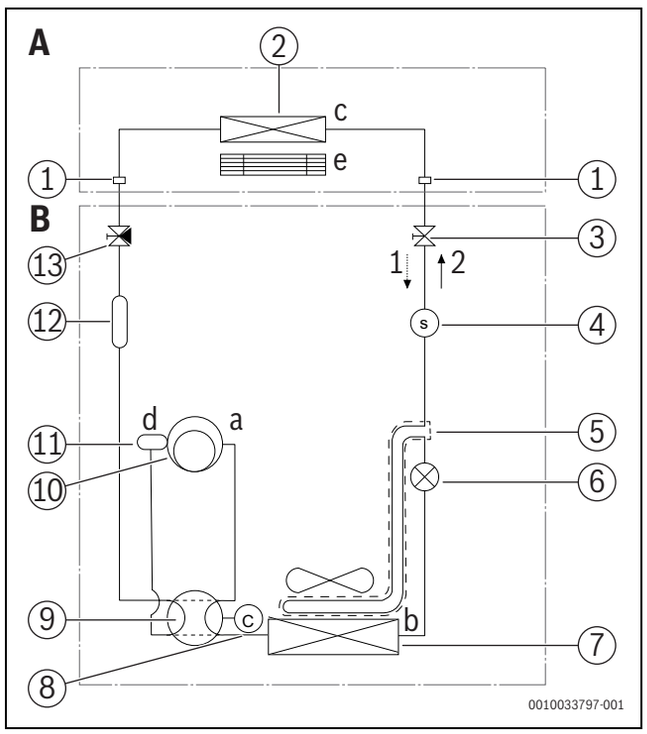


Fig. 17

[A] Indoor Unit
[B] Outdoor Unit

[1] Flare coupling
[2] Evaporator
[3] Flare coupling (2-way valve)
[4] Silencer
[5] Accumulator
[6] Compressor
[7] Reverse valve
[8] Strainer
[9] Antifreeze pipe (Only CLC6101i-W 50 HE, CLC6101i 50 HE, CLC8101i-W 65 HE (T/S/R) models)
[10] Expansion valve
[11] Condenser
[12] Coil
[13] 3-way valve

1 Heating
2 Cooling
a – e outlet temperatures

5.2 Standard Condition

	Indoor side		Outdoor side	
	Dry-bulb Temp. (°C)	Relative Humidity (%)	Dry-bulb Temp. (°C)	Relative Humidity (%)
Cooling	27	47	35	40

Table 31

5.3 Temperature at each part and pressure in 3-way valve

To enter max cooling mode, start the unit with remote control setting 16 °C and high fan speed. Check the data within 30 min after starting cooling.

Refer to installation manual for how to enter test run.

Model		CLC6101i-W 50 HE, CLC6101i 50 HE				CLC6101i-W 65 HE, CLC6100i 65 HE			
		Cooling		Heating		Cooling		Heating	
Mode		Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]
Ampere		3.9	3.1	6.6	2.4	5.9	3.2	9.8	2.5
3-way valve pressure (MPaG)		1.0	1.1	3.1	2.1	0.9	1.1	3.4	2.1
Indoor Outlet Temperature (5)		14	15	43	32	12	16	50	31
Temperature	(a)	74	69	94	62	86	67	92	62
	(b)	39	40	2	3	41	40	1	4
	(c)	12	13	25	27	11	15	45	23
	(d)	14	16	2	4	9	16	1	4

1) To enter cooling max, start the unit with remote control setting 16 °C and high fan speed. Check the data within 30 min after start cooling.

2) Refer to installation manual for how to enter test run.

Table 32

Model		CLC8101i-W 65 HE (T/S/R), CL8101i 65 HE				CLC6001i-W 25 E, CL6001i 25 E			
		Cooling		Heating		Cooling		Heating	
Mode		Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]
Ampere		4.9	2.8	7.9	2.4	3.9	3.1	6.1	2.6
3-way valve pressure (MPaG)		0.9	1.1	3.1	2.0	1.0	1.1	3.0	2.2
Indoor Outlet Temperature (5)		13	16	46	30	14	15	42	31
Temperature	(a)	76	62	94	60	75	71	90	64
	(b)	38	37	2	3	39	39	2	3
	(c)	12	15	30	21	12	13	32	26
	(d)	10	14	1	5	13	15	3	5

1) To enter cooling max, start the unit with remote control setting 16 °C and high fan speed. Check the data within 30 min after start cooling.

2) Refer to installation manual for how to enter test run.

Table 33

Model		CLC6001i-W 35 E, CLC6001i 35 E				CLC8001i-W 25 E (T/S/R), CLC8001i 25 E			
		Cooling		Heating		Cooling		Heating	
Mode		Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]	Max[1]	Test run[2]
Ampere		6.1	3.2	7.8	2.6	3.1	3.8	5.7	2.5
3-way valve pressure (MPaG)		0.9	1.1	3.3	2.2	1.1	1.1	2.8	2.0
Indoor Outlet Temperature (5)		13	16	45	31	15	16	40	30
Temperature	(a)	85	70	94	64	66	64	89	61
	(b)	40	39	2	3	37	37	2	3
	(c)	10	14	34	26	14	15	23	21
	(d)	7	16	2	5	14	15	4	5

1) To enter cooling max, start the unit with remote control setting 16 °C and high fan speed. Check the data within 30 min after start cooling.
2) Refer to installation manual for how to enter test run.

Table 34

Model		CLC8001i-W 35 E (T/S/R), CL8001i 35 E			
		Cooling		Heating	
Mode		Max[1)]	Test run[2)]	Max[1)]	Test run[2)]
Ampere		4.9	2.8	7.9	2.5
3-way valve pressure (MPaG)		0.9	1.1	3.1	2.0
Indoor Outlet Temperature (5)		14	16	44	30
Temperature	(a)	77	63	98	61
	(b)	38	37	2	2
	(c)	12	15	25	20
	(d)	12	15	1	5

1) To enter cooling max, start the unit with remote control setting 16 °C and high fan speed. Check the data within 30 min after start cooling.
2) Refer to installation manual for how to enter test run.

Table 35

5.4 Performance curves

- Indoor fan speed: High
- Indoor air temp.: Cooling 27 °C
- Power source: 230V, 50Hz

CLC6101i-W 50 HE, CLC6101i 50 HE

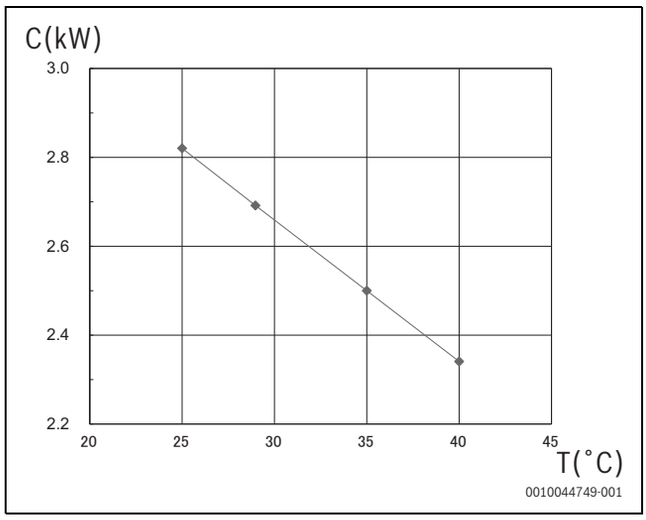


Fig. 18 Cooling

C Capacity in kW
T Outdoor air temperature in °C

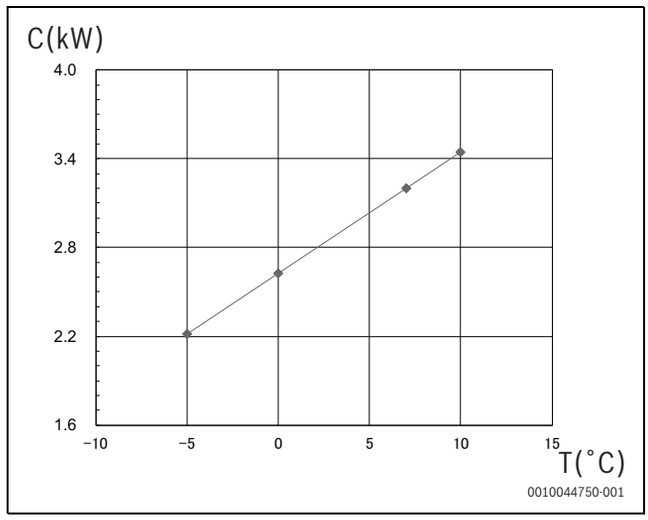


Fig. 20 Heating

C Capacity in kW
T Outdoor air temperature in °C

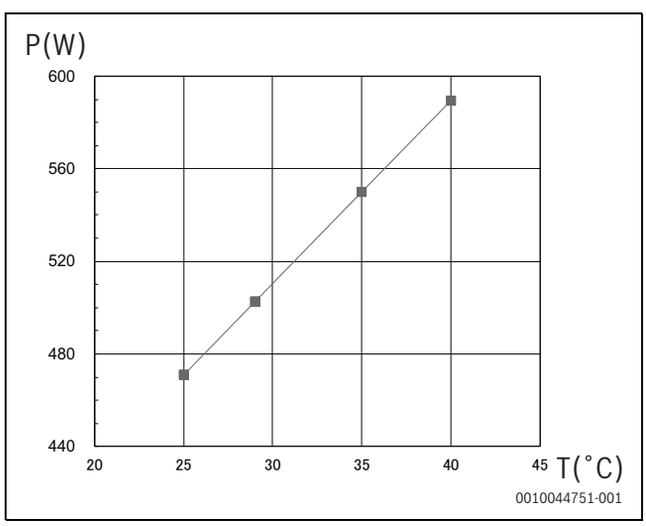


Fig. 19 Cooling

P Power consumption in W
T Outdoor air temperature in °C

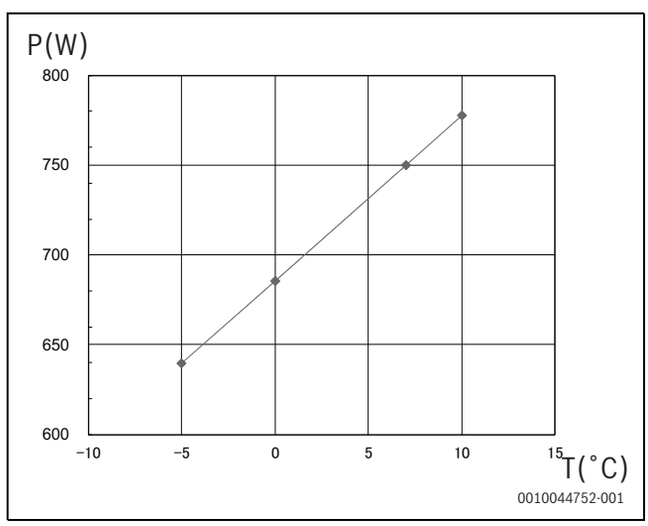


Fig. 21 Cooling

P Power consumption in W
T Outdoor air temperature in °C

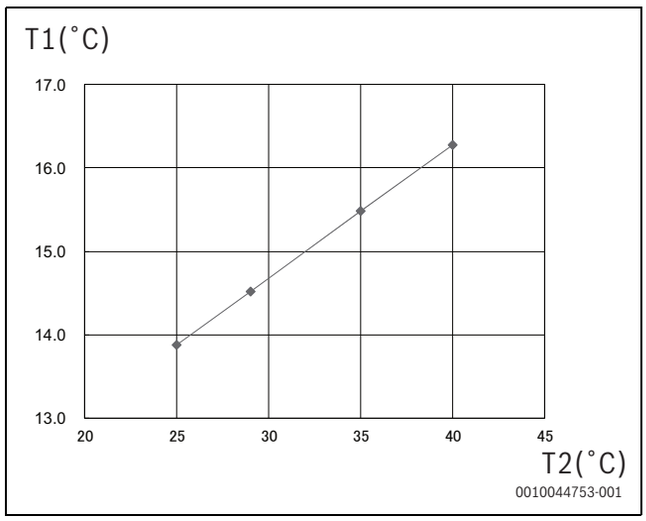


Fig. 22 Cooling

T_1 Indoor air outlet temperature in ℃
T_2 Outdoor air temperature in ℃

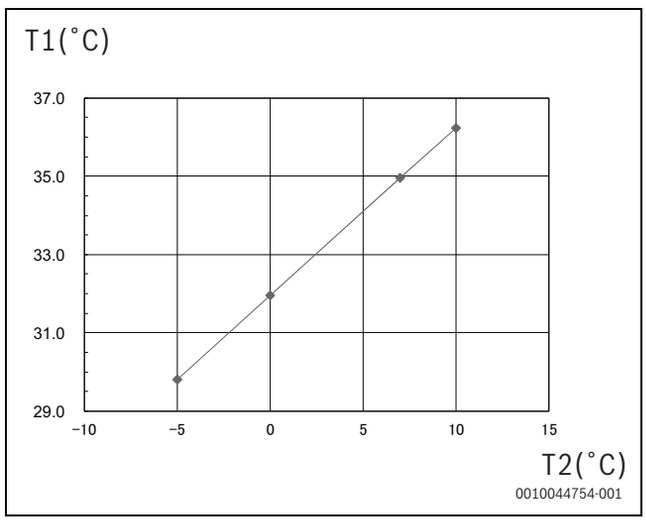


Fig. 23 Heating

T_1 Indoor air outlet temperature in ℃
T_2 Outdoor air temperature in ℃

CLC6101i-W 65 HE, CLC6100i 65 HE

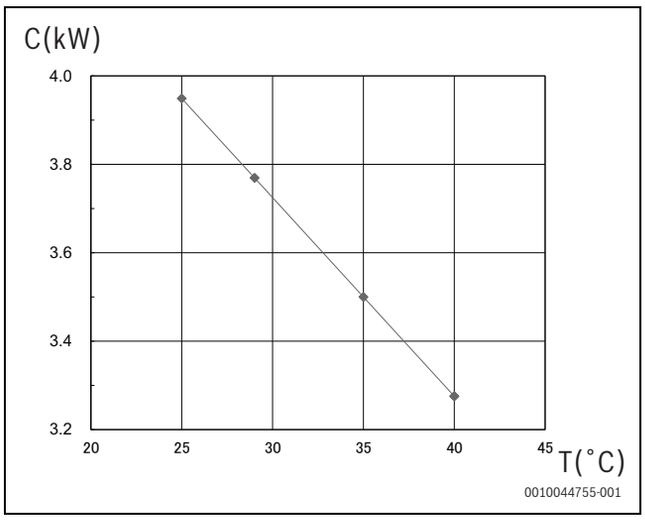


Fig. 24 Cooling

C Capacity in kW
T Outdoor air temperature in ℃

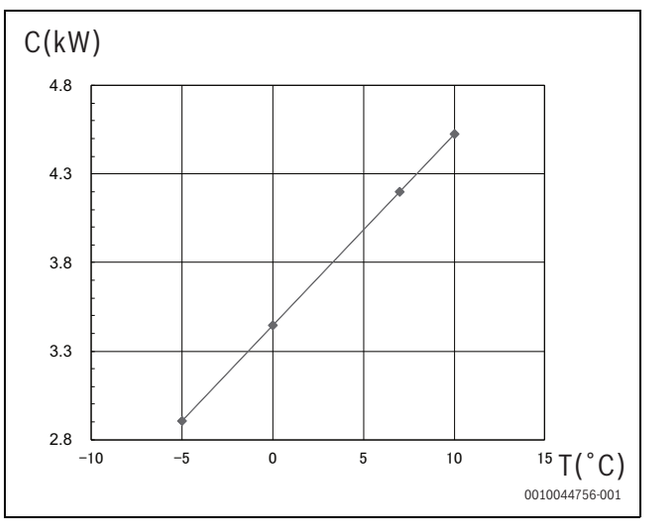


Fig. 25 Heating

C Capacity in kW
T Outdoor air temperature in ℃

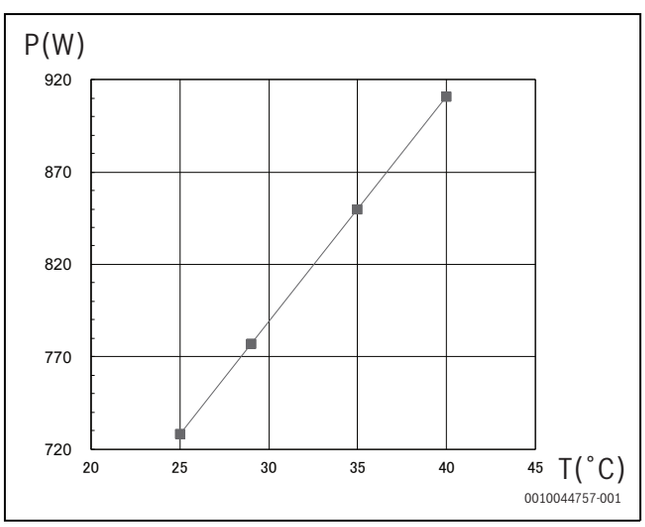


Fig. 26 Cooling

P Power consumption in W
T Outdoor air temperature in ℃

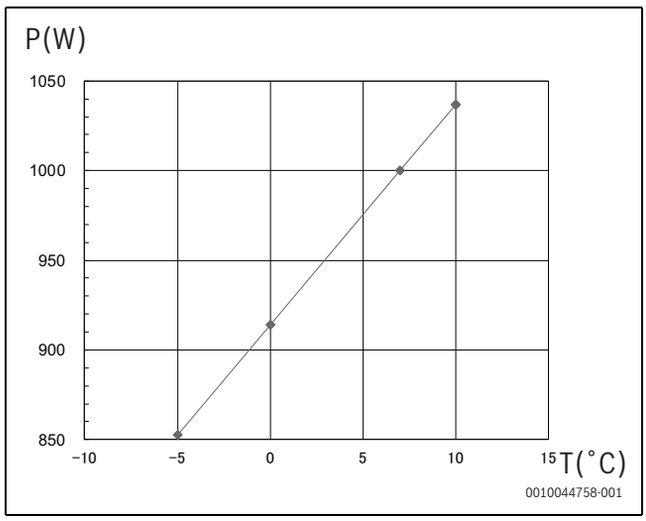


Fig. 27 Heating

P Power consumption in W
T Outdoor air temperature in °C

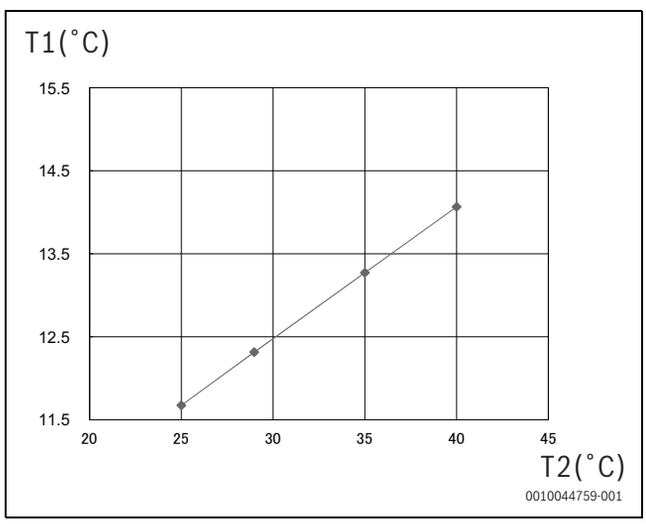


Fig. 28 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

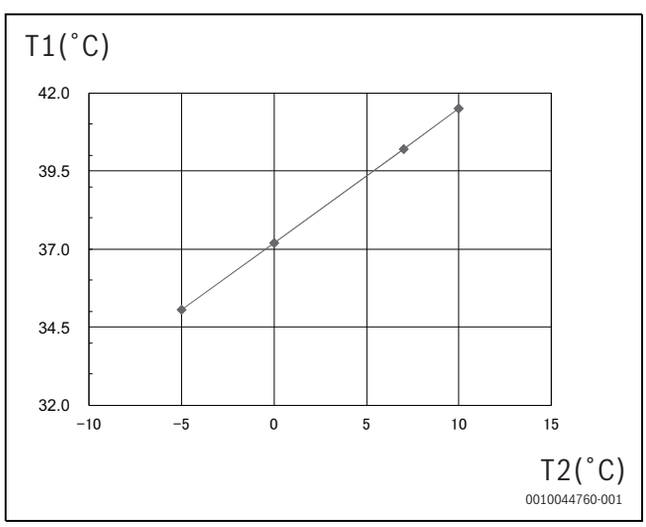


Fig. 29 Heating

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

CLC8101i-W 65 HE (T/S/R), CL8101i 65 HE

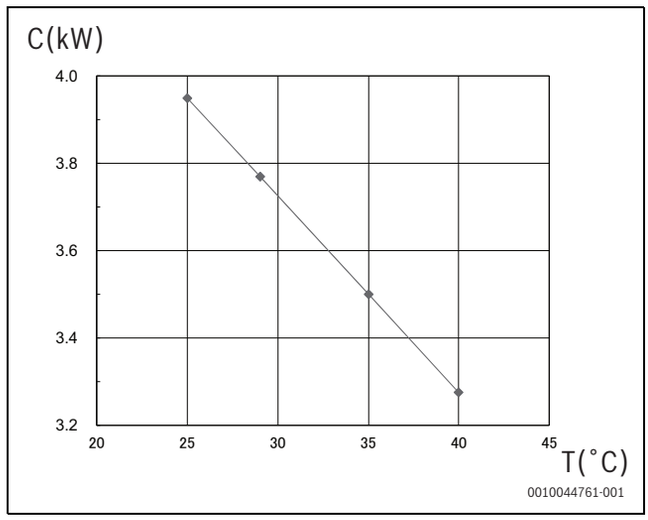


Fig. 30 Cooling

C Capacity in kW
T Outdoor air temperature in °C

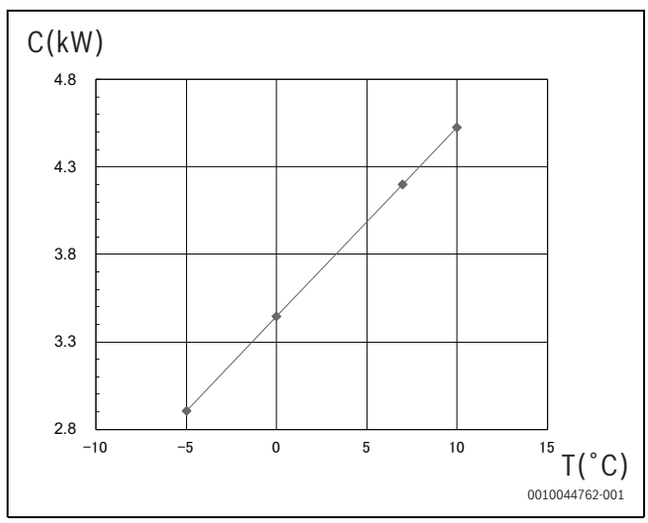


Fig. 31 Heating

C Capacity in kW
T Outdoor air temperature in °C

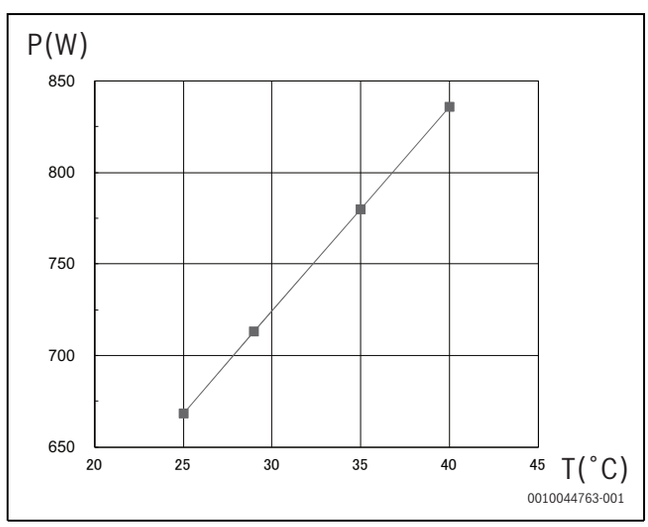


Fig. 32 Cooling

C Capacity in kW
T Outdoor air temperature in °C

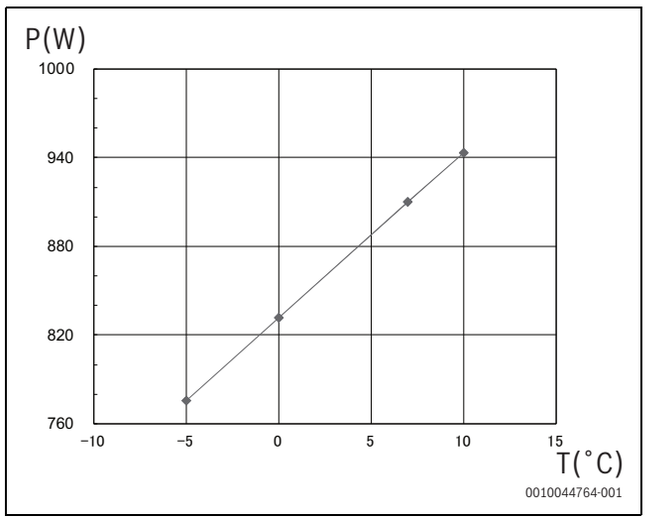


Fig. 33 Heating

P Power consumption in W
T Outdoor air temperature in °C

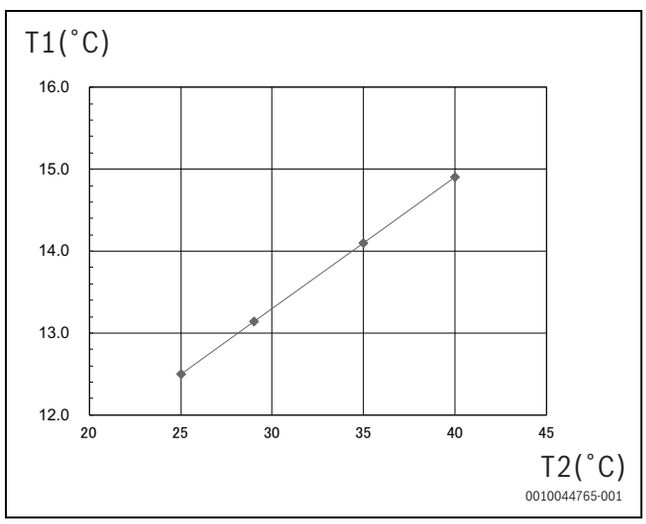


Fig. 34 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

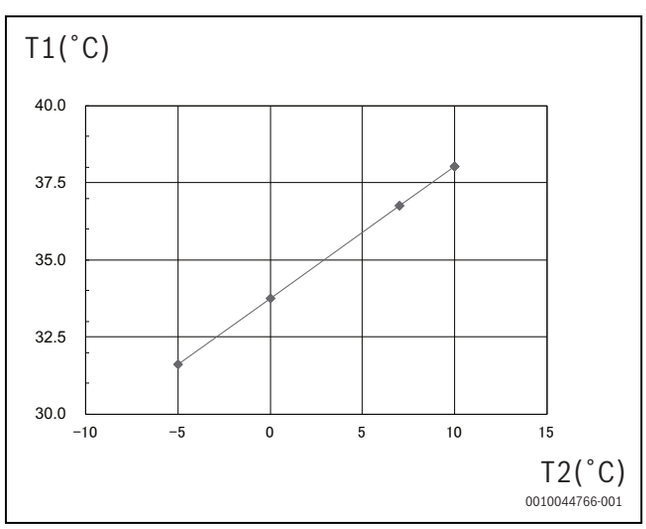


Fig. 35 Heating

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

CLC6001i-W 25 E, CL6001i 25 E

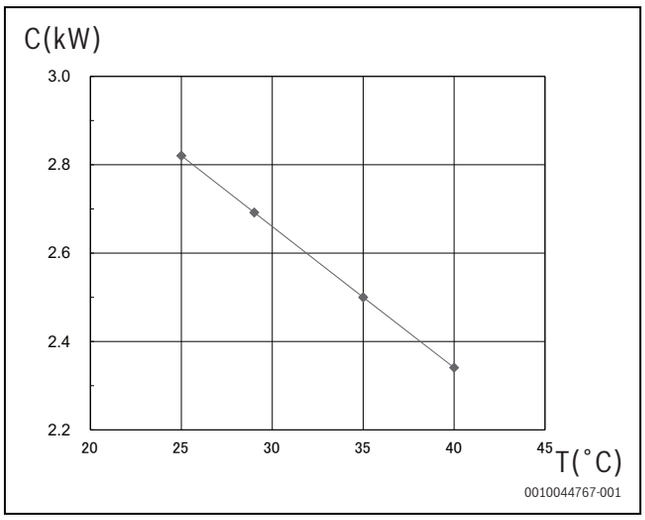


Fig. 36 Cooling

C Capacity in kW
T Outdoor air temperature in °C

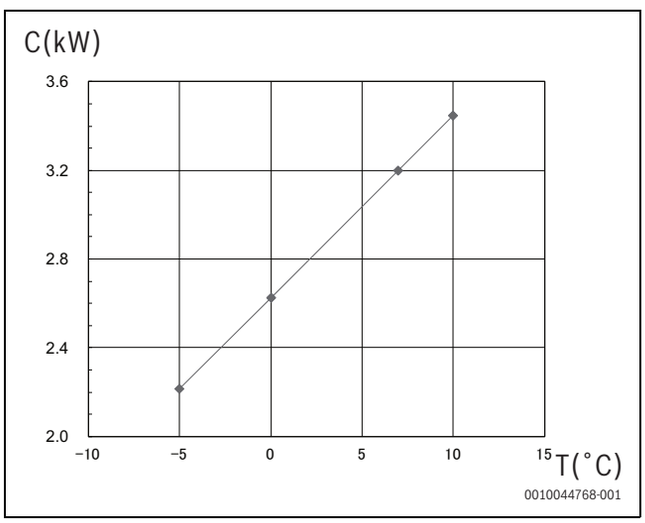


Fig. 37 Heating

C Capacity in kW
T Outdoor air temperature in °C

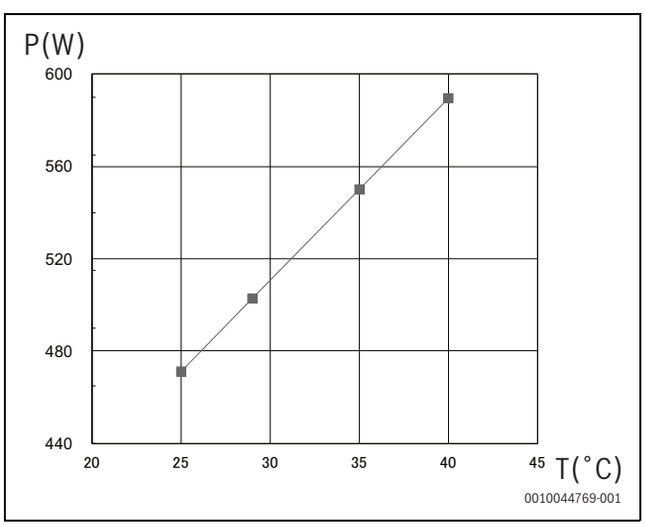


Fig. 38 Cooling

P Power consumption in W
T Outdoor air temperature in °C

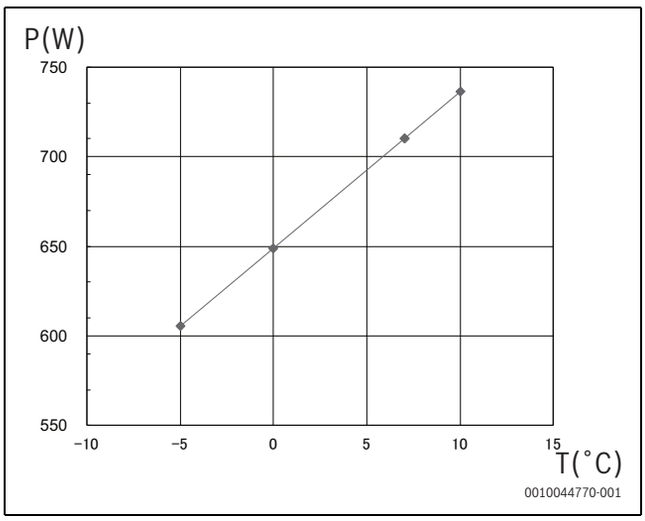


Fig. 39 Heating

P Power consumption in W
T Outdoor air temperature in °C

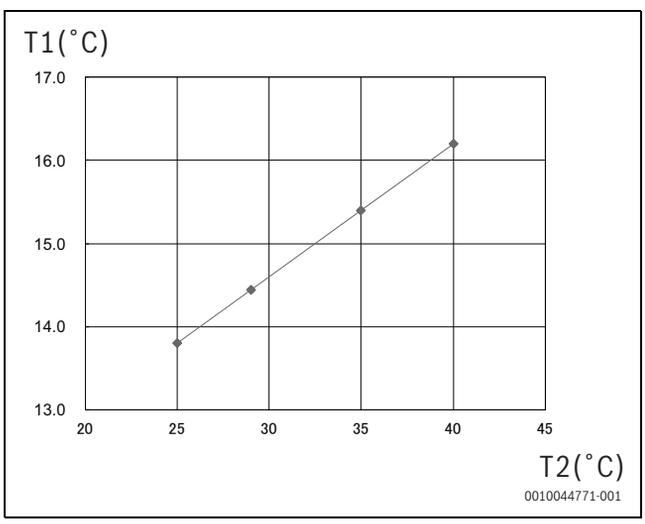


Fig. 40 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

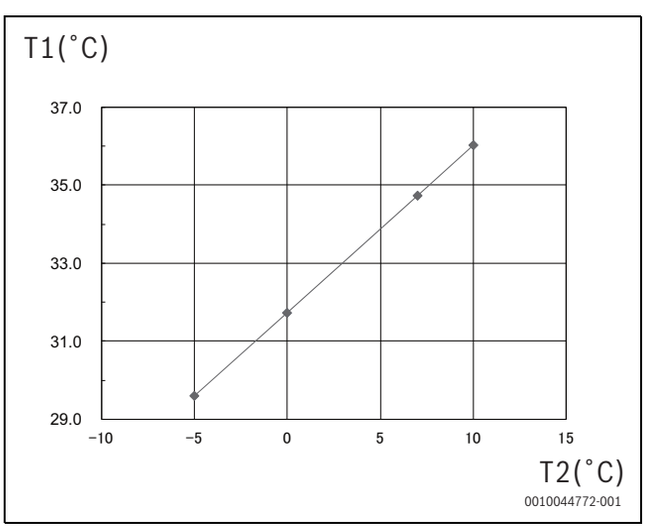


Fig. 41 Cooling

P Power consumption in W
T Outdoor air temperature in °C

CLC6001i-W 35 E, CLC6001i 35 E

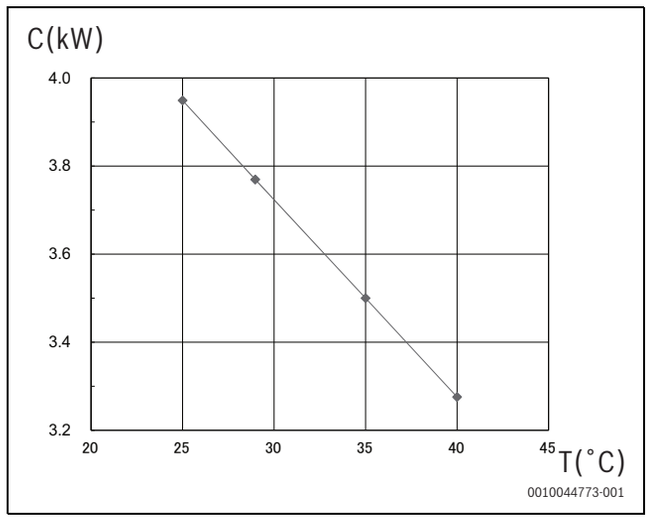


Fig. 42 Cooling

C Capacity in kW
T Outdoor air temperature in °C

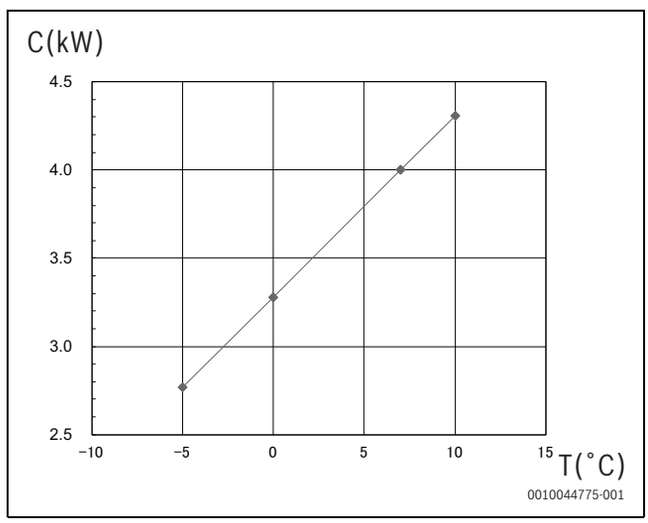


Fig. 43 Heating

C Capacity in kW
T Outdoor air temperature in °C

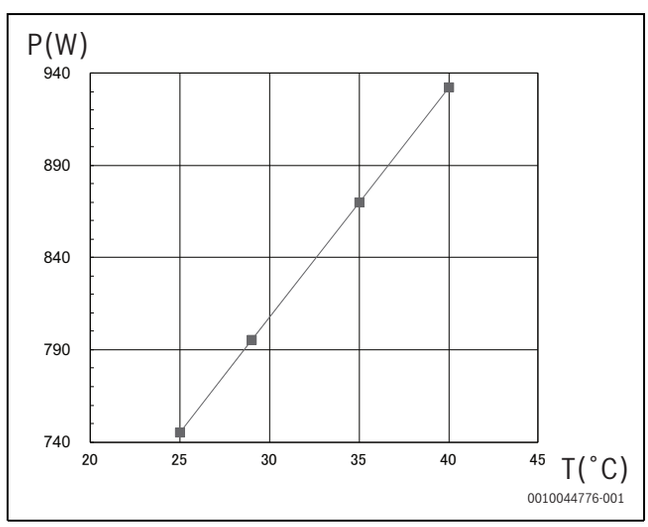


Fig. 44 Cooling

P Power consumption in W
T Outdoor air temperature in °C

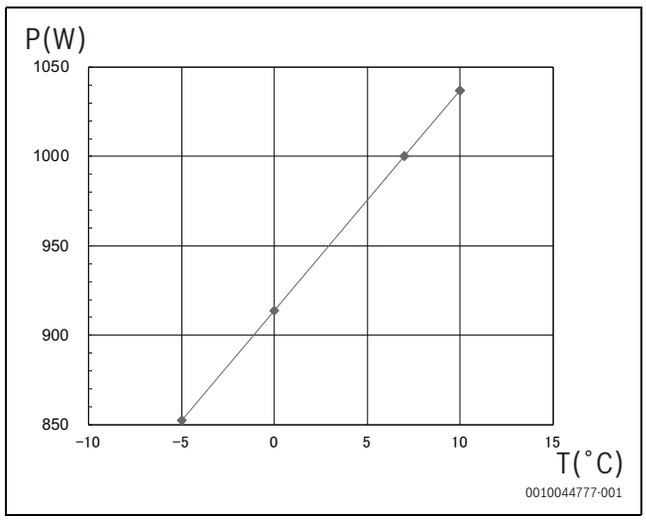


Fig. 45 Heating

P Power consumption in W
T Outdoor air temperature in °C

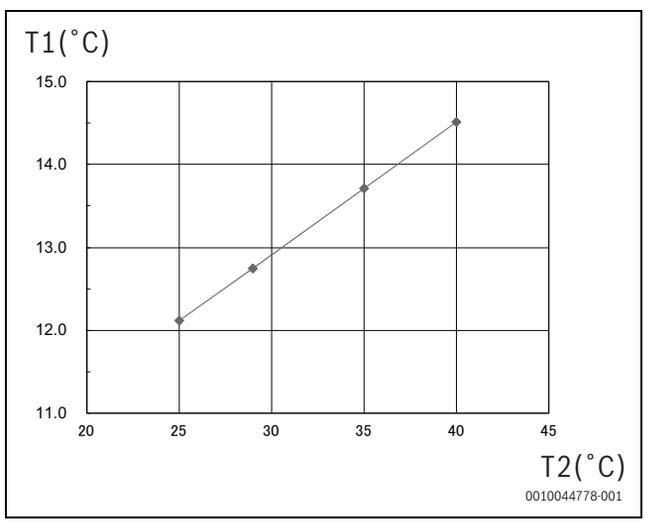


Fig. 46 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

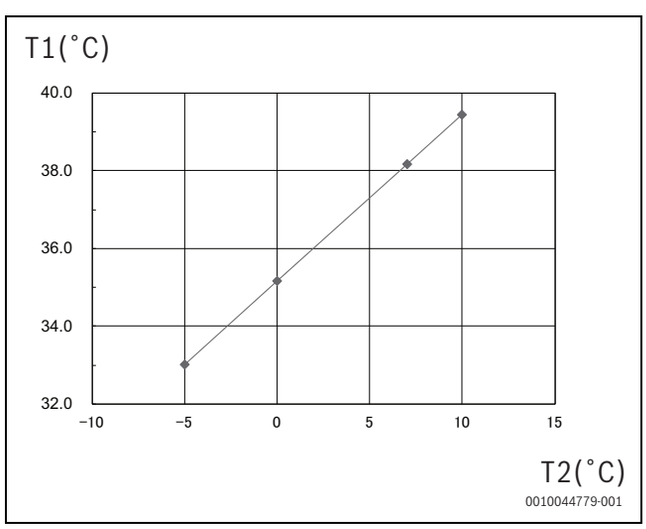


Fig. 47 Heating

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

CLC8001i-W 25 E (T/S/R), CLC8001i 25 E

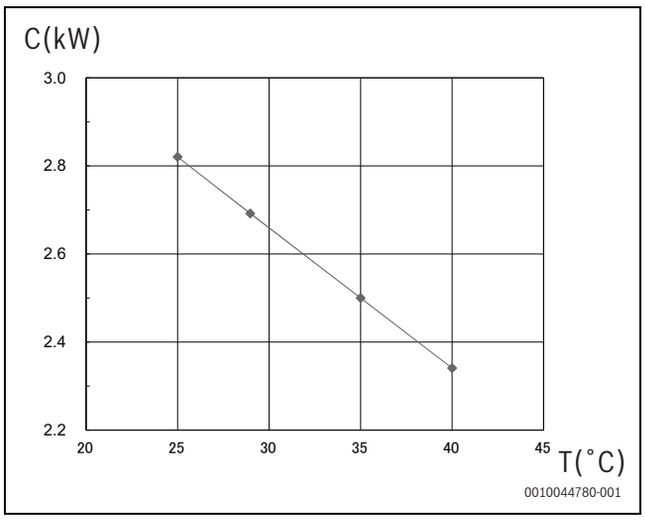


Fig. 48 Cooling

C Capacity in kW
T Outdoor air temperature in °C

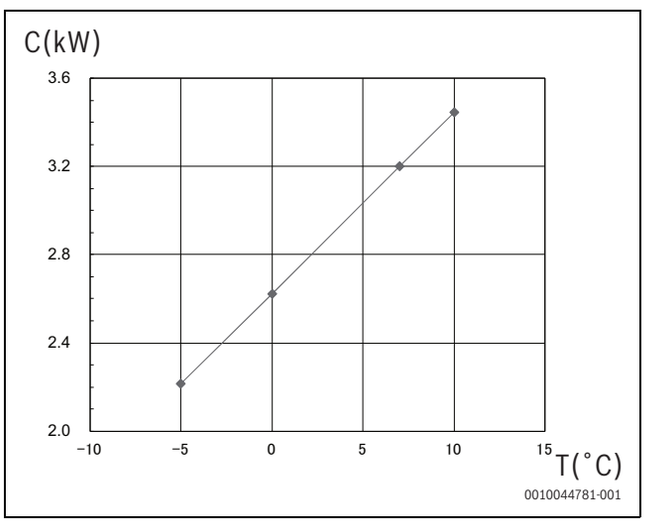


Fig. 49 Heating

C Capacity in kW
T Outdoor air temperature in °C

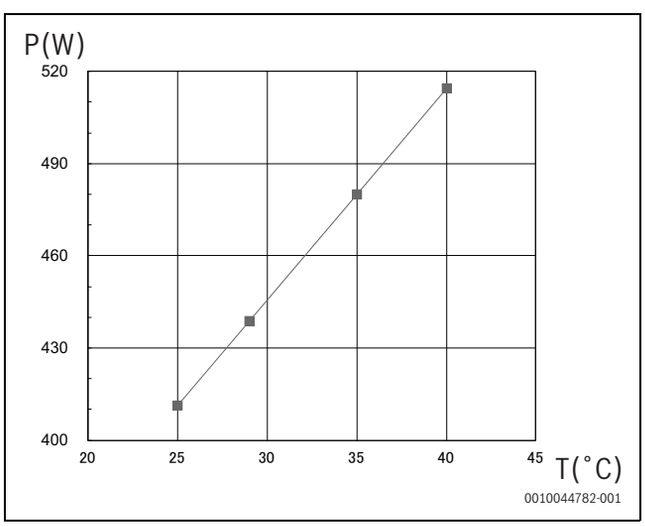


Fig. 50 Cooling

P Power consumption in W
T Outdoor air temperature in °C

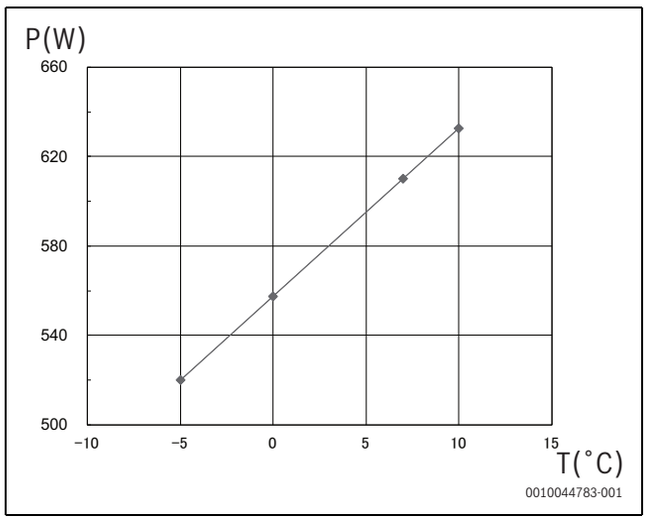


Fig. 51 Heating

P Power consumption in W
T Outdoor air temperature in °C

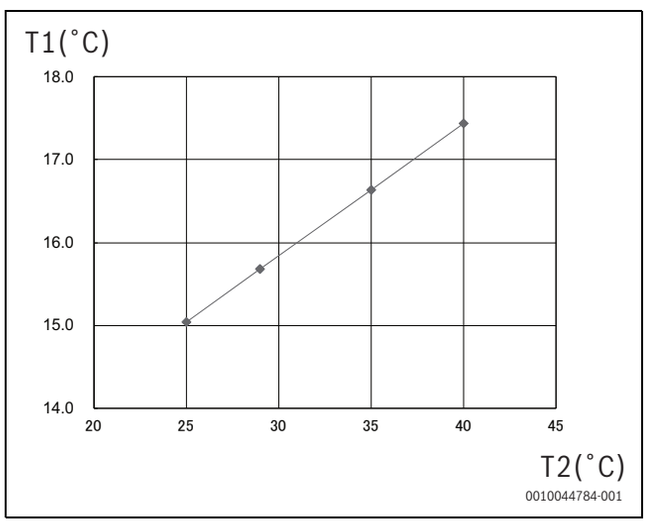


Fig. 52 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

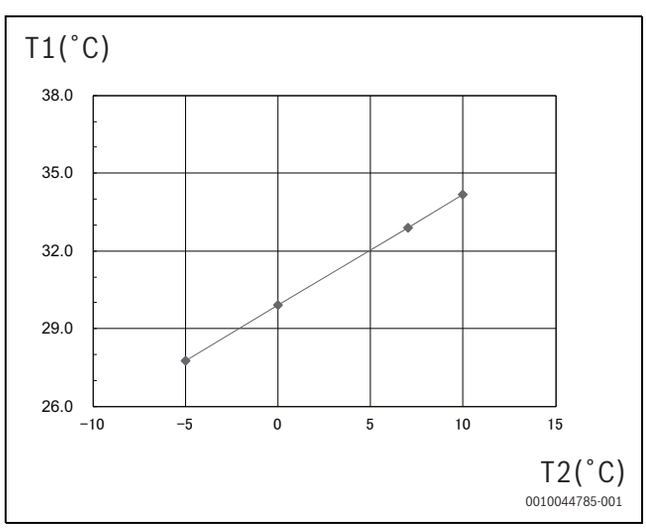


Fig. 53 Heating

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

CLC8001i-W 35 E (T/S/R), CL8001i 35 E

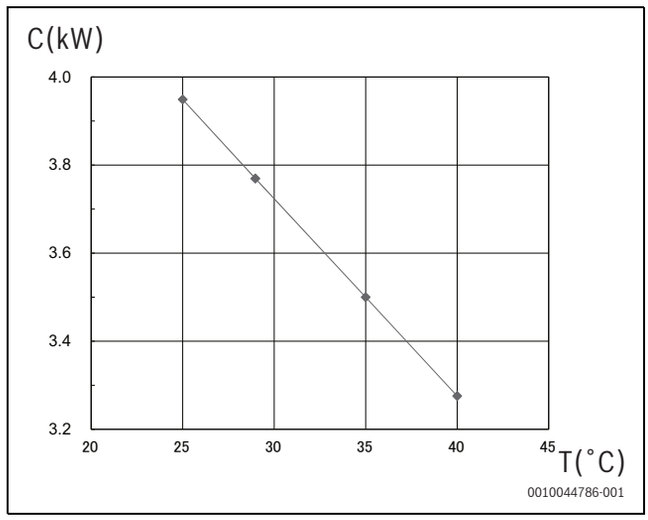


Fig. 54 Cooling

C Capacity in kW
T Outdoor air temperature in °C

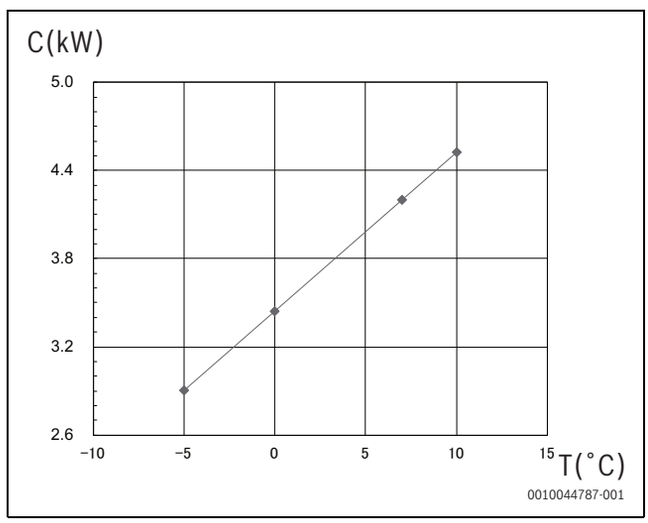


Fig. 55 Heating

C Capacity in kW
T Outdoor air temperature in °C

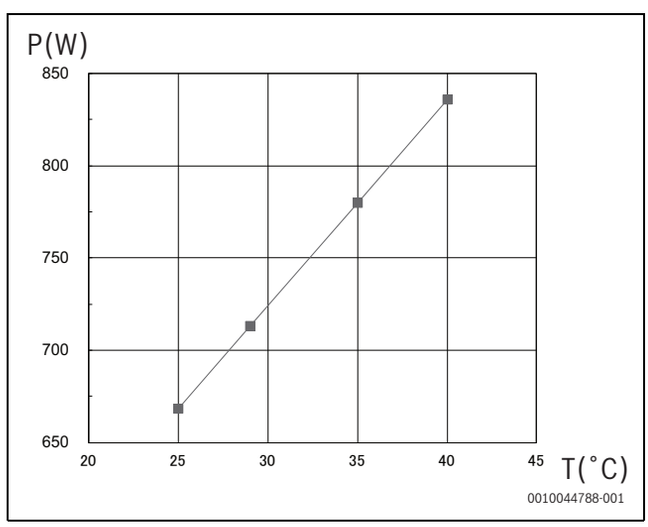


Fig. 56 Cooling

P Power consumption in W
T Outdoor air temperature in °C

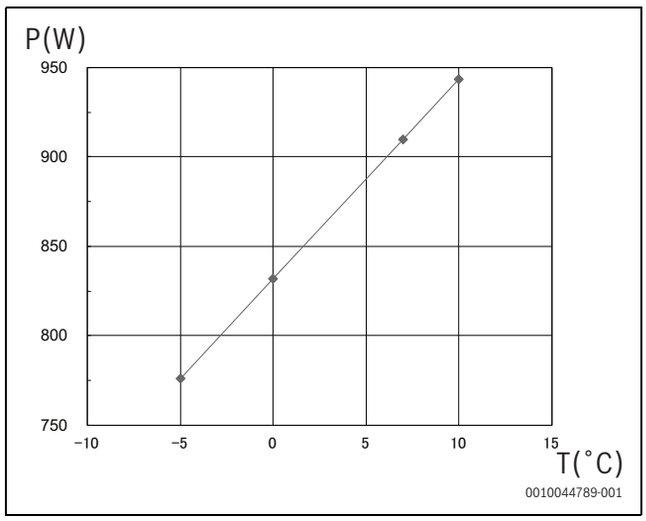


Fig. 57 Heating

P Power consumption in W
T Outdoor air temperature in °C

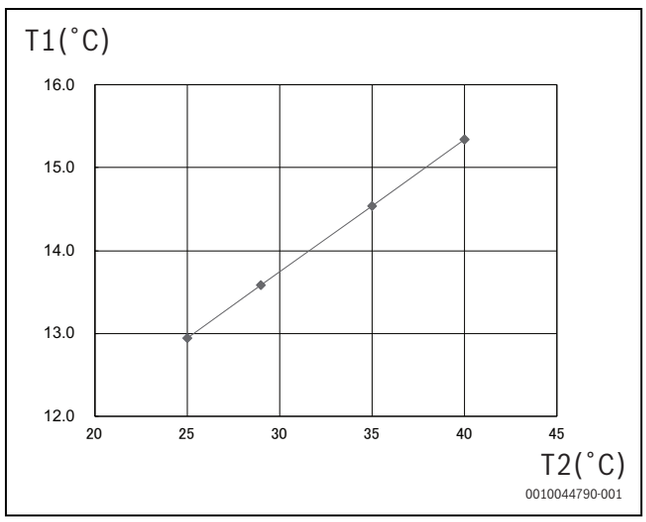


Fig. 58 Cooling

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

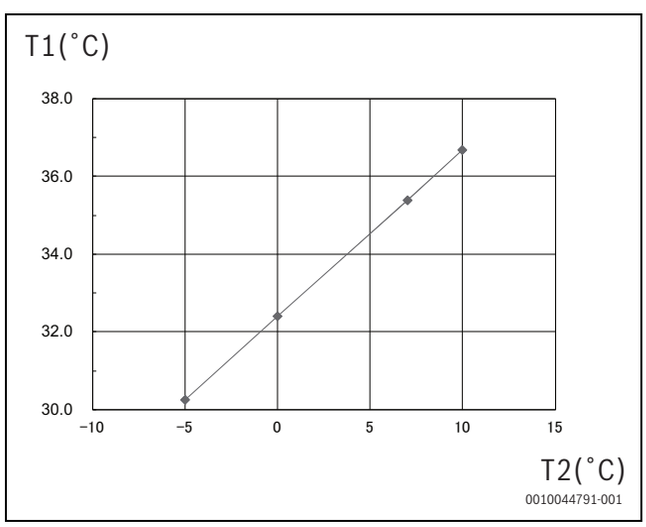


Fig. 59 Heating

T_1 Indoor air outlet temperature in °C
T_2 Outdoor air temperature in °C

6 Disassembly Procedure

If, in carrying out repairs and modifications, the work requires the use of arc- and flame-producing apparatus, such as welding, brazing and soldering equipment, this work shall only be started after the rooms have been thoroughly ventilated. While the work is being carried out, the mechanical ventilation, if any, shall be kept in constant operation and all windows and doors kept open. In the case of repairs to parts of the refrigerant circuit, it may be necessary that not only the workman but also a second person shall be present for observation and assistance.Necessary protective equipment shall be available and, in the case of open flames or arcs, fire extinguishing apparatus shall be ready to hand. Welding and brazing shall be carried out by qualified workmen.

Be sure to turn off the circuit breaker before disassembly procedure. When reassembling the unit after repairing, be sure to install screws to their original positions.

The screws used are not the same in specifications such as corrosion-resistant treatment, tip shape and length.

After the air conditioner is repaired or parts are replaced, measure insulation resistance of the equipment using an insulation resistance meter. If the measured resistance is lower than 1 MΩ, inspect parts and repair or replace defective parts.

NOTICE

Risk of static discharge.

Static charges can destroy sensitive electronics parts.

▶ Wear antistatic gloves.

6.1 Indoor Unit

▶ Push the handles up to remove the air filter.

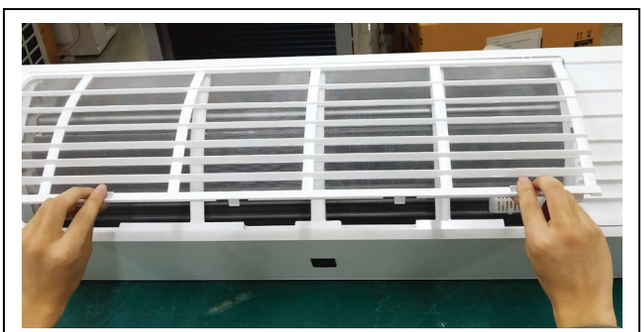


Fig. 60

▶ Remove the open panel by unlocking the panel lock (right and left side).

Fig. 61

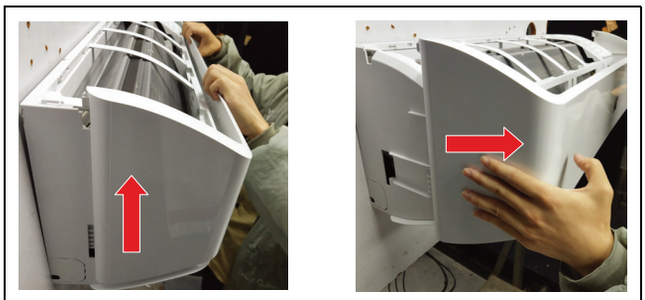


Fig. 62

- Lift the open panel up, then slide the open panel's hook along the guide to remove it (right and left side).

Fig. 63

- Loosen the screw on the terminal board.
- Remove unit-to-unit wiring.

Fig. 64

- Remove the horizontal louver (H-louver) by taking the center of the bearing out.

Fig. 65

- Then, take the left side of the louver bushing out.
- Take the horizontal louver (H-louver) out.

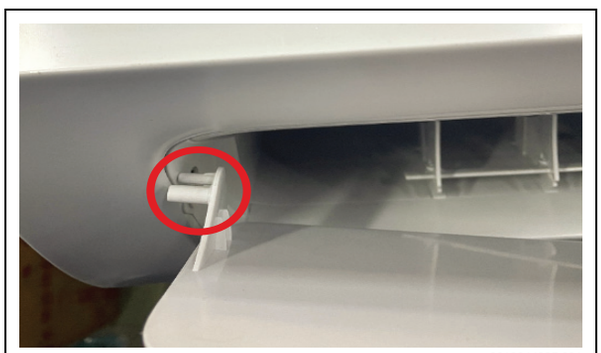


Fig. 66

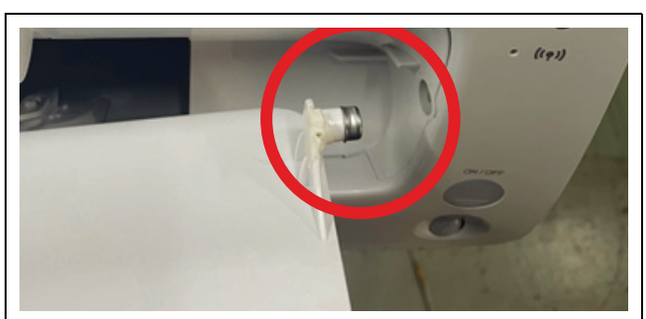


Fig. 67

- Remove the two screws fixing the front panel.

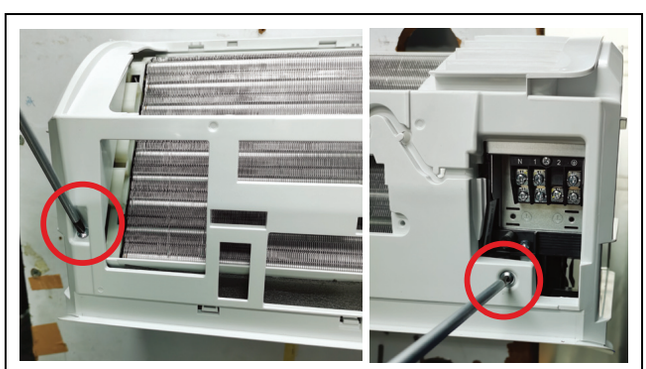


Fig. 68

▶ Pull the top side of the front panel to release the hooks.

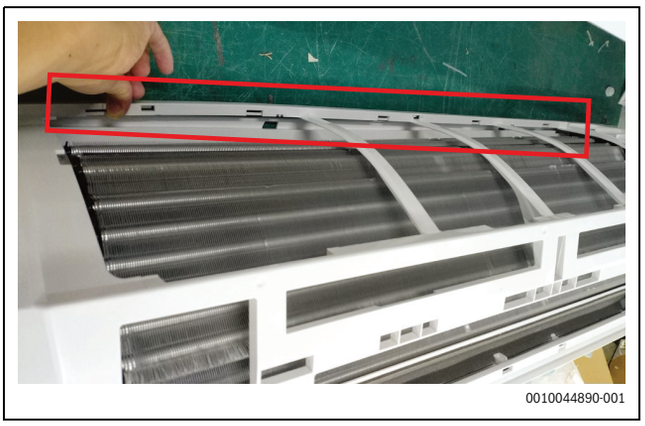


Fig. 69

▶ Pull the indicated side to release the hooks.

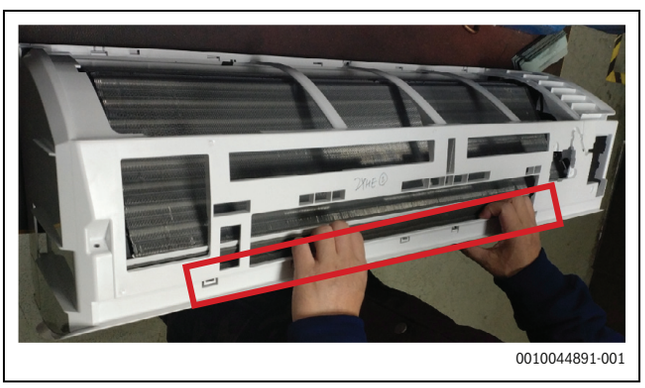


Fig. 70

▶ Press below position to unfasten the hooks in the side of the front panel.

▶ Take the front panel out.

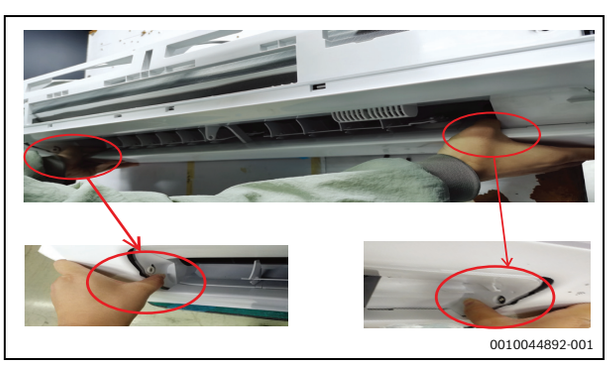


Fig. 71

▶ Cut the wire fixing band and remove the thermistor (CLC6001i-W 25 E, CLC6001i-W 35 E, CLC6101i-W 50 HE).

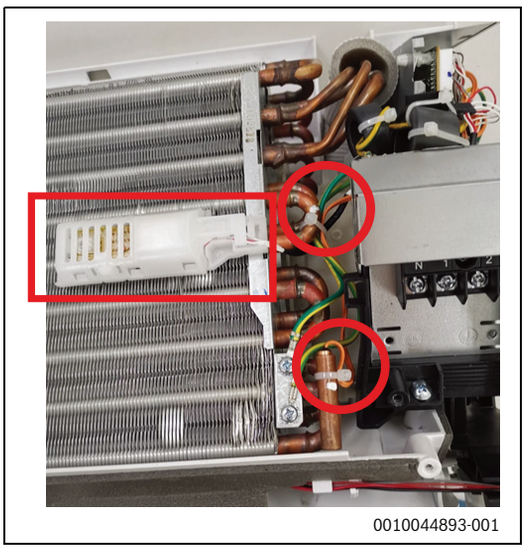


Fig. 72

(CLC8101i-W 65 HE (T/S/R), CLC8001i-W 25 E (T/S/R), CLC8001i-W 35 E (T/S/R))

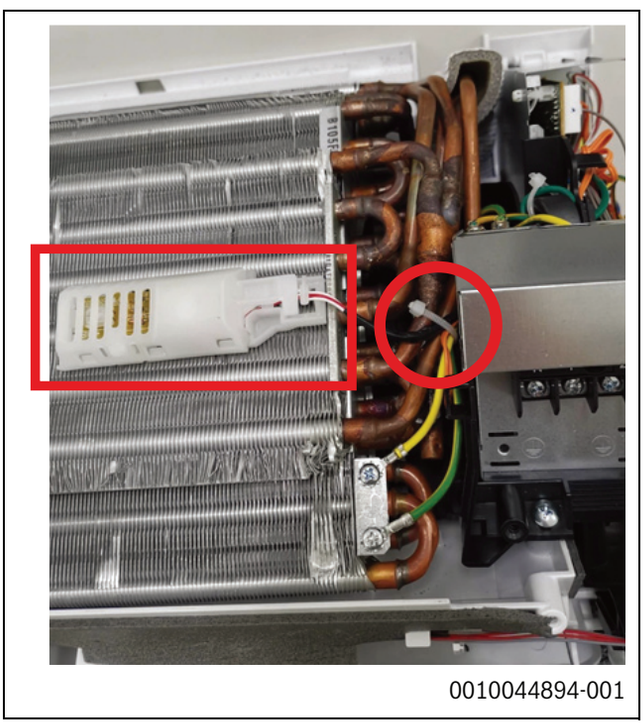
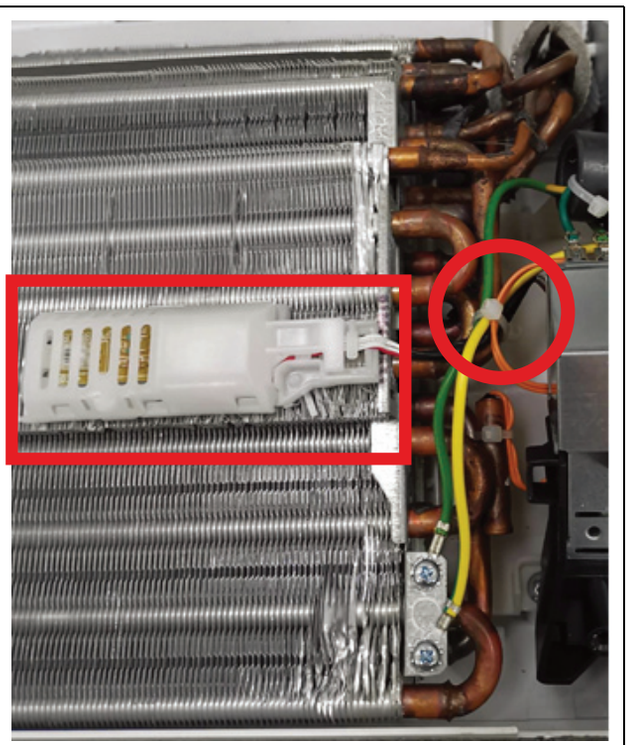


Fig. 73

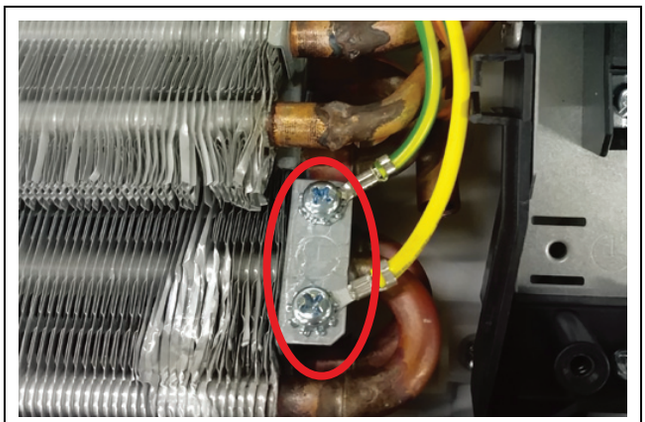
(CLC6101i-W 65 HE)



0010044895-001

Fig. 74

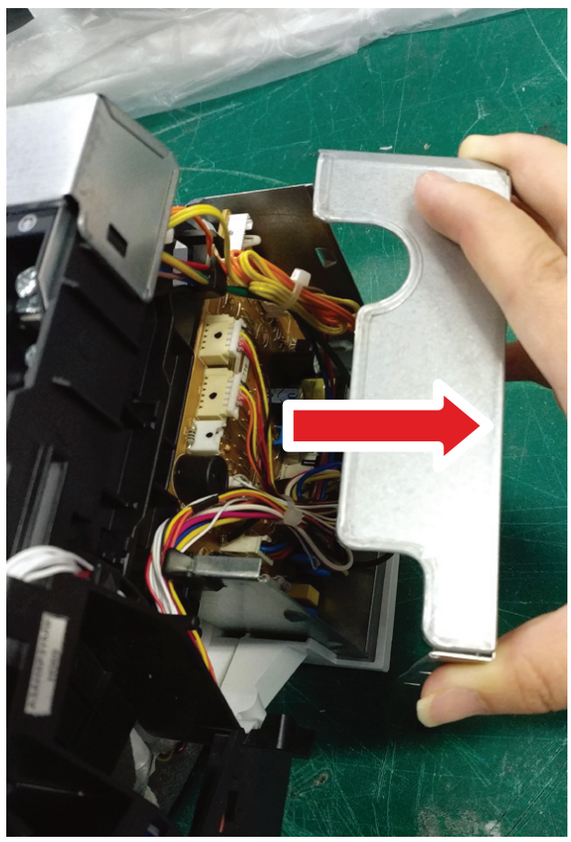
▶ Remove the two screws fixing the ground wire.



0010044896-001

Fig. 75

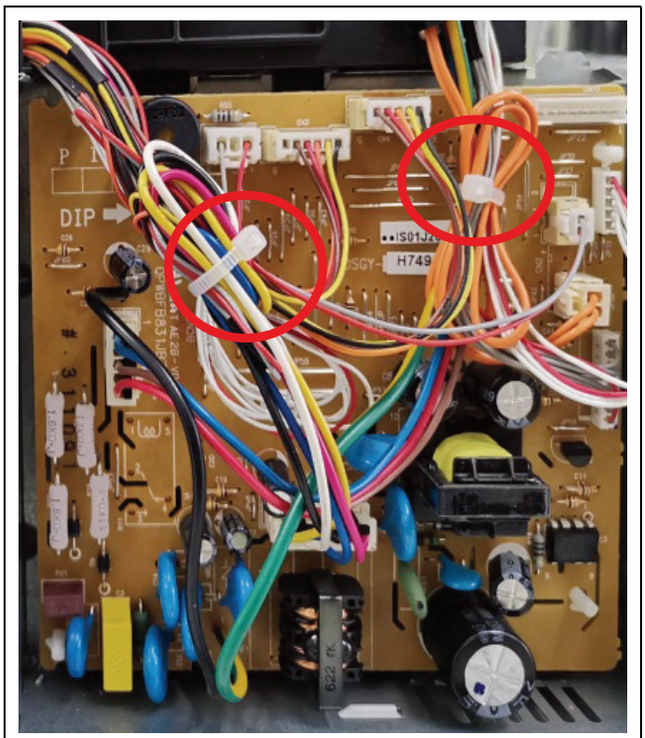
▶ Take off the control box cover.



0010044897-001

Fig. 76

▶ Cut the wire fixing band and remove all the connectors.



0010044898-001

Fig. 77

▶ Remove one screw, then rotate the control unit as below to take it out.

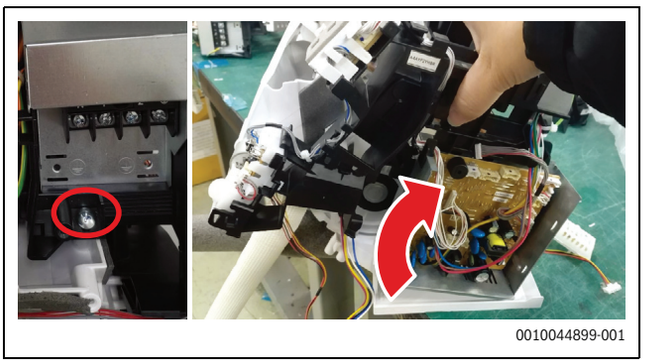


Fig. 78

▶ Cut the wire fixing band and remove the thermistor (CLC8101i-W 65 HE (T/S/R), CLC8001i-W 25 E (T/S/R), CLC8001i-W 35 E (T/S/R)).

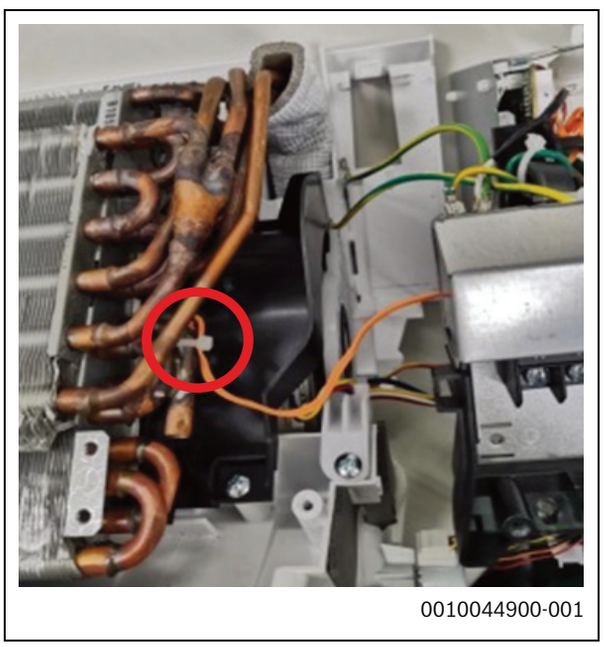


Fig. 79

(CLC6101i-W 65 HE)

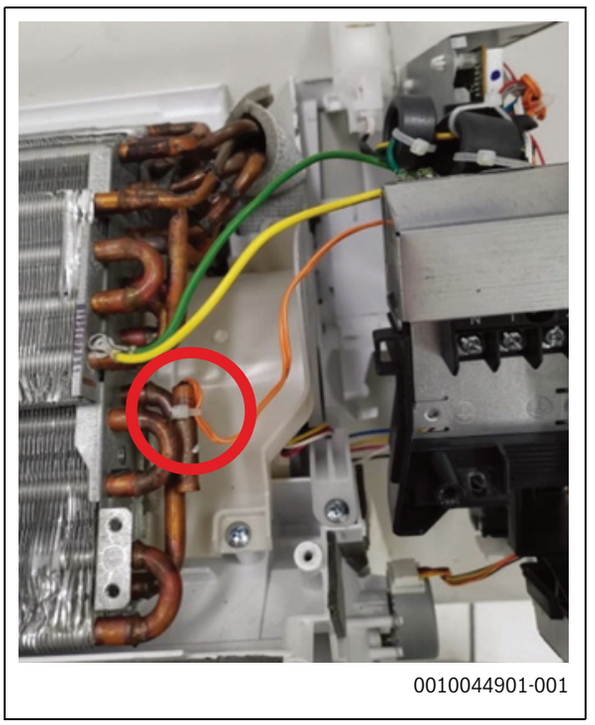


Fig. 80

▶ Use a pincer to press the four spacer into the control angle to remove the PCB.

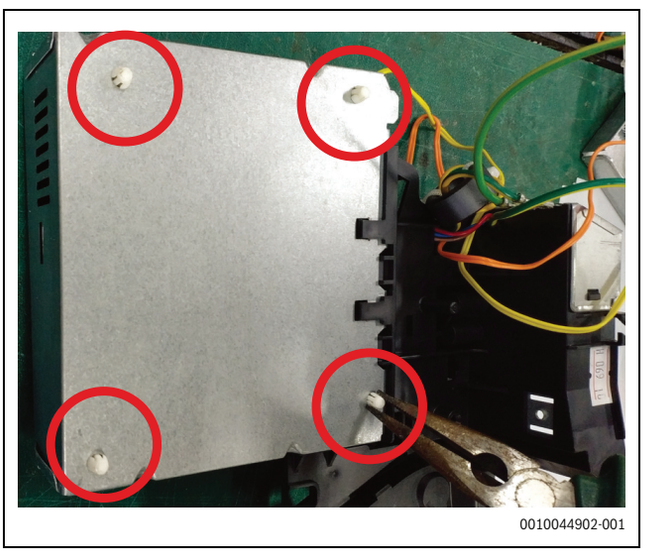


Fig. 81

▶ Remove the PCI unit (CLC8101i-W 65 HE (T/S/R), CLC8001i-W 25 E (T/S/R), CLC8001i-W 35 E (T/S/R)).

▶ Press the hook to rotate the PCI lock.

Fig. 82

▶ Slide the PCI cover to the right side.
▶ Lift the cover to take it out.

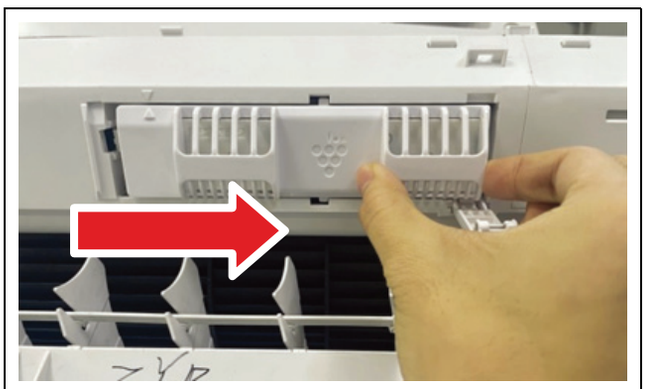


Fig. 83

▶ Release the hook of the right and left stabilizer assembly and rolate it out.

Fig. 84

▶ Loosen the screw of the PCI joint PCB unit B and take the PCB out.

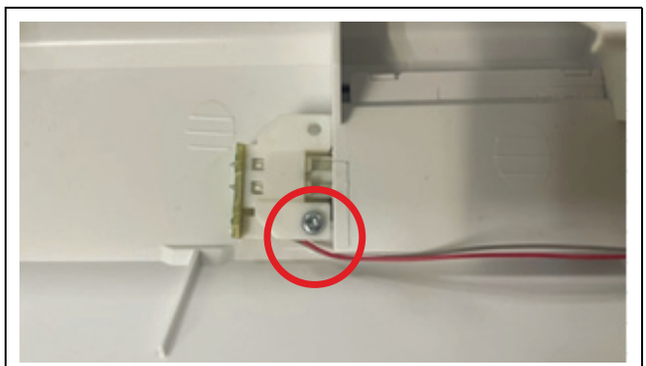


Fig. 85

(CLC6001i-W 25 E, CLC6001i-W 35 E, CLC6101i-W 50 HE, CLC6101i-W 65 HE)

▶ Release the hook of the PCI cover.

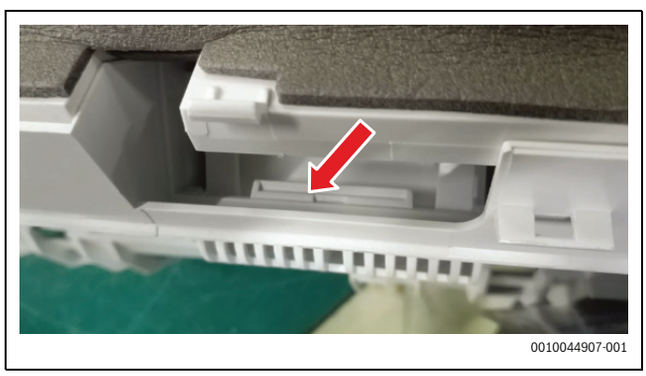


Fig. 86

▶ Take the plasmacluster unit out. Then, remove the connector.

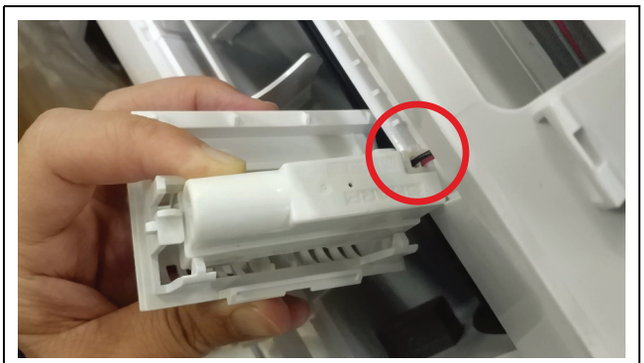


Fig. 87

▶ Remove the center LED unit, by releasing the hook of the right stabilizer assembly and rolating it out.

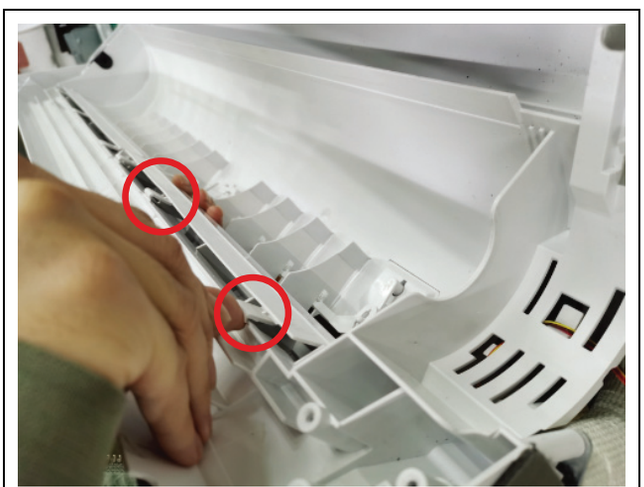


Fig. 88

▶ Release the hook, take out the LED case and then take the center LED case out.

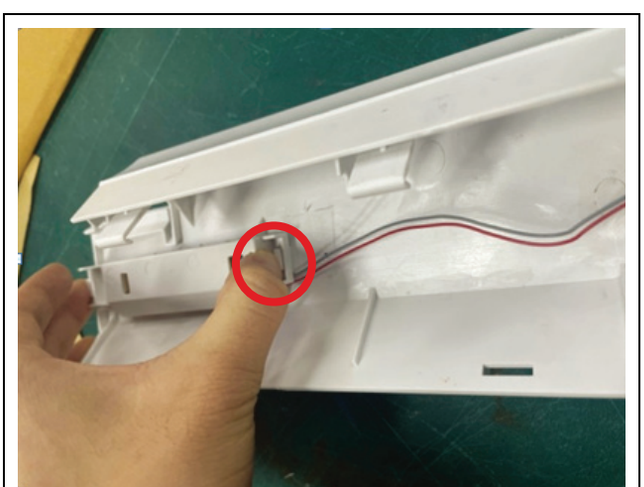


Fig. 89

▶ Press the hook and take out the PCI LED unit.

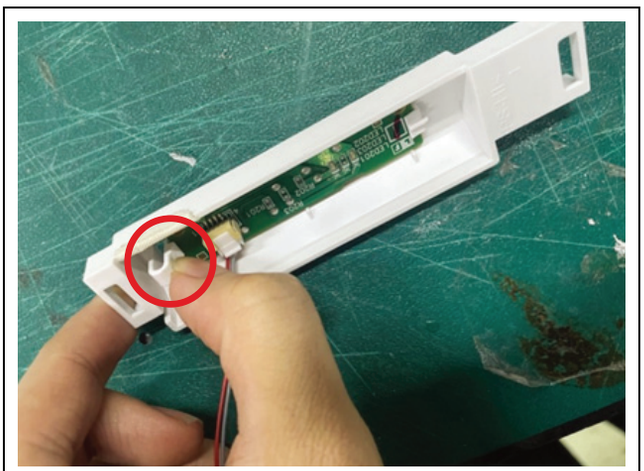


Fig. 90

▶ Unfold the light guide cover.

▶ Take out the light guide.

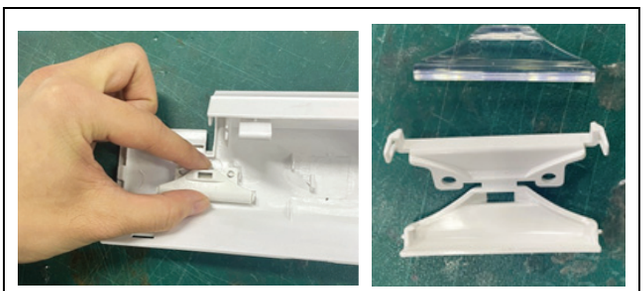


Fig. 91

▶ Remove the screw of the louver motor.

▶ Take the motor out.

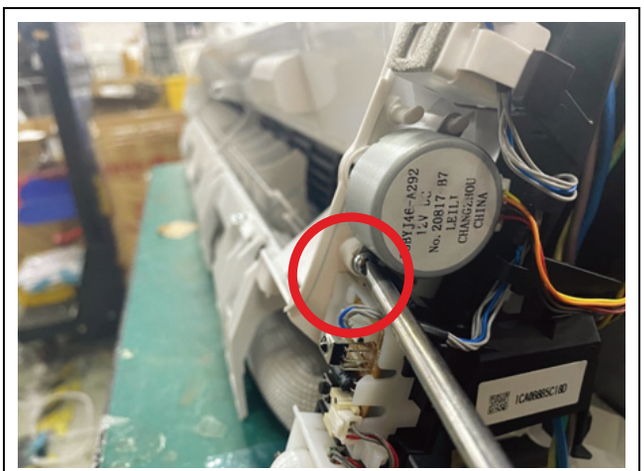


Fig. 92

▶ Release the arm Auto/Manual from the right louver link.

Fig. 93

▶ Remove the screw of the bracket and take it out.

Fig. 94

▶ Remove the two screws of the vertical louver motor to take the motor out.

Fig. 95

▶ Remove the two screws fixing the fan motor cover.
▶ Remove the fan motor cover.

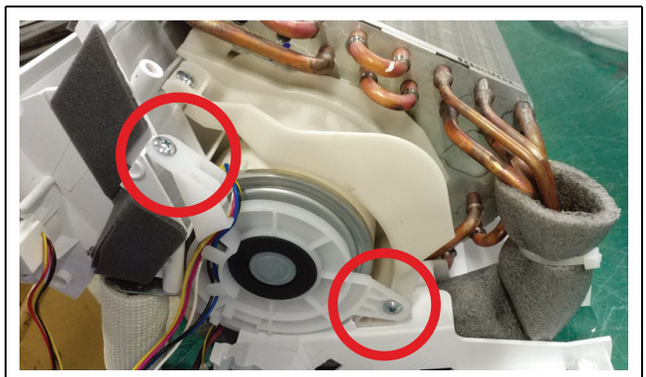


Fig. 96

▶ Remove one screw between the cross flow fan and fan motor.

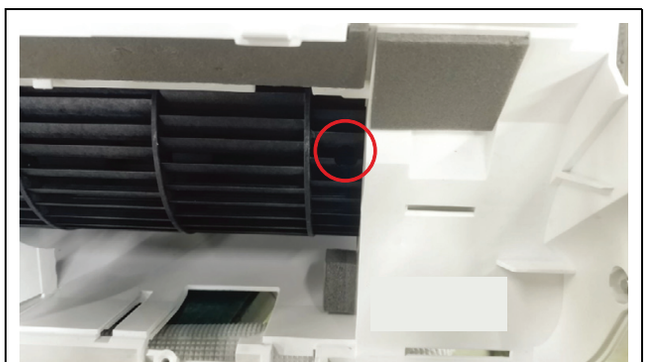


Fig. 97

▶ Hold and press the cross flow fan to the left side as much as possible. Meanwhile, take the fan motor out.

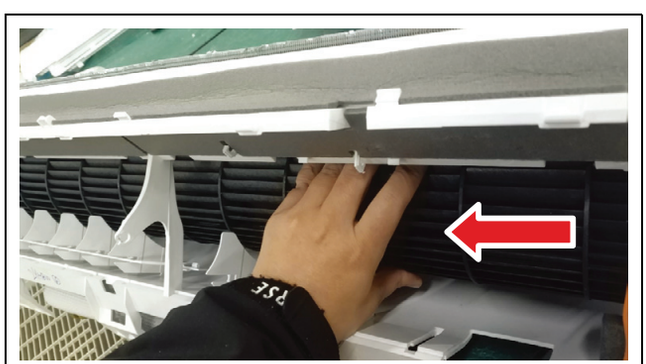
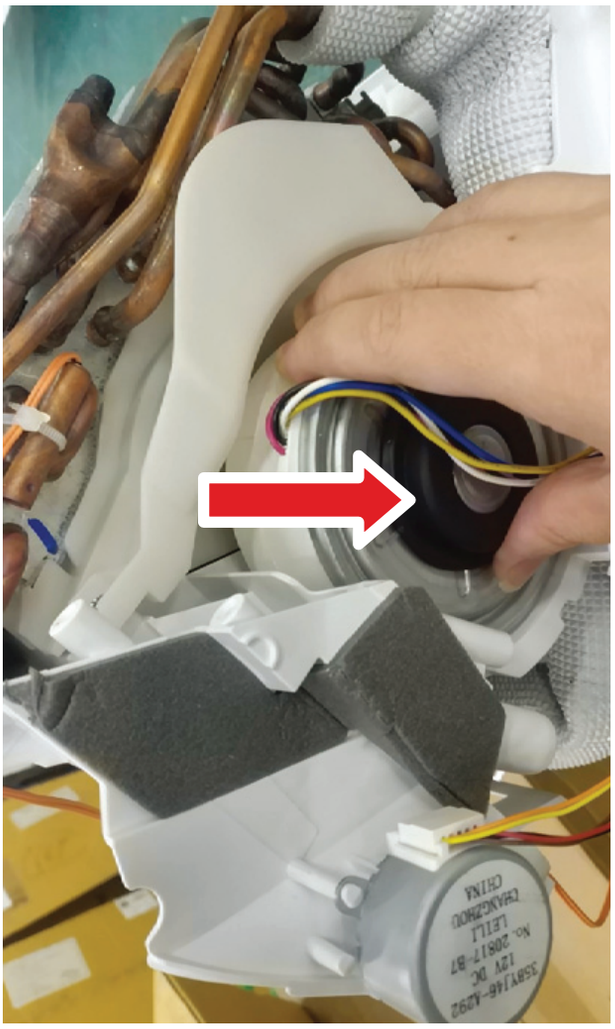


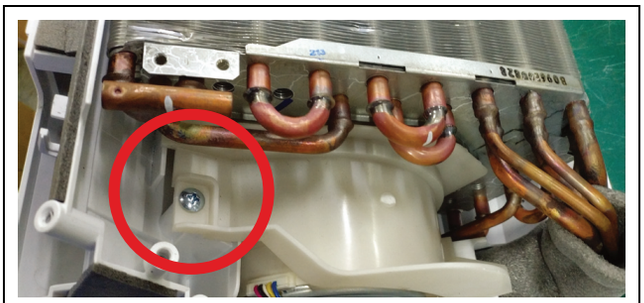
Fig. 98



0010044920-001

Fig. 99

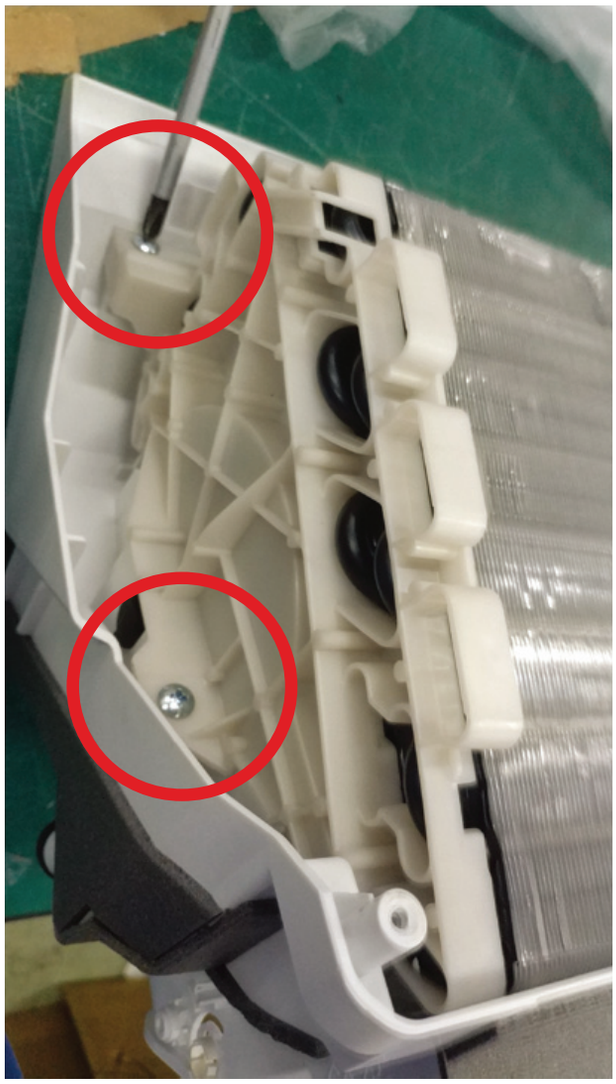
▶ Remove the screw of the right side cover.



0010044921-001

Fig. 100

▶ Remove two screws fixing the left side cover.



0010044922-001

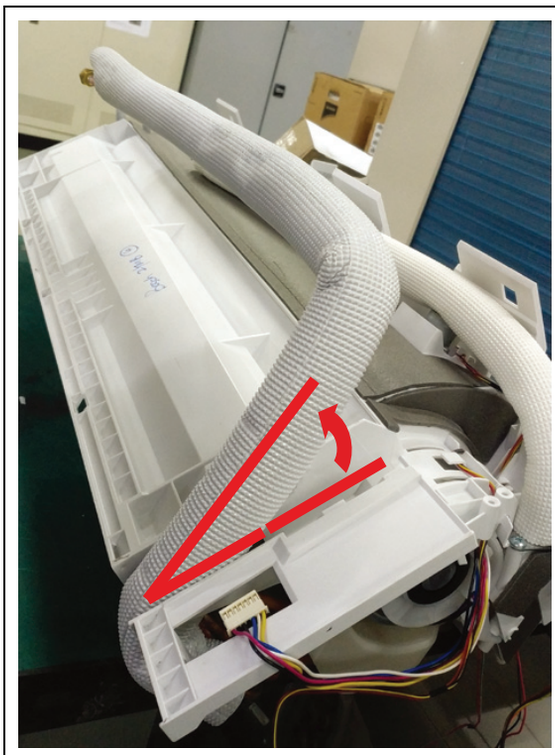
Fig. 101

▶ Push the pipe holder to remove it.

0010044923-001

Fig. 102

- ▶ Enlarge the angle between the tube assembly and the cabinet.
- ▶ Take out the evaporator.



0010044924-001

Fig. 103

- ▶ Take out the cross flow fan.

0010044925-001

Fig. 104

Replace the wireless adapter

Maintenance shall be performed by service personnel with full knowledge of the wireless LAN. Contact Bosch for any replacement.

- ▶ Remove the connector of the wireless adapter.
- ▶ Take the adapter out of the control unit.
- ▶ Replace the wireless adapter.

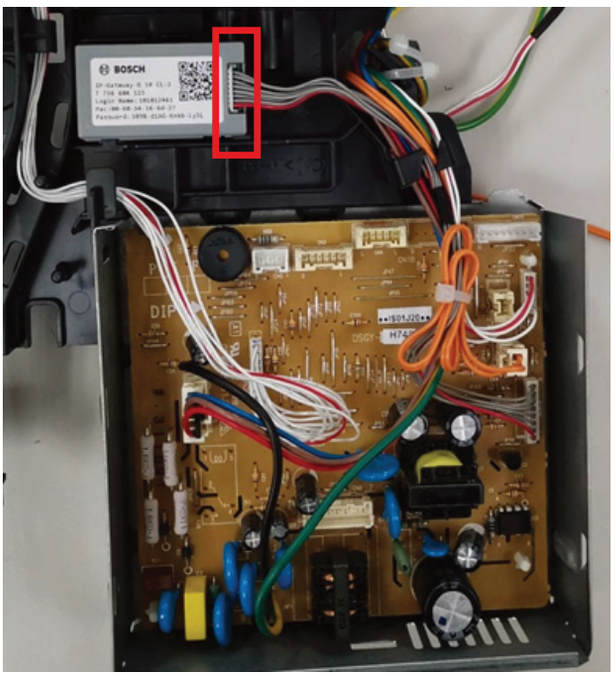


Fig. 105

It is necessary to re-stablish the connection setting of the wireless LAN. Finish the initial connection setting after replacing the wireless adapter. The procedure is similar to when purchasing the Air-conditioner.

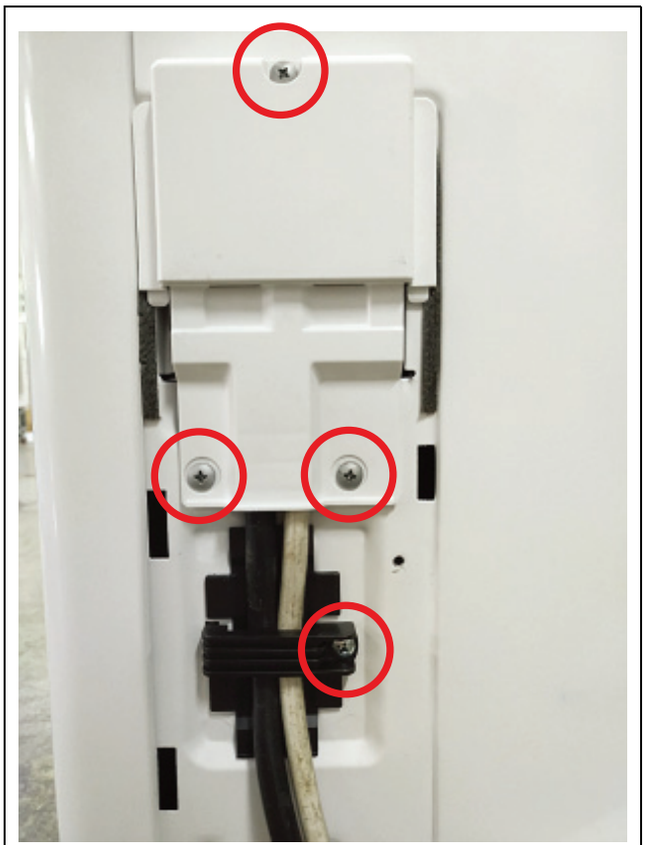
6.2 Outdoor Unit (CLC6101i 50 HE, CLC6100i 65 HE, CL6001i 25 E, CLC6001i 35 E)

- ▶ Remove the screw fixing the cover.
- ▶ Take the cover out.

0010044927-001

Fig. 106

- ▶ Remove the screw fixing the terminal cover and cord clamp.
- ▶ Take them out.



0010044928-001

Fig. 107

- ▶ Loosen the screws.
- ▶ Remove the connecting cable from the terminal board.

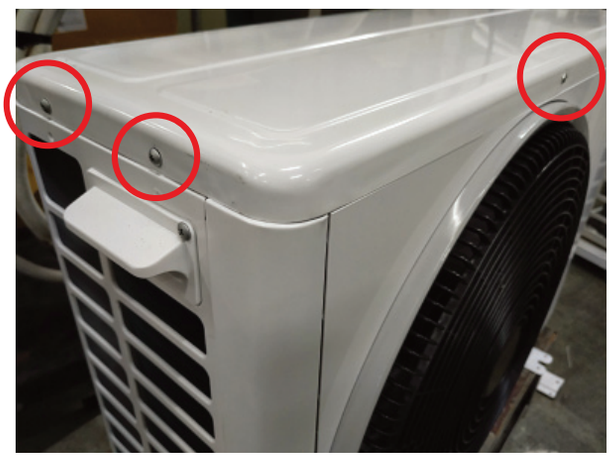
0010044929-001

Fig. 108

- ▶ Remove the five screws.
- ▶ Lift the top panel to take it out.

0010044930-001

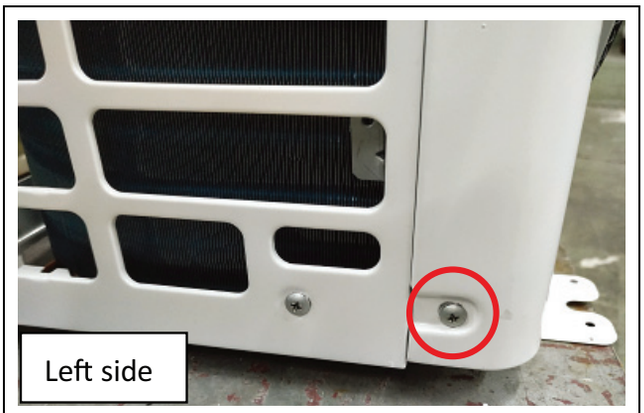
Fig. 109



0010044931-001

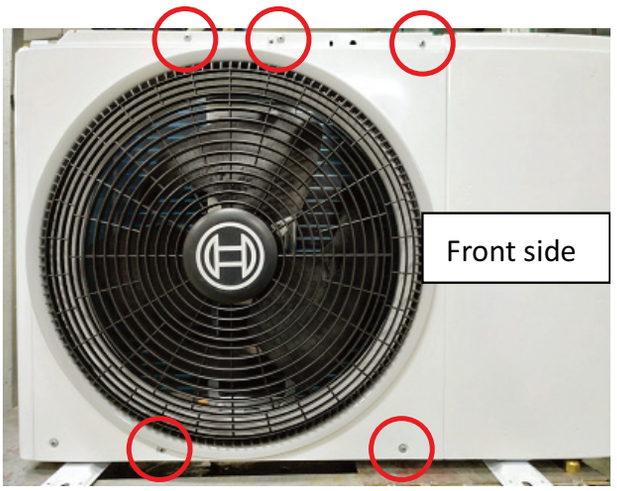
Fig. 110

- Remove the seven screws fixing the front panel.
- Move them out.



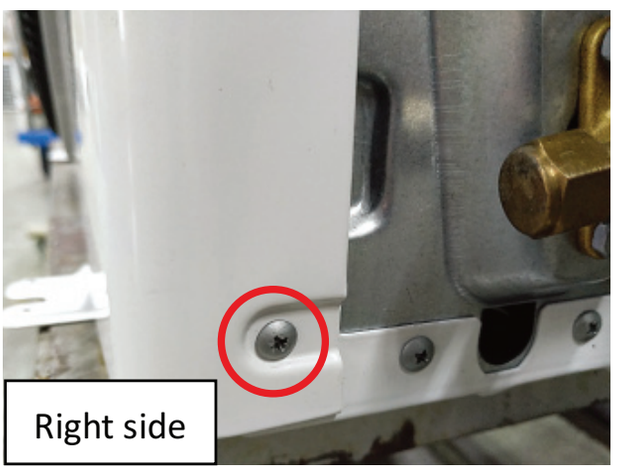
0010044932-001

Fig. 111



0010044933-001

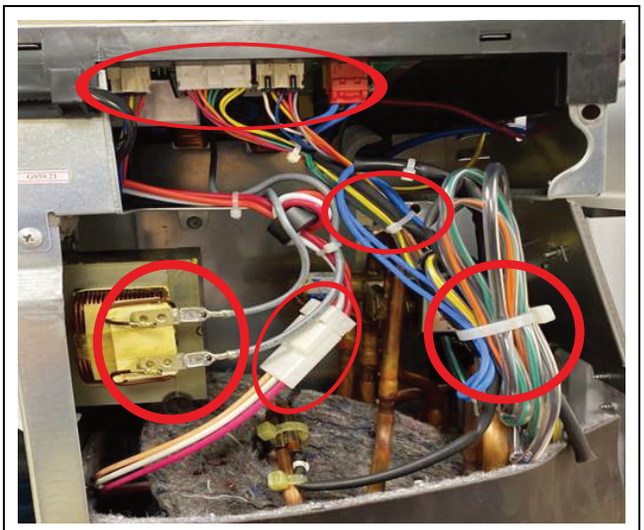
Fig. 112



0010044934-001

Fig. 113

- Cut the wire fixing band.
- Remove the two terminals from the reactor and all the connectors on the control board unit.
- Remove the compressor connector.

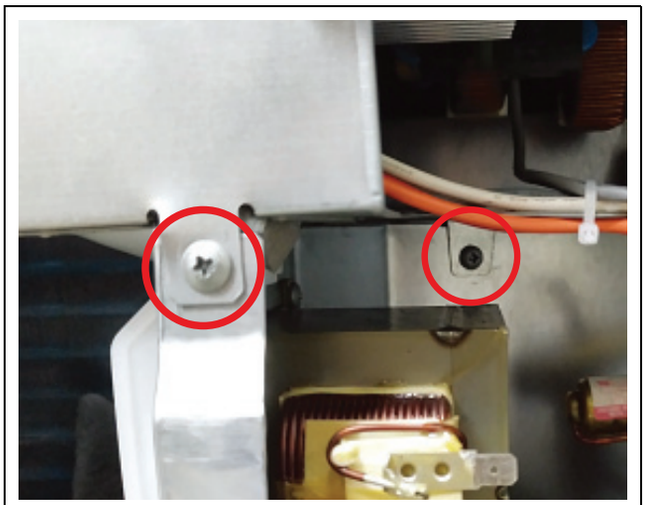


0010044935-001

Fig. 114

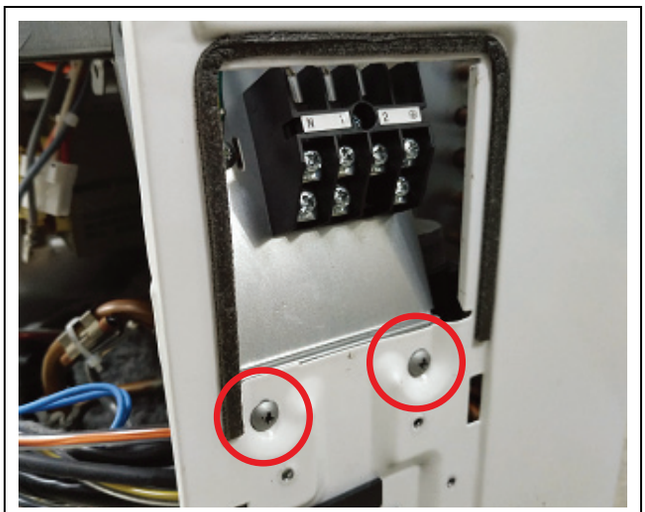
- Remove the four screws fixing the control box.

▶ Take it out.



0010044936-001

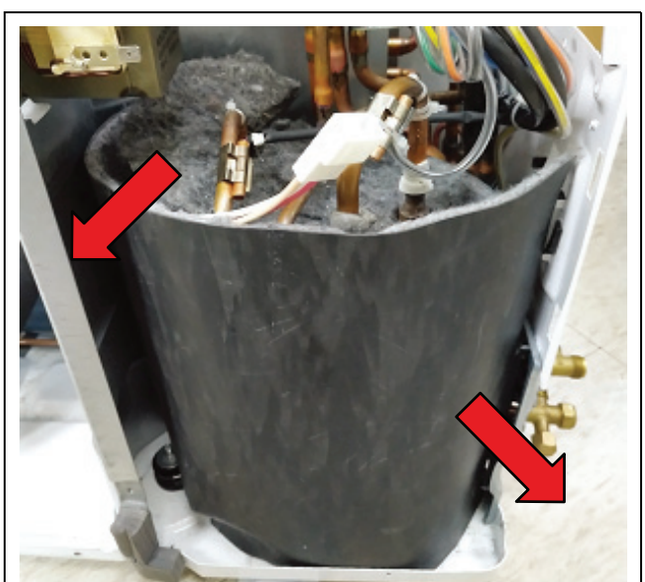
Fig. 115



0010044937-001

Fig. 116

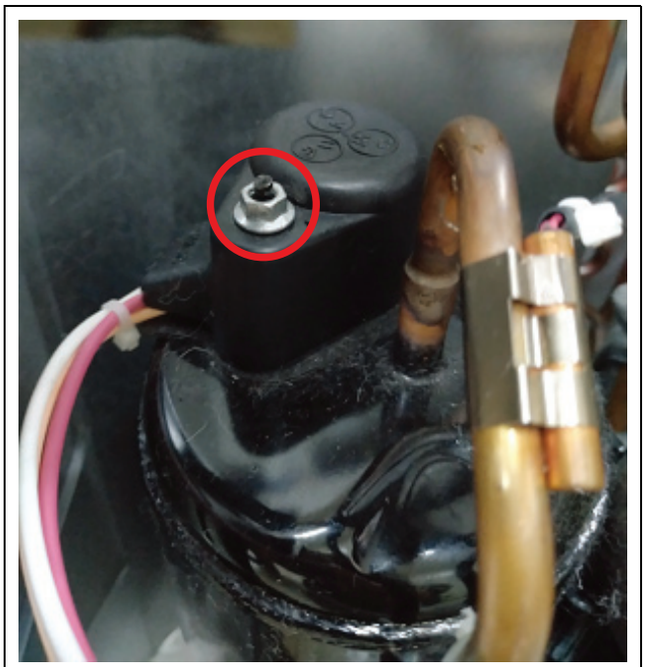
▶ Remove the compressor cover (two pcs).



0010044938-001

Fig. 117

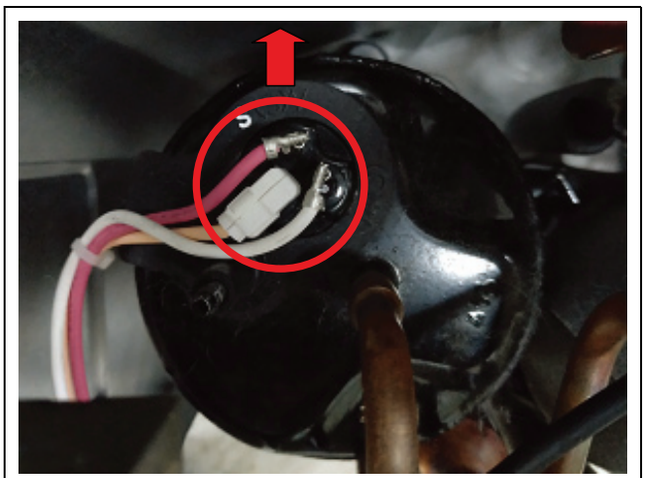
▶ Unscrew the nut.
▶ Move the terminal cover.



0010044939-001

Fig. 118

▶ Disconnect the three terminals on the compressor.



0010044940-001

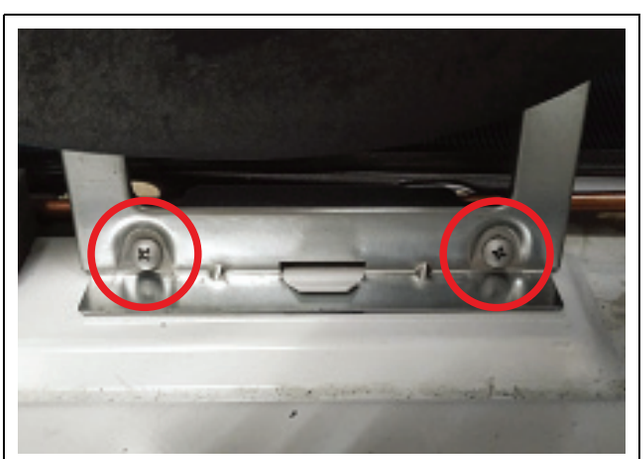
Fig. 119

▶ Remove the two screws fixing the bulkhead.
▶ Remove the bulkhead.

0010044941-001

Fig. 120

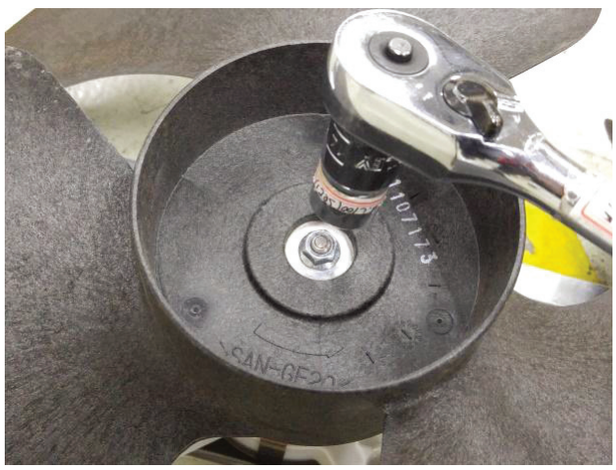
- ▶ Remove the screw fixing the motor angle.
- ▶ Take it out.



0010044942-001

Fig. 121

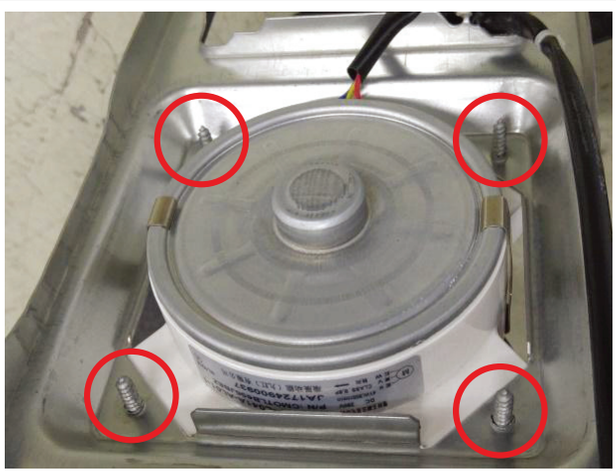
- ▶ Unscrew the nut.
- ▶ Take out the propeller fan carefully.



0010044943-001

Fig. 122

- ▶ Remove all screws.
- ▶ Take out the motor.



0010044944-001

Fig. 123

6.3 Control unit

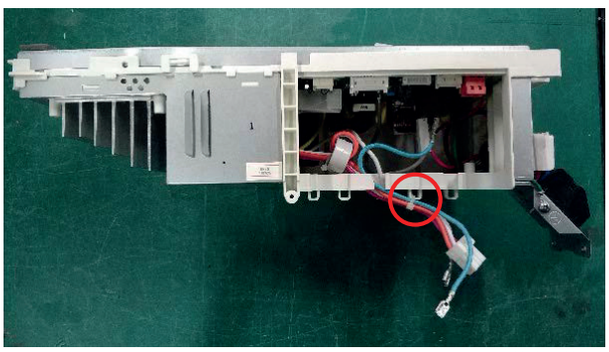
NOTICE

Risk of static discharge.

Static charges can destroy sensitive electronics parts.

- ▶ Wear antistatic gloves.

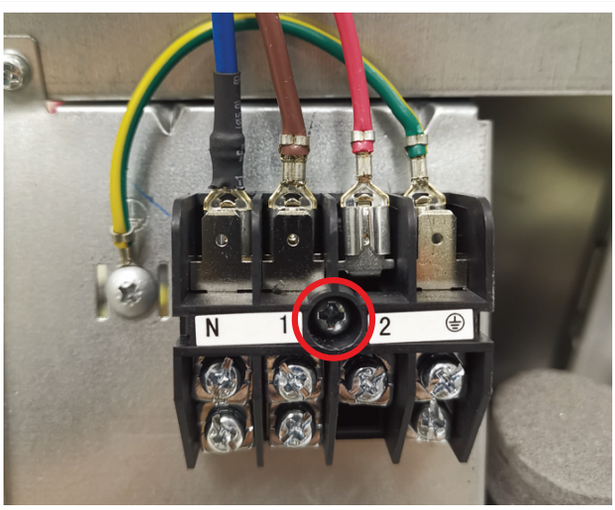
- ▶ Cut the fixing band.



0010034093-001

Fig. 124

- ▶ Remove the screw.
- ▶ Then, remove the terminal board.



0010044946-001

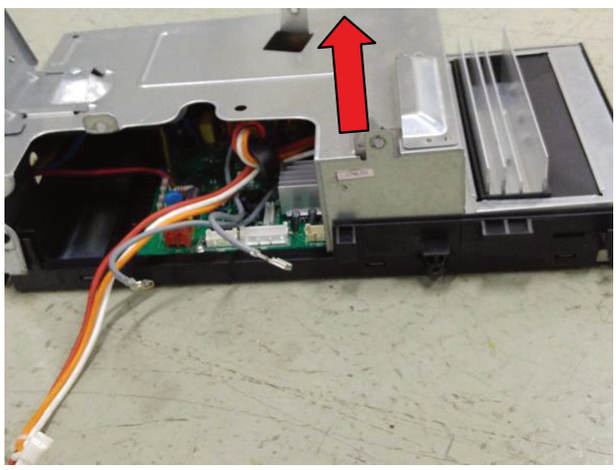
Fig. 125

- ▶ Disassemble terminal board, if terminal board is broken (1 screw)

0010034095-001

Fig. 126

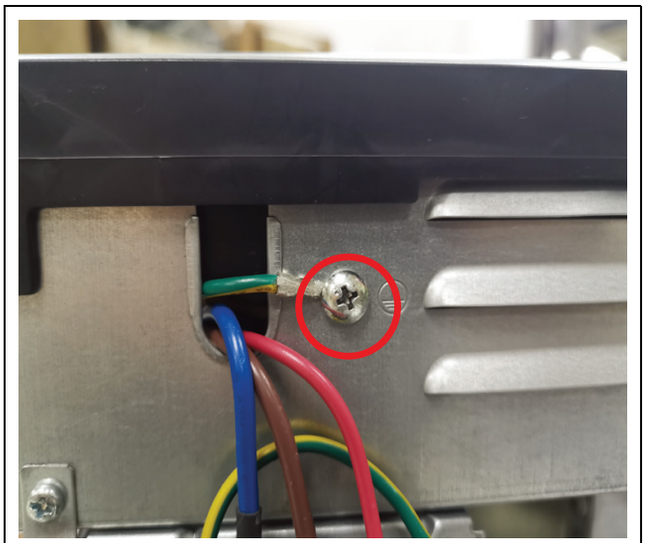
- ▶ Lift up to remove the metal cover.



0010044947-001

Fig. 127

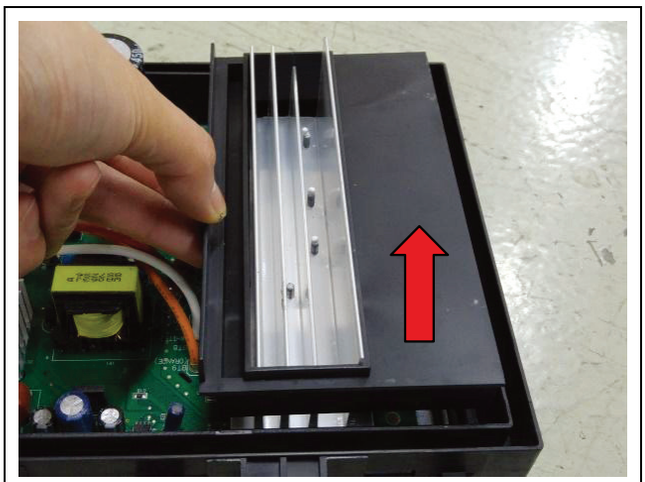
- ▶ Remove the screw fixing the earth wire.



0010044948-001

Fig. 128

- ▶ Move out the heat sink holder.

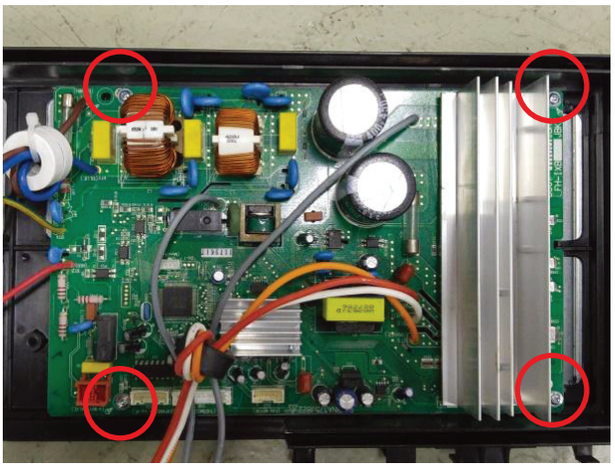


0010044949-001

Fig. 129

- ▶ Unscrew all four screws.

▶ Remove the control board unit.



0010044951-001

Fig. 130

6.4 Thermistor Assembly Installation Drawing

For CLC6101i 50 HE, CLC6100i 65 HE models

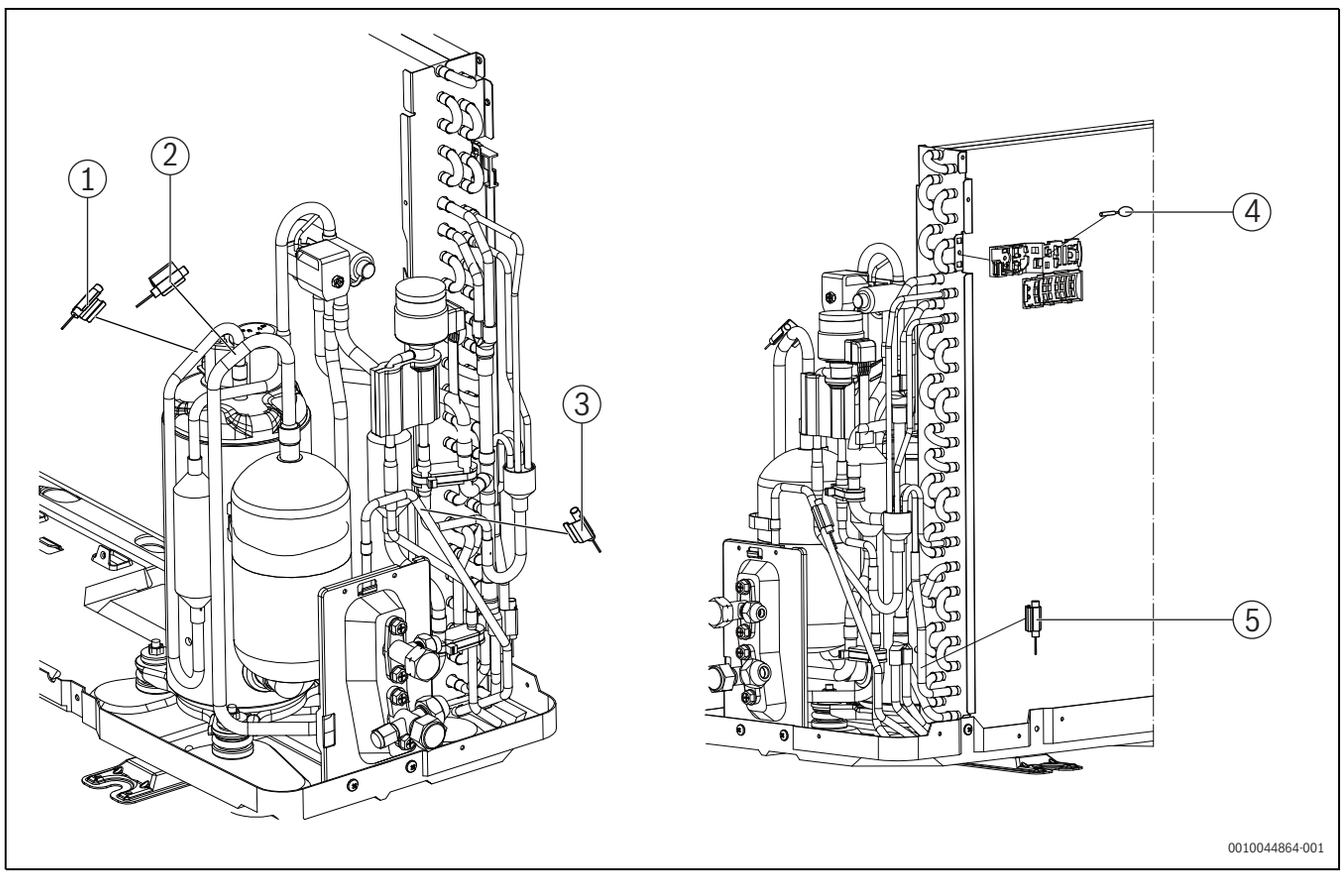


Fig. 131

[1] Suction thermistor TH4 (Black)
[2] Compressor thermistor TH1 (Red)
[3] 2 way valve thermistor TH5 (Yellow)
[4] Outdoor temperature thermistor TH3 (Green)
[5] Heat exchange thermistor TH2 (Orange)

For CL6001i 25 E, CLC6001i 35 E models

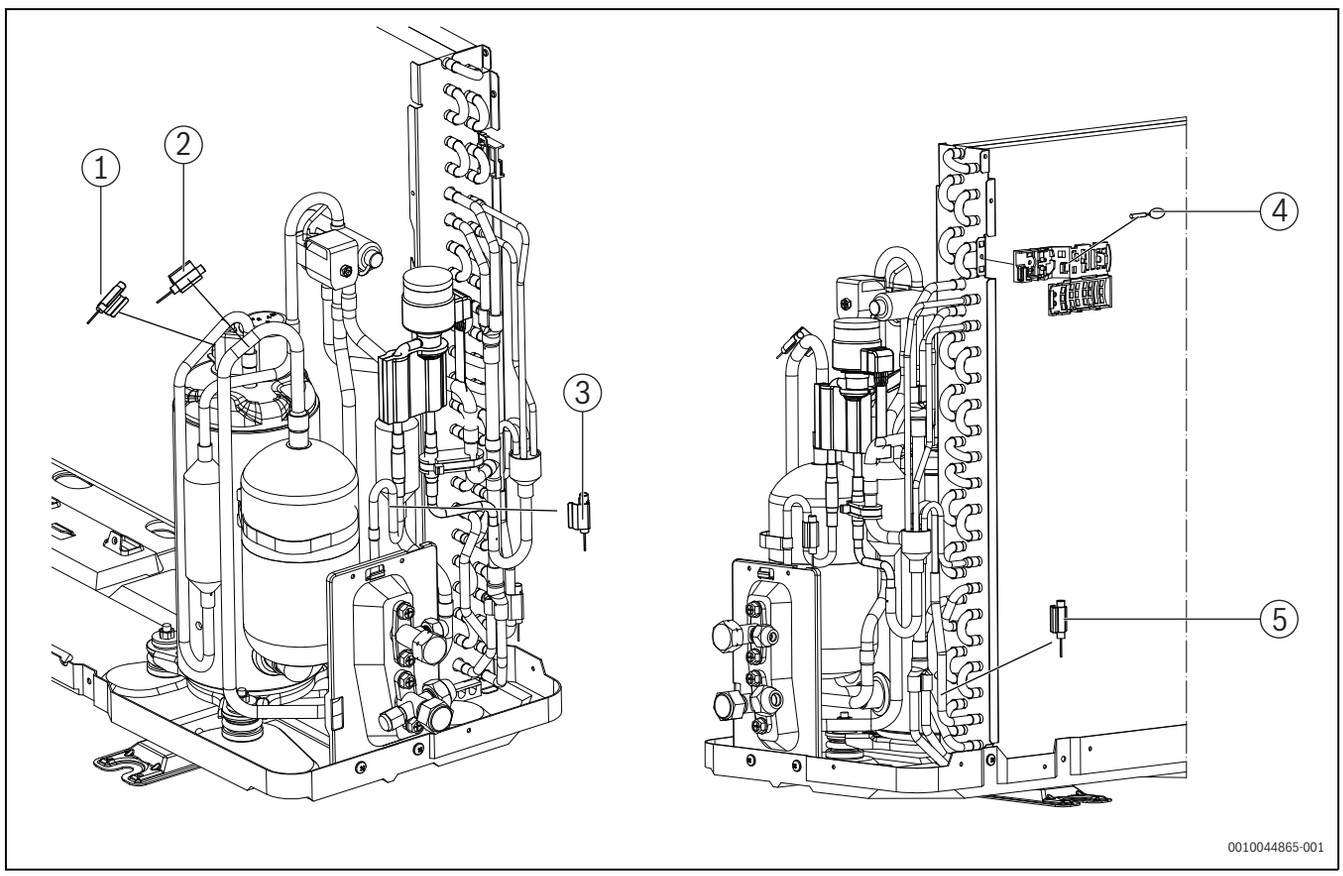


Fig. 132

[1] Suction thermistor TH4 (Black)
[2] Compressor thermistor TH1 (Red)
[3] 2 way valve thermistor TH5 (Yellow)
[4] Outdoor temperature thermistor TH3 (Green)
[5] Heat exchange thermistor TH2 (Orange)

6.5 Outdoor Unit (CL8101i 65 HE, CLC8001i 25 E, CL8001i 35 E)

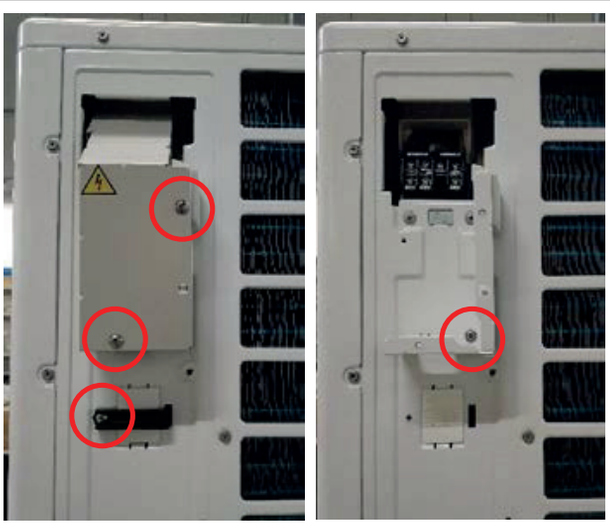
Body's decomposition steps

- ▶ Disassemble the screw fixing the side cover.
- ▶ Then, disassemble the side cover.

0010034065-001

Fig. 133

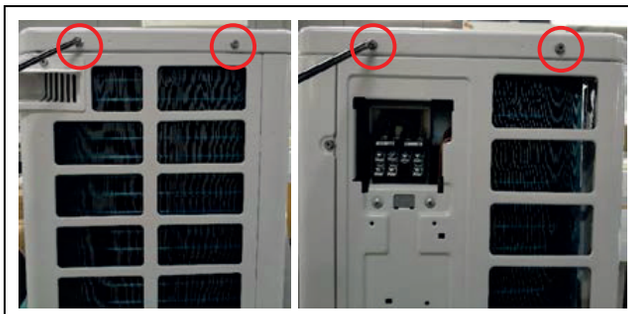
- ▶ Disassemble the fixing terminal cover and the screw of the cord clamp.
- ▶ Remove them.
- ▶ Remove the cable holder (4 screws).



0010034068-001

Fig. 134

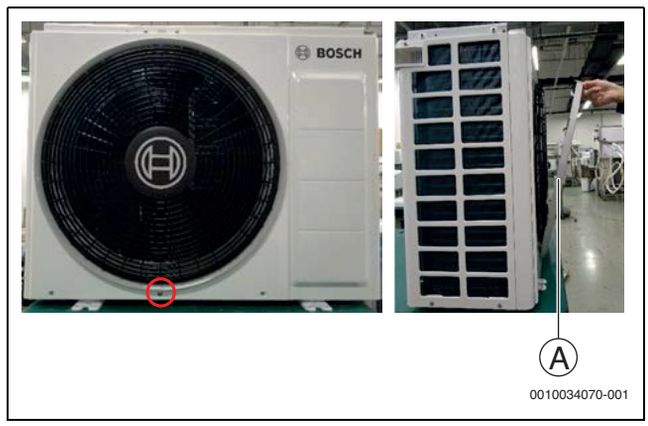
- ▶ Disassemble the top cover after removing the four screws.
- ▶ Remove the connecting cable from the terminal board.



0010034069-001

Fig. 135

- ▶ Disassemble the screw fixing ring, then take the ring out.

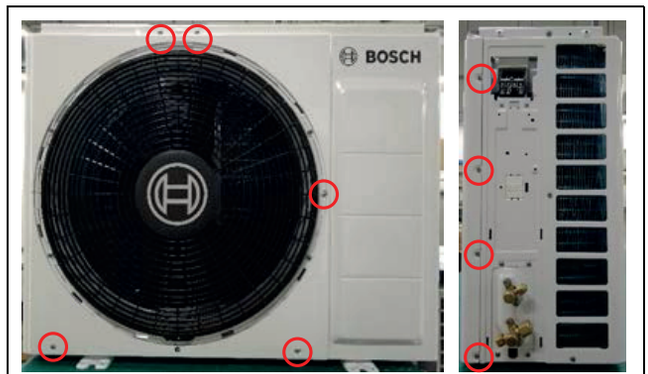


0010034070-001

Fig. 136

[A] Screw fixing ring

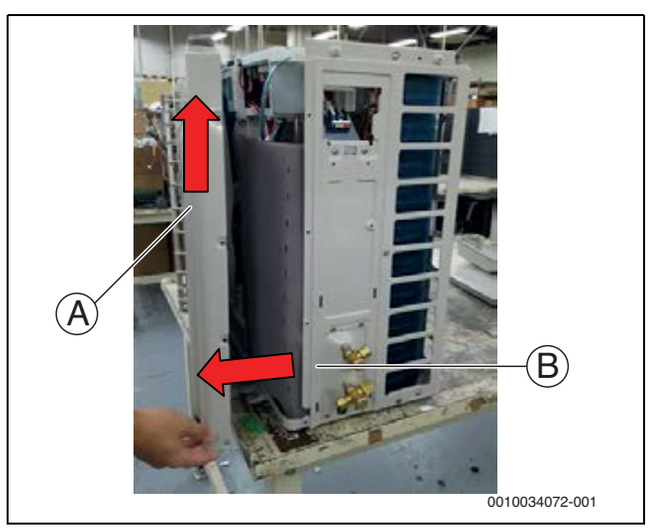
- ▶ Disassemble the front cabinet assembly (5 screws on front side, 4 screws on right side).



0010034071-001

Fig. 137

- ▶ Open the front cabinet axis on the left.



0010034072-001

Fig. 138

[A] Lift it up a little on the right[B] Open it outward and lift up a little on the left, then open.

- ▶ Disassemble side cover (right side) (8 screws).

Fig. 139

▶ Disassemble side cover (left side) (6 screws).

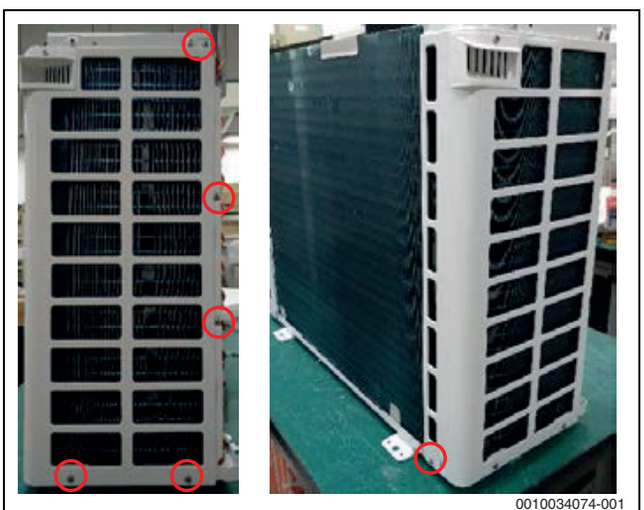


Fig. 140

▶ Disassemble the screw fixing control box assembly (1 screw).

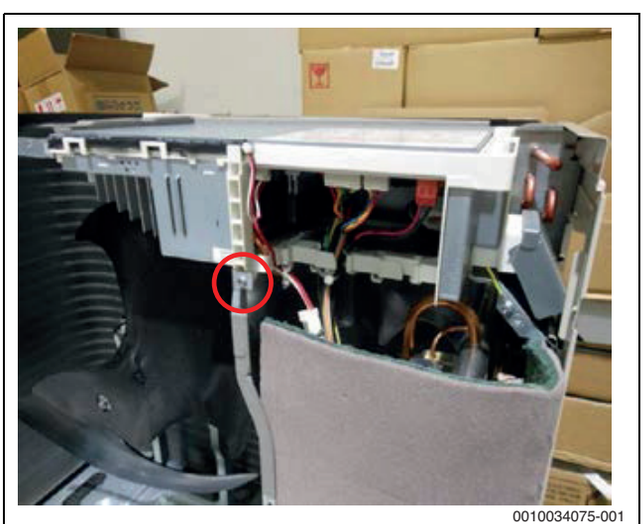


Fig. 141

▶ Pull down the terminals connecting the electric box substrate.

▶ Take out the thermistor lead wire from guide groove.

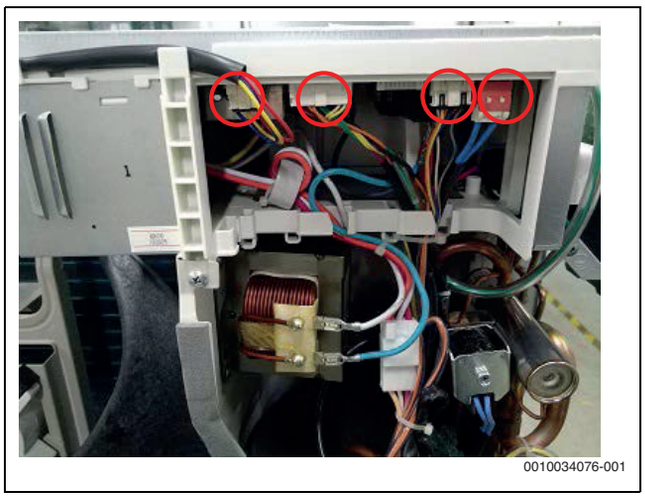


Fig. 142

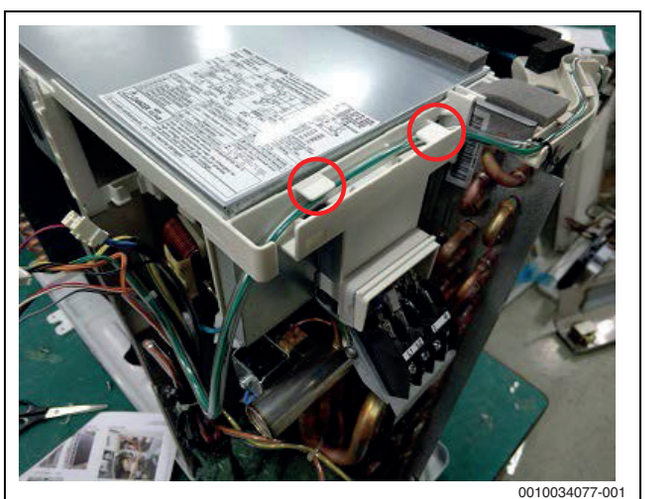


Fig. 143

▶ Cut the wire fixing band fixing the transfer connector of the compressor and control box assembly.

▶ Disassemble the terminal of reactor and compressor.

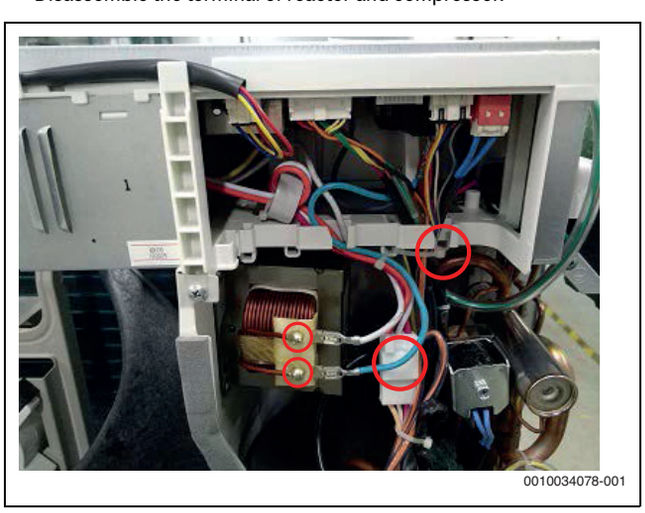


Fig. 144

▶ Disassemble the control box assembly.

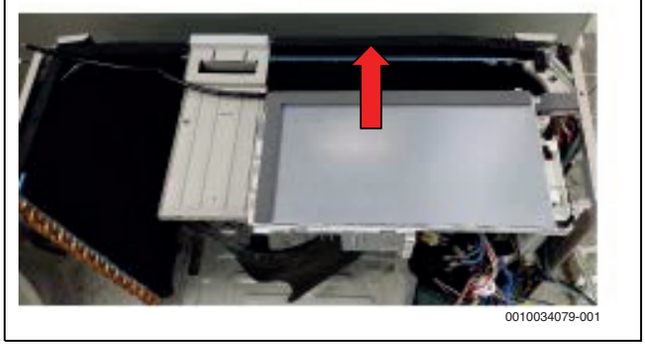


Fig. 145

▶ Remove compressor cover (1 pcs).

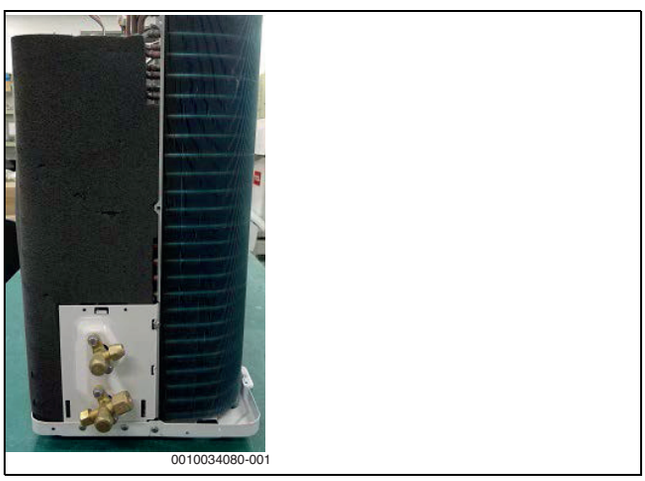


Fig. 146

▶ Disassemble bulkhead assembly (2 screws).

Fig. 147

▶ Unscrew the nut.

▶ Remove remain cover and compressor cover (4 pcs).

Fig. 148 Removing compressor cover 1

[1] Compressor cover

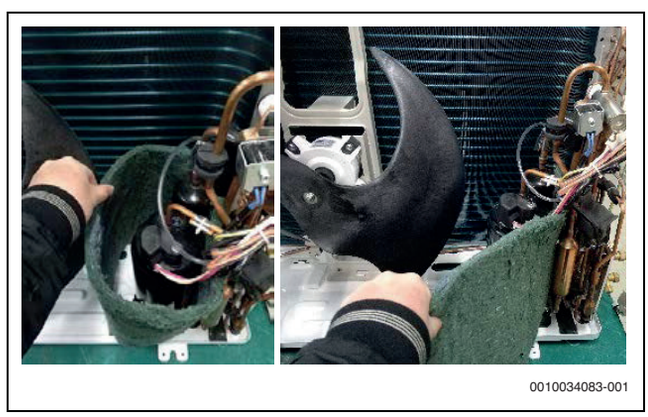


Fig. 149 Removing compressor cover 2

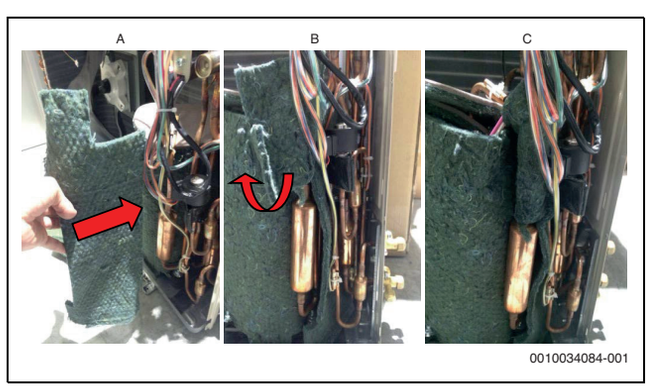


Fig. 150 Removing assemble cover

- ▶ Disassemble compressor terminal cover (1 nut).
- ▶ Then disassemble the compressor connecting terminal.

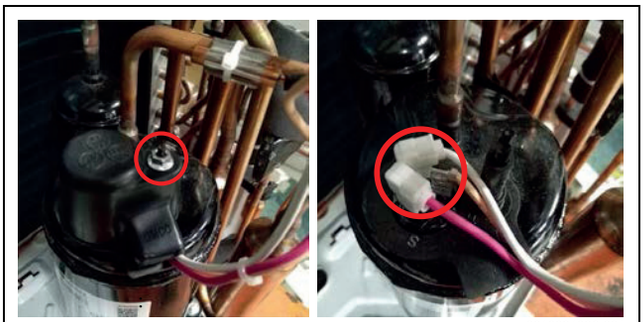


Fig. 151 Compressor: GMCC

- ▶ Disassemble thermistors (4 pcs) and thermistor clamps (1 pc).

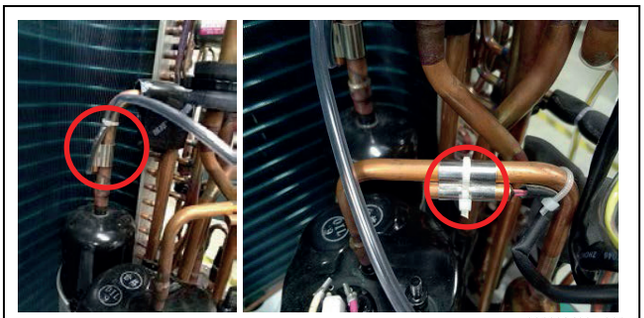


Fig. 152

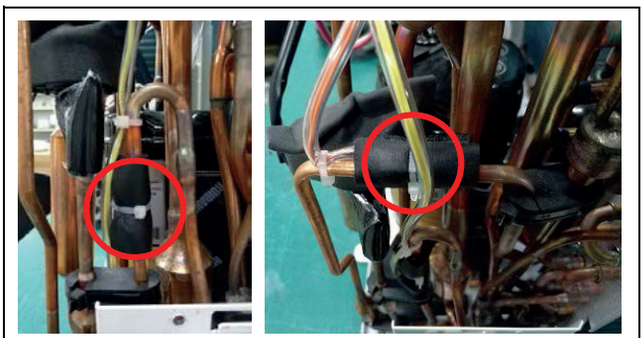


Fig. 153

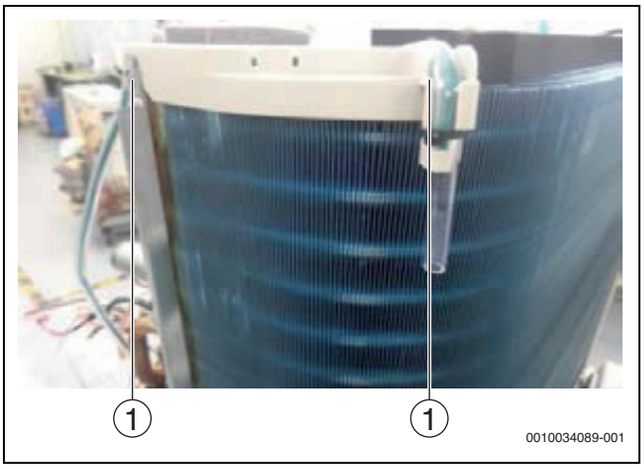


Fig. 154

[1] Thermistor clamps

- ▶ Disassemble propeller fan and fan motor (1 nut, 4 screws).

Fig. 155

- ▶ Disassemble fan motor angle assembly (2 screws).

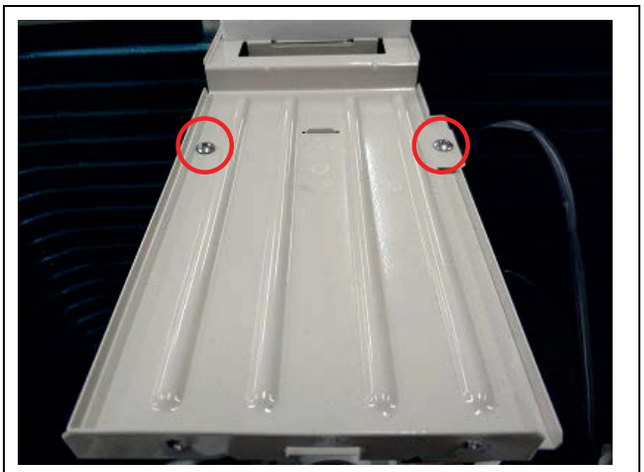


Fig. 156

- ▶ Disassemble fan motor angle (2 screws).

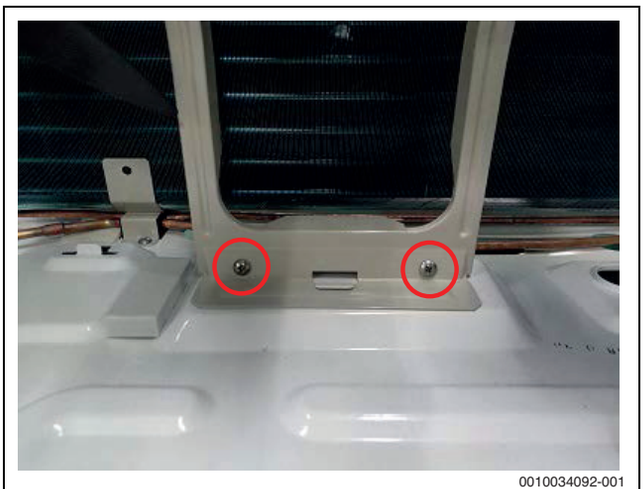


Fig. 157

6.6 Exchanging electrical parts of the outdoor control box unit

NOTICE

Risk of static discharge.

Static charges can destroy sensitive electronics parts.

▶ Wear antistatic gloves.

▶ Cut the fixing band (1 pc).

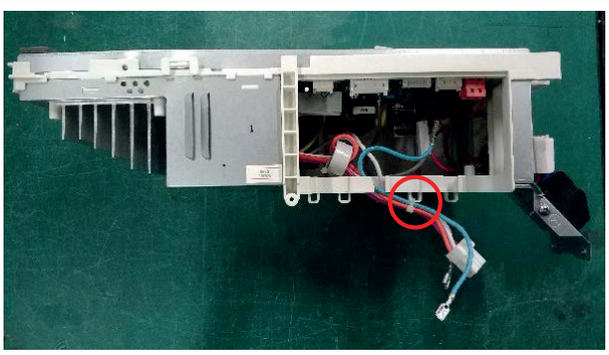


Fig. 158

▶ Disassemble lead wire connected with terminal board (5 pcs).

Fig. 159

▶ Disassemble terminal board, if terminal board is broken (1 screw)

Fig. 160

▶ Disassemble terminal holder, if terminal holder is broken (1 screw).

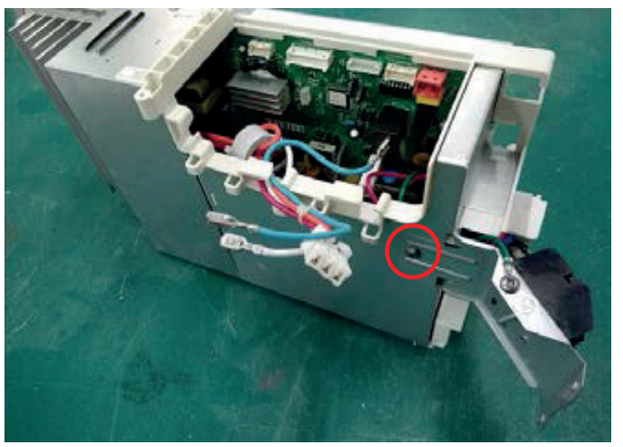


Fig. 161

▶ Disassemble cover.

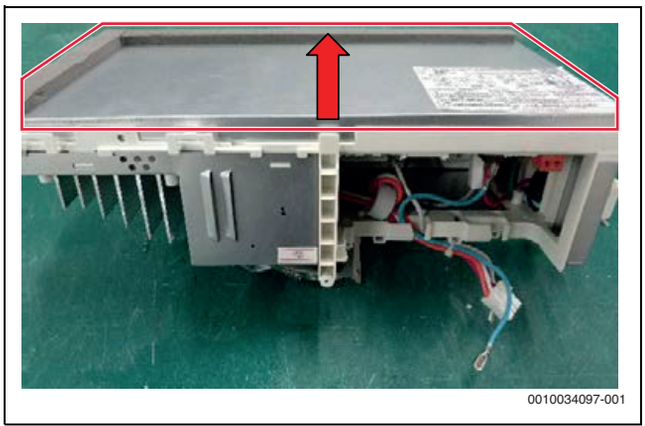


Fig. 162

▶ Unscrew 4 screws, then disassemble control board unit.

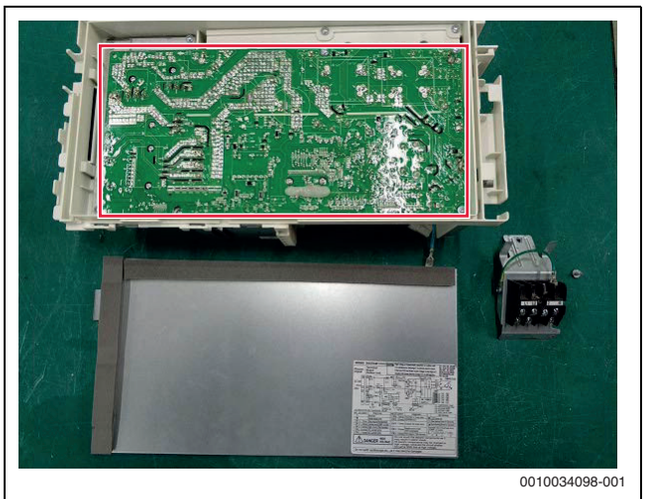


Fig. 163

▶ Disassemble 4 screws on control board unit.

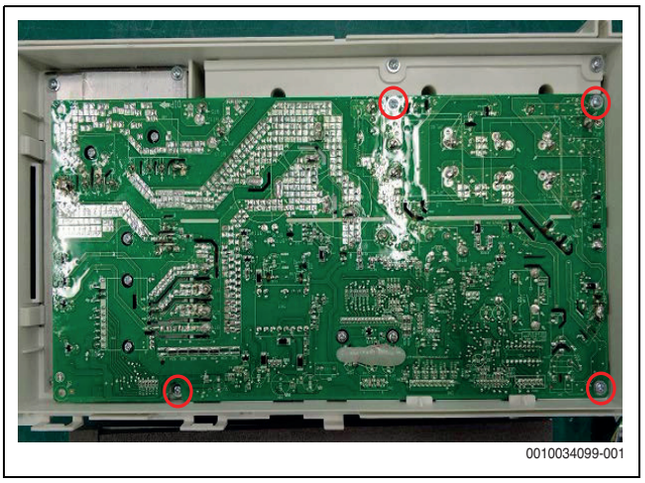


Fig. 164

▶ Disassemble control board unit.

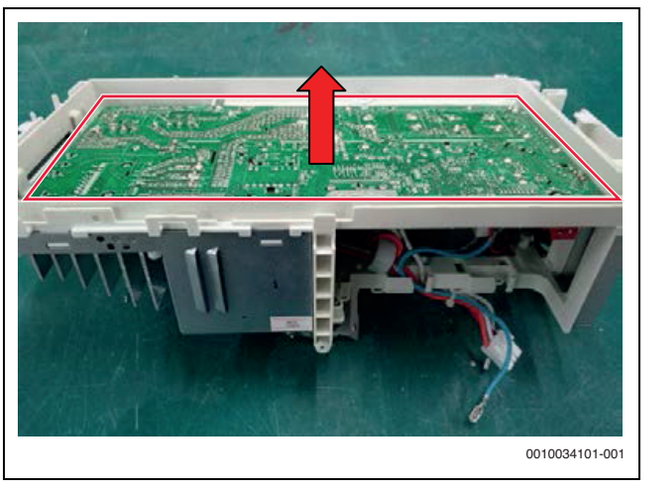


Fig. 165

Exchanging the outdoor circuit board

▶ Remove the fixing terminals T5 and T7 - 9 (pull out after pressing the locking tab).

▶ Reconnect terminals in order after exchanging the control basal lamina.

Note the following:

▶ Pull out the terminal straight along the blade connector.

▶ Do not pull on the wire to remove the terminal.

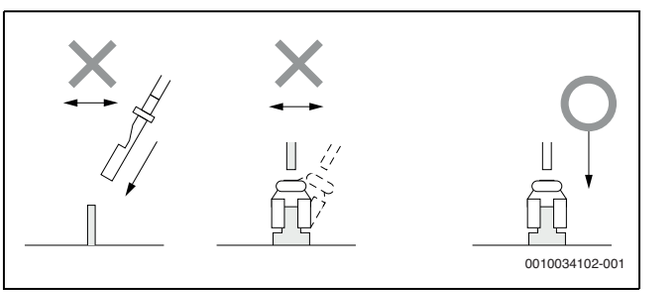


Fig. 166

▶ Do not grip the sleeve above the terminal or the not buckled side.

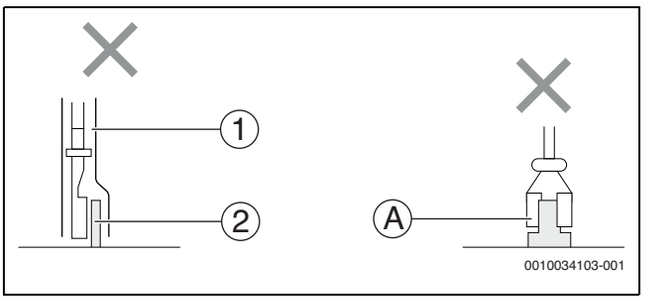


Fig. 167

[1] Sleeve
[2] Blade connector
[A] One side of the fixing terminal is not buckled

▶ Pay attention to the locking tab when present on the terminal. Do not plug the terminal by hand and do not clip the locking tab with a radio pench.

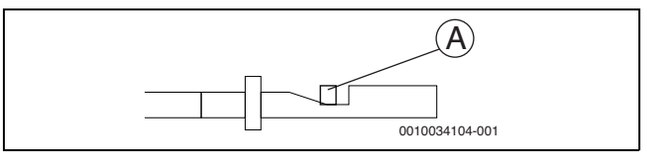


Fig. 168

[A] Locking tab

▶ Avoid too much tension in the terminal when wiring.

▶ The interlocking of the terminal decreases once removed. It is necessary to compress the clamp a little, before reuse.

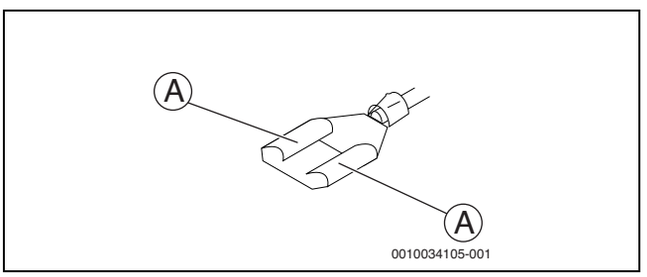


Fig. 169

[A] Compress the clamp a little

6.7 Thermistor Assembly Installation Drawing

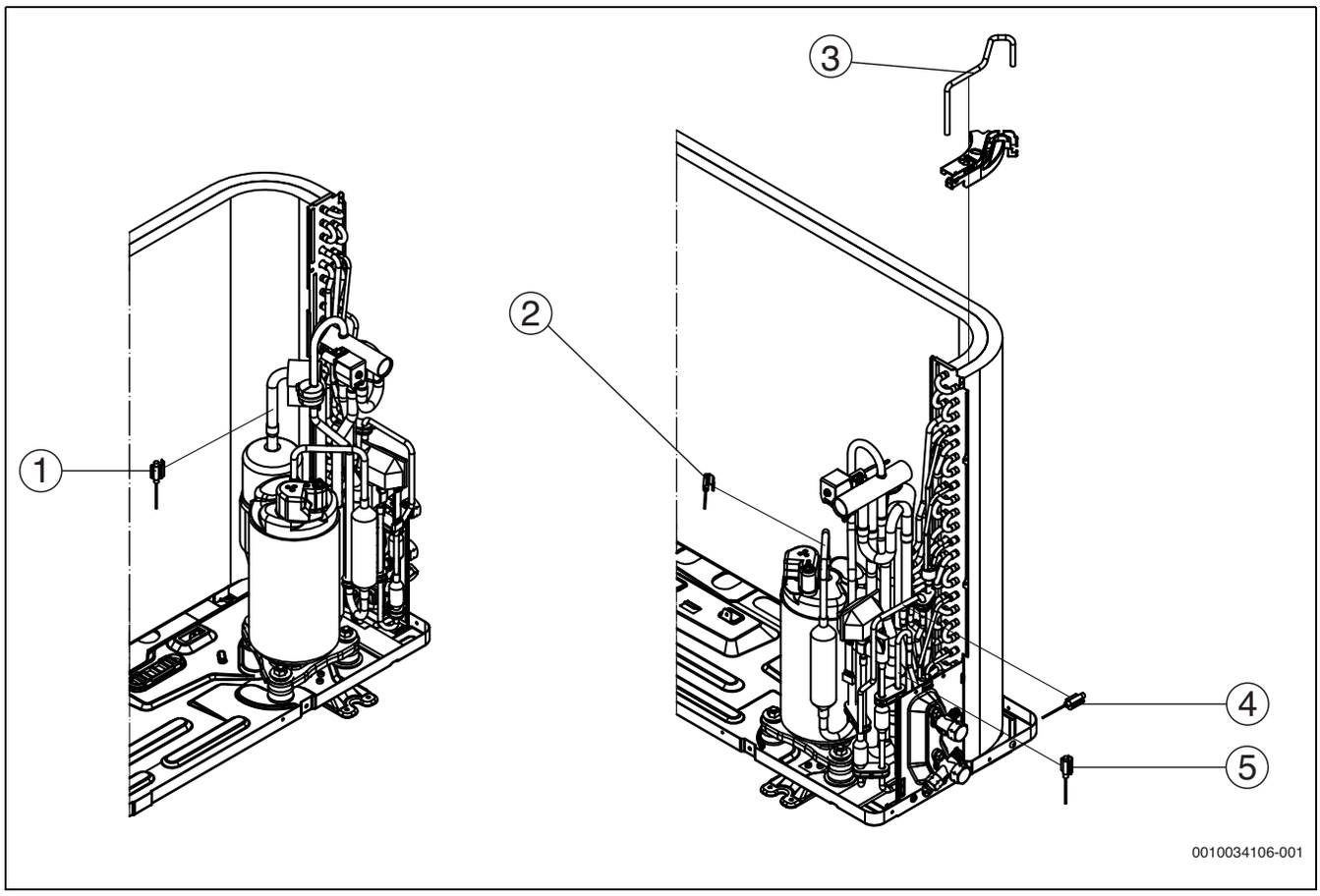


Fig. 170

[1] Suction thermistor TH4 (Black)
[2] Compressor thermistor TH1 (Red)
[3] Outdoor temperature thermistor TH3 (Green)
[4] Heat exchange thermistor TH2 (Orange)
[5] 2 way valve thermistor TH5 (Yellow)

7 Troubleshooting

WARNING

- All electrical work must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation (all national, local and other laws, standards, codes, rules, regulations and other legislation that apply in a given situation).
- Power-off all units before connecting or disconnecting any connections or wiring. Otherwise electric shock may occur, leading to damage to components, physical injury or death.

NOTICE

Risk of static discharge.

Static charges can destroy sensitive electronics parts.

- Wear antistatic gloves.

7.1 Error code 1: Short circuit of the outdoor unit thermistor

Error subcodes

- 1-0: Heat exchanger thermistor short-circuit (orange)
- 1-1: Outside air temperature thermistor short-circuit (green)
- 1-2: Suction thermistor short-circuit (black)
- 1-3: 2-way valve thermistor short-circuit (yellow)
- 1-4: Heat sink thermistor short-circuit.

Remedy

Check the thermistor short-circuit.

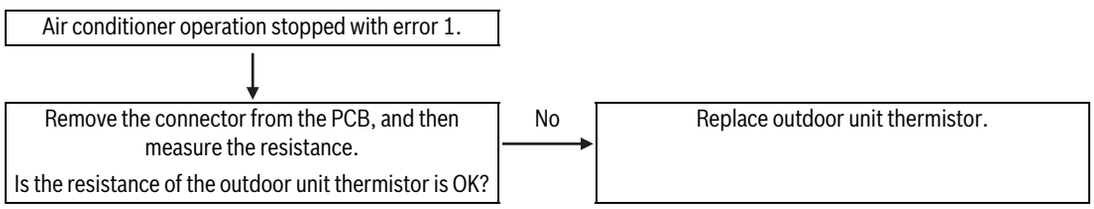
Possible causes

- The lead wire of the outdoor unit thermistor is torn by edge and the torn sheath is touched to the pipe, etc.
- The lead wire of the outdoor unit thermistor is torn by pipe due to long-time friction in vibration and the torn sheath is touched to the pipe, etc.

Additional Information

For outdoor thermistor resistances → refer to chapter 4.4.2 "Outdoor unit", p. 25.

Procedure



7.2 Error code 2: Overheat error (Compressor or cycle)

Error subcodes

- 2-0: Compressor high temperature error
- 2-1: Compressor discharge overheat
- 2-2: Outdoor unit pipe overheat
- 2-3: Indoor unit pipe overheat
- 2-5 IPM high temperature error.

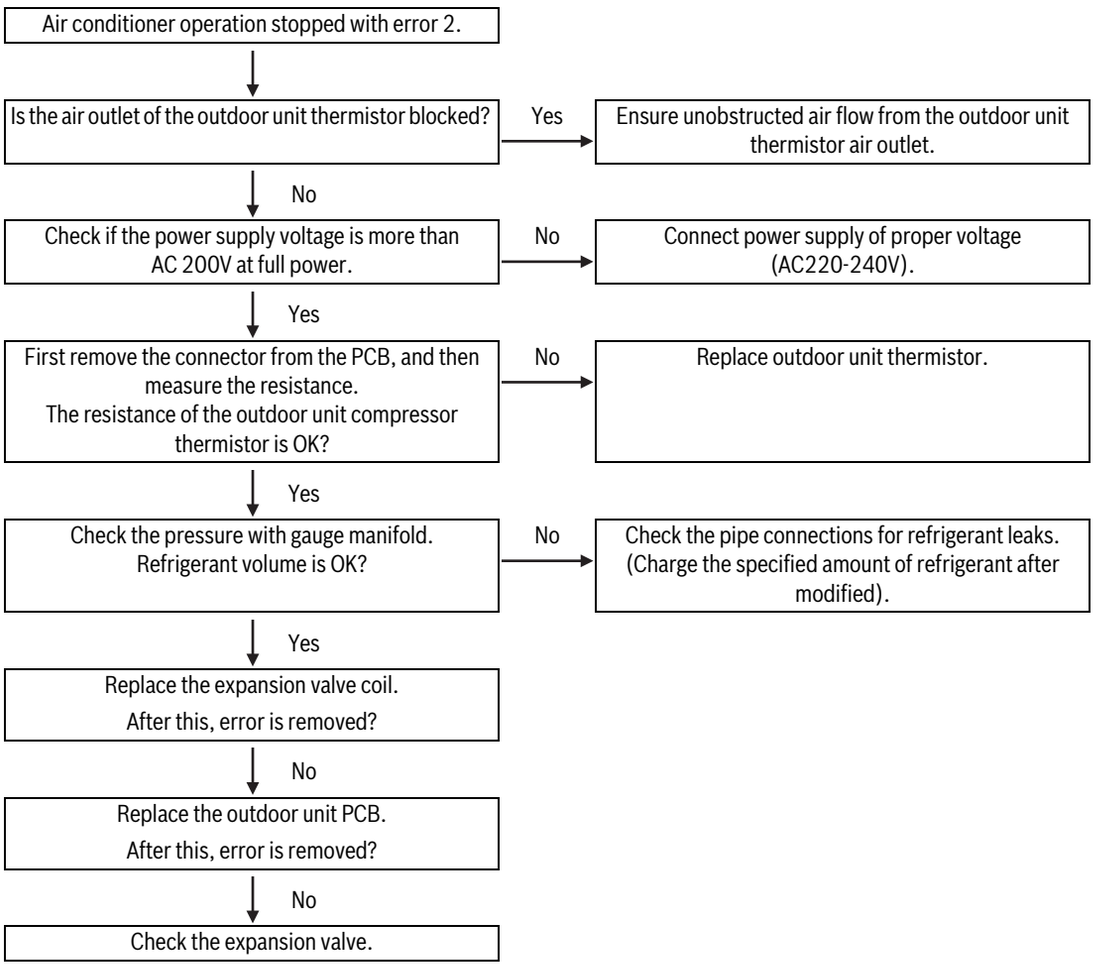
Remedy

Check the failure of compressor.

Possible causes

- Ambient temperature of compressor becomes quite high.

Procedure



7.3 Error code 5: Open circuit of outdoor unit thermistor

Error subcodes

- 5-0: Heat exchanger thermistor short-circuit (orange)
- 5-1: Outside air temperature thermistor short-circuit (green)
- 5-2: Suction thermistor short-circuit (black)
- 5-3: 2-way valve thermistor short-circuit (yellow)
- 5-4: Compressor thermistor open-circuit (red)
- 5-5: Heat sink thermistor short-circuit.

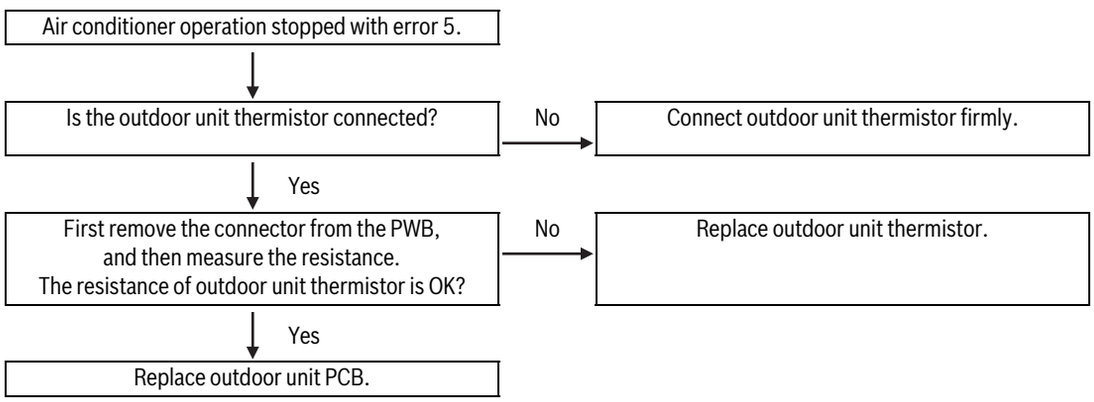
Remedy

Check the thermistor open-circuit.

Possible causes

- The lead wire of the outdoor unit thermistor is breaking due to touching the edge and vibration.
- The attachment of connector is broken due to the tension in inside wiring process.

Procedure



7.4 Error code 6: DC current error

Remedy

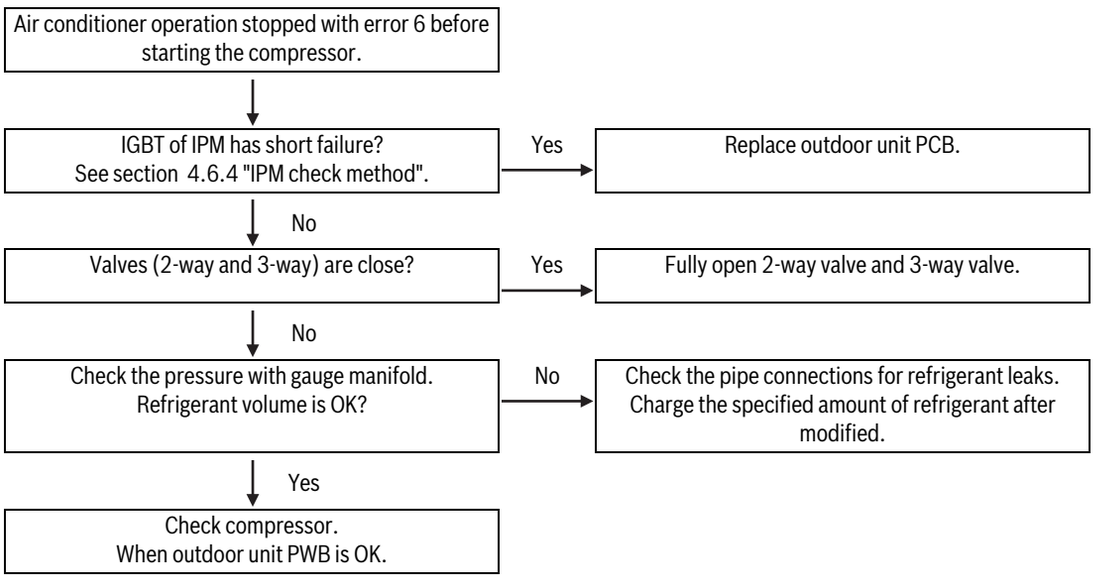
Check the cause due to compressor or PCB.

Additional Information

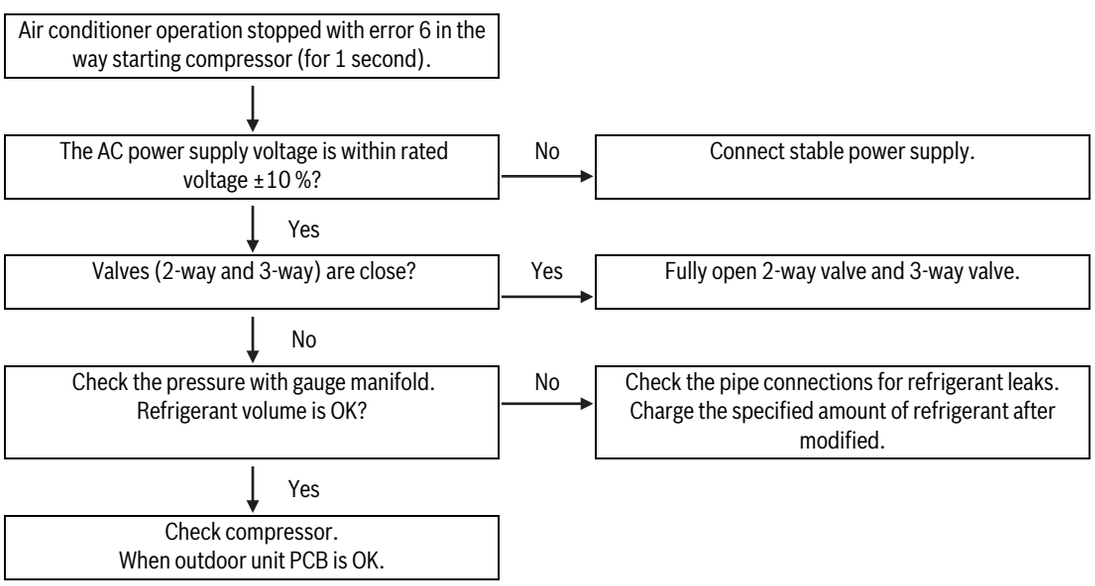
Procedure depending on the case:

- Case 1: Error occurs before starting the compressor.
- Case 2: Error occurs within the first second of starting the compressor.
- Case 3: Error occurs more than one second after starting the compressor while in heating mode.
- Case 4: Error occurs more than one second after starting the compressor while in cooling mode.

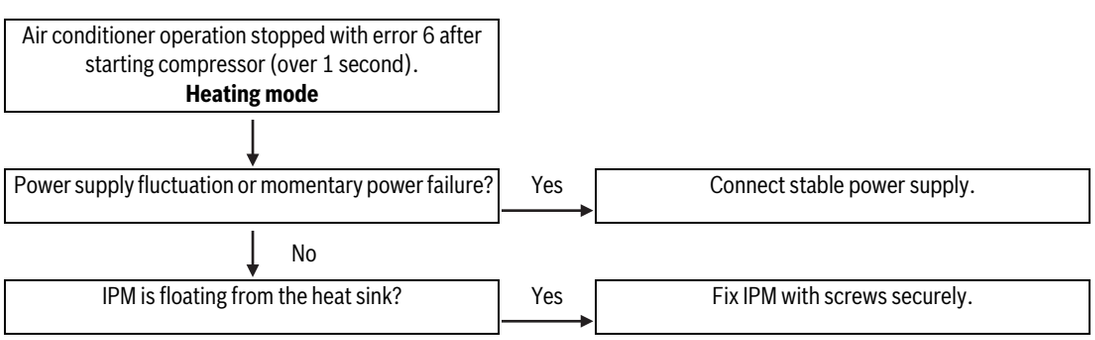
Procedure for case 1

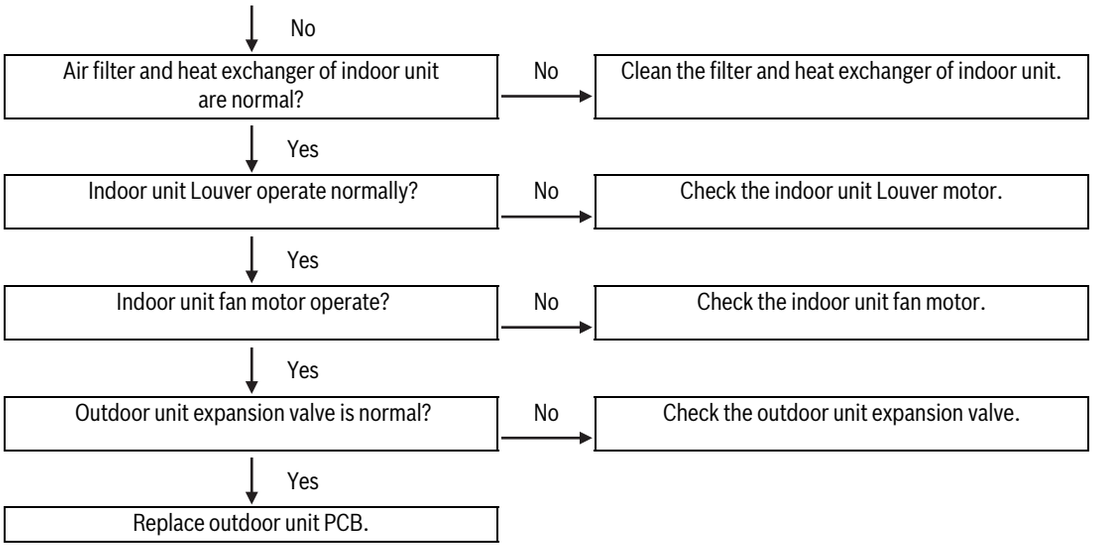


Procedure for case 2

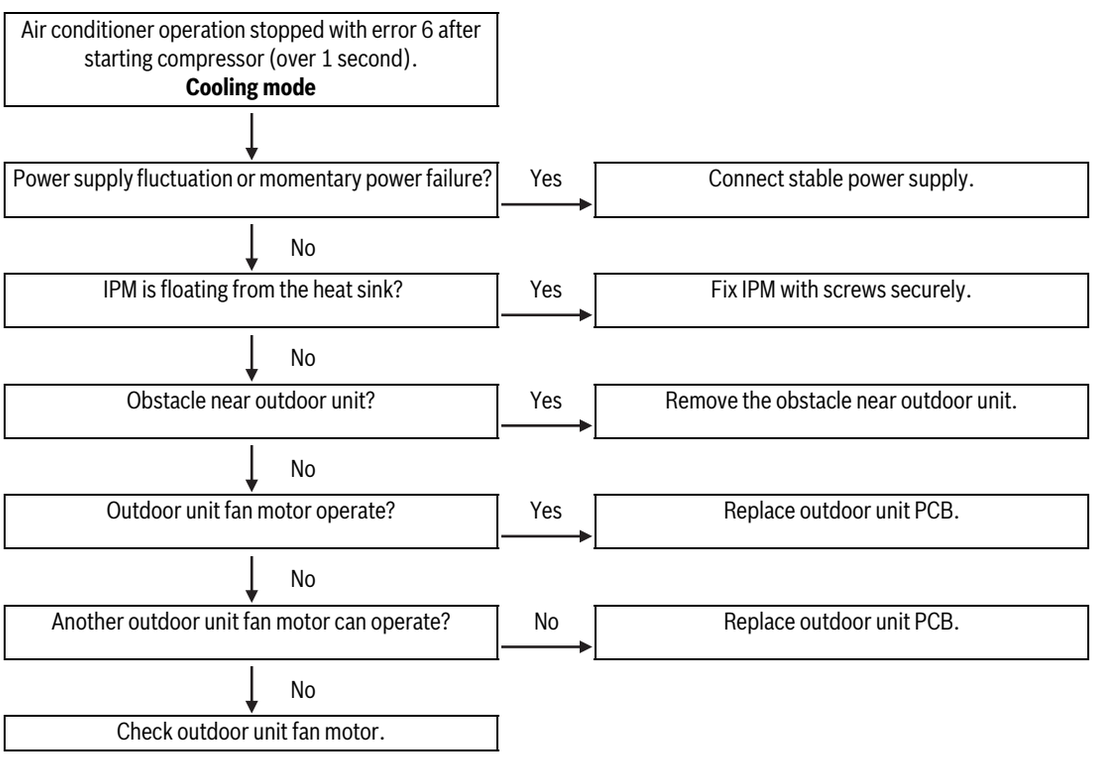


Procedure for case 3





Procedure for case 4



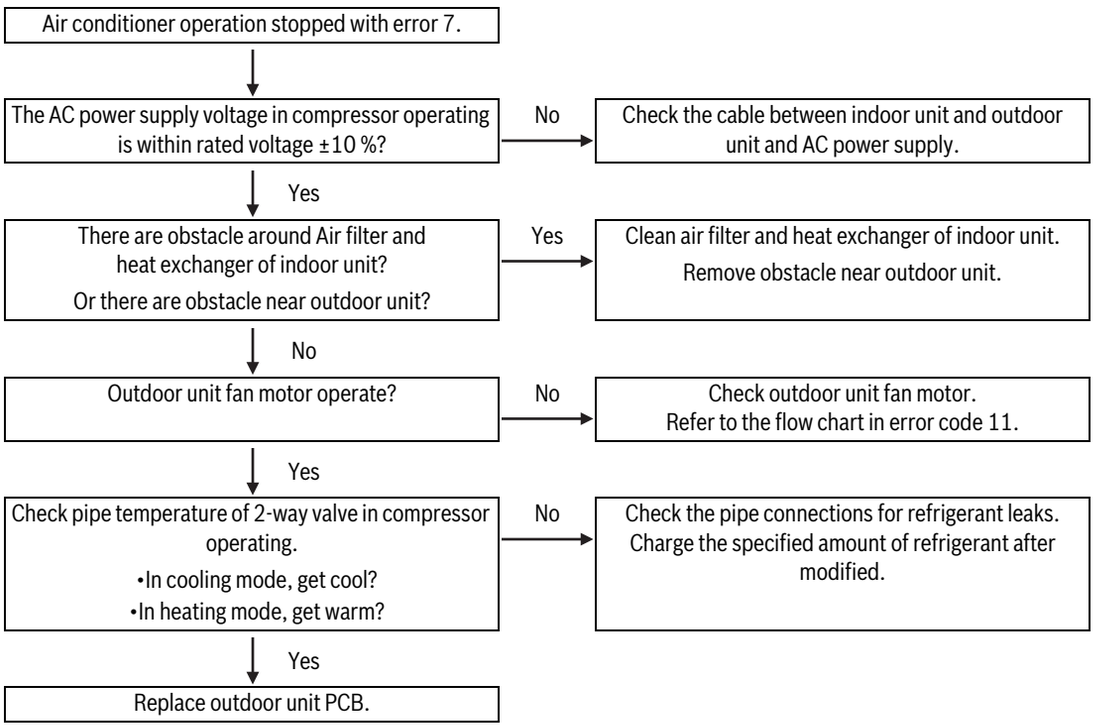
7.5 Error code 7: AC current error

Error subcodes

- 7-0: AC over current error.
- 7-1: AC current error when compressor OFF.
- 7-2: AC maximum current error.
- 7-3: AC current deficiency error.

Remedy

Check the cause due to PCB or another parts.



7.6 Error code 9: Cycle error

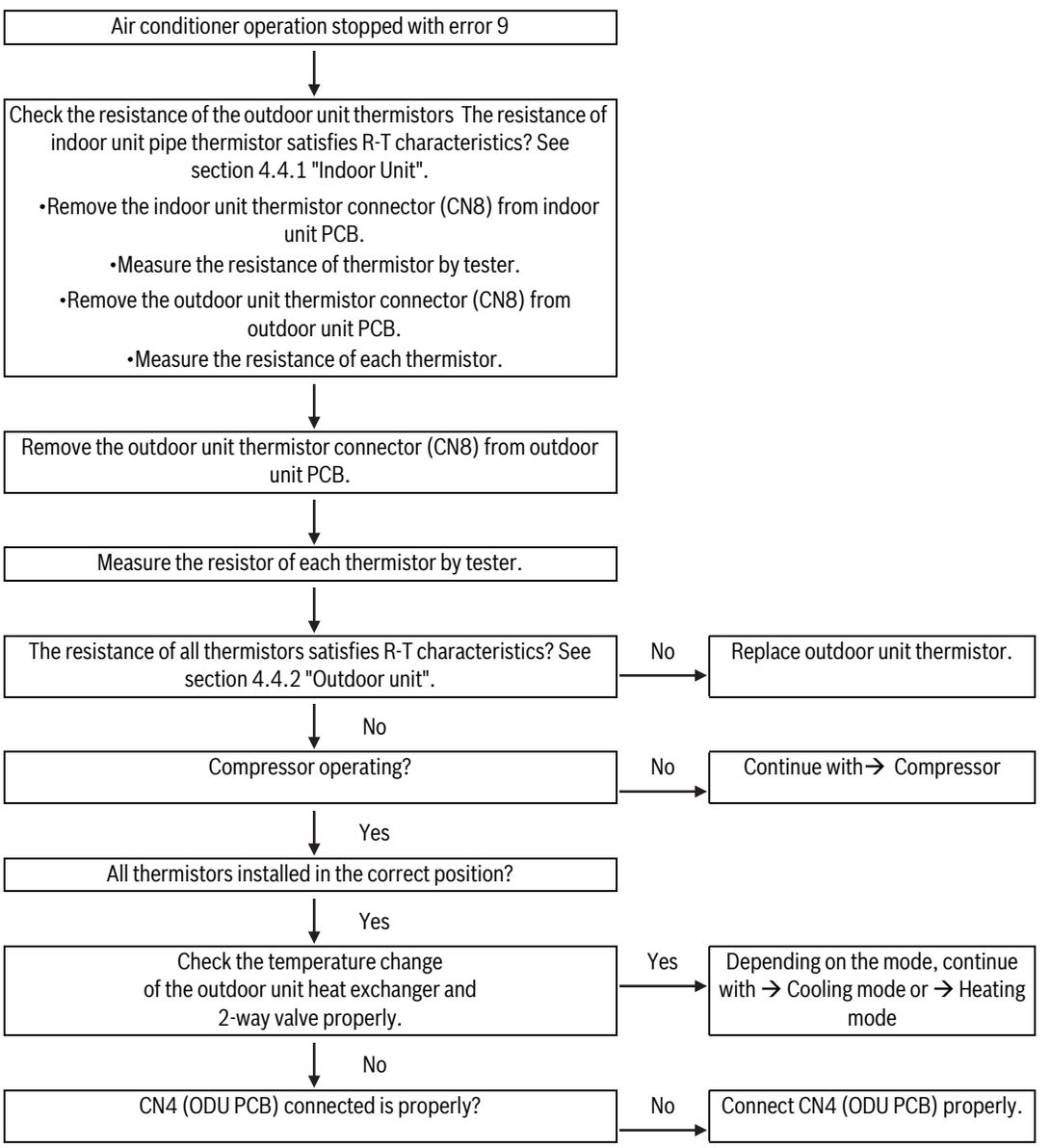
Remedy

Check the cause due to PCB or another parts.

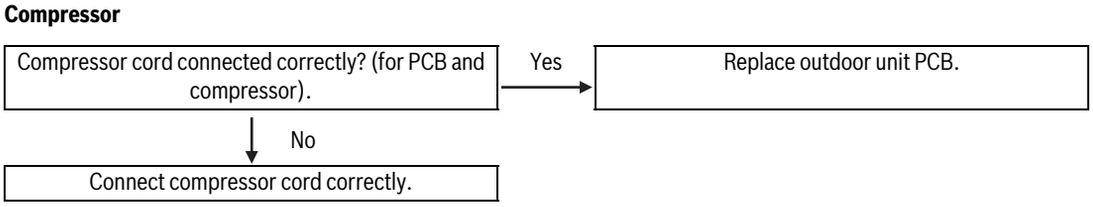
Additional Information

Error code 9 occurs when there is no temperature difference between TH2 and TH5 3 minutes after operation.

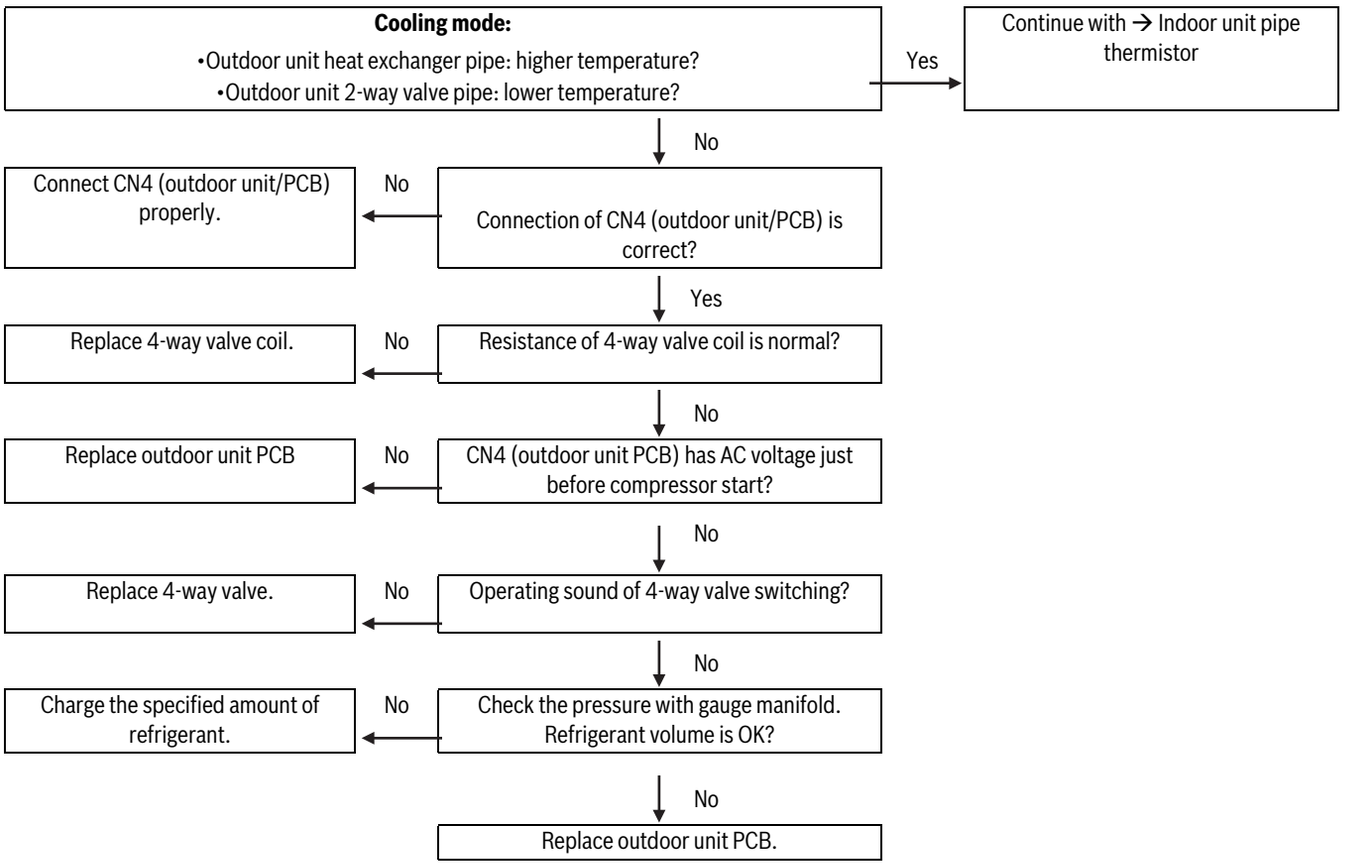
- 4-way valve error.
- Refrigerant leak error.



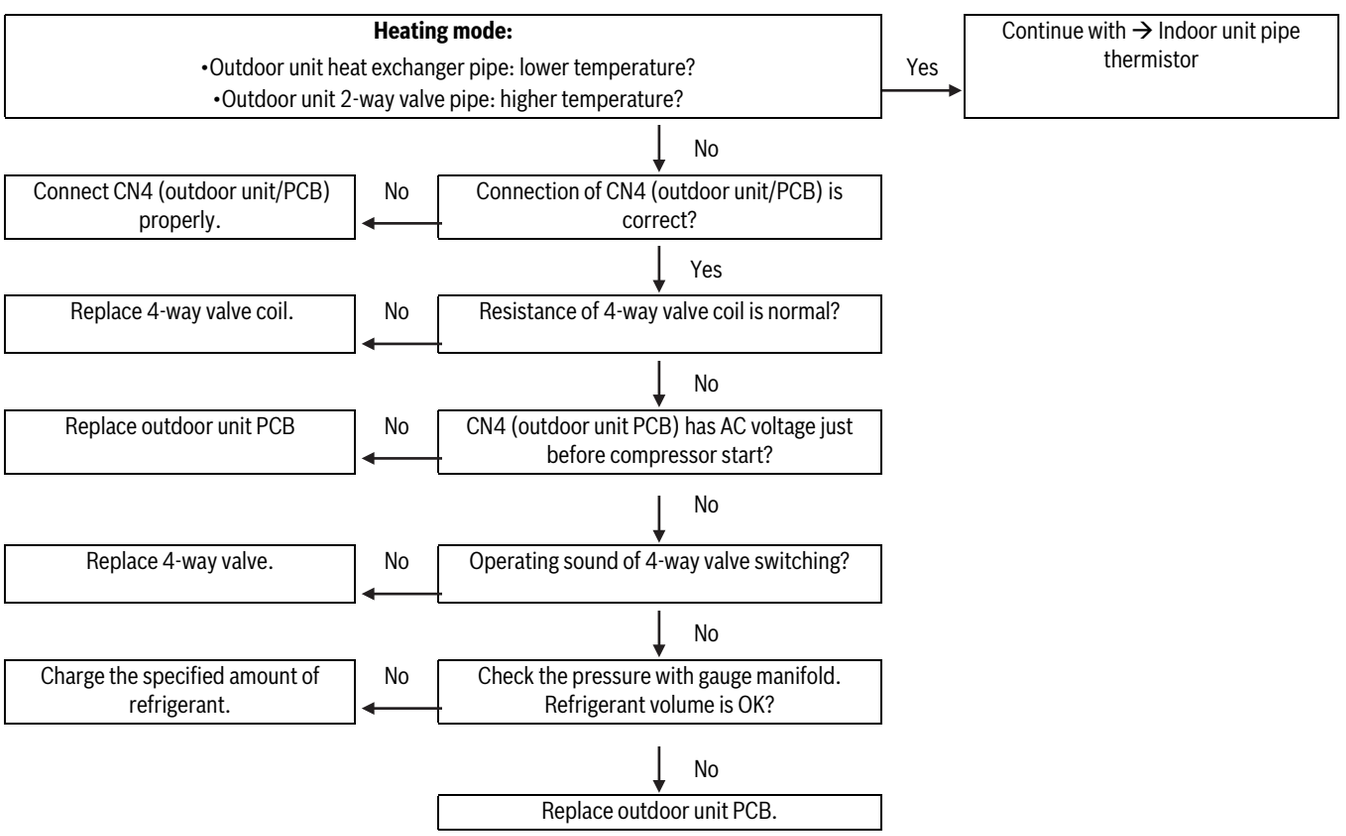
Compressor



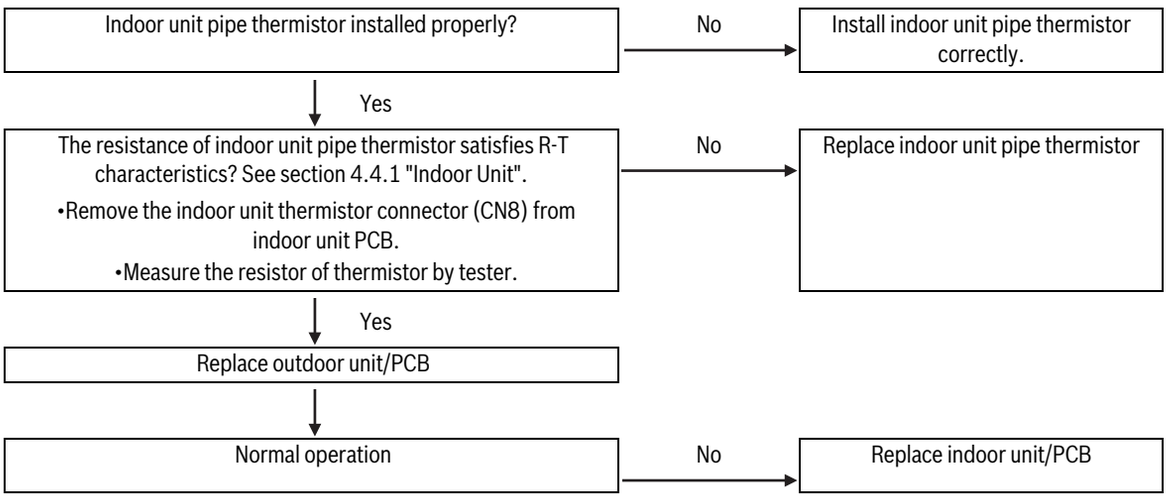
Cooling mode



Heating mode



Indoor unit pipe thermistor


Indoor unit pipe thermistor installed properly?
No
Install indoor unit pipe thermistor correctly.
Yes
The resistance of indoor unit pipe thermistor satisfies R-T characteristics? See section 4.4.1 "Indoor Unit".
•Remove the indoor unit thermistor connector (CN8) from indoor unit PCB.
•Measure the resistor of thermistor by tester.
No
Replace indoor unit pipe thermistor
Yes
Replace outdoor unit/PCB
Normal operation
No
Replace indoor unit/PCB

7.7 Error code 11: Outcoor unit fan motor error

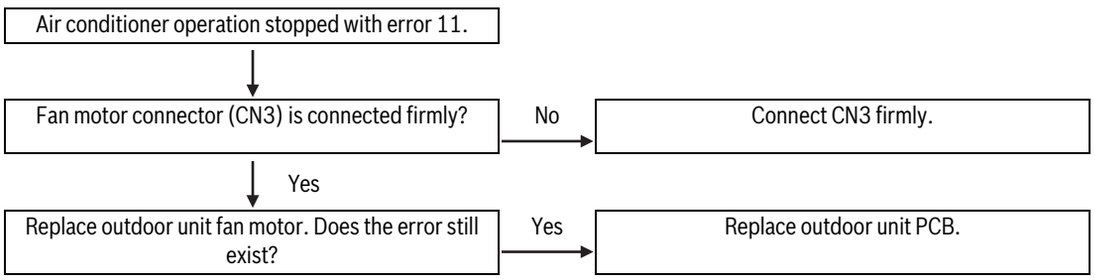
Error subcodes

- 11-1: DC fan driver IC error
- 11-2: DC fan lock error
- 11-3: Detection error of negative rotation before compressor start
- 11-4: Detection error of inverter current
- 11-5: open connector error.

Remedy

Check the cause due to PCB or DC fan motor.

Procedure



7.8 Error code 13: Compressor rotation error

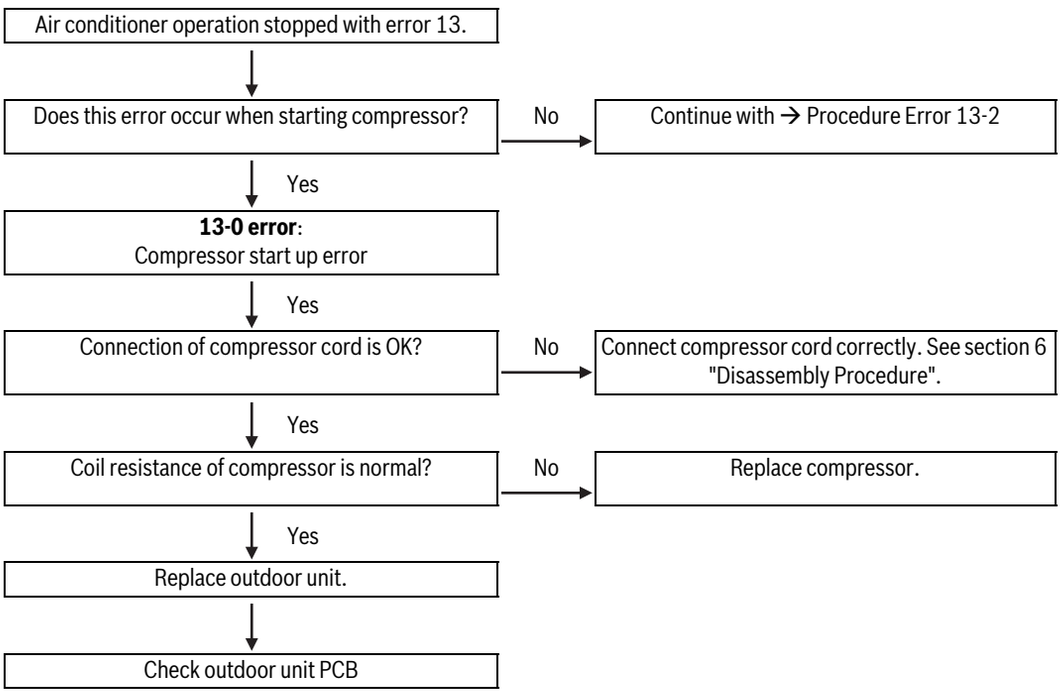
Error sub codes

- 13-0: Compressor start up error.
- 13-2: Compressor rotation error.

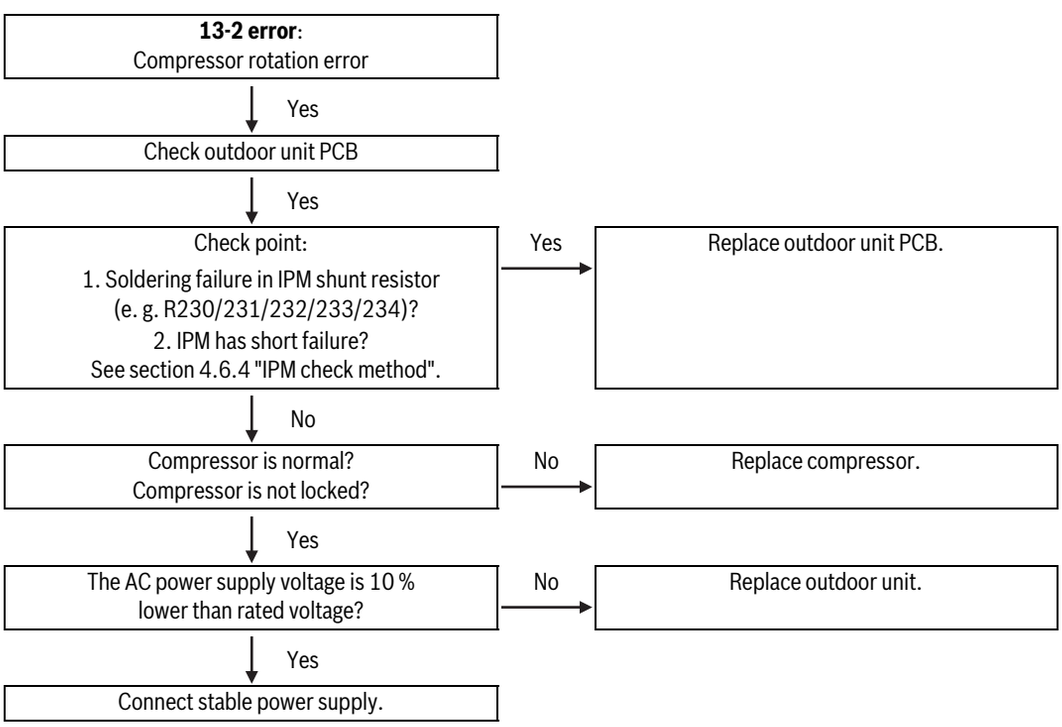
Possible causes

Ambient temperature of compressor becomes quite high.

Procedure Error 13-0



Procedure Error 13-2



7.9 Error code 14: PAM error

Error subcodes

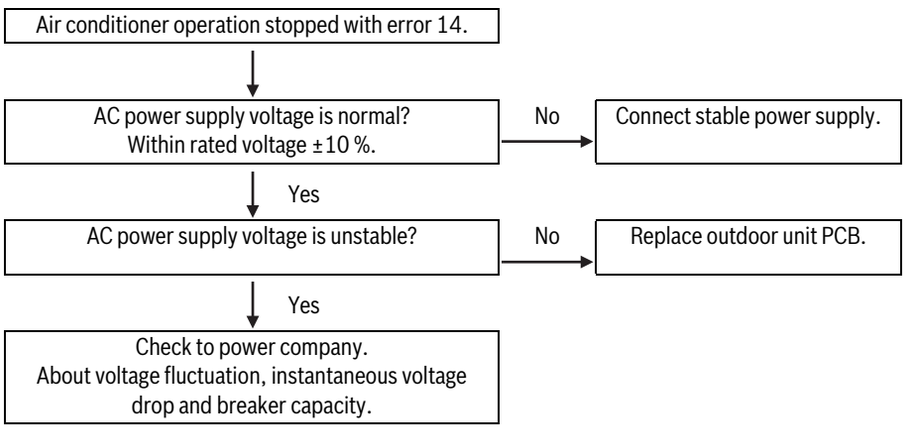
- 14-0: PAM over voltage error.
- 14-1: PAM clock error
- 14-2: DC low voltage error.

Possible causes

- AC power supply voltage is abnormal. (Not within rated voltage±10%).
- Big fluctuation of AC power supply voltage.
- Instantaneous voltage drop.

Remedy

Check AC power supply.



7.10 Error code 17: Serial open error

Error subcodes

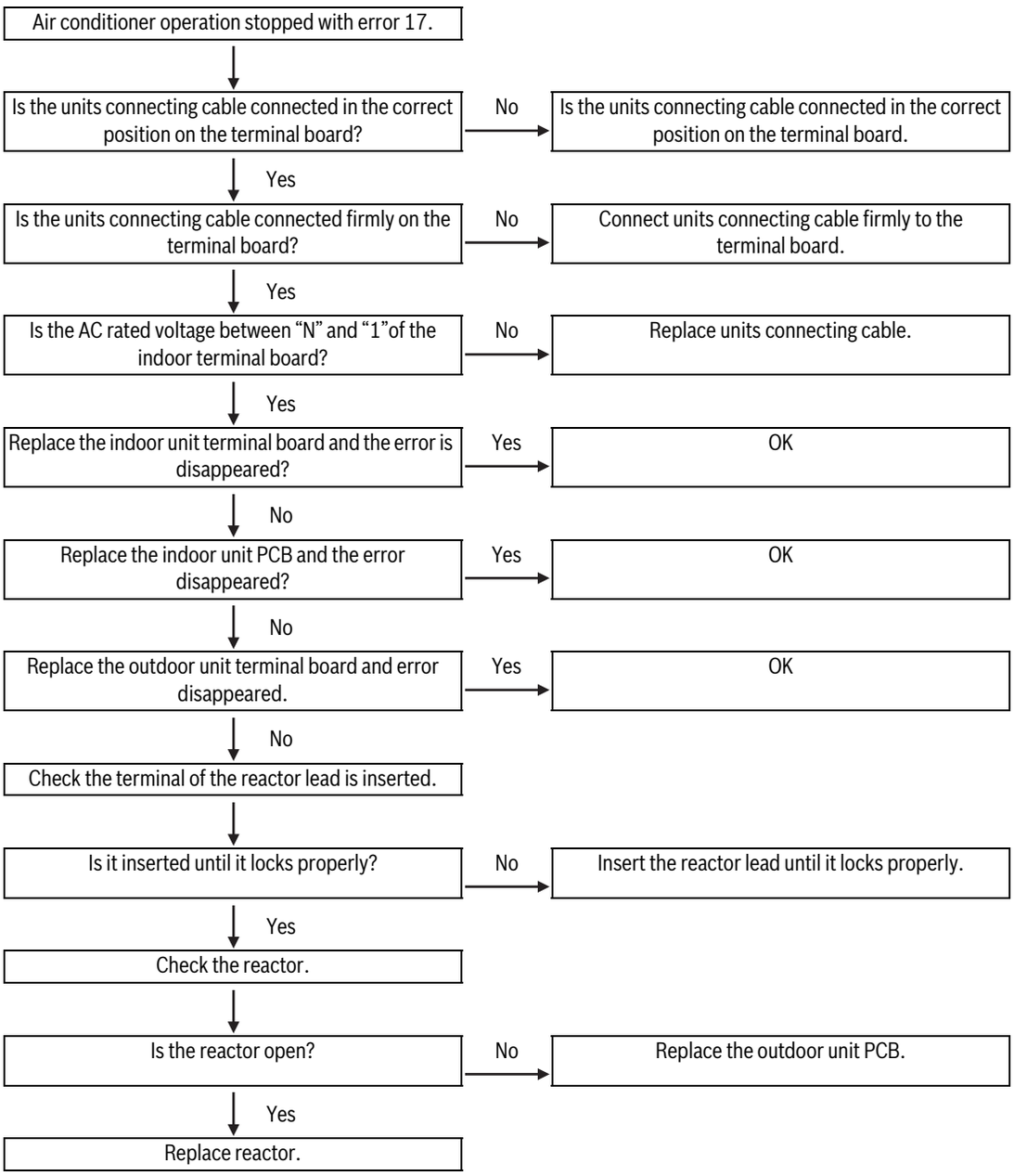
- 17-0: Serial open error.

Possible causes

- Defective PWB of indoor unit. Serial circuit failure, power supply circuit operation failure, etc..
- Defective PWB of outdoor unit. Serial circuit failure, power supply circuit operation failure, etc..
- Poor connection of the wiring between the units connecting the indoor unit and the outdoor unit
- Defective terminal board of indoor unit/outdoor unit.
- Poor connection of electrical components mounted other than the PWB (outdoor unit reactor, etc.).

Remedy

Determine why serial communication is not possible.

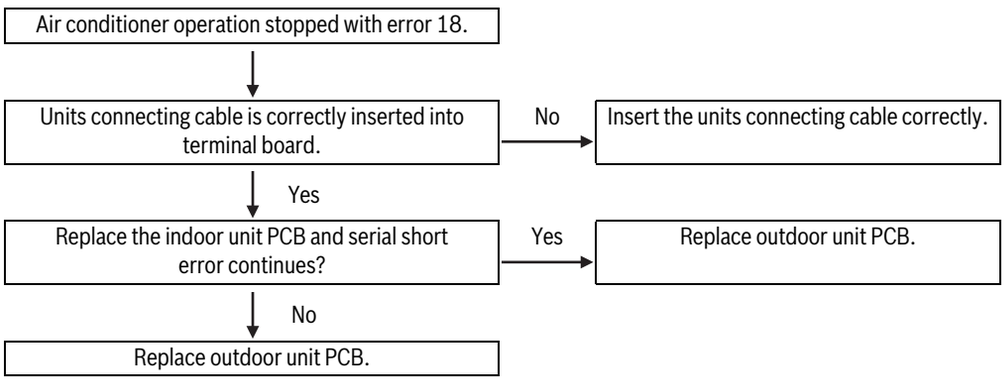


7.11 Error code 18: Serial short error

Error subcodes
- 18-0: Serial short.
- 18-1: Incorrect wiring.

Possible causes
- Incorrect insertion of units connecting cable.
- Indoor unit serial circuit failure.
- Outdoor unit serial circuit failure.

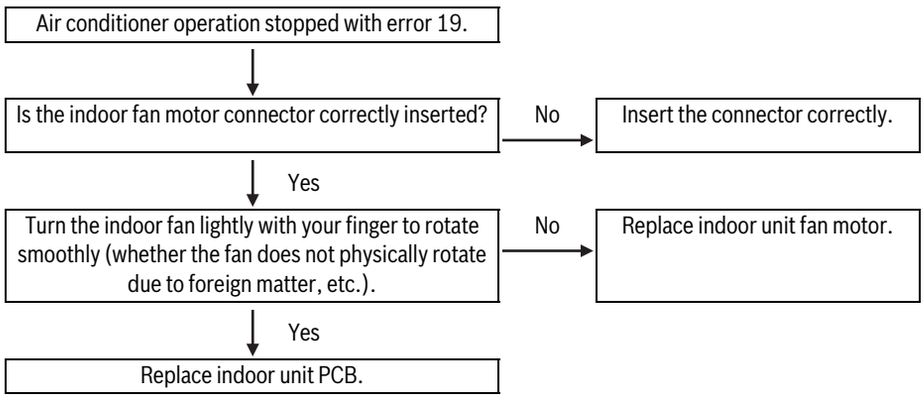
Remedy
Determine if the units connecting cable is incorrectly inserted or the control board is defective.



7.12 Error code 19: Indoor fan error

Error subcodes

- 19-0: Indoor fan error.



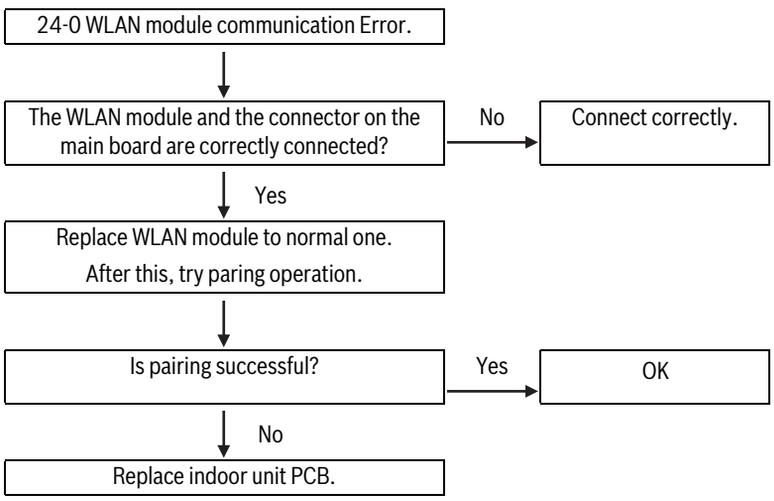
Remedy

Determine whether the cause is the indoor fan motor or the indoor unit PCB.

7.13 Error code 24-0: WLAN module communication error

Remedy

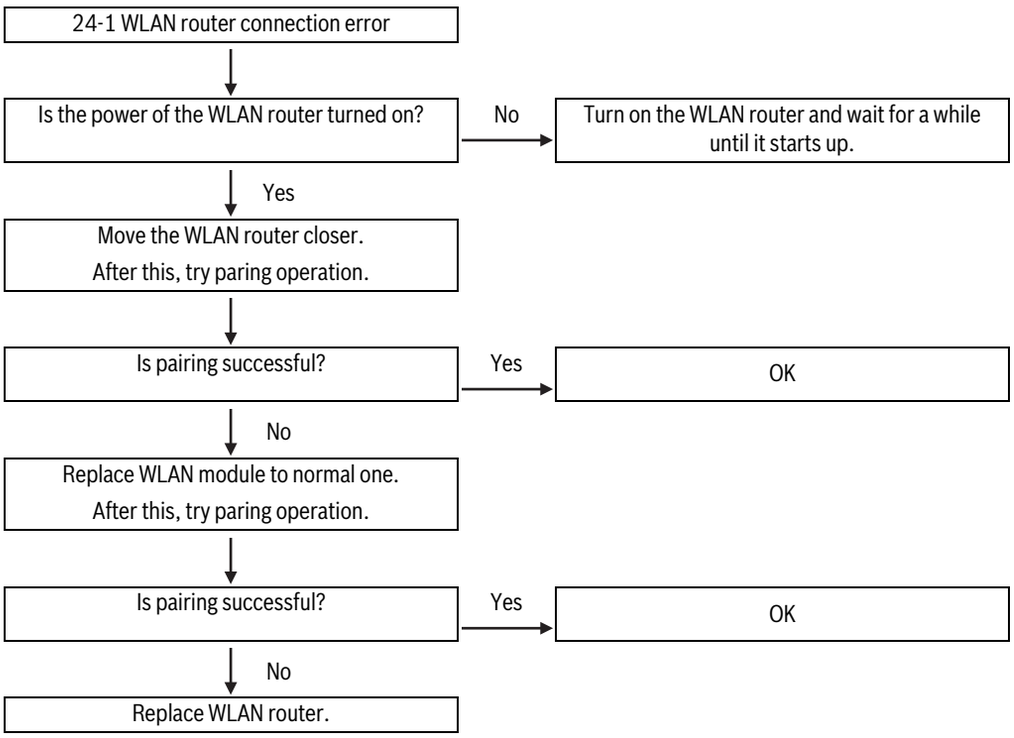
Determine whether the cause is a connector or a board (WLAN module, main board).



7.14 Error code 24-1: WLAN router connection error

Remedy

Determine whether the cause is a WLAN module or a WLAN router.



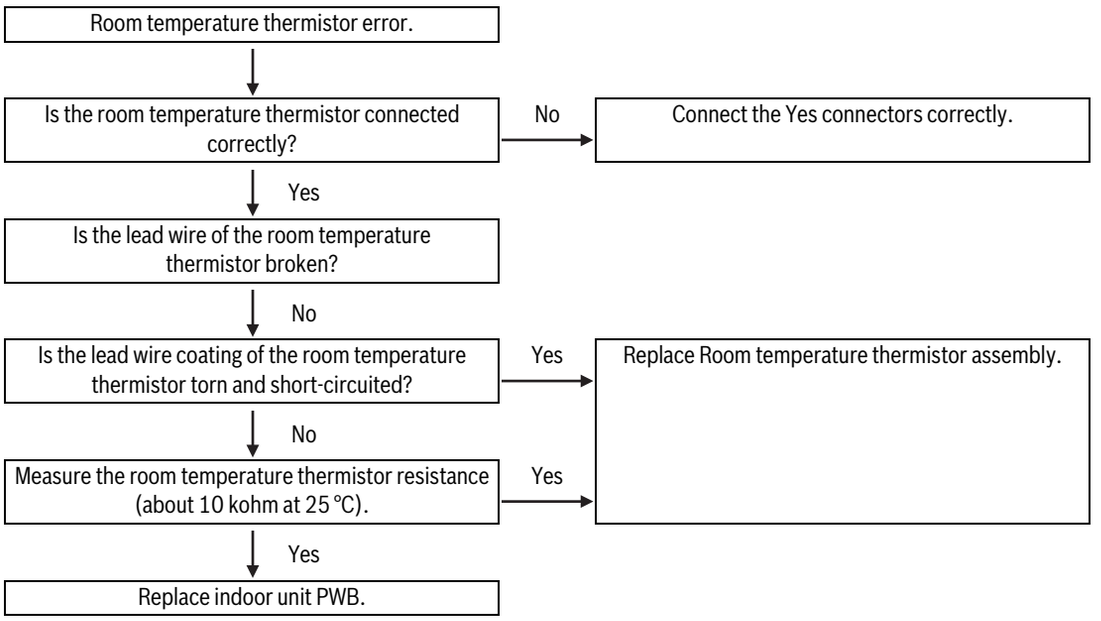
7.15 Error code 26-1: Indoor unit room temperature thermistor open short error

Error subcodes

- 26-1: Room temperature thermistor error.
- 26-2: Pipe thermistor error.

Remedy

Determine whether the cause is room temperature thermistor or indoor unit PCB.



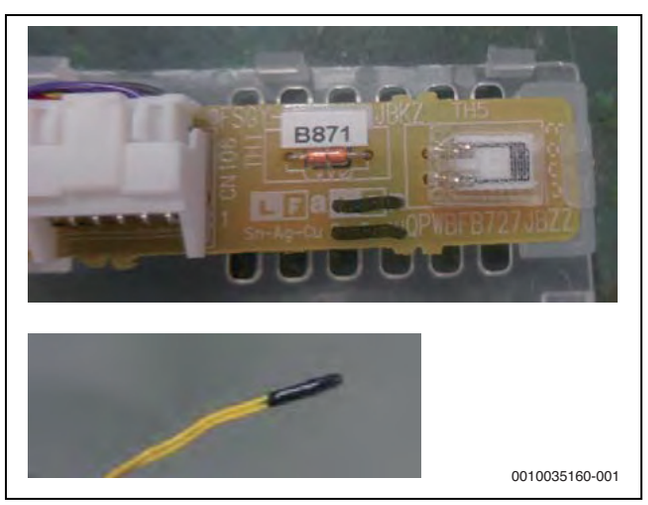


Fig. 171 Room temperature thermistor

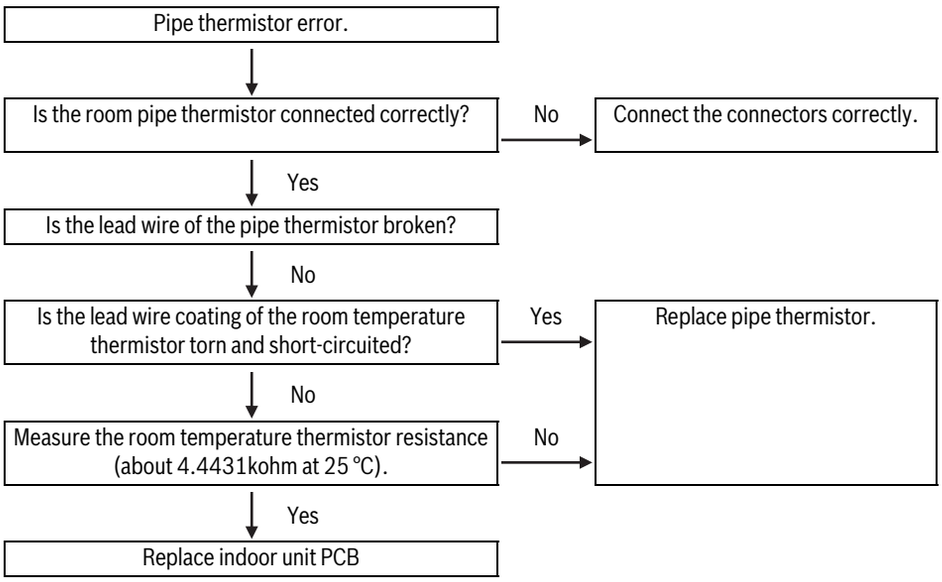
7.16 Error code 26-2: Indoor unit pipe thermistor open short error

Error subcodes

- 26-1: Room temperature thermistor error.
- 26-2: Pipe thermistor error.

Remedy

Determine whether the cause is pipe thermistor or indoor unit PCB.



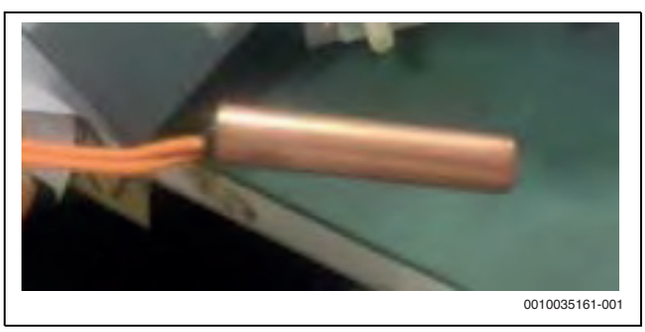


Fig. 172 Pipe thermistor

8 Environmental protection and disposal

Environmental protection is a fundamental corporate strategy of the Bosch Group.
The quality of our products, their economy and environmental safety are all of equal importance to us and all environmental protection legislation and regulations are strictly observed.
We use the best possible technology and materials for protecting the environment taking account of economic considerations.

Packaging

Where packaging is concerned, we participate in country-specific recycling processes that ensure optimum recycling.
All of our packaging materials are environmentally compatible and can be recycled.

Used appliances

Used appliances contain valuable materials that can be recycled.
The various assemblies can be easily dismantled. Synthetic materials are marked accordingly. Assemblies can therefore be sorted by composition and passed on for recycling or disposal.

Old electrical and electronic appliances

This symbol means that the product must not be disposed of with other waste, and instead must be taken to the waste collection points for treatment, collection, recycling and disposal.

The symbol is valid in countries where waste electrical and electronic equipment regulations apply, e.g. "European Directive 2012/19/EC on old electronic and electrical appliances". These regulations define the framework for the return and recycling of old electronic appliances that apply in each country.

As electronic devices may contain hazardous substances, it needs to be recycled responsibly in order to minimize any potential harm to the environment and human health. Furthermore, recycling of electronic scrap helps preserve natural resources.

For additional information on the environmentally compatible disposal of old electrical and electronic appliances, please contact the relevant local authorities, your household waste disposal service or the retailer where you purchased the product.

You can find more information here:
www.weee.bosch-thermotechnology.com/

Batteries

Batteries must not be disposed together with your household waste.
Used batteries must be disposed of in local collection systems.

Refrigerant R32

The appliance contains fluorinated gas R32 (global warming potential 675[1)]) mild combustibility and low toxicity (A2L or A2).

Contained quantity is indicated on the equipment outdoor unit name label.

Refrigerant is hazardous to the environment and must be collected and disposed of separately.

9 Data Protection Notice

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1) Based on ANNEX I of REGULATION (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014.

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