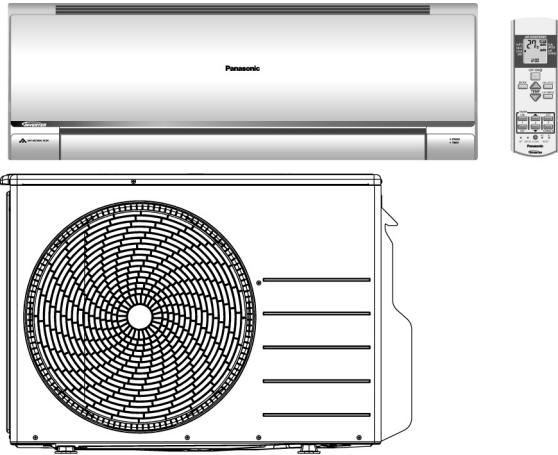


Service Manual

Air Conditioner



Indoor Unit
CS-MRE7PKE
CS-MRE9PKE
CS-MRE12PKE

Outdoor Unit
CU-2RE15PBE
CU-2RE18PBE

Destination
Europe

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigerant circuit.

Panasonic®

TABLE OF CONTENTS

1. Safety Precautions	3	15.1 Freeze Prevention control (Cool)	44
2. Specifications	5	15.2 Dew Prevention control (Cool)	44
2.1 CS-MRE7PKE CS-MRE9PKE		15.3 Electronic Parts Temperature Rise	
CS-MRE12PKE	5	Protection 1 (Cool).....	44
2.2 CU-2RE15PBE	9	15.4 Electronic Parts Temperature Rise	
2.3 CU-2RE18PBE	11	Protection 2 (Cool).....	44
3. Features.....	14	15.5 Cooling overload control (Cool).....	45
4. Location of Controls and Components.....	15	15.6 Heating overload control (Heat)	45
4.1 Indoor Unit	15	15.7 Extreme Low Temperature Compressor low	
4.2 Outdoor Unit	15	pressure protection control (Heat).....	45
4.3 Remote Control	15	15.8 Deice Control.....	46
5. Dimensions	16	15.9 Time Delay Safety Control	
5.1 Indoor Unit	16	(Restart Control).....	46
5.2 Outdoor Unit	17	15.10 30 seconds Force Operation	46
6. Refrigeration Cycle Diagram	18	15.11 Total Current Control.....	46
7. Block Diagram	19	15.12 IPM (power transistor) Protection	
7.1 Indoor Unit	19	Control	46
7.2 Outdoor Unit	20	15.13 Compressor Protection Control	
8. Wiring Connection Diagram	21	(Gas leak detection control 1)	47
8.1 Indoor Unit	21	15.14 Compressor Protection Control	
8.2 Outdoor Unit	22	(Gas leak detection control 2)	47
9. Electronic Circuit Diagram	23	15.15 Valve close detection control.....	47
9.1 Indoor Unit	23	15.16 Compressor discharge high pressure	
9.2 Outdoor Unit	24	protection control	47
10. Printed Circuit Board	25	16. Servicing Mode	48
10.1 Indoor Unit	25	16.1 Auto OFF/ON Button	48
10.2 Outdoor Unit	26	16.2 Remote Control Button.....	49
11. Installation Information.....	27	17. Troubleshooting Guide.....	50
11.1 CU-2RE15PBE	27	17.1 Refrigeration Cycle System	50
11.2 CU-2RE18PBE	28	17.2 Breakdown Self Diagnosis Function.....	52
12. Installation Instruction	29	17.3 Self Diagnosis Function.....	53
12.1 Select the Best Location.....	29	17.4 Self-diagnosis Method.....	55
12.2 Indoor Unit	30	18. Disassembly and Assembly Instructions	80
12.3 Outdoor Unit	34	18.1 Indoor Electronic Controllers,	
13. Operation and Control	37	Cross Flow Fan and Indoor Fan Motor	
13.1 Basic Function	37	Removal Procedures	80
13.2 Indoor Fan Motor Operation	38	18.2 Outdoor Unit Removal Procedure	84
13.3 Indoor Fan Motor Operation	39	19. Technical Data	86
13.4 Airflow Direction.....	39	19.1 Operation Characteristics	
13.5 Timer Control.....	40	(CU-2RE15PBE).....	86
13.6 Auto Restart Control	40	19.2 Operation Characteristics	
13.7 Indication Panel.....	40	(CU-2RE18PBE).....	94
14. Operation Control.....	41	20. Exploded View and Replacement Parts	
14.1 Cooling Operation.....	41	List	106
14.2 Heating Operation	42	20.1 Indoor Unit	106
14.3 Outdoor Quiet Cooling Operation		20.2 Outdoor Unit	108
Control	42		
15. Protection Control.....	44		

1. Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before perform any servicing.
- Electrical work must be installed or serviced by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation or servicing due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

 WARNING	This indication shows the possibility of causing death or serious injury.
 CAUTION	This indication shows the possibility of causing injury or damage to properties.

- The items to be followed are classified by the symbols:

	This symbol denotes item that is PROHIBITED from doing.
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- Carry out test run to confirm that no abnormality occurs after the servicing. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

 WARNING	
1. Do not modify the machine, part, material during repairing service.	
2. If wiring unit is supplied as repairing part, do not repair or connect the wire even only partial wire break. Exchange the whole wiring unit.	
3. Do not wrench the fasten terminal. Pull it out or insert it straightly.	
4. Engage authorized dealer or specialist for installation and servicing. If installation or servicing done by the user is defective, it will cause water leakage, electrical shock or fire.	
5. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electric shock or fire.	
6. Use the attached accessories parts and specified parts for installation and servicing. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
7. Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.	
8. For electrical work, follow the local national wiring standard, regulation and the installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
9. This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case equipment breakdown or insulation breakdown.	
10. Do not use joint cable for indoor/outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to installation instruction CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.	
11. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up or fire at the connection point of terminal, fire or electrical shock.	
12. When install or relocate air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). (Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.).	
13. Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.	
14. This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case equipment breakdown or insulation breakdown.	
15. Keep away from small children, the thin film may cling to nose and mouth and prevent breathing.	
16. Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.	
17. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.	
18. For R410A models, when connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials. Thickness of copper pipes used with R410A must be more than 0.8mm. Never use copper pipes thinner than 0.8mm. It is desirable that the amount of residual oil is less than 40 mg/10m.	

**WARNING**

19. During installation, install the refrigerant piping properly before run the compressor. (Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc).
20. During pump down operation, stop the compressor before remove the refrigeration piping. (Removal of refrigeration piping while compressor is operating and valves are opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.)
21. After completion of installation or service, confirm there is no leakage or refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
22. Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.
23. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury. 
24. Must not use other parts except original parts describe in catalog and manual.
25. Using of refrigerant other than the specified type may cause product damage, burst and injury etc.

**CAUTION**

1. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire. 
2. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
3. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
4. Do not touch outdoor unit air inlet and aluminium fin. It may cause injury. 
5. Select an installation location which is easy for maintenance.
6. Pb free solder has a higher melting point than standard solder; typically the melting point is 50°F – 70°F (30°C – 40°C) higher. Please use a high temperature solder iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C). Pb free solder will tend to splash when heated too high (about 1100°F / 600°C).
7. Power supply connection to the room air conditioner.
Use power supply cord 3 x 1.5 mm² type designation 60245 IEC 57 or heavier cord.
Connect the power cord of the air conditioner to the mains using one of the following method.
Power supply point should be in easily accessible place for power disconnection in case of emergency.
In some countries, permanent connection to the receptacle using power plug.
i. Power supply connection to the receptacle using a power plug.
Use an approved 15/16A power plug with earth pin for the connection to the socket.
ii. Power supply connection to a circuit breaker for the permanent connection.
Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.
8. Do not release refrigerant during piping work for installation, servicing, reinstallation and during repairing a refrigerant parts. Take care of the liquid refrigerant, it may cause frostbite. 
9. Installation or servicing work: It may need two people to carry out the installation or servicing work.
10. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc. 
11. Do not sit or step on the unit, you may fall down accidentally. 
12. Do not touch the sharp aluminium fins or edges of metal parts.
If you are required to handle sharp parts during installation or servicing, please wear hand glove.
Sharp parts may cause injury. 

2. Specifications

2.1 CS-MRE7PKE CS-MRE9PKE CS-MRE12PKE

MODEL				INDOOR		CS-MRE7PKE			CS-MRE9PKE			
Performance Test Condition						EUROVENT						
Power Supply				Phase, Hz		Single, 50						
				V		230						
						Min.	Mid.	Max.	Min.	Mid.	Max.	
Cooling	Capacity			kW		1.10	2.00	2.50	1.10	2.50	3.10	
				BTU/h		3750	6820	8530	3750	8530	10600	
	Running Current			A		-	2.60	-	-	3.35	-	
	Input Power			W		230	550	690	230	710	950	
	Annual Consumption			kWh		-	275	-	-	355	-	
	EER			W/W		4.78	3.64	3.62	4.78	3.52	3.26	
	Indoor Noise (H / L)			dB-A		40 / 29			40 / 29			
				Power Level dB		56 / -			56 / -			
Heating	Capacity			kW		0.70	3.20	4.30	0.70	3.60	5.00	
				BTU/h		2390	10900	14700	2390	12300	17100	
	Running Current			A		-	4.15	-	-	4.95	-	
	Input Power			W		190	940	1.35k	190	1.12k	1.66k	
	COP			W/W		3.68	3.40	3.19	3.68	3.21	3.01	
	Indoor Noise (H / L)			dB-A		40 / 29			40 / 29			
				Power Level dB		56 / -			56 / -			
	Indoor Fan	Type					Cross-flow Fan			Cross-flow Fan		
Material					ASG20K1			ASG20K1				
Motor Type					DC (8-poles)			DC (8-poles)				
Input Power			W		47.3			47.3				
Output Power			W		40			40				
Speed		QLo	Cool	rpm	690			710				
			Heat	rpm	690			710				
		Lo	Cool	rpm	760			790				
			Heat	rpm	760			790				
		Me	Cool	rpm	910			980				
			Heat	rpm	930			1000				
		Hi	Cool	rpm	1050			1160				
			Heat	rpm	1090			1200				
		SHi	Cool	rpm	1120			1240				
			Heat	rpm	1160			1360				
Moisture Removal				L/h (Pt/h)		1.3 (2.7)			1.5 (3.2)			
Indoor Airflow		QLo	Cool	m³/min (ft³/min)	6.79 (239)			6.58 (232)				
			Heat	m³/min (ft³/min)	6.79 (239)			6.58 (232)				
	Lo	Cool	m³/min (ft³/min)	7.62 (269)			7.48 (264)					
		Heat	m³/min (ft³/min)	7.62 (269)			7.48 (264)					
	Me	Cool	m³/min (ft³/min)	9.39 (331)			9.61 (339)					
		Heat	m³/min (ft³/min)	9.62 (339)			9.83 (347)					
	Hi	Cool	m³/min (ft³/min)	11.04 (389)			11.62 (410)					
		Heat	m³/min (ft³/min)	11.51 (406)			12.07 (426)					
	SHi	Cool	m³/min (ft³/min)	11.86 (418)			12.52 (442)					
		Heat	m³/min (ft³/min)	12.33 (435)			13.86 (489)					

MODEL		INDOOR	CS-MRE7PKE		CS-MRE9PKE	
Dimension	Height (I/D)	mm (inch)	290 (11-7/16)			
	Width (I/D)	mm (inch)	870 (34-9/32)			
	Depth (I/D)	mm (inch)	214 (8-7/16)			
Weight	Net (I/D)	kg (lb)	9 (20)			
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 9.52 (3/8)		6.35 (1/4) / 9.52 (3/8)	
Drain Hose	Inner Diameter	mm	16		16	
	Length	mm	650		650	
Indoor Heat Exchanger	Fin Material		Aluminium (Pre Coat)		Aluminium (Pre Coat)	
	Fin Type		Slit Fin		Slit Fin	
	Row x Stage x FPI		2 x 15 x 17		2 x 15 x 21	
	Size (W x H x L)	mm	610 x 315 x 25.4		610 x 315 x 25.4	
Air Filter	Material		Polypropelene		Polypropelene	
	Type		One-touch		One-touch	
Power Supply			Outdoor Power Supply		Outdoor Power Supply	
Power Supply Cord		A	Nil		Nil	
			Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C	32	23	32	23
		Minimum °C	16	11	16	11
	Heating	Maximum °C	30	-	30	-
		Minimum °C	16	-	16	-

1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
4. Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
5. Specifications are subjected to change without prior notice for further improvement.

MODEL				INDOOR		CS-MRE12PKE						
Performance Test Condition						EUROVENT						
Power Supply				Phase, Hz		Single, 50						
				V		230						
						Min.		Mid.		Max.		
Cooling	Capacity			kW		1.10		3.20		3.70		
				BTU/h		3750		10900		12600		
	Running Current			A		-		4.60		-		
	Input Power			W		230		980		1.21k		
	Annual Consumption			kWh		-		490		-		
	EER			W/W		4.78		3.27		3.06		
	Indoor Noise (H / L)			dB-A		44 / 32						
				Power Level dB		60 / -						
Heating	Capacity			kW		0.70		4.50		5.70		
				BTU/h		2390		15300		19400		
	Running Current			A		-		6.15		-		
	Input Power			W		190		1.39k		1.78k		
	COP			W/W		3.68		3.24		3.20		
	Indoor Noise (H / L)			dB-A		44 / 32						
				Power Level dB		60 / -						
	Indoor Fan	Type					Cross-flow Fan					
Material					ASG20K1							
Motor Type					DC (8-poles)							
Input Power			W		47.3							
Output Power			W		40							
Speed		QLo	Cool	rpm		790						
			Heat	rpm		790						
		Lo	Cool	rpm		870						
			Heat	rpm		870						
		Me	Cool	rpm		1070						
			Heat	rpm		1090						
		Hi	Cool	rpm		1260						
			Heat	rpm		1300						
		SHi	Cool	rpm		1290						
			Heat	rpm		1360						
Moisture Removal				L/h (Pt/h)		1.8 (3.8)						
Indoor Airflow		QLo	Cool	m³/min (ft³/min)		7.48 (264)						
	Heat		m³/min (ft³/min)		7.48 (264)							
	Lo	Cool	m³/min (ft³/min)		8.38 (295)							
		Heat	m³/min (ft³/min)		8.38 (295)							
	Me	Cool	m³/min (ft³/min)		10.62 (375)							
		Heat	m³/min (ft³/min)		10.84 (382)							
	Hi	Cool	m³/min (ft³/min)		12.74 (449)							
		Heat	m³/min (ft³/min)		13.19 (465)							
	SHi	Cool	m³/min (ft³/min)		13.08 (461)							
		Heat	m³/min (ft³/min)		13.86(489)							
Dimension	Height (I/D)		mm (inch)		290 (11-7/16)							
	Width (I/D)		mm (inch)		870 (34-9/32)							
	Depth (I/D)		mm (inch)		214 (8-7/16)							
Weight	Net (I/D)		kg (lb)		9 (20)							

MODEL		INDOOR	CS-MRE12PKE	
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 9.52 (3/8)	
Drain Hose	Inner Diameter	mm	16	
	Length	mm	650	
Indoor Heat Exchanger	Fin Material		Aluminium (Pre Coat)	
	Fin Type		Slit Fin	
	Row x Stage x FPI		2 x 15 x 21	
	Size (W x H x L)	mm	610 x 315 x 25.4	
Air Filter	Material		Polypropelene	
	Type		One-touch	
Power Supply			Outdoor Power Supply	
Power Supply Cord		A	Nil	
			Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C	32	23
		Minimum °C	16	11
	Heating	Maximum °C	30	-
		Minimum °C	16	-

- Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
- Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
- Heating low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor 2/1°C
- Heating extreme low temperature capacity, Input Power and COP measured at 230 V, indoor temperature 20°C, outdoor -7/-8°C
- Specifications are subjected to change without prior notice for further improvement.

2.2 CU-2RE15PBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				2.0kW + 2.5kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	4.4 (1.5 ~ 4.8)
			BTU/h	15000 (5120 ~ 16400)
	Electrical Data	Running Current	A	6.10
		Power Input	kW	1.30 (0.27 ~ 1.52)
		EER	W/W	3.38 (5.56 ~ 3.16)
		Power Factor	%	93
		Annual Consumption	kWh	650
	Noise	Sound Pressure Level	dB-A (H/L)	47 / -
		Sound Power Level	dB (H/L)	62 / -
Heating Operation	Capacity		kW	4.8 (1.1 ~ 6.5)
			BTU/h	16400 (3750 ~ 22200)
	Electrical Data	Running Current	A	5.35
		Power Input	kW	1.20k (0.24 ~ 1.67)
		COP	W/W	4.00 (4.58 ~ 3.89)
		Power Factor	%	98
	Noise	Sound Pressure Level	dB-A (H/L)	49 / -
		Sound Power Level	dB (H/L)	64 / -
	Maximum Current			A
Maximum Input Power			W	2.73k
Starting Current			A	6.10
Circuit Breaker Capacity			A	16
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	39
Connection Cable				3 + 1 (Earth) ø1.5 mm ²
Pipe Length Range (1 room)			m	3 ~ 20
Maximum Pipe Length (Total Room)			m	30
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)
	Gas Side		mm (inch)	9.52 (3/8)
Compressor	Type			Hermetic Motor / Rotary
	Motor Type			Brushless (6-poles)
	Rated Output		W	900
Air Circulation	Type			Propeller Fan
	Motor Type			DC Motor (8-poles)
	Rated Output		W	40
Fan Speed	High (Cooling / Heating)		RPM	800 / 900
Heat Exchanger	Type			Plate fin configuration forced draft type
	Tube Material			Copper
	Fin Material			Aluminum (Pre Coat)
	Row / Stage			2 / 28
	FPI			17
Air Volume	High (Cooling / Heating)		m ³ /min	32.7 / 36.9
Refrigerant Control Device				Expansion Valve
Refrigerant Oil			cm ³	RB68A / Freol Alpha68M (350)
Refrigerant (R410A)			g	1.40k

Item			Unit	OUTDOOR UNIT	
				Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C		32	23
		Minimum °C		16	11
	Heating	Maximum °C		30	—
		Minimum °C		16	—
Outdoor Operation Range	Cooling	Maximum °C		43	26
		Minimum °C		16	11
	Heating	Maximum °C		24	18
		Minimum °C		-10	-11

Note

- Specifications are subject to change without notice for further improvement.

2.3 CU-2RE18PBE

Item			Unit	OUTDOOR UNIT
Indoor Unit Combination				2.5kW + 2.5kW
Power Source				1 Phase, 230V, 50Hz (Power supply from outdoor unit)
Cooling Operation	Capacity		kW	4.8 (1.5 ~ 5.0)
			BTU/h	16400 (5120 ~ 17100)
	Electrical Data	Running Current	A	6.95
		Power Input	kW	1.49 (0.27 ~ 1.58)
		EER	W/W	3.22 (5.56 ~ 3.16)
		Power Factor	%	93
		Annual Consumption	kWh	745
	Noise	Sound Pressure Level	dB-A (H/L)	49 / -
		Sound Power Level	dB (H/L)	64 / -
Heating Operation	Capacity		kW	5.2 (1.1 ~ 6.7)
			BTU/h	17700 (3750 ~ 22800)
	Electrical Data	Running Current	A	5.75
		Power Input	kW	1.30k (0.24 ~ 1.70)
		COP	W/W	4.00 (4.58 ~ 3.94)
		Power Factor	%	98
	Noise	Sound Pressure Level	dB-A (H/L)	51 / -
		Sound Power Level	dB (H/L)	66 / -
Maximum Current			A	12.0
Maximum Input Power			W	2.73k
Starting Current			A	6.95
Circuit Breaker Capacity			A	16
Dimension	Height		mm	619
	Width		mm	824 (+70)
	Depth		mm	299
Net Weight			kg	39
Connection Cable				3 + 1 (Earth) ø1.5 mm ²
Pipe Length Range (1 room)			m	3 ~ 20
Maximum Pipe Length (Total Room)			m	30
Refrigerant Pipe Diameter	Liquid Side		mm (inch)	6.35 (1/4)
	Gas Side		mm (inch)	9.52 (3/8)
Compressor	Type			Hermetic Motor / Rotary
	Motor Type			Brushless (6-poles)
	Rated Output		W	900
Air Circulation	Type			Propeller Fan
	Motor Type			DC Motor (8-poles)
	Rated Output		W	40
Fan Speed	High (Cooling / Heating)		RPM	900 / 1000
Heat Exchanger	Type			Plate fin configuration forced draft type
	Tube Material			Copper
	Fin Material			Aluminum (Pre Coat)
	Row / Stage			2 / 28
	FPI			17
Air Volume	High (Cooling / Heating)		m ³ /min	36.9 / 41.1
Refrigerant Control Device				Expansion Valve
Refrigerant Oil			cm ³	RB68A / Freol Alpha68M (350)
Refrigerant (R410A)			g	1.40k

Item			Unit	OUTDOOR UNIT	
				Dry Bulb	Wet Bulb
Indoor Operation Range	Cooling	Maximum °C		32	23
		Minimum °C		16	11
	Heating	Maximum °C		30	—
		Minimum °C		16	—
Outdoor Operation Range	Cooling	Maximum °C		43	26
		Minimum °C		16	11
	Heating	Maximum °C		24	18
		Minimum °C		-10	-11

Note

- Specifications are subject to change without notice for further improvement.

- Multi Split Combination Possibility:
 - A single outdoor unit enables air conditioning of up to two separate rooms for CU-2RE15PBE, CU-2RE18PBE.

CONNECTABLE INDOOR UNIT			OUTDOOR UNIT			
			CU-2RE15PBE		CU-2RE18PBE	
Type			ROOM			
			A	B	A	B
Wall	2.0kW	CS-MRE7PKE	●	●	●	●
	2.5kW	CS-MRE9PKE	●	●	●	●
	3.2kW	CS-MRE12PKE	●	●	●	●
Capacity range of connectable indoor units			From 4.0kW to 5.6kW		From 4.0kW to 6.4kW	
Pipe length	1-room maximum pipe length (m)		20		20	
	Allowable elevation (m)		10		10	
	Total allowable pipe length (m)		30		30	
	Total pipe length for maximum chargeless length (m)		20		20	
	Additional gas amount over chargeless length (g/m)		15		15	
Note: “●” : Available						
Remarks for CU-2RE15PBE / CU-2RE18PBE						
1. At least two indoor units must be connected.						
2. The total nominal cooling capacity of indoor units that will be connected to outdoor unit must be within connectable capacity range of indoor unit. (as shown in the table above) Example: The indoor units' combination below is possible to connect to CU-2RE15PBE. (Total nominal capacity of indoor units is between 4.0kW to 5.6kW)						
CU-2RE15PBE. (Total nominal capacity of indoor units is between 4.0kW to 5.6kW)						
1) Two CS-MRE7PKE only (Total nominal cooling capacity is 4.0kW)						
2) One CS-MRE7PKE and one CS-MRE9PKE. (Total nominal cooling capacity is 4.5kW)						

- Indoor Unit : CS-MRE7/9/12PKE
- Outdoor Unit : CU-2RE15PBE

2 Room		1 Room	
Indoor Unit Capacity (kW)	Total Indoor Capacity (kW)	Indoor Unit Capacity (kW)	Total Indoor Capacity (kW)
20 + 20	40	20	20
20 + 25	45	25	25
20 + 32	52	32	32
25 + 25	50		

- Indoor Unit : CS-MRE7/9/12PKE
- Outdoor Unit : CU-2RE18PBE

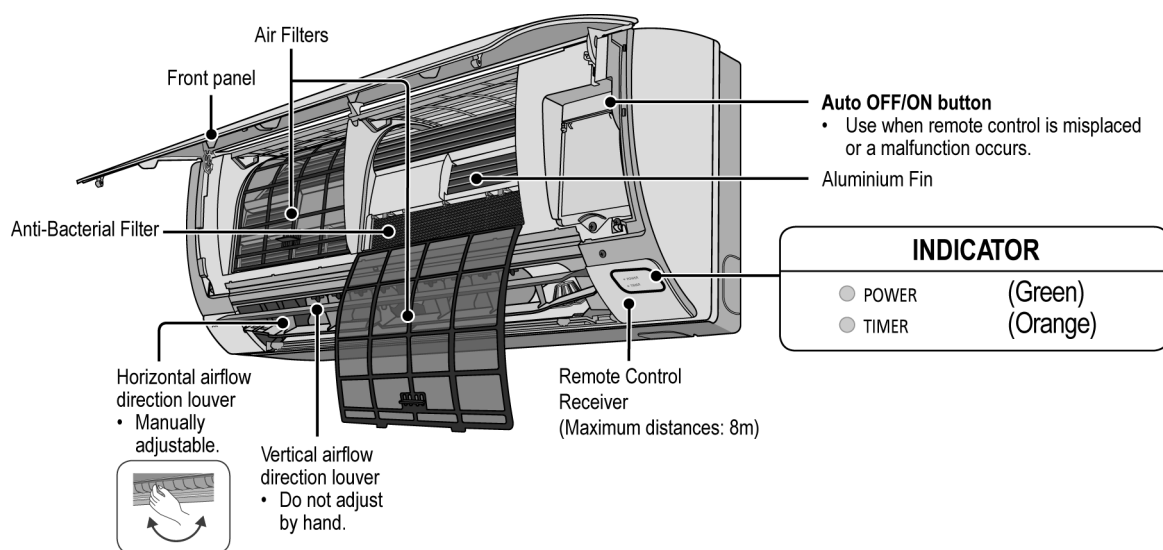
2 Room		1 Room	
Indoor Unit Capacity (kW)	Total Indoor Capacity (kW)	Indoor Unit Capacity (kW)	Total Indoor Capacity (kW)
20 + 20	40	20	20
20 + 25	45	25	25
20 + 32	52	32	32
25 + 25	50		
25 + 32	57		
32 + 32	64		

3. Features

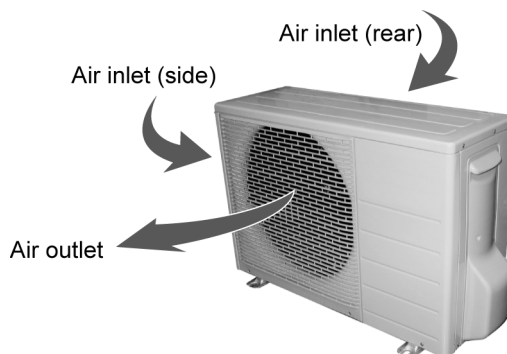
- **Inverter Technology**
 - Wider output power range
 - Energy saving
 - Quick Cooling
 - Quick Heating
 - More precise temperature control
- **Environment Protection**
 - Non-ozone depletion substances refrigerant (R410A)
- **Long Installation Piping**
 - Long piping up to 15 meters (0.75 ~ 1.75HP) during single split connection only
- **Easy to use remote control**
- **Quality Improvement**
 - Random auto restart after power failure for safety restart operation
 - Gas leakage protection
 - Prevent compressor reverse cycle
 - Inner protector to protect Compressor
 - Noise prevention during soft dry operation
- **Operation Improvement**
 - 24-hour timer setting
- **Serviceability Improvement**
 - Breakdown Self Diagnosis function

4. Location of Controls and Components

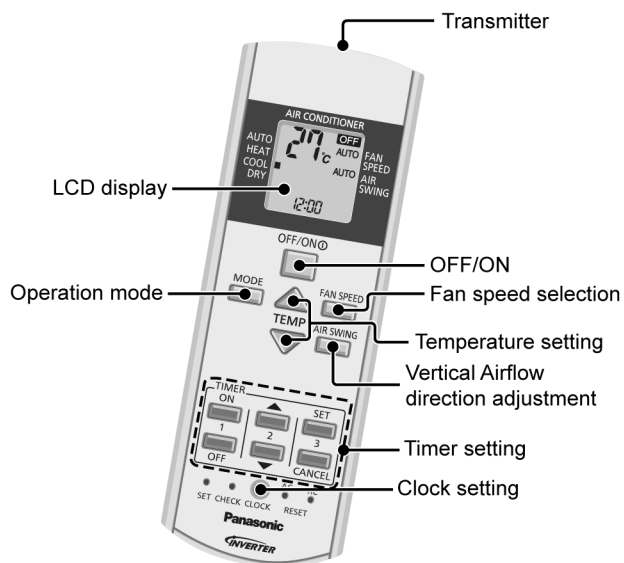
4.1 Indoor Unit



4.2 Outdoor Unit

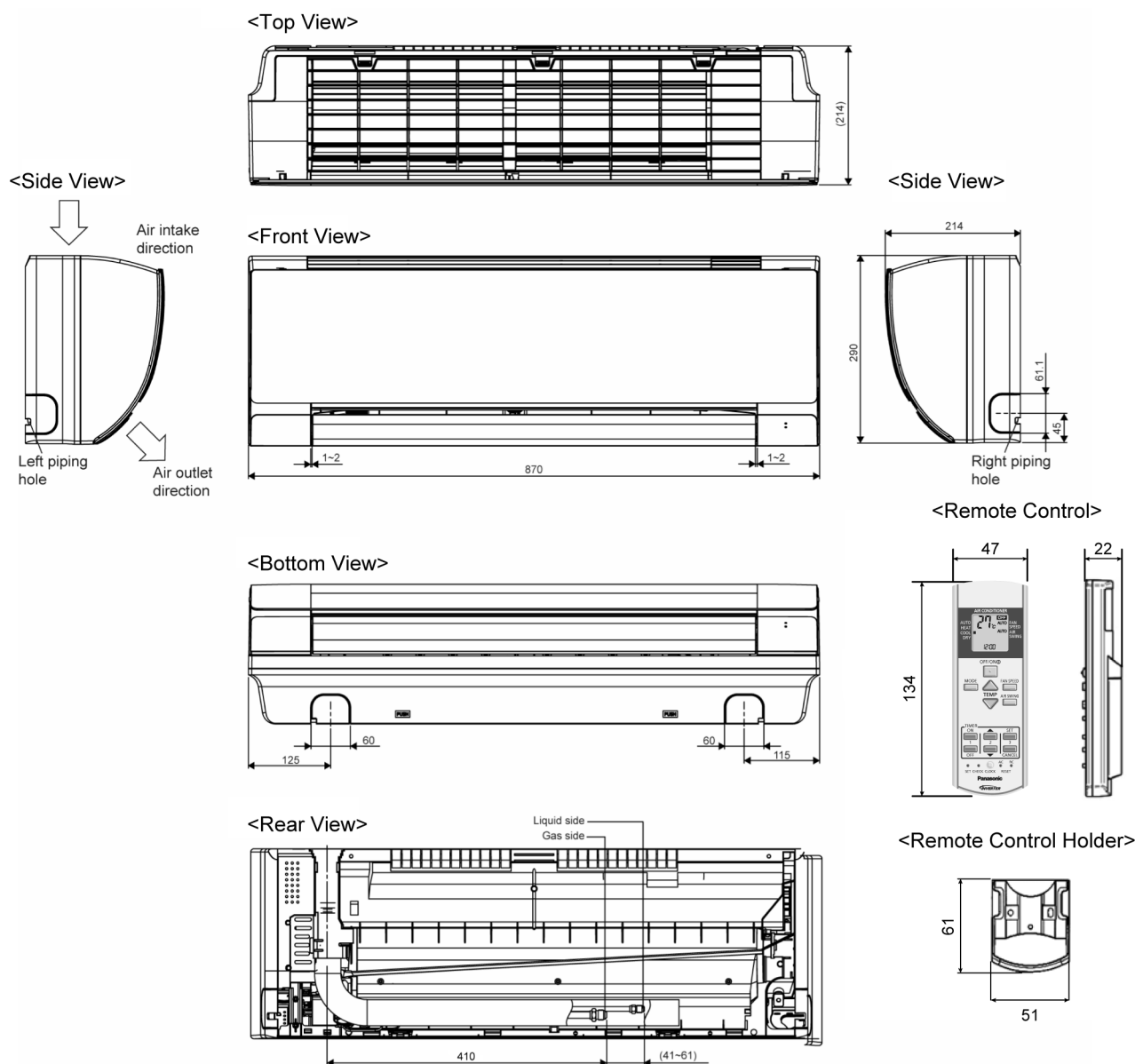


4.3 Remote Control

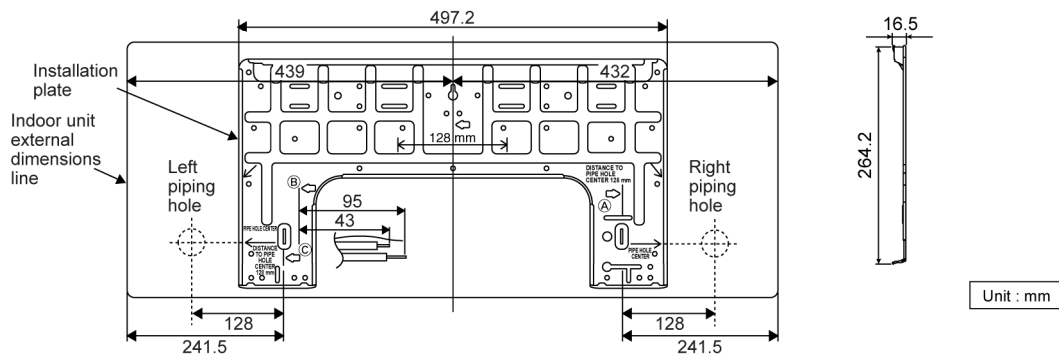


5. Dimensions

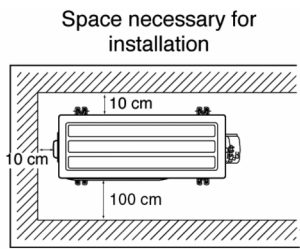
5.1 Indoor Unit



Relative position between the indoor unit and the installation plate

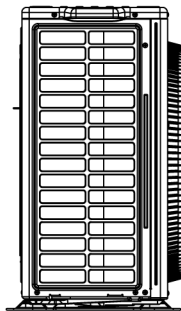


5.2 Outdoor Unit

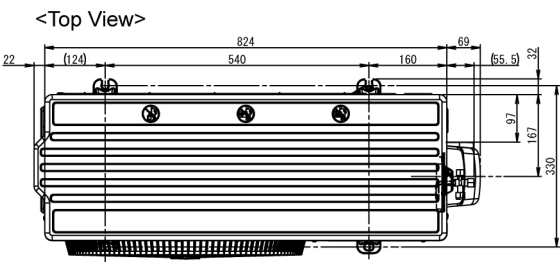


Anchor Bolt Pitch
540 x 330

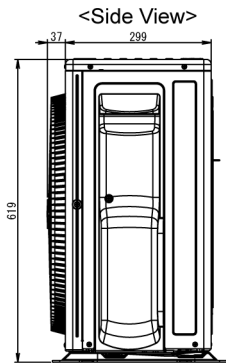
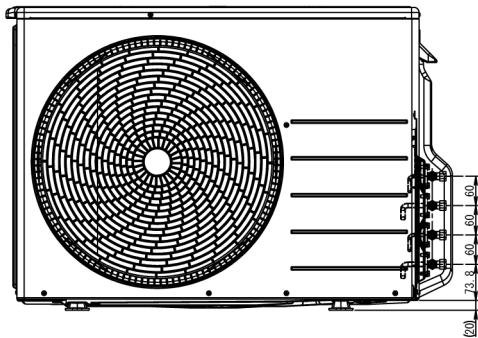
<Side View>



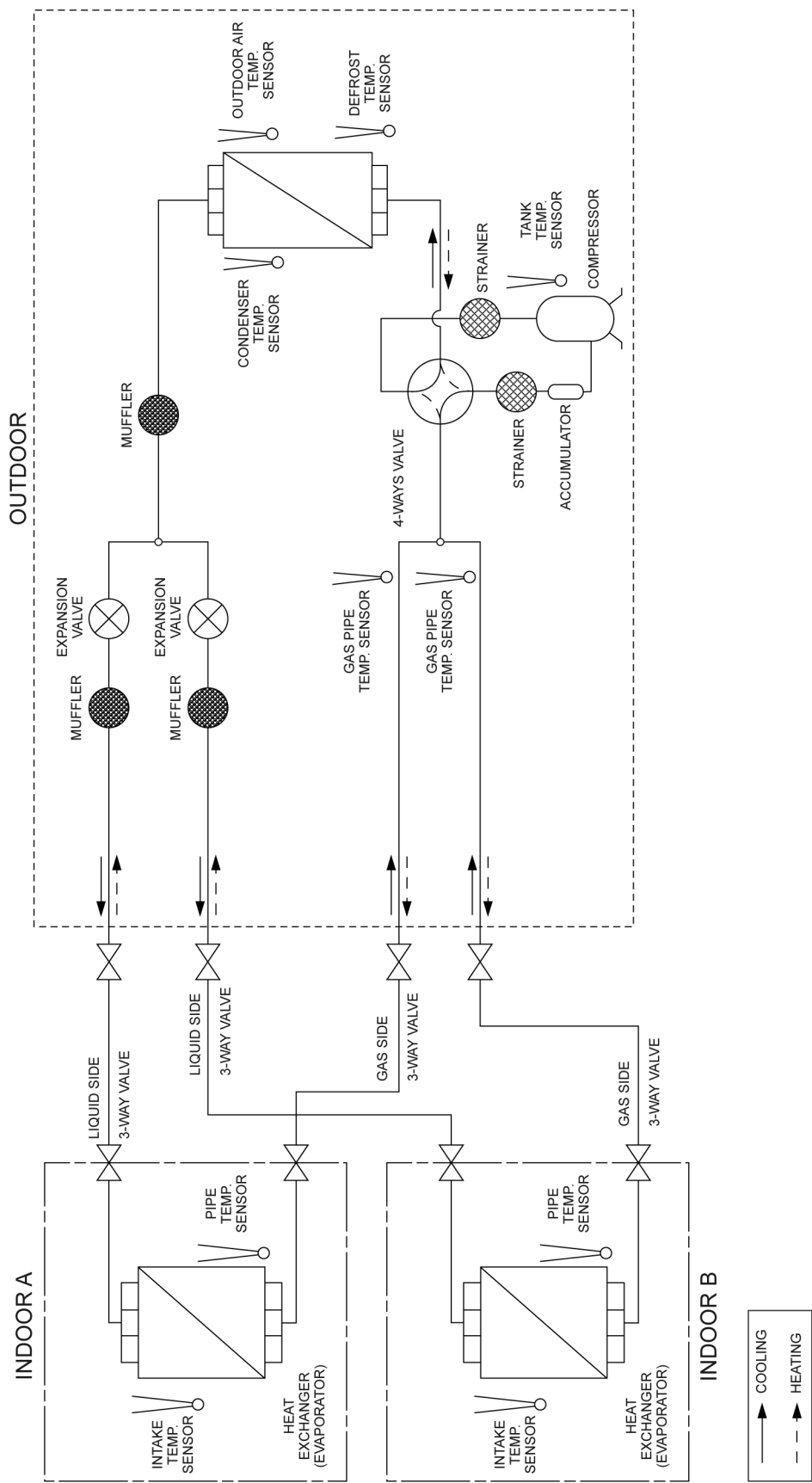
Unit: mm



<Front View>

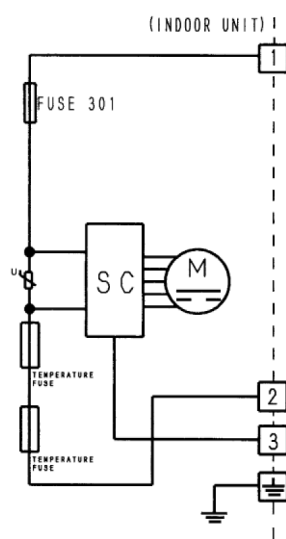


6. Refrigeration Cycle Diagram

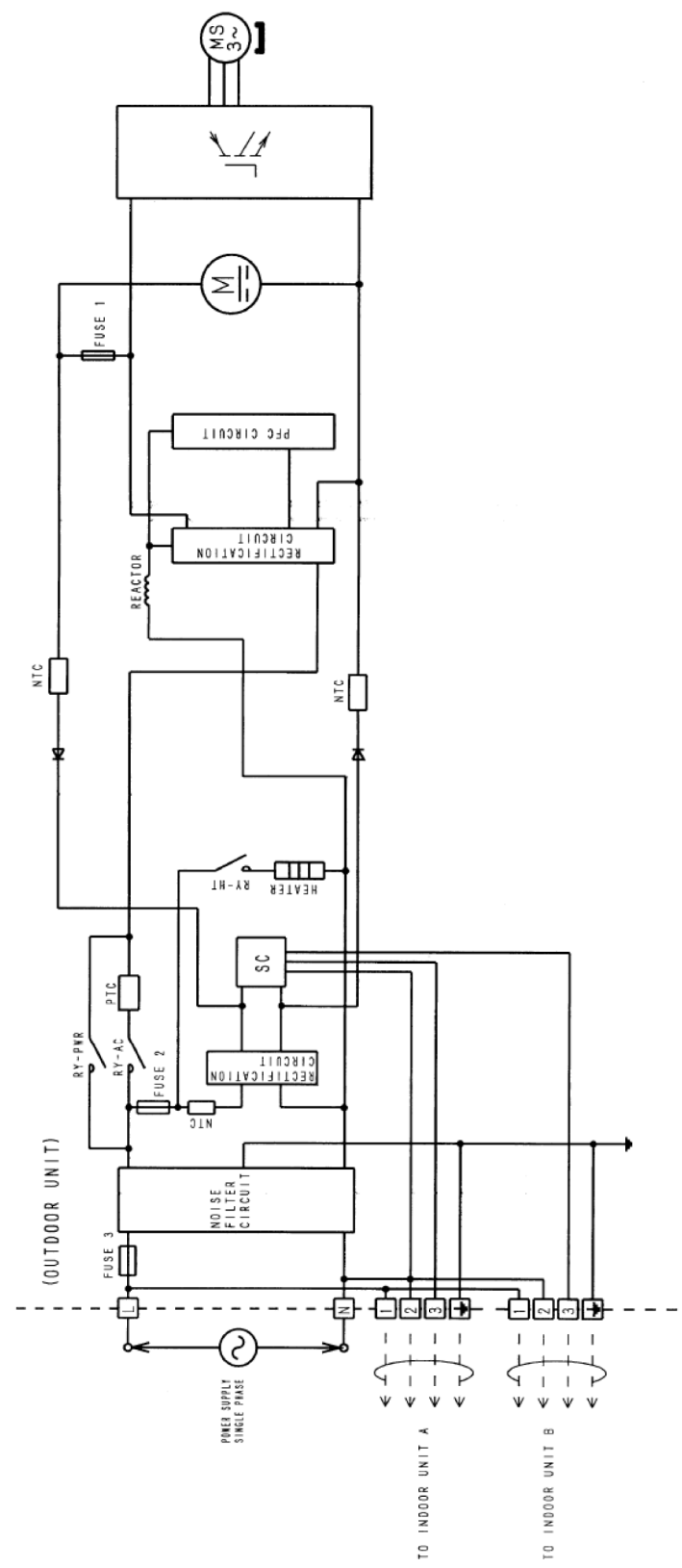


7. Block Diagram

7.1 Indoor Unit

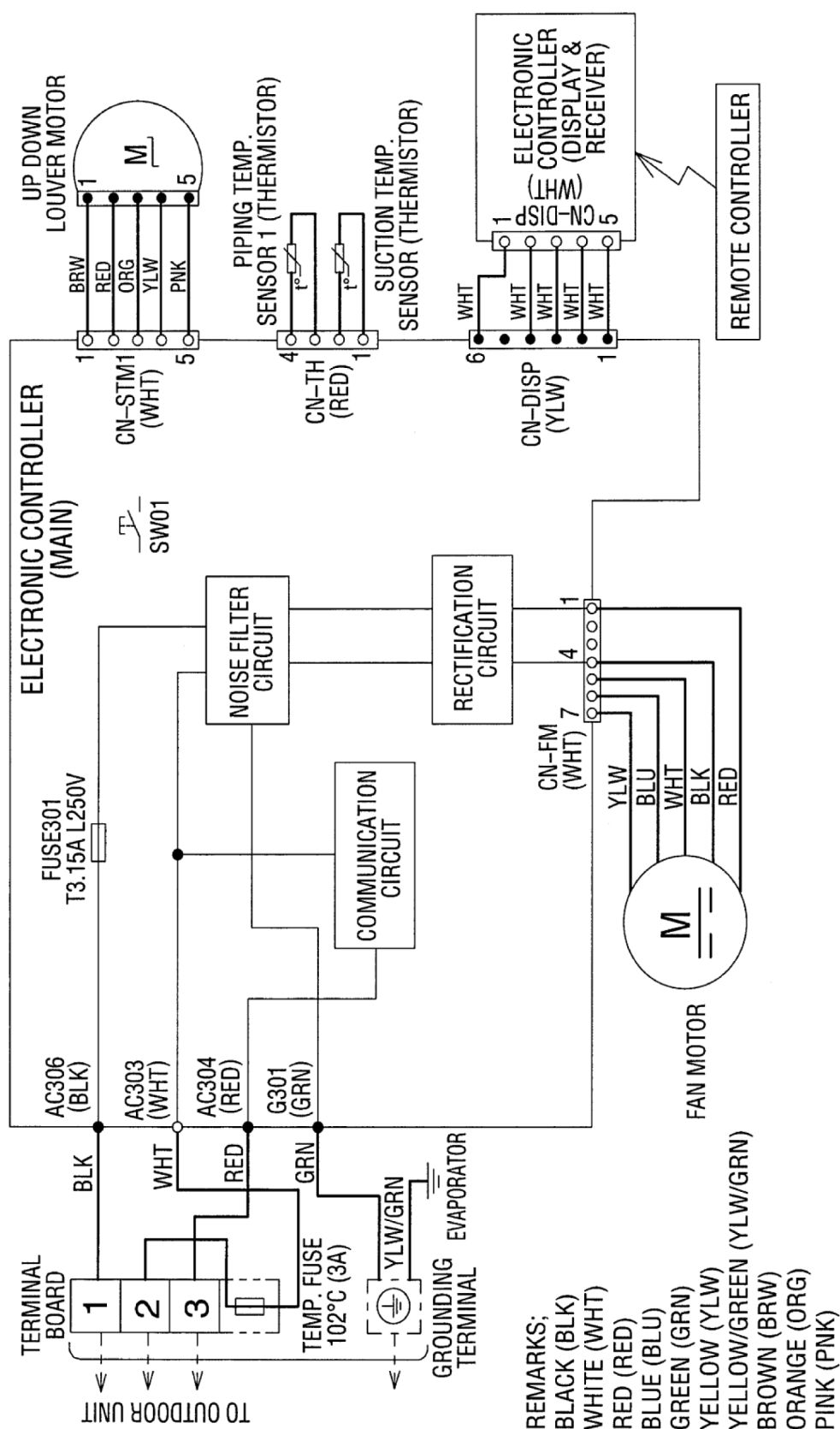


7.2 Outdoor Unit



8. Wiring Connection Diagram

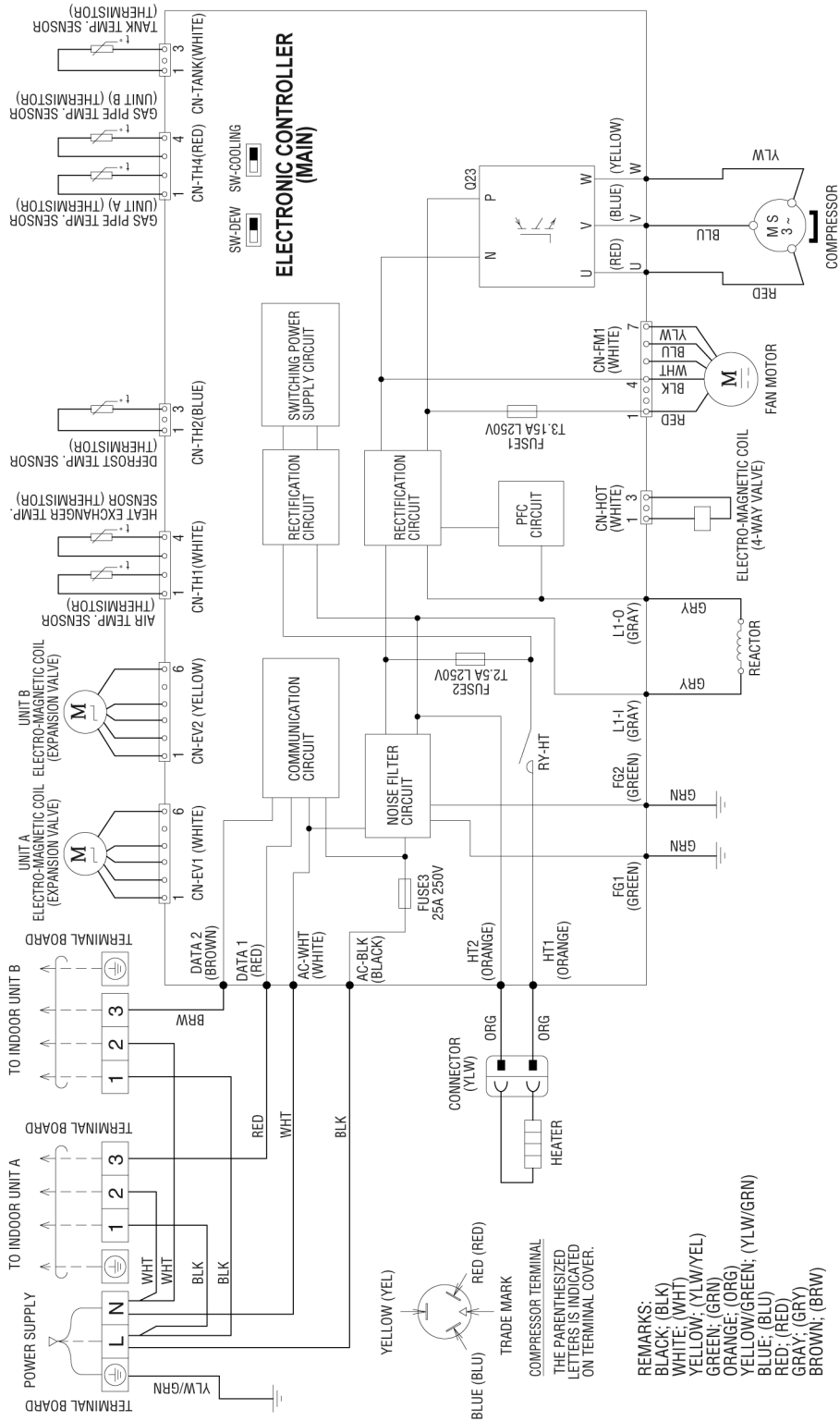
8.1 Indoor Unit



8.2 Outdoor Unit

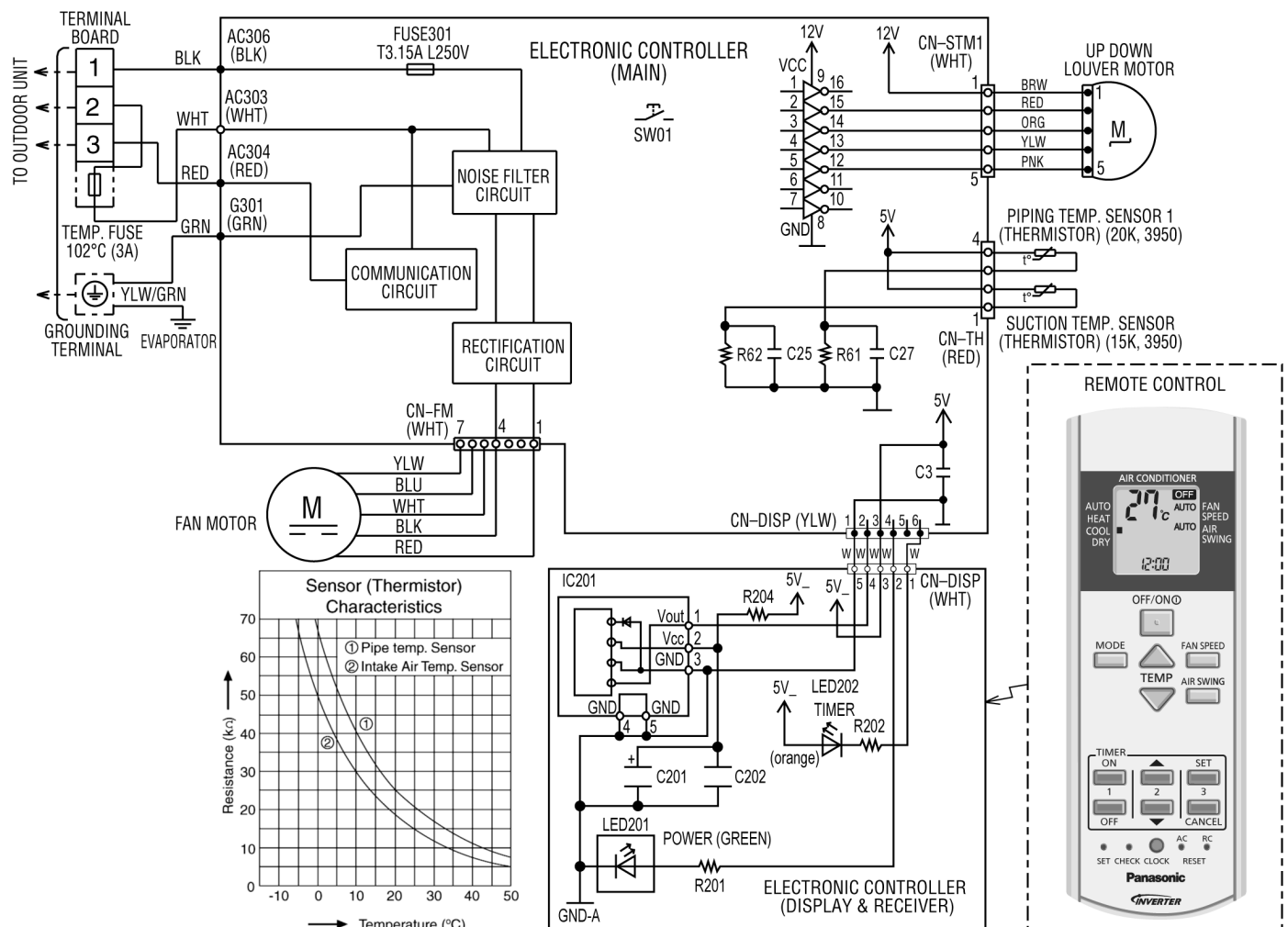
Resistance of Compressor Windings

CONNECTION	5RD132XFC21 (Ω)
U - V	0.642
V - W	0.636
U - W	0.652

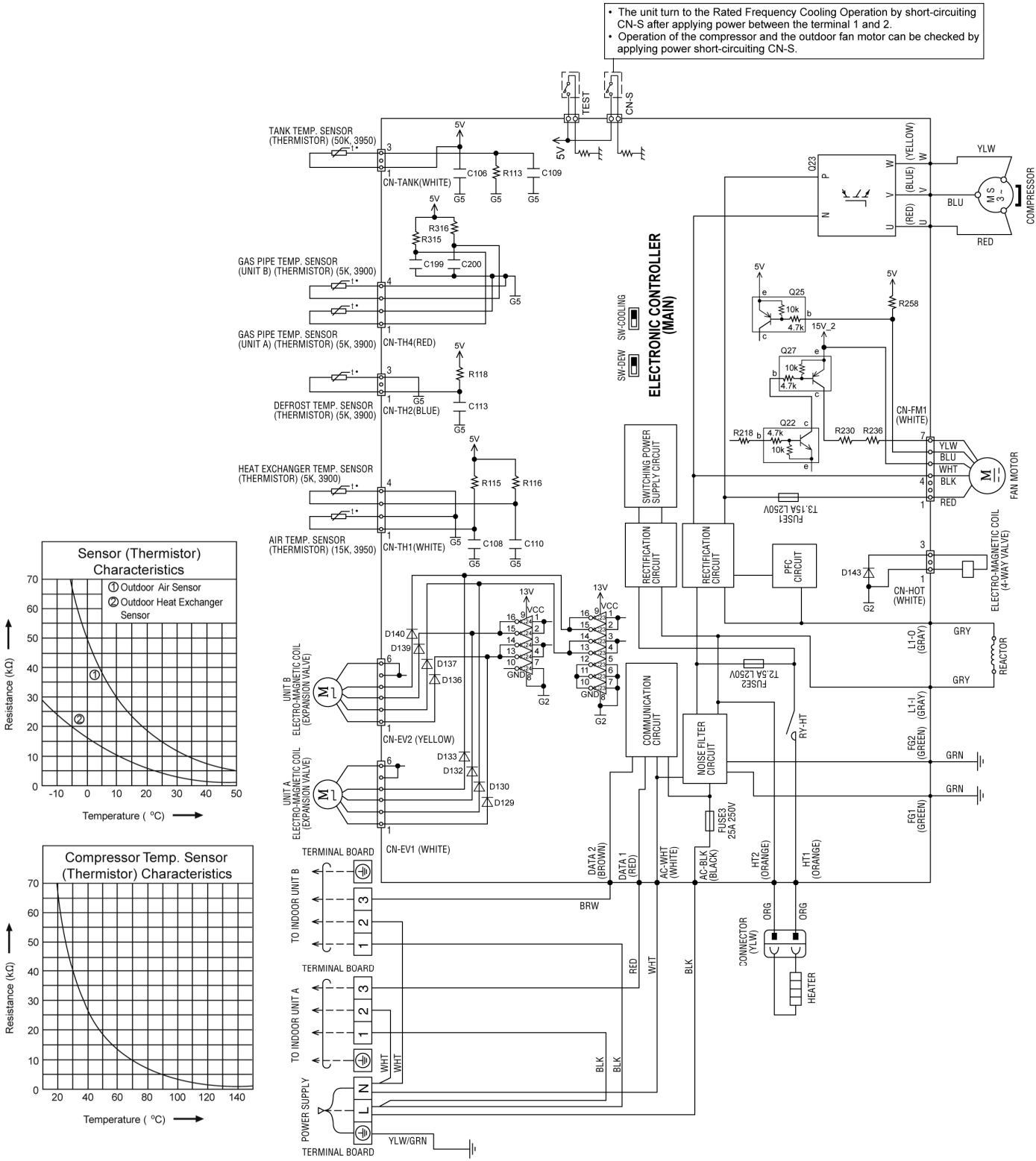


9. Electronic Circuit Diagram

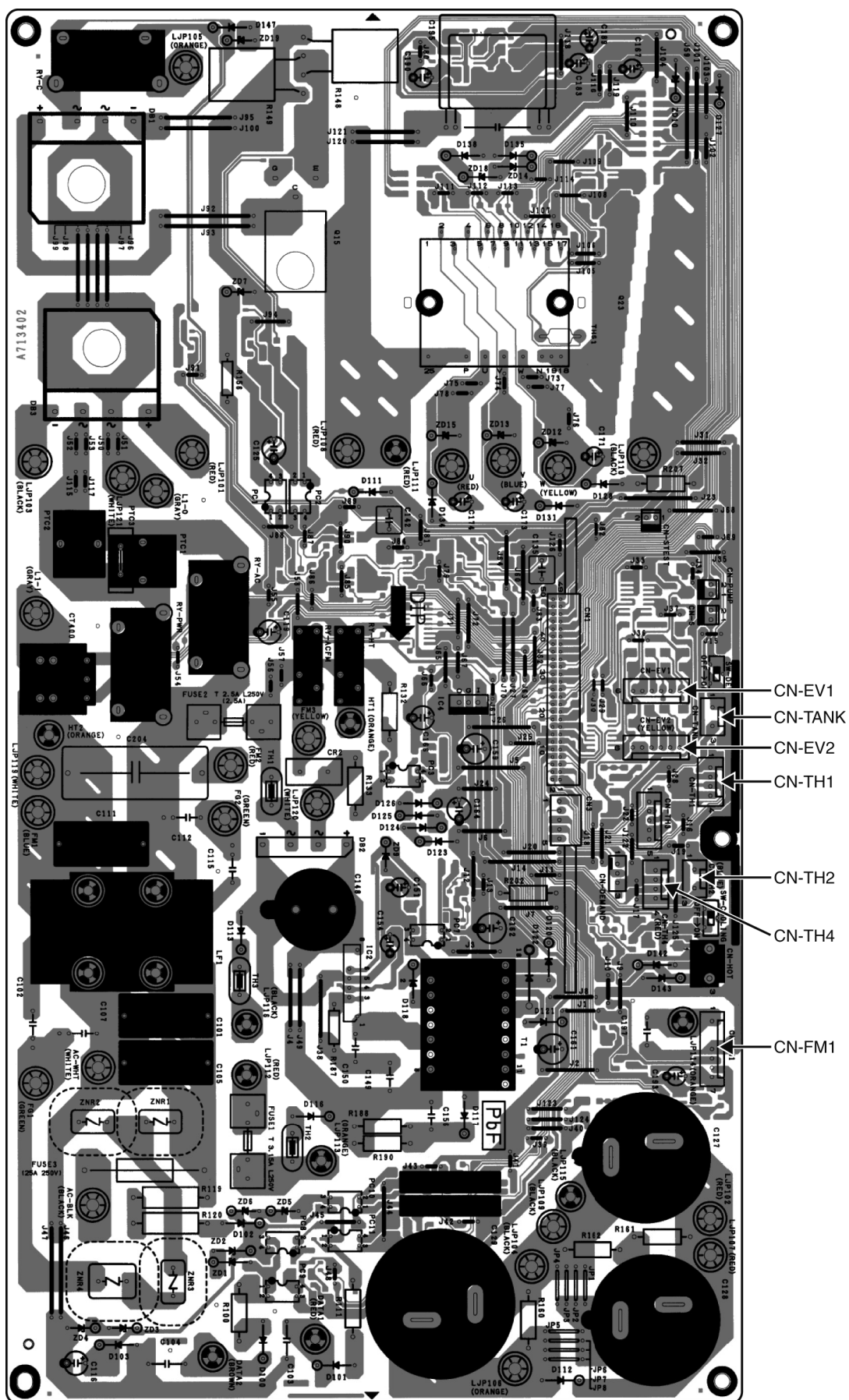
9.1 Indoor Unit



9.2 Outdoor Unit



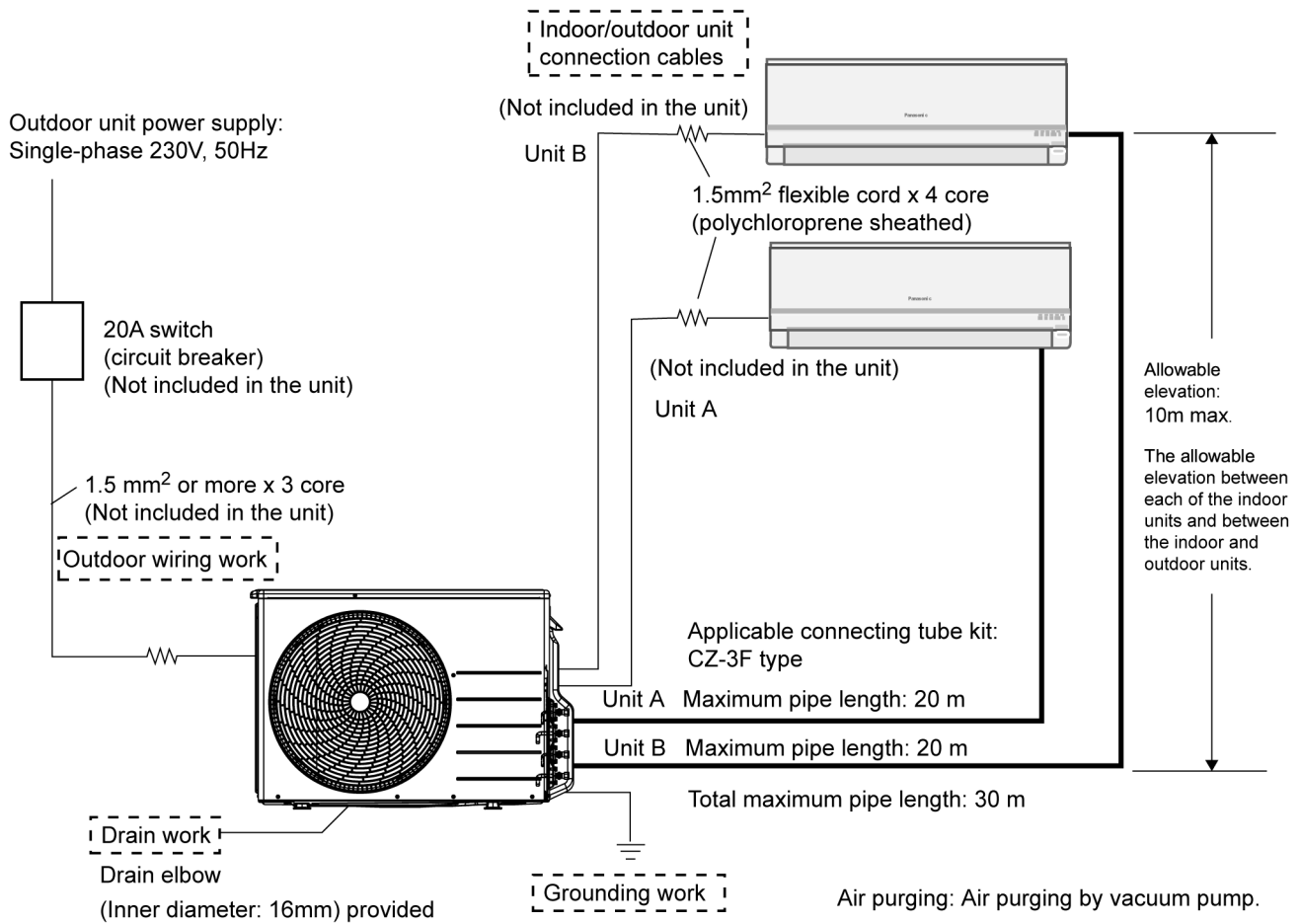
10.2 Outdoor Unit



11. Installation Information

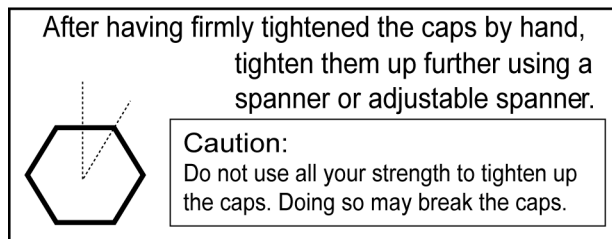
11.1 CU-2RE15PBE

11.1.1 Check Points



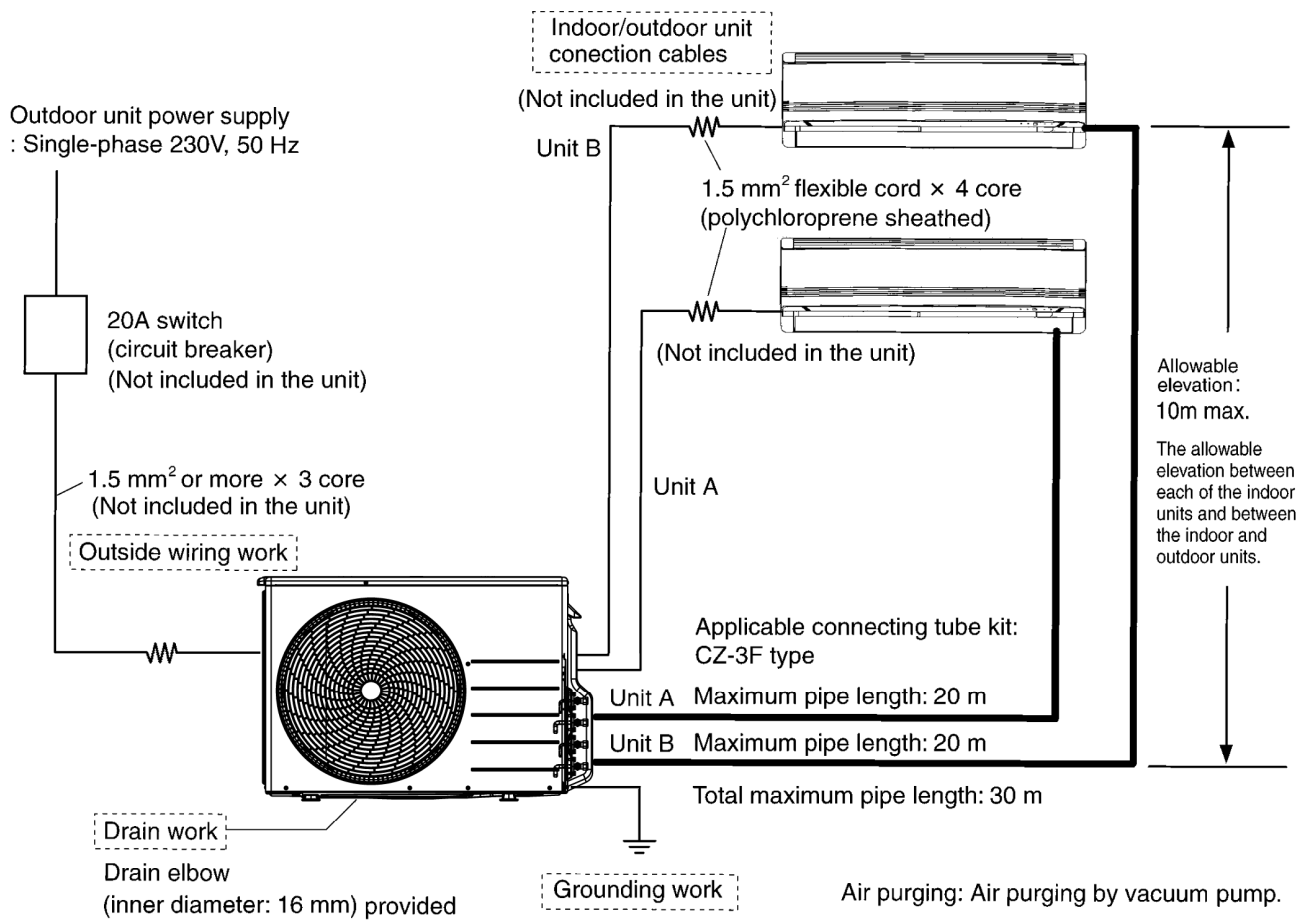
11.1.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.



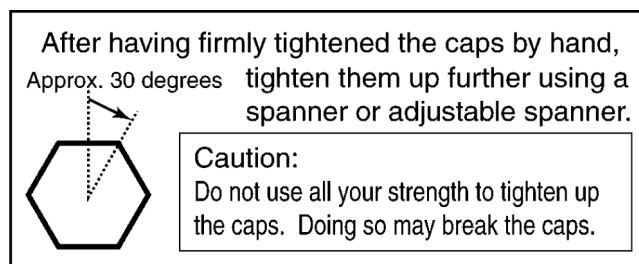
11.2 CU-2RE18PBE

11.2.1 Check Points



11.2.2 The Shapes of the 3-Way Valve Caps of the Outdoor Unit Have Been Changed

- Accompanying the changes in the shapes of the 3-way valve caps, the tightening method has also been changed.
- Firmly tighten the 3-way valve caps by hand, and then tighten them up by another 30 degrees or so (one-twelfth of a full turn) using a spanner or adjustable spanner.



12. Installation Instruction

12.1 Select the Best Location

12.1.1 Indoor Unit

- Do not install the unit in excessive oil fume area such as kitchen, workshop and etc.
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit shall be at least 2.5 m.

12.1.2 Outdoor Unit

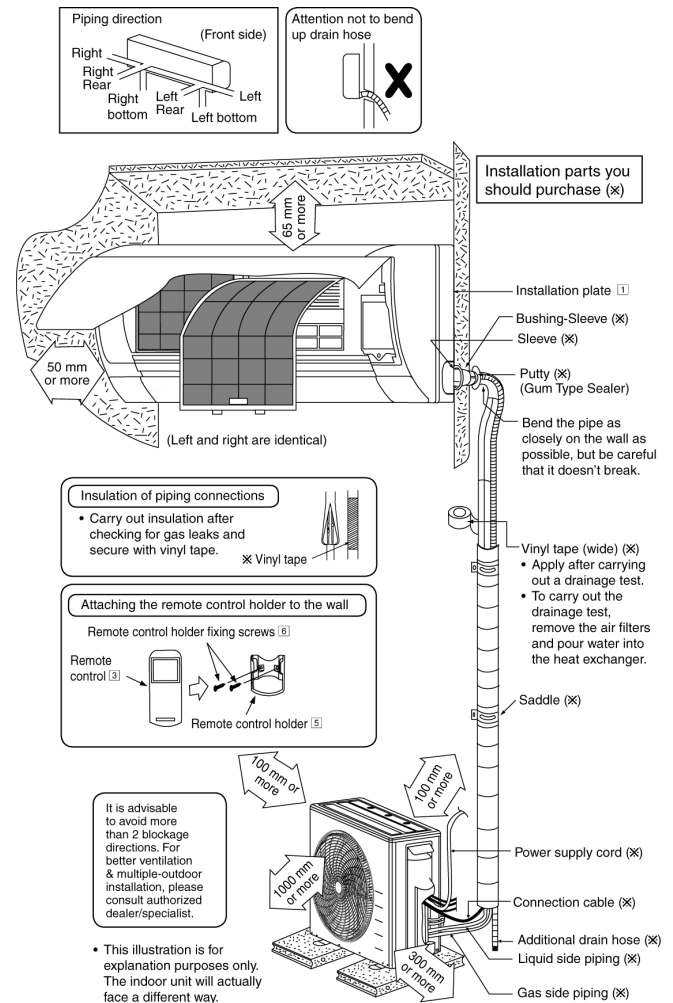
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

PIPE size		Std. Length (m)	Min. Length (m)	Max. total Length (m)	Max. Elevation (m)	Additional gas charge amount (g/m)
Gas 9.52 mm (3/8")	Liquid 6.35mm (1/4")					
		5 m/ Indoor unit	3 m/ Indoor unit	30	10	15

Note:

- (1) It is possible to extend the piping length of one unit up to 20 meters. However, the total piping length must not exceed 30.
- (2) If the length exceeds 20 meters, refrigerant of 15g per meter must be added.

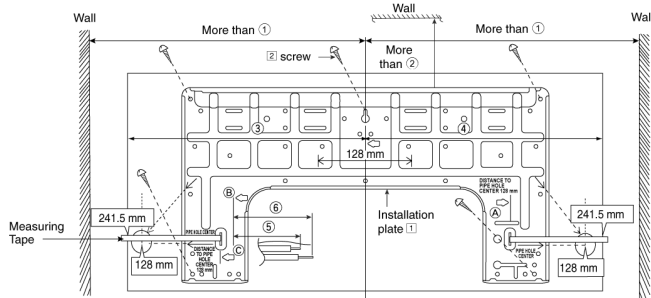
12.1.3 Indoor/Outdoor Unit Installation Diagram



12.2 Indoor Unit

12.2.1 How to Fix Installation Plate

The mounting wall is strong and solid enough to prevent it from the vibration.



Model	Dimension					
	①	②	③	④	⑤	⑥
MRE7*** MRE9*** MRE12***	490 mm	82 mm	439 mm	432 mm	43 mm	95 mm

The center of installation plate should be at more than ① at right and left of the wall.

The distance from installation plate edge to ceiling should more than ②.

From installation plate center to unit's left side is ③.

From installation plate center to unit's right side is ④.

- ⑥ : For left side piping, piping connection for liquid should be about ⑤ from this line.
: For left side piping, piping connection for gas should be about ⑥ from this line.

- Mount the installation plate on the wall with 5 screws or more (at least 5 screws). (If mounting the unit on the concrete wall, consider using anchor bolts.)
 - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
- Drill the piping plate hole with $\varnothing 70$ mm hole-core drill.
 - Line according to the left and right side of the installation plate. The meeting point of the extended line is the center of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole center is obtained by measuring the distance namely 128 mm for left and right hole respectively.
 - Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side.

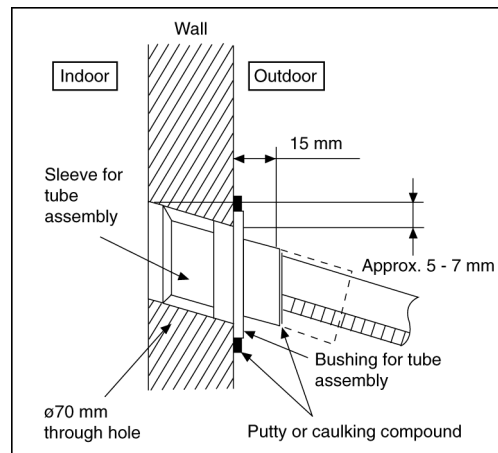
12.2.2 To Drill a Hole in the Wall and Install a Sleeve of Piping

- Insert the piping sleeve to the hole.
- Fix the bushing to the sleeve.
- Cut the sleeve until it extrudes about 15 mm from the wall.

⚠ CAUTION

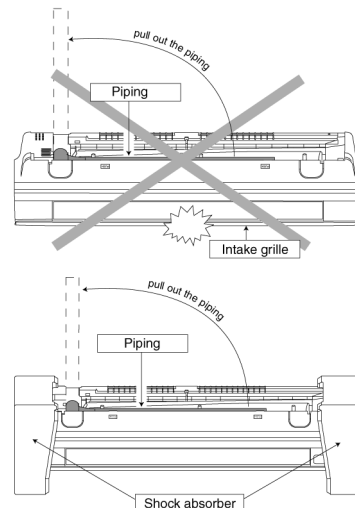
⚠ When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

- Finish by sealing the sleeve with putty or caulking compound at the final stage.



12.2.3 Indoor Unit Installation

- Do not turn over the unit without its shock absorber during pull out the piping. It may cause intake grille damage.
- Use shock absorber during pull out the piping to protect the intake grille from damage.



12.2.3.1 For the right rear piping

- Step-1** Pull out the Indoor piping
- Step-2** Install the Indoor Unit
- Step-3** Secure the Indoor Unit
- Step-4** Insert the connection cable

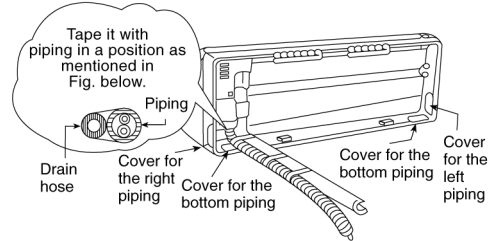
12.2.3.2 For the right and right bottom piping

- Step-1** Pull out the Indoor piping
- Step-2** Install the Indoor Unit
- Step-3** Insert the connection cable
- Step-4** Secure the Indoor Unit

12.2.3.3 For the embedded piping

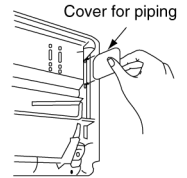
- Step-1** Replace the drain hose
- Step-2** Bend the embedded piping
 - Use a spring bender or equivalent to bend the piping so that the piping is not crushed.
- Step-3** Pull the connection cable into Indoor Unit
 - The inside and outside connection cable can be connected without removing the front grille.
- Step-4** Cut and flare the embedded piping
 - When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
 - Refer to the section "Cutting and flaring the piping".
- Step-5** Install the Indoor Unit
- Step-6** Connect the piping
 - Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)
- Step-7** Insulate and finish the piping
 - Please refer to "Insulation of piping connection" column as mentioned in indoor/outdoor unit installation.
- Step-8** Secure the Indoor Unit

Right Rear piping

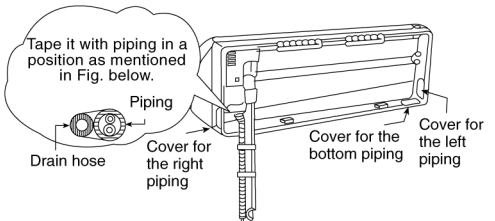


How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.
(Left, right and 2 bottom covers for piping.)

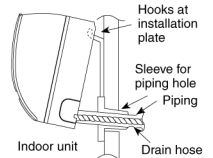


Right and Right Bottom piping



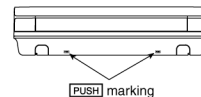
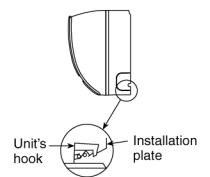
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate. (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.



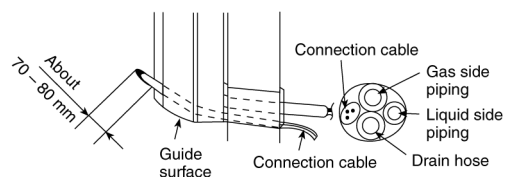
Secure the Indoor Unit

1. Press the lower left and right side of the unit against the installation plate until hooks engages with their slot (sound click).

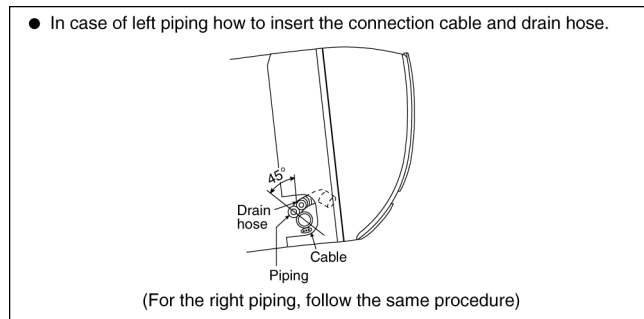
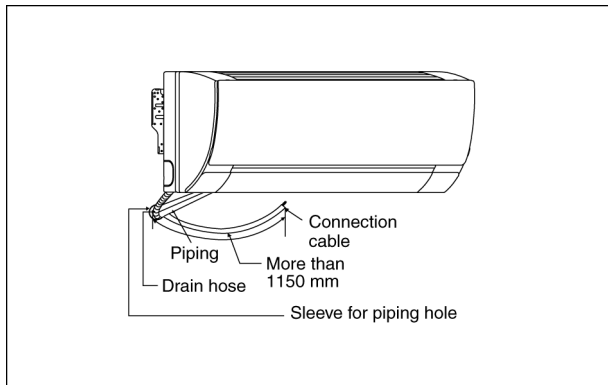
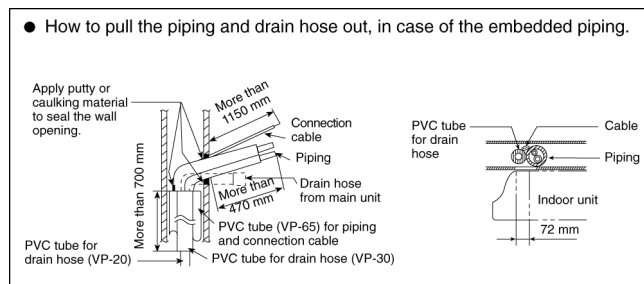
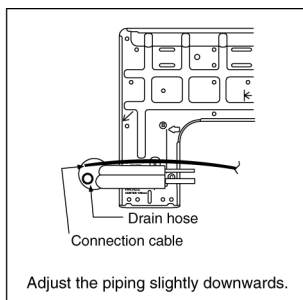
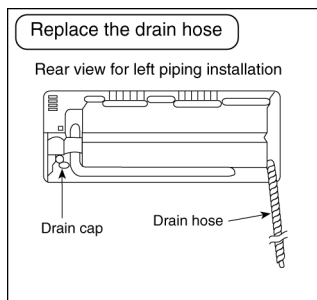


To take out the unit, push the **PUSH** marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

Insert the connection cable



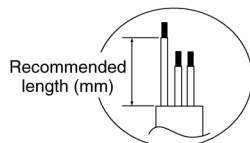
(This can be used for left rear piping and bottom piping also.)



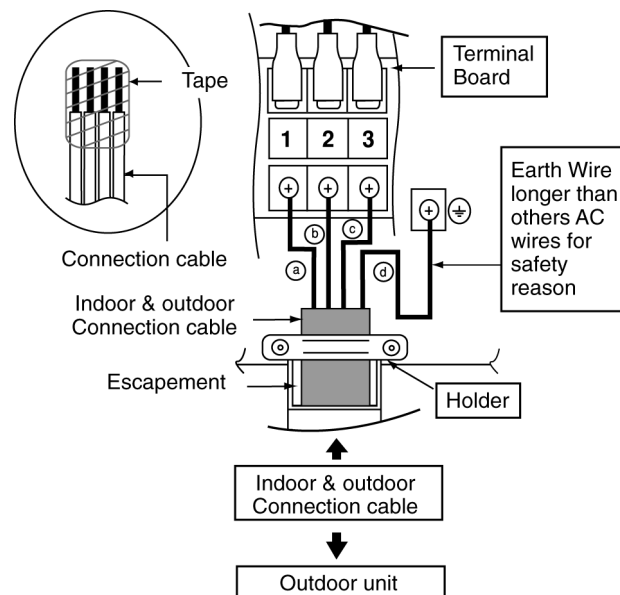
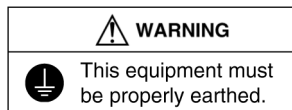
12.2.4 Connect the Cable to the Indoor Unit

- 1 The inside and outside connection cable can be connected without removing the front grille.
- 2 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord.
- 3 Bind all the indoor and outdoor connection cable with tape and route the connection cable via the escapement.
- 4 Remove the tapes and connect the connection cable between indoor unit and outdoor unit according to the diagram below.

Terminals on the indoor unit	1	2	3	⊕
Colour of wires				
Terminals on the outdoor unit	1	2	3	⊕

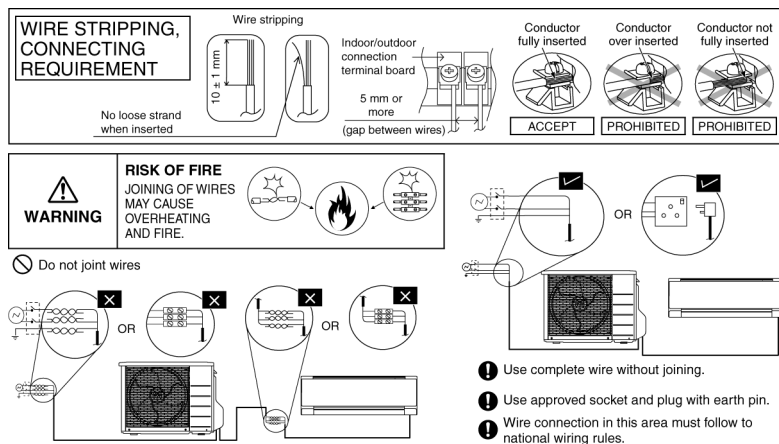


Recommended length (mm)	a	b	c	d
	35	35	35	55



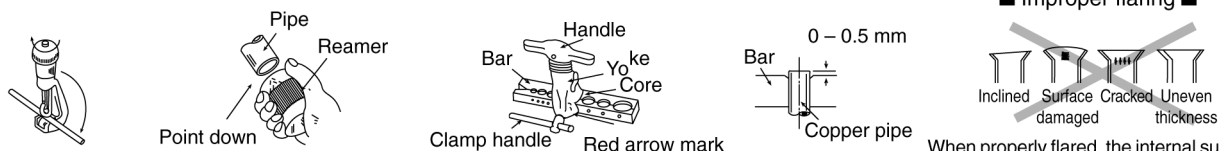
Note:

- Secure the connection cable onto the control board with the holder.
- Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.



CUTTING AND FLARING THE PIPING

- 1 Please cut using pipe cutter and then remove the burrs.
- 2 Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
- 3 Please make flare after inserting the flare nut onto the copper pipes.

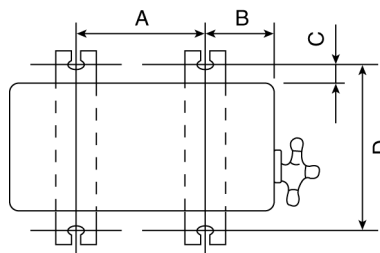


When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

12.3 Outdoor Unit

12.3.1 Install the Outdoor Unit

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.
 - Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
 - When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.



Model	A	B	C	D
2RE15***, 2RE18***	540 mm	160 mm	18.5 mm	330 mm

12.3.2 Connect the Piping

Connecting the Piping to Indoor

Please make flare after inserting flare nut (locate at joint portion, of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

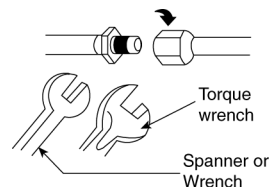
Do not overtighten, overtightening may cause gas leakage.	
Piping Size	Torque
6.35 mm (1/4")	[18 N•m (1.8 kgf.m)]
9.52 mm (3/8")	[42 N•m (4.3 kgf.m)]
12.7 mm (1/2")	[55 N•m (5.6 kgf.m)]
15.88 mm (5/8")	[65 N•m (6.6 kgf.m)]
19.05 mm (3/4")	[100 N•m (10.2 kgf.m)]

Connecting the Piping to Outdoor Multi

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.

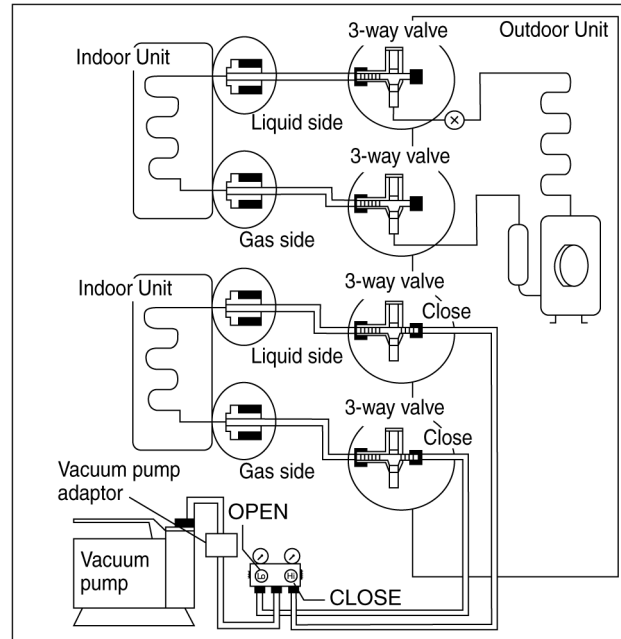
Make flare after inserting the flare nut (locate at valve) onto the copper pipe.

Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.



12.3.3 Evacuation of the Equipment

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



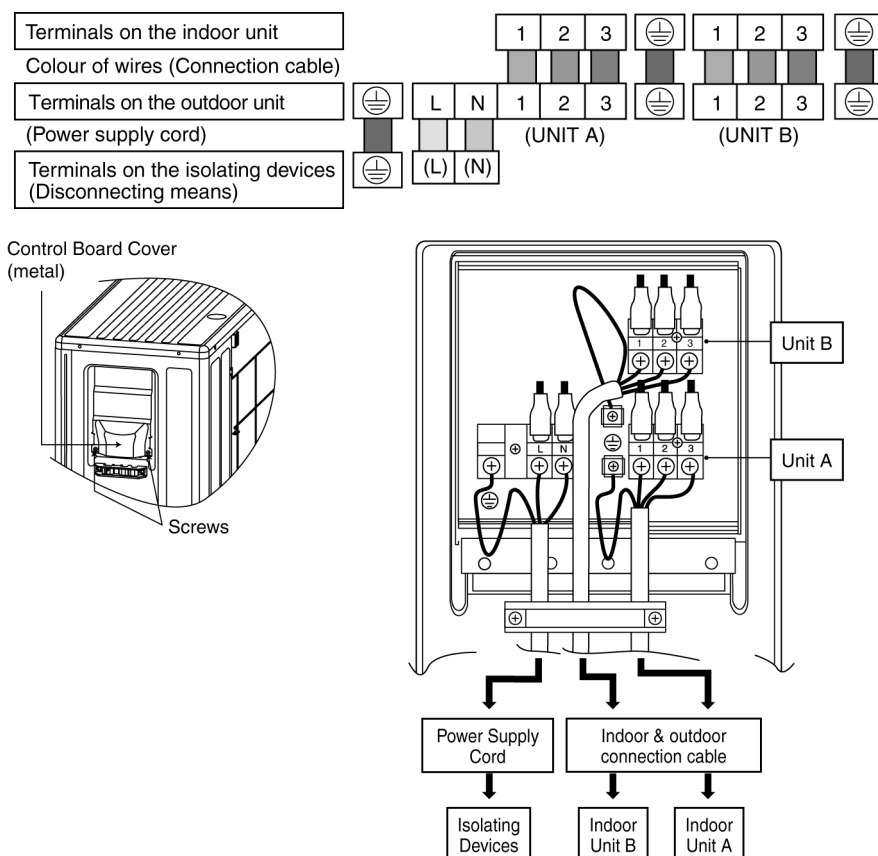
- 1 Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.
 - Be sure to connect the end of the charging hose with the push pin to the service port.
- 2 Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump adaptor.
- 3 Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.
- 4 Close the Low and High side valves of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.
Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO REFRIGERANT GAS LEAKAGE.
- 5 Disconnect the charging hose from the vacuum pump and from the service of the 3-way valve.
- 6 Tighten the service port caps of the 3-way valve at a torque of 18 N•m with a torque wrench.
- 7 Remove the valve caps of both of the 3-way valve. Position both of the valves to "OPEN" using a hexagonal wrench (4 mm).
- 8 Mount valve caps onto the both 3-way valve.
 - Be sure to check for gas leakage.

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in the step ③ above take the following measure:
 - If the leak stops when the piping connections are tightened further, continue working from step ③.
 - If the leak does not stop when the connections are retightened, repair location of leak.
 - Do not release refrigerant during piping work for installation and reinstallation.
 - Take care of the liquid refrigerant, it may cause frostbite.

12.3.4 Connect the cable to the Outdoor Unit

- 1 Remove the control board cover (metal) from the unit by loosening two screws.
- 2 Cable connection to the power supply through Isolating Devices (Disconnecting means).
 - Connect approved type polychloroprene sheathed **power supply cord** 3 x 1.5 mm² type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the others end of the cord to Isolating Devices (Disconnecting means).
- 3 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord.

- 4 Connect the power supply cord and connection cable between indoor unit and outdoor unit according to the diagram as shown.



- 5 Secure the power supply cord and connection cables onto the control board with the holder.
- 6 Attach the control board cover back to the original position with screw.
- 7 For wire stripping and connection requirement, refer to instruction 11.2.4 of indoor unit.

WARNING
This equipment must be properly earthed.

- Note: Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

12.3.5 Piping Insulation

- 1 Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
- 2 If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

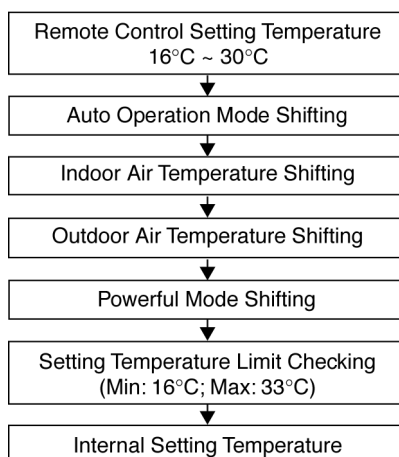
13. Operation and Control

13.1 Basic Function

Inverter control, which equipped with a microcomputer in determining the most suitable operating mode as time passes, automatically adjusts output power for maximum comfort always. In order to achieve the suitable operating mode, the microcomputer maintains the set temperature by measuring the temperature of the environment and performing temperature shifting. The compressor at outdoor unit is operating following the frequency instructed by the microcomputer at indoor unit that judging the condition according to internal setting temperature and intake air temperature.

13.1.1 Internal Setting Temperature

Once the operation starts, remote control setting temperature will be taken as base value for temperature shifting processes. These shifting processes are depending on the air conditioner settings and the operation environment. The final shifted value will be used as internal setting temperature and it is updated continuously whenever the electrical power is supplied to the unit.



13.1.2 Cooling Operation

13.1.2.1 Thermostat control

- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature < -2.0°C
- Capability resume supply to indoor unit after waiting for 3 minutes, if the Intake Air temperature — Internal setting temperature > Capability supply OFF point.

13.1.3 Soft Dry Operation

13.1.3.1 Thermostat control

- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature < -3.0°C
- Capability resume to indoor unit after waiting for 3 minutes, if the Intake Air temperature — Internal setting temperature > Capability supply OFF point.

13.1.4 Heating Operation

13.1.4.1 Thermostat control

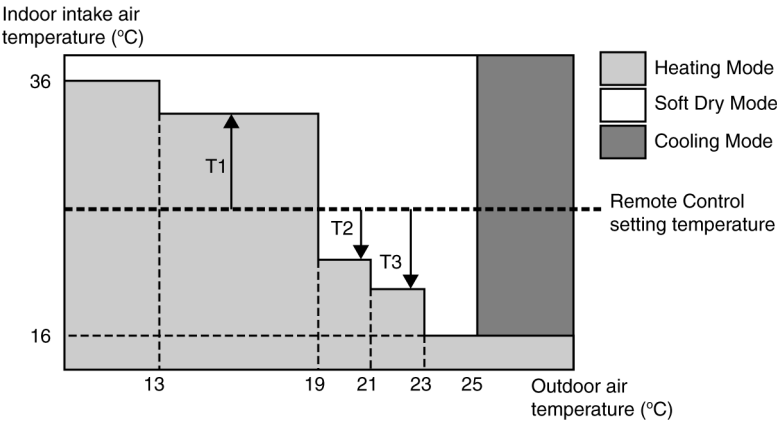
- Capability supply to indoor unit is OFF (Expansion valve closed) when Intake Air Temperature — Internal setting temperature > +1.0°C
- During this condition, the indoor fan is stopped if compressor is ON.
- Capability resume supply to indoor unit after waiting for 3 minutes, if the Intake Air Temperature — Internal setting temperature < Capability supply OFF point.

13.1.4.2 Heating Temperature Sampling Control

- Temperature sampling is controlled by outdoor unit where room temperature for all power supply ON indoor unit could be obtained.
- When capability supply to the indoor unit is OFF and the compressor is ON, the indoor fan motor is stopped. During this condition, 15 seconds after sampling signal from outdoor unit is received, the indoor fan start operation at pre-determined fan speed.
- However, within first 4 minutes of capability stopped supply to the indoor unit, even sampling signal is received, the sampling control is cancelled.

13.1.5 Automatic Operation

- This mode can be set using remote control and the operation is decided by remote control setting temperature, remote control operation mode, indoor intake and outdoor air temperature.
- During operation mode judgment, indoor fan motor (with speed of -Lo) and outdoor fan motor are running for 30 seconds to detect the indoor intake and outdoor air temperature. The operation mode is decided based on below chart.



- Every 180 minutes, the indoor and outdoor temperature is judge. Based on remote control setting temperature, the value of T1 will increase up to 10°C, T2 will decrease by 3°C and T3 will decrease up to 8°C.

13.2 Indoor Fan Motor Operation

A. Basic Rotation Speed (rpm)

i. Manual Fan Speed

[Cooling, Dry]

- Fan motor’s number of rotation is determined according to remote control setting.

Remote control	O	O	O	O	O
Tab	Hi	Me+	Me	Me-	Lo

[Heating]

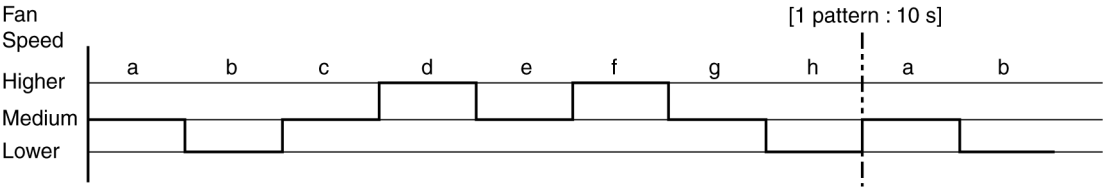
- Fan motor’s number of rotation is determined according to remote control setting.

Remote control	O	O	O	O	O
Tab	SHi	Me+	Me	Me-	Lo

ii. Auto Fan Speed

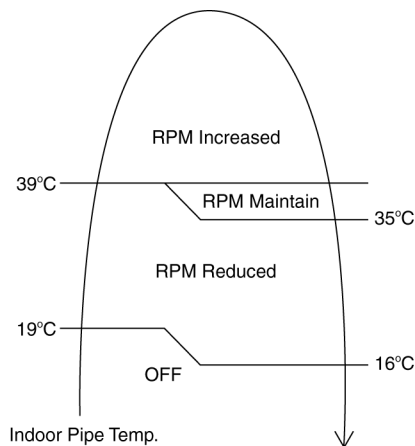
[Cooling, Dry]

- According to room temperature and setting temperature, indoor fan speed is determined automatically.
- The indoor fan will operate according to pattern below.



[Heating]

- According to indoor pipe temperature, automatic heating fan speed is determined as follows.



B. Feedback control

- Immediately after the fan motor started, feedback control is performed once every second.
- During fan motor on, if fan motor feedback ≥ 2550 rpm or < 50 rpm continue for 10 seconds, then fan motor error counter increase, fan motor is then stop and restart. If the fan motor counter becomes 7 times, then H19 - fan motor error is detected. Operation stops and cannot on back.

13.3 Indoor Fan Motor Operation

13.3.1 Residual Heat Removal Control

- To prevent high pressure at indoor unit, when heating mode thermostat-off condition or power supply OFF, indoor fan continue to operate at controlled fan speed for maximum 30 seconds then stop.

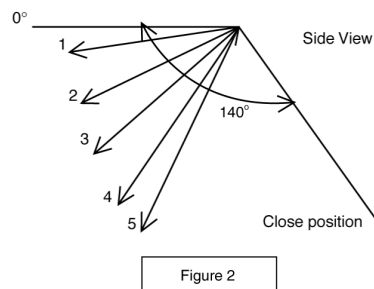
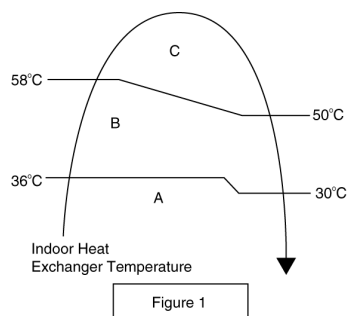
13.4 Airflow Direction

- There are two types of airflow, vertical airflow (directed by horizontal vane) and horizontal airflow (directed by vertical vanes).
- Control of airflow direction can be automatic (angles of direction is determined by operation mode, heat exchanger temperature and intake air temperature) and manual (angles of direction can be adjusted using remote control).

13.4.1 Vertical Airflow

Operation Mode			Vane Angle (°)				
			1	2	3	4	5
Cooling	Auto	Usual (Ventilation)	10 ~ 40				
		Control with dew	10 ~ 40				
	Manual	Usual (Ventilation)	10	17.5	25	32.5	40
		Control with dew	10	17.5	25	32.5	40
Dry	Auto	Usual	10 ~ 40				
		Control with dew	10 ~ 40				
	Manual	Usual	10	17.5	25	32.5	40
		Control with dew	10	17.5	25	32.5	40
Heating	Manual		10	21.2	32.5	43.8	55

- Automatic vertical airflow direction can be set using remote control; the vane swings up and down within the angles as stated above. For heating mode operation, the angle of the vane depends on the indoor heat exchanger temperature as Figure 1 below. It does not swing during fan motor stop. When the air conditioner is stopped using remote control, the vane will shift to close position.
- Manual vertical airflow direction can be set using remote control; the angles of the vane are as stated above and the positions of the vane are as Figure 2 below. When the air conditioner is stopped using remote control, the vane will shift to close position.



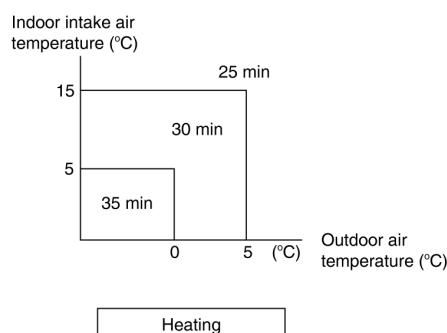
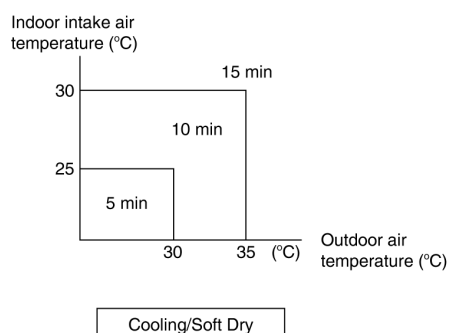
13.4.2 Horizontal Airflow

- The horizontal airflow direction louvers can be adjusted manually by hand.

13.5 Timer Control

13.5.1 ON Timer Control

- ON timer can be set using remote control, the unit with timer set will start operate earlier than the setting time. This is to provide a comfortable environment when reaching the set ON time.
- 60 minutes before the set time, indoor (at fan speed of Lo-) and outdoor fan motor start operate for 30 seconds to determine the indoor intake air temperature and outdoor air temperature in order to judge the operation starting time.
- From the above judgment, the decided operation will start operate earlier than the set time as shown below.



13.5.2 OFF Timer Control

OFF timer can be set using remote control, the unit with timer set will stop operate at set time.

13.6 Auto Restart Control

- When the power supply is cut off during the operation of air conditioner, the compressor will re-operate between three to four minutes (10 patterns to be selected randomly) after power resume.
- During multi split connection, Indoor unit will resume previous mode, include unit standby mode.

13.7 Indication Panel

LED	POWER	TIMER
Color	Green	Orange
Light ON	Operation ON	Timer Setting ON
Light OFF	Operation OFF	Timer Setting OFF

Note:

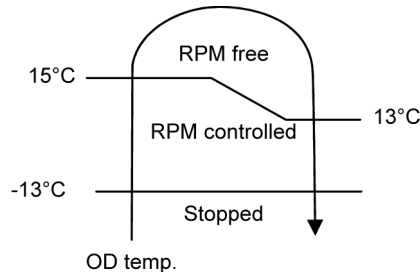
- If POWER LED is blinking (0.5 seconds ON, 0.5 second OFF), the possible operation of the unit are during Indoor Residual Heat Removal, Hot Start, during Deice operation, operation mode judgment, or ON timer sampling.
- If POWER LED is blinking (2.5 seconds ON, 0.5 second OFF), the unit is in standby mode.
- If TIMER LED is blinking, there is an abnormality operation occurs.

14. Operation Control

14.1 Cooling Operation

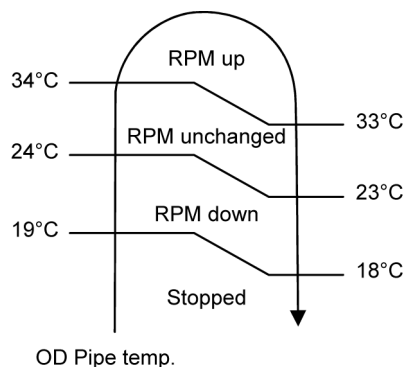
14.1.1 Outdoor fan control

- When cooling operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below:



14.1.2 Annual Cooling control

- This control is to enable cooling operation when outdoor ambient temperature is low.
- Control start conditions:
 - Cooling operation is activated with compressor ON.
 - Outdoor ambient temperature is less than 15°C
- Control contents:
 - When the above conditions are fulfilled, based on outdoor pipe temperature, the outdoor fan motor will operate according to figure below:



- To improve the judgment accuracy during annual cooling control, outdoor ambient temperature sampling for 2 minutes will be activated every 35 minutes under designated fan speed.
- Control stop conditions:
 - When either one of the start conditions are not complied.

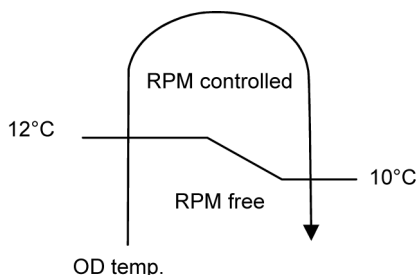
14.1.3 Cooling Powerful Operation 1

- During cooling operation, this control is to concentrate outdoor unit capability to the powerful operation enabled indoor unit by temporary stop the capability supply to low load demand indoor units.
- Operation start condition:
 - Powerful operation ON for targeted indoor unit
- Operation content:
 - If other indoor units (where Powerful operation are OFF) achieve setting temperature continuously for 1 minute after received powerful command from indoor unit, then capability supply to other indoor units are stopped for minimum 3 minutes. Capability supply stop period follows powerful operation period.
- Operation stops when comply either one of the following conditions:
 - When other indoor units (where Powerful operation are OFF) is demand for capacity.
 - When the powerful operation is OFF for all indoor units.
 - When Quiet operation received from 1 indoor unit.
 - When protection control starts.

14.2 Heating Operation

14.2.1 Outdoor fan control

- When heating operation is enabled, based on outdoor ambient temperature, fan motor control will be adjusted according to figure below for Heating overload control:



14.2.2 Heating Room Temp Sampling Control

- To improve the judgment accuracy, indoor room temperature sampling starts when any indoor unit has stopped capability supplied (heating thermo-off) during heating operation with compressor ON, outdoor unit will send signal to all thermo-off indoor units to ON fan motor and get room temperature sample.
- To prevent discharge temperature drop at indoor units which is ON when sampling the room temperature of heating thermo-off units, the compressor frequency is increased accordingly.
- However, if indoor room temperature is much higher compare to remote control setting temperature, before thermo-off, sampling of corresponding indoor unit will be cancelled.

14.2.3 Powerful Operation 2

- During cooling / heating operation, this control is to provide fast cooling / heating operation compare to normal operation.
- Operation start if all condition below are complied:
 - Powerful operation ON for indoor unit.
 - Not under Annual Cooling control.
- Operation content:
 - Outdoor fan speed will adjust automatically.
 - Compressor frequency will adjust automatically.
- Operation stop when comply either one of the follow conditions:
 - When the powerful operation is OFF for all indoor units.
 - When annual cooling control activated.

14.3 Outdoor Quiet Cooling Operation Control

- Purpose**
Provide quiet cooling operation when only 1 indoor in operation.
 - Start Condition**
 - Indoor fan speed is lower than Lo fan.
 - Only 1 operation indoor unit.
 - Not in any cooling overload zone.
 - Not during annual cooling
 - Not initial frequency operation.
 - Not during starting control.
 - Not during "Electronic part temperature rise protection by outdoor air & total current"
 - Not during "Electronic part temperature rise protection by total current"
 - Not during "IPM temperature rise prevention control"
 - During cool mode
- All conditions above are satisfied and function selection enable.

- Control Contents

Compressor frequency and outdoor fan speed maximum limit is set. Adjust accordingly.

	Compressor frequency	Outdoor fan speed
Cool/Quiet	#30 Hz	#400 rpm

- Cancel Condition

- Indoor fan speed is equal or higher than Lo fan.
- > 1 operation indoor unit.
- In any cooling overload zone.
- During annual cooling
- Initial frequency operation.
- During starting control.
- During "Electronic part temperature rise protection by outdoor air & total current"
- During "Electronic part temperature rise protection by total current"
- During "IPM temperature rise prevention control"
- Not during cool mode

When any above is satisfied.

15. Protection Control

15.1 Freeze Prevention control (Cool)

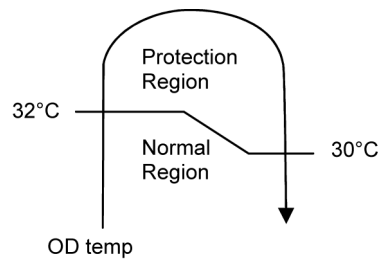
- When received freeze prevention signal from indoor unit, the compressor frequency changes according to indoor heat exchanger temperature.
- When indoor unit request capability OFF due to freeze condition, immediately the capability supply to targeted indoor unit stops.

15.2 Dew Prevention control (Cool)

- When received dew prevention signal from indoor unit, which according to indoor intake temperature and indoor heat exchanger temperature the compressor frequency changes.

15.3 Electronic Parts Temperature Rise Protection 1 (Cool)

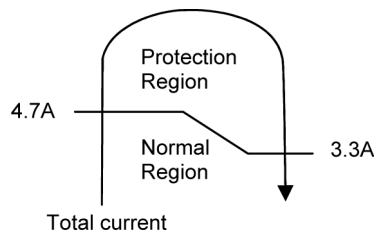
- This control prevents electronic parts temperature rise during cooling overload condition.
- Start conditions:
 - Outdoor ambient temperature is at protection region as shown in figure below:



- Outdoor unit total current is above 5.5A (4E/3E), 5.0A (2E18/2E15)
- Control content
 - Outdoor fan speed is adjusted accordingly.
- Control stop condition
 - When outdoor ambient temperature is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

15.4 Electronic Parts Temperature Rise Protection 2 (Cool)

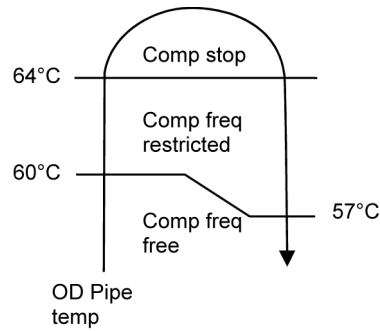
- This control prevents electronic parts temperature rise during cooling/dry operation.
- Start conditions:
 - Total current is at protection region as shown in figure below:



- Control content
 - Outdoor fan speed is adjusted accordingly.
- Control stop conditions
 - When total current is back to normal region.
- During this control, outdoor fan speed does not reduce for Quiet operation.

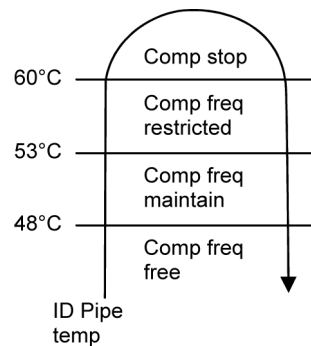
15.5 Cooling overload control (Cool)

- This control detect outdoor pipe temperature and perform the compressor frequency restriction during cooling operation.

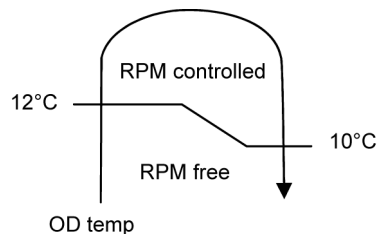


15.6 Heating overload control (Heat)

- This control detect indoor pipe temperature and perform the compressor frequency restriction during heating operation.

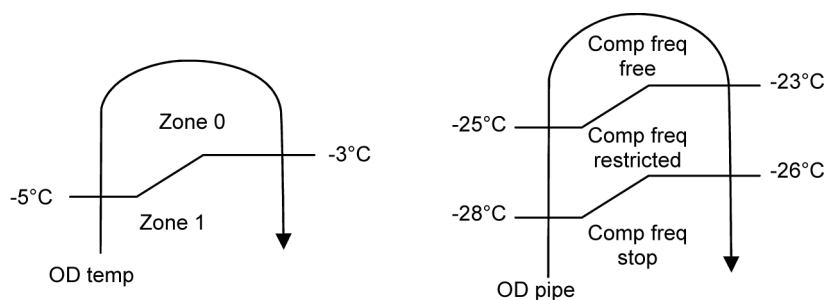


- This control detect outdoor ambient temperature and perform the fan speed adjustment during heating operation.



15.7 Extreme Low Temperature Compressor low pressure protection control (Heat)

- This control is to prevent low pressure drops too low during extremely low outdoor ambient temperature to improve the compressor reliability.
- During heating operation, when outdoor ambient temperature is in Zone 1, this control will be activated. Compressor frequency restriction will be based on outdoor piping temperature.



15.8 Deice Control

- When outdoor pipe temperature and outdoor air temperature is low, deice operation starts where indoor fan motor and outdoor fan motor stop, indoor unit horizontal vane close and operation LED blink with compressor ON.

15.9 Time Delay Safety Control (Restart Control)

- The compressor will not restart within three minutes after compressor is stopped.
- This control is not applicable if the power supply reset or after deice condition.

15.10 30 seconds Force Operation

- Once the compressor starts operation, it will not stop its operation for 30 seconds in order to cycle back compressor oil.
- However, it can be stopped using remote control or Auto OFF/ON button at indoor unit.

15.11 Total Current Control

- By referring to table below, during normal (default) operation, the running current refer to Hi values and during Power Save Mode, the running current refer to Lo values. (not applicable for 2E18/2E15)
- When the outdoor unit total running current (AC) exceeds X value, compressor frequency will decrease.
- If the running current does not exceed X value for 5 seconds, compressor frequency will increase.
- However, if total outdoor unit running current exceeds Y value, compressor will be stopped immediately for 3 minutes.

Operation Mode		CU-2RE18PBE		CU-2RE15PBE	
		X (A)	Y (A)	X (A)	Y (A)
Cooling/Soft Dry (A)	Hi	10.12	12.54	10.12	12.54
	Lo	-	-	-	-
Cooling/Soft Dry (B)	Hi	8.79	12.54	8.79	12.54
	Lo	-	-	-	-
Heating	Hi	11.04	12.54	11.04	12.54
	Lo	-	-	-	-

15.12 IPM (power transistor) Protection Control

- Overheating Prevention Control
 - If IPM temperature rises to 80°C, outdoor fan speed will be increased.
 - When the IPM temperature rises to 95°C, compressor operation will stop immediately.
 - Compressor operation restarts when temperature decreases to 90°C.
 - If IPM temperature detected less than -30°C, IPM is judged as open circuit ("F96" is indicated).
- DC peak current control
 - When IPM DC current exceeds set value of 30.0 ± 3.0 A, the compressor will stop.
 - If the DC peak current detected within 30 seconds after operation starts, compressor will restart after 1 minute.
 - If the DC peak current detected 30 seconds or more after operation starts, compressor will restart after 2 minutes.
 - Within 30 seconds after compressor restarts, if the DC peak current is exceeded set value continuously for 7 times, all indoor and outdoor relays will be cut off ("F99" is indicated).
- Error reset can be done by power supply reset.

15.13 Compressor Protection Control (Gas leak detection control 1)

- Control start conditions
 - For 5 minutes, the compressor continuously operates and total current is low.
 - During Cooling or Soft Dry operation:
Indoor intake temperature — indoor piping temperature is below 4°C.
 - During Heating operation:
Indoor pipe temperature — indoor intake temperature is below 3°C.
 - Not during deice control.
 - Compressor ON with maximum frequency.
- Control content
 - Compressor stops (and restart after 3 minutes)
 - If the conditions above happen 4 times within 60 minutes, the unit will stop operation ("F91" is indicated).

15.14 Compressor Protection Control (Gas leak detection control 2)

- This control detect gas leakage condition to prevent compressor damage.
- Control start condition
 - All connected indoor units capability supply ON.
 - Compressor ON with maximum frequency.
 - Not during annual cooling.
 - Compressor discharge temperature high.
- Control content
 - Compressor OFF during this control ("F91" is memorized in EEPROM)
 - If the above conditions happen 2 times within 60 minutes, indoor units' Timer LED will blinks ("F91" is indicated at all indoor units)

15.15 Valve close detection control

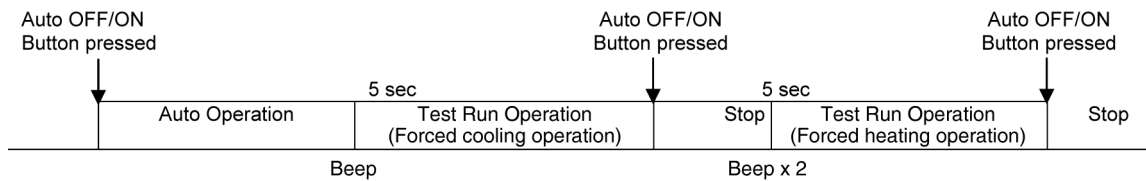
- This control detects 3-way valve close condition to prevent damage to refrigerant cycle.
- Start conditions:
 - For all connected indoor units, if Indoor intake temperature — indoor piping temperature are between -2°C and 2°C continuously for 5 minutes after compressor ON at first cooling operation.
 - The first cooling operation is defined as cooling operation is ON for less than 8 minutes after new installation or after pump down.
- Control content
 - During this control, compressor stop, indoor units' Timer LED will blink. ("F91" is indicated at indoor units)
- Error reset can be done by power supply reset or reset by using remote control.

15.16 Compressor discharge high pressure protection control

- This control protect by using high pressure switch during operation.
- Start conditions
 - High pressure switch is activated (from normally close to open) when outdoor operation mode is cooling or heating during compressor running.
- Control 1 content
 - Compressor stop when high pressure switch is opened and restart after high pressure switch closed. If this condition happen 4 times within 30 minutes, "F94" is indicated.
 - After 30 minutes, counter is reset if this condition does not happen for 4 times.
- Control 1 stop conditions
 - Power supply reset
 - Reset by using remote control

16. Servicing Mode

16.1 Auto OFF/ON Button



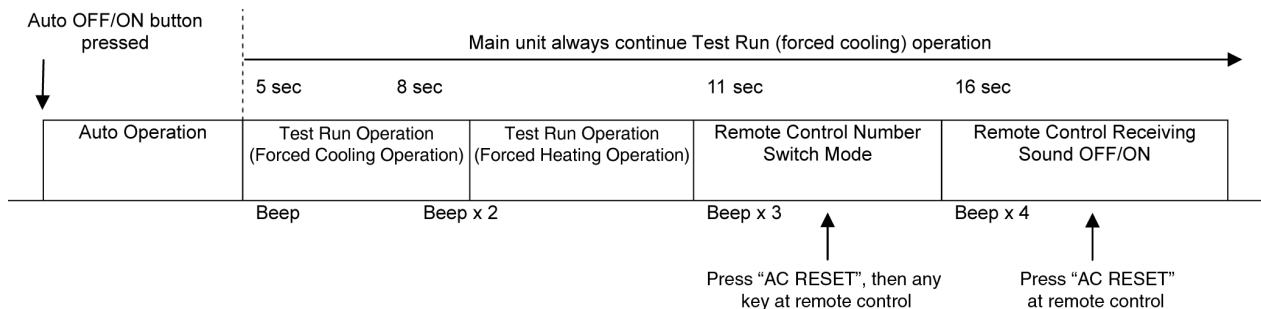
1 AUTO OPERATION MODE

The Auto operation will be activated immediately once the Auto OFF/ON button is pressed. This operation can be used to operate air conditioner with limited function if remote control is misplaced or malfunction.

2 TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

The Test Run operation will be activated if the Auto OFF/ON button is pressed continuously for more than 5 seconds. A “beep” sound will heard at the fifth seconds, in order to identify the starting of Test Run operation (Forced cooling operation). Within 5 minutes after Forced cooling operation start, the Auto OFF/ON button is pressed for more than 5 seconds. A 2 “beep” sounds will heard at the fifth seconds, in order to identify the starting of Forced heating operation.

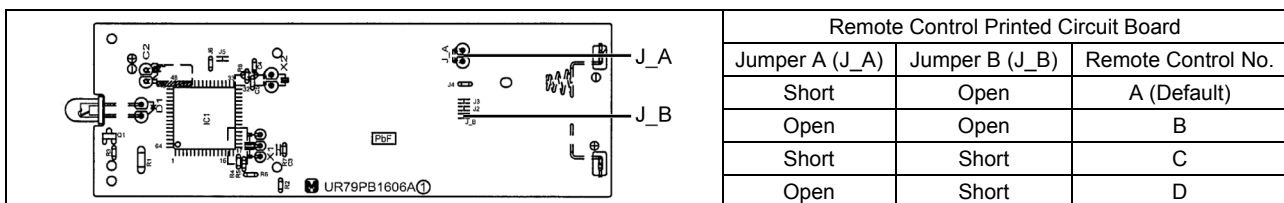
The Auto OFF/ON button may be used together with remote control to set / change the advance setting of air conditioner operation.



3 REMOTE CONTROL NUMBER SWITCH MODE

The Remote Control Number Switch Mode will be activated if the Auto OFF/ON button is pressed continuously for more than 11 seconds (3 “beep” sounds will occur at 11th seconds to identify the Remote Control Number Switch Mode is in standby condition) and press “AC RESET” button and then press any button at remote control to transmit and store the desired transmission code to the EEPROM.

There are 4 types of remote control transmission code could be selected and stored in EEPROM of indoor unit. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal interference when there are 2 or more indoor units installed nearby together. To change remote control transmission code, short or open jumpers at the remote control printed circuit board.



- During Remote Control Number Switch Mode, press any button at remote control to transmit and store the transmission code to the EEPROM.

4 REMOTE CONTROL RECEIVING SOUND OFF/ON MODE

The Remote Control Receiving Sound OFF/ON Mode will be activated if the Auto OFF/ON button is pressed continuously for more than 16 seconds (4 “beep” sounds will occur at 16th seconds to identify the Remote Control Receiving Sound Off/On Mode is in standby condition) and press “AC Reset” button at remote control.

Press “Auto OFF/ON button” to toggle remote control receiving sound.

- Short “beep”: Turn OFF remote control receiving sound.
- Long “beep”: Turn ON remote control receiving sound.

After Auto OFF/ON Button is pressed, the 20 seconds counter for Remote Control Receiving Sound OFF/ON Mode is restarted.

16.2 Remote Control Button

16.2.1 SET BUTTON

- To check remote control transmission code and store the transmission code to EEPROM
 - Press “SET” button continuously for 10 seconds by using pointer.
 - Press “TIMER SET” button until a “beep” sound is heard as confirmation of transmission code changed.

16.2.2 RESET (RC)

- To clear and restore the remote control setting to factory default.
 - Press once to clear the memory.

16.2.3 RESET (AC)

- To restore the unit's setting to factory default
 - Press once to restore the unit's setting.

16.2.4 TIMER ▲

- To change indoor unit indicator's LED intensity
 - Press continuously for 5 seconds.

16.2.5 TIMER ▼

- To change remote control display from Degree Celsius (°C) to Degree Fahrenheit (°F)
 - Press continuously for 10 seconds.

17. Troubleshooting Guide

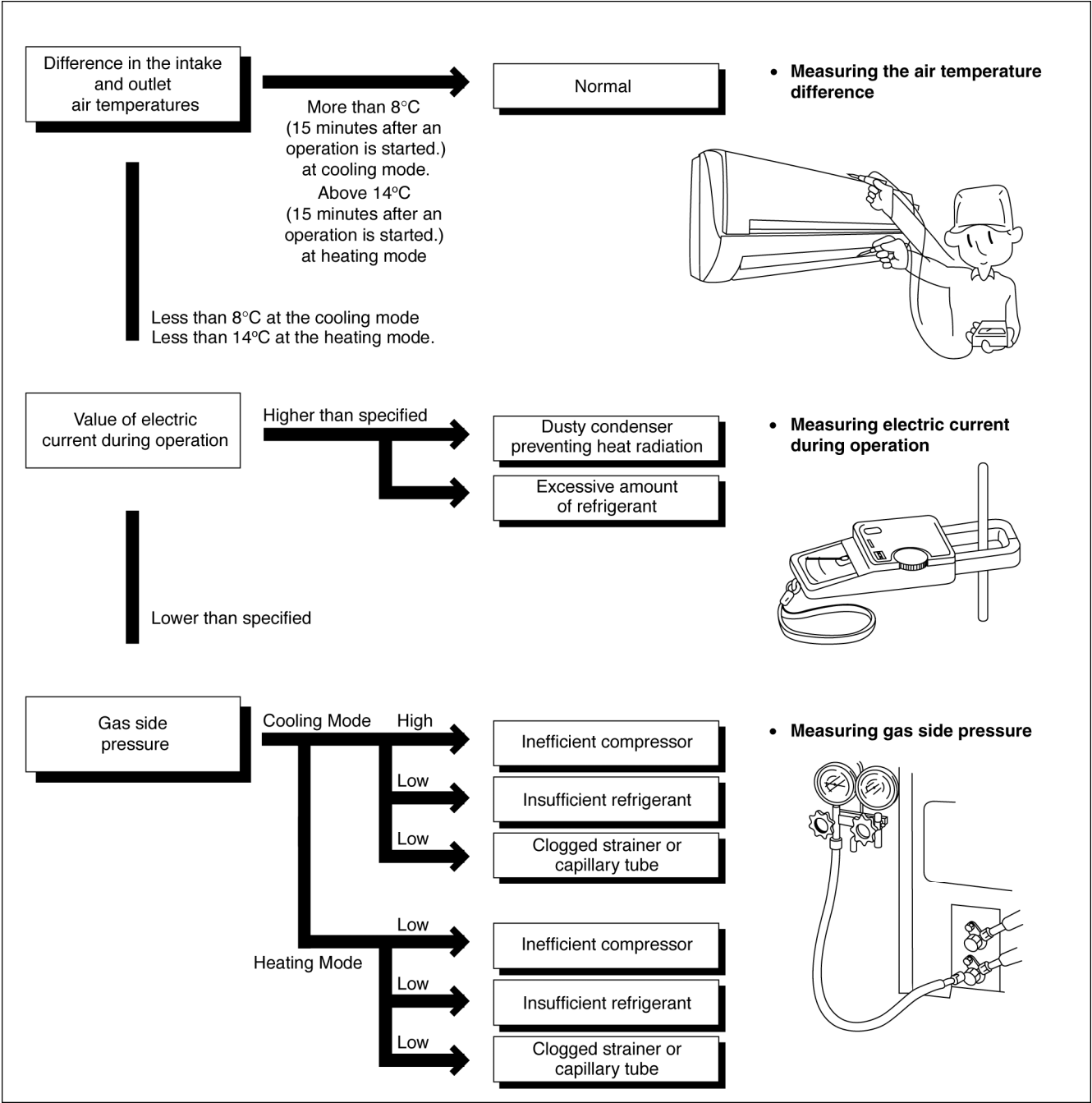
17.1 Refrigeration Cycle System

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan. The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure MPa (kg/cm ² G)	Outlet air temperature (°C)
Cooling Mode	0.9 ~ 1.2 (9 ~ 12)	12 ~ 16
Heating Mode	2.3 ~ 2.9 (23 ~ 29)	36 ~ 45

*Condition: • Indoor fan speed; High
• Outdoor temperature 35°C at cooling mode and 7°C at heating mode
• Compressor operates at rated frequency



17.1.1 Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↗	↗	↗
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

- Carry out the measurement of pressure, electric current, and temperature fifteen minutes after an operation is started.

17.2 Breakdown Self Diagnosis Function

17.2.1 Self Diagnosis Function (Three Digits Alphanumeric Code)

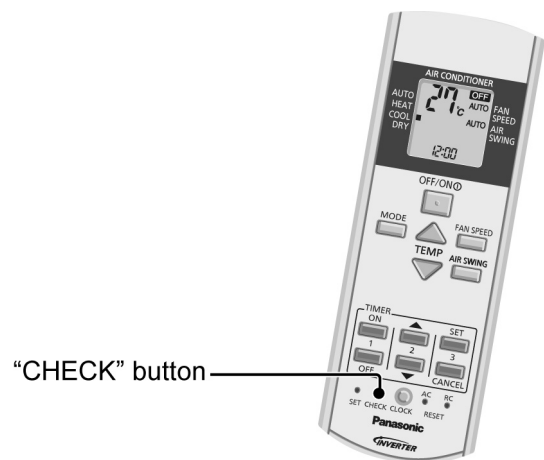
- Once abnormality has occurred during operation, the unit will stop its operation, and Timer LED blinks.
 - Although Timer LED goes off when power supply is turned off, if the unit is operated under a breakdown condition, the LED will light up again.
 - In operation after breakdown repair, the Timer LED will no more blink. The last error code (abnormality) will be stored in IC memory.
- Every press of the button (up or down) will increase abnormality numbers and transmit abnormality code signal to the main unit.
 - When the latest abnormality code on the main unit and code transmitted from the remote controller are matched, power LED will light up for 30 seconds and a beep sound (continuously for 4 seconds) will be heard. If no codes are matched, power LED will light up for 0.5 seconds and no sound will be heard.
 - The breakdown diagnosis mode will be canceled unless pressing the CHECK button continuously for 5 seconds or operating the unit for 30 seconds.
 - The same diagnosis can be repeated by turning power on again.

17.2.2 To Make a Diagnosis

- Timer LED start to blink and the unit automatically stops the operation.
- Press the CHECK button on the remote controller continuously for 5 seconds.
- "- -" will be displayed on the remote controller display.
Note: Display only for "- -". (No transmitting signal, no receiving sound and no Power LED blinking.)
- Press the "TIMER" ▲ or ▼ button on the remote controller. The code "H00" (no abnormality) will be displayed and signal will be transmitted to the main unit.
- Every press of the button (up or down) will increase abnormality numbers and transmit abnormality code signal to the main unit.
- When the latest abnormality code on the main unit and code transmitted from the remote controller are matched, power LED will light up for 30 seconds and a beep sound (continuously for 4 seconds) will be heard. If no codes are matched, power LED will light up for 0.5 seconds and no sound will be heard.
- The breakdown diagnosis mode will be canceled unless pressing the CHECK button continuously for 5 seconds or operating the unit for 30 seconds.
- The LED will be off if the unit is turned off or the RESET button on the main unit is pressed.

17.2.3 To Display Memorized Error (Protective Operation) Status

- Turn power on.
- Press the CHECK button on the remote controller continuously for 5 seconds.
- "- -" will be displayed on the remote controller display.
Note: Display only for "- -". (No transmitting signal, no receiving sound and no Power LED blinking.)
- Press the "TIMER" ▲ or ▼ button on the remote controller. The code "H00" (no abnormality) will be displayed and signal will be transmitted to the main unit. The power LED lights up. If no abnormality is stored in the memory, three beeps sound will be heard.



17.2.4 To Clear Memorized Error (Protective Operation) Status after Repair

- Turn power on (in standby condition).
- Press the AUTO button for 5 seconds (A beep receiving sound) on the main unit to operate the unit at Forced Cooling Operation modes.
- Press the CHECK button on the remote controller for about 1 second with a pointed object to transmit signal to main unit. A beep sound is heard from main unit and the data is cleared.

17.2.5 Temporary Operation (Depending On Breakdown Status)

- Press the AUTO button (A beep receiving sound) on the main unit to operate the unit. (Remote control will become possible.)
- The unit can temporarily be used until repaired.

17.3 Self Diagnosis Function

Diagnosis display	Abnormality or protection control	Abnormality judgement	Protection operation	Problem	Check location
H11	Indoor/outdoor abnormal communication	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor/outdoor communication not establish	- Indoor/outdoor wire terminal - Indoor/outdoor PCB - Indoor/outdoor connection wire
H12	Indoor unit capacity unmatched	90s after power supply	—	Total indoor capability more than maximum limit or less than minimum limit, or number of indoor unit less than two.	- Indoor/outdoor connection wire - Indoor/outdoor PCB - Specification and combination table in catalogue
H15	Compressor temperature sensor abnormality	Continuous for 5s	—	Compressor temperature sensor open or short circuit	Compressor temperature sensor lead wire and connector
H16	Outdoor current transformer (CT) abnormality	—	—	Current transformer faulty or compressor faulty	Outdoor PCB faulty or compressor faulty
H27	Outdoor air temperature sensor abnormality	Continuous for 5s	—	Outdoor air temperature sensor open or short circuit	Outdoor air temperature sensor lead wire and connector
H28	Outdoor heat exchanger temperature sensor 1 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 1 open or short circuit	Outdoor heat exchanger temperature sensor 1 lead wire and connector
H32	Outdoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	—	Outdoor heat exchanger temperature sensor 2 open or short circuit	Outdoor heat exchanger temperature sensor 2 lead wire and connector
H33	Indoor / outdoor misconnection abnormality	—	—	Indoor and outdoor rated voltage different	Indoor and outdoor units check
H36	Outdoor gas pipe temperature sensor abnormality	Continuous for 5s	Heating protection operation only	Outdoor gas pipe temperature sensor open or short circuit	Outdoor gas pipe temperature sensor lead wire and connector
H37	Outdoor liquid pipe temperature sensor abnormality	Continuous for 5s	Cooling protection operation only	Outdoor liquid pipe temperature sensor open or short circuit	Outdoor liquid pipe temperature sensor lead wire and connector
H64	Outdoor high pressure sensor abnormality	Continuous for 1 minutes	—	High pressure sensor open circuit during compressor stop	- High pressure sensor - Lead wire and connector
H97	Outdoor fan motor mechanism lock	2 times happen within 30 minutes	—	Outdoor fan motor lock or feedback abnormal	- Outdoor fan motor lead wire and connector - Fan motor lock or block
H98	Indoor high pressure protection	—	—	Indoor high pressure protection (Heating)	- Check indoor heat exchanger - Air filter dirty - Air circulation short circuit
H99	Indoor operating unit freeze protection	—	—	Indoor freeze protection (Cooling)	- Check indoor heat exchanger - Air filter dirty - Air circulation short circuit
F11	4-way valve switching abnormality	4 times happen within 30 minutes	—	4-way valve switching abnormal	4-way valve - Lead wire and connector.

Diagnosis display	Abnormality or protection control	Abnormality judgement	Protection operation	Problem	Check location
F17	Indoor standby units freezing abnormality	3 times happen within 40 minutes	—	Wrong wiring and connecting pipe, expansion valve leakage.	• Check indoor/outdoor connection wire and pipe • Indoor heat exchanger sensor lead wire and connector • Expansion valve lead wire and connector.
F90	Power factor correction (PFC) circuit protection	4 times happen within 20 minutes	—	Power factor correction circuit abnormal	• Outdoor PCB faulty
F91	Refrigeration cycle abnormality	4 times happen within 60 minutes	—	Refrigeration cycle abnormal	• Insufficient refrigerant or valve close
F93	Compressor abnormal revolution	4 times happen within 20 minutes	—	Compressor abnormal revolution	• Power transistor module faulty or compressor lock
F94	Compressor discharge pressure overshoot protection	4 times happen within 30 minutes	—	Compressor discharge pressure overshoot	• Check refrigeration system
F95	Outdoor cooling high pressure protection	4 times happen within 20 minutes	—	Cooling high pressure protection	• Check refrigeration system • Outdoor air circuit
F96	Power transistor module overheating protection	4 times happen within 30 minutes	—	Power transistor module overheat	• PCB faulty • Outdoor air circuit (fan motor)
F97	Compressor overheating protection	3 times happen within 30 minutes	—	Compressor overheat	• Insufficient refrigerant
F98	Total running current protection	3 times happen within 20 minutes	—	Total current protection	• Check refrigeration system • Power source or compressor lock
F99	Outdoor direct current (DC) peak detection	Continuous happen for 7 times	—	Power transistor module current protection	• Power transistor module faulty or compressor lock

17.4 Self-diagnosis Method

17.4.1 H11 (Indoor/Outdoor Abnormal Communication)

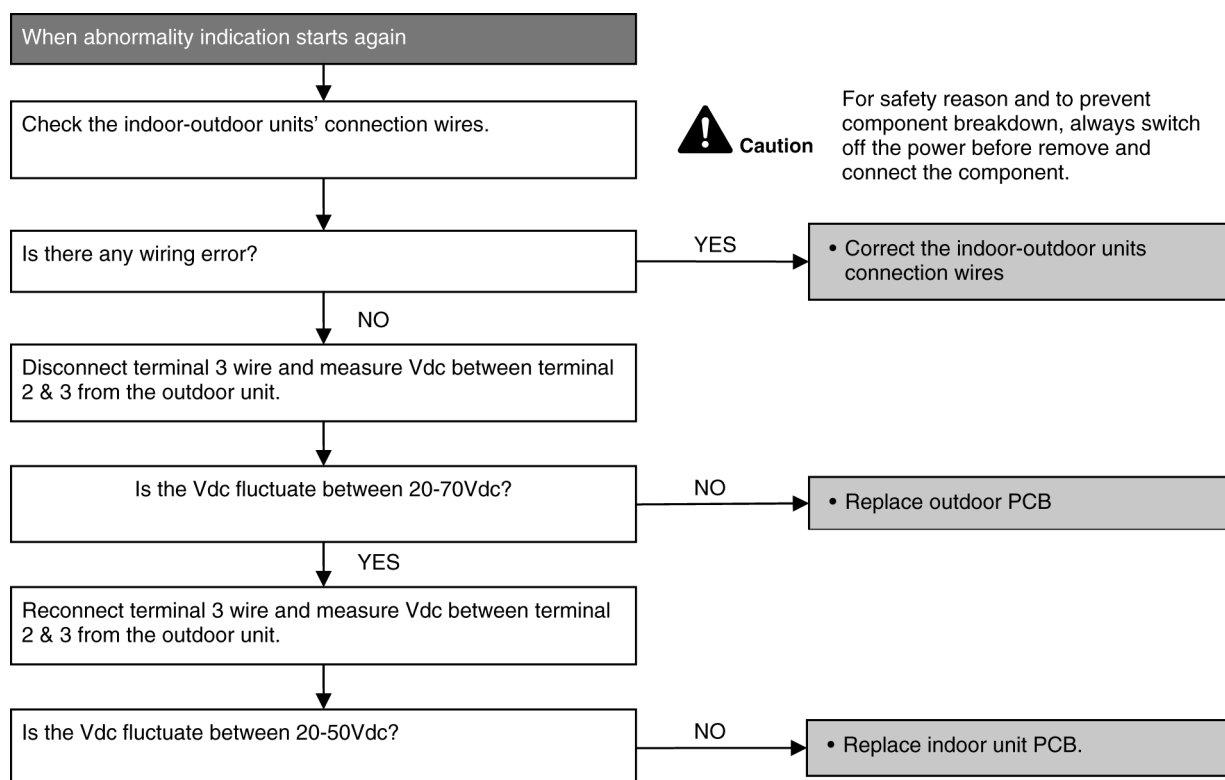
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.2 H12 (Indoor/Outdoor Capacity Rank Mismatched)

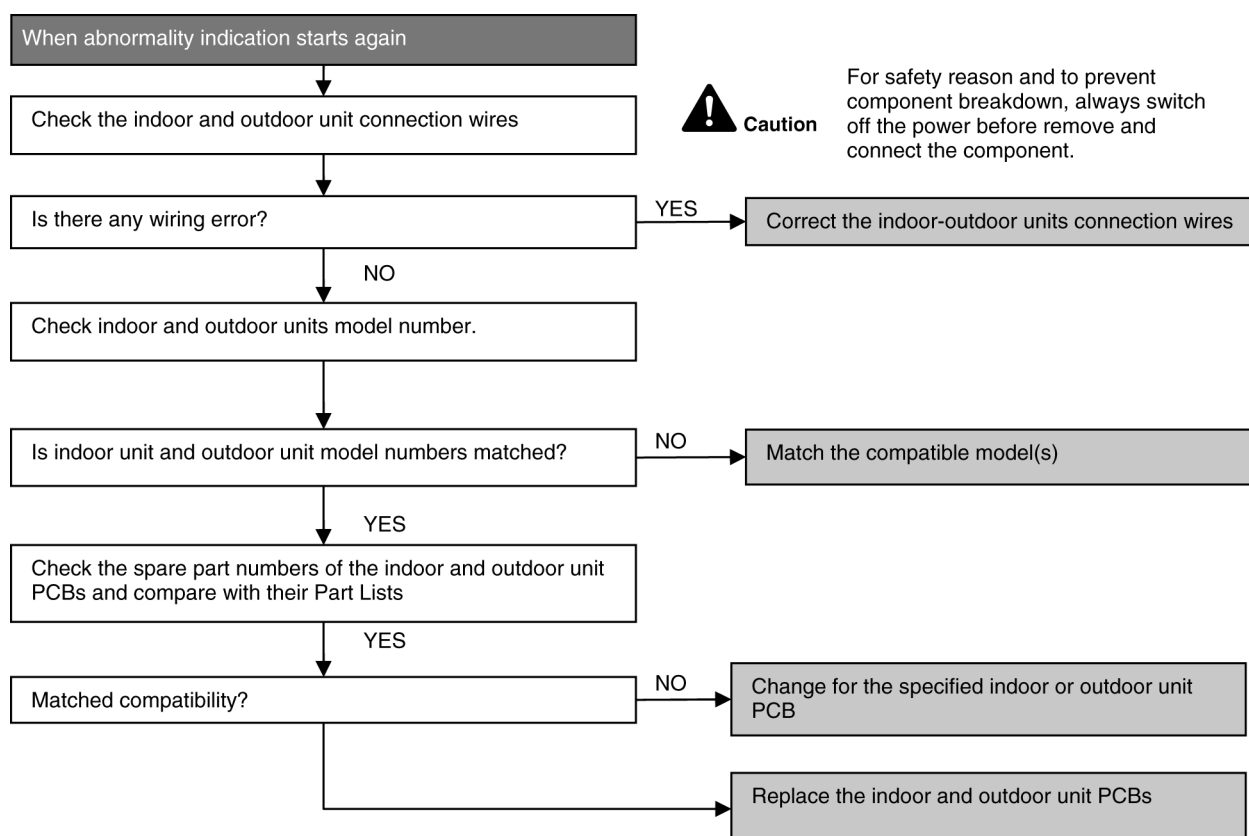
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.3 H14 (Indoor Intake Air Temperature Sensor Abnormality)

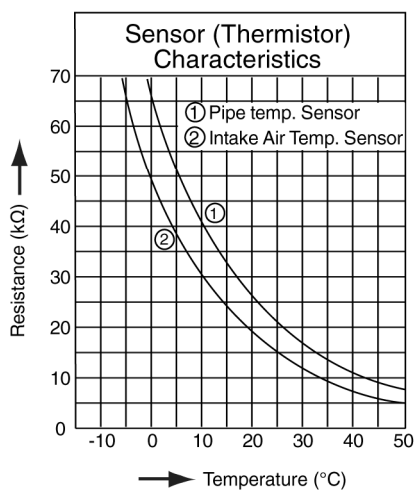
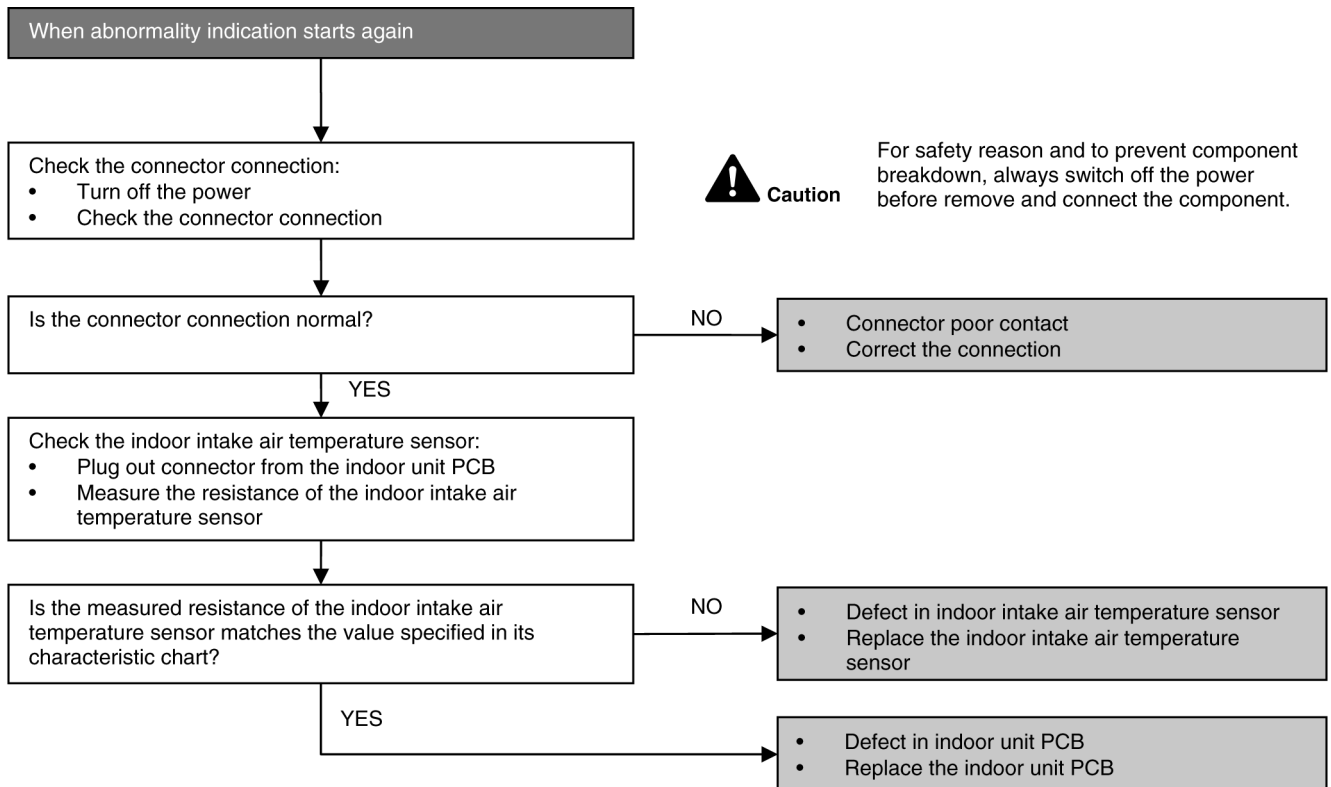
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.4 H15 (Compressor Temperature Sensor Abnormality)

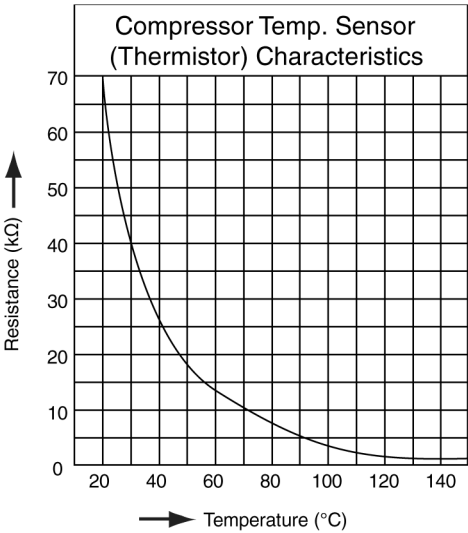
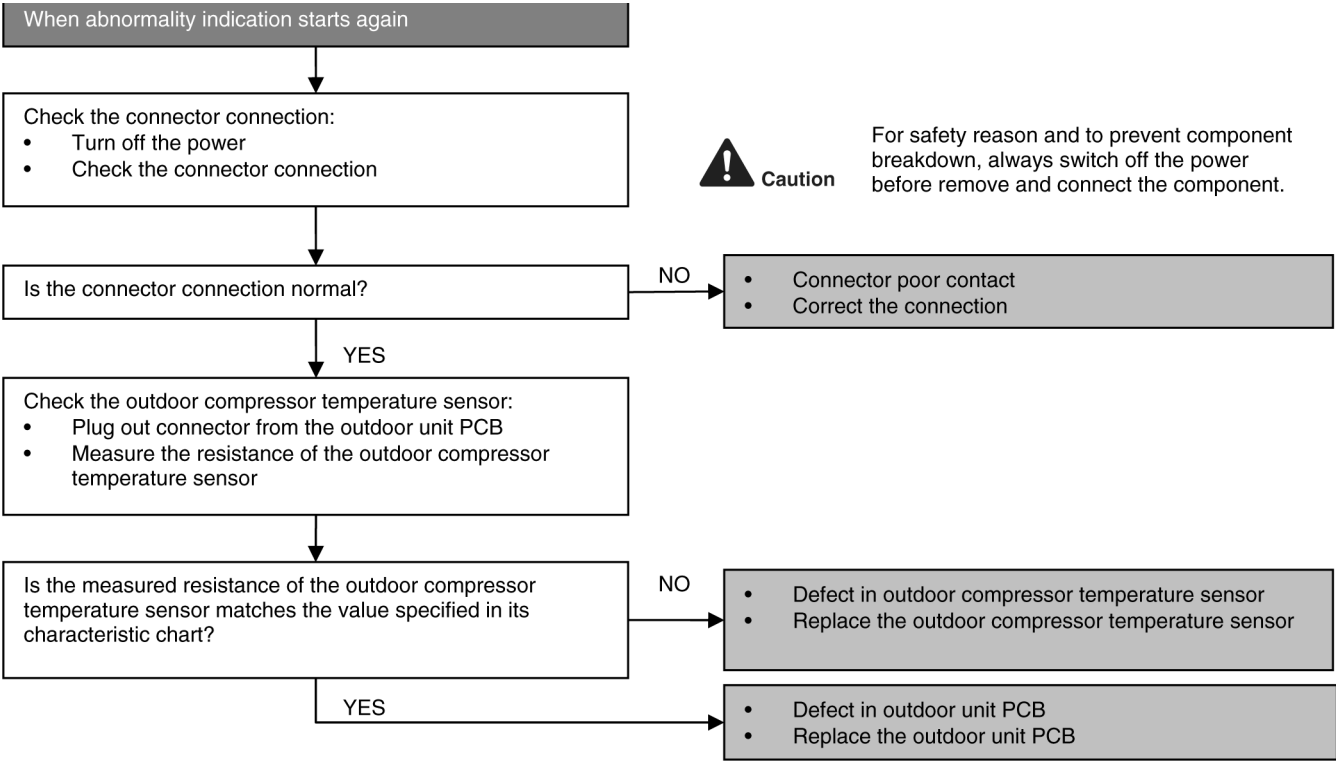
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.5 H16 (Outdoor Current Transformer Open Circuit)

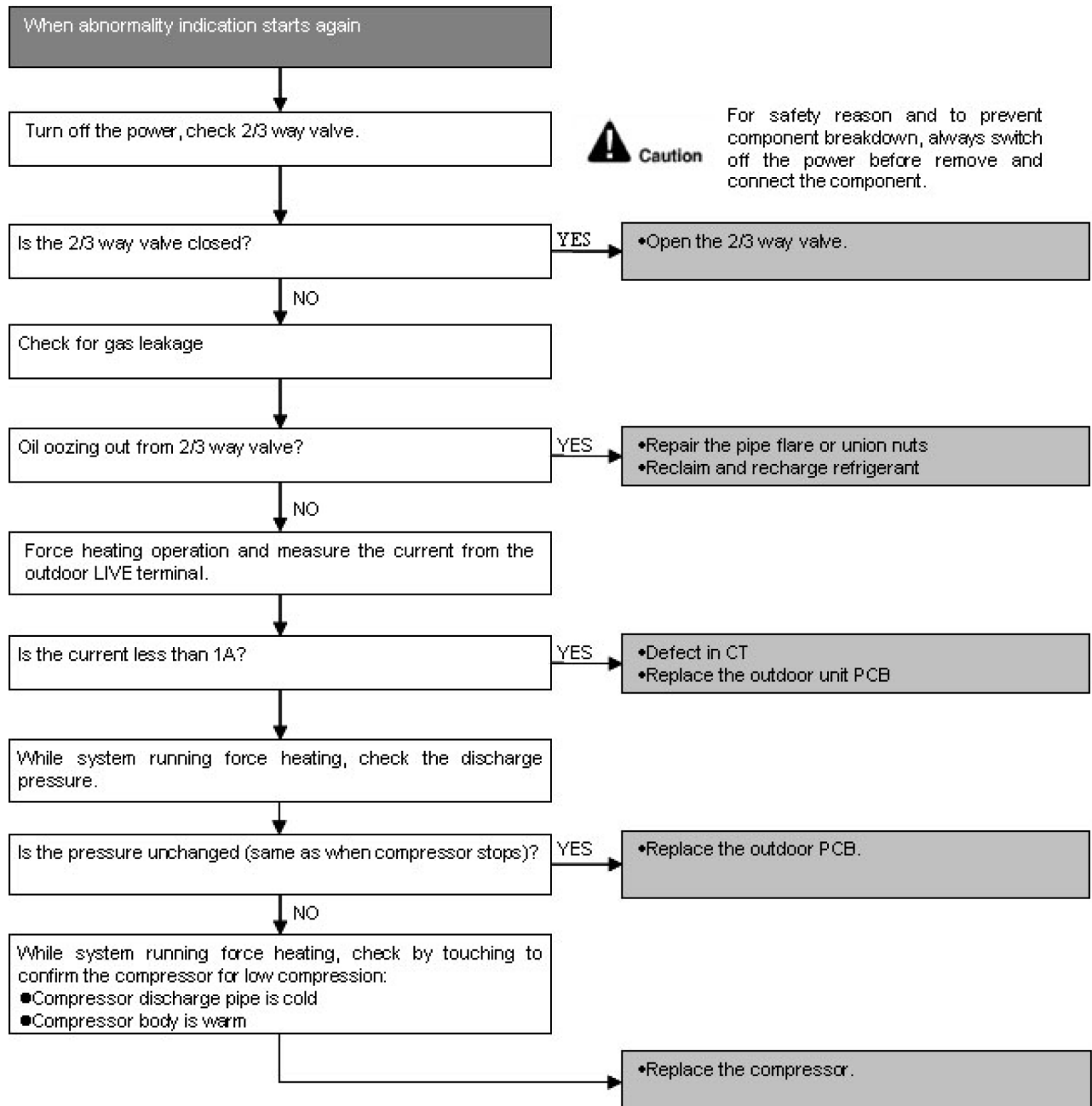
Malfunction Decision Conditions

A current transformer (CT) is detected by checking the compressor running frequency ($\geq$ rated frequency) and CT detected input current (less than 0.65A) for continuously 20 seconds.

Malfunction Caused

- CT defective
- Outdoor PCB defective
- Compressor defective (low compression)

Troubleshooting



17.4.6 H19 (Indoor Fan Motor – DC Motor Mechanism Locked)

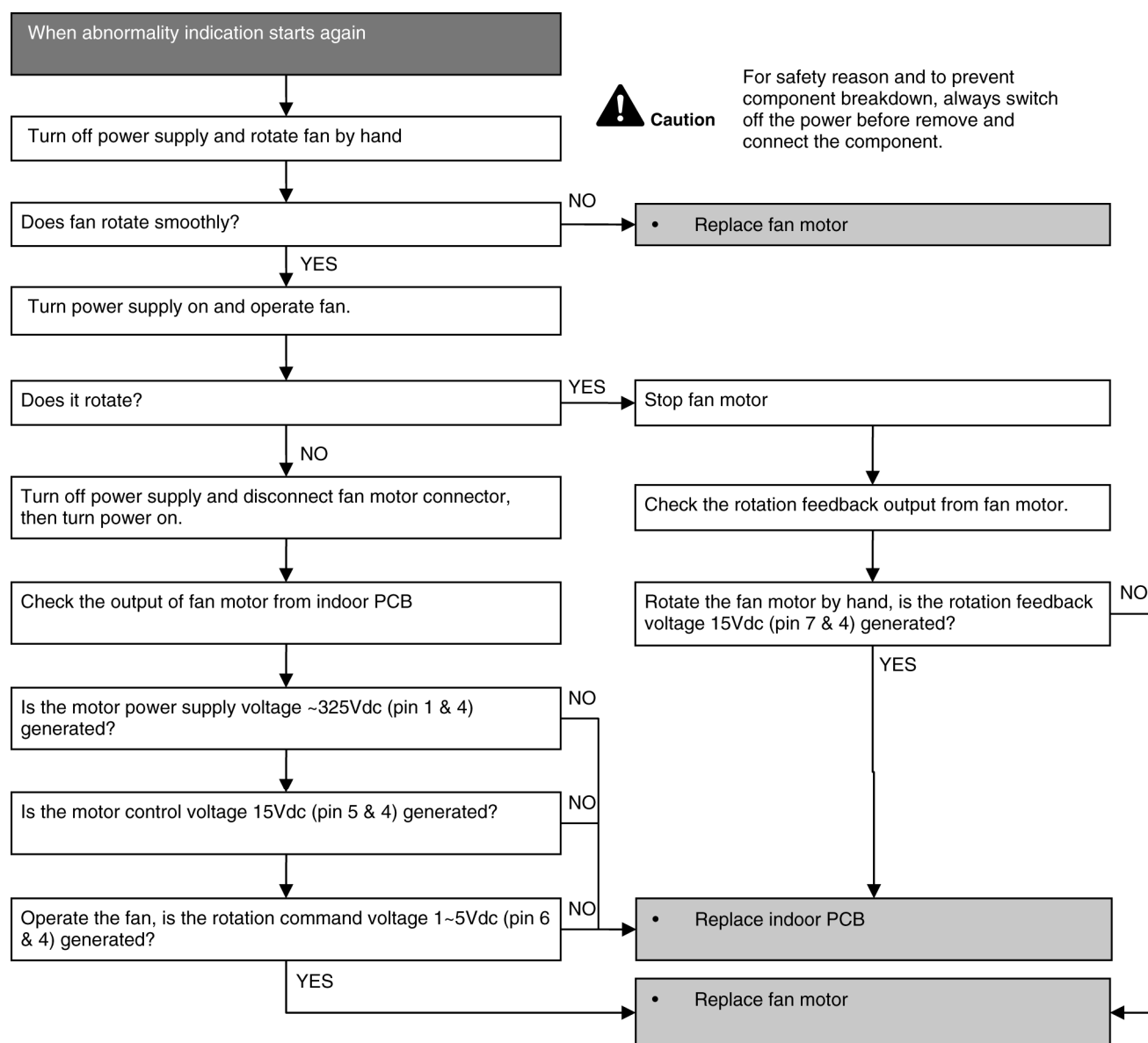
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.7 H23 (Indoor Pipe Temperature Sensor Abnormality)

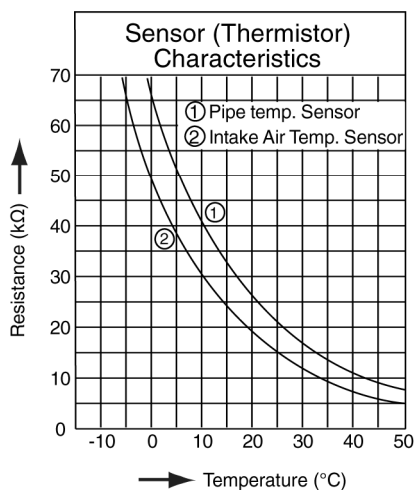
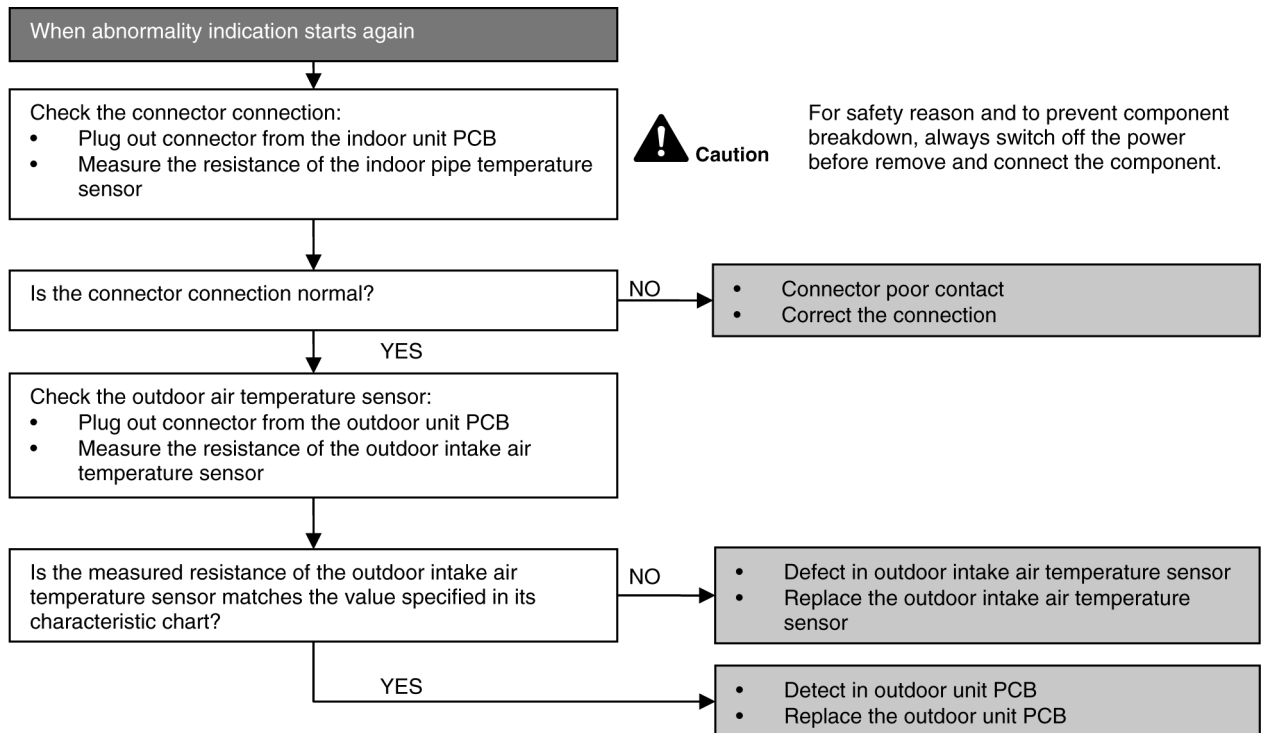
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.8 H27 (Outdoor Air Temperature Sensor Abnormality)

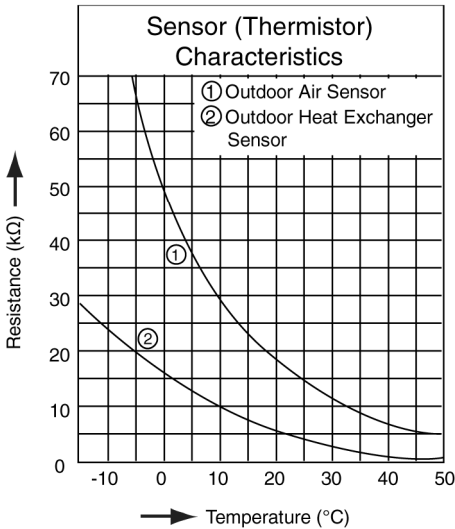
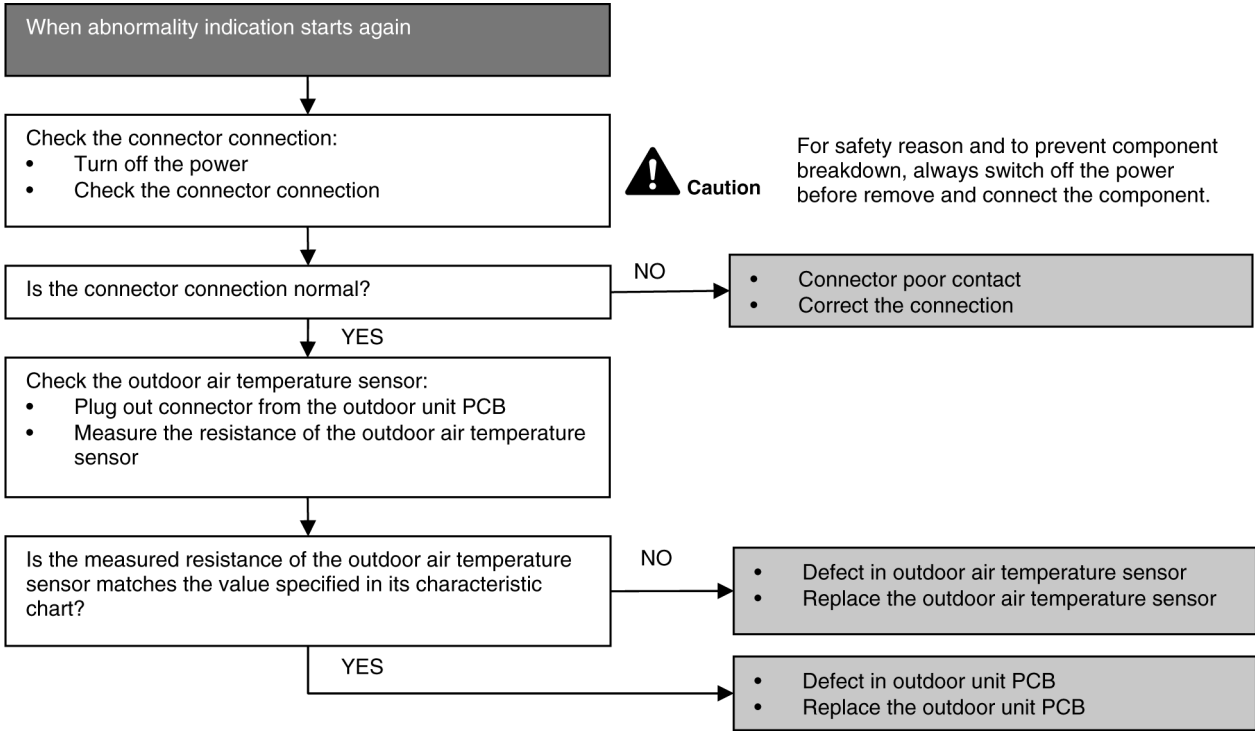
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.9 H28 (Outdoor Pipe Temperature Sensor Abnormality)

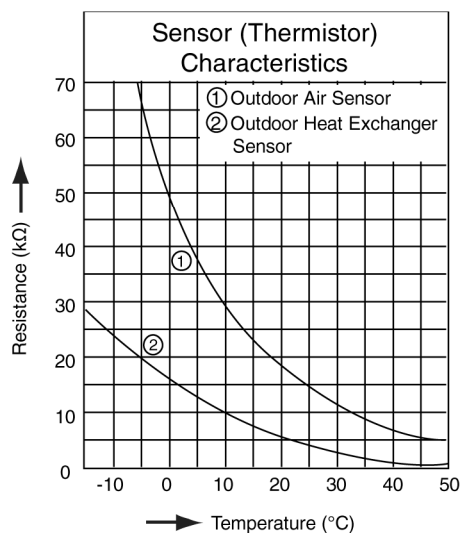
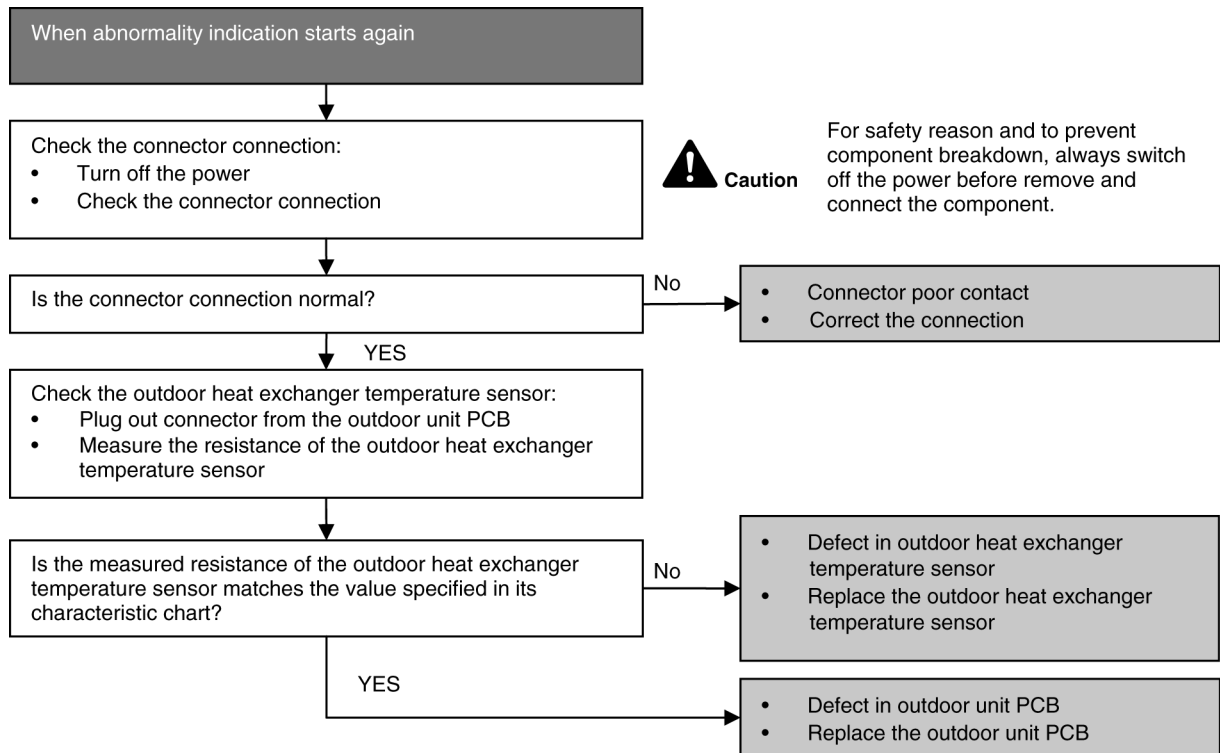
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.10 H32 (Outdoor Heat Exchanger Temperature Sensor 2 Abnormality)

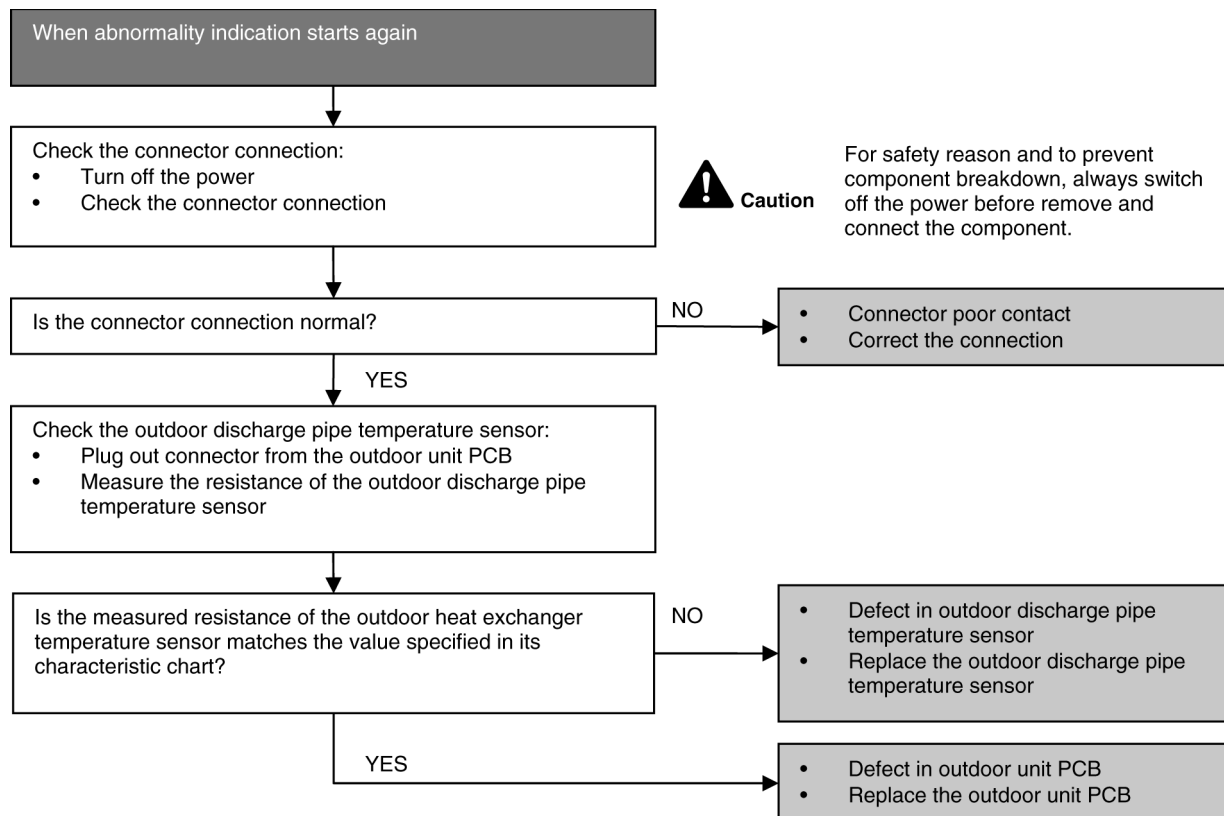
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.11 H33 (Unspecified Voltage between Indoor and Outdoor)

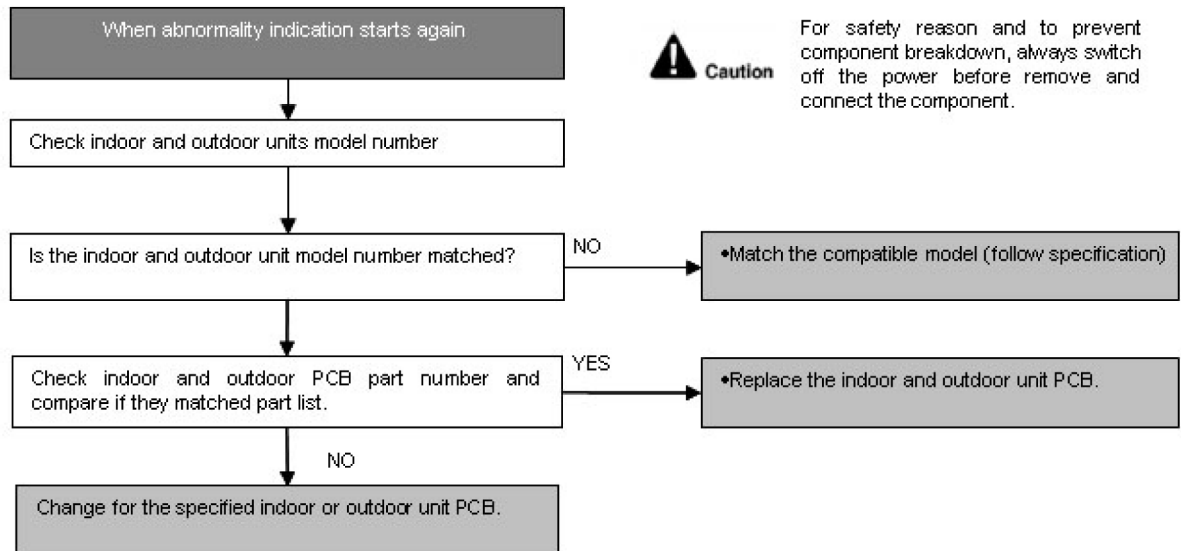
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.12 H36 (Outdoor Gas Pipe Sensor Abnormality)

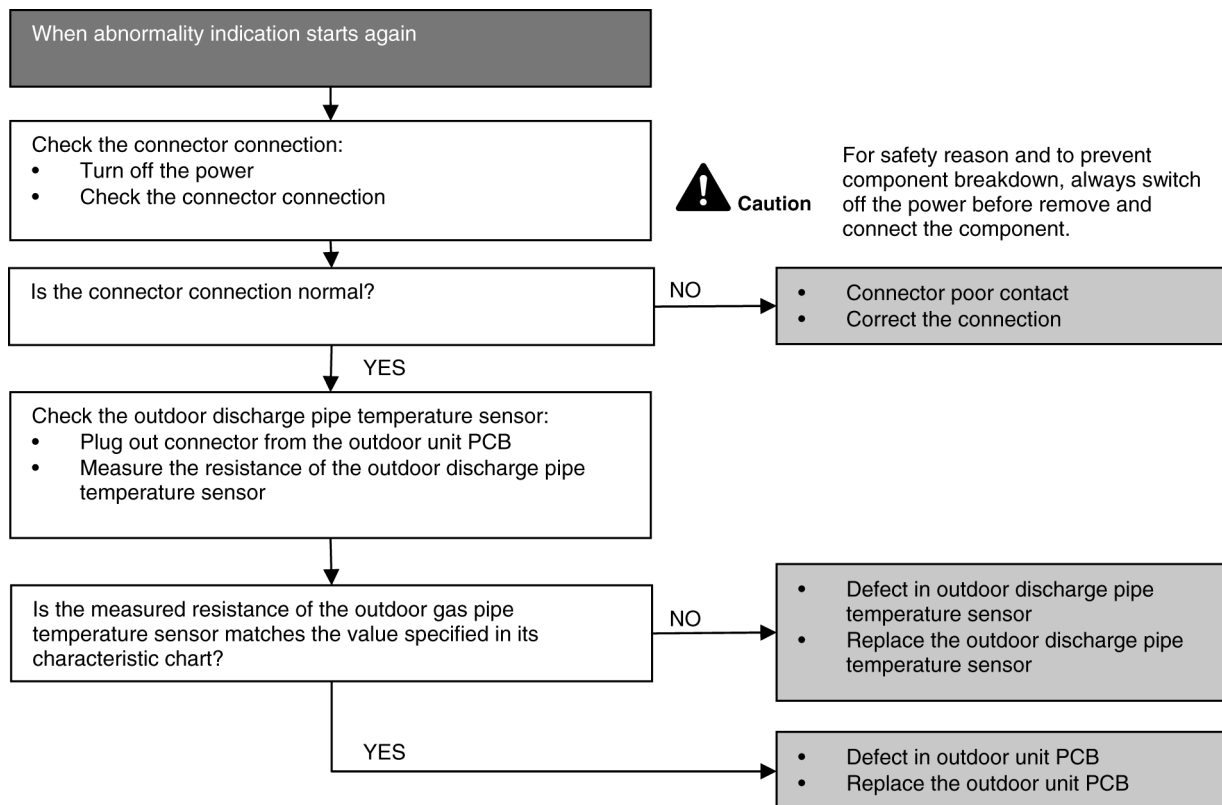
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.13 H97 (Outdoor Fan Motor – DC Motor Mechanism Locked)

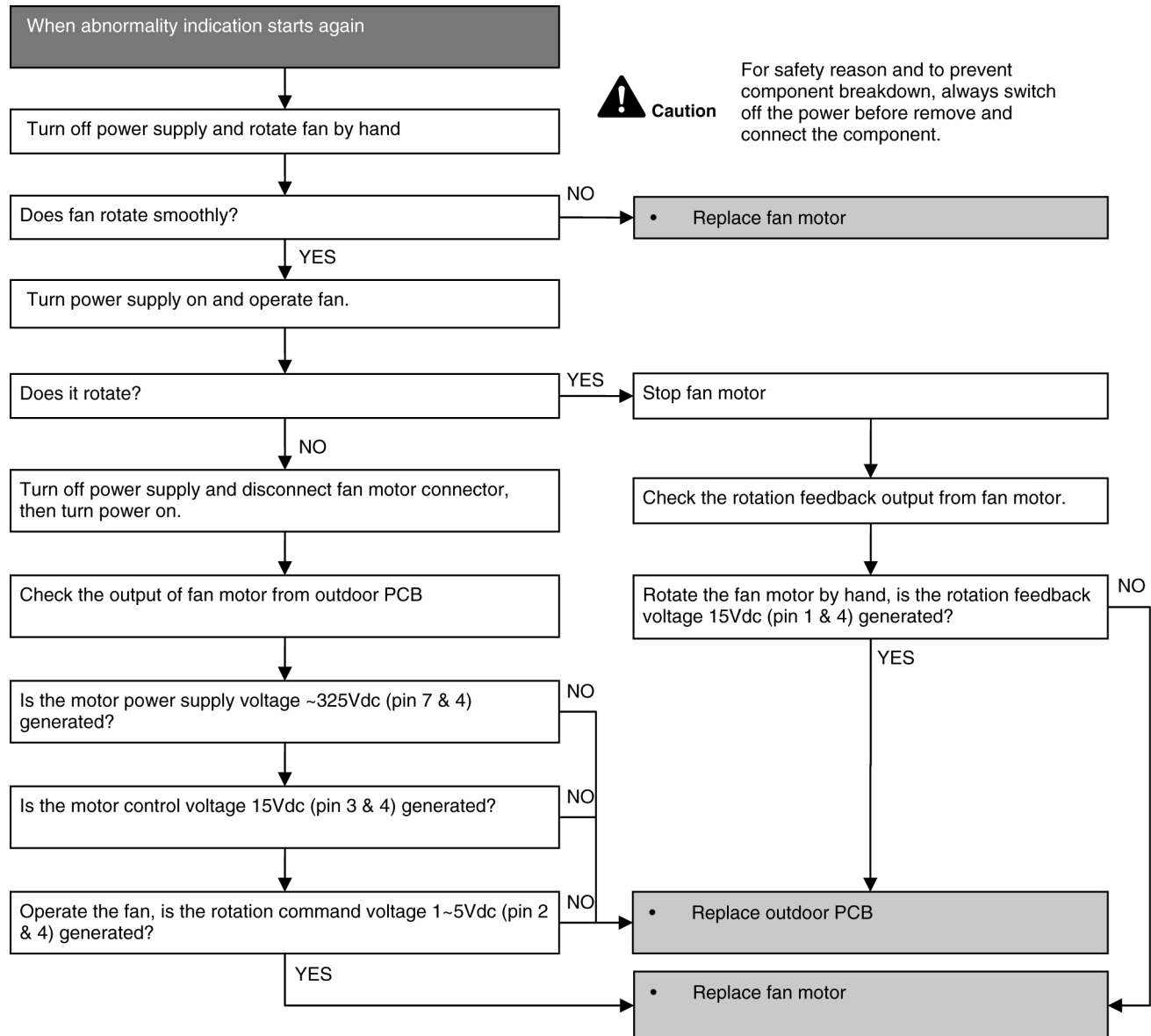
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.14 H98 (Indoor High Pressure Protection)

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

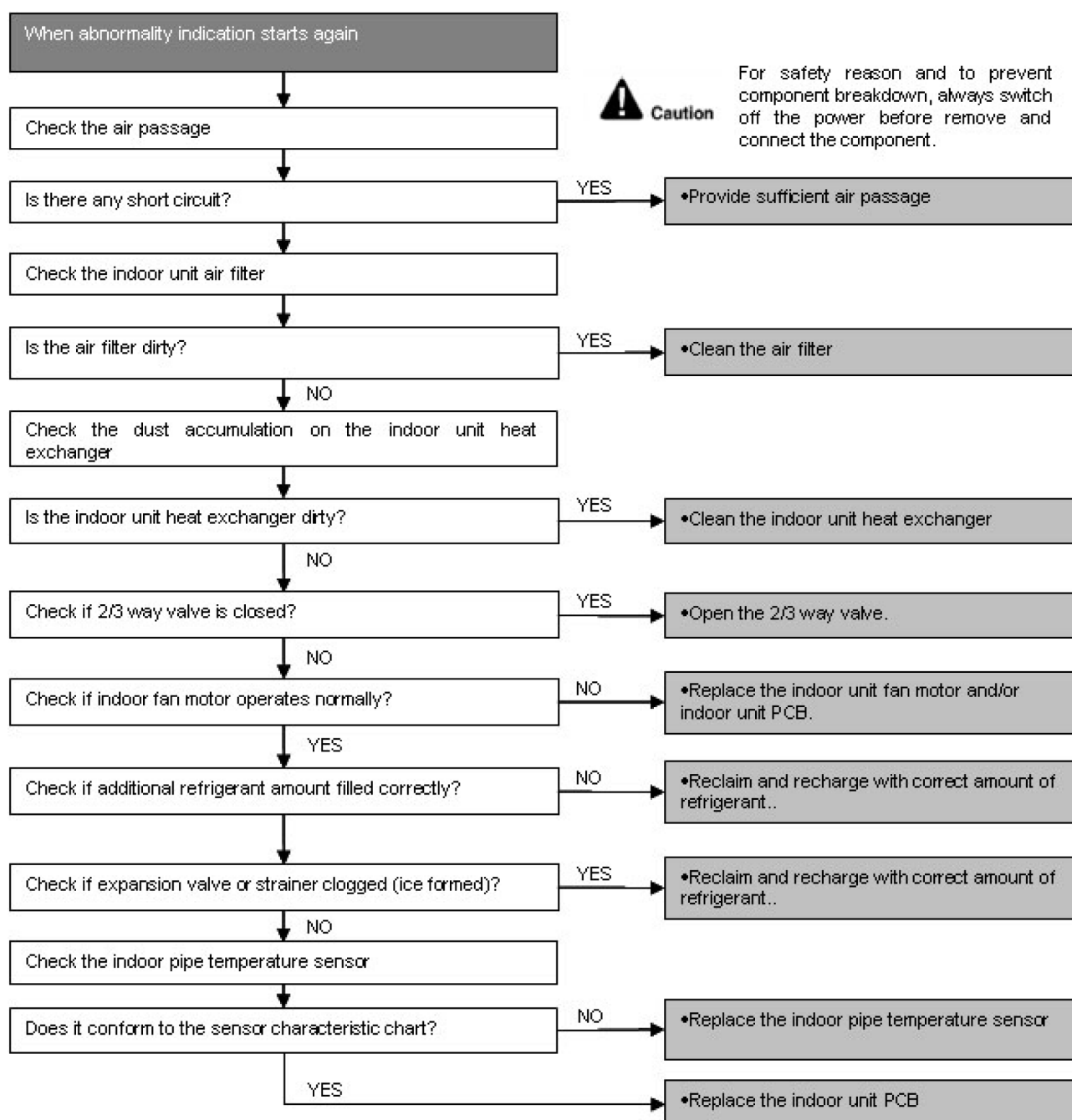
Malfunction Decision Conditions

During heating operation, the temperature detected by the indoor pipe temperature sensor is above 60°C.

Malfunction Caused

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

Troubleshooting



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

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

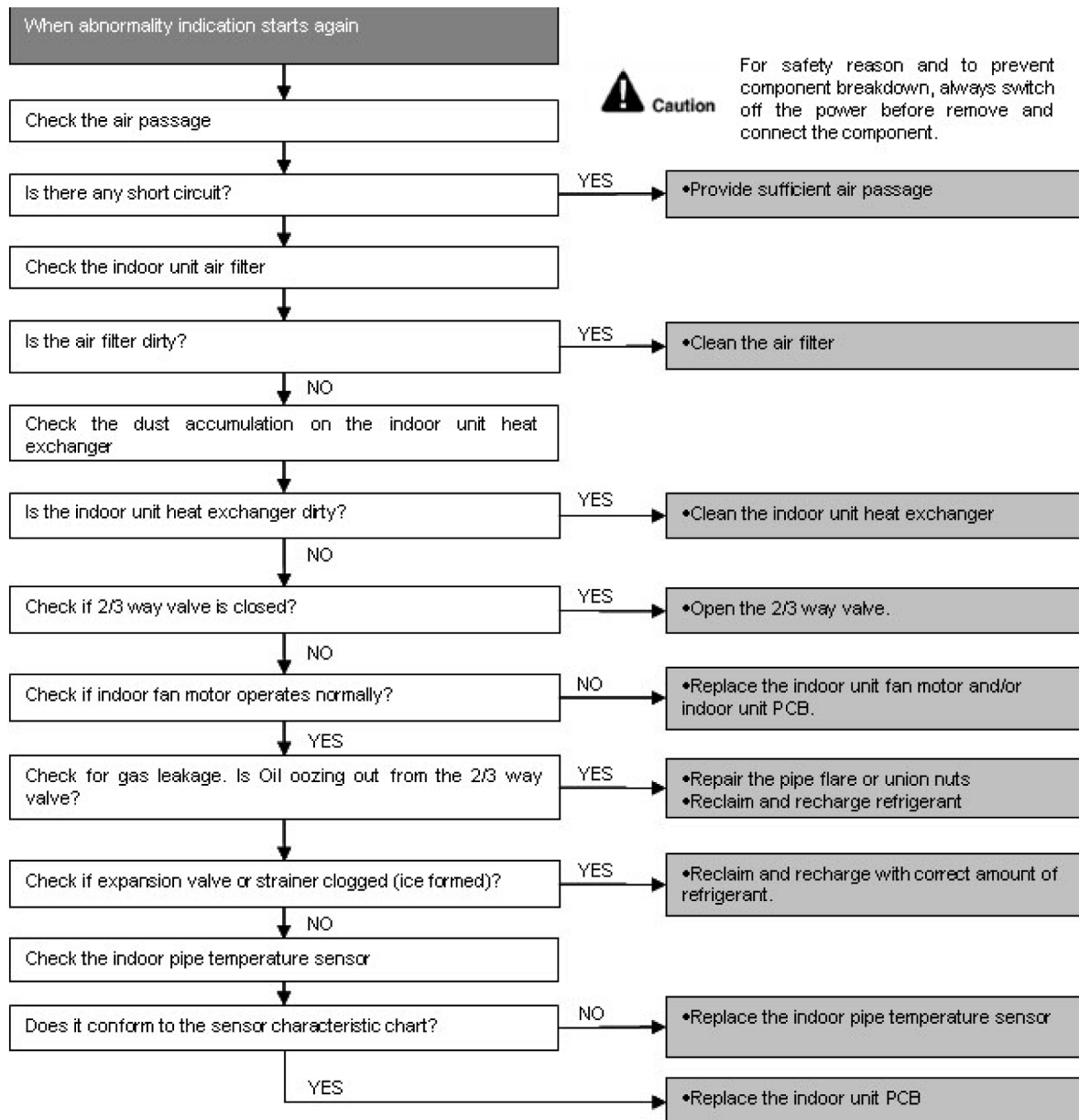
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.16 F11 (4-way valve Abnormality)

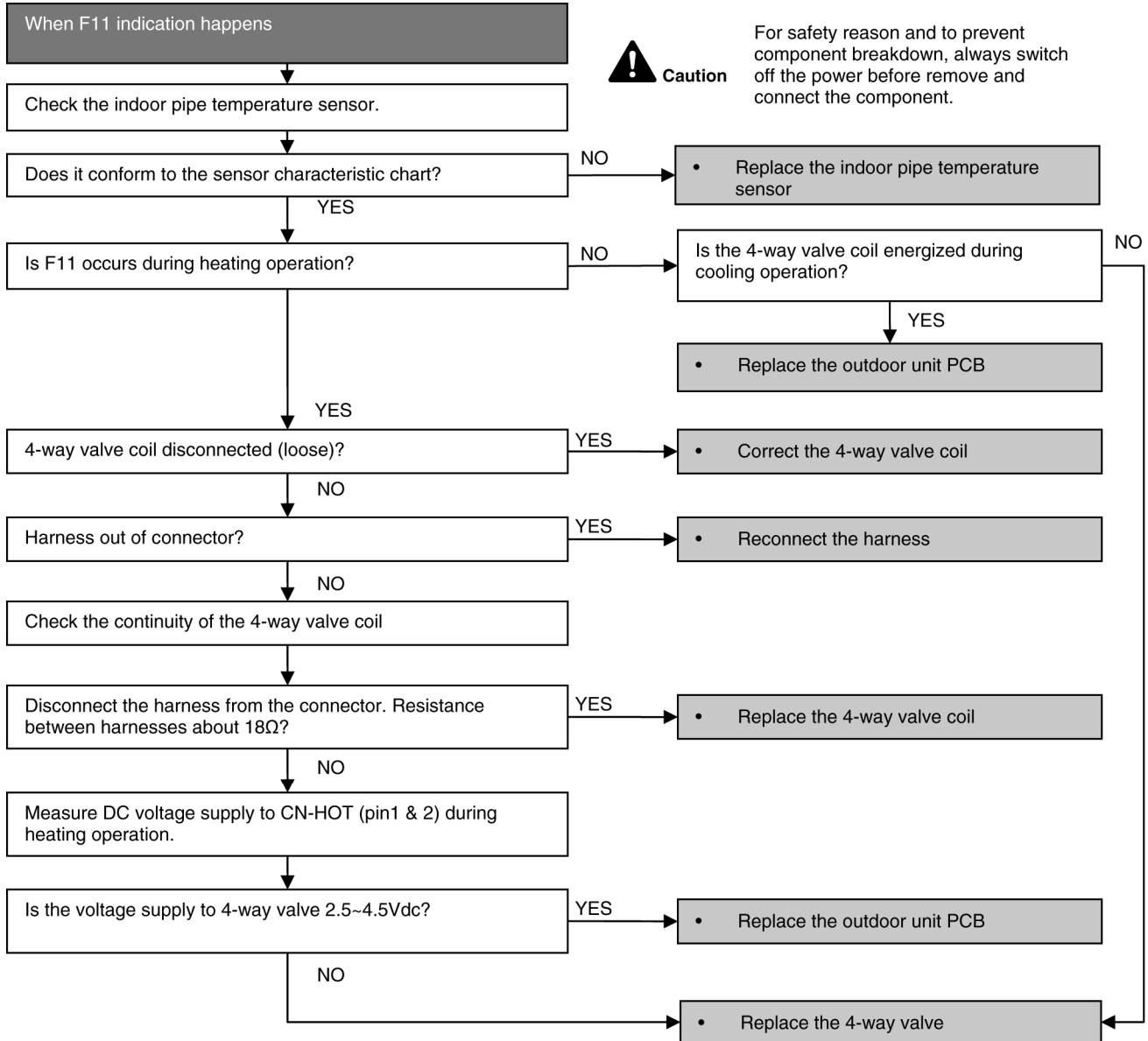
Malfunction Decision Conditions

- When heating operation, when indoor pipe temperature is below 10°C
- When cooling operation, when indoor pipe temperature is above 45°C

Malfunction Caused

- Connector in poor contact
- Faulty sensor
- Faulty outdoor unit PCB
- 4-way valve defective

Troubleshooting



17.4.17 F17 (Indoor Standby Units Freezing Abnormality)

Malfunction Decision Conditions

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

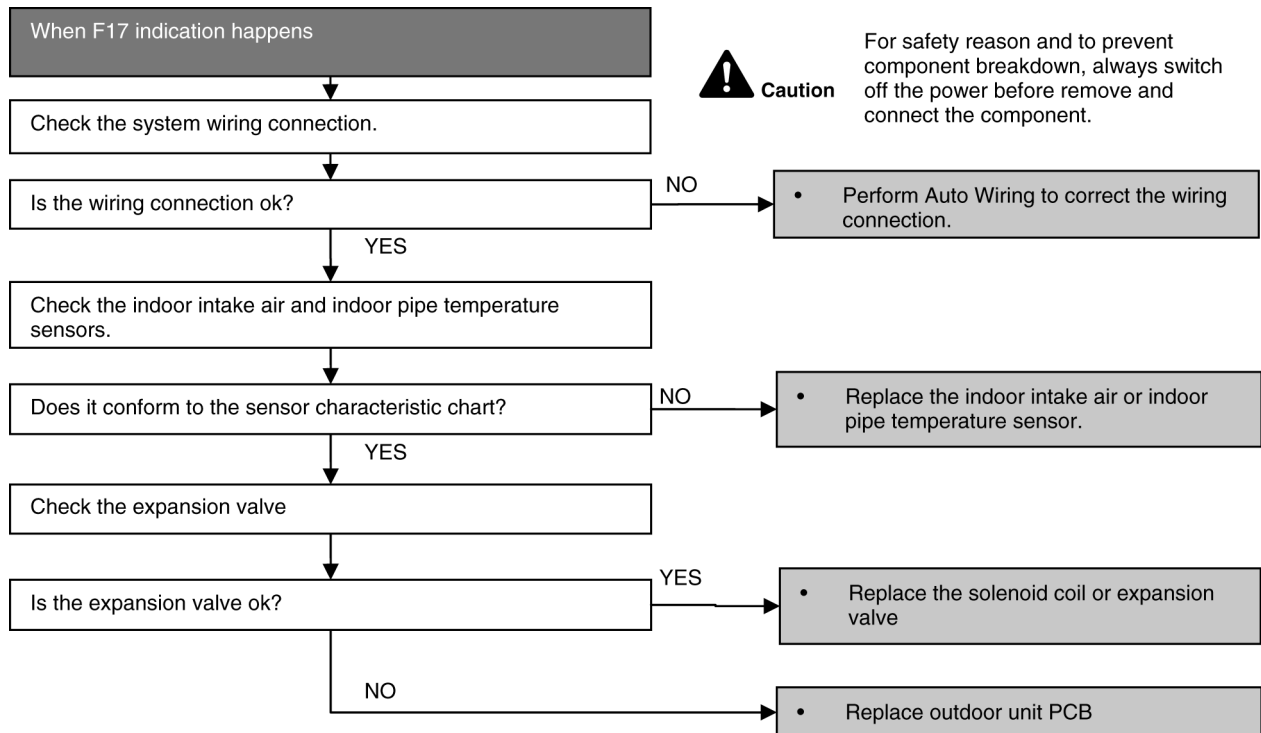
Remark:

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

Malfunction Caused

- Wrong wiring connection
- Faulty sensor
- Faulty expansion valve

Troubleshooting



17.4.18 F90 (Power Factor Correction Protection)

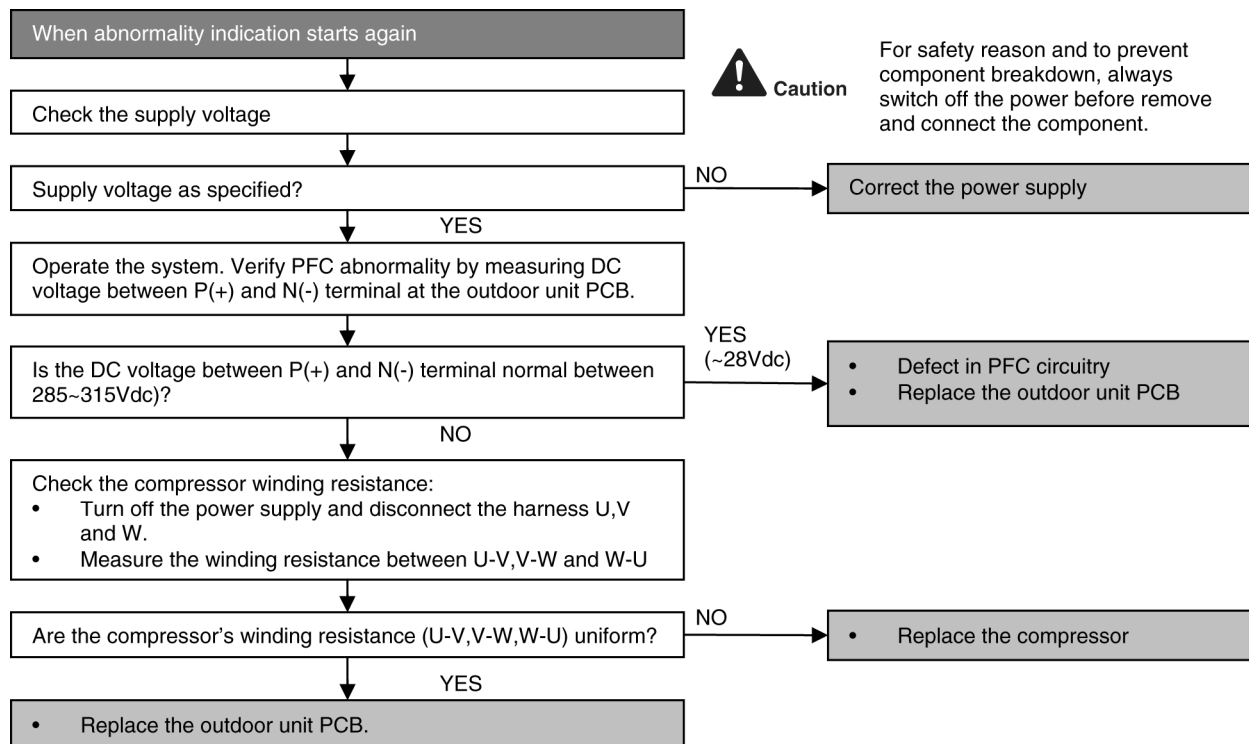
Malfunction Decision Conditions

During startup and operation of cooling and heating, when Power Factor Correction (PFC) protection circuitry at the outdoor unit main PCB senses abnormal high DC voltage level.

Malfunction Caused

- DC voltage peak due to power supply surge.
- DC voltage peak due to compressor windings not uniform.
- Faulty outdoor PCB.

Troubleshooting

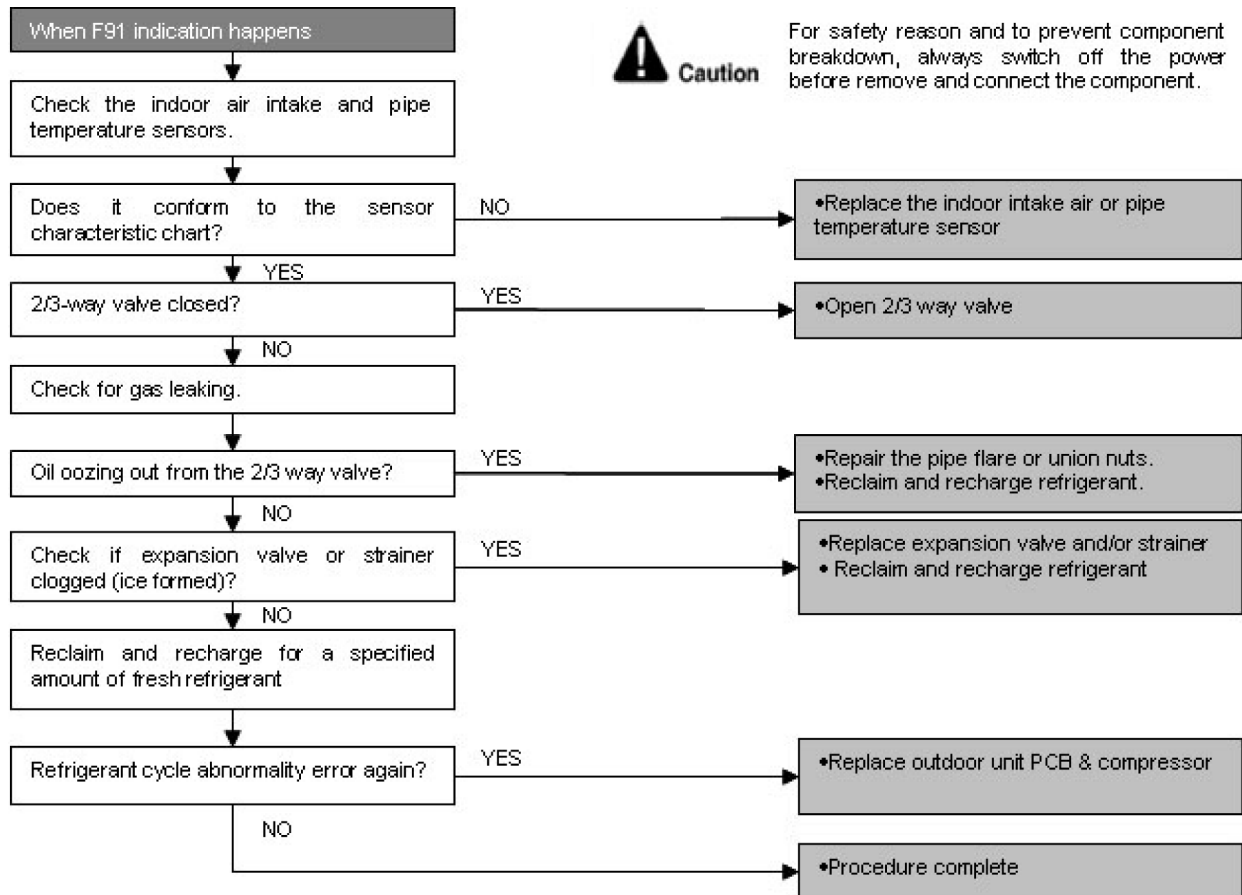


17.4.19 F91 (Refrigeration Cycle Abnormality)

Malfunction Caused

- Faulty indoor intake air or pipe temperature sensor
- 2/3 way valve closed
- Refrigerant shortage (refrigerant leakage)
- Clogged expansion valve or strainer
- Faulty outdoor unit
- Poor compression of compressor

Troubleshooting



17.4.20 F93 (Compressor Rotation Failure)

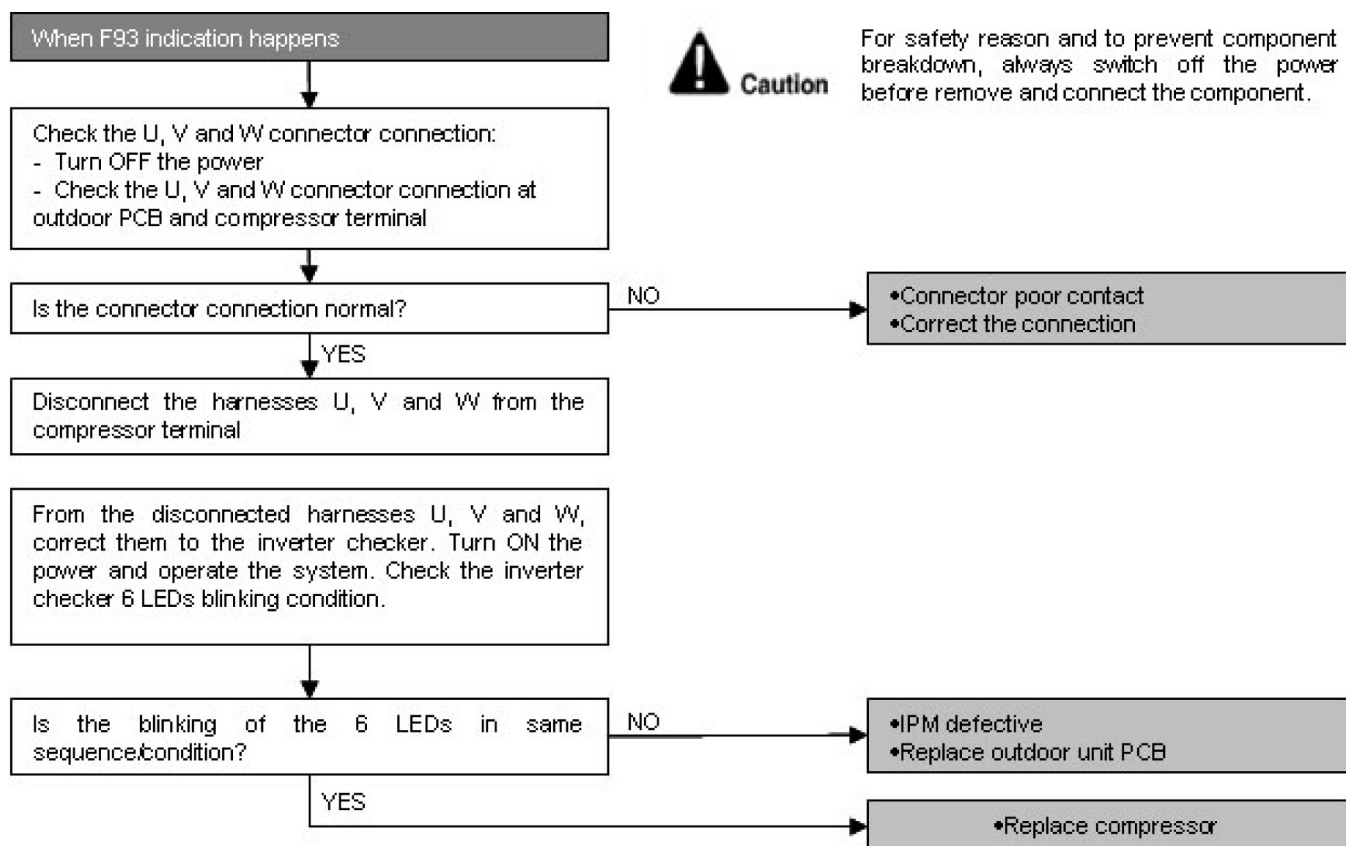
Malfunction Decision Conditions

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

Malfunction Caused

- Compressor terminal disconnect
- Faulty Outdoor PCB
- Faulty compressor

Troubleshooting



17.4.21 F95 (Cooling High Pressure Abnormality)

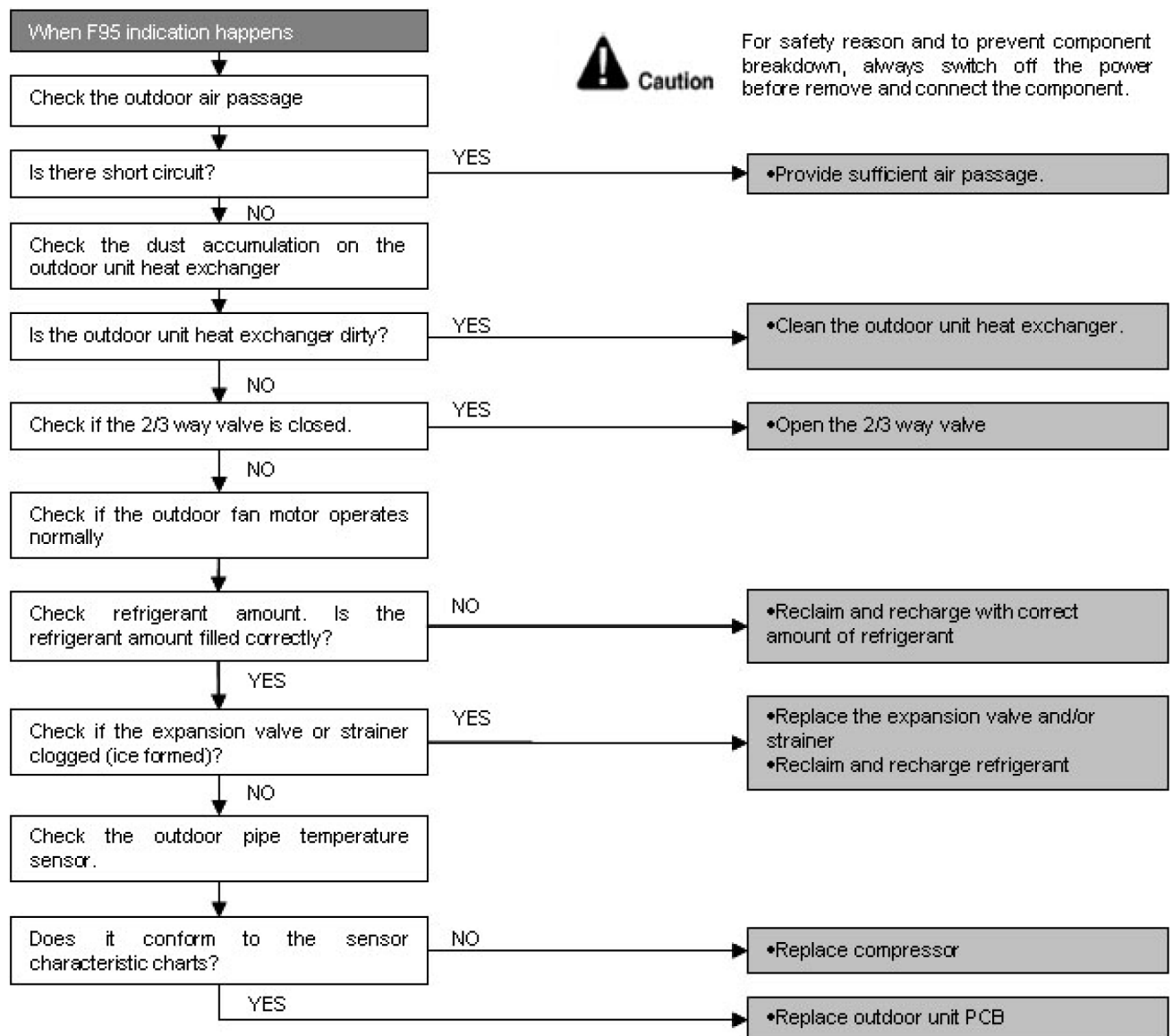
Malfunction Decision Conditions

During operation of cooling, when outdoor unit heat exchanger high temperature data (61°C) is detected by the outdoor pipe temperature sensor.

Malfunction Caused

- Air short circuit at indoor unit
- Dust accumulation on the indoor unit heat exchanger
- 2/3 way valve closed
- Faulty outdoor unit fan motor
- Excessive refrigerant
- Clogged expansion valve or strainer
- Faulty outdoor pipe temperature sensor
- Faulty outdoor unit PCB

Troubleshooting



17.4.22 F96 (IPM Overheating)

Malfunction Decision Conditions

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

Multi models only

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

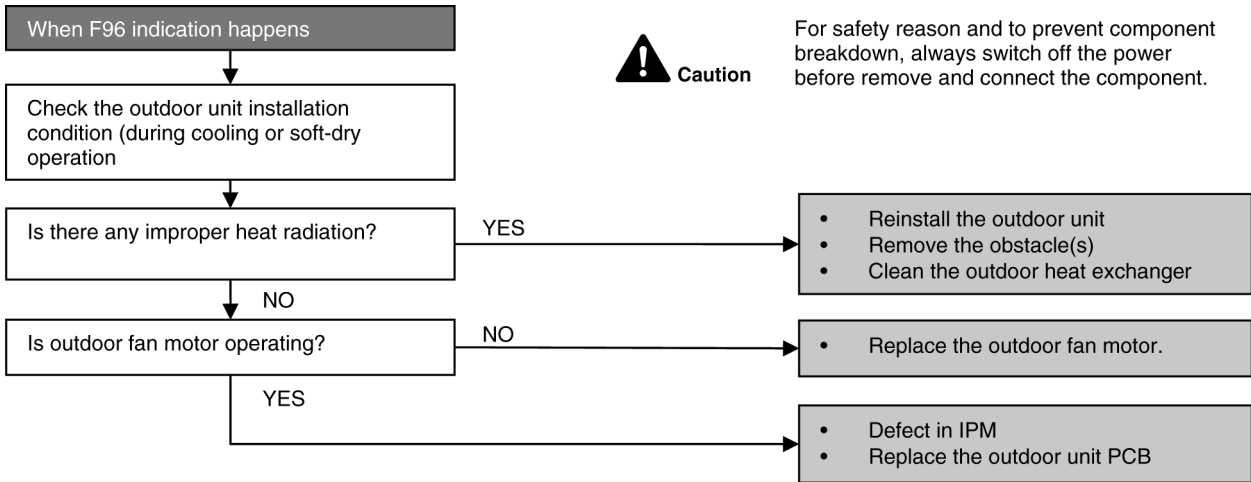
Malfunction Caused

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

Multi Models Only

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

Troubleshooting



17.4.23 F97 (Compressor Overheating)

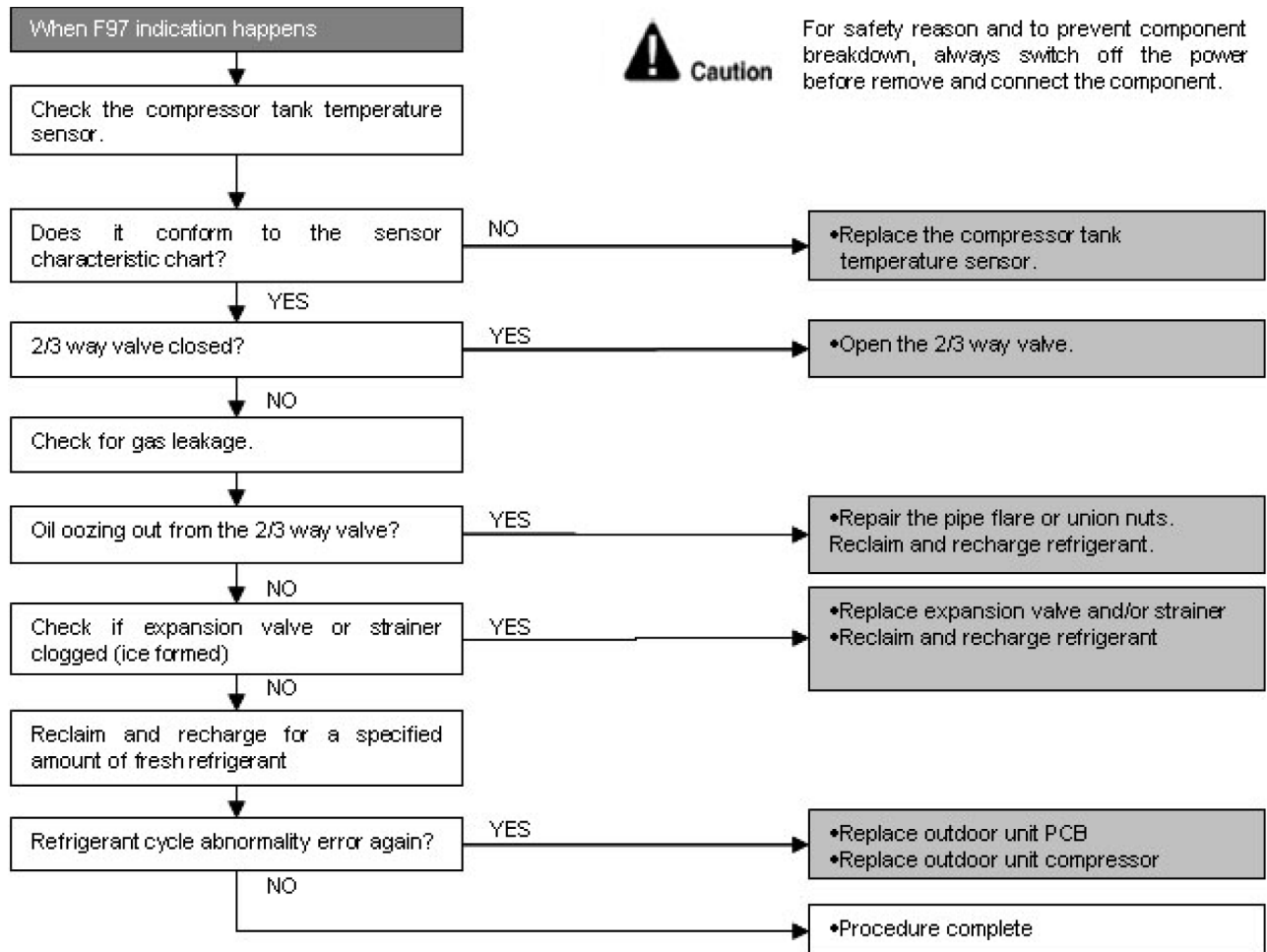
Malfunction Decision Conditions

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

Malfunction Caused

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

Troubleshooting



17.4.24 F98 (Input Over Current Detection)

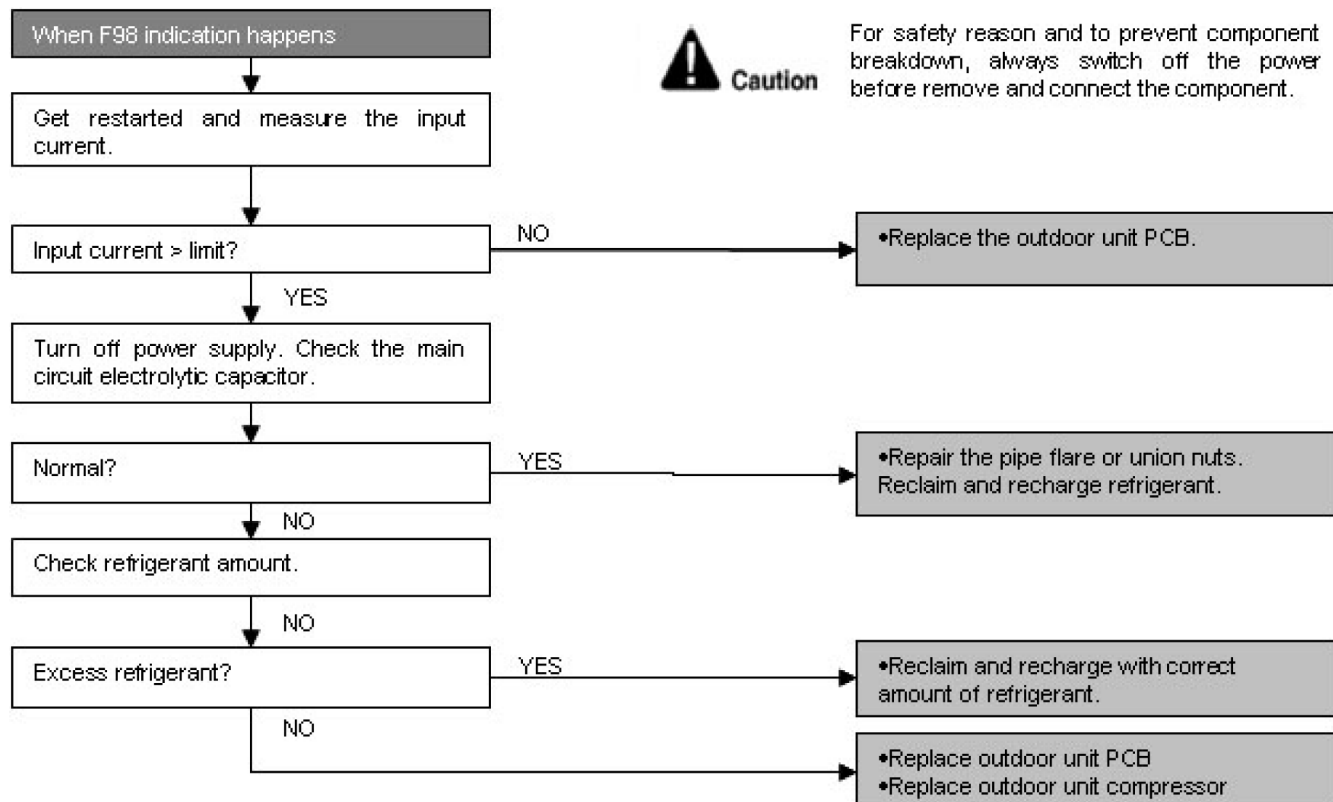
Malfunction Decision Conditions

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

Malfunction Caused

- Excessive refrigerant.
- Faulty outdoor unit PCB.

Troubleshooting



17.4.25 F99 (Output Over Current Detection)

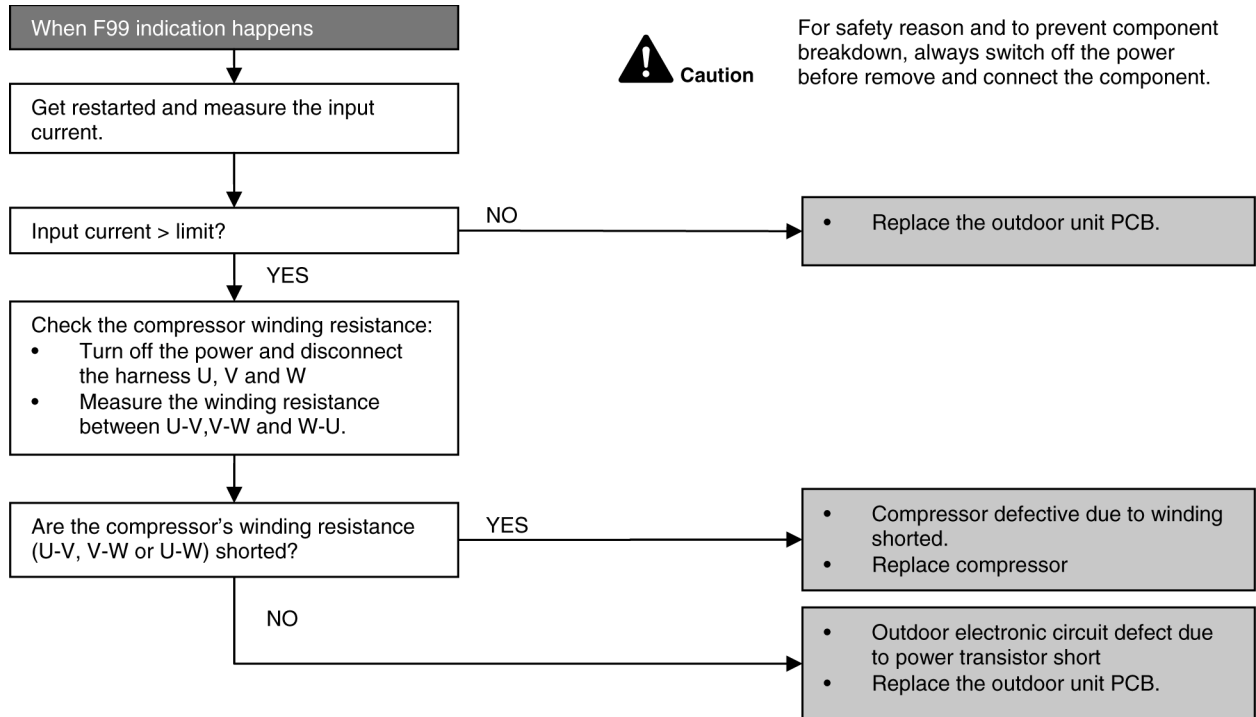
Malfunction Decision Conditions

During operation of cooling and heating, when an output over-current (DC peak current value at IPM Prevention Control) is detected by checking the current that flows in the inverter DC peak sensing circuitry.

Malfunction Caused

- Faulty outdoor unit PCB
- Faulty compressor

Troubleshooting



- Checking the power transistor
- Never touch any live parts for at least 10 minutes after turning off the circuit breaker.
- If unavoidable necessary to touch a live part, make sure the power transistor's supply voltage is below 50V using the tester.
- For the UVW, make measurement at the Faston terminal on the board of the relay connector.

Tester's negative terminal	Power transistor (+)	UVW	Power transistor (-)	UVW
Tester's positive terminal	UVW	Power transistor (+)	UVW	Power transistor (-)
Normal resistance	Several kΩ to several MΩ			
Abnormal resistance	0 or ∞			

18. Disassembly and Assembly Instructions



WARNING

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

18.1 Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

18.1.1 To remove front grille

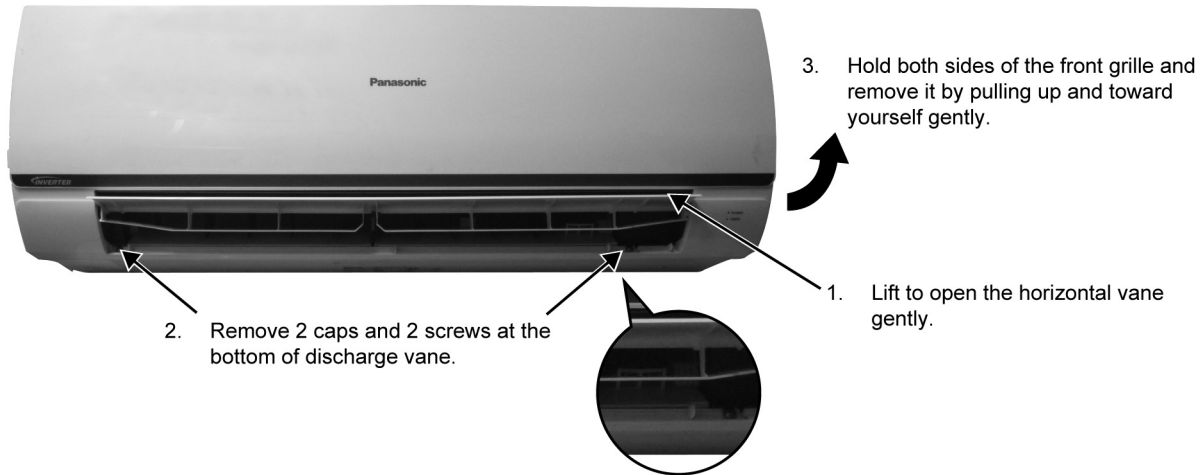


Figure 1

18.1.2 To remove electronic controller

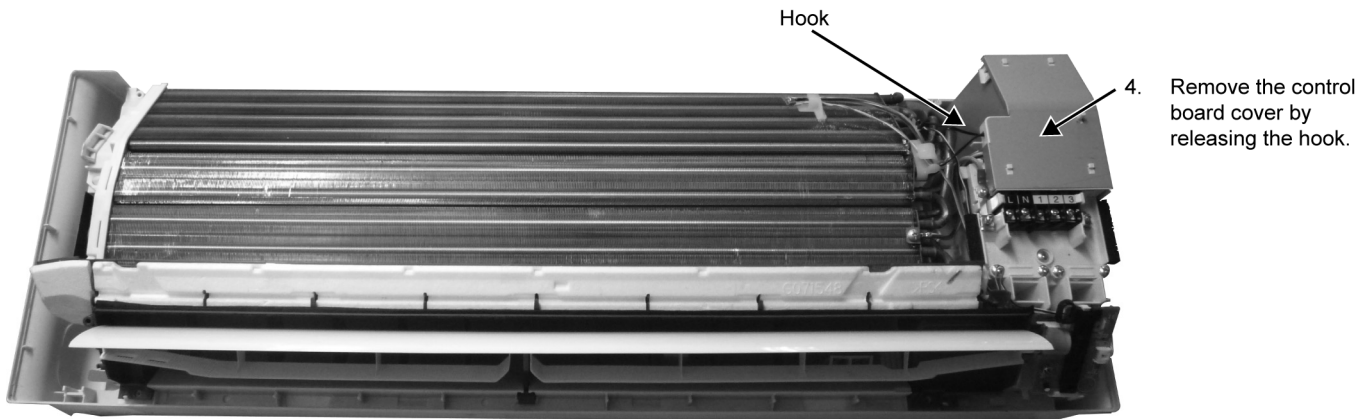


Figure 2

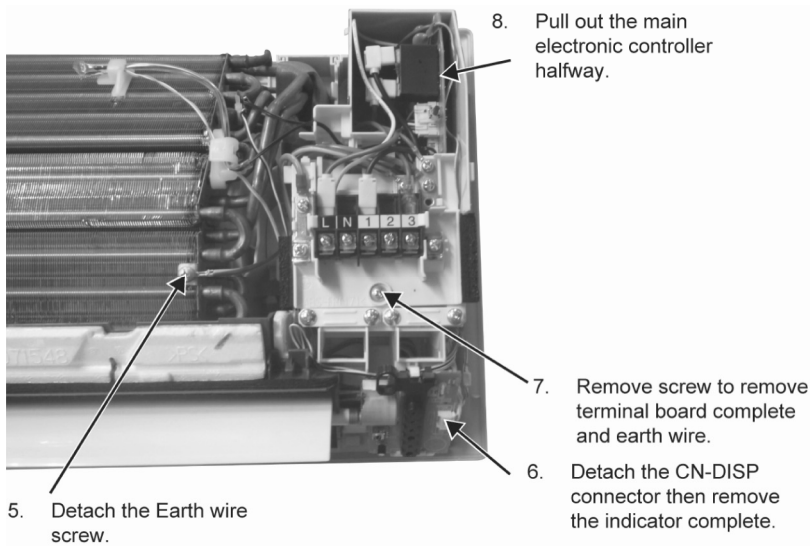


Figure 3

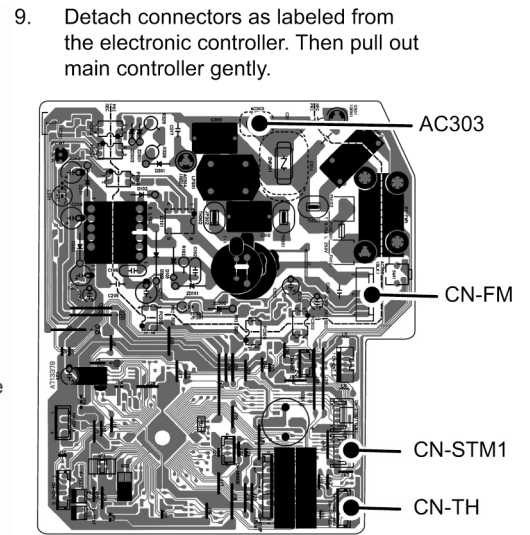


Figure 4

18.1.3 To remove discharge grille

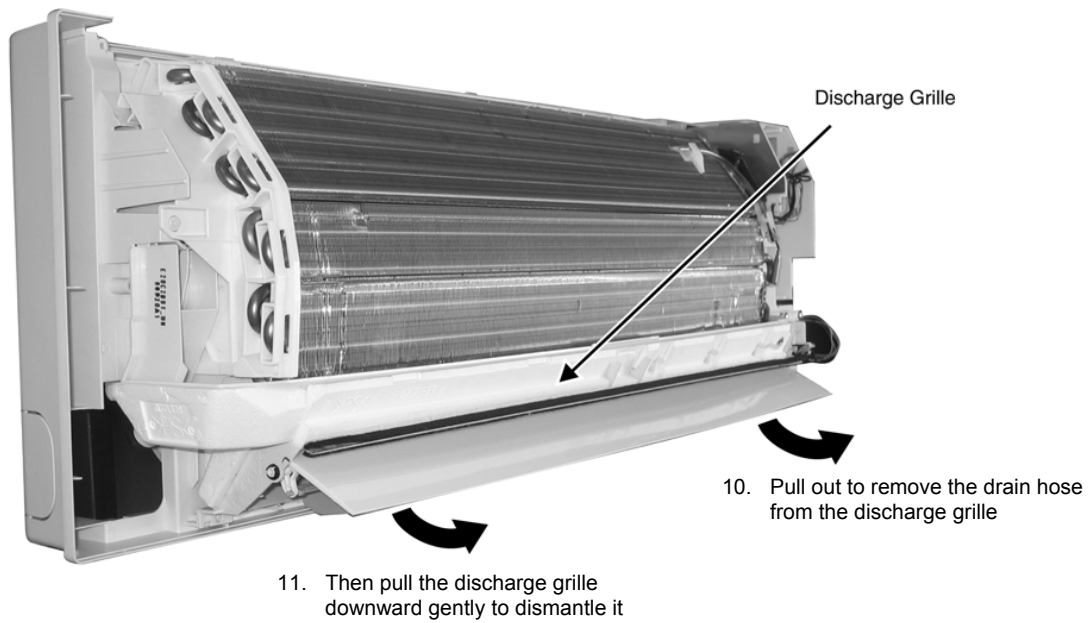


Figure 5

18.1.4 To remove control board

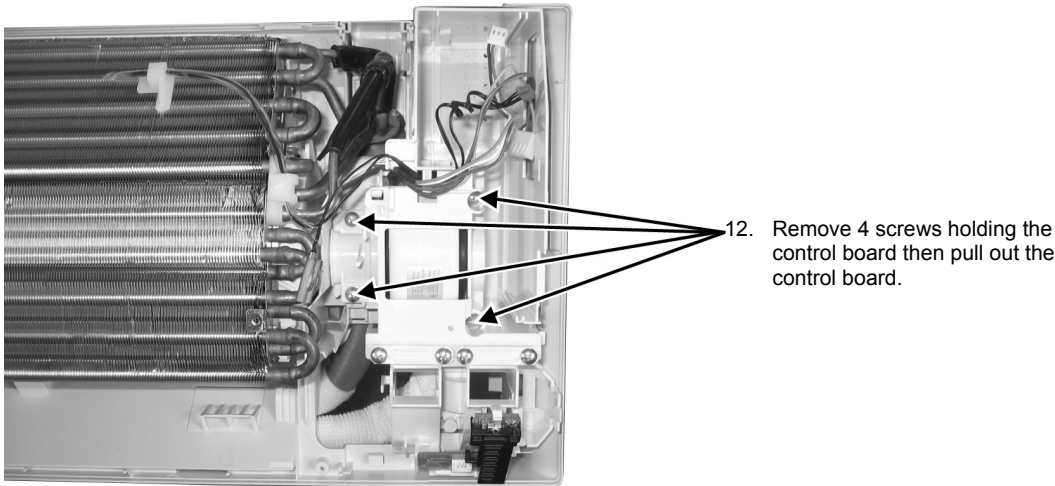


Figure 6

18.1.5 To remove cross flow fan and indoor fan motor

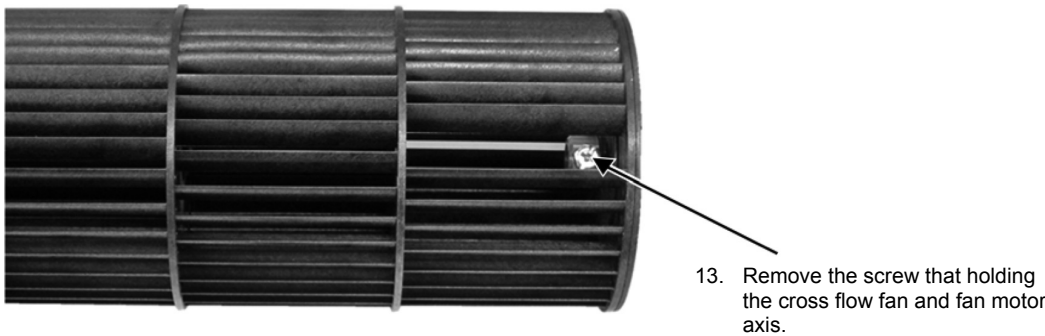


Figure 7

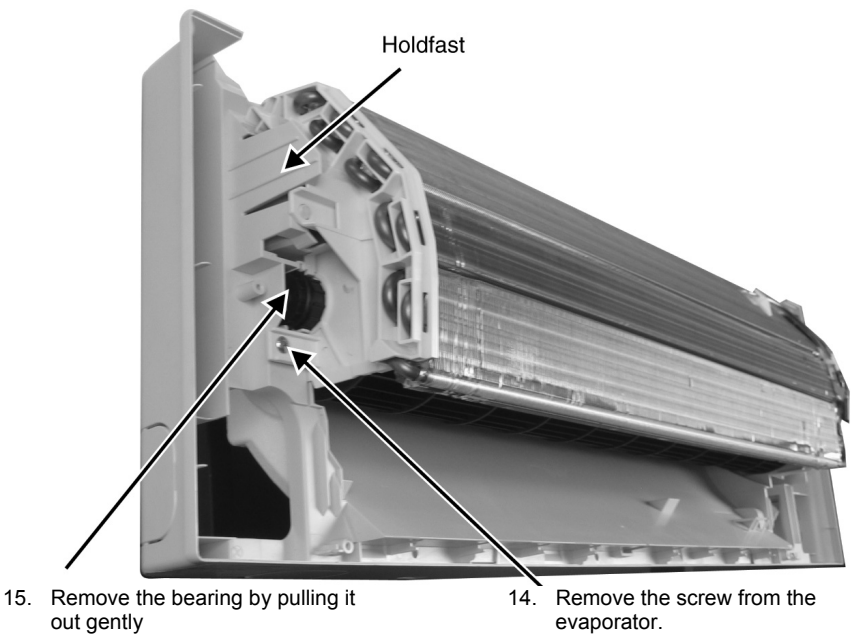


Figure 8

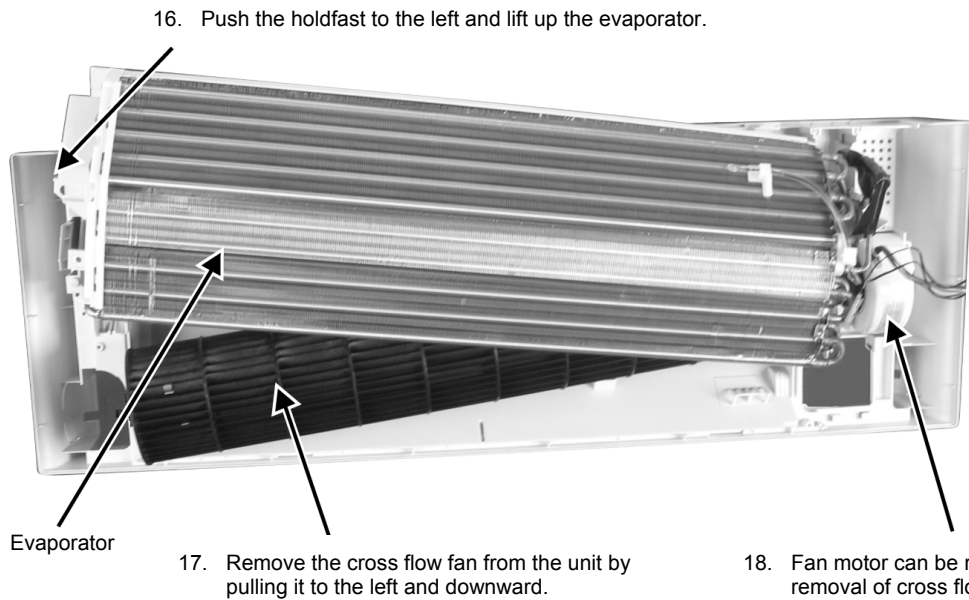


Figure 9

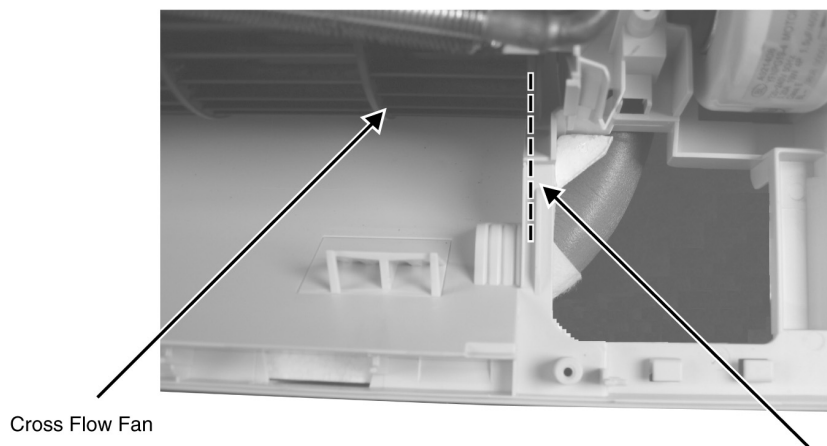


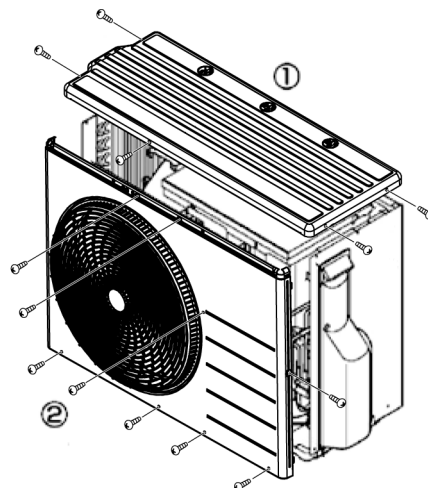
Figure 10

18.2 Outdoor Unit Removal Procedure

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

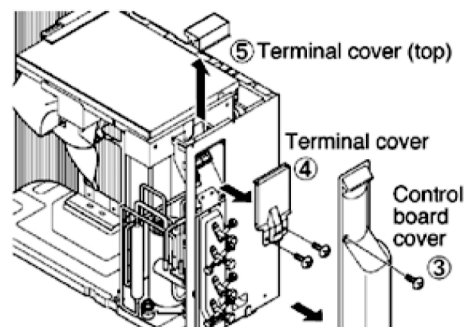
18.2.1 Removing the Cabinet Top Plate and Cabinet Front Plate

- 1 Remove the cabinet top plate (by removing the 5 screws).
- 2 Remove the 8 screws fixing the cabinet front plate, release 6 hooks and pull the cabinet front plate toward front side.



18.2.2 Removing the Control Board Cover

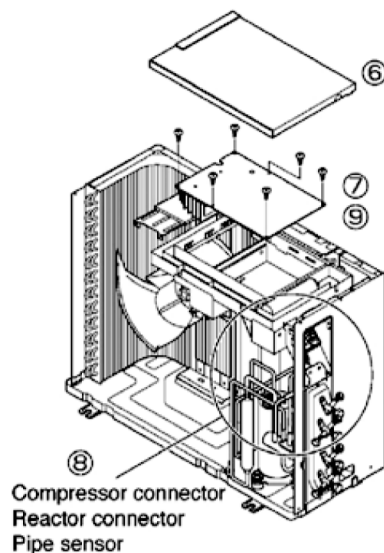
- 3 Remove the control board cover (remove 1 screw).
- 4 Remove the terminal cover (remove 2 screws).
- 5 Remove the terminal cover (top) and disconnect all the lead wires (3 fasten tab) inside.



18.2.3 Removing the Control Board

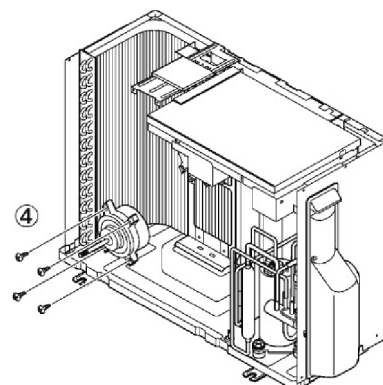
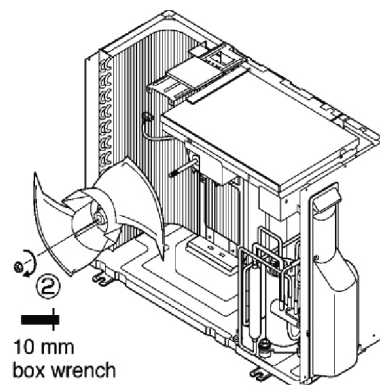
- 6 Remove the control board cover.
- 7 Remove the 6 screws at the positions on the control board indicated by arrows.
- 8 Disconnect the connectors and pipe sensor connected to the compressor and reactor.
- 9 Remove the control board.

When pulling the control board upward, it may not be possible to remove it because of the way in which the ground wire and other wires are routed. In this case, it is removed after the control board cover itself has been removed.



18.2.4 Removing the Propeller Fan and Fan Motor

- 1 Remove the cabinet top plate and cabinet front plate.
- 2 Remove the propeller fan by removing the nut turning clockwise at its center.
- 3 Disconnect the connector of the fan motor from the control board.
- 4 Loosen the 4 screws at the fan motor mounting then remove the fan motor.



19. Technical Data

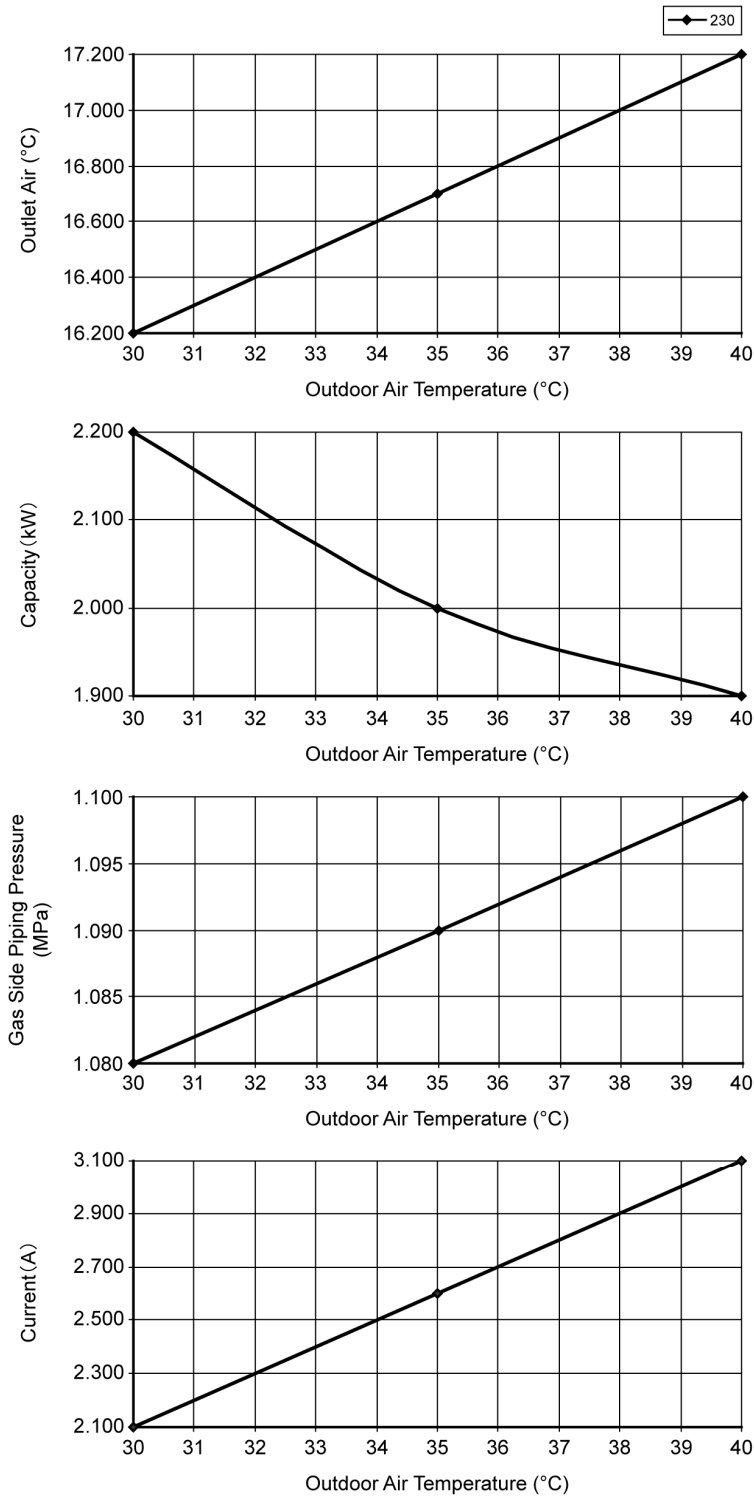
19.1 Operation Characteristics (CU-2RE15PBE)

19.1.1 One Indoor Unit Operation

19.1.1.1 CS-MRE7PKE

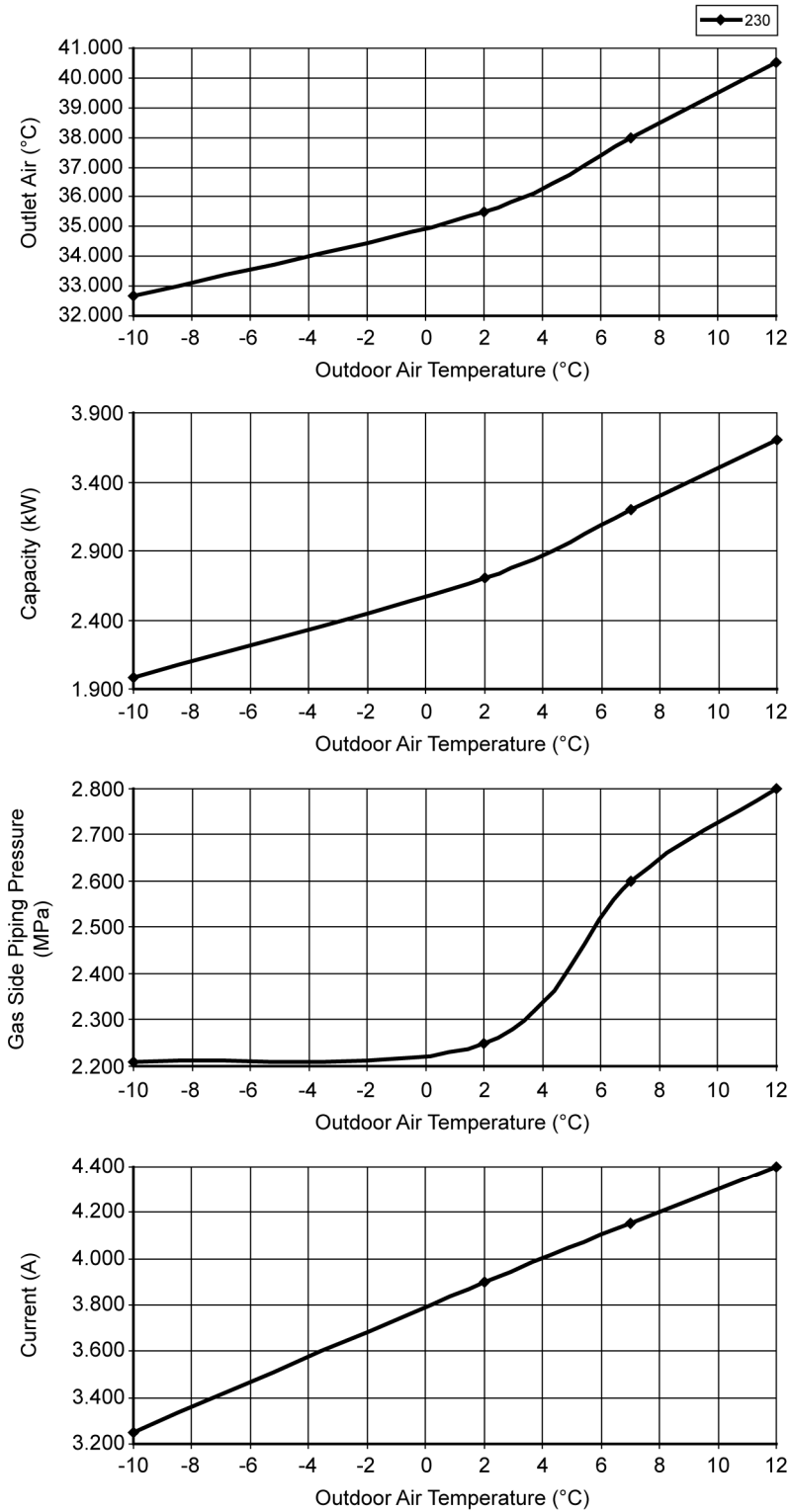
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

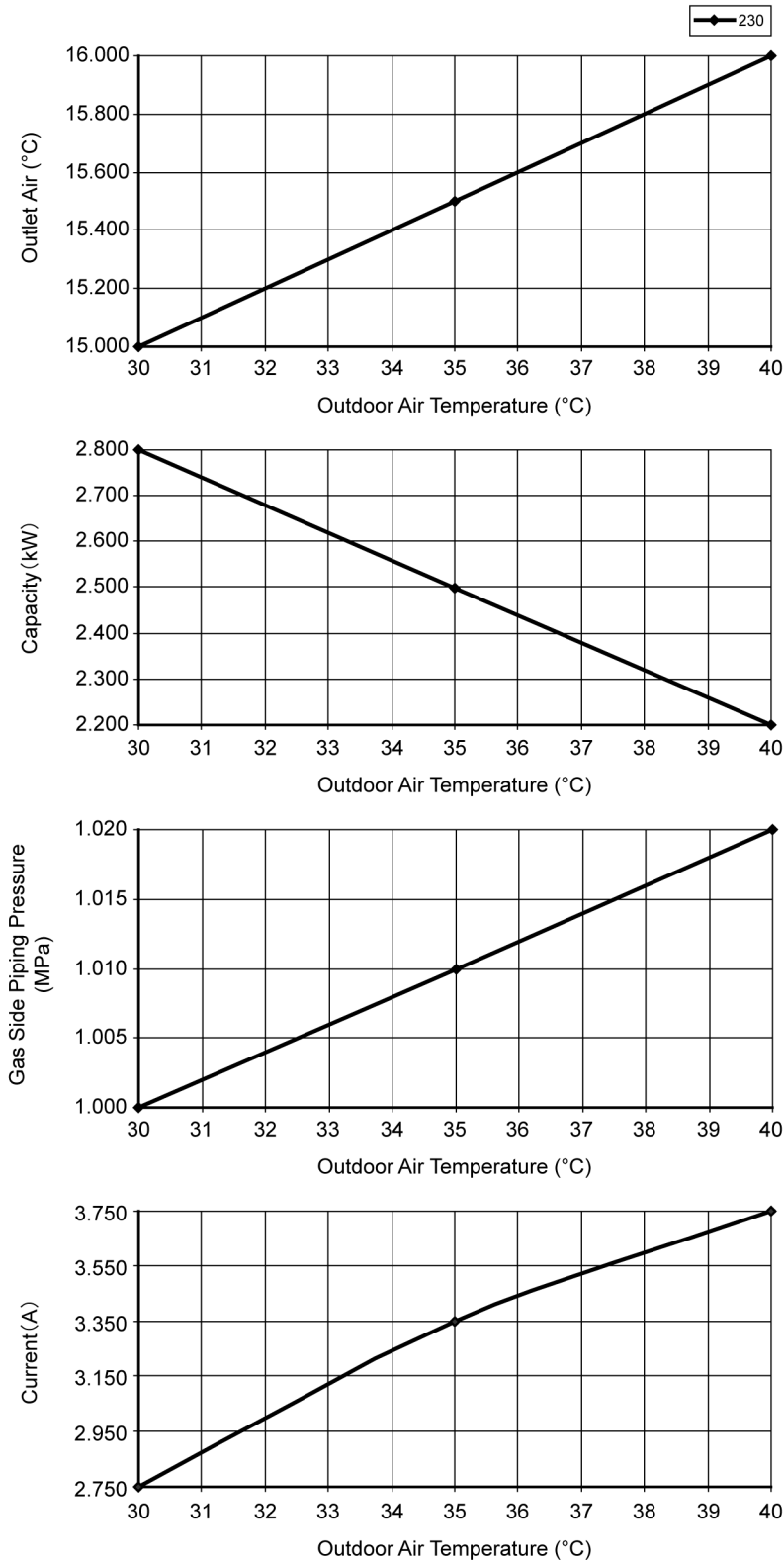
[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh



19.1.1.2 CS-MRE9PKE

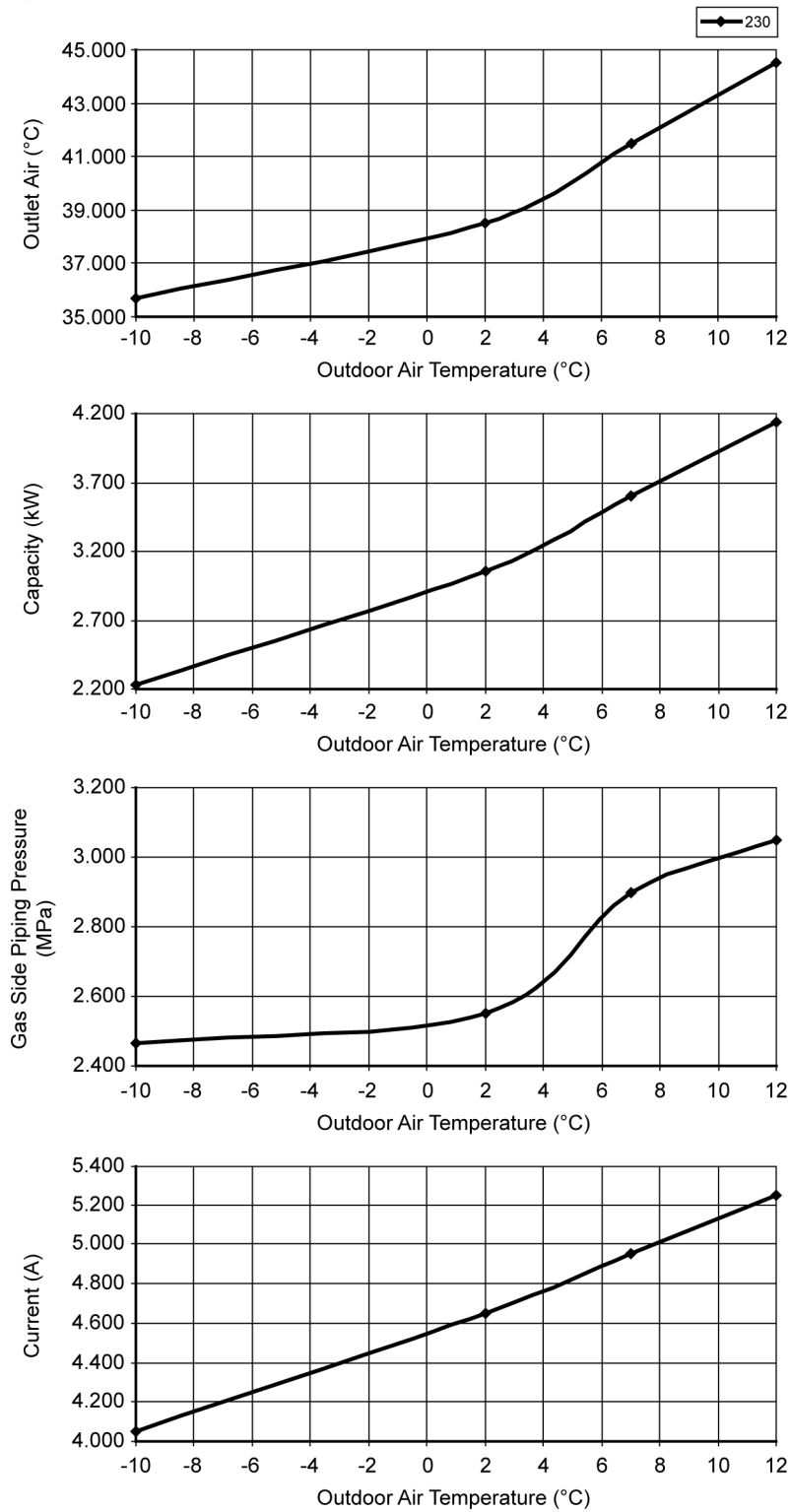
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh

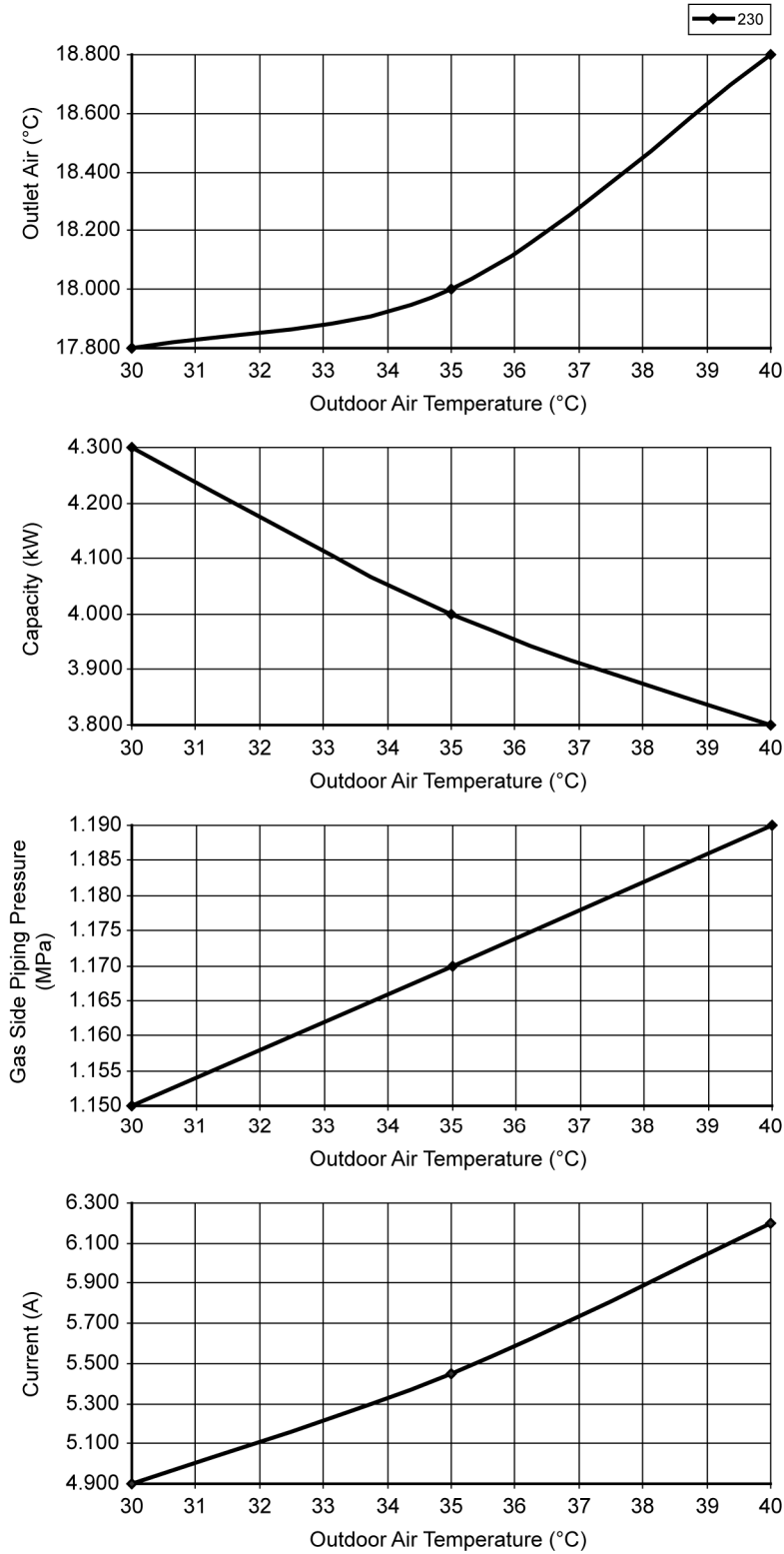


19.1.2 Two Indoor Unit Operation

19.1.2.1 CS-MRE7PKE x2

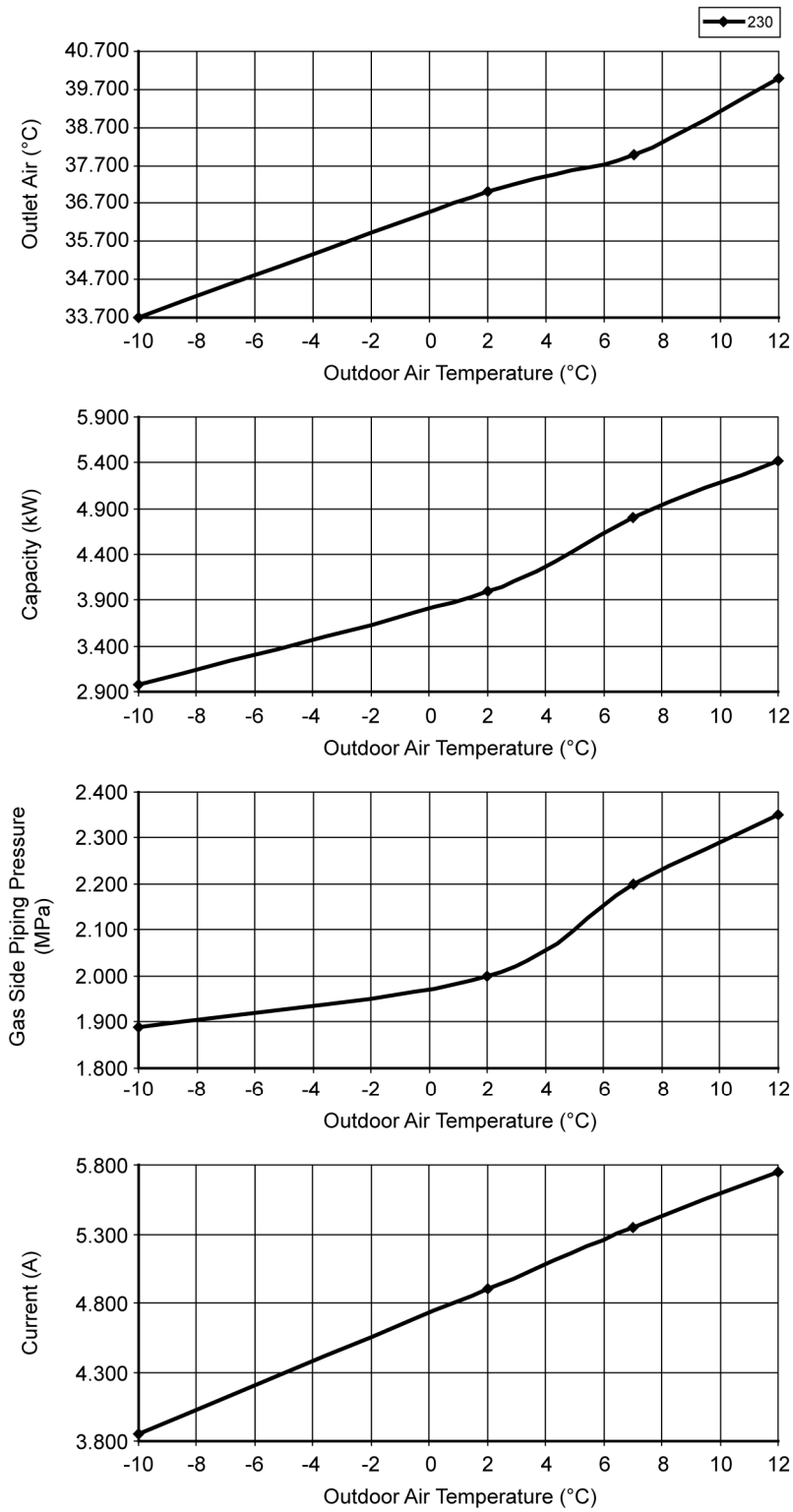
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

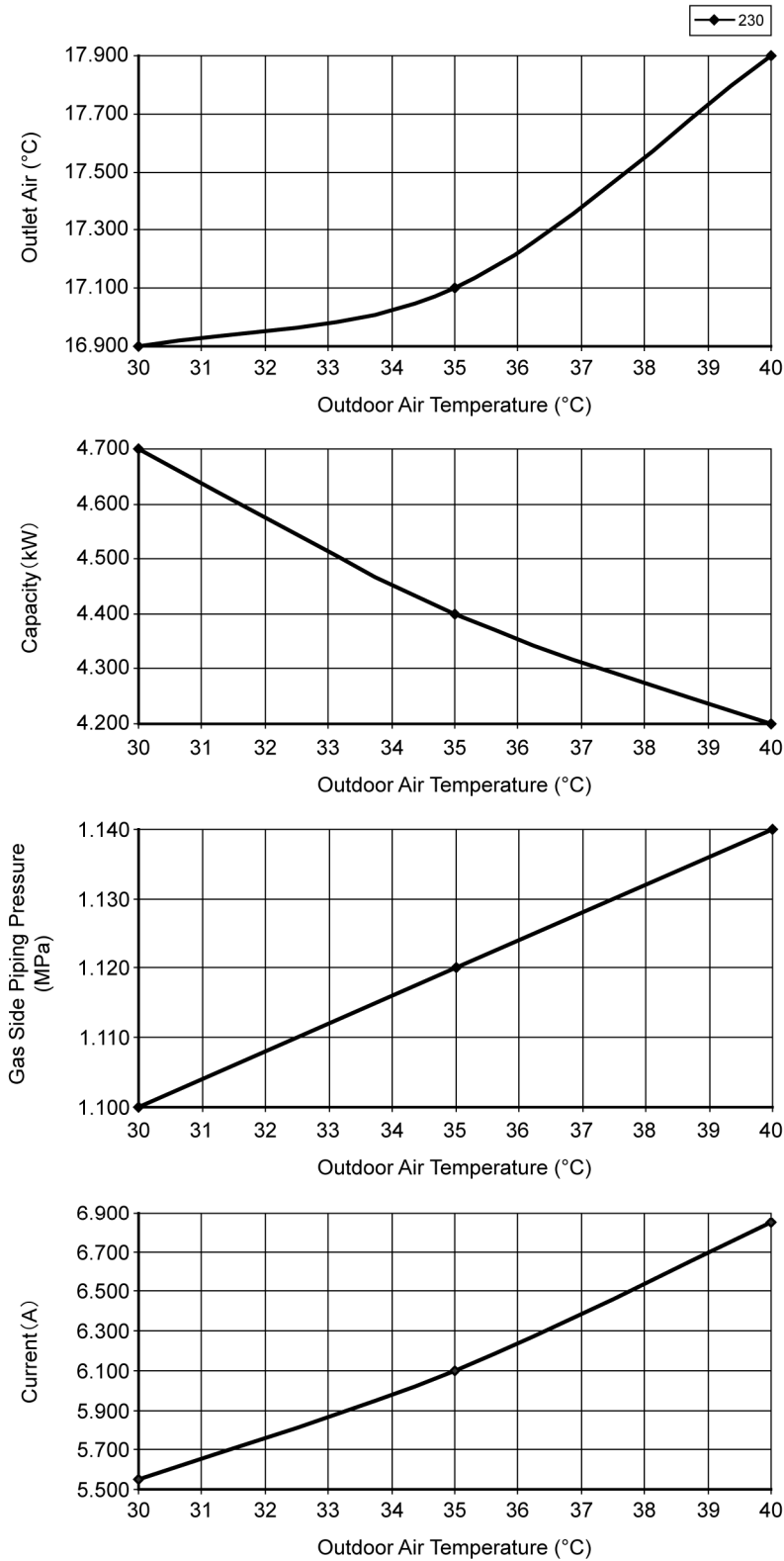
[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh



19.1.2.2 CS-MRE9PKE + CS-MRE7PKE

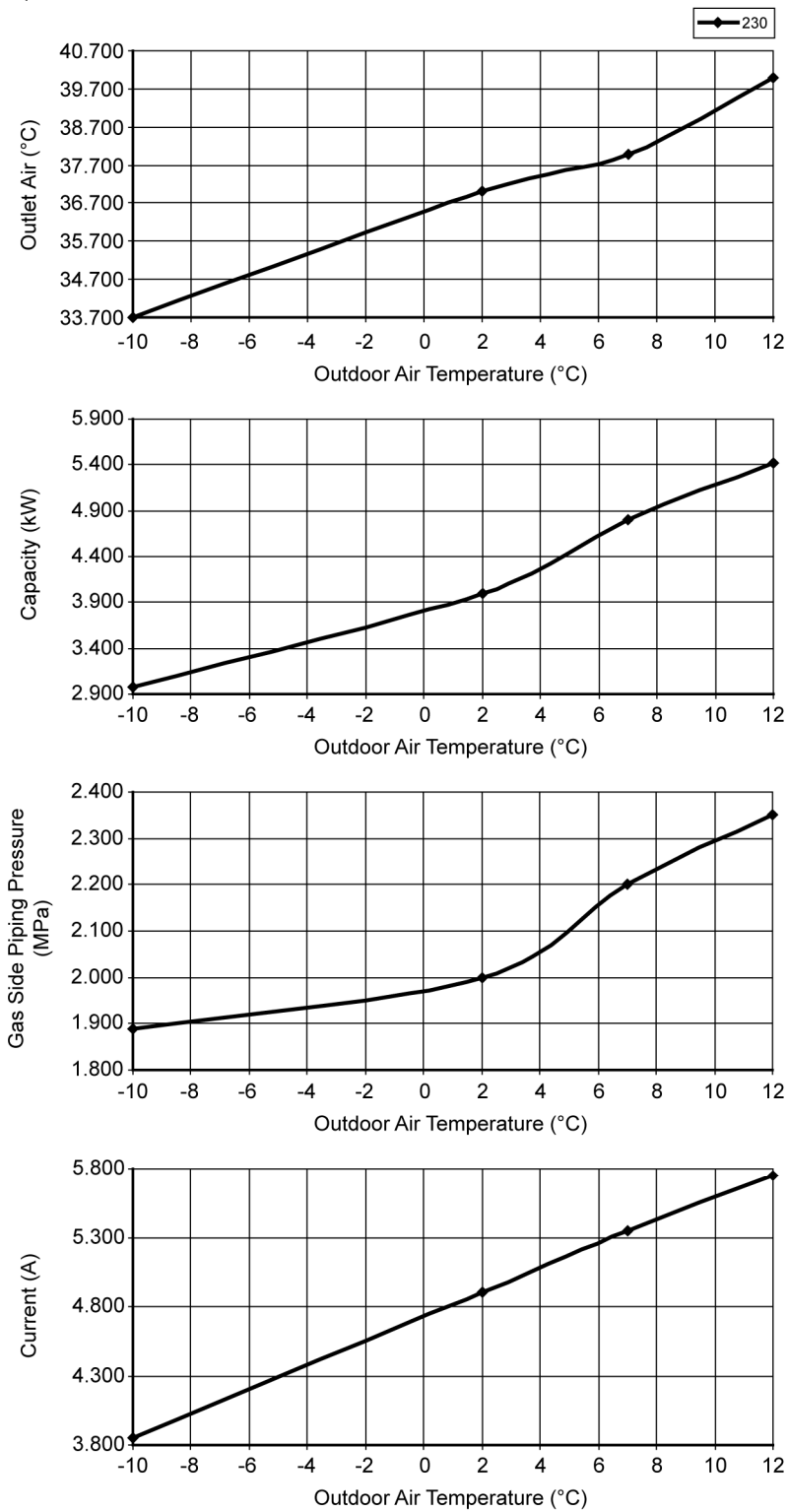
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh



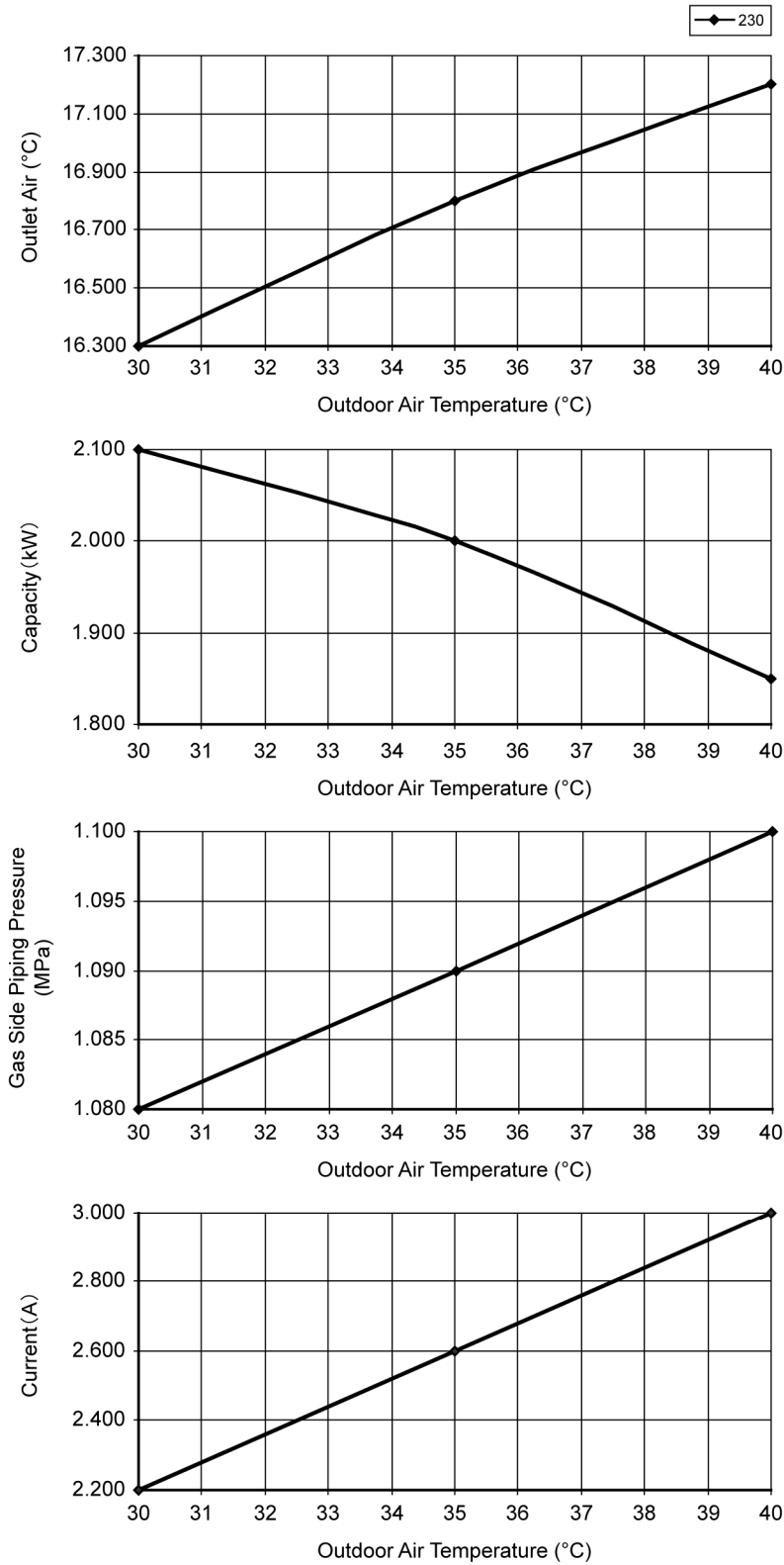
19.2 Operation Characteristics (CU-2RE18PBE)

19.2.1 One Indoor Unit Operation

19.2.1.1 CS-MRE7PKE

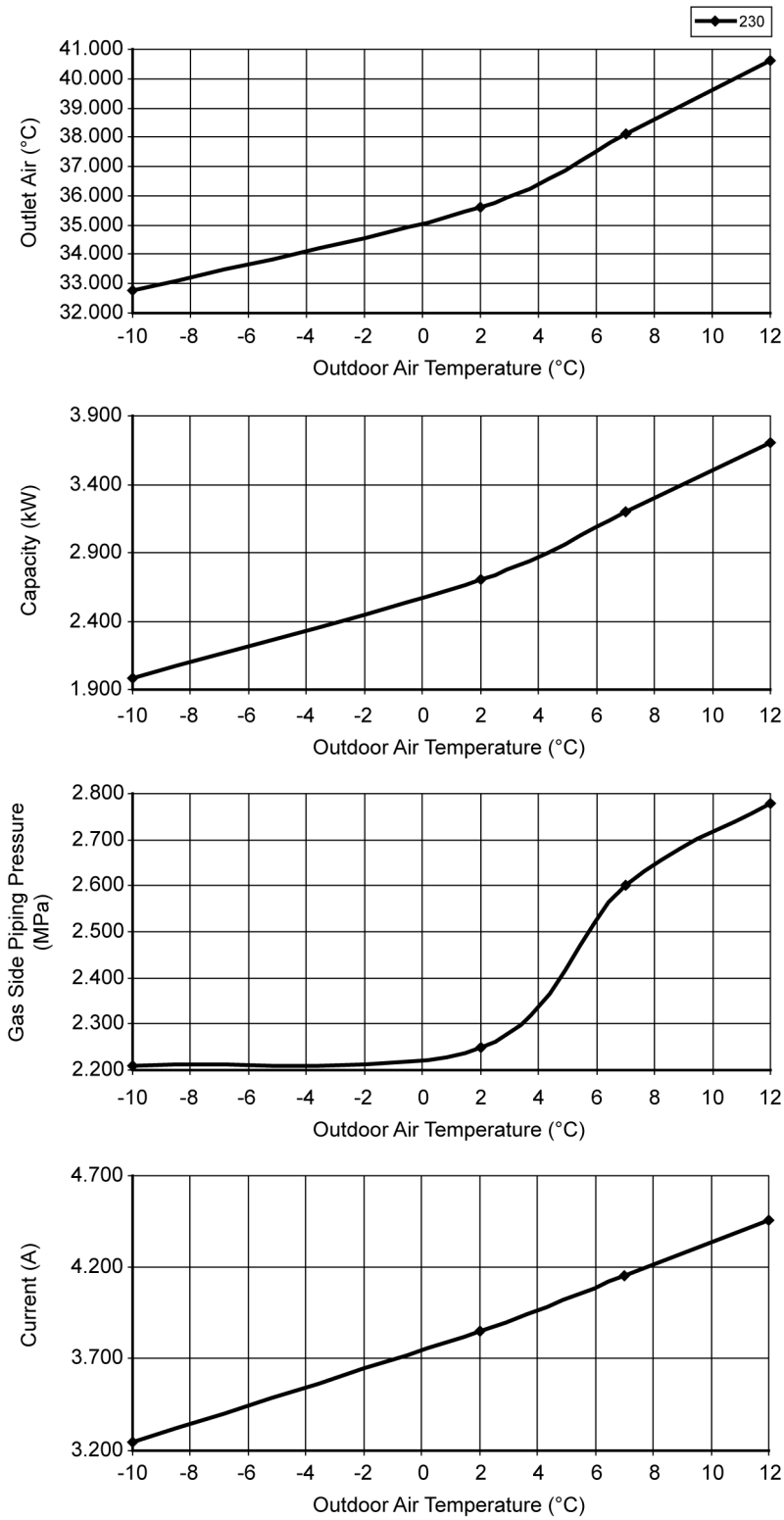
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

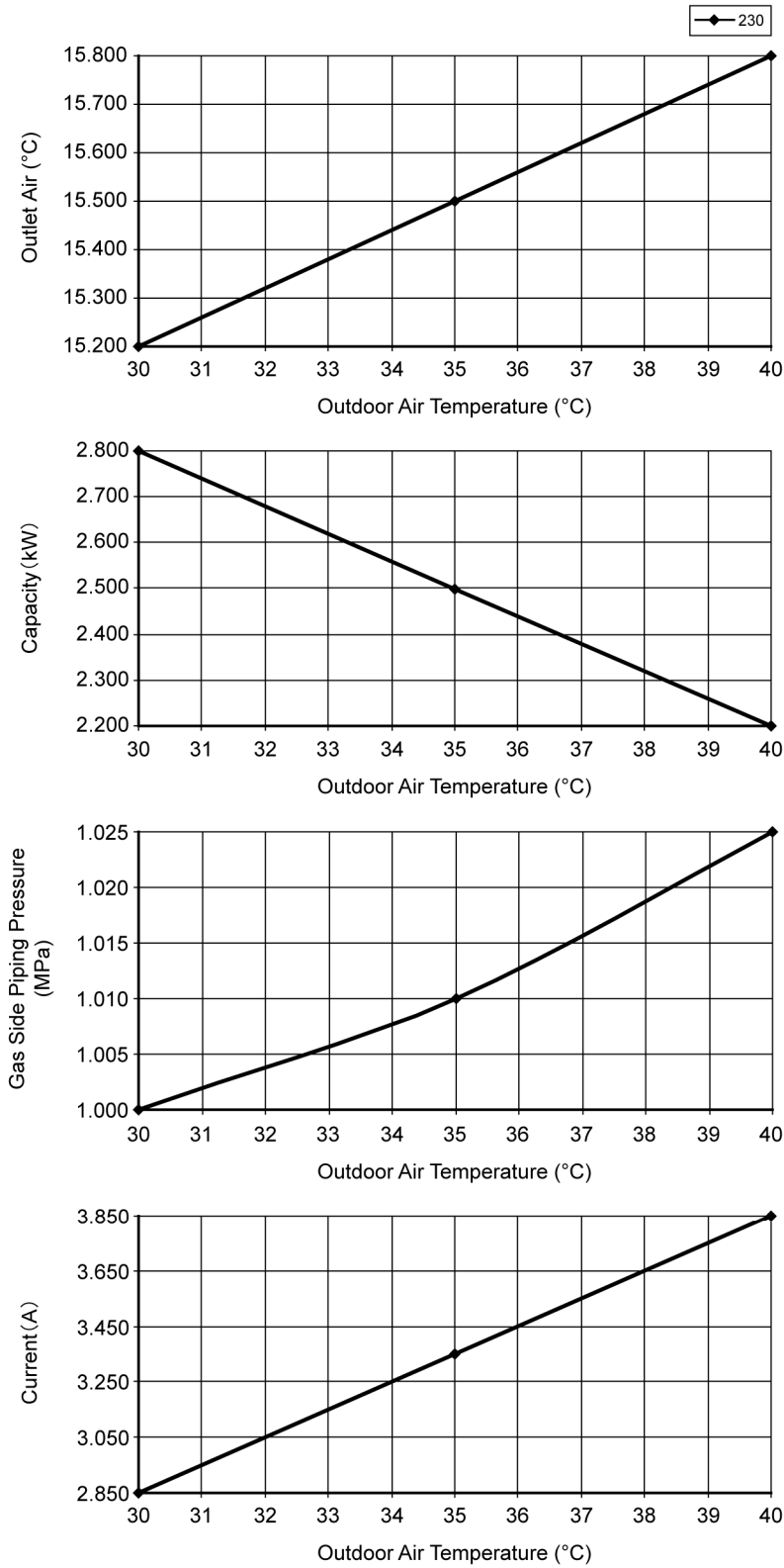
[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh



19.2.1.2 CS-MRE9PKE

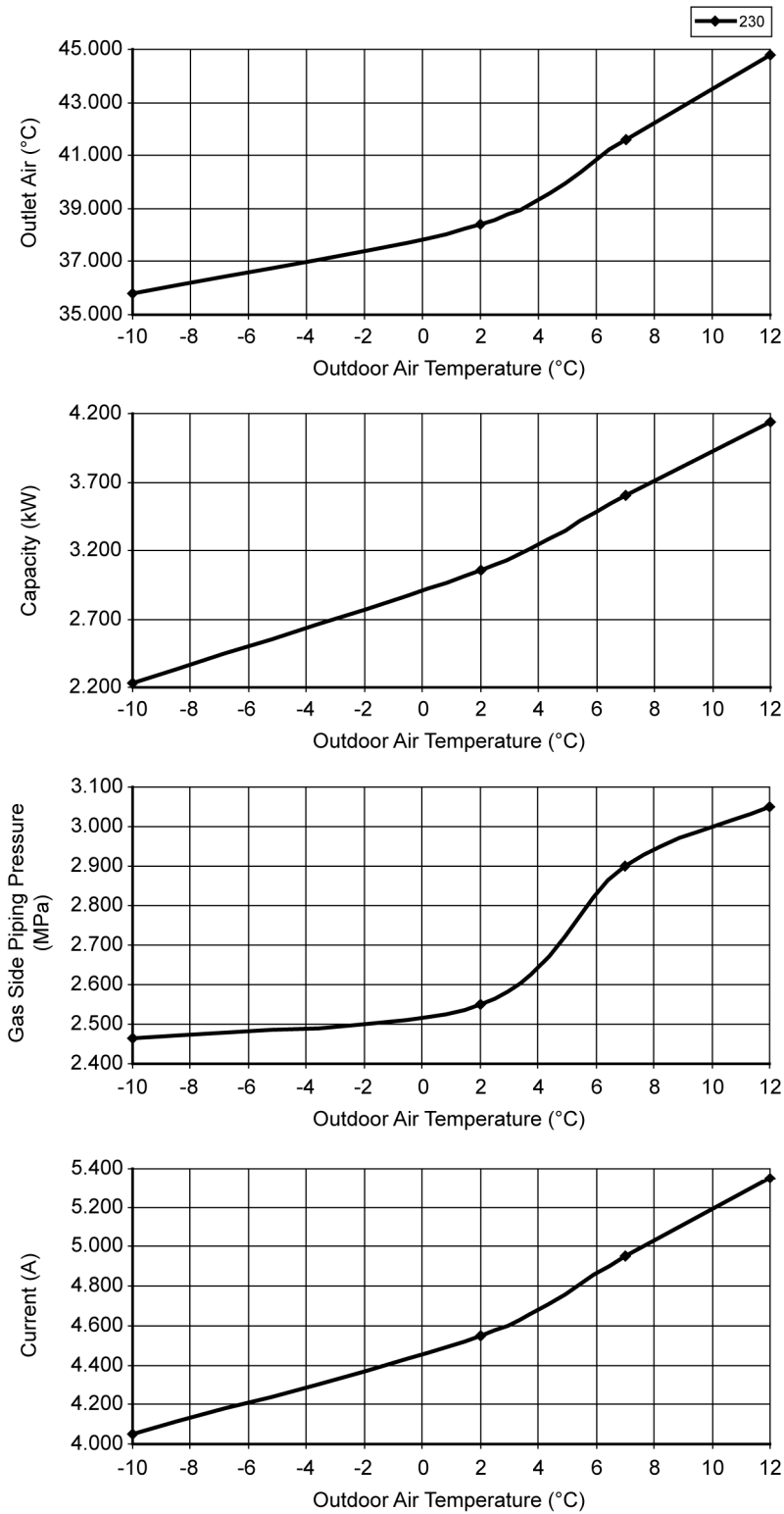
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

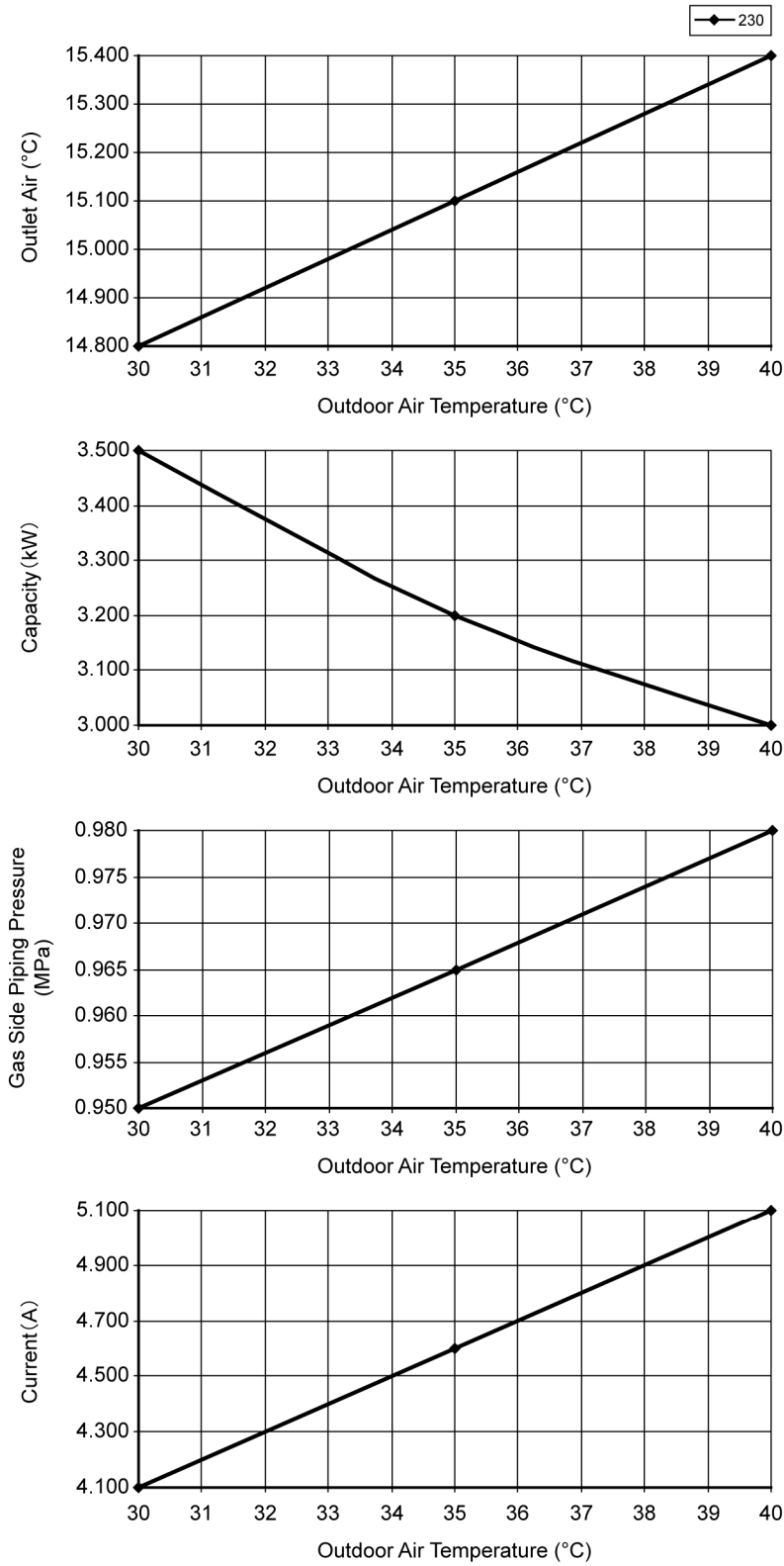
[Condition] Room temperature: 20°C (DBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fh



19.2.1.3 CS-MRE12PKE

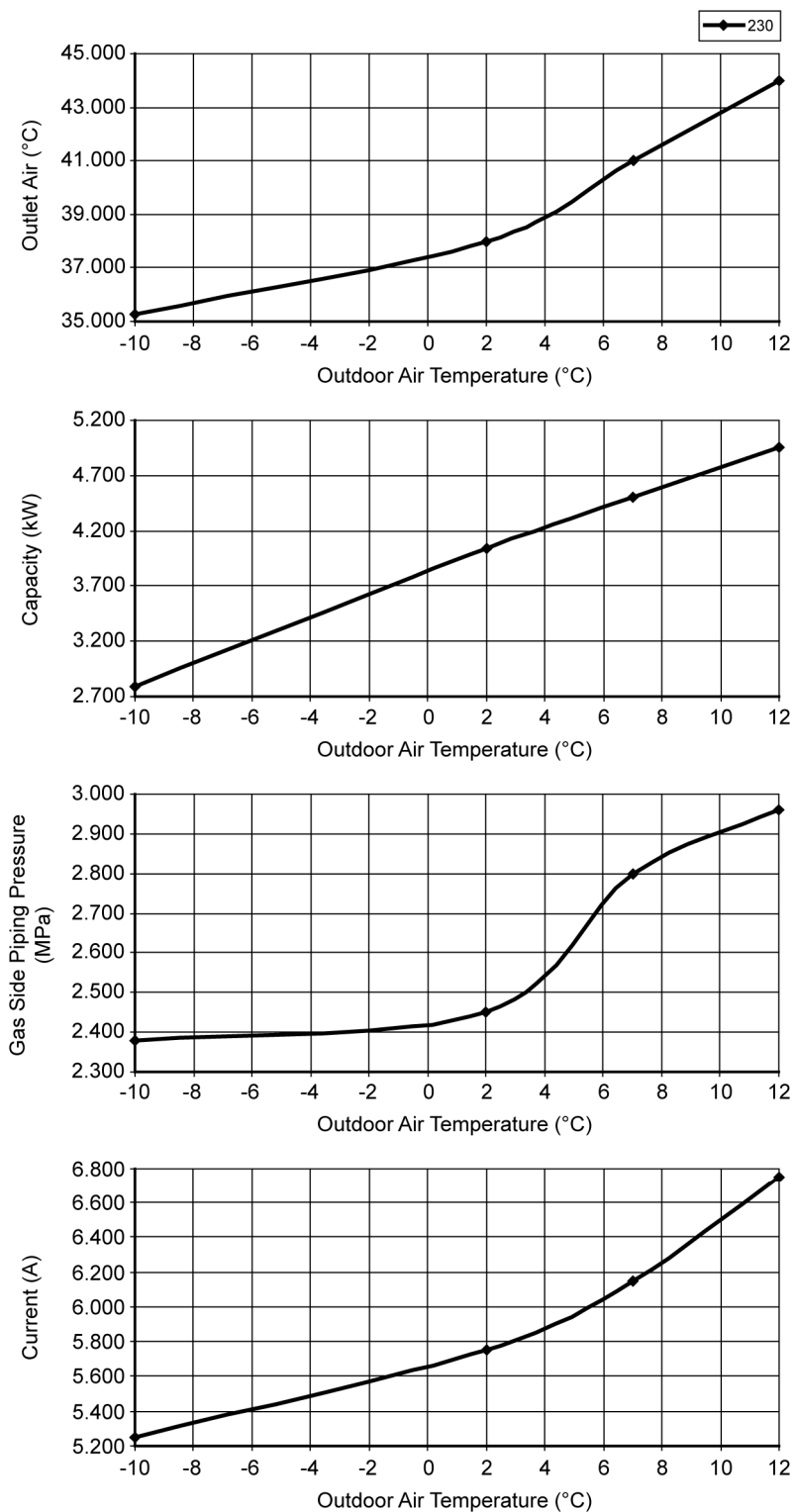
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

[Condition] Room temperature: 20°C (DBT)
 Operation condition: High fan speed
 Piping length: 7.5m
 Compressor: Fh

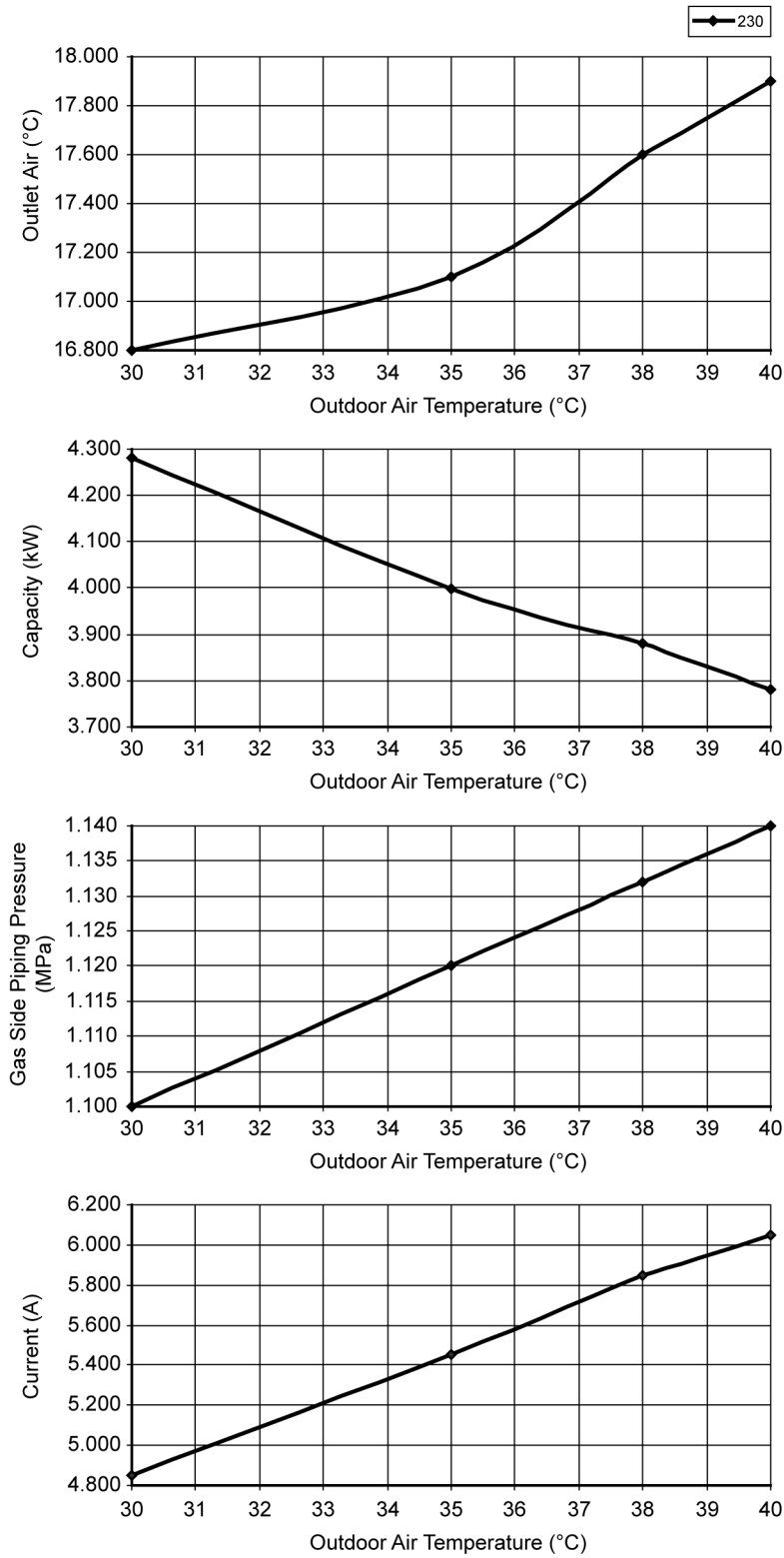


19.2.2 Two Indoor Unit Operation

19.2.2.1 CS-MRE7PKE x2

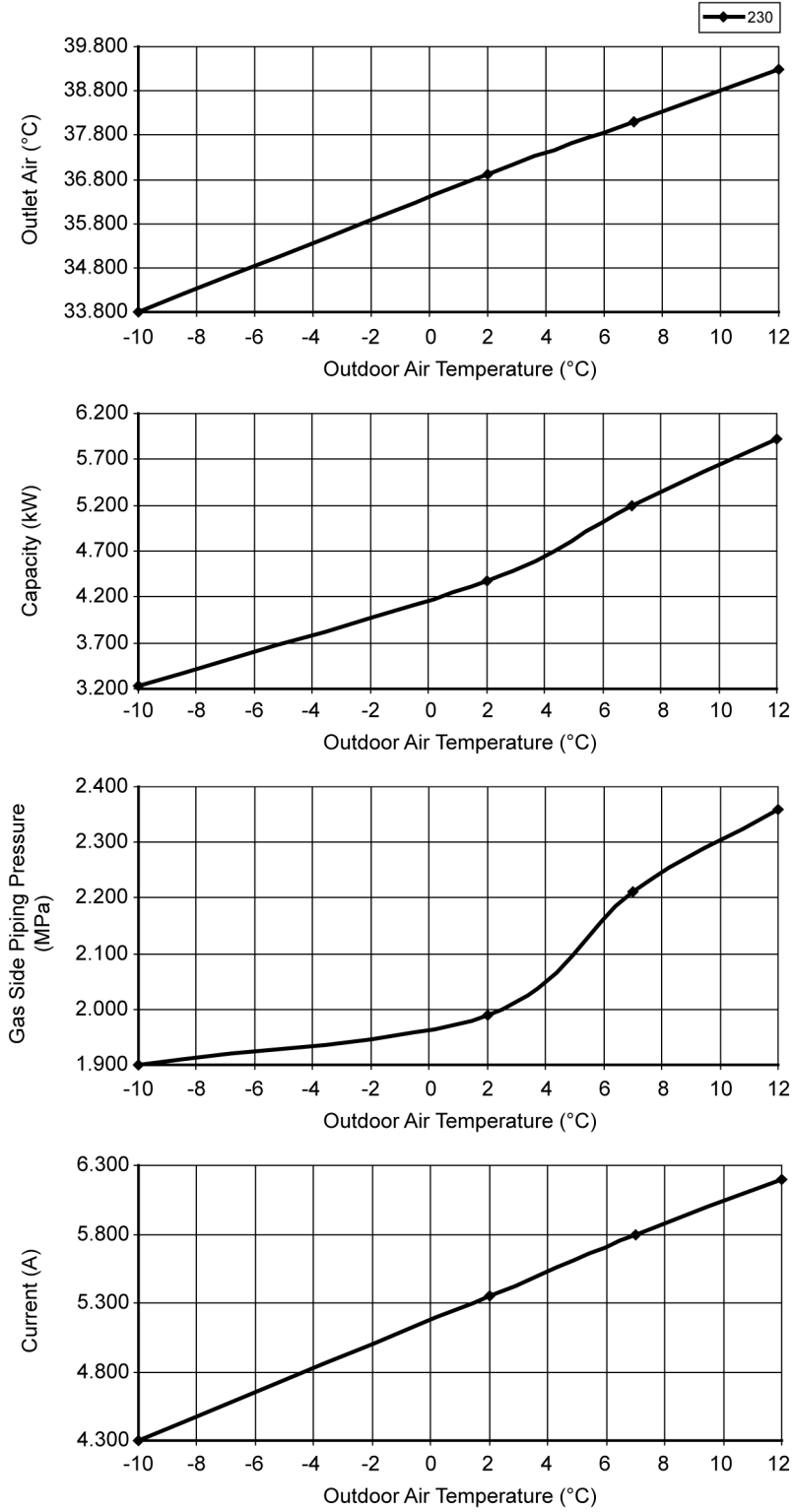
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

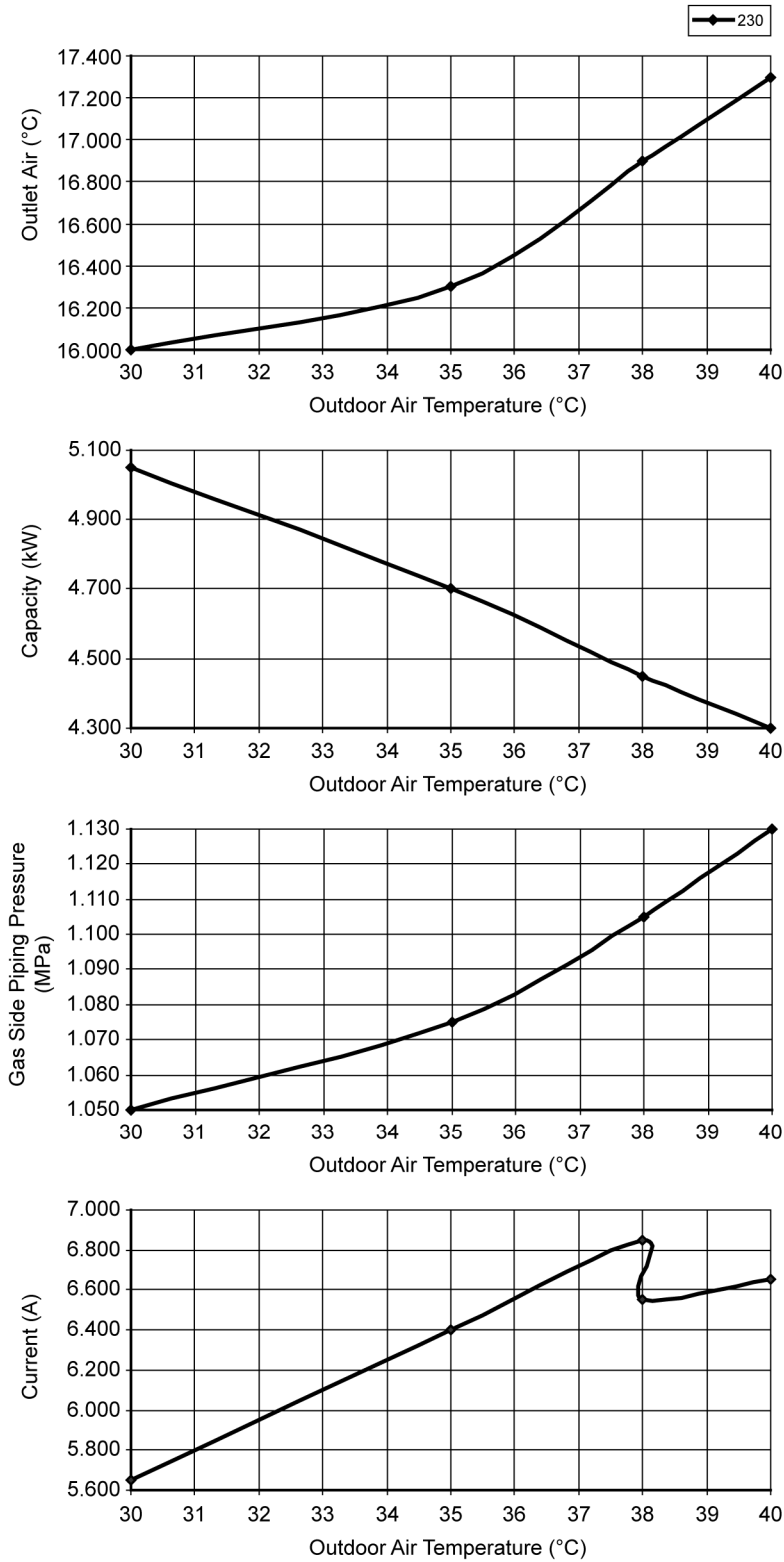
[Condition] Room temperature: 20°C (DBT)
Operation condition: At high fan
Piping length: 7.5m
Compressor Freq: Fh



19.2.2.2 CS-MRE9PKE x2

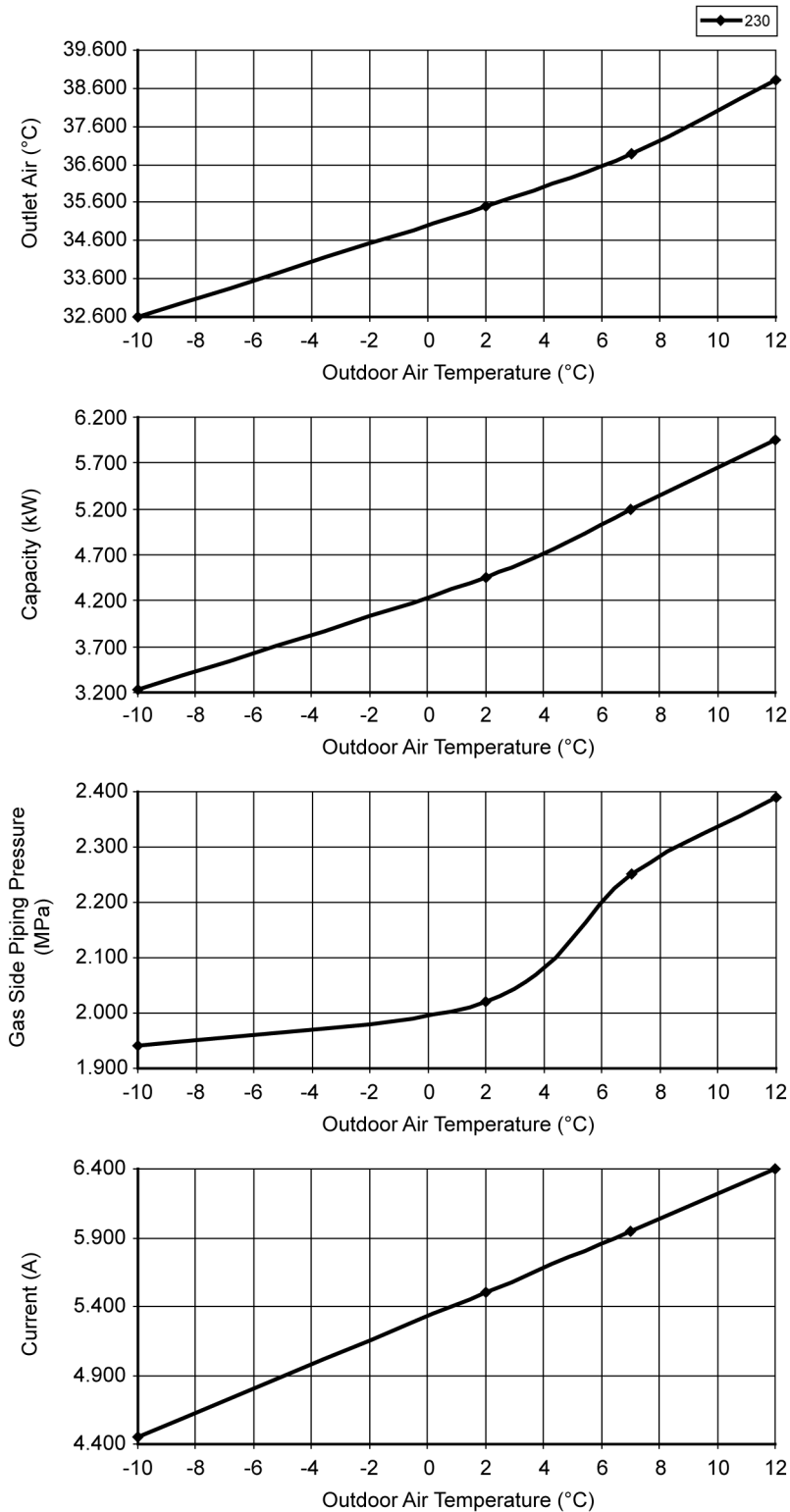
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



• Heating Characteristic

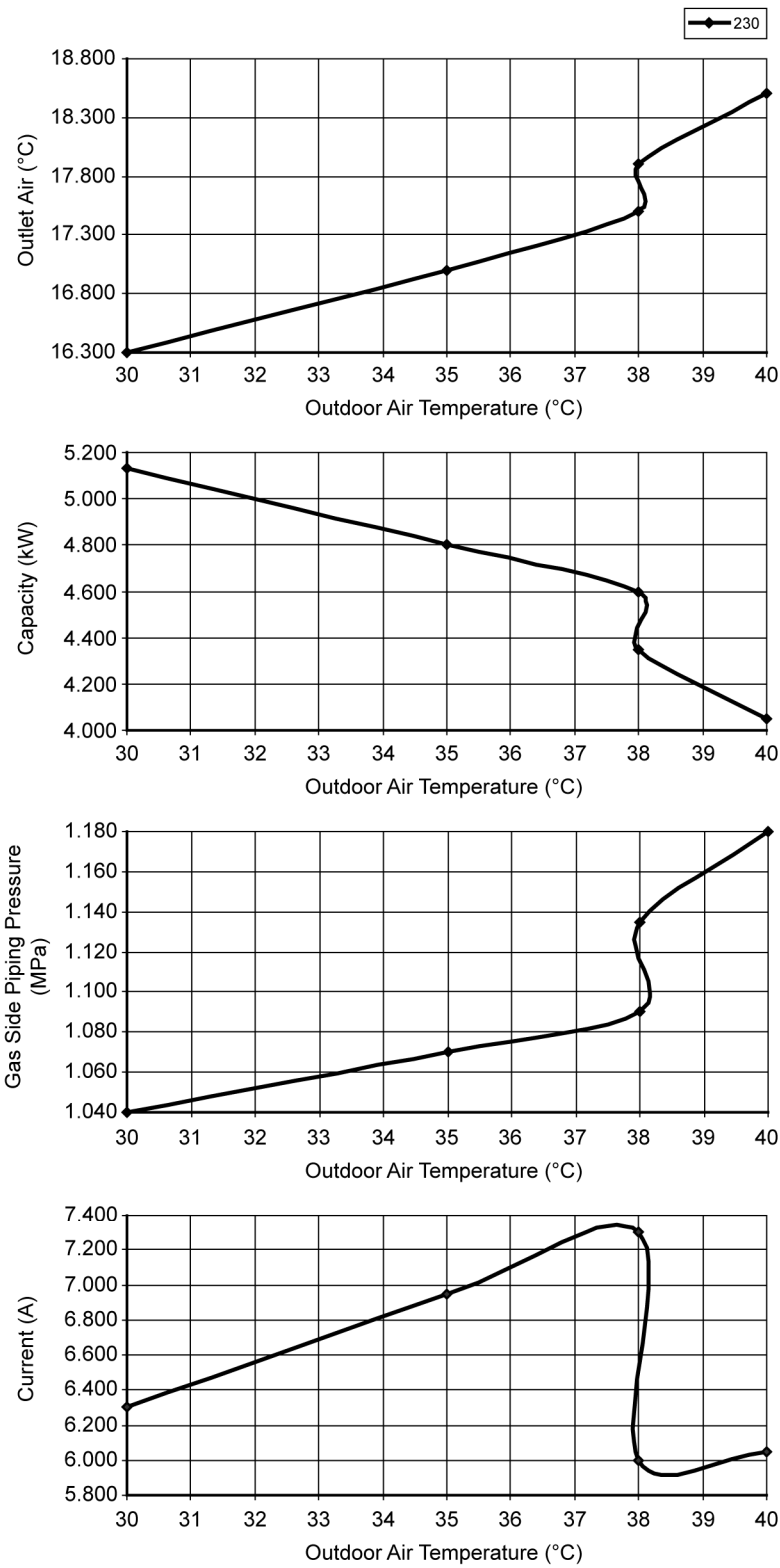
[Condition] Room temperature: 20°C (DBT)
Operation condition: At high fan
Piping length: 7.5m
Compressor Freq: Fh



19.2.2.3 CS-MRE12PKE x2

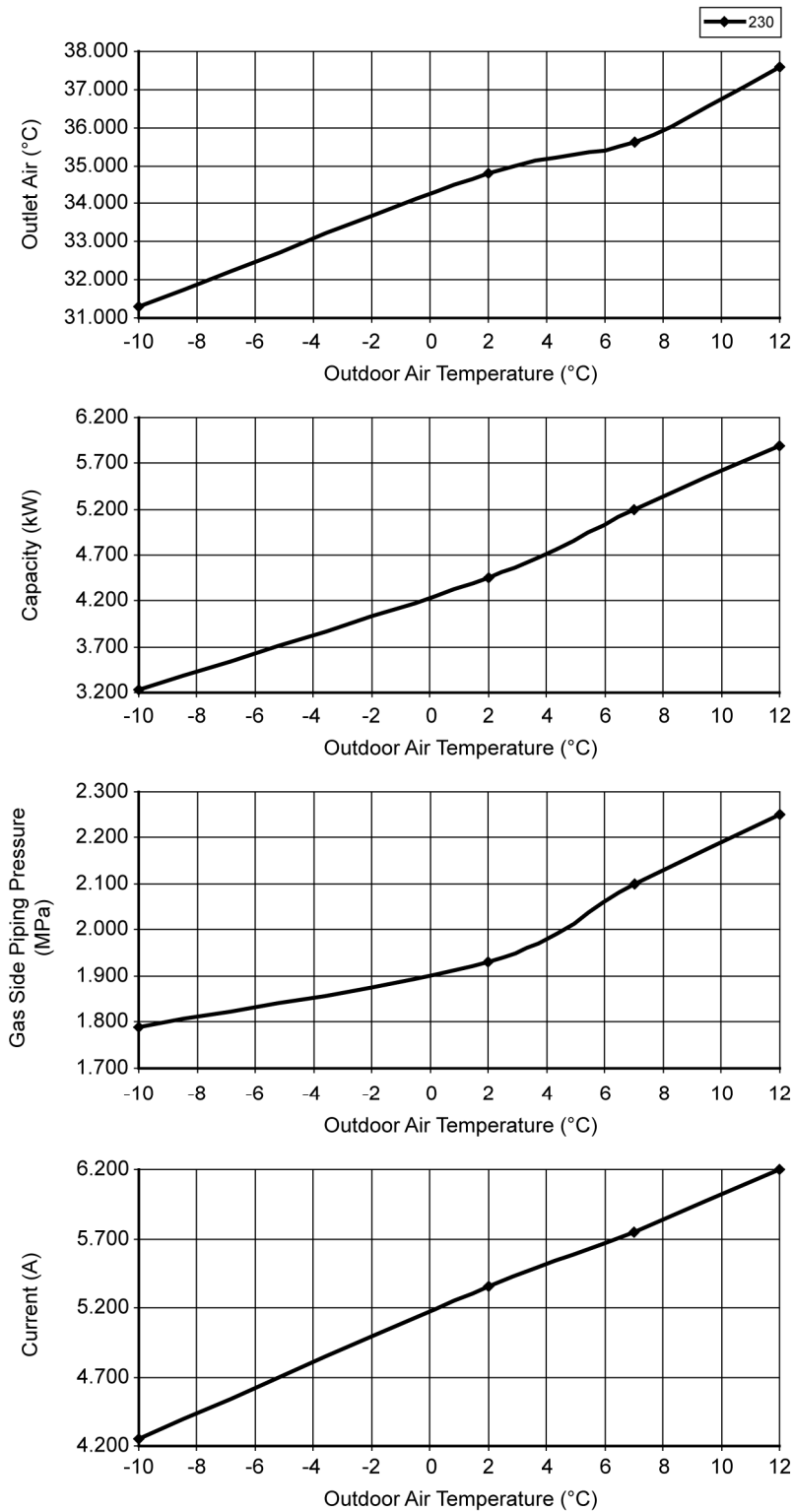
• Cooling Characteristic

[Condition] Room temperature: 27°C (DBT), 19°C (WBT)
Operation condition: High fan speed
Piping length: 7.5m
Compressor Freq: Fc



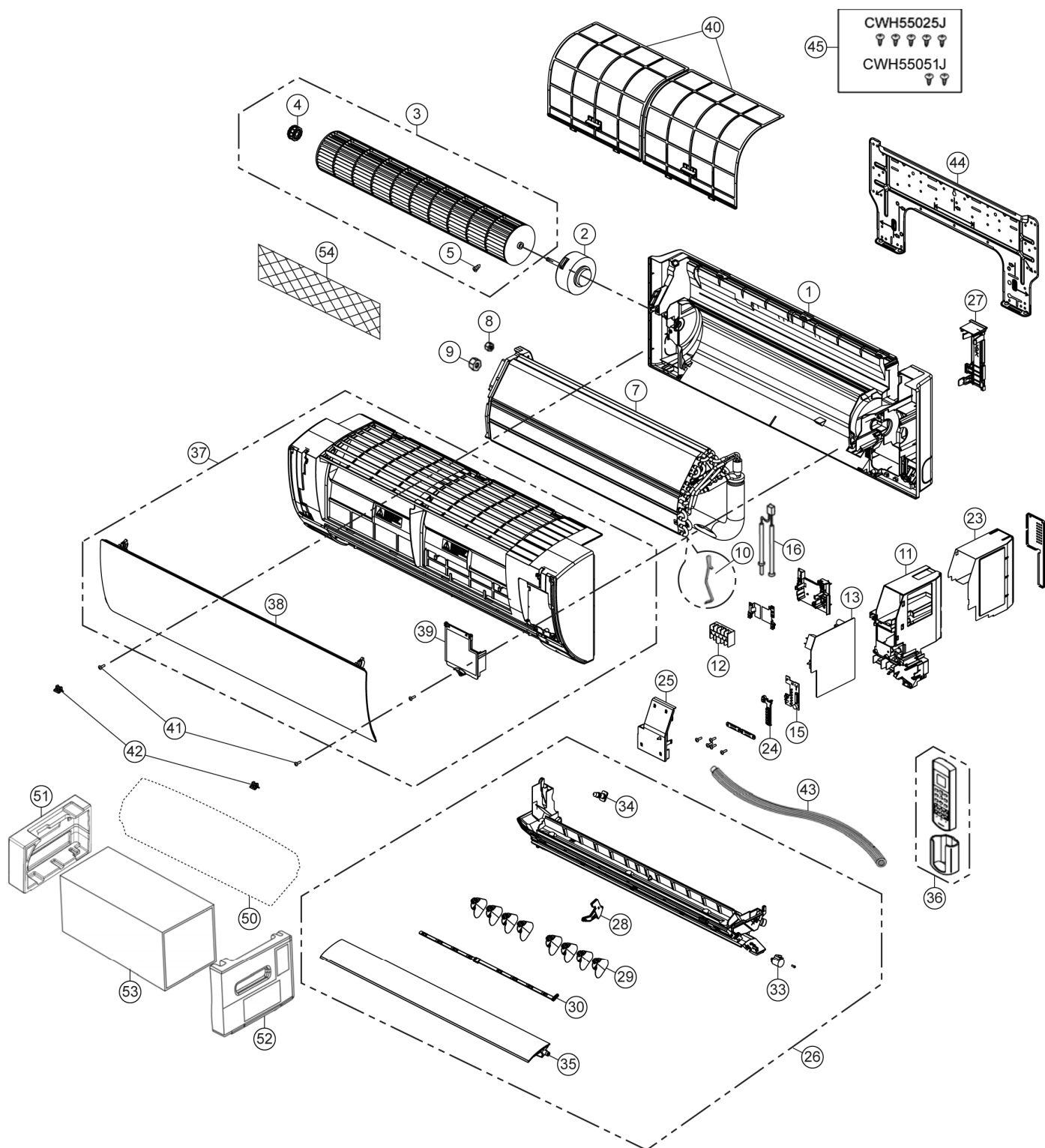
• Heating Characteristic

[Condition] Room temperature: 20°C (DBT)
Operation condition: At high fan
Piping length: 7.5m
Compressor Freq: Fh



20. Exploded View and Replacement Parts List

20.1 Indoor Unit



Note

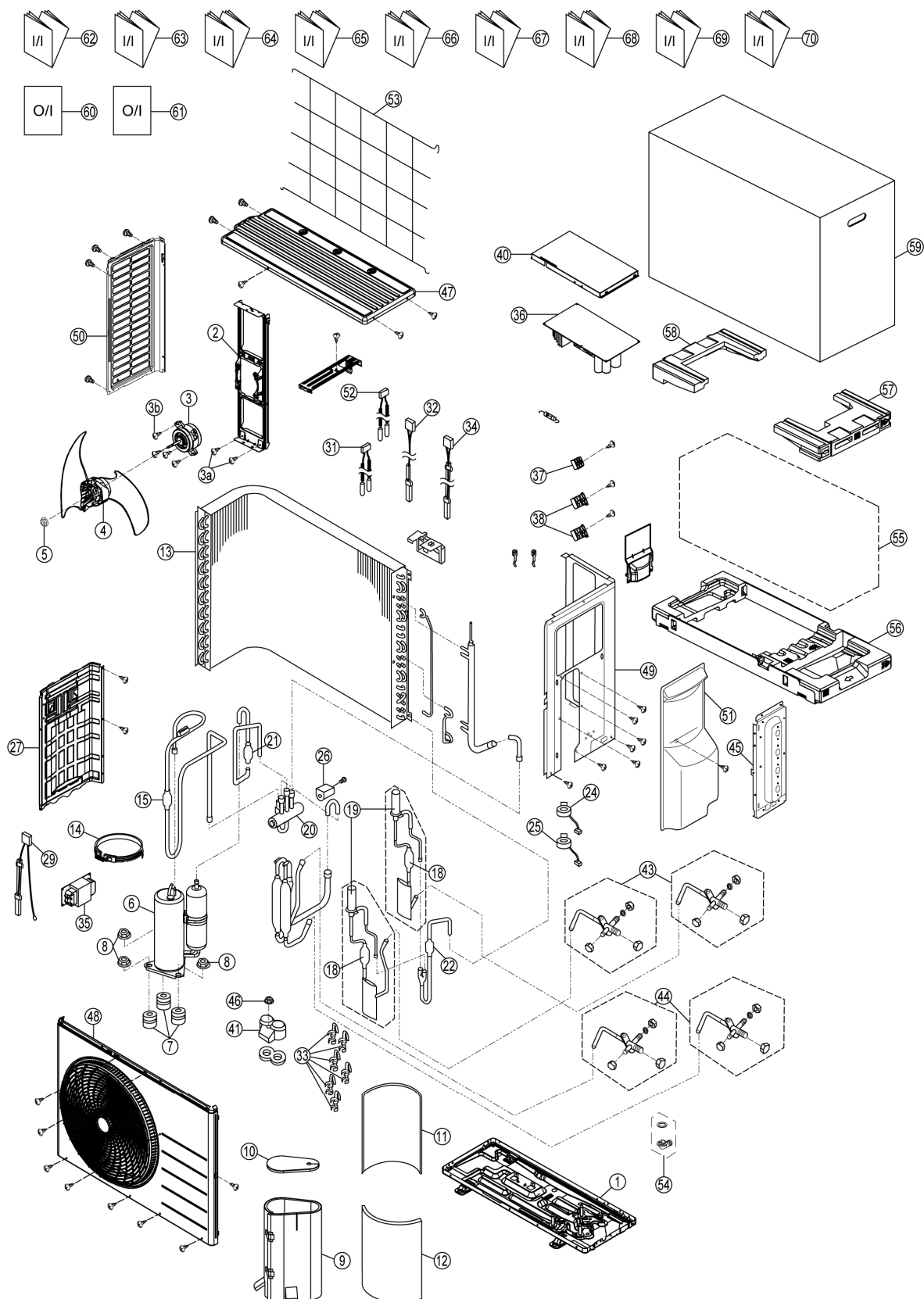
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-MRE7PKE	CS-MRE9PKE	CS-MRE12PKE	REMARK
	1	CHASSIS COMPLETE	1	CWD50C1653	←	←	
⚠	2	FAN MOTOR	1	ARW7628AC	←	←	O
	3	CROSS-FLOW FAN COMPLETE	1	CWH02C1076	←	←	
	4	BEARING ASSY	1	CWH64K007	←	←	
	5	SCREW - CROSS-FLOW FAN	1	CWH551146	←	←	
	7	EVAPORATOR	1	CWB30C2960	CWB30C2755	CWB30C3359	
	8	FLARE NUT (LIQUID)	1	CWT251030	←	←	
	9	FLARE NUT (GAS)	1	CWT251031	←	←	
	10	CLIP FOR SENSOR	1	CWH32143	←	←	
	11	CONTROL BOARD CASING	1	CWH102449	←	←	
⚠	12	TERMINAL BOARD COMPLETE	1	CWA28C2357	←	←	
⚠	13	ELECTRONIC CONTROLLER - MAIN	1	CWA73C7244	CWA73C7245	CWA73C7246	O
⚠	15	ELECTRONIC CONTROLLER - INDICATOR	1	CWA746716	←	←	O
	16	SENSOR COMPLETE	1	CWA50C2401	←	←	
	23	CONTROL BOARD TOP COVER	1	CWH131467	←	←	
	24	INDICATOR HOLDER	1	CWD933406	←	←	
	25	CONTROL BOARD FRONT COVER CO.	1	CWH13C1247	←	←	
	26	DISCHARGE GRILLE COMPLETE	1	CWE20C3236	←	←	
	27	BACK COVER CHASSIS	1	CWD933233	←	←	
	28	FULCRUM	1	CWH621131	←	←	
	29	VERTICAL VANE	8	CWE241374	←	←	
	30	CONNECTING BAR	2	CWE261251	←	←	
	33	AIR SWING MOTOR	1	CWA981264	←	←	O
	34	CAP - DRAIN TRAY	1	CWH521096	←	←	
	35	HORIZONTAL VANE COMPLETE	1	CWE24C1385	←	←	
	36	REMOTE CONTROL COMPLETE	1	CWA75C3810	←	←	O
	37	FRONT GRILLE COMPLETE	1	CWE11C5569	←	←	O
	38	INTAKE GRILLE COMPLETE	1	CWE22C1723	←	←	O
	39	GRILLE DOOR COMPLETE	1	CWE14C1090	←	←	
	40	AIR FILTER	2	CWD001279	←	←	
	41	SCREW - FRONT GRILLE	2	XTT4+16CFJ	←	←	
	42	CAP - FRONT GRILLE	2	CWH521227	←	←	
	43	DRAIN HOSE	1	CWH851173	←	←	
	44	INSTALLATION PLATE	1	CWH361134	←	←	
	45	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	←	←	
	50	BAG	1	CWG861497	←	←	
	51	SHOCK ABSORBER (L)	1	CWG713386	←	←	
	52	SHOCK ABSORBER (R)	1	CWG713387	←	←	
	53	C.C.CASE	1	CWG567355	←	←	
	54	ANTI-BACTERIAL FILTER	1	CWD00C1280	←	←	

(NOTE)

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

20.2 Outdoor Unit



Note

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

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-2RE15PBE	CU-2RE18PBE	REMARK
	1	CHASSIS ASSY	1	CWD52K1277	←	
	2	FAN MOTOR BRACKET	1	CWD541167	←	
⚠	3	FAN MOTOR, AC 50W SINGLE	1	ARW6405AC	←	O
	3a	SCREW-FAN MOTOR BRACKET	2	CWH551217	←	
	3b	SCREW-FAN MOTOR MOUNT	4	CWH55252J	←	
	4	PROPELLER FAN	1	CWH03K1066	←	
	5	NUT - PROPELLER FAN	1	CWH56053J	←	
⚠	6	COMPRESSOR	1	5RD132XFC21	←	O
	7	ANTI - VIBRATION BUSHING	3	CWH50077	←	
	8	NUT - COMPRESSOR	3	CWH56000J	←	
	9	SOUND PROOF MATERIAL	1	CWG302808	←	
	10	SOUND PROOF MATERIAL	1	CWG302630	←	
	11	SOUND PROOF MATERIAL	1	CWG302806	←	
	12	SOUND PROOF MATERIAL	1	CWG302807	←	
	13	CONDENSER COMPLETE	1	CWB32C3722	←	
	14	CRANKCASE HEATER	1	CWA341044	←	
	15	RECEIVER	1	CWB14011	←	
	18	STRAINER	2	CWB111024	←	
	19	EXPANSION VALVE	2	CWB051029	←	O
	20	4-WAYS VALVE	1	CWB001064	←	O
	21	STRAINER	1	CWB111004	←	
	22	STRAINER	1	CWB111080	←	
⚠	24	V-COIL COMPLETE (EXPAND VALVE-WHITE)	1	CWA43C2579	←	O
⚠	25	V-COIL COMPLETE (EXPAND VALVE-YELLOW)	1	CWA43C2580	←	O
⚠	26	V-COIL COMPLETE (4 WAY VALVE)	1	CWA43C2585	←	O
	27	SOUND-PROOF BOARD	1	CWH151366	←	
	29	SENSOR-COMPLETE - INTAKE & PIPE	1	CWA50C2893	←	O
	31	SENSOR-COMPLETE - GAS	1	CWA50C3070	←	O
	32	SENSOR-COMPLETE - DEF.	1	CWA50C3069	←	O
	33	HOLDER-SENSOR	6	CWH32143	←	
	34	SENSOR-COMPLETE - TANK	1	CWA50C2894	←	O
	35	NORMAL-MODE LINE CHOKE COILS	1	G0C193J00004	←	O
⚠	36	ELECTRONIC CONTROLLER	1	CWA73C7217R	CWA73C7218R	O
⚠	37	TERMINAL BOARD ASS'Y	1	CWA28K1162	←	O
⚠	38	TERMINAL BOARD ASS'Y	2	CWA28K1161	←	O
	40	CONTROL BOARD COVER	1	CWH131473	←	
	41	TERMINAL COVER	1	CWH171039A	←	
	43	3-WAY VALVE (LIQUID)	2	CWB011418	←	O
	44	3-WAY VALVE (GAS)	2	CWB011081J	←	O
	45	HOLDER COUPLING	1	CWH351253	←	
	46	NUT - TERMINAL COVER	1	CWH7080300J	←	
	47	CABINET TOP PLATE	1	CWE031148A	←	
	48	CABINET FRONT PLATE CO.	1	CWE06C1468	←	
	49	CABINET SIDE PLATE COMP	1	CWE04C1453	←	
	50	CABINET SIDE PLATE	1	CWE041579A	←	
	51	CONTROL BOARD COVER COMPLETE	1	CWH13C1300	←	
	52	SENSOR-COMPLETE - LIQUID	-	-	←	O
	53	WIRE NET	1	CWD041166A	←	
	54	BAG-COMPLETE	1	CWG87C900	←	
	55	BAG	1	CWG861078	←	
	56	BASE BOARD-COMPLETE	1	CWG62C1144	←	
	57	SHOCK ABSORBER (R)	1	CWG713415	←	
	58	SHOCK ABSORBER (L)	1	CWG713416	←	
	59	C.C. CASE	1	CWG566848	←	
	60	OPERATING INSTRUCTION	1	CWF568939	←	

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-2RE15PBE	CU-2RE18PBE	REMARK
	61	OPERATING INSTRUCTION	1	CWF568940	←	
	62	INSTALLATION INSTRUCTION	1	CWF615766	←	
	63	INSTALLATION INSTRUCTION	1	CWF615767	←	
	64	INSTALLATION INSTRUCTION	1	CWF615768	←	
	65	INSTALLATION INSTRUCTION	1	CWF615769	←	
	66	INSTALLATION INSTRUCTION	1	CWF615770	←	
	67	INSTALLATION INSTRUCTION	1	CWF615771	←	
	68	INSTALLATION INSTRUCTION	1	CWF615772	←	
	69	INSTALLATION INSTRUCTION	1	CWF615773	←	
	70	INSTALLATION INSTRUCTION	1	CWF615774	←	

(Note)

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