MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

August 2014
No. OCH573

HFC utilized R410A

TECHNICAL & SERVICE MANUAL

[Model Name]
<Outdoor unit>

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

<Branch box>

PAC-MKA50BC

PAC-MKA30BC

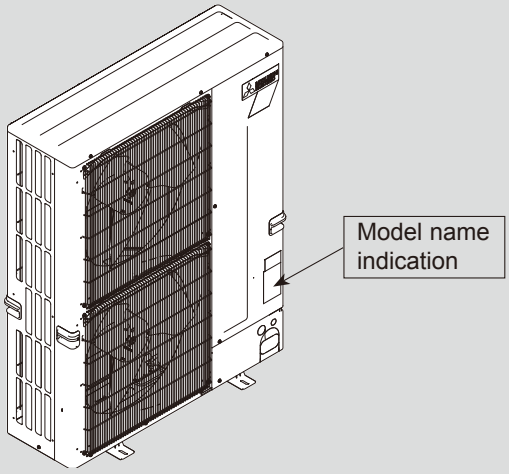
[Service Ref.]

MXZ-4C36NAHZ
MXZ-5C42NAHZ
MXZ-8C48NAHZ
MXZ-8C48NA

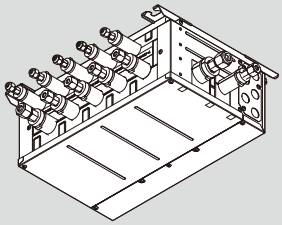
PAC-MKA50BC
PAC-MKA30BC

(Indispensable optional parts for MXZ-4C36/5C42/8C48NAHZ and MXZ-8C48NA)

Notes:
- This service manual describes technical data of outdoor unit and branch box. As for indoor units, refer to its service manual.
- RoHS compliant products have <G> mark on the spec name plate.



OUTDOOR UNIT: MXZ-4C36NAHZ



BRANCH BOX: PAC-MKA50BC

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PARTS CATALOG (OCB573)

1 SAFETY PRECAUTION

1-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuit must be disconnected.

1-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R410A

Use new refrigerant pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contaminants such as sulfur, oxides, dirt, shaving particles, etc, which are hazard to refrigerant cycle.
In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil, etc.

Store the piping indoors, and both ends of the piping sealed until just before brazing.
(Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil, etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Do not use refrigerant other than R410A.

If other refrigerant (R22, etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil, etc.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil, etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use the specified refrigerant only.

Never use any refrigerant other than that specified.
Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.
Correct refrigerant is specified in the manuals and on the spec labels provided with our products.
We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

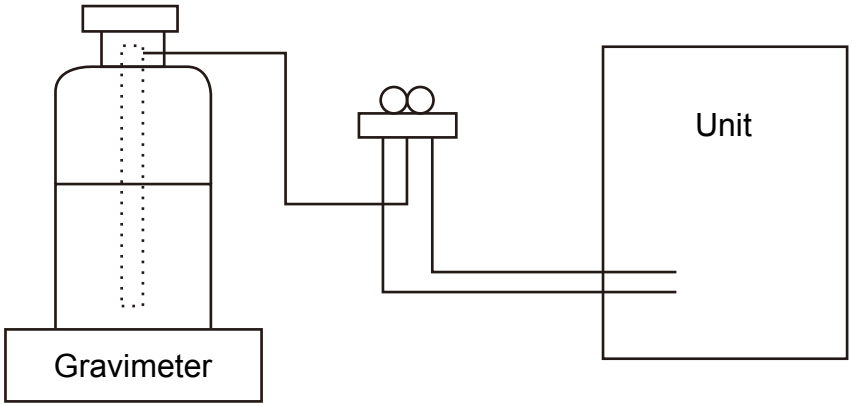
[1] Cautions for service

(1) Perform service after recovering the refrigerant left in unit completely.
(2) Do not release refrigerant in the air.
(3) After completing service, charge the cycle with specified amount of refrigerant.
(4) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[2] Additional refrigerant charge

When charging directly from cylinder

· Check that cylinder for R410A on the market is a syphon type.
· Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



[3] Service tools

(1) Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
1	Gauge manifold	·Only for R410A
		·Use the existing fitting specifications. (UNF1/2)
		·Use high-tension side pressure of 5.3MPa·G or over.
2	Charge hose	·Only for R410A
		·Use pressure performance of 5.09MPa·G or over.
3	Electronic scale	——
4	Gas leak detector	·Use the detector for R134a, R407C or R410A.
5	Adaptor for reverse flow check	·Attach on vacuum pump.
6	Refrigerant charge base	——
7	Refrigerant cylinder	·Only for R410A ·Top of cylinder (Pink) ·Cylinder with syphon
8	Refrigerant recovery equipment	——

1-3. Cautions for refrigerant piping work

New refrigerant R410A is adopted for replacement inverter series. Although the refrigerant piping work for R410A is same as for R22, exclusive tools are necessary so as not to mix with different kind of refrigerant. Furthermore as the working pressure of R410A is 1.6 times higher than that of R22, their sizes of flared sections and flare nuts are different.

1 Thickness of pipes

Because the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 7/256 in [0.7 mm] or below.)

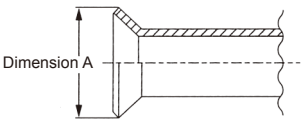
Diagram below: Piping diameter and thickness

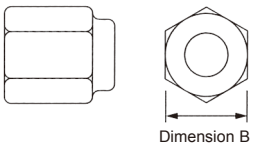
Nominal dimensions (in)	Outside diameter (mm)	Thickness : in [mm]	
		R410A	R22
1/4	6.35	1/32 [0.8]	1/32 [0.8]
3/8	9.52	1/32 [0.8]	1/32 [0.8]
1/2	12.70	1/32 [0.8]	1/32 [0.8]
5/8	15.88	5/128 [1.0]	5/128 [1.0]
3/4	19.05	—	5/128 [1.0]

2 Dimensions of flare cutting and flare nut

The component molecules in HFC refrigerant are smaller compared to conventional refrigerants. In addition to that, R410A is a refrigerant, which has higher risk of leakage because its working pressure is higher than that of other refrigerants. Therefore, to enhance airtightness and intensity, flare cutting dimension of copper pipe for R410A has been specified separately from the dimensions for other refrigerants as shown below. The dimension B of flare nut for R410A also has partly been changed to increase intensity as shown below. Set copper pipe correctly referring to copper pipe flaring dimensions for R410A below. For 1/2 and 5/8 inch, the dimension B changes.

Use torque wrench corresponding to each dimension.





Flare cutting dimensions Unit : in [mm]

Nominal dimensions (in)	Outside diameter (mm)	Dimension A ($^{+0}_{-0.4}$)	
		R410A	R22
1/4	6.35	11/32-23/64 [9.1]	9.0
3/8	9.52	1/2-33/64 [13.2]	13.0
1/2	12.70	41/64-21/32 [16.6]	16.2
5/8	15.88	49/64-25/32 [19.7]	19.4
3/4	19.05	—	23.3

Flare nut dimensions Unit: in [mm]

Nominal dimensions (in)	Outside diameter (mm)	Dimension B	
		R410A	R22
1/4	6.35	43/64 [17.0]	17.0
3/8	9.52	7/8 [22.0]	22.0
1/2	12.70	1-3/64 [26.0]	24.0
5/8	15.88	1-9/64 [29.0]	27.0
3/4	19.05	—	36.0

3 Tools for R410A (The following table shows whether conventional tools can be used or not.)

Tools and materials	Use	R410A tools	Can R22 tools be used?	Can R407C tools be used?
Gauge manifold	Air purge, refrigerant charge and operation check	Tool exclusive for R410A	×	×
Charge hose		Tool exclusive for R410A	×	×
Gas leak detector	Gas leak check	Tool for HFC refrigerant	×	○
Refrigerant recovery equipment	Refrigerant recovery	Tool exclusive for R410A	×	×
Refrigerant cylinder	Refrigerant charge	Tool exclusive for R410A	×	×
Applied oil	Apply to flared section	Ester oil, ether oil and alkylbenzene oil (minimum amount)	×	Ester oil, ether oil: ○ Alkylbenzene oil: minimum amount
Safety charger	Prevent compressor malfunction when charging refrigerant by spraying liquid refrigerant	Tool exclusive for R410A	×	×
Charge valve	Prevent gas from blowing out when detaching charge hose	Tool exclusive for R410A	×	×
Vacuum pump	Vacuum drying and air purge	Tools for other refrigerants can be used if equipped with adopter for reverse flow check	△ (Usable if equipped with adopter for reverse flow)	△ (Usable if equipped with adopter for reverse flow)
Flare tool	Flaring work of piping	Tools for other refrigerants can be used by adjusting flaring dimension	△ (Usable by adjusting flaring dimension)	△ (Usable by adjusting flaring dimension)
Bender	Bend the pipes	Tools for other refrigerants can be used	○	○
Pipe cutter	Cut the pipes	Tools for other refrigerants can be used	○	○
Welder and nitrogen gas cylinder	Weld the pipes	Tools for other refrigerants can be used	○	○
Refrigerant charging scale	Refrigerant charge	Tools for other refrigerants can be used	○	○
Vacuum gauge or thermistor vacuum gauge and vacuum valve	Check the degree of vacuum. (Vacuum valve prevents back flow of oil and refrigerant to thermistor vacuum gauge)	Tools for other refrigerants can be used	○	○
Charging cylinder	Refrigerant charge	Tool exclusive for R410A	×	—

× : Prepare a new tool. (Use the new tool as the tool exclusive for R410A.)
△ : Tools for other refrigerants can be used under certain conditions.
○ : Tools for other refrigerants can be used.

2 OVERVIEW OF UNITS

2-1. CONSTRUCTION OF SYSTEM

Outdoor unit			MXZ-4C36NAHZ	MXZ-5C42NAHZ	MXZ-8C48NAHZ MXZ-8C48NA
			4HP	4.5HP	5HP
	Rated capacity (kBTU/h)	Cooling	36	42	48
		Heating	45	48	54
	Refrigerant		R410A		
Connectable indoor unit	**Capacity**		Type 06 to Type 36 **Caution:** The indoor unit which rated capacity exceeds 36 kBTU/ h (Type 36) can NOT be connected.		
	Number of units		2(*) to 4 units	2(*) to 5 units	2(*) to 8 units
	Total system wide capacity		33 to 130% of outdoor unit capacity (12 to 46.8 kBTU/h)	29 to 130% of outdoor unit capacity (12 to 54.6 kBTU/h)	25 to 130% of outdoor unit capacity (12 to 62.4 kBTU/h)
Connectable branch box	Number of units		1 or 2 units		

* 1 for MVZ model.
Single unit connection is possible with MVZ model.

Connectable indoor unit lineups (Heat pump inverter type)

Model type		Model name	Capacity class [kBTU/h]							
			06	09	12	15	18	24	30	36
Wall mounted	Deluxe	MSZ-FE09/12/18NA		●	●		●			
		MSZ-FH09/12/15NA		●	●	●				
	Standard	MSZ-GE06/09/12/15/18/24NA	●	●	●	●	●	●		
Ceiling concealed	Low static pressure	SEZ-KD09/12/15/18NA		●	●	●	●			
	Middle static pressure	PEAD-A24/30/36AA4						●	●	●
4-way ceiling cassette	2 by 2 type	SLZ-KA09/12/15NA		●	●	●				
	Standard	PLA-A12/18/24/30/36BA4			●		●	●	●	●
Floor standing		MFZ-KA09/12/18NA		●	●		●			
Multi-position		MVZ-A12/18/24/30/36AA4			●		●	●	●	●

Branch box	PAC-MKA50BC	PAC-MKA30BC
Number of branches (Indoor unit that can be connected)	5 branches (MAX. 5 units)	3 branches (MAX. 3 units)

Note: A maximum of 2 branch boxes can be connected to 1 outdoor unit.

2- branch pipe (joint): Optional parts

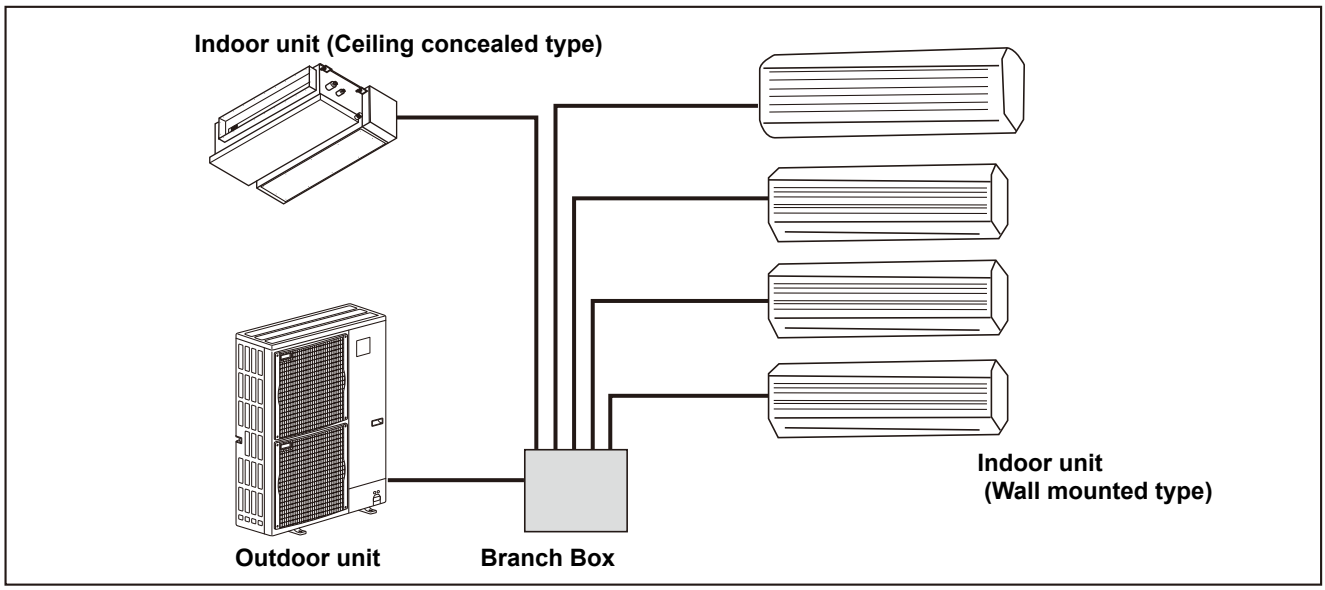
In case of using 1- branch box	No need
In case of using 2- branch boxes	Model name: MSDD-50AR-E — Connection method: flare Model name: MSDD-50BR-E — Connection method: brazing Select a model according to the connection method.

Option	Optional accessories for indoor units and outdoor units are available.

2-2. SYSTEM OUTLINE

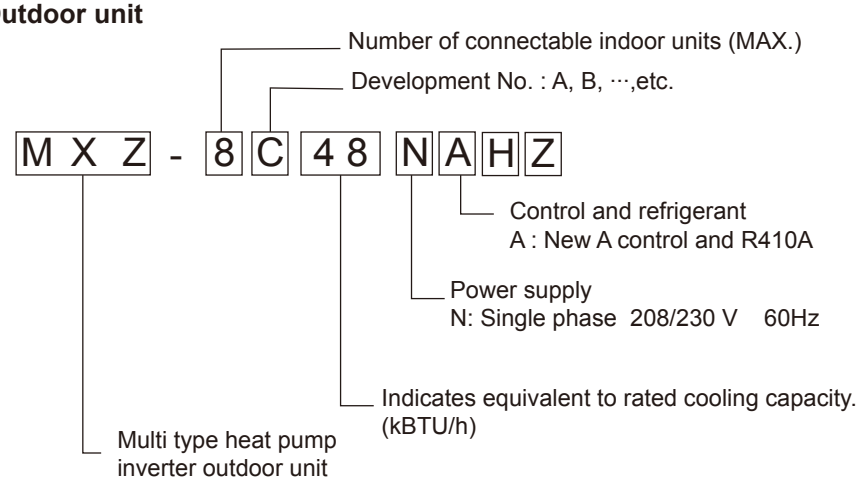
The additional connection of the branch box together with employment of the compact trunk-looking outdoor unit can successfully realize a long distance piping for large houses. Equipped with a microcomputer, the branch box can translate the transmission signal of indoor units to achieve the optimum control.

2-2-1. System example

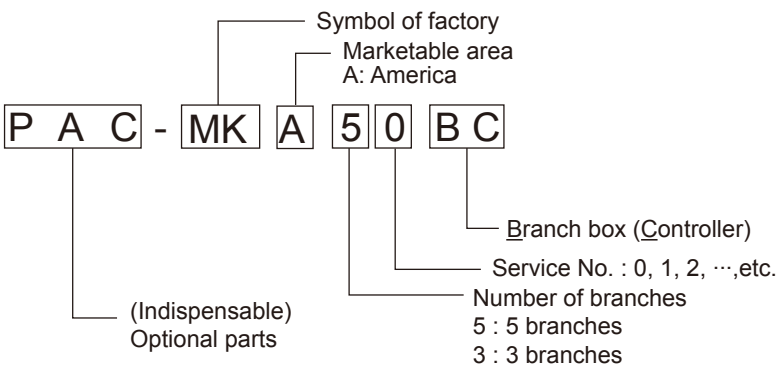


2-2-2. Method for identifying

■ **Outdoor unit**

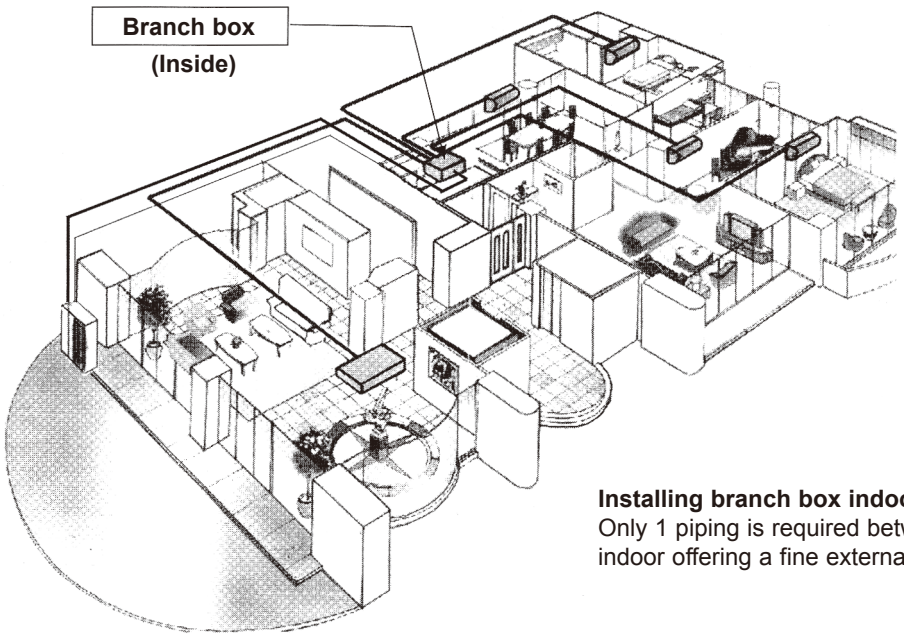


■ **Branch box**



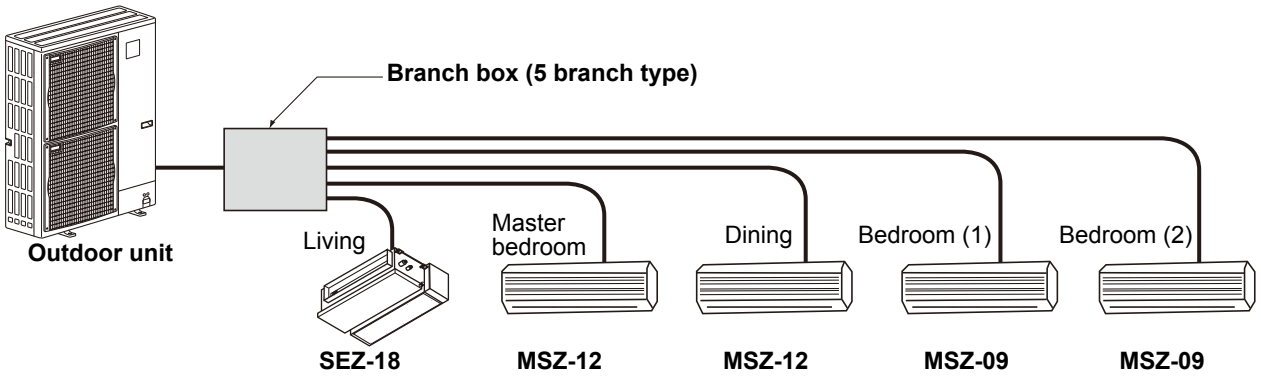
2-3. TYPICAL COMBINATION EXAMPLE

Branch box is located INSIDE of condominium



Installing branch box indoors
Only 1 piping is required between the outdoor and indoor offering a fine external view.

■ **System example of 5 indoor units**



■ **Verification (In case of MXZ-8C48NAHZ)**

The rated capacity should be determined by observing the table below. The unit's quantities are limited to 1(*) to 8 units. For the next step, make sure that the selected total rated capacity is in a range of 12 to 62.4 kBTU/h.
The total indoor unit capacity should be within the outdoor units. (= 48.0 kBTU/h is preferred).
Combination of excessive indoor units and an outdoor unit may reduce the capacity of each indoor unit.
The rated indoor capacity is as the table below.
*Single unit connection is possible only with MVZ model. Connect 2 or more units for models other than MVZ.

Example:

SEZ-18 = 18
\+
MSZ-12 = 12
\+
MSZ-12 = 12
\+
MSZ-09 = 9
\+
MSZ-09 = 9

Total rated capacity
60 ≦ 62.4 kBTU/h

Indoor unit type (capacity class)	06	09	12	15	18	24	30	36
Rated capacity (cooling) (kBTU/h)	6	9	12	15	18	24	30	36

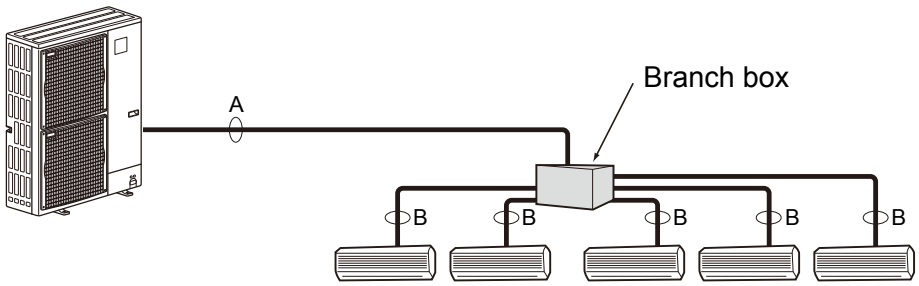
2-4. SIMPLIFIED PIPING SYSTEM

Piping connection size

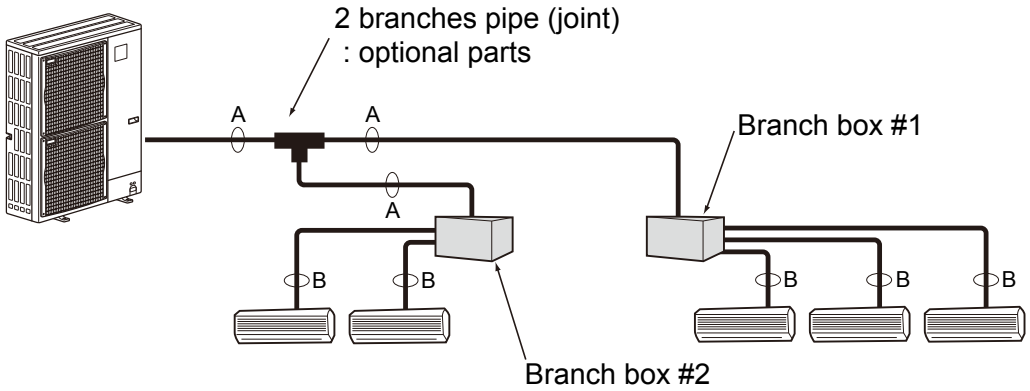
	A	B
Liquid	ϕ3/8 in [9.52 mm]	The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size of branch box with indoor unit. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)
Gas	ϕ5/8 in [15.88 mm]	

Flare connection employed. (No brazing!)

■ In case of using 1-branch box
Flare connection employed (No brazing)



■ In case of using 2-branch boxes



■ Installation procedure (2 branches pipe (joint))
Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.

3 SPECIFICATIONS

3-1. OUTDOOR UNIT: MXZ-4C36/5C42/8C48NAHZ, MXZ-8C48NA

Conversion formula:	kcal/h = kW × 860 BTU/h = kW × 3412 CFM = m^3/min × 35.31

Service Ref.				MXZ-4C36NAHZ			MXZ-5C42NAHZ		
Standard performance	Indoor type			Non-Ducted	Mix	Ducted	Non-Ducted	Mix	Ducted
	Cooling	Capacity Rated*1	BTU/h	36,000	36,000	36,000	42,000	42,000	42,000
		Rated power consumption*1	W	2,570	2,875	3,180	3,130	3,510	3,890
		EER	BTU/Wh	14.01	12.52	11.32	13.42	11.97	10.80
		SEER	BTU/Wh	19.1	17.5	15.8	19.0	17.0	15.0
	Heating	Capacity Rated 47°F*1	BTU/h	45,000	45,000	45,000	48,000	48,000	48,000
		Capacity Max. 17°F*2	BTU/h	45,000	45,000	45,000	48,000	48,000	48,000
		Capacity Max. 5°F	BTU/h	45,000	45,000	45,000	48,000	48,000	48,000
		Rated power consumption 47°F*1	W	3,340	3,795	4,250	3,430	3,890	4,350
		COP 47°F*1	BTU/Wh	3.95	3.48	3.10	4.10	3.62	3.23
		HSPF Ⅳ/Ⅴ	BTU/Wh	11.3/9.2	10.7/8.9	10.1/8.5	11.0/9.1	10.6/9.0	10.1/8.8
OUTDOOR UNIT	Connectable indoor units (Max.)			4			5		
	Max. Connectable Capacity			46,000			54,000		
	Power supply			1 Phase 208 / 230 V, 60 Hz					
	Breaker Size / Max. fuse size			50 A/ 52 A					
	Min. circuit ampacity			42 A					
	Sound level (Cool/Heat)		dB	49/ 53			50/ 54		
	External finish			Munsell 3Y 7.8/ 1.1					
	Refrigerant control			Linear Expansion Valve					
	Compressor			Hermetic					
		Model		ANB33FJSMT					
		Motor output	kW	2.8			3.0		
		Starting method		Inverter					
	Heat exchanger			Plate fin coil					
	Fan	Fan (drive) × No.		Propeller fan × 2					
		Fan motor output	kW	0.06 + 0.06					
		Airflow	m^3/min (CFM)	110 (3885)					
	Dimensions (H × W × D)	W	in (mm)	41-11/32 (1050)					
		D	in (mm)	13+1 (330+25)					
		H	in (mm)	52-11/16 (1338)					
	Weight		lb (kg)	276 (125)					
	Refrigerant			R410A					
		Charge	lb (kg)	10 lbs. 9 oz.(4.8)					
		Oil/ Model	oz (L)	73 (2.3)					
	Protection devices	High pressure protection		HP switch					
		Compressor protection		Compressor thermo, Overcurrent detection					
		Fan motor protection		Overheating / Voltage protection					
	Guaranteed operation range		(cool)	D.B 23 to 115°F . [D.B.−5 to 46°C] *3					
			(heat)	D.B. −13 to 70°F [D.B. −25 to 21°C]					
REFRIGERANT PIPING	Total Piping length (Max.)		ft (m)	492 (150)					
	Farthest		ft (m)	262 (80)					
	Max. Height difference		ft (m)	164 (50)*4					
	Chargeless length		ft (m)	0					
	Piping diameter	Liquid	ϕin (mm)	ϕ3/8 (9.52)					
		Gas	ϕin (mm)	ϕ5/8 (15.88)					
	Connection method	Indoor side		Flared					
		Outdoor side		Flared					

*1 Rating conditions
Cooling Indoor : D.B. 80°F/ W.B. 67 °F [D.B.26.7°C/ W.B. 19.4°C]
Outdoor : D.B. 95°F [D.B. 35.0°C]
Heating Indoor : D.B. 70°F [D.B. 21.1°C]
Outdoor : D.B. 47°F/ W.B. 43°F [D.B. 8.3°C/ W.B. 6.1°C]

*2 Conditions
Heating Indoor : D.B. 70°F [D.B. 21.1°C]
Outdoor : D.B. 17°F/ W.B. 15°F [D.B. −8.3°C/ W.B. −9.4°C]

*3 D.B. 5 to 115°F [D.B. −15 to 46°C], when an optional Air Outlet Guide is installed.
*4 131 ft [40 m], in case of installing outdoor unit lower than indoor unit.
Note: Refer to the indoor unit's service manual for the indoor units specifications.

Continue to the next page

Conversion formula:	kcal/h = kW × 860 BTU/h = kW × 3412 CFM = m³/min × 35.31

Service Ref.				MXZ-8C48NAHZ			MXZ-8C48NA		
Standard performance	Indoor type			Non-Ducted	Mix	Ducted	Non-Ducted	Mix	Ducted
	Cooling	Capacity Rated*1	BTU/h	48,000	48,000	48,000	48,000	48,000	48,000
		Rated power consumption*1	W	4,000	4,525	5,050	4,000	4,525	5,050
		EER	BTU/Wh	12.00	10.61	9.50	12.00	10.61	9.50
		SEER	BTU/Wh	18.9	16.8	14.7	18.9	16.8	14.7
	Heating	Capacity Rated 47°F*1	BTU/h	54,000	54,000	54,000	54,000	54,000	54,000
		Capacity 17°F*2	BTU/h	54,000	54,000	54,000	36,600	36,600	36,600
		Capacity 5°F	BTU/h	54,000	54,000	54,000	32,400	32,400	32,400
		Rated power consumption 47°F*1	W	4,220	4,605	4,990	4,220	4,605	4,990
		COP 47°F*1	BTU/Wh	3.75	3.44	3.17	3.75	3.44	3.17
		HSPF Ⅳ/Ⅴ	BTU/Wh	11.0/9.2	10.5/9.2	10.0/9.2	11.4/8.7	10.8/8.6	10.1/8.4
OUTDOOR UNIT	Connectable indoor units (Max.)			8					
	Max. Connectable Capacity			62,000					
	Power supply			1 Phase 208 / 230 V, 60 Hz					
	Breaker Size / Max. fuse size			50 A/ 52 A			40 A/ 52 A		
	Min. circuit ampacity			42 A			37 A		
	Sound level (Cool/Heat)		dB	51/ 54					
	External finish			Munsell 3Y 7.8 / 1.1					
	Refrigerant control			Linear Expansion Valve					
	Compressor			Hermetic					
		Model		ANB33FJSMT			ANB33FNHMT		
		Motor output	kW	3.4					
		Starting method		Inverter					
	Heat exchanger			Plate fin coil					
	Fan	Fan (drive) × No.		Propeller fan × 2					
		Fan motor output	kW	0.06 + 0.06					
		Airflow	m³/min (CFM)	110 (3885)					
	Dimensions (H × W × D)	W	in (mm)	41-11/32 (1050)					
		D	in (mm)	13+1 (330+25)					
		H	in (mm)	52-11/16 (1338)					
	Weight		lb (kg)	276 (125)			269 (122)		
	Refrigerant			R410A					
		Charge	lb (kg)	10 lbs. 9 oz. (4.8)					
		Oil / Model	oz (L)	73 (2.3)					
	Protection devices	High pressure protection		HP switch					
		Compressor protection		Compressor thermo, Over current detection					
		Fan motor protection		Overheating / Voltage protection					
	Guaranteed operation range		(cool)	D.B. 23 to 115°F [D.B. −5 to 46°C]*3					
			(heat)	D.B. −13 to 70°F [D.B. −25 to 21°C]			D.B. −4 to 70°F [D.B. −20 to 21°C]		
REFRIGERANT PIPING	Total Piping length (Max.)		ft (m)	492 (150)					
	Farthest		ft (m)	262 (80)					
	Max. Height difference		ft (m)	164 (50)*4					
	Chargeless length		ft (m)	0					
	Piping diameter	Liquid	ϕin (mm)	ϕ3/8 (9.52)					
		Gas	ϕin (mm)	ϕ 5/8 (15.88)					
	Connection method	Indoor side		Flared					
		Outdoor side		Flared					

*1 Rating conditions
Cooling Indoor : D.B. 80°F/ W.B. 67°F [D.B. 26.7°C/ W.B. 19.4°C]
Outdoor : D.B. 95°F [D.B. 35.0°C]
Heating Indoor : D.B. 70°F [D.B. 21.1°C]
Outdoor : D.B. 47°F/ W.B. 43°F [D.B. 8.3°C / W.B. 6.1°C]

*2 Conditions
Heating Indoor : D.B. 70°F [D.B. 21.1°C]
Outdoor : D.B. 17°F/ W.B. 15°F [D.B. −8.3°C/ W.B. −9.4°C]

*3 D.B. 5 to 115°F [D.B. −15 to 46°C], when an optional Air Outlet Guide is installed.
*4 131 ft [40 m], in case of installing outdoor unit lower than indoor unit.
Note: Refer to the indoor unit's service manual for the indoor units specifications.

3-2. BRANCH BOX: PAC-MKA50BC PAC-MKA30BC

Model name				PAC-MKA50BC	PAC-MKA30BC
Connectable number of indoor units				Maximum 5	Maximum 3
Power supply				Single phase, 208/230 V, 60 Hz	
Input			kW	0.003	
Running current			A	0.05	
External finish				Galvanized sheets	
Dimensions	Width		in (mm)	17-23/32 (450)	
	Depth		in (mm)	11-1/32 (280)	
	Height		in (mm)	6-11/16 (170)	
Weight			lb (kg)	16 (7.4)	15 (6.7)
Piping connection (Flare)	Branch (indoor side)*	Liquid	in (mm)	ϕ1/4(6.35) × 5 {A,B,C,D,E}	ϕ1/4(6.35) × 3 {A,B,C}
		Gas	in (mm)	ϕ 3/8(9.52) × 4 {A,B,C,D}, ϕ 1/2(12.7) × 1{E}	ϕ3/8(9.52) × 3 {A,B,C}
	Main (outdoor side)	Liquid	in (mm)	ϕ3/8 (9.52)	
		Gas	in (mm)	ϕ 5/8 (15.88)	

*The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size for indoor and branch box. If the piping connection size of branch box does not match the piping connection size of indoor units, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)

4 DATA

4-1. COOLING AND HEATING CAPACITY AND CHARACTERISTICS

4-1-1. Method for obtaining system cooling and heating capacity:

To obtain the system cooling and heating capacity and the electrical characteristics of the outdoor unit, first add up the ratings of all the indoor units connected to the outdoor unit (see table below), and then use this total to find the standard capacity with the help of the tables on 4-3. STANDARD CAPACITY DIAGRAM.

(1) Capacity of indoor unit

	Model Number for indoor unit	Model 06	Model 09	Model 12	Model 15	Model 18	Model 24	Model 30	Model 36
M series	Model Capacity [kBtu/h]	6.0	9.0	12.0	14.0*1 15.0*2	17.2*3 18.0*4	22.5	—	—
P series		—	—	12.0	—	18.0	24.0	30.0	35.0
SEZ		—	8.1	11.5	14.1	17.2	—	—	—
SLZ		—	8.4	11.1	15.0	—	—	—	—
MVZ		—	—	12.0	—	18.0	24.0	30.0	36.0

*1 The value is for MSZ-GE15NA.
*2 The value is for MSZ-FH15NA.
*3 The value is for MSZ-GE/FH18NA.
*4 The value is for MSZ-FE18NA or MFZ-KA18NA.

(2) Sample calculation

① System assembled from indoor and outdoor unit (in this example the total capacity of the indoor units is greater than that of the outdoor unit)
- Outdoor unit MXZ-5C42NAHZ
- Indoor unit MSZ-GE09NA × 2 + MSZ-FH15NA ×2

② According to the conditions in ①, the total capacity of the indoor unit will be: 9.0 × 2 + 15.0 × 2 = 48.0

③ The following figures are obtained from the 16.8 total capacity of indoor units, referring the standard capacity diagram in "4-3-3. MXZ-5C42NAHZ <cooling>" and "4-3-4. MXZ-5C42NAHZ <heating>".

Capacity (kBTU/h)		Outdoor unit power consumption (kW)		Outdoor unit current (A)/ 230 V	
Cooling	Heating	Cooling	Heating	Cooling	Heating
Ⓐ 42.0	Ⓑ 48.0	3.46	4.37	15.26	19.31

4-1-2. Method for obtaining the heating and cooling capacity of an indoor unit:

(1) The capacity of each indoor unit (kW) = the capacity Ⓐ (or Ⓑ) × $\frac{\text{model capacity}}{\text{total model capacity of all indoor units}}$

(2) Sample calculation (using the system described above in 4-1-1. (2)):

During cooling:

- The total model capacity of the indoor unit is:
  9.0 × 2 + 15.0 × 2 = 48.0 kBTU/h
  Therefore, the capacity of MSZ-GE09NA and MSZ-FH15NA will be calculated as follows by using the formula in 4-1-2. (1):

Model 09 = $42.0 \times \frac{9.0}{48.0}$ = 7.88 kBTU/h

Model 15 = $42.0 \times \frac{15.0}{48.0}$ = 13.13 kBTU/h

During heating:

- The total model capacity of indoor unit is:
  10.9 × 2 + 18.0 × 2 = 57.8 kBTU/h
  Therefore, the capacity of MSZ-GE09NA and MSZ-FH15NA will be calculated as follows by using the formula in 4-1-2. (1):

Model 25 = $48.0 \times \frac{10.9}{57.8}$ = 9.05 kBTU/h

Model 50 = $48.0 \times \frac{18.0}{57.8}$ = 14.95 kBTU/h

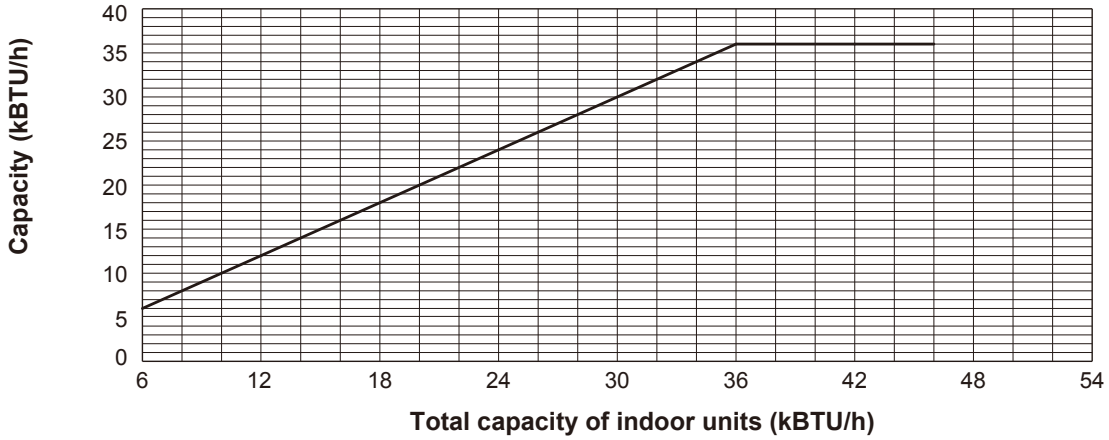
4-2. STANDARD OPERATION DATA (REFERENCE DATA)

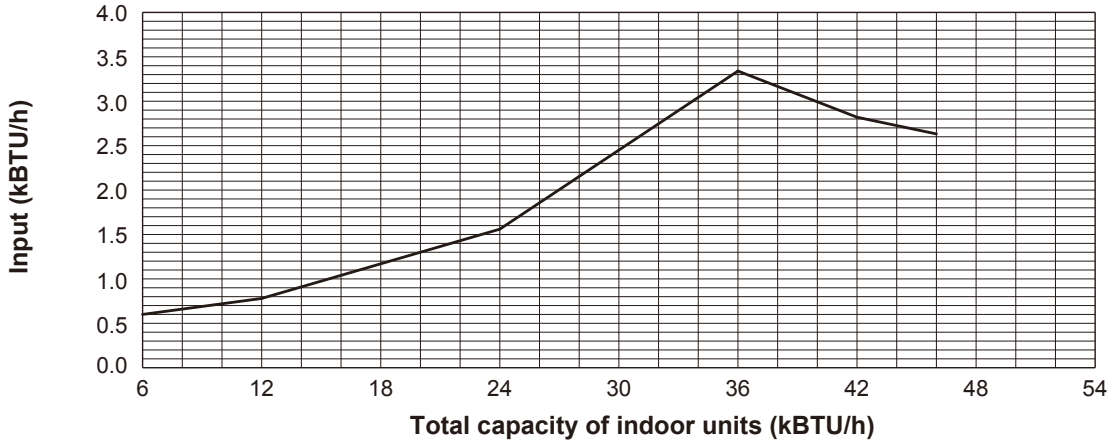
Operation				Outdoor unit model					
				MXZ-4C36NAHZ		MXZ-5C42NAHZ		MXZ-8C48NA/NAHZ	
Operating conditions	Ambient temperature	Indoor	DB/WB	80°F / 67°F	70°F / 60°F	80°F / 67°F	70°F / 60°F	80°F / 67°F	70°F / 60°F
		Outdoor		95°F / 75°F	47°F / 43°F	95°F / 75°F	47°F / 43°F	95°F / 75°F	47°F / 43°F
	Indoor unit	No. of connected units	Unit	4		4		4	
		No. of units in operation		4		4		4	
		Model	—	09 × 4		09 × 2 + 12 ×2		12 × 4	
	Piping	Main pipe	m	9.84 (3)		9.84 (3)		9.84 (3)	
		Branch pipe		14.76 (4.5)		14.76 (4.5)		14.76 (4.5)	
		Total pipe length		68.90 (21)		68.90 (21)		68.90 (21)	
	Fan speed		—	Hi		Hi		Hi	
	Amount of refrigerant		lb oz (kg)	17 lb 7 oz (7.9)		17 lb 7 oz (7.9)		17 lb 7 oz (7.9)	
Outdoor unit	Electric current		A	14.1	18.7	17.2	19.1	22.1	21.9
	Voltage		V	230		230		230	
	Compressor frequency		Hz	59	74	70	80	86	91
LEV opening	Indoor unit		Pulse	112	128	129	128	112	132
Pressure	High pressure/Low pressure		MPa	2.57/ 0.98	2.78/ 0.64	2.72/ 0.80	2.80/ 0.56	2.83/ 0.77	2.82/ 0.55
Temp. of each section	Outdoor unit	Discharge	°C	62.1	66.4	64.8	63.2	69.8	65.1
		Heat exchanger outlet		38.2	2.6	38.8	2.0	40.9	1.3
		Accumulator inlet		10.3	2.3	9.7	1.6	8.4	0.8
		Compressor inlet		8.4	1.1	7.4	0.4	5.8	−0.8
	Indoor unit	LEV inlet		21.1	39.7	28.7	37.9	21.7	37.1
		Heat exchanger inlet		12.3	59.4	9.8	55.7	8.6	57.0

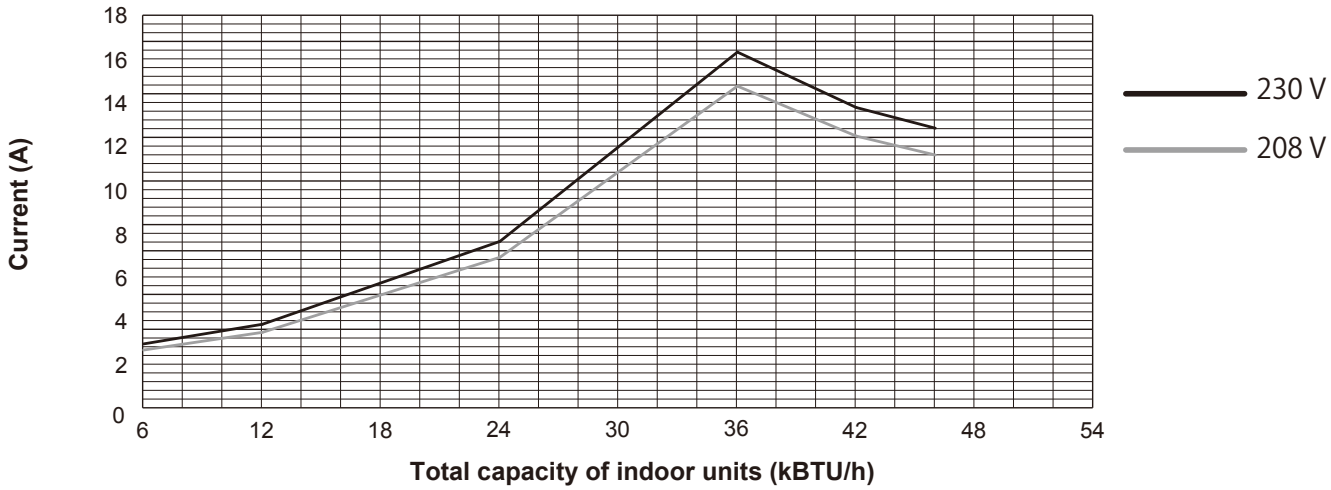
4-3. STANDARD CAPACITY DIAGRAM

Before calculating the sum of total capacity of indoor units, please convert the value into the kW model capacity following the formula on "4-1-1. Method for obtaining system cooling and heating capacity".

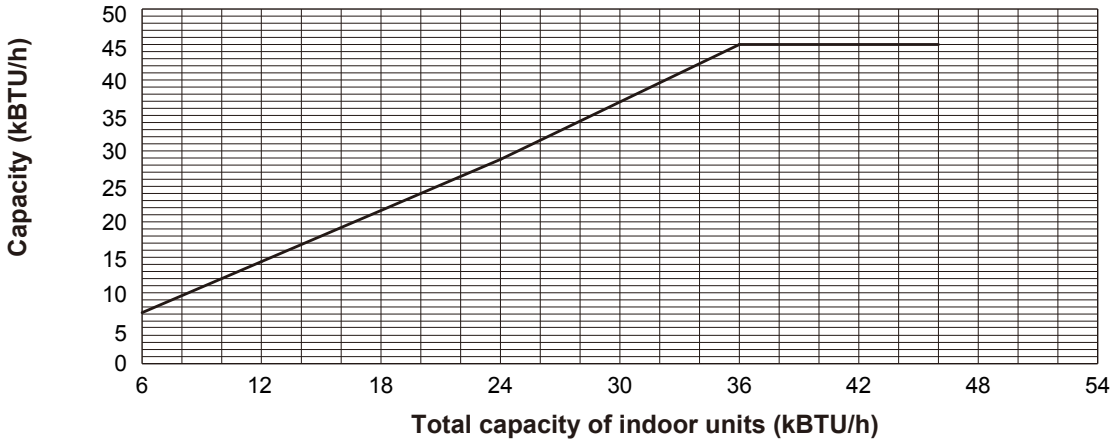
4-3-1. MXZ-4C36NAHZ <cooling>

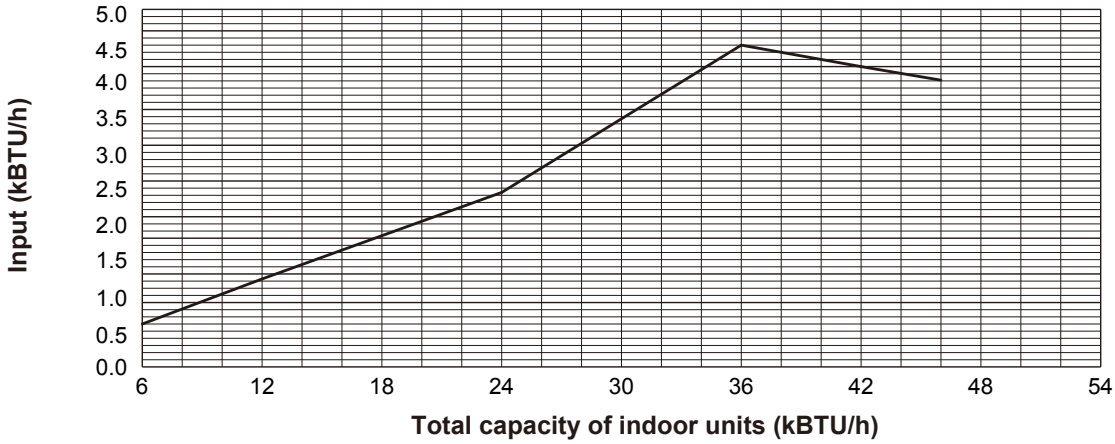


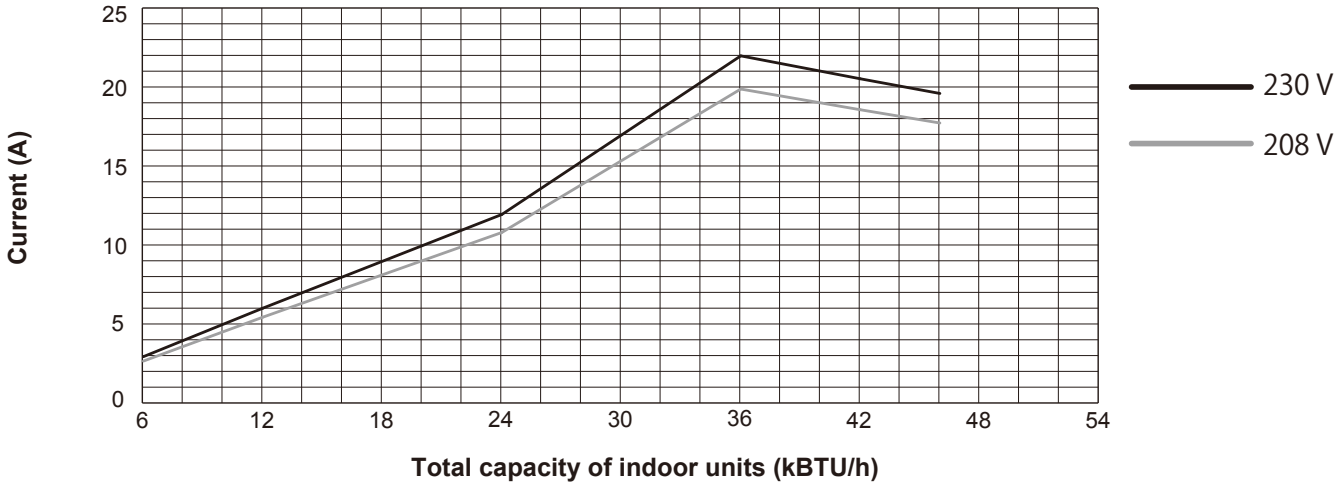




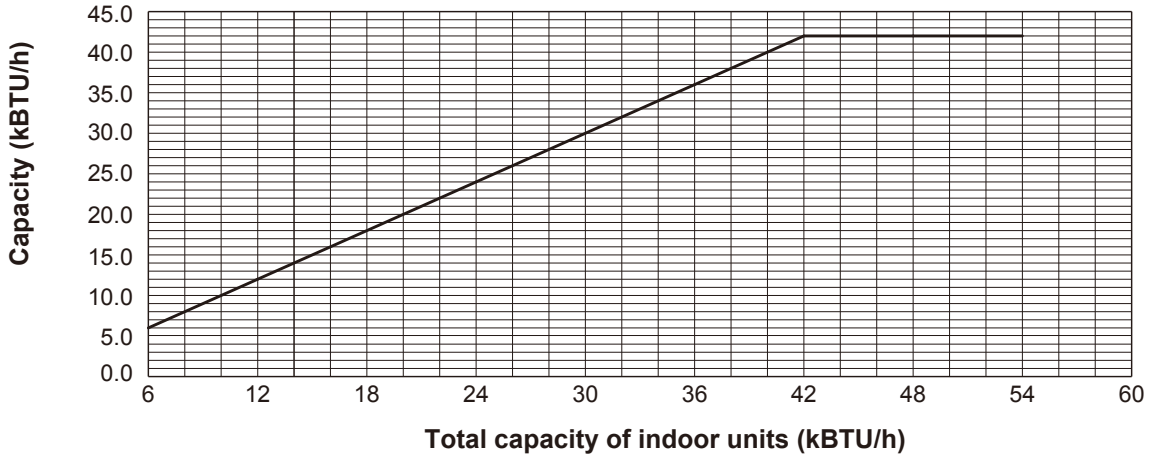
4-3-2. MXZ-4C36NAHZ <heating>

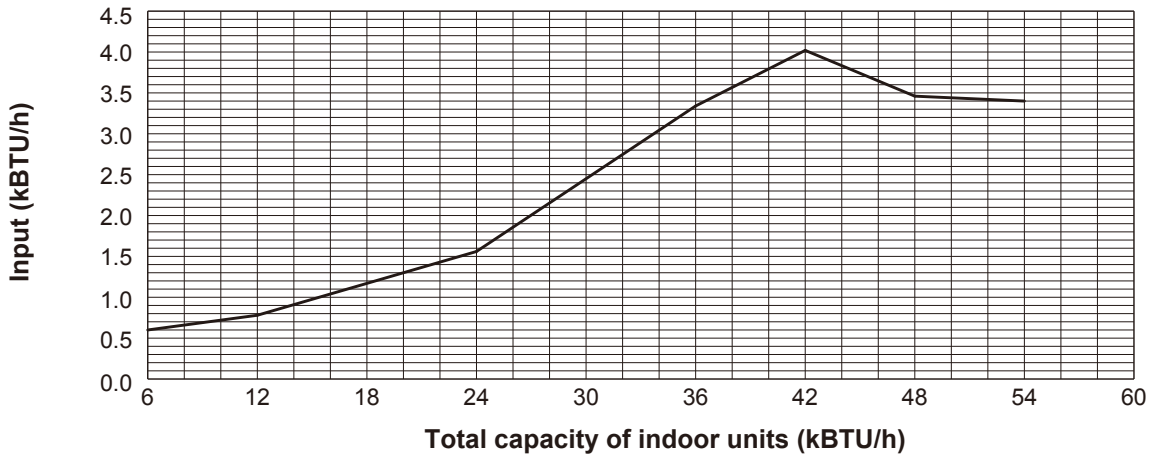


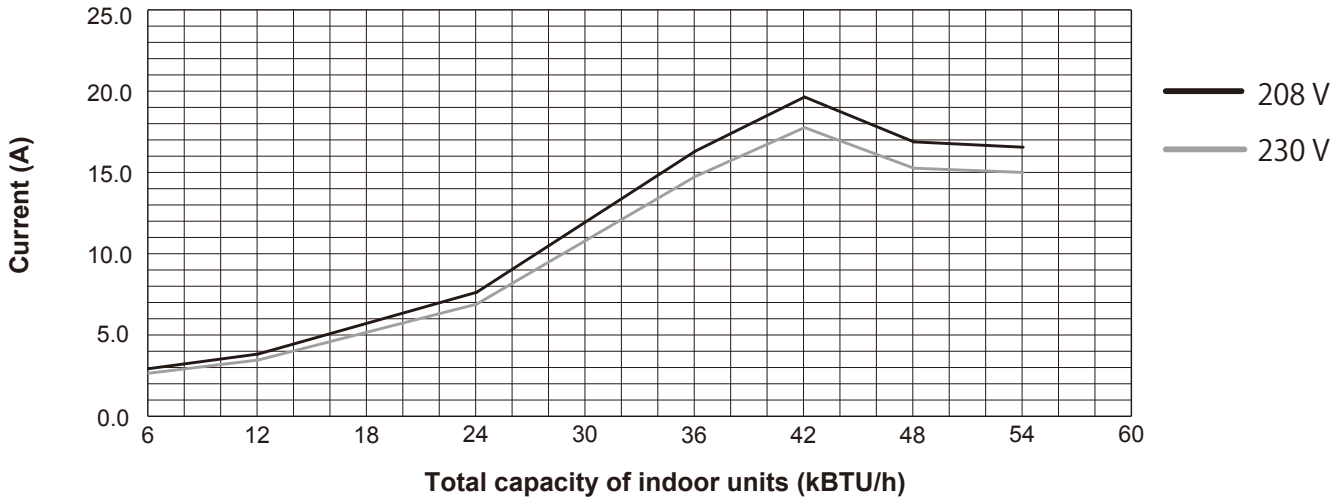




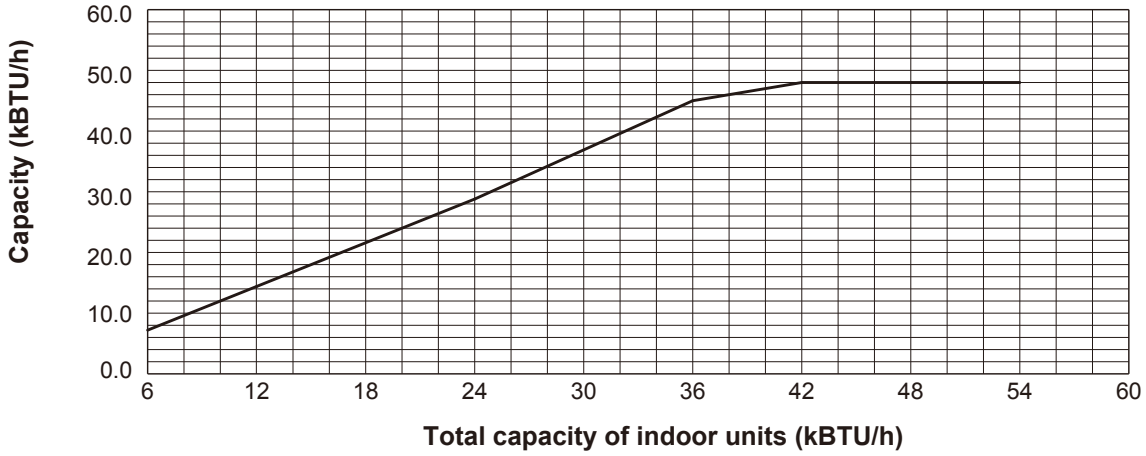
4-3-3. MXZ-5C42NAHZ <cooling>

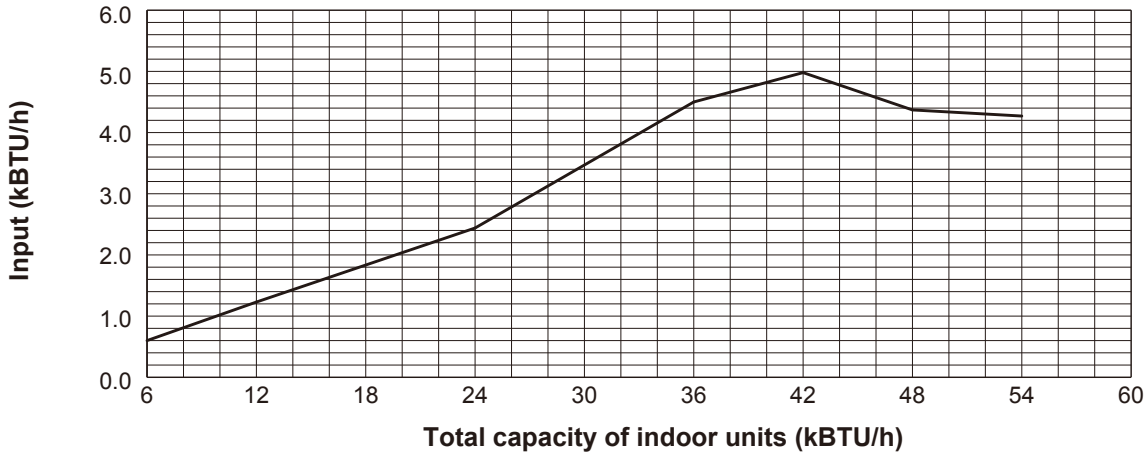


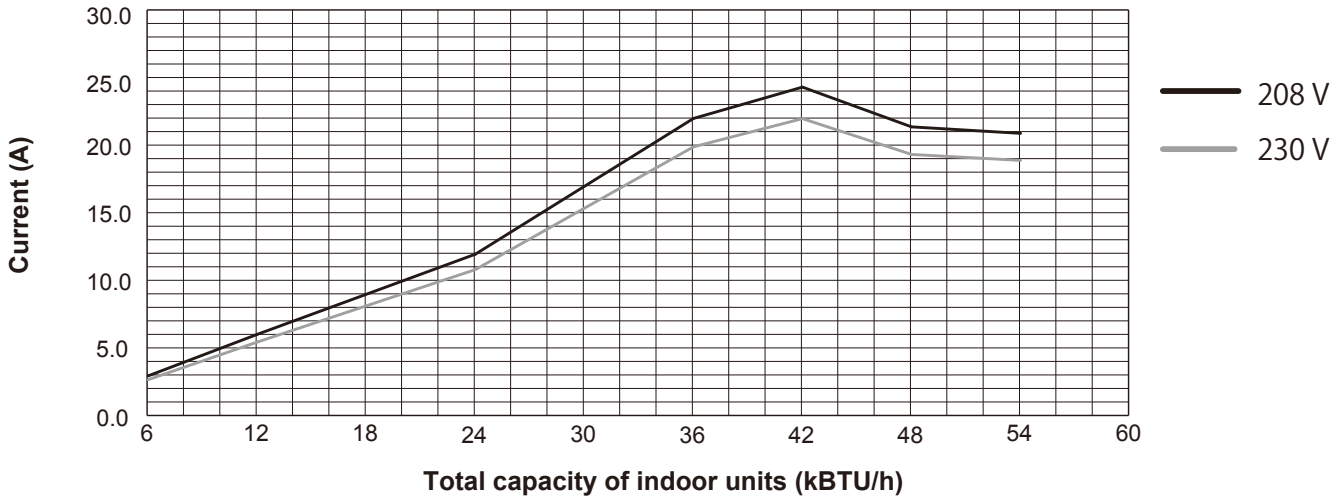




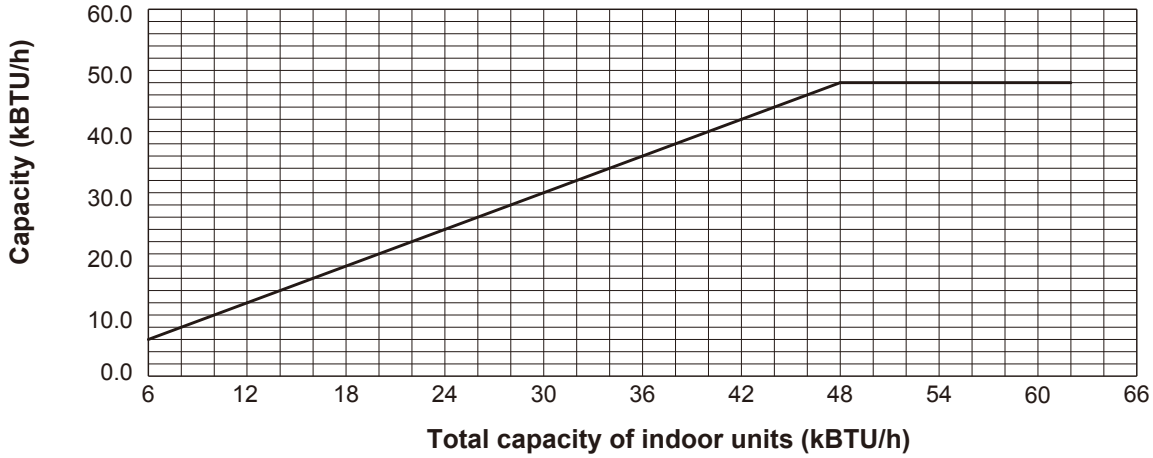
4-3-4. MXZ-5C42NAHZ <heating>

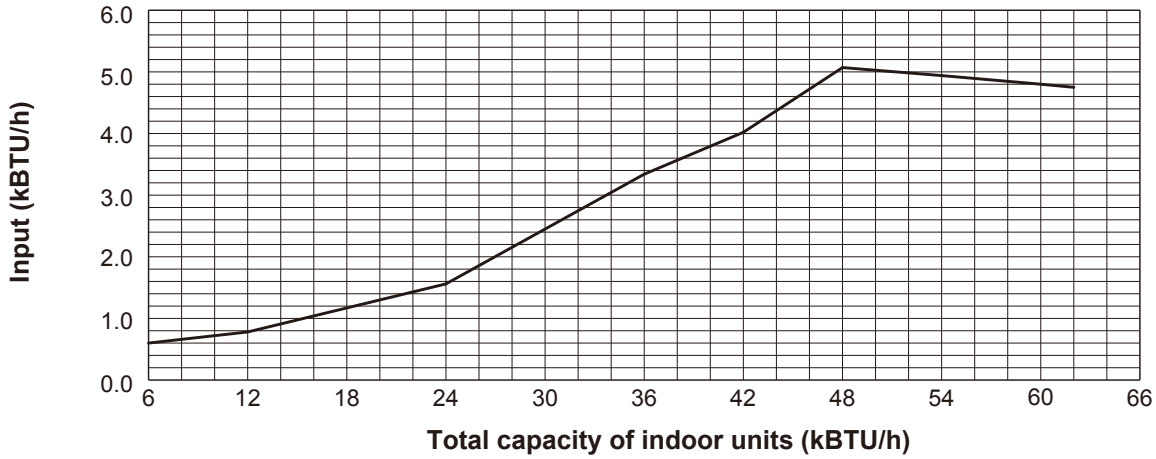


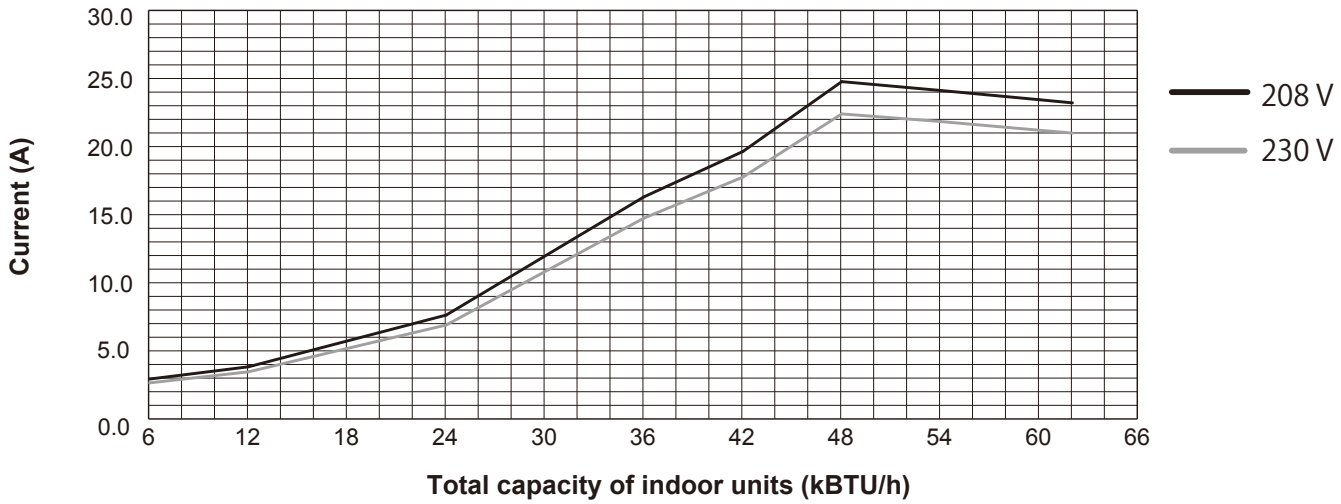




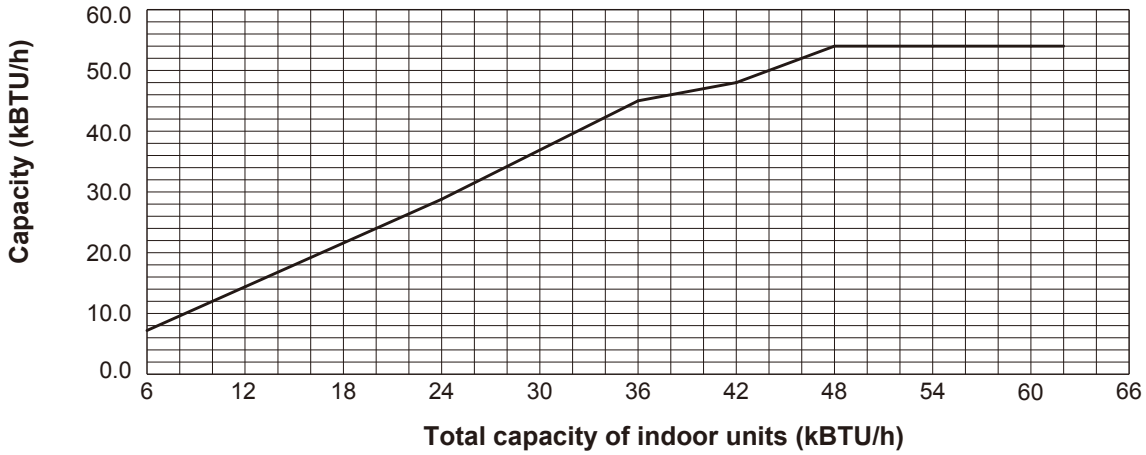
4-3-5. MXZ-8C48NA MXZ-8C48NAHZ <cooling>

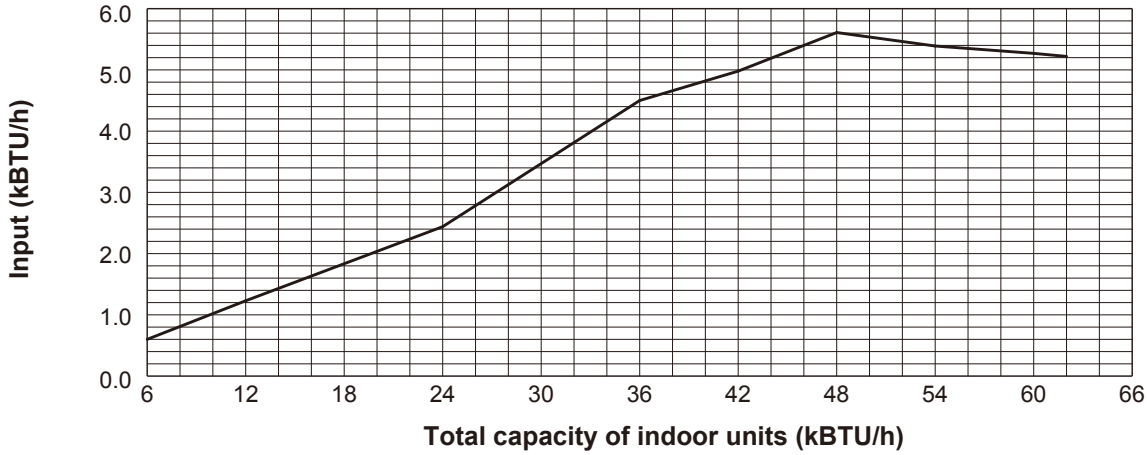


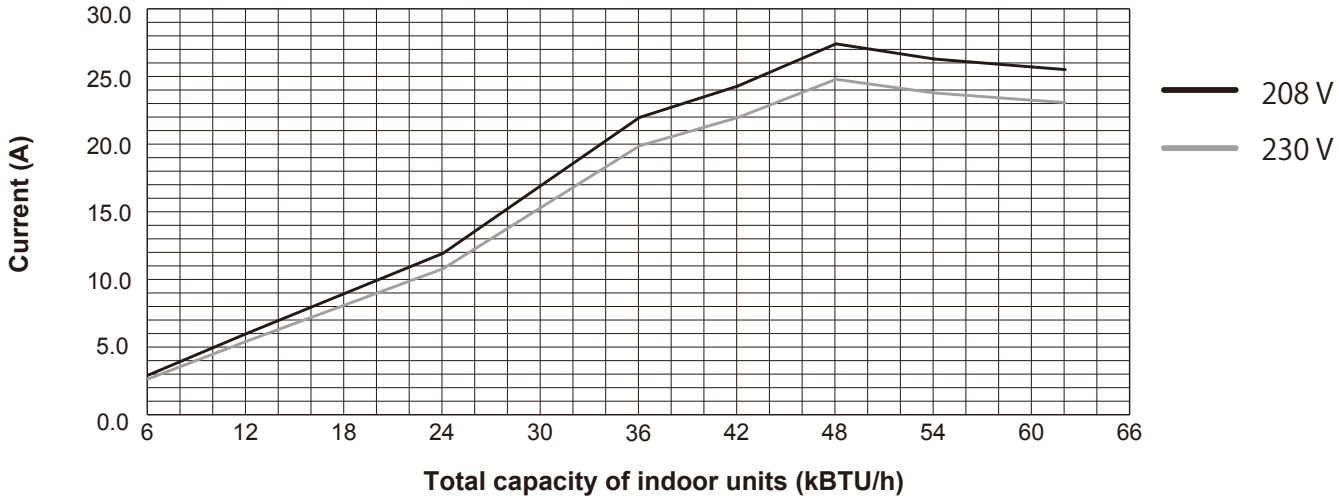




4-3-6. MXZ-8C48NA MXZ-8C48NAHZ <heating>







4-4. CORRECTING COOLING AND HEATING CAPACITY

4-4-1. Correcting Changes in Air Conditions

(1)To obtain the system cooling and heating capacity and the electrical characteristics of the outdoor unit, first add up the ratings of all the indoor units connected to the outdoor unit (see table below), and then use this total to find the standard capacity with the help of the tables on "4-3. STANDARD CAPACITY DIAGRAM".

• Standard conditions:

Rated cooling capacity	Indoor D.B. 80°F / W.B. 67°F Outdoor D.B. 95°F
Rated heating capacity	Indoor D.B. 70°F Outdoor D.B. 47°F / W.B. 43°F

• Use the rated capacity and rated input given in “4-3. STANDARD CAPACITY DIAGRAM”.

• The input is the single value on the side of the outdoor unit; the input on the sides of each indoor unit must be added to obtain the total input.

(2)The capacity of each indoor unit may be obtained by multiplying the total capacity obtained in (1) by the ratio between the individual capacity at the rated time and the total capacity at the rated time.

$$\text{Individual capacity under stated conditions} = \text{Total capacity under the stated conditions} \times \frac{\text{Individual capacity at the rated time}}{\text{Total capacity at the rated time}}$$

(3) Capacity correction factor curve

Fig. 1-1: Cooling capacity
(MXZ-8C48NA, MXZ-8C48/5C42/4C36NAHZ)

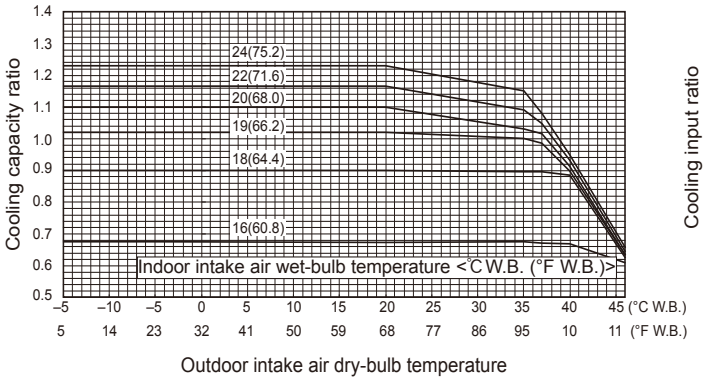


Fig. 1-2: Cooling input
(MXZ-8C48NA, MXZ-8C48/5C42/4C36NAHZ)

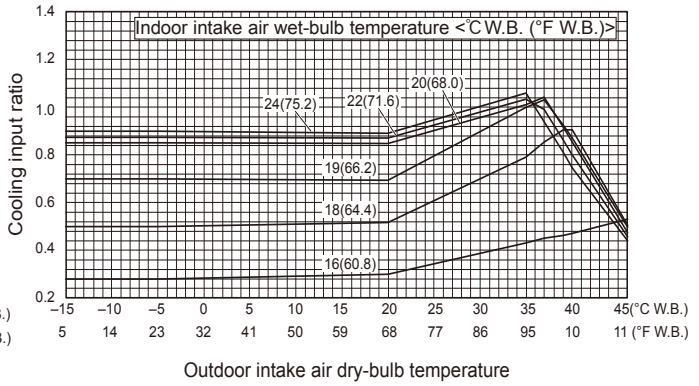


Fig. 2-1: Heating capacity (MXZ-8C48NA)

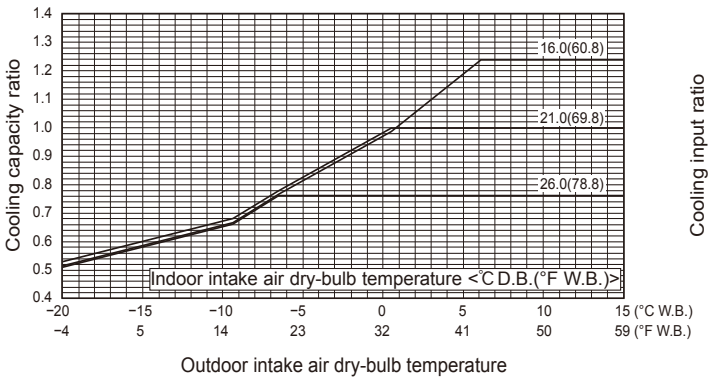
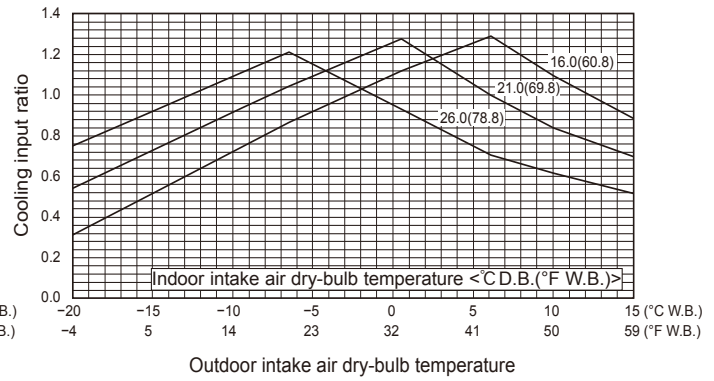


Fig. 2-2: Heating input (MXZ-8C48NA)



Note: These diagrams show the case where the operation frequency of a compressor is fixed.

Fig. 2-3: Heating capacity
(MXZ-8C48/5C42/4C36NAHZ)

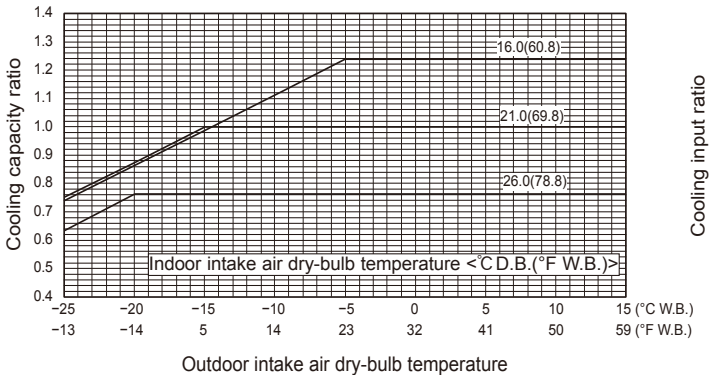
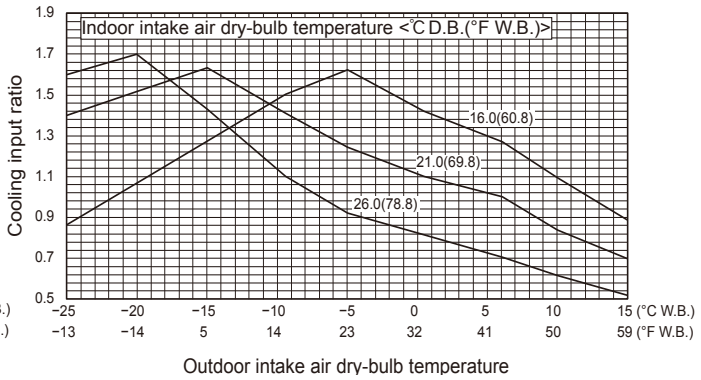


Fig. 2-4: Heating input
(MXZ-8C48/5C42/4C36NAHZ)



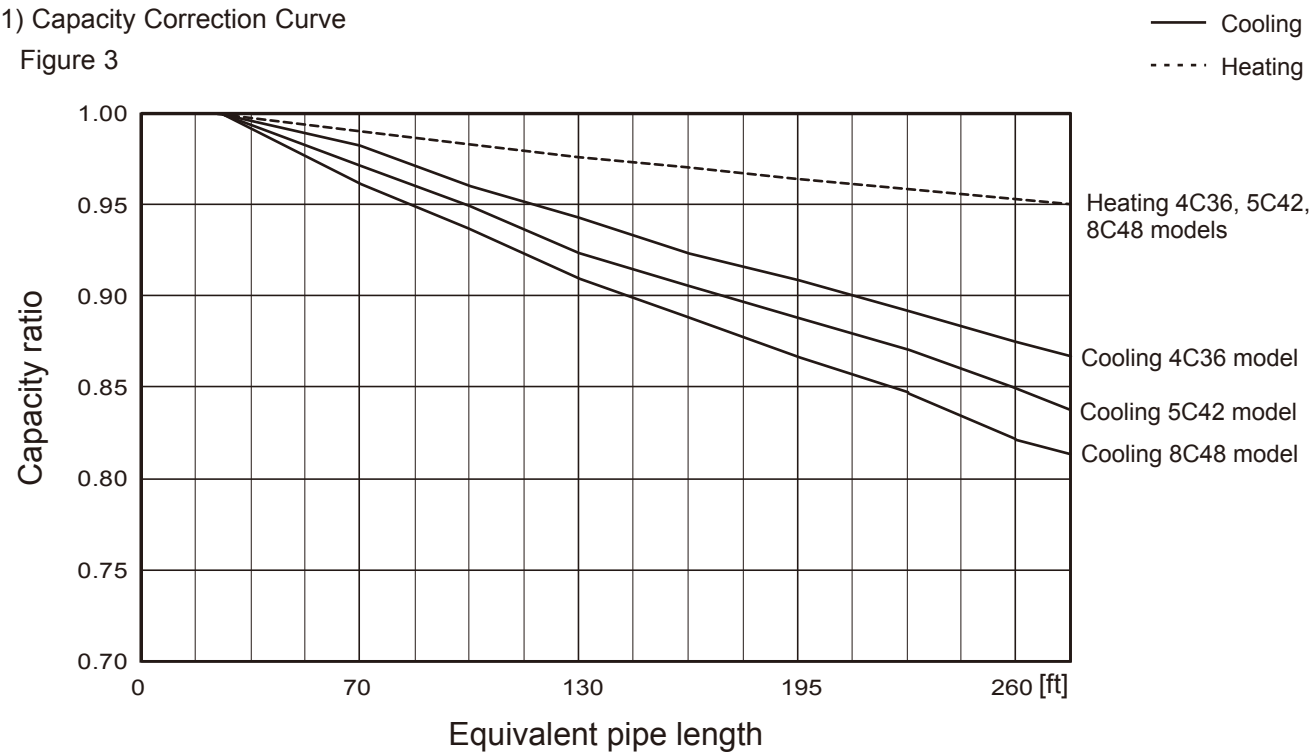
4-4-2. Correcting Capacity for Changes in the Length of Refrigerant Piping

(1) During cooling, obtain the ratio (and the equivalent piping length) of the outdoor units rated capacity and the total in-use indoor capacity, and find the capacity ratio corresponding to the standard piping length from Figure 3. Then multiply by the cooling capacity from Figure 1 to obtain the actual capacity.

(2) During heating, find the equivalent piping length, and find the capacity ratio corresponding to standard piping length from Figure 3. Then multiply by the heating capacity from Figure 2 to obtain the actual capacity.

(1) Capacity Correction Curve

Figure 3



(2) Method for Obtaining the Equivalent Piping Length

Equivalent length = (length of piping to farthest indoor unit) + (0.3 x number of bends in the piping) (m)

Length of piping to farthest indoor unit: type 80 m

4-4-3. Correction of Heating Capacity for Frost and Defrosting

If heating capacity has been reduced due to frost formation or defrosting, multiply the capacity by the appropriate correction factor from the following table to obtain the actual heating capacity.

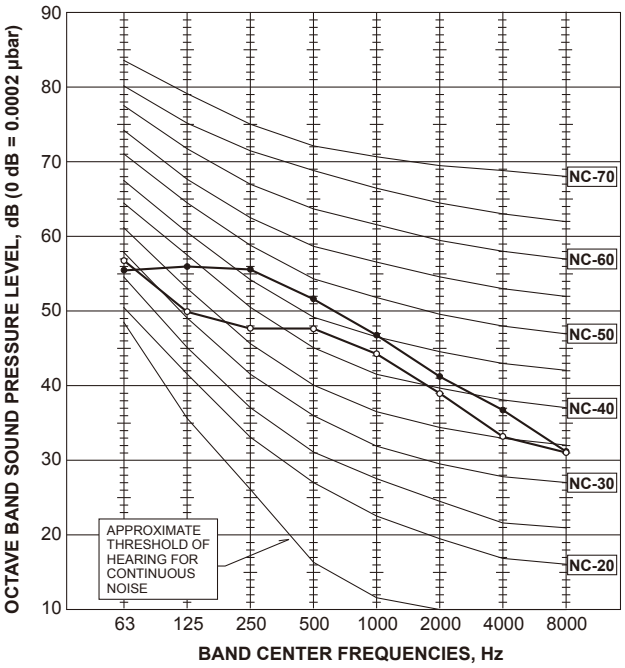
Correction factor diagram

Outdoor Intake temperature <W.B.°F [°C]>	43 (6)	39 (4)	36 (2)	32 (0)	28 (-2)	25 (-4)	21(-6)	18(-8)	14(-10)	5(-15)	-4(-20)	-13(-25)
Correction factor	1.0	0.98	0.89	0.88	0.89	0.9	0.95	0.95	0.95	0.95	0.95	0.95

4-5. NOISE CRITERION CURVES

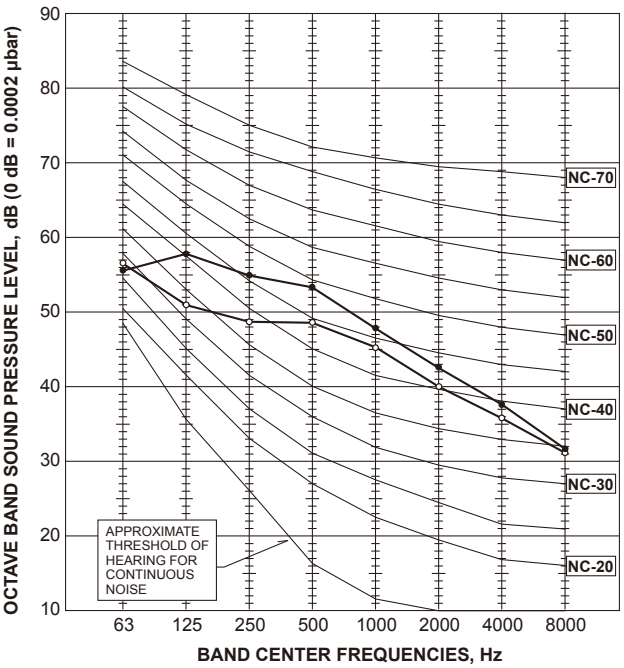
MXZ-4C36NAHZ

MODE	SPL(dB)	LINE
COOLING	49	○—○
HEATING	53	●—●



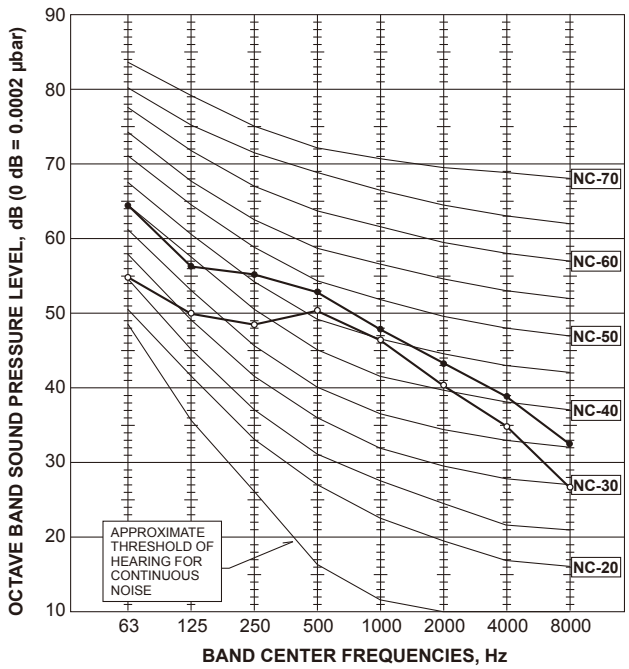
MXZ-5C42NAHZ

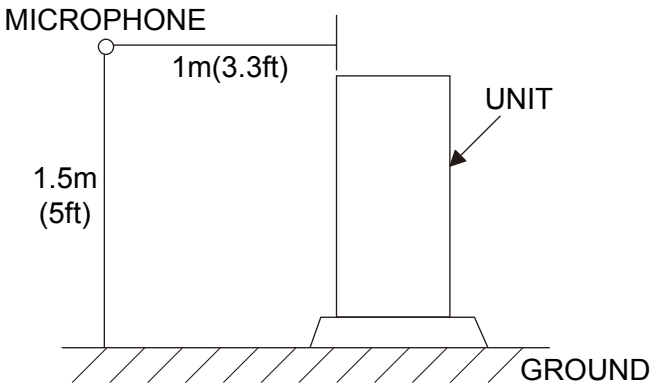
MODE	SPL(dB)	LINE
COOLING	50	○—○
HEATING	54	●—●



MXZ-8C48NA
MXZ-8C48NAHZ

MODE	SPL(dB)	LINE
COOLING	51	○—○
HEATING	54	●—●

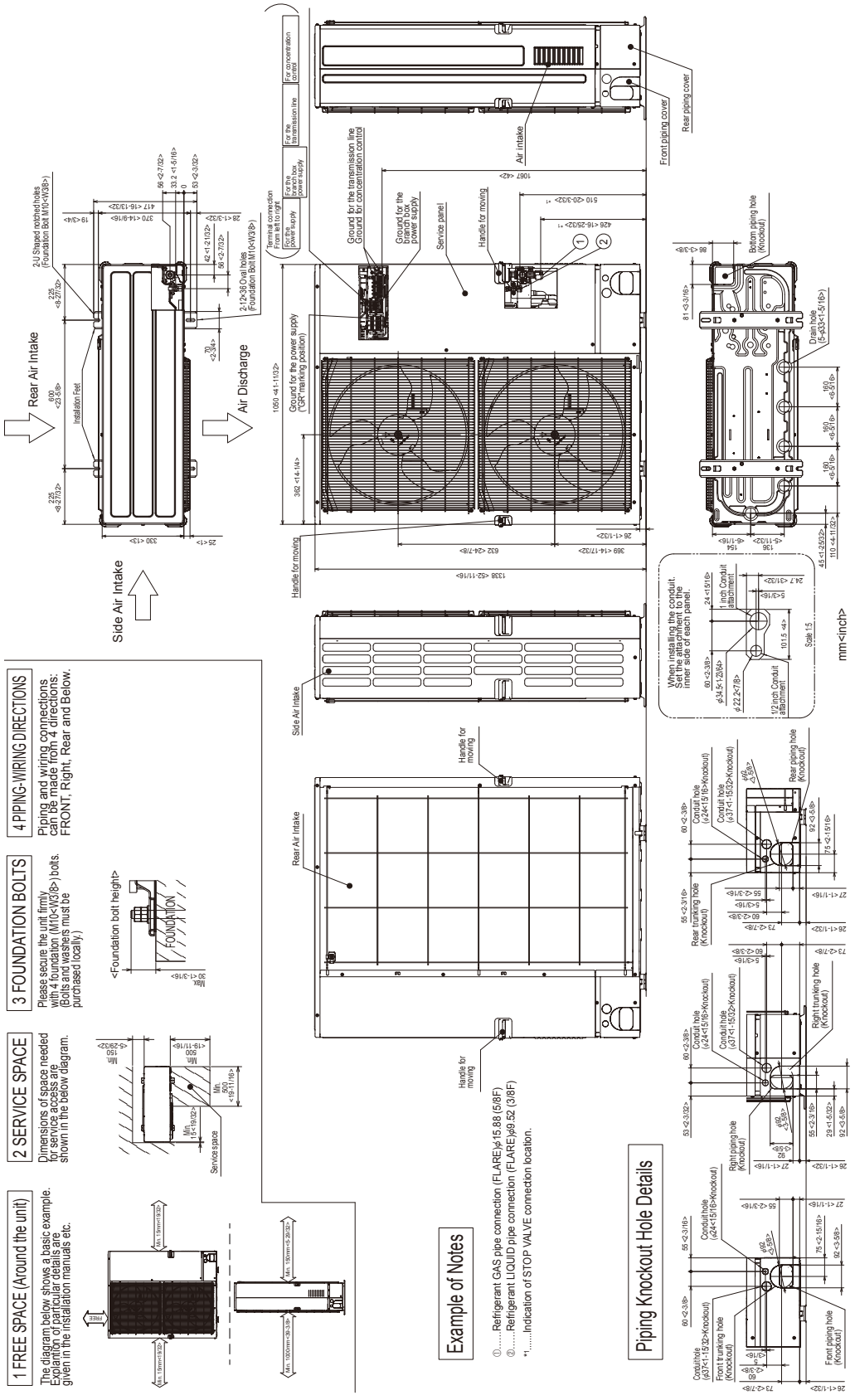




5 OUTLINES AND DIMENSIONS

5-1. OUTDOOR UNIT
MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ MXZ-8C48NA

Unit: mm <in>



5-2. BRANCH BOX

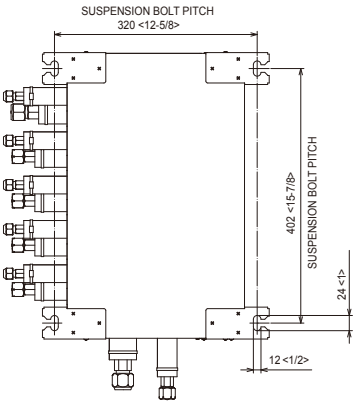
Unit: mm <in>

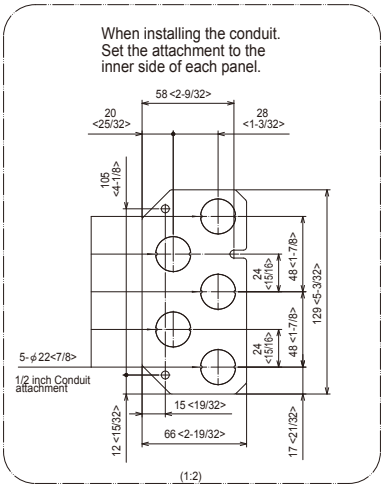
PAC-MKA50BC

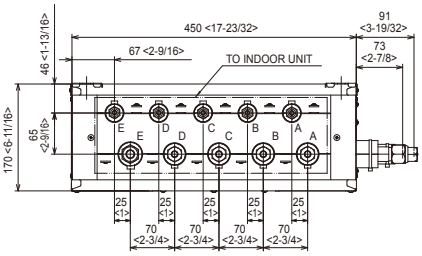
SUSPENSION BOLT : W3/8(M10)

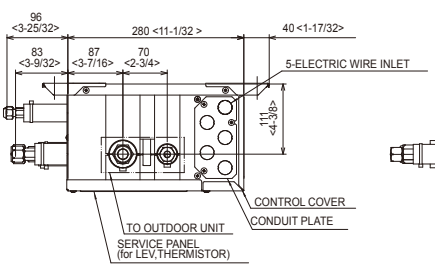
REFRIGERANT PIPE FLARED CONNECTION

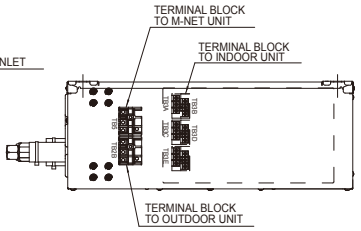
	A	B	C	D	E	TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F	1/4F	1/4F	3/8F
GAS PIPE	3/8F	3/8F	3/8F	3/8F	1/2F	5/8F









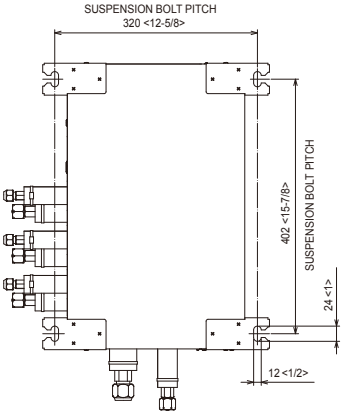


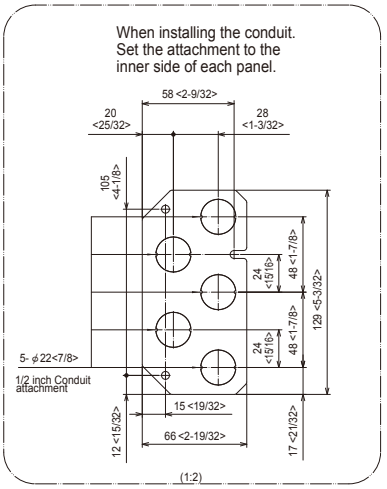
PAC-MKA30BC

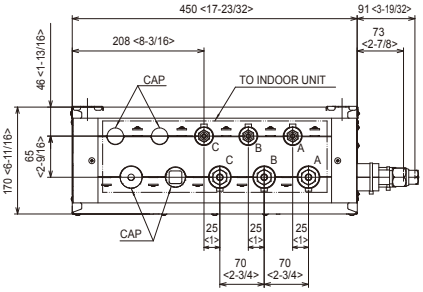
SUSPENSION BOLT : W3/8(M10)

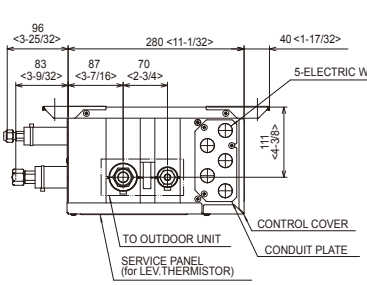
REFRIGERANT PIPE FLARED CONNECTION

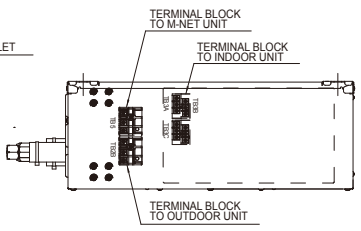
	A	B	C			TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F			3/8F
GAS PIPE	3/8F	3/8F	3/8F			5/8F











6 WIRING DIAGRAM

6-1. OUTDOOR UNIT
MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH6	Thermistor (Suction Pipe)	SW7	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	TH7	Thermistor (Ambient)	SW8	Switch (Model Selection)
TB3	Terminal Block (Branch box/Outdoor Transmission Line)	TH8	Thermistor (Heat Sink)	SW9	Switch (Function Selection)
		LEV-A,LEV-B	Electronic Expansion Valve	SWU1	Switch (Unit Address Selection, 1st digit)
TB7	Terminal Block (Centralized Control Transmission Line)	DCL	Reactor	SWU2	Switch (Unit Address Selection, 2nd digit)
		P.B.	Power Circuit Board	CNS1	Connector (Branch box/Outdoor Transmission Line)
FUSE1,FUSE2	Fuse (T20A,L250V)	U/V/W	Connection Terminal (U/V/W-Phase)	CNS2	Connector (Centralized control Transmission Line)
MC	Motor For Compressor	LI	Connection Terminal (L-Phase)	SS	Connector (Base heater)
MF1,MF2	Fan Motor	NI	Connection Terminal (N-Phase)	CN3D	Connector (Connection For Option)
21S4	Solenoid Valve (Four-Way Valve)	DCL1,DCL2	Connection Terminal (Reactor)	CN3S	Connector (Connection For Option)
63H	High Pressure Switch	IGBT	Power Module	CN3N	Connector (Connection For Option)
63HS	High Pressure Sensor	E1,E2,E3,E4	Connection Terminal (Ground)	CN51	Connector (Connection For Option)
63LS	Low Pressure Sensor	MULTI.B.	Controller Circuit Board	LED1,LED2	LED (Operation Inspection Display)
SV1	Solenoid Valve (Bypass Valve)	SW1	Switch (Display Selection)	LED3	LED (Power Supply to Main Microcomputer)
SV2	Solenoid Valve (Switching Valve)	SW2	Switch (Function Selection)	F1,F2	Fuse (T6.3AL250V)
BH	Base heater	SW3	Switch (Test Run)	X501~505	Relay
TH2	Thermistor (Hic Pipe)	SW4	Switch (Model Selection)	M-NET P.B.	M-NET Power Circuit Board
TH3	Thermistor (Outdoor Liquid Pipe)	SW5	Switch (Function Selection)	TB1	ConnectionTerminal (Ground)
TH4	Thermistor (Compressor)	SW6	Switch (Function Selection)		

● During normal operation
The LED indicates the drive state of the controller in the outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	SV2	—	—	Always lit

● When fault requiring inspection has occurred
The LED alternately indicates the inspection code and the location of the unit in which the fault has occurred.

Check code	Trouble	Check code	Trouble	Check code	Trouble
0403	Serial transmission trouble	4400	Fan controller trouble (Outdoor)	6602	Transmission error (Transmission processor hardware error)
1102	Compressor temperature trouble	5101	Air inlet sensor trouble (TH21) or Compressor temperature sensor trouble (TH4)	6603	Transmission error (Transmission route BUSY)
1302	High pressure trouble				
1500	Excessive refrigerant replenishment	5102	Liquid pipe temp.sensor trouble (TH22) or Suction pipe temperature sensor trouble (TH6)	6606	Transmission and reception error (Communication trouble with transmission processor)
1501	Insufficient refrigerant trouble				
1508	Blocked valve in cooling mode	5103	Gas pipe temperature sensor trouble (TH23)	6607	Transmission and reception error (No ACK error)
2502	Four-way valve disconnection trouble	5105	Piping temperature sensor trouble (TH5)	6608	Transmission and reception error (No responsive frame error)
2503	Drain pump trouble	5106	Ambient temperature sensor trouble (TH7)		
4100	Drain sensor trouble (TH4)	5109	HIC piping temperature sensor trouble (TH2)	7100	Total capacity error
4116	Overcurrent trouble (Overload, compressor lock)	5110	IGBT heat sink temperature sensor trouble (TH8)	7101	Capacity code error
4210	Fan controller trouble (Indoor unit)			7102	Connecting unit number error
4220	Compressor overcurrent trouble	5201	High Pressure sensor trouble (63HS)	7105	Address set error
4230	Inverter trouble	5202	Low Pressure sensor trouble (63LS)	7111	Remote controller sensor trouble
4250	Overheat protection of heat sink	5300	Current sensor trouble	7130	Combination error
	Power module trouble or Overcurrent trouble	6600	Dupricated unit address setting		

[Example]
When the compressor and SV1 are turned during cooling operation.

Caution for electrical work

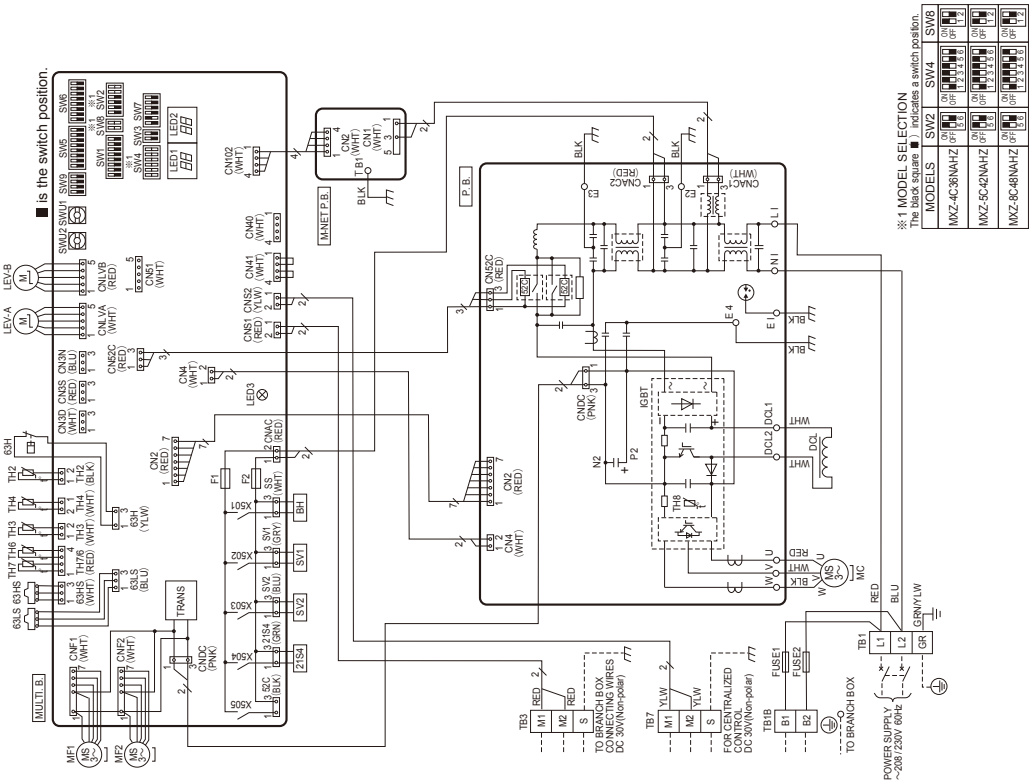
- Use copper supply wires.

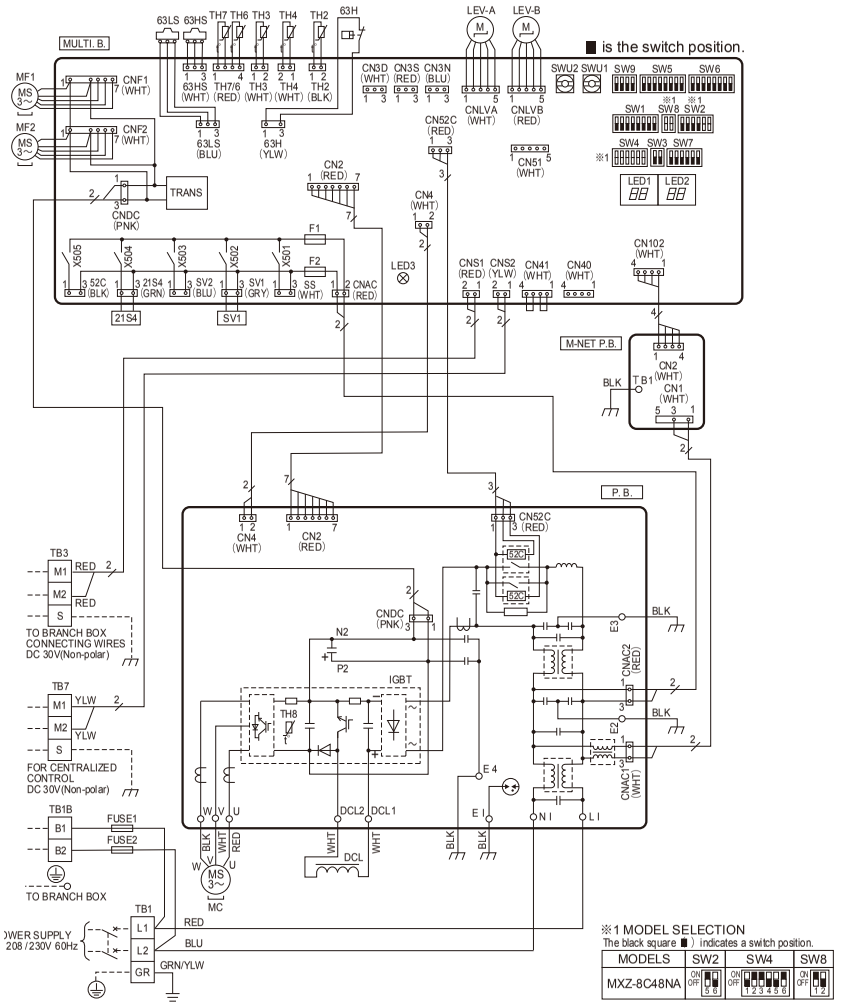
Cautions when servicing

⚠ WARNING: When the main supply is turned off, the voltage [340 V] in the main capacitor will drop to 20 V in approx. 2 minutes (input voltage: 230 V). When servicing, make sure that LED1, LED2 on the outdoor circuit board goes out, and then wait for at least 1 minute.

- Components other than the outdoor board may be faulty: Check and take corrective action, referring to the service manual. Do not replace the outdoor board without checking.

NOTES:
1. Refer to the wiring diagrams of the indoor units for details on wiring of each indoor unit.
2. Self-diagnosis function
The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED1, LED2 (LED indication) found on the multi-controller of the outdoor unit.
LED indication : Set all contacts of SW1 to OFF.





※1 MODEL SELECTION
The black square (■) indicates a switch position.

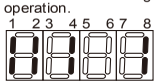
MODELS	SW2	SW4	SW8
MXZ-8C48NA	ON OFF 5 6	ON OFF 1 2 3 4 5 6	ON OFF 1 2

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block 〈Power Supply〉	TH7	Thermistor 〈Ambient〉	SW7	Switch 〈Function Selection〉
TB1B	Terminal Block 〈Branch Box〉	TH8	Thermistor 〈Heat Sink〉	SW8	Switch 〈Model Selection〉
TB3	Terminal Block 〈Branch box/Outdoor Transmission Line〉	LEV-A,LEV-B	Electronic Expansion Valve	SW9	Switch 〈Function Selection〉
		DCL	Reactor	SWU1	Switch 〈Unit Address Selection, 1st digit〉
TB7	Terminal Block 〈Centralized Control Transmission Line〉	P.B.	Power Circuit Board	SWU2	Switch 〈Unit Address Selection, 2nd digit〉
		U/V/W	Connection Terminal 〈U/V/W-Phase〉	CNS1	Connector 〈Branch box/Outdoor Transmission Line〉
FUSE1,FUSE2	Fuse 〈T20AL250V〉	LI	Connection Terminal 〈L-Phase〉	CNS2	Connector 〈Centralized Contrd Transmission Line〉
MC	Motor For Compressor	NI	Connection Terminal 〈N-Phase〉	SS	Connector 〈Connection For Option〉
MF1,MF2	Fan Motor	DCL1,DCL2	Connection Terminal 〈Reactor〉	CN3D	Connector 〈Connection For Option〉
21S4	Solenoid Valve 〈Four-Way Valve〉	IGBT	Power Module	CN3S	Connector 〈Connection For Option〉
63H	High Pressure Switch	EI,E2,E3,E4	Connection Terminal 〈Ground〉	CN3N	Connector 〈Connection For Option〉
63HS	High Pressure Sensor	MULTI.B.	Controller Circuit Board	CN51	Connector 〈Connection For Option〉
63LS	Low Pressure Sensor	SW1	Switch 〈Display Selection〉	LED1,LED2	LED 〈Operation Inspection Display〉
SV1	Solenoid Valve 〈Bypass Valve〉	SW2	Switch 〈Function Selection〉	LED3	LED 〈Power Supply to Main Microcomputer〉
TH2	Thermistor 〈Hic Pipe〉	SW3	Switch 〈Test Run〉	F1,F2	Fuse 〈T6,3AL250V〉
TH3	Thermistor 〈Outdoor Liquid Pipe〉	SW4	Switch 〈Model Selection〉	X501～505	Relay
TH4	Thermistor 〈Compressor〉	SW5	Switch 〈Function Selection〉	M-NET P.B.	M-NET Power Circuit Board
TH6	Thermistor 〈Suction Pipe〉	SW6	Switch 〈Function Selection〉	TB1	ConnectionTerminal 〈Ground〉

- During normal operation
  The LED indicates the drive state of the controller in the outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	(SV2)	—	—	Always lit

〔Example〕
When the compressor and SV1 are turned during cooling operation.



- When fault requiring inspection has occurred
  The LED alternately indicates the inspection code and the location of the unit in which the fault has occurred.

Check code	Trouble	Check code	Trouble	Check code	Trouble
0403	Serial transmission trouble	4400	Fan controller trouble (Outdoor)	6602	Transmission error (Transmission processor hardware error)
1102	Compressor temperature trouble	5101	Air inlet sensor trouble (TH21) or Compressor temperature sensor trouble (TH4)	6603	Transmission error (Transmission route BUSY)
1302	High pressure trouble	5102	Liquid pipe temp.sensor trouble (TH22) or Suction pipe temperature sensor trouble (TH6)	6606	Transmission and reception error (Communication trouble with transmission processor)
1500	Excessive refrigerant replenishment	5103	Gas pipe temperature sensor trouble (TH23)	6607	Transmission and reception error (No ACK error)
1501	Insufficient refrigerant trouble / Blocked valve in cooling mode	5105	Piping temperature sensor trouble (TH3)	6608	Transmission and reception error (No responsive frame error)
1508	Four-way valve disconnection trouble	5106	Ambient temperature sensor trouble (TH7)	7100	Total capacity error
2502	Drain pump trouble	5109	HIC piping temperature sensor trouble (TH2)	7101	Capacity code error
2503	Drain sensor trouble (THd)	5110	IGBT heat sink temperature sensor trouble (TH8)	7102	Connecting unit number error
4100	Overcurrent trouble (Overload, compressor lock)	5201	High Pressure sensor trouble (63HS)	7105	Address set error
4116	Fan controller trouble (Indoor unit)	5202	Low Pressure sensor trouble (63LS)	7111	Remote controller sensor trouble
4210	Compressor overcurrent trouble	5300	Current sensor trouble	7130	Combination error
4220	Inverter trouble	6600	Dupricated unit address setting		
4230	Overheat protection of heat sink				
4250	Power module trouble or Overcurrent trouble				

Caution for electrical work

- Use copper supply wires.

Cautions when servicing

⚠ WARNING: When the main supply is turned off, the voltage [340 V] in the main capacitor will drop to 20 V in approx. 2 minutes (input voltage: 230 V). When servicing, make sure that LED1, LED2 on the outdoor circuit board goes out, and then wait for at least 1 minute.

- Components other than the outdoor board may be faulty: Check and take corrective action, referring to the service manual. Do not replace the outdoor board without checking.

NOTES:

1. Refer to the wiring diagrams of the indoor units for details on wiring of each indoor unit.
2. Self-diagnosis function
   The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED1, LED2 (LED indication) found on the multi-controller of the outdoor unit.
   LED indication : Set all contacts of SW1 to OFF.

6-2. BRANCH BOX
PAC-MKA50BC PAC-MKA30BC

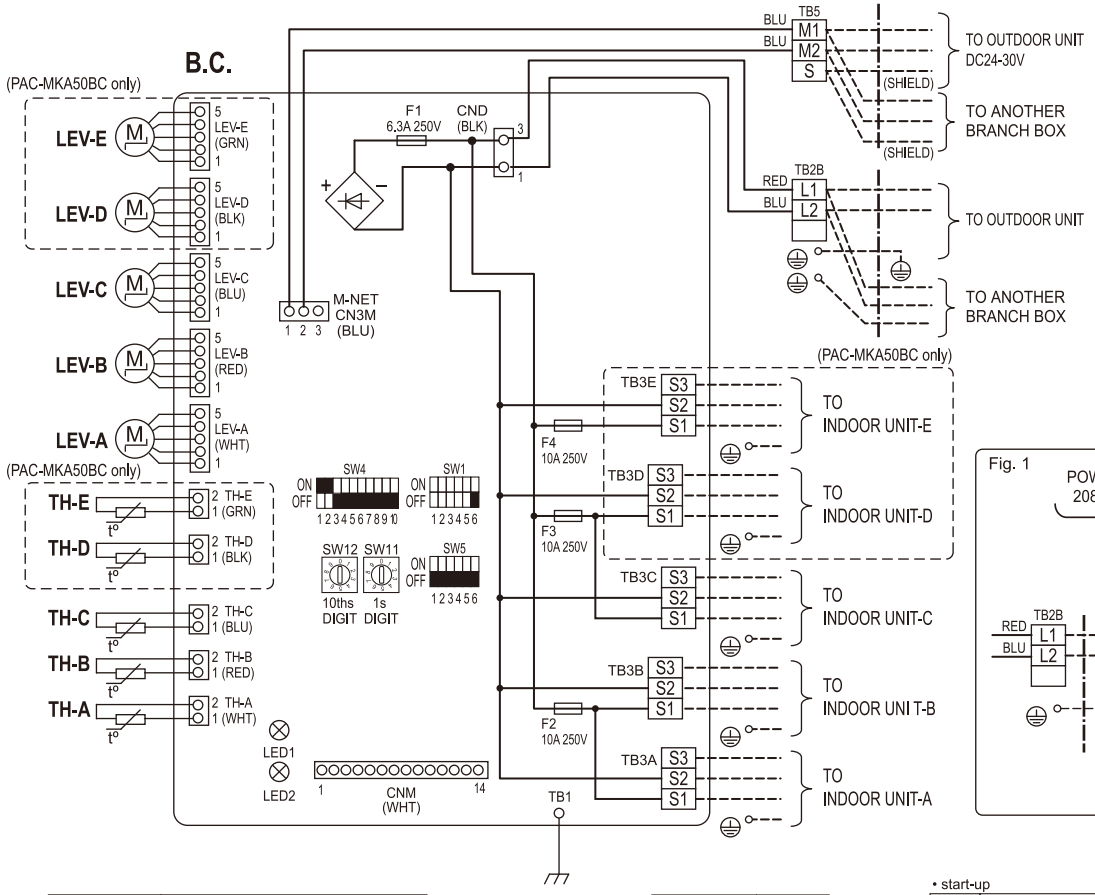
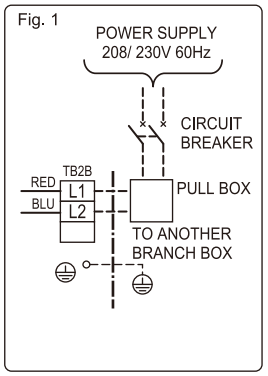


Fig. 1



<Note>
1. At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
2. Caution for electrical work.
   • Use copper supply wires.
3. When work to supply power separately to Branch box and outdoor units are applied, refer to Fig. 1.
4. For the connection method, please refer to the Branch box Installation Manual.

<Remarque>
1. Pour le service de l'unité extérieure, suivez toujours le diagramme de câblage de l'unité extérieure.
2. Précautions relatives aux travaux électriques.
   • Utilisez des câbles d'alimentation en cuivre.
3. Lorsque des travaux pour alimenter séparément le boîtier de dérivation et les unités extérieures sont effectués, reportez-vous à la Fig. 1.
4. Pour la méthode de raccordement, veuillez vous reporter au mode d'emploi du boîtier de dérivation.

<Symbols used in wiring diagram>
: Terminal block, : Connector
: Dip switch (■(black square) indicates a switch position)

SYMBOL	NAME
B.C.	Branch box controller board
F1 <B.C.>	Fuse 250V 6.3A
F2~F4 <B.C.>	Fuse 250V 10A
SW1 <B.C.>	Switch for indoor unit connection *1
SW4 <B.C.>	Switch for mode selection
SW5 <B.C.>	Not in use
CNM <B.C.>	Connector <Connection for service>
LED1,2 <B.C.>	Light emitting diode *2
LEV-A~E	Linear expansion valve *3
TH-A~E	Thermistor <Gas pipe> *3
TB2B	Terminal block <To Power Supply>
TB5	Terminal block <Transmission>
TB3A~E <B.C.>	Terminal block To indoor unit-A~E *3
SW11 <B.C.>	Address Setting 1s DIGIT
SW12 <B.C.>	Address Setting 10ths DIGIT

		OFF	ON
SW1-1	INDOOR UNIT-A	NOT CONNECT	CONNECT
SW1-2	INDOOR UNIT-B	NOT CONNECT	CONNECT
SW1-3	INDOOR UNIT-C	NOT CONNECT	CONNECT
SW1-4	INDOOR UNIT-D	NOT CONNECT	CONNECT
SW1-5	INDOOR UNIT-E	NOT CONNECT	CONNECT
SW1-6	NO USE		

PAC-MKA 50BC only

After each indoor unit is connected to the outdoor unit, turn on the switch corresponding to each indoor unit. For example, when the indoor units are connected to INDOOR UNIT-A and C, turn SW1-1 and SW1-3 to on.

*1 SW1 setting

*2 LED on Branch box controller board for service

*3 D and E for PAC-MKA50BC only.

• start-up

Mark	Meaning	Function
LED 1	Main power supply	Main power supply (208/230V)
LED 2		Power on → Lamps are lit

• normal operating

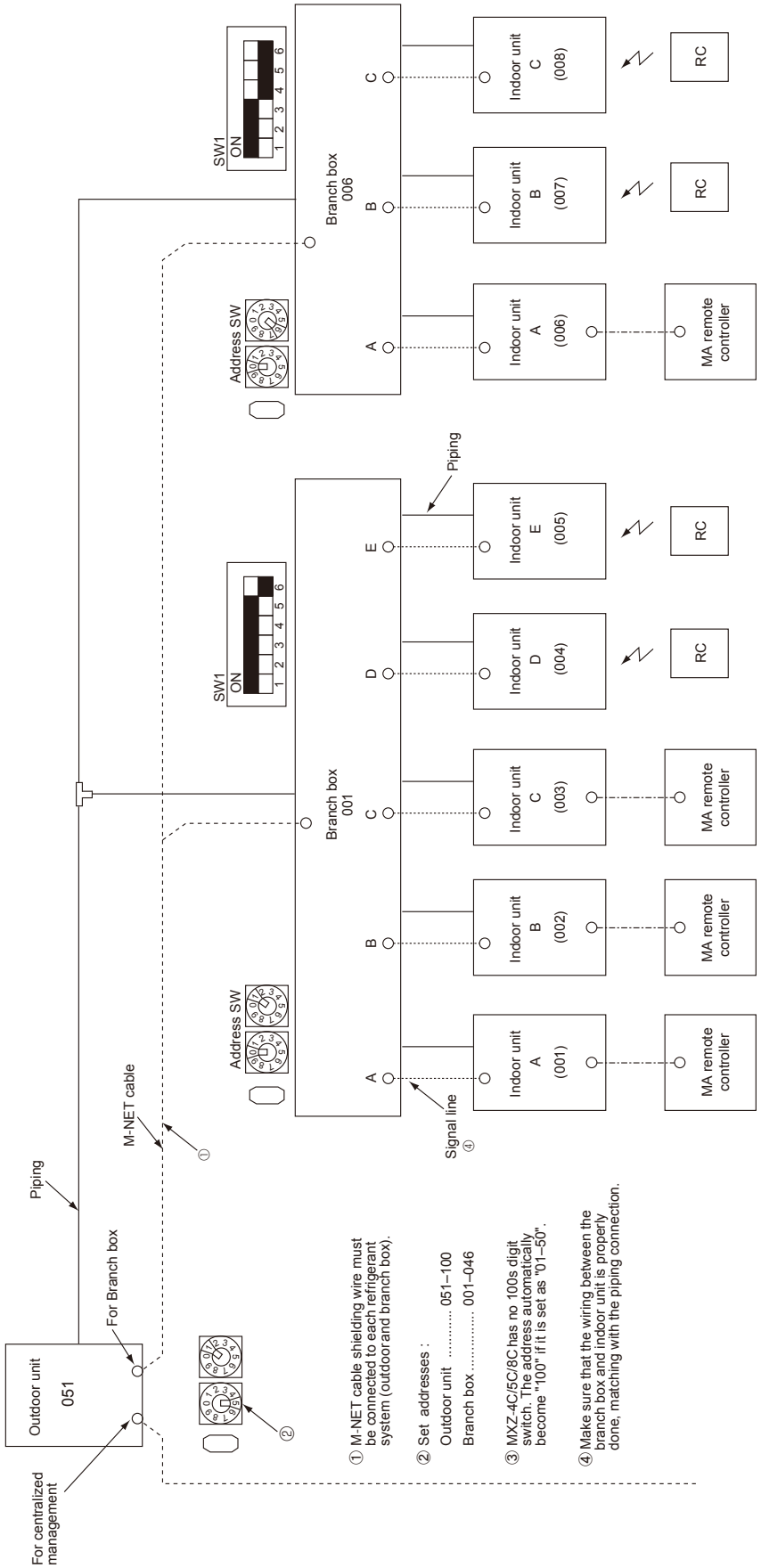
Mark	Meaning	Function
LED 1	Main power supply	Lamp is lit
LED 2	Total number of indoor units	Blink depend on the total number <example> The total number is 2 ① Blink 2 times. ② Turn off for three sec. ③ Repeat ① to ②.

〈Combination of indoor units〉
Enter the location of combined indoor units with model name in each blank below because it is necessary for service and maintenance.

Indoor unit - A	Indoor unit - B	Indoor unit - C	Indoor unit - D	Indoor unit - E

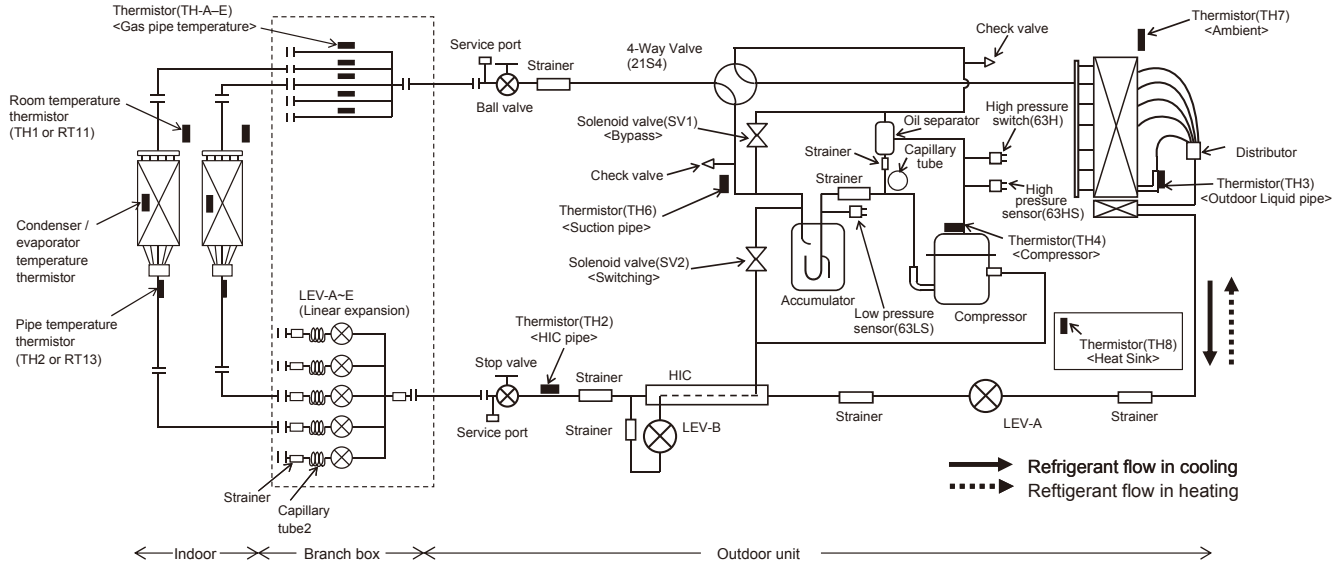
7 NECESSARY CONDITIONS FOR SYSTEM CONSTRUCTION

7-1. TRANSMISSION SYSTEM SETUP



7-2. REFRIGERANT SYSTEM DIAGRAM

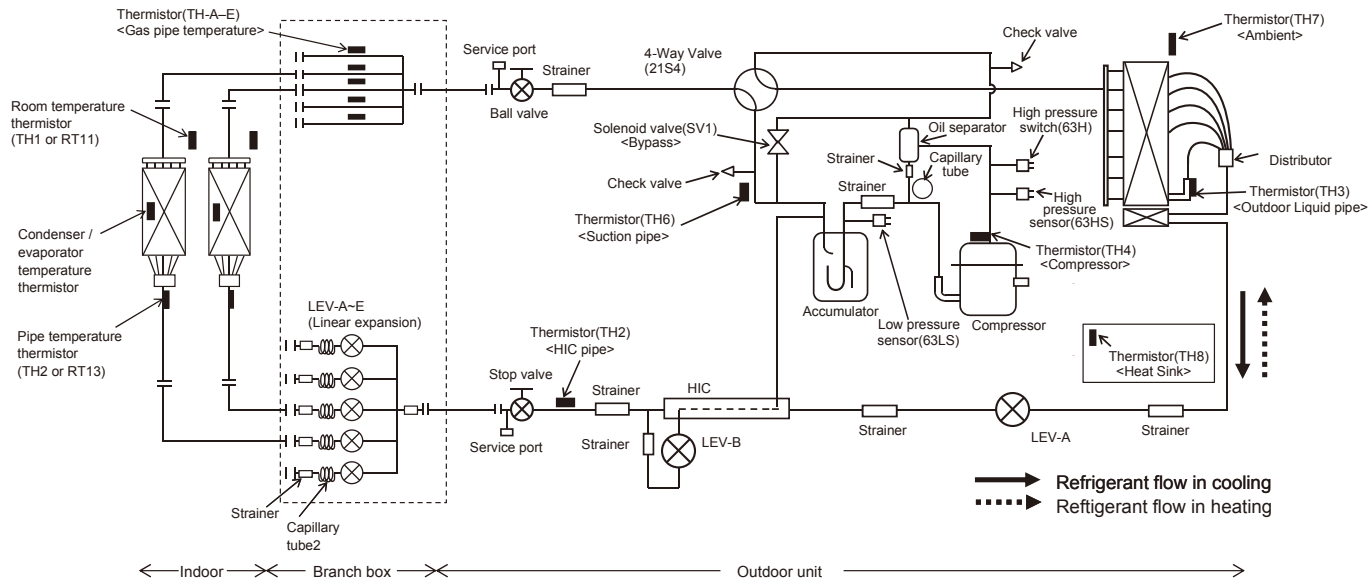
MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ



Unit: in (mm)

		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 behind LEV (in cooling mode)
Outdoor unit	MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ	ϕ0.098 × ϕ0.031 × L(39-1/2) (ϕ2.5 × ϕ0.8 × L1000)	
Branch box	PAC-MKA50BC	———	(ϕ0.157 × ϕ0.117 × L(5-1/8)) × 5 ((ϕ4 × ϕ3.0 × L130) × 5)
	PAC-MKA30BC	———	(ϕ0.157 × ϕ0.117 × L(5-1/8)) × 3 ((ϕ4 × ϕ3.0 × L130) × 3)

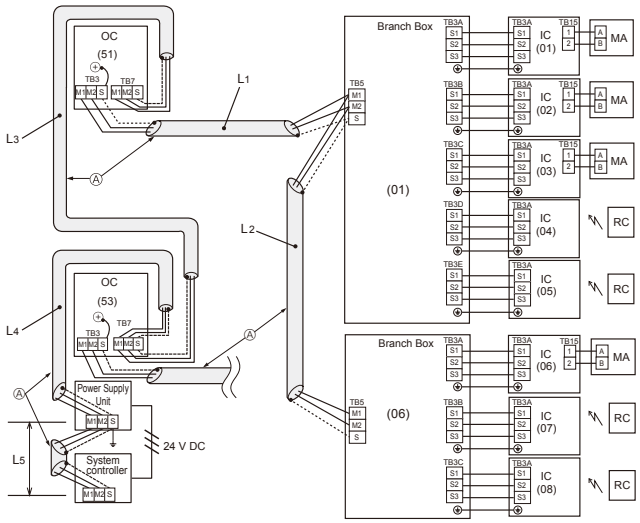
MXZ-8C48NA



Unit: in (mm)

		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 behind LEV (in cooling mode)
Outdoor unit	MXZ-8C48NA	ϕ0.098 × ϕ0.031 × L(39-1/2) (ϕ2.5 × ϕ0.8 × L1000)	
Branch box	PAC-MKA50BC	———	(ϕ0.157 × ϕ0.117 × L(5-1/8)) × 5 ((ϕ4 × ϕ3.0 × L130) × 5)
	PAC-MKA30BC	———	(ϕ0.157 × ϕ0.117 × L(5-1/8)) × 3 ((ϕ4 × ϕ3.0 × L130) × 3)

7-3. TYPICAL CONTROL SYSTEM



IMPORTANT:
Make sure that the current leakage breaker is one compatible with higher harmonics.
Always use a current leakage breaker that is compatible with higher harmonics as this unit is equipped with an inverter.
The use of an inadequate breaker can cause the incorrect operation of inverter.

Longest length via outdoor units:
L1 + L2 + L3 + L4 + L5 ≦ 500 m (1640 ft.) (1.25 mm^2 or more)
Longest transmission cable length
L1 + L2, L3, L3 + L4, L5 ≦ 200 m (656 ft.) (1.25 mm^2 or more)

(1) Difference between display and operation

① When operating the system using the system controller or the ME remote controller, details of those operations will not appear on the display of the wireless remote controller.

② The set temperature range is different in the wireless remote controller that comes with room air conditioner, and the ME remote controller or the system controller. The room air conditioner has a wider range. If the target temperature is set to below 63°F [17℃] or less, or 86°F [30℃] or more by the wireless remote controller that comes with room air conditioner, the temperature displayed on the ME remote controller or the system controller may be converted to their maximum/ minimum set temperature. For instance, when HEAT operation at 61°F [16℃] is set at the room air conditioner, the ME remote controller or the system controller may display 63°F [17℃].

③ When the DRY mode is set with the wireless remote controller, the room air conditioner automatically set the optimum target temperature. The ME remote controller or the system controller will display the target temperature as a set temperature.

④ When the DRY mode is set with the ME remote controller, or the system controller, the room air conditioner performs the DRY mode control operation according to the temperature set with the ME remote controller or the system controller.

(2) Timer operation

① Timer operation should be set using only one controller from the remote controller that comes with the room air conditioner, the system controller, the MA remote controller, or the ME remote controller. If more than one controller is used to set the timer at the same time, the timer will not function properly.

② When the timer is set with the wireless remote controller; the ME remote controller or the system controller will not show the timer display.

③ The timer set with the ME remote controller or the system controller will not be cancelled with the wireless remote controller.

(3) Manual operation prohibition

① When the manual operation (ON/OFF, set temperature, or operation mode) is prohibited with the system controller, the command to perform the prohibited operation will not be accepted from the wireless remote controller that comes with the room air conditioner. The operation partially enabled by the system controller can be operated with the wireless remote controller. Regardless of whether the operation is disabled or enabled, three short beeps will sound when the signal is sent from the wireless remote controller.

(4) Trouble

① If the MA remote controller, the ME remote controller, or the system controller shows the abnormal indication, clear it by stopping the operation with one of the followings: the MA remote controller, the ME remote controller, the system controller, or the wireless remote controller.
(Abnormal indication of the air conditioner could be recovered automatically, but that of the MA remote controller, the ME remote controller, or the system controller cannot be recovered unless the operation is stopped.)

(5) Group setting

① MA group or M-NET group setting cannot be set.
② Indoor units of CITY MULTI series cannot be connected to the branch boxes or outdoor unit.

(6) Restricted functions

- The following functions of system controller cannot be used.
- DIDO controller (Interlock with the air conditioner)
- Fan control of energy saving control or peak cut control function
- Air conditioning charge [TG-2000A]
- Set temperature range limiting function
- Operation mode changeover limit (season changing) [PAC-SF44SRA]
- Dual set point function
- Setback mode
- Hold function

8 TROUBLESHOOTING

8-1. TROUBLESHOOTING

<Check code displayed by self-diagnosis and actions to be taken for service (summary)>

Present and past check codes are logged, and they can be displayed on the wired remote controller and multi controller circuit board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring in the field, are summarized in the table below. Check the contents below before investigating details.

Unit conditions at service	Check code	Actions to be taken for service (summary)
The trouble has reoccurred.	Displayed	Judge what is wrong and take a corrective action according to “8-4. SELF-DIAGNOSIS ACTION BY FLOWCHART”.
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble according to “8-5. TROUBLESHOOTING BY INFERIOR PHENOMENA”.
The trouble is not reoccurring.	Logged	①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise, etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring, etc. ②Reset check code logs and restart the unit after finishing service. ③There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.
	Not logged	①Re-check the abnormal symptom. ②Conduct troubleshooting and ascertain the cause of the trouble according to “8-5. TROUBLESHOOTING BY INFERIOR PHENOMENA”. ③Continue to operate unit for the time being if the cause is not ascertained. ④There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.

8-2. CHECK POINTS FOR TEST RUN

8-2-1. Procedures before test run

(1) Before a test run, make sure that the following work is completed.

- Installation related :
  Make sure that the panel of cassette type and electrical wiring are done.
  Otherwise electrical functions like auto vane will not operate normally.
- Piping related :
  Perform leakage test of refrigerant and drain piping.
  Make sure that all joints are perfectly insulated.
  Check stop valves on both liquid and gas side for full open.
- Electrical wiring related :
  Check ground wire, transmission cable, remote controller cable, and power supply cable for secure connection.
  Make sure that all switch settings of address or adjustments for special specification systems are correctly settled.

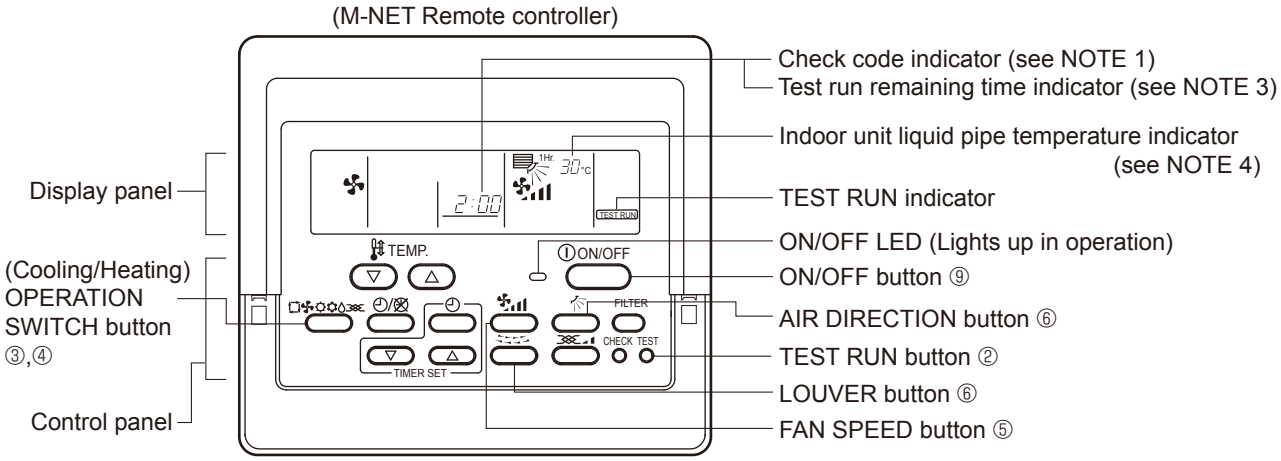
(2) Safety check :
With the insulation tester of 500V, inspect the insulation resistance.
Do not touch the transmission cable and remote controller cable with the tester.
The resistance should be over 1.0 MΩ. Do not proceed inspection if the resistance is under 1.0 MΩ.
Inspect between the outdoor unit power supply terminal block and ground first, metallic parts like refrigerant pipes or the electrical box next, then inspect all electrical wiring of outdoor unit, indoor unit, and all linked equipment .

(3) Before operation :
a) Turn the power supply switch of the outdoor unit to on for compressor protection. For a test run, wait at least 12 hours from this point.
b) Register control systems into remote controller(s). Never touch the on/off switch of the remote controller(s). Refer to " 8-2-2. Special Function Operation and Settings (for M-NET Remote Controller)" as for settings. In MA remote controller(s), this registration is unnecessary.

(4) More than 12 hours later from power supply to the outdoor unit, turn all power switch to on for the test run. Perform test run according to the "Operation procedure" table of the bottom of this page. While test running, make test run reports .

8-2-1-1. Test run for M-NET Remote controller

When you deliver the unit after the test run, instruct the end user for proper usage of the system using owners' manual and the test run report you made to certificate normal operation. If abnormalities are detected during test run, refer to "8-3-3 Countermeasures for Error During Test Run". As for DIP switch setting of outdoor unit, refer to "8-10. INTERNAL SWITCH FUNCTION TABLE".

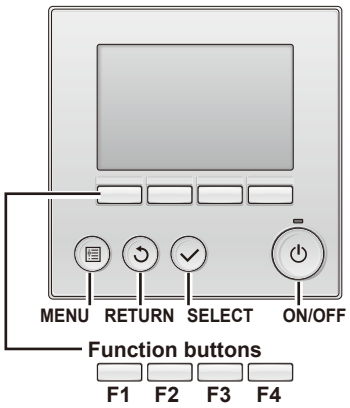


Operation procedure	
①	Turn on the main power supply of all units at least 12 hours before test run. "HO" appears on display panel for 3 min.
②	12 hours later, press TEST RUN button twice to perform test run. "TEST RUN " appears on display panel.
③	Press OPERATION SWITCH button to make sure that air blows out.
④	Select Cooling (or Heating) by OPERATION SWITCH button to make sure that cool (or warm) air blows out.
⑤	Press Fan speed button to make sure that fan speed is changed by the button.
⑥	Press AIR DIRECTION button or LOUVER button to make sure that air direction is adjustable (horizontal, downward, upward, and each angle).
⑦	Check outdoor fans for normal operation.
⑧	Check interlocked devices (like ventilator) for normal operation, if any. This is the end of test run operation.
⑨	Press ON/OFF button to stop and cancel test run.

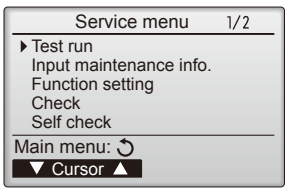
Notes:

1. If check code appears on remote controller or remote controller malfunctions, refer to " 8-3-3. Countermeasures for Error During Run".
2. During test run operation, 2-hour off timer activates automatically and remaining time is on remote controller and test run stops 2 hours later.
3. During test run, the indoor liquid pipe temperature is displayed on remote controller instead of room temperature.
4. Depending on a model, "This function is not available" appears when air direction button is pressed. However, this is not malfunction.

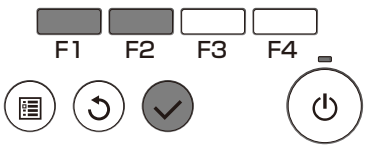
8-2-1-2. Test run for wired remote controller <PAR-31MAA>



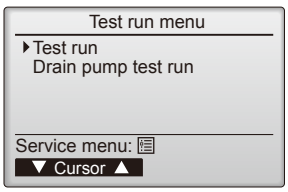
① **Select "Service" from the Main menu, and press the ⓢ button.**

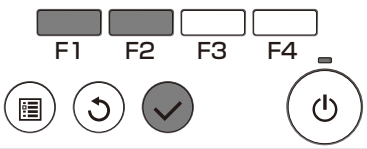


Select "Test run" with the F1 or F2 button, and press the ⓢ button.



② **Select "Test run" with the F1 or F2 button, and press the ⓢ button.**

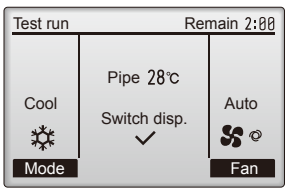




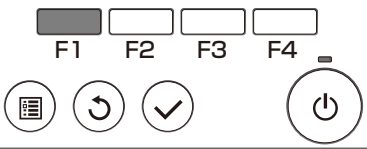
Test run operation

Press the F1 button to go through the operation modes in the order of "Cool and Heat".

Cool mode: Check the cold air blow out.
Heat mode: Check the heat blow out.

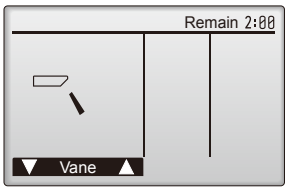


Press the ⓢ button and open the Vane setting screen.

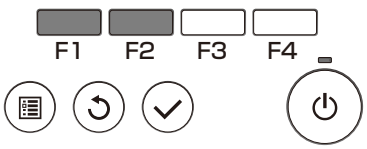


Auto vane check*

Check the auto vane with the F1 F2 buttons.
Check the operation of the outdoor unit fan, also.



Press the ⓒ button to return to "Test run operation".



Press the ⏻ button.

When the test run is completed, the "Test run menu" screen will appear.
The test run will automatically stop after two hours.
*The function is available only for the model with vanes.

8-2-2. Special Function Operation and Settings (for M-NET Remote Controller)

- It is necessary to perform “group settings” and “paired settings” at making group settings of different refrigerant systems (multiple outdoor unit).
  (A) Group settings: Enter the indoor unit controlled by the remote controller, check the content of entries, and clear entries, etc.
  (B) Paired settings: Used to set the linked operation of a Lossnay unit.

(1) Entering address: Follow the steps below to enter the addresses of the indoor unit using the remote controller.

a) Group settings

- Turning off the remote controller: Press the ON/OFF button to stop operation (the indicator light will go off).
- Changing to indoor unit address display mode: If the FILTER and buttons on the remote controller are pressed simultaneously and held for 2 seconds, the display shown in Figure 1 will appear.
- Changing address: Press the temperature adjustment buttons to change the displayed address to the address to be entered.
- Entering the displayed address: Press the TEST RUN button to enter the indoor unit with the displayed address.
  The type of the unit will be displayed as shown in Figure 2 if entry is completed normally.
  If a selected indoor unit does not exist, an error signal will be displayed as shown in Figure 3. When this happens, check whether the indoor unit actually exists and perform entry again.
- Returning to the normal mode after completing entry: Press the FILTER and buttons simultaneously and hold for 2 seconds to return to the normal mode.

Figure 1. (A) Group setting display

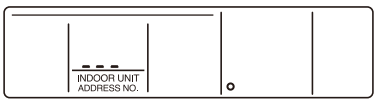
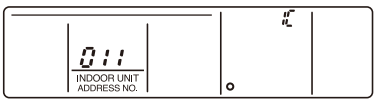
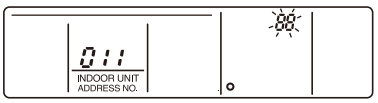


Figure 2. Normal completion of entry



Type of unit is displayed.

Figure 3. Entry error signal

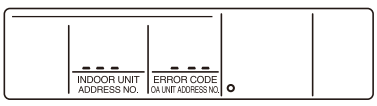


Flashing “88” indicates entry error.

b) Paired Settings

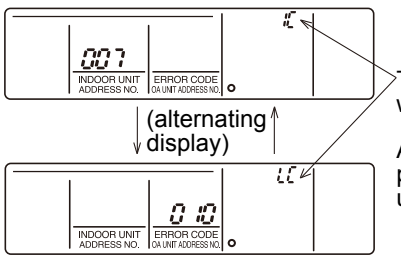
- Turn off the remote controller: Press the remote controller’s ON/OFF button to turn it off (the indicator light will go off).
- Put in indoor unit address display mode: Press the FILTER and buttons on the remote controller simultaneously and hold for 2 seconds.
  Note: The above steps are the same as when making group settings (A).
- Changing to the linked operation unit address display state: The display shown in Figure 4 will appear when the button on the remote control is pressed.
- Displaying the address of the Lossnay unit and linked indoor unit: In this situation, the indoor unit number will be the lowest address of the group. The Lossnay unit will not operate if this setting is incorrect.
  Notes:
  1. If the temperature adjustment buttons are pressed, the address may be changed to the indoor unit that are to be linked.
  2. If the time setting buttons are pressed, the address of the linked units may be changed to the address where it is desired to enter the Lossnay.
- Linking the Lossnay and the indoor unit: The display shown in Figure 5 will appear when the TEST RUN button is pressed. The indoor unit whose address is displayed and the Lossnay unit with a linked address will operate in a linked manner.
  Notes:
  1. If it is desired to display the address of the Lossnay in the indoor unit address, display the indoor unit address in the linked unit address, and the above content will also be recorded.
  2. Apart from the indoor unit with the lowest address in the group, display and enter the addresses of the other indoor unit that are to be linked with the Lossnay unit.
- Returning to the normal mode after completing entry: Press the FILTER and buttons on the remote controller simultaneously and hold for 2 seconds to return to the normal mode.

Figure 4. (B) Making paired settings



The addresses of indoor unit and linked units are displayed simultaneously.

Figure 5. Completing normal entry



These alternating IC or LC displays will appear when entry is completed normally.

A flashing “88” will appear if there is a problem with the entry (indicating that the unit does not exist).

(2) Address check: Refer to section (1) regarding address entry.

a) In making group settings:

- Turn off the remote controller: Press the remote controller's ON/OFF button to stop operation (the indicator light will go off).
- Locate the indoor unit address display mode: Press the FILTER and buttons on the remote controller simultaneously and hold for 2 seconds.
- Display indoor unit address: The entered indoor units address and type will be displayed each time the button is pressed.
  Note: When 1 entry is made, only 1 address will be displayed no matter how many times the button is pressed.
- Returning to the normal mode after completing check: Simultaneously press the FILTER and buttons on the remote controller and hold for 2 seconds to return to the normal mode.

b) In making paired settings:

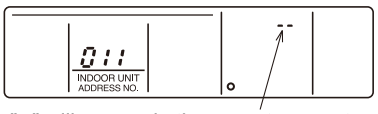
- Turn off the remote controller: Press the remote controller's ON/OFF button to stop operation (the indicator light will go off).
- Put in indoor unit address display mode: Press the FILTER and buttons on the remote controller simultaneously and hold for 2 seconds.
- Changing to the linked operation unit address display state: Press the button on the remote control.
- Displaying the address of the indoor unit to be checked: Change the address to that of the indoor unit to be checked by pressing the temperature adjustment buttons .
- Displaying the address of the linked Lossnay unit: Press the button to display the addresses of the linked Lossnay and indoor unit in alternation.
- Displaying the addresses of other entered units: The addresses of the other entered units will be displayed in alternating fashion after resting the button again.
- Returning to the normal mode after completing the check: Simultaneously press the FILTER and buttons on the remote controller and hold for 2 seconds to return to the normal mode.

(3) Clearing an address: Refer to section (1) regarding the address entry and section (2) regarding checking addresses.

a) In making group settings:

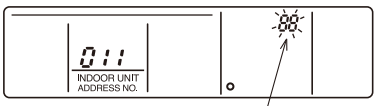
- Turn off the remote controller: The procedure is same as **a)** in (2) Address check.
- Put in the indoor unit address display mode: The procedure is the same as **a)** in (2) Address check.
- Displaying the indoor unit address to be cleared: The procedure is the same as **a)** in (2) Address check.
- Clearing indoor unit address : Pressing the button on the remote controller twice will clear the address entry of the displayed indoor unit, resulting in the display shown in Figure 6.
  The display shown in Figure 7 will appear if an abnormality occurs and the entry is not cleared.
  Please repeat the clearing procedure.
- Returning to the normal mode after clearing an address: The procedure is same as **a)** in (2) Address check.

Figure 6. Display after address has been cleared normally



"--" will appear in the room temperature display location.

Figure 7. Display when an abnormality has occurred during clearing

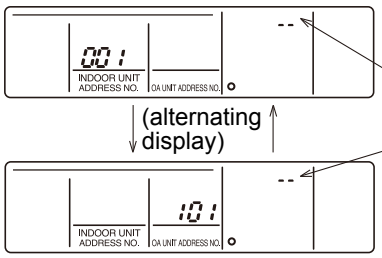


"88" will appear in the room temperature display location.

b) In making paired settings:

- Turn off the remote controller: The procedure is the same as **b)** in (2) Address check.
- Put into the indoor unit address display mode: The procedure is the same as **b)** in (2) Address check.
- Put into the linked unit address display mode: The procedure is the same as **b)** in (2) Address check.
- Display the address of the Lossnay unit or the indoor unit to be cleared.
- Deleting the address of a linked indoor unit: Pressing the button on the remote controller twice will clear the address entry of the displayed indoor unit, resulting in the display shown in Figure 8.
- Returning to the normal mode after clearing an address: The procedure is the same as **b)** in (2) Address check.

Figure 8. Display after address has been cleared normally



"--" will appear in the unit type display location when an address has been cleared normally.

"88" will appear in the unit type display location when an abnormality has occurred during clearing.

8-3. CHECK POINTS FOR TEST RUN

8-3-1. Procedures before test run

(1) Before a test run, make sure that the following work is completed.
- Installation related :
  Make sure that the panel of cassette type and electrical wiring are done.
  Otherwise electrical functions like auto vane will not operate normally.
- Piping related :
  Perform leakage test of refrigerant and drain piping.
  Make sure that all joints are perfectly insulated.
  Check stop valves on both liquid and gas side for full open.
- Electrical wiring related :
  Check ground wire, transmission cable, remote controller cable, and power supply cable for secure connection.
  Make sure that all switch settings of address or adjustments for special specification systems are correctly settled.

(2) Safety check :
With the insulation tester of 500 V, inspect the insulation resistance.
Do not touch the transmission cable and remote controller cable with the tester.
The resistance should be over 1.0 MΩ". Do not proceed inspection if the resistance is under 1.0 MΩ".
Inspect between the outdoor unit power supply terminal block and ground first, metallic parts like refrigerant pipes or the electrical box next, then inspect all electrical wiring of outdoor unit, indoor unit, and all linked equipment .

(3) Before operation :
a) Turn the power supply switch of the outdoor unit to on for compressor protection. For a test run, wait at least 12 hours from this point.
b) Register control systems into remote controller (s). Never touch the on/off switch of the remote controller(s). Refer to " 8-2-2. Special Function Operation and Settings (for M-NET Remote Controller)" as for settings. In MA remote controller(s), this registration is unnecessary.

(4) More than 12 hours later from power supply to the outdoor unit, turn all power switch to on for the test run. Perform test run according to the "Operation procedure" table of the bottom of this page. While test running, make test run reports .

8-3-2. Test run

(1) Using remote controller
Refer to the indoor unit installation manual.

- Be sure to perform the test run individually for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
  If you perform the test run for indoor units connected all at once, faulty connections of the refrigerant pipes and cables cannot be detected.
- The compressor operation is not available for 3 minutes at least after the power is supplied.
- The compressor can emit noise just after turn on the power supply or in case of low outside air temperature.

About the restart protective mechanism
Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

(2) Using SW3 in outdoor unit

In case of the test run from outdoor unit, all indoor units operate. Therefore, you cannot detect any erroneous connection of refrigerant pipes and the connecting wires. If it aims at detection of any erroneous connection, be sure to carry out the test run from remote controller with reference to "(1) Using remote controller."

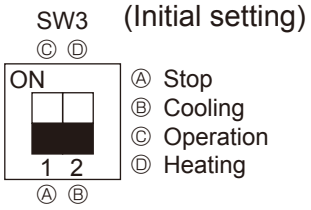
SW3-1	ON	Cooling operation
SW3-2	OFF	
SW3-1	ON	Heating operation
SW3-2	ON	

Note: After performing the test run, set SW3-1 to OFF.

● Setting procedure

The setting of test run (ON/OFF) and its operation mode (cooling/heating) can be set by SW3 on the multi controller circuit board of outdoor unit.

① Set operation mode (cooling or heating) by SW3-2.
② Start test run by setting SW3-1 to ON (⇑) with the indicated operation mode of SW3-2.
③ Finish test run by setting SW3-1 to OFF (⇓).



- Operation mode cannot be changed by SW3-2 during test run.
- To change the test run operation mode, stop the test run by 3-1, and restart test run by SW3-1 after the mode is changed by SW3-2.
- Test run automatically stops 2 hours later by 2-hour OFF timer function.
- Test run can be performed by the remote controller.
- The remote controller display of test run by outdoor unit is the same as that of test run by remote controller.
- If test run is set with the outdoor unit, the test run is performed for all indoor units.
- The remote controller operation becomes unavailable once the test run is set with the outdoor unit.

- A few seconds after the compressor starts, a clanging noise may be heard from the inside of the outdoor unit. The noise is coming from the check valve due to the small difference in pressure in the pipes. The unit is not faulty.

When a test run is started by “Using SW3 in outdoor unit”, even if it carries out stop instructions by remote controller, outdoor unit does not stop. A test run is not ended.
In this case, please set SW3 in outdoor unit to off.

- **After power is supplied or after an operation stops for a while, a small clicking noise may be heard from the inside of the branch box. The electronic expansion valve is opening and closing. The unit is not faulty.**

Note: Be sure to wait at least 3 minutes after turning on the power supply before setting SW3-1 and SW3-2.
If the DIP switches are set before 3 minutes has elapsed, the test run may not start.

8-3-3. Countermeasures for Error During Test Run

• If a problem occurs during test run, a code number will appear on the remote controller (or LED on the outdoor unit), and the air conditioning system will automatically cease operating.

Determine the nature of the abnormality and apply corrective measures.

Check code	Trouble	Detected Unit			Remarks
		Indoor	Outdoor	Remote Controller	
0403	Serial communication error		○		Outdoor unit Multi controller board ~ Power board communication trouble
1102	Compressor temperature		○		Check delay code 1202
1302	High pressure		○		Check delay code 1402
1500	Superheat due to low discharge temperature		○		Check delay code 1600
1501	Refrigerant shortage		○		Check delay code 1601
	Blocked valve in cooling mode		○		Check delay code 1501
1503	Indoor HEX freezing protection		○		
1508	4-way valve trouble in heating mode		○		Check delay code 1608
2500	Water leakage	○			
2502	Drain over flow protection	○			
2503	Drain sensor abnormality	○			
4100	Compressor current interruption (locked compressor)		○		Check delay code 4350
4210	Compressor overcurrent interruption		○		
4220	Voltage shortage/overvoltage/PAM error/L1open phase/power synchronization signal error		○		Check delay code 4320
4230	Heat sink temperature		○		Check delay code 4330
4250	Power module		○		Check delay code 4350
4400	Rotational frequency of outdoor fan motor		○		Check delay code 4500
5101	Air inlet thermistor trouble (TH21) or	○			
	Compressor temperature thermistor (TH4) open/short		○		Check delay code 1202
5102	Liquid pipe temperature thermistor trouble (TH22)	○			
	Suction pipe temperature thermistor (TH6) open/short		○		Check delay code 1211
5103	Gas pipe temperature thermistor trouble (TH23)	○			
5105	Outdoor liquid pipe temperature thermistor (TH3) open/short		○		Check delay code 1205
5106	Ambient thermistor (TH7) open/short		○		Check delay code 1221
5109	HIC pipe temperature thermistor (TH2) open/short		○		Check delay code 1222
5110	Heat sink temperature thermistor (TH8) open/short		○		Check delay code 1214
5201	High pressure sensor (63HS)		○		Check delay code 1402
5202	Low pressure sensor (63LS)		○		Check delay code 1400
5300	Primary current		○		Check delay code 4310
5701	Contact failure of drain float switch	○			
6600	Duplex address error	○	○	○	Only M-NET Remote controller is detected.
6602	Transmission processor hardware error	○	○	○	Only M-NET Remote controller is detected.
6603	Transmission bus BUSY error	○	○	○	Only M-NET Remote controller is detected.
6606	Signal communication error with transmission processor	○	○	○	Only M-NET Remote controller is detected.
6607	No ACK error	○		○	Only M-NET Remote controller is detected.
6608	No response frame error	○		○	Only M-NET Remote controller is detected.
6831	MA communication receive error (no receive signal)	○		○	Only MA Remote controller is detected.
6832	MA communication send error	○		○	Only MA Remote controller is detected.
6833	MA communication send error	○		○	Only MA Remote controller is detected.
6834	MA communication receive error	○		○	Only MA Remote controller is detected.
7100	Total capacity error		○		
7101	Capacity code error	○	○		
7102	Connecting excessive number of units and branch boxes		○		
7105	Address setting error		○		
7130	Incompatible unit combination		○		

Note:
When the outdoor unit detects No ACK error/No response error, an object indoor unit is treated as a stop, and not assumed to be abnormal.

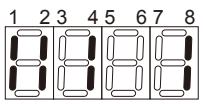
● Self-diagnosis function
The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED1, LED2 (LED indication) found on the multi-controller of the outdoor unit.
LED indication : Set all contacts of SW1 to OFF.

● During normal operation
The LED indicates the drive state of the controller in the outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	SV2*	—	—	Always lit

*SV2 is not equipped to MXZ-8C48NA.

[Example]
When the compressor and SV1 are turned during cooling operation.



8-4. SELF-DIAGNOSIS ACTION BY FLOWCHART

Check code

0403

Serial communication error

Abnormal points and detection methods	Causes and check points
Abnormal if serial communication between the outdoor controller board and outdoor power board is defective.	①Wire breakage or contact failure of connector CN2 or CN4 ②Malfunction of power board communication circuit on outdoor controller board ③Malfunction of communication circuit on outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Check the connection of the communication line (CN2 and CN4) between the outdoor controller board and power board. Are they connected normally? No → Connect the CN2 and CN4 properly. Replace them in case of a breakage. Yes → The communication circuit of either the outdoor controller board or power board is defective. If unable to identify the defective circuit; ①Replace the outdoor controller board if it does not recover, ②Replace the outdoor power board.	

Check code

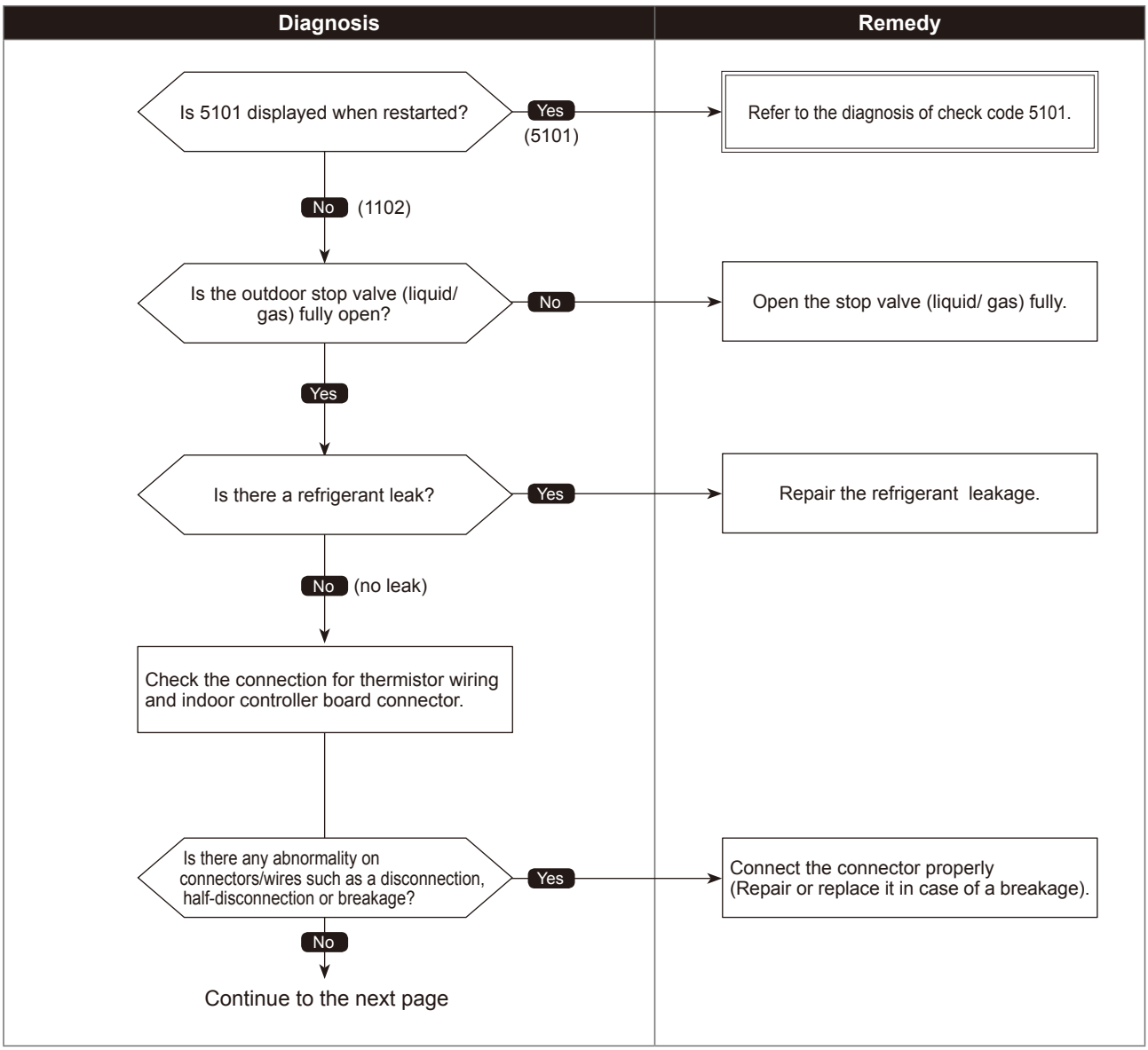
1102

Compressor temperature trouble

Abnormal points and detection methods	Causes and check points
(1) Abnormal if TH4 falls into following temperature conditions; ●exceeds 230°F [110℃] continuously for 5 minutes ●exceeds 257°F [125℃] (2) Abnormal if a pressure detected by the high-pressure sensor and converted to saturation temperature exceeds 104°F [40℃] during defrosting, and TH4 exceeds 230°F [110℃]. TH4: Thermistor <Compressor> LEV: Electronic expansion valve	①Malfunction of stop valve ②Over-heated compressor operation caused by shortage of refrigerant ③Defective thermistor ④Defective outdoor controller board ⑤LEV performance failure ⑥Defective indoor controller board ⑦Clogged refrigerant system caused by foreign object ⑧Refrigerant shortage while in heating operation (Refrigerant liquid accumulation in compressor while indoor unit is OFF/thermo-OFF.)

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



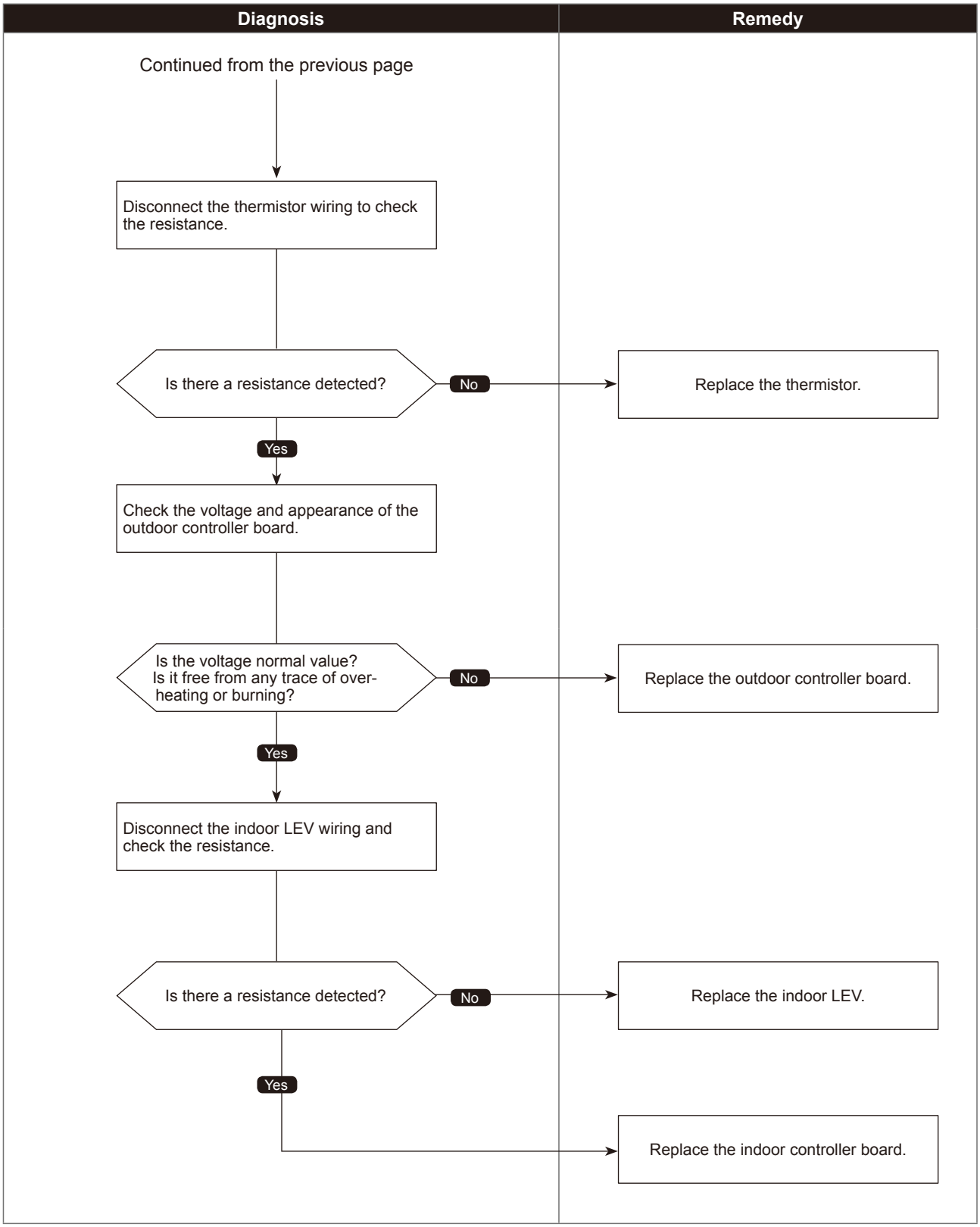
Check code

1102

Compressor temperature trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

1302

High pressure trouble

Abnormal points and detection methods	Causes and check points
(1) High pressure abnormality (63H operation) Abnormal if 63H operates(*) during compressor operation. (*4.15 MPa) (2) High pressure abnormality (63HS detected) Abnormal if a pressure detected by 63HS exceeds 4.15 MPa during compressor operation. 63H : High-pressure switch 63HS: High-pressure sensor LEV : Electronic expansion valve SV1 : Solenoid valve TH7 : Thermistor <Ambient>	① Defective operation of stop valve (not fully open) ② Clogged or broken pipe ③ Malfunction or locked outdoor fan motor ④ Short-cycle of outdoor unit ⑤ Dirt of outdoor heat exchanger ⑥ Remote controller transmitting error caused by noise interference ⑦ Contact failure of the outdoor controller board connector ⑧ Defective outdoor controller board ⑨ Short-cycle of indoor unit ⑩ Decreased airflow, clogged filter, or dirt on indoor unit. ⑪ Malfunction or locked indoor fan motor ⑫ Decreased airflow caused by defective inspection of outdoor temperature thermistor (It detects lower temperature than actual temperature.) ⑬ Indoor LEV performance failure ⑭ Malfunction of fan driving circuit ⑮ SV1 performance failure ⑯ Defective high-pressure sensor ⑰ Defective high-pressure sensor input circuit on outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Is 5201 displayed when restarted? — Yes (5201)	Refer to the diagnosis of check code 5201.
No (1302)	
Is the outdoor stop valve (liquid/ gas) fully open? — No	Open the stop valve (liquid/ gas) fully.
Yes	
Does the outdoor fan rotate while the operation? — No	Check the outdoor fan motor. Refer to "How to check the parts" on the outdoor unit service manual.
Yes	
Does the indoor fan rotate while the operation? — No	Check the indoor fan motor. Refer to "How to check the parts" on the indoor unit servive manual.
Yes	
Is the indoor unit short-cycled? — Yes (short-cycled)	Solve the short-cycle.
No (no short-cycle)	
Continue to the next page	

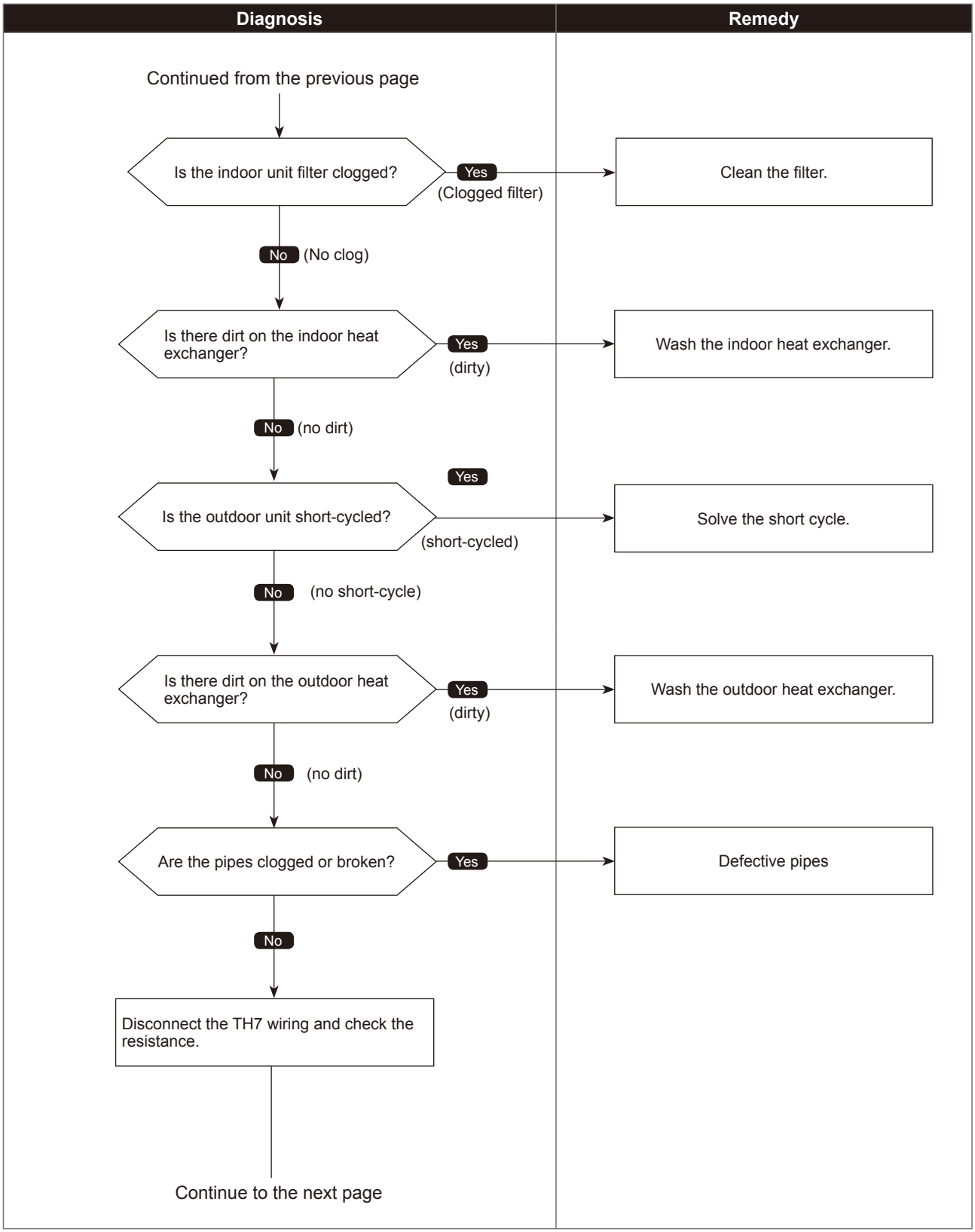
Check code

1302

High pressure trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



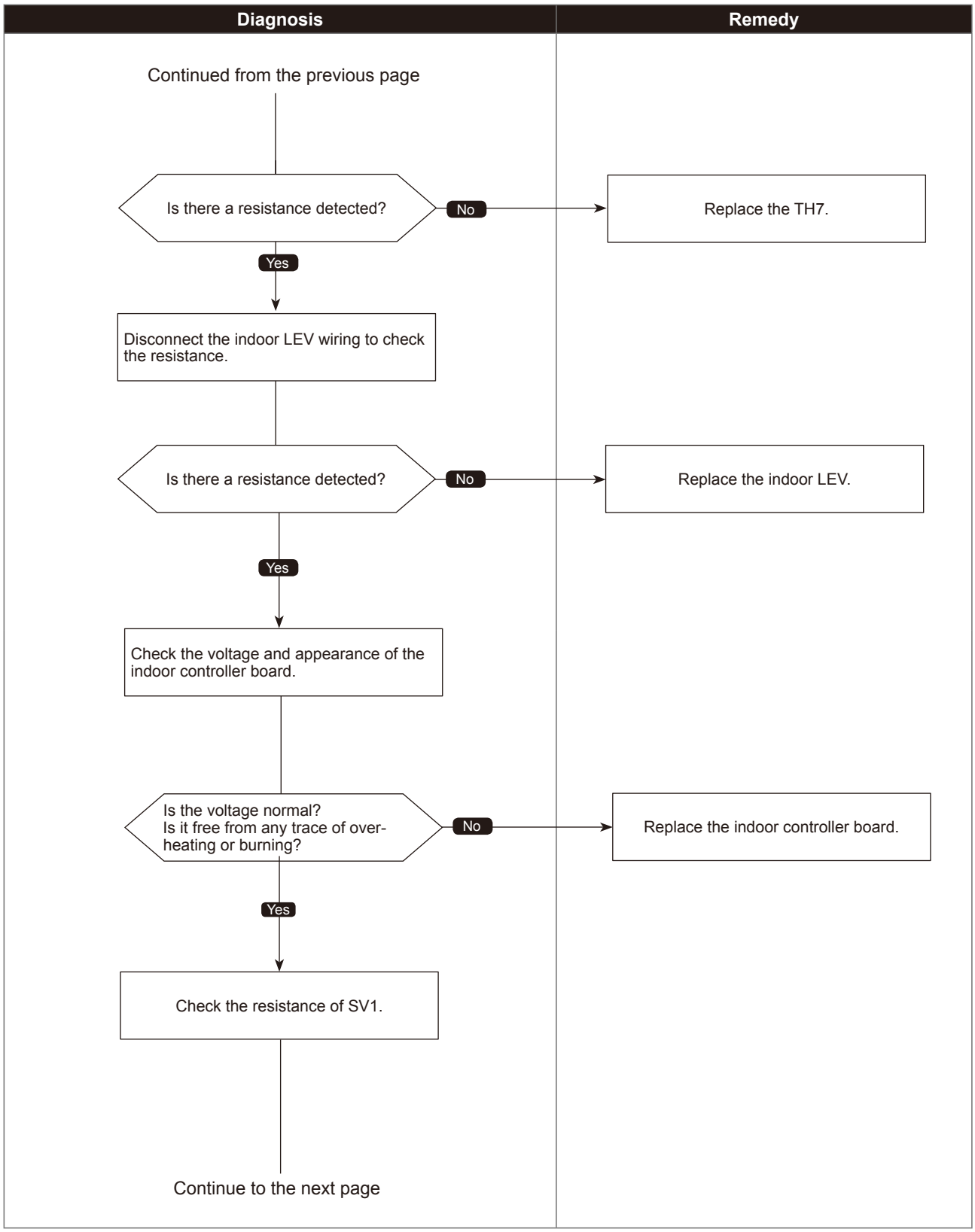
Check code

1302

High pressure trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



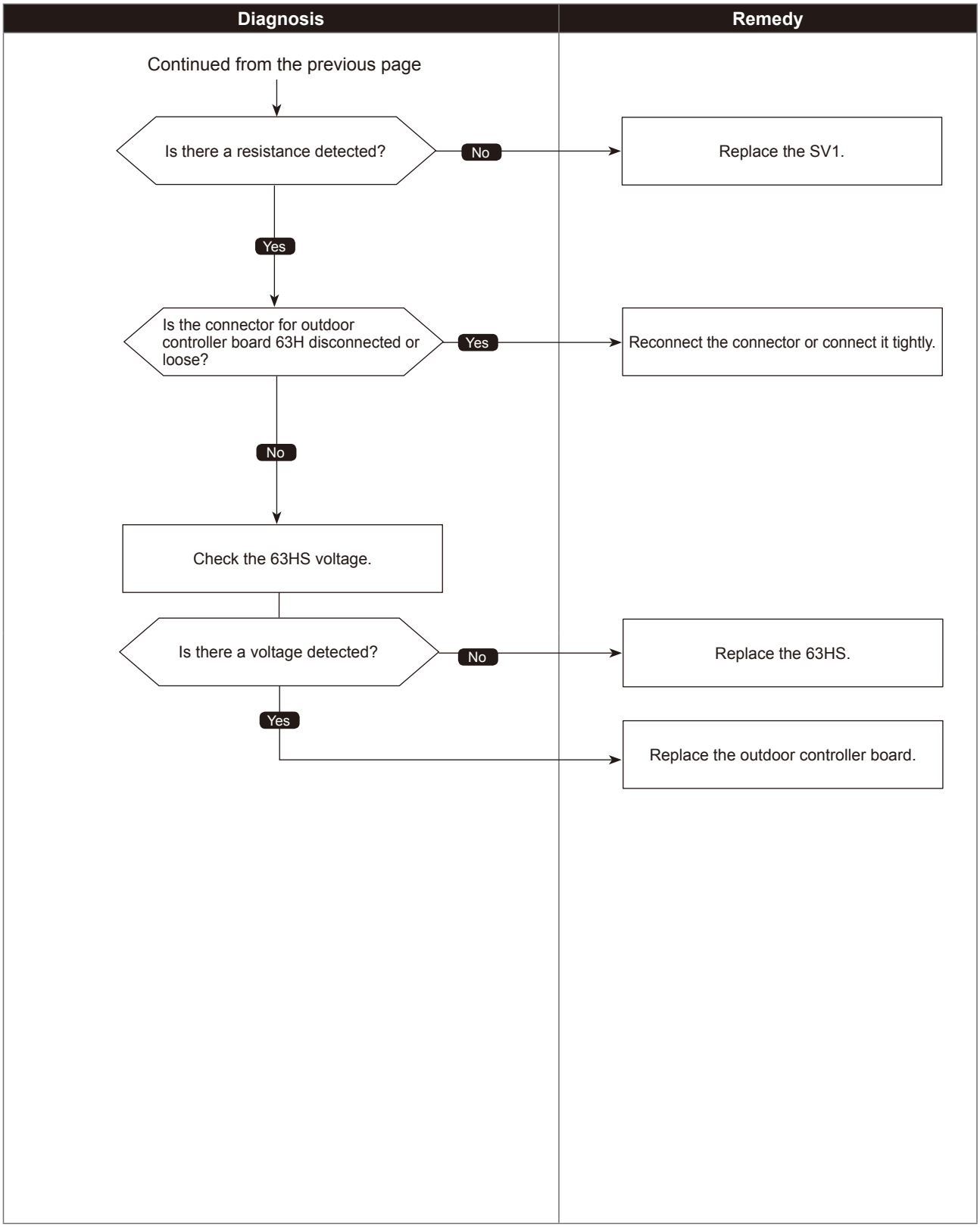
Check code

1302

High pressure trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

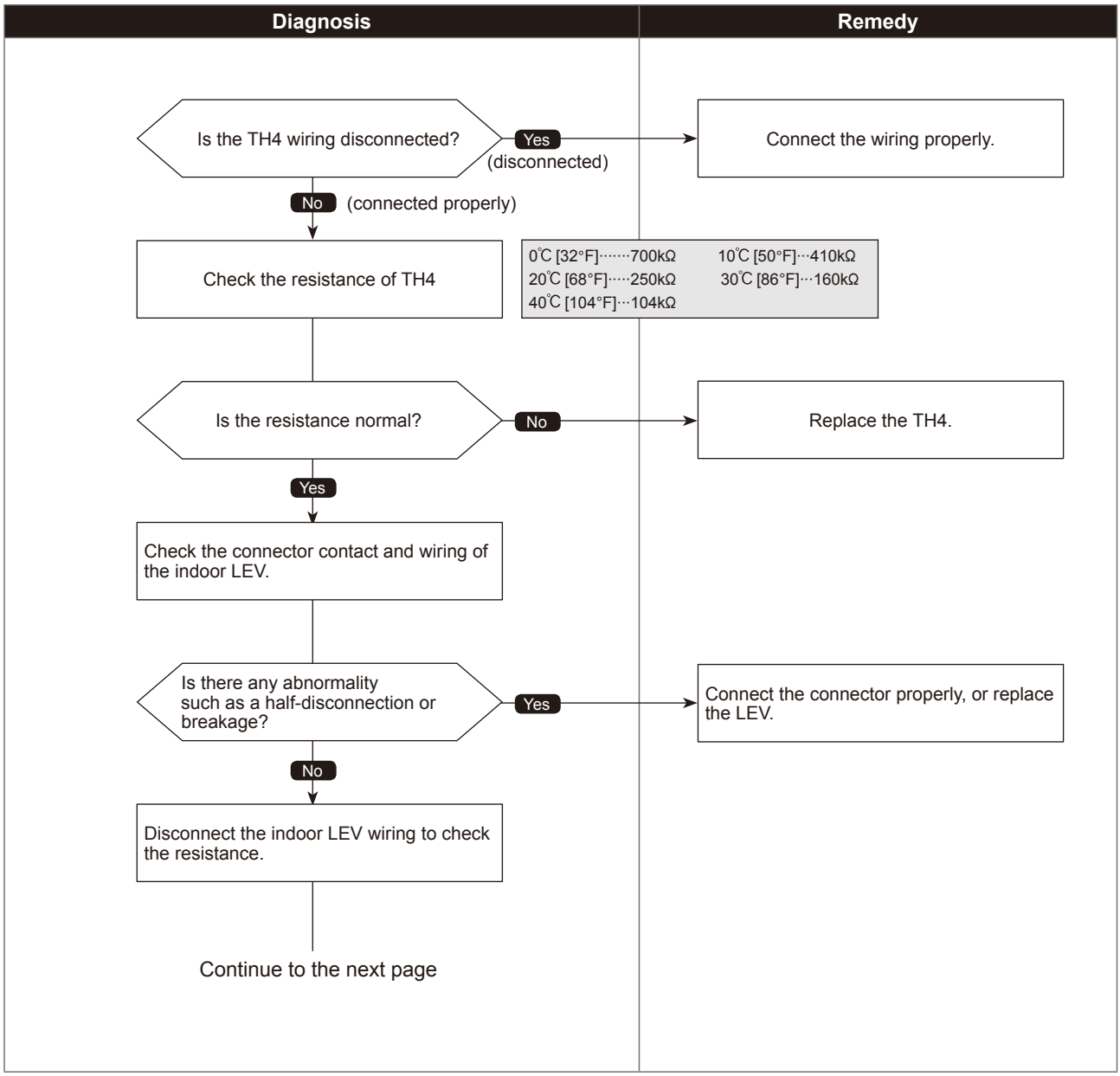
1500

Superheat due to low discharge temperature trouble

Abnormal points and detection methods	Causes and check points
Abnormal if the discharge superheat is continuously detected less than or equal to 5°F [−15℃]* for 5 minutes even though the indoor LEV has minimum open pulse after the compressor starts operating for 10 minutes. LEV : Electronic expansion valve TH4 : Thermistor <Compressor> 63HS : High-pressure sensor *At this temperature, conditions for the abnormality detection will not be satisfied if no abnormality is detected on either TH4 or 63HS.	① Disconnection or loose connection of TH4 ② Defective holder of TH4 ③ Disconnection of LEV coil ④ Disconnection of LEV connector ⑤ LEV performance failure

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



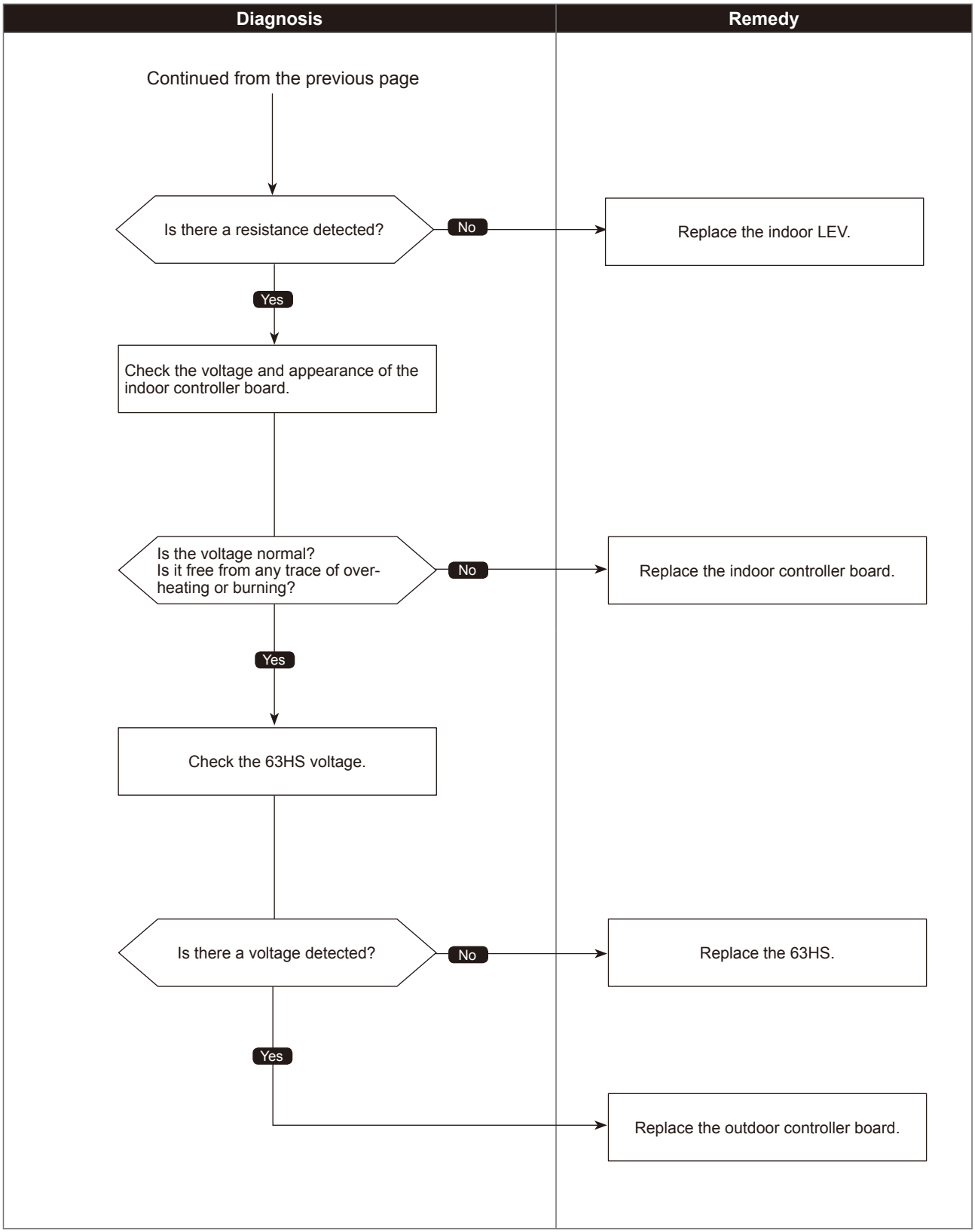
Check code

1500

Superheat due to low discharge temperature trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

1501

Refrigerant shortage trouble

Abnormal points and detection methods	Causes and check points
(1) Abnormal when all of the following conditions are satisfied: 1. The compressor is operating in HEAT mode. 2. Discharge super heat is 176°F [80℃] or more. 3. Difference between TH7 and the TH3 applies to the formula of (TH7−TH3 < 41°F [5℃]). 4.The 63HS detects below 2.04 MPa. (2) Abnormal when all of the following conditions are satisfied: 1.The compressor is in operation. 2.When cooling, discharge superheat is 176°F [80℃] or more. 3. When heating, discharge superheat is 194°F [90℃] or more. 4. The High-pressure sensor detects below 2.32 MPa	①Defective operation of stop valve (not fully open) ②Defective thermistor ③Defective outdoor controller board ④Indoor LEV performance failure ⑤Gas leakage or shortage ⑥Defective 63HS TH3 : Thermistor <Outdoor liquid pipe> TH7 : Thermistor <Ambient> LEV : Electronic expansion valve 63HS: High-pressure sensor

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Is the outdoor stop valve (ball valve) fully open? — No	Open the stop valve (ball balve) fully.
Yes	
Is there a refrigerant leak? — Yes (leaking)	Repair the refrigerant leak.
No (no leaking)	
Is 5104 displayed when restarted? — Yes (5104)	Refer to the diagnosis of check code 5104.
No (1501)	
Check relevant thermistor wirings and connector contacts of the controller boards.	
Is there any abnormality on connectors such as a disconnection, half-disconnection or breakage? — Yes	Connect the connector properly. (Repair or replace it in case of a breakage.)
No	
Disconnect the thermistor wiring and check the resistance.	
Continue to the next page	

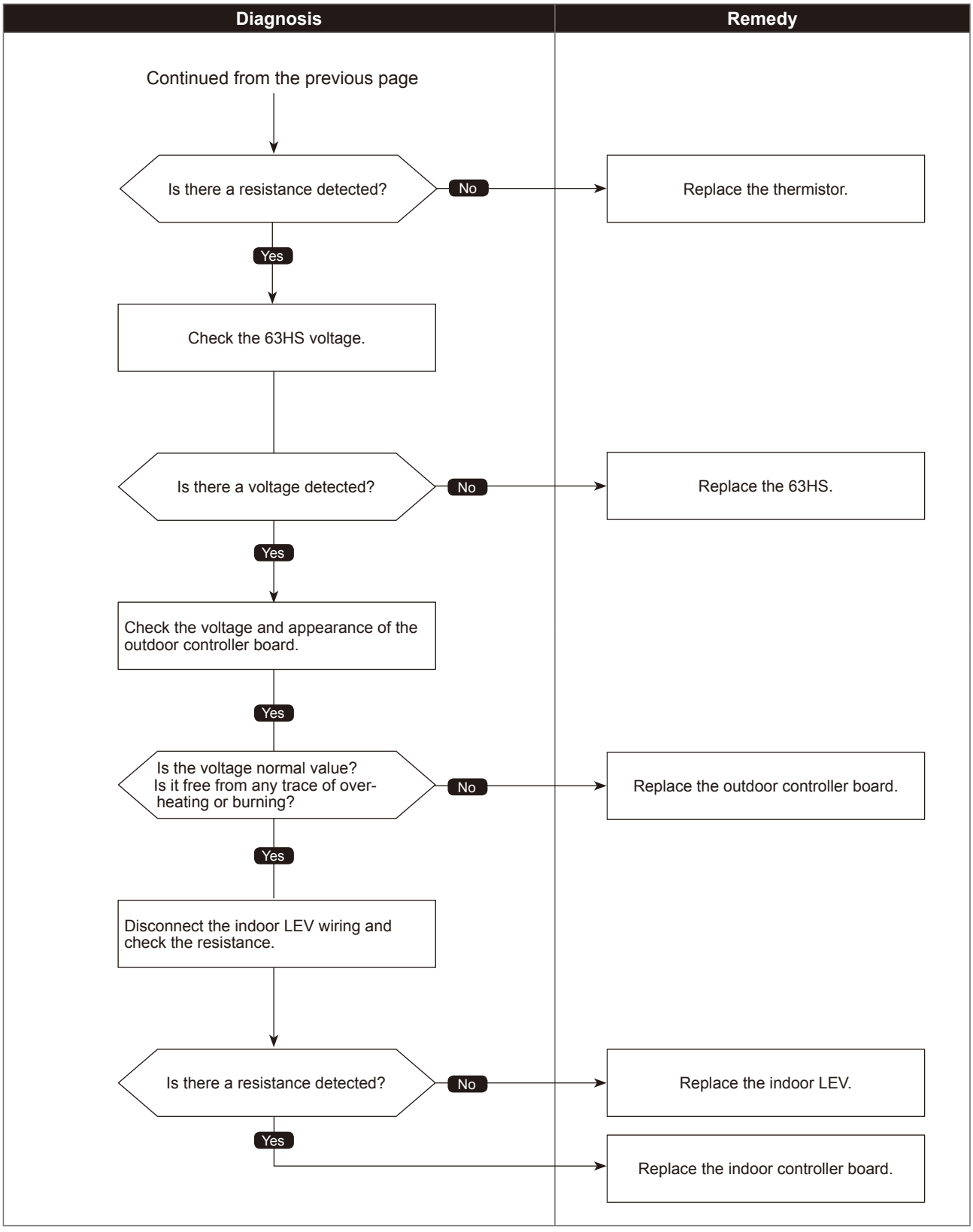
Check code

1501

Refrigerant shortage trouble

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

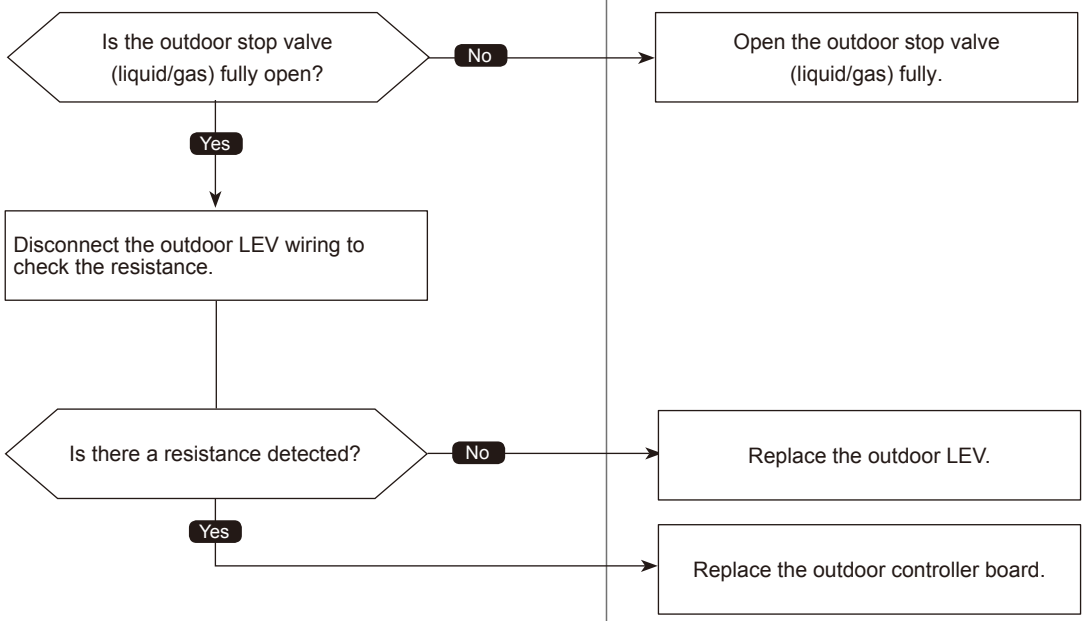
1501

Blocked valve in cooling mode

Abnormal points and detection methods	Causes and check points
Abnormal if stop valve is blocked during cooling operation. Abnormal when both of the following temperature conditions are satisfied for 20 minutes or more during cooling operation. 1. TH22j − TH21j ≧ 28.4°F [−2°C] 2. TH23j − TH21j ≧ 28.4°F [−2°C] Note: For indoor unit, the abnormality is detected if an operating unit satisfies the condition.	① Outdoor liquid/gas valve is blocked. ② Mulfunction of outdoor LEV (LEV-A) (blockage) TH21: Indoor intake temperature thermistor (RT11 or TH1) TH22: Indoor liquid pipe temperature thermistor (RT13 or TH2) TH23: Branch box gas pipe temperature thermistor (TH-A to E) LEV: Electronic expansion valve

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
	

Check code

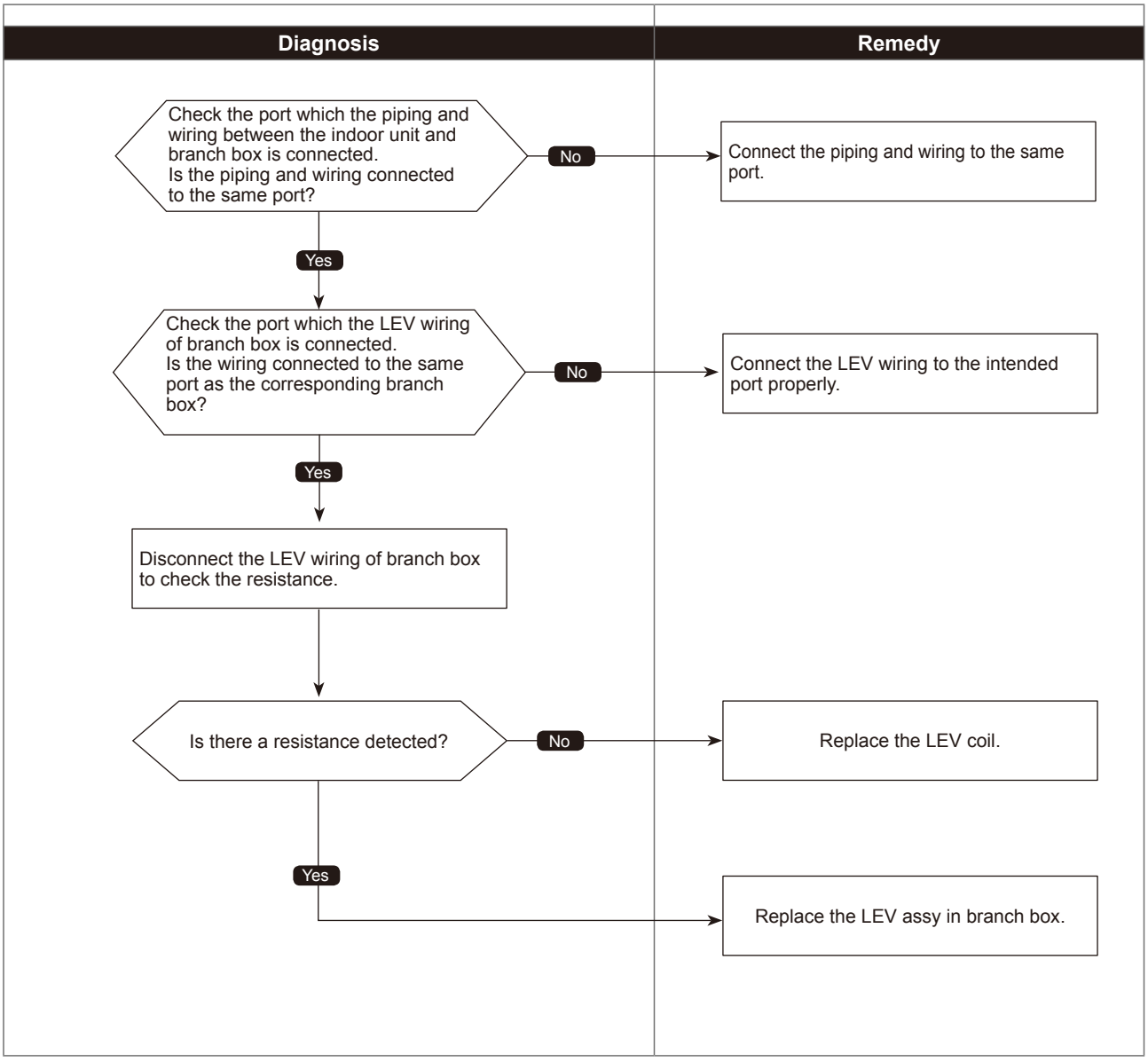
1503

Indoor HEX freezing protection

Abnormal points and detection methods	Causes and check points
The purpose of the check code is to prevent indoor unit from freezing or dew condensation which is caused when a refrigerant keeps flowing into the unit in STOP. Abnormal when all of the following conditions are satisfied: 1. The compressor is operating in COOL mode. 2. 15 minutes have past after the start-up of the compressor, or the change in the number of operating indoor units is made (including a change by turning thermo-ON/OFF). 3. After the condition 2 above is satisfied, the thermistor of indoor unit in STOP detects TH22j ≦ 23°F [−5℃] for 5 consecutive minutes.	①Wrong piping connection between indoor unit and branch box ②Miswiring between indoor unit and branch box ③Miswiring of LEV in branch box ④Malfunction of LEV in brach box

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

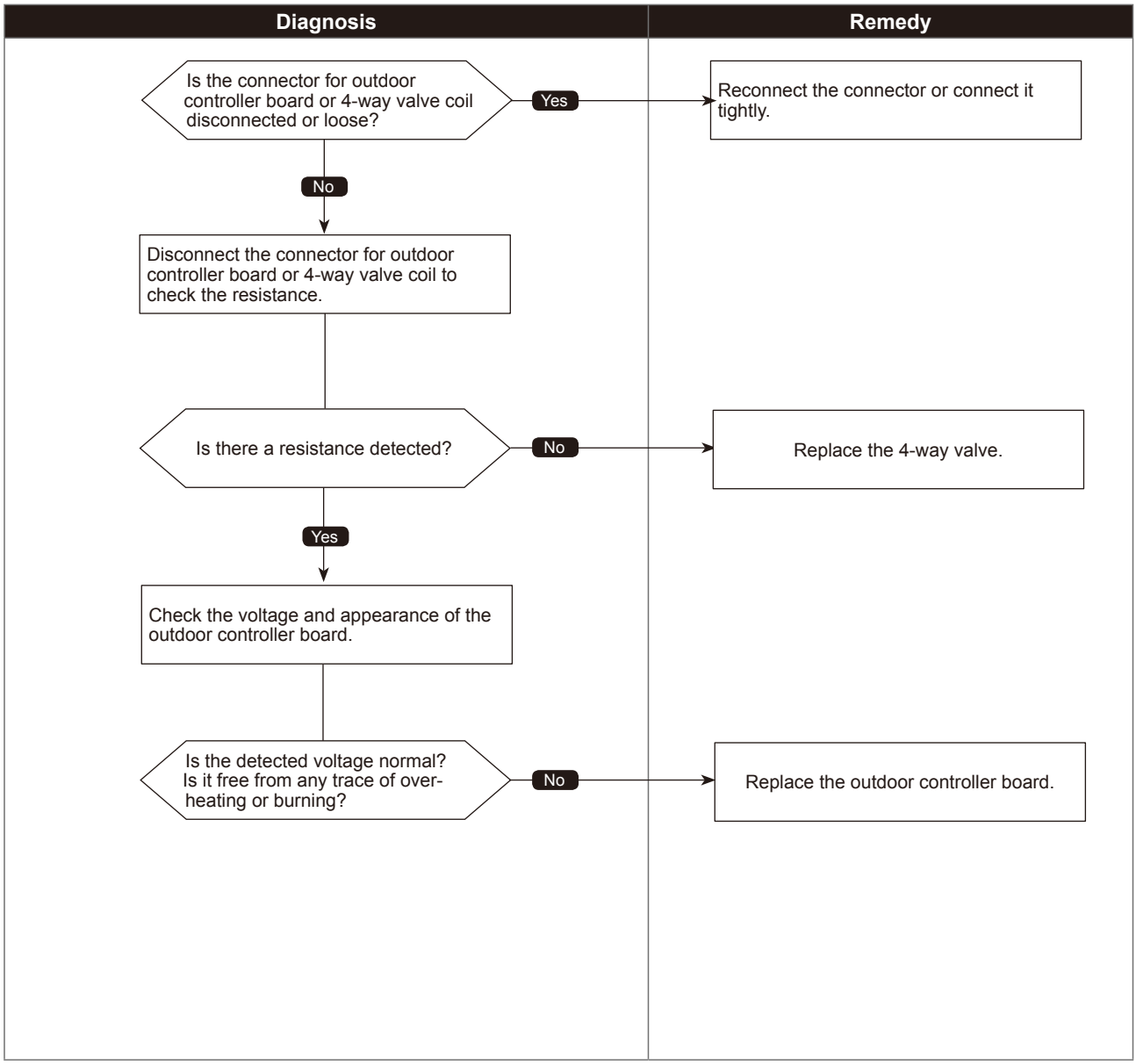
1508

4-way valve trouble in heating mode

Abnormal points and detection methods	Causes and check points
Abnormal if 4-way valve does not operate during heating operation. Abnormal when any of the following temperature conditions is satisfied for 3 minutes or more during heating operation 1. TH22j − TH21j ≧ 14°F [−10°C] 2. TH23j − TH21j ≧ 14°F [−10°C] 3. TH22j ≦ 37.4°F [3℃] 4. TH23j ≦ 37.4°F [3℃] Note: For indoor unit, the abnormality is detected if an operating unit satisfies the condition.	①4-way valve failure ②Disconnection or failure of 4-way valve coil ③Clogged drain pipe ④Disconnection or loose connection of connectors ⑤Malfunction of input circuit on outdoor controller board ⑥Defective outdoor power board TH21: Indoor intake temperature thermistor (RT11 or TH1) TH22: Indoor liquid pipe temperature thermistor (RT13 or TH2) TH23: Branch box gas pipe temperature thermistor (TH-A to E)

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

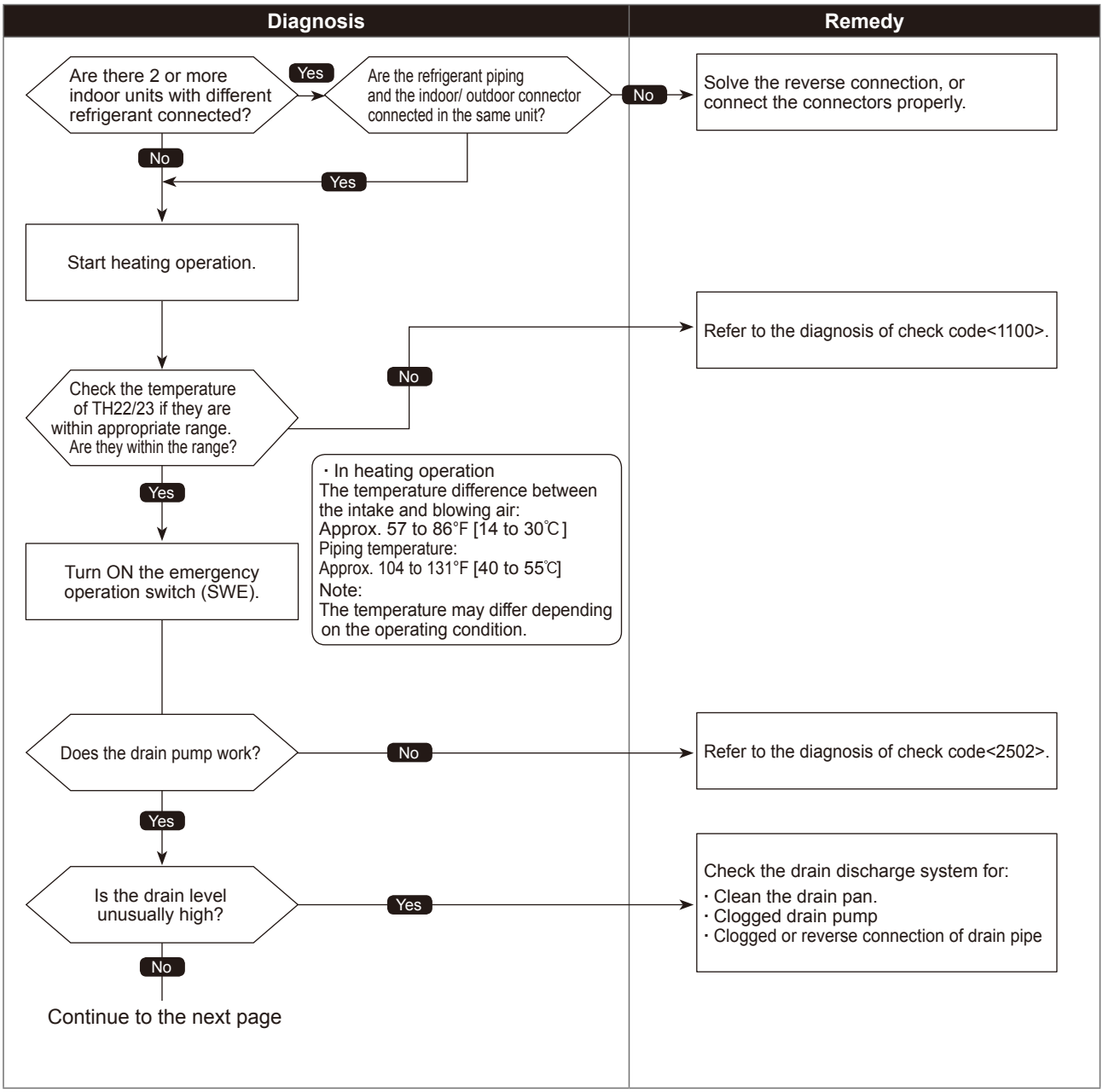
2500

Water leakage

Abnormal points and detection methods	Causes and check points
Abnormal if drain sensor or float switch detects to be in the water during cooling or dry operation. **To release this abnormality, reset the power (turn OFF and ON).** TH21: Indoor intake temperature thermistor (RT11 or TH1) TH22: Indoor liquid pipe temperature thermistor (RT13 or TH2) TH23: Branch box gas pipe temperature thermistor (TH-A to E)	① Reverse connection of extended piping (when connecting multiple units) ② Reverse connection of indoor/ outdoor connector ③ Defective thermistor of TH21 or TH22/23 ④ Defective drain sensor or float switch ⑤ Defective drain pump ⑥ Poor drainage ・Clogged drain pump ・Clogged drain pipe

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



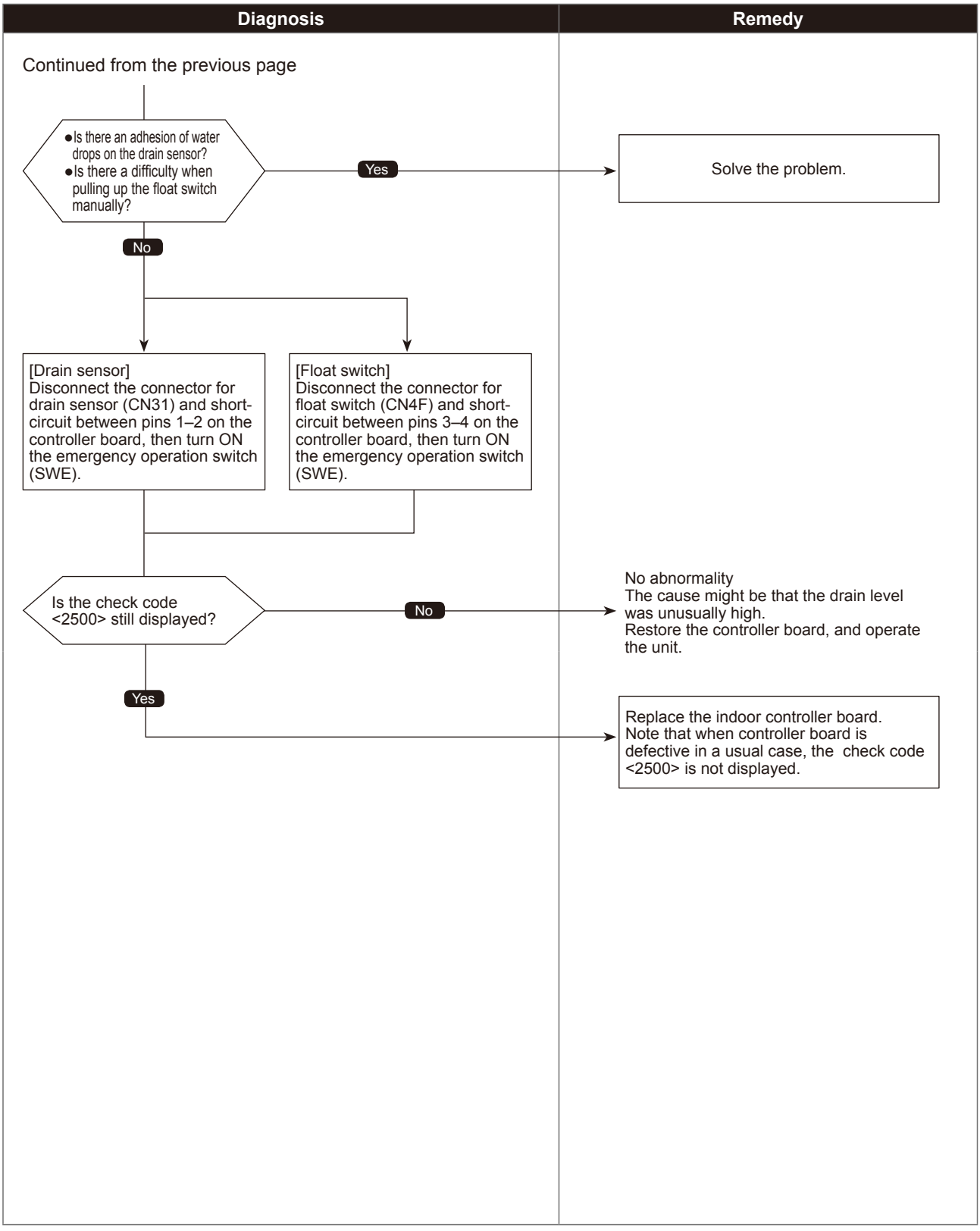
Check code

2500

Water leakage

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards



Check code

2502

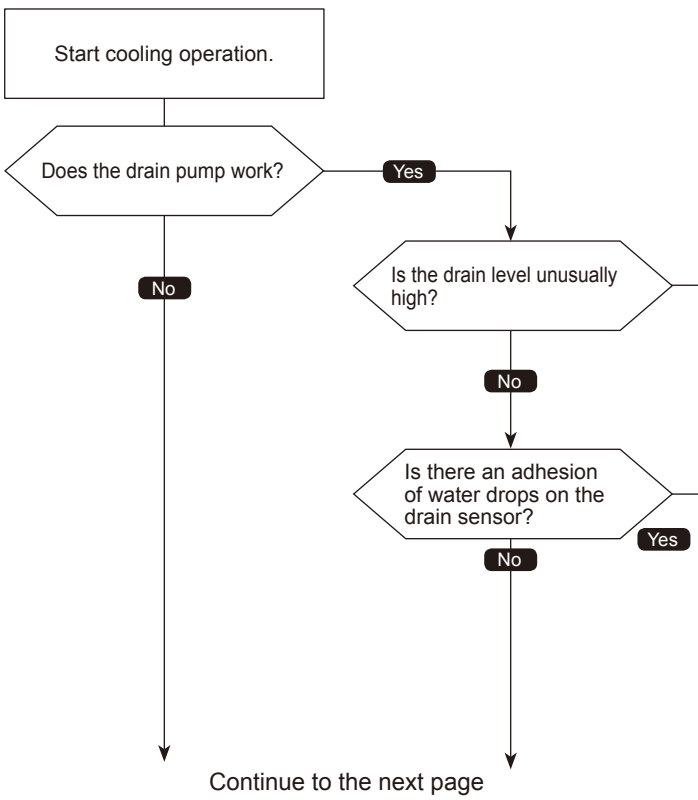
<Drain sensor models>

Drain overflow protection

Abnormal points and detection methods	Causes and check points
Drain pump (DP) ①Let drain sensor self-heated, and if temperature rises slightly, as suspensive abnormality operation stops and changes to protect mode of restarting in 3 minutes. ②Drain pump is abnormal if the condition above is detected during suspensive abnormality. <2502> is displayed. ③Malfunction of drain pipe is constantly detected during drain pump operation. ④The unit enters to forced outdoor unit stop when following conditions, ⓐ and ⓑ, are satisfied (while the above mentioned detection is performed). ⓐThe drain sensor detects to be soaked in the water 10 times in a row. ⓑDetected that [liquid pipe temperature − room temperature] ≦ 14°F [−10℃] for 30 minutes constantly. Notes: 1. When the drain sensor detects to be NOT soaked in the water, the detection record of ⓐ and ⓑ will be cleared.) 2. Drain pump abnormality (above ①–③ is detected before it becomes an outdoor unit forced stop condition). ⑤When indoor unit detects above ④ condition, outdoor unit in the same refrigerant sytem stops. Also, indoor unit except for Fan or OFF mode unit stop. <2502> is displayed on stopped unit. ⑥Detection timing of forced outdoor unit stop Constantly detected during unit operation and stop ⑦Releasing of forced outdoor unit stop Reset power supply of both abnormal indoor unit and its outdoor unit in same refrigerant system. Forced outdoor unit stop cannot be released by remote controller OFF. Note: Above-mentioned①–③ and ④–⑦ are detected independently.	① Malfunction of drain pump ② Defective drain Clogged drain pump Clogged drain pipe ③ Water drops on drain sensor Drops of drain trickles from lead wire Clogged filter is causing wave of drain ④ Defective indoor controller board ⑤ Both of above mentioned ①–④ and the indoor linear expansion valve full-closed failure (leakage) happens synchronistically Note: Address/Attribute displayed on the remote controller shows the indoor unit which is the cause of trouble.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
	

Check code

2502

<Drain sensor models>

Drain overflow protection

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy

Continued from the previous page

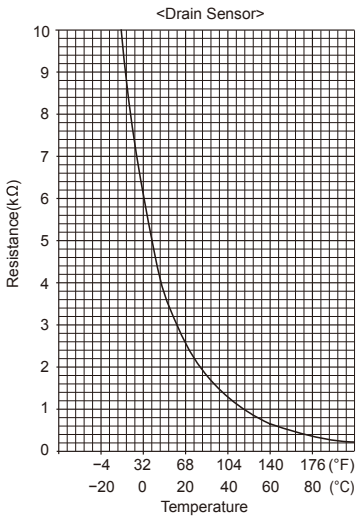
Is the resistance of drain sensor normal?

No → Replace the drain sensor.

<How to check the resistance>

Disconnect the connector for drain sensor from the indoor controller board to check the resistance using a tester.

Temperature		Resistance
0℃	[32°F]	6.0 kΩ
10℃	[50°F]	3.9 kΩ
20℃	[68°F]	2.6 kΩ
25℃	[77°F]	2.2 kΩ
30℃	[86°F]	1.8 kΩ
40℃	[104°F]	1.3 kΩ
60℃	[140°F]	0.6 kΩ



No

Yes

Disconnect the connector for drain sensor (CN31) and short-circuit between pins 1–2 on the controller board, then start cooling operation.

Is the check code <2502> still displayed?

No → No abnormality
The cause might be that the drain level was unusually high.
Restore the drain sensor, and operate the unit.

Yes

Is the connector CNP connected properly?

No → Connect the connector (CN4) properly.

Yes

Turn ON the emergency operation switch (SWE).

Is 200 V AC output on the connector CNP?

No → Replace the indoor controller board.

Yes

Continue to the next page

Check code

2502

<Drain sensor models>

Drain overflow protection

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Continued from the previous page Yes Check the voltage on both ends of the branch connector. Is 200 V AC output? No Yes	Check the branch connector for breakage or contact failure. Replace the drain pump.

Check code

2502

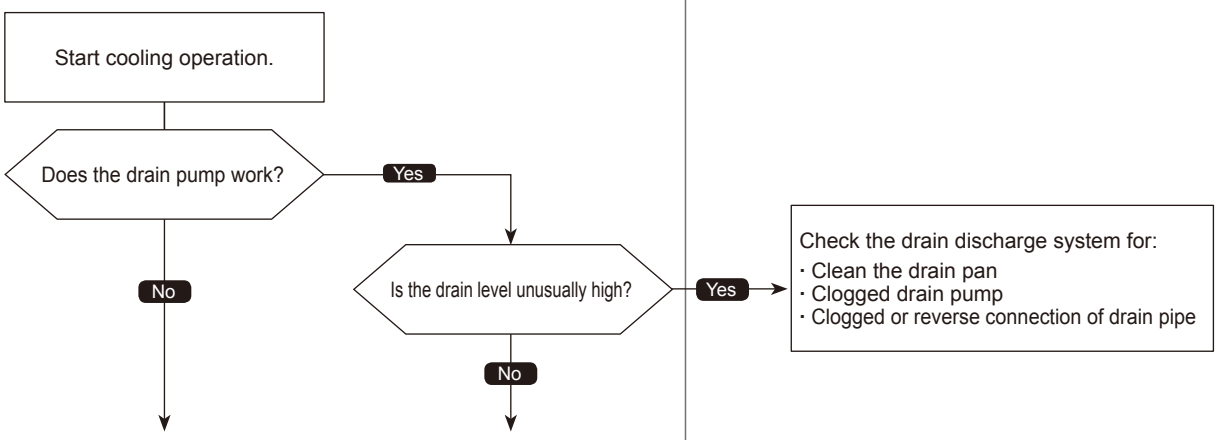
<Float switch models>

Drain overflow protection

Abnormal points and detection methods	Causes and check points
Drain pump (DP) ①Judge whether the sensor is in the water or in the air by turning the float switch ON/OFF. In the water: Detected that the float switch is ON for 15 seconds. In the air: Detected that the float switch is OFF for 15 seconds. ②When the float switch remains to be turned ON for 3 minutes after detected to be in the water, the drain pump is judged to be abnormal and <2502> will be displayed. Note: It takes 3 minutes and 15 seconds to detect abnormality including the time to judge to be in the water. ③The unit continue to detect abnormality while turned off. ④When the conditions below 1, 2 and forced outdoor unit stop condition are met 1. Detected that [liquid pipe temperature − room temperature] ≦ 14°F [−10℃] for 30 minutes constantly. 2. Float switch detects to be in the water for 15 minutes constantly. Note: Before Forced outdoor unit stop condition is met, the unit always detects ①–③ above. ⑤The indoor unit detecting ④ above stops due to detecting abnormality the outdoor unit in same refrigerant system compressor is inhibited to operate). The unit which stops due to detecting abnormality displays <2502>. ⑥Detection timing of forced outdoor unit stop Constantly detected during unit operation and stop ⑦Releasing of forced outdoor unit stop Reset power supply of both abnormal indoor unit and its outdoor unit in same refrigerant system. Forced outdoor unit stop cannot be released by remote controller OFF. Note: Above-mentioned ①–③ and ④–⑦ are detected independently.	① Malfunction of drain pump ② Defective drain Clogged drain pump Clogged drain pipe ③ Defective moving part of float switch Foreign matter on the moving part of float switch (ex. sludge, etc.) ④ Defective float switch ⑤ Defective indoor controller board Defective driving circuit of drain pump Defective input circuit of float switch ⑥ Both of above mentioned ①–⑤ and the indoor linear expansion valve full-closed failure (leakage) happens synchronistically. Note: Address/Attribute displayed on the remote controller shows the indoor unit which is the cause of trouble.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis	Remedy
 Continue to the next page	

Check code

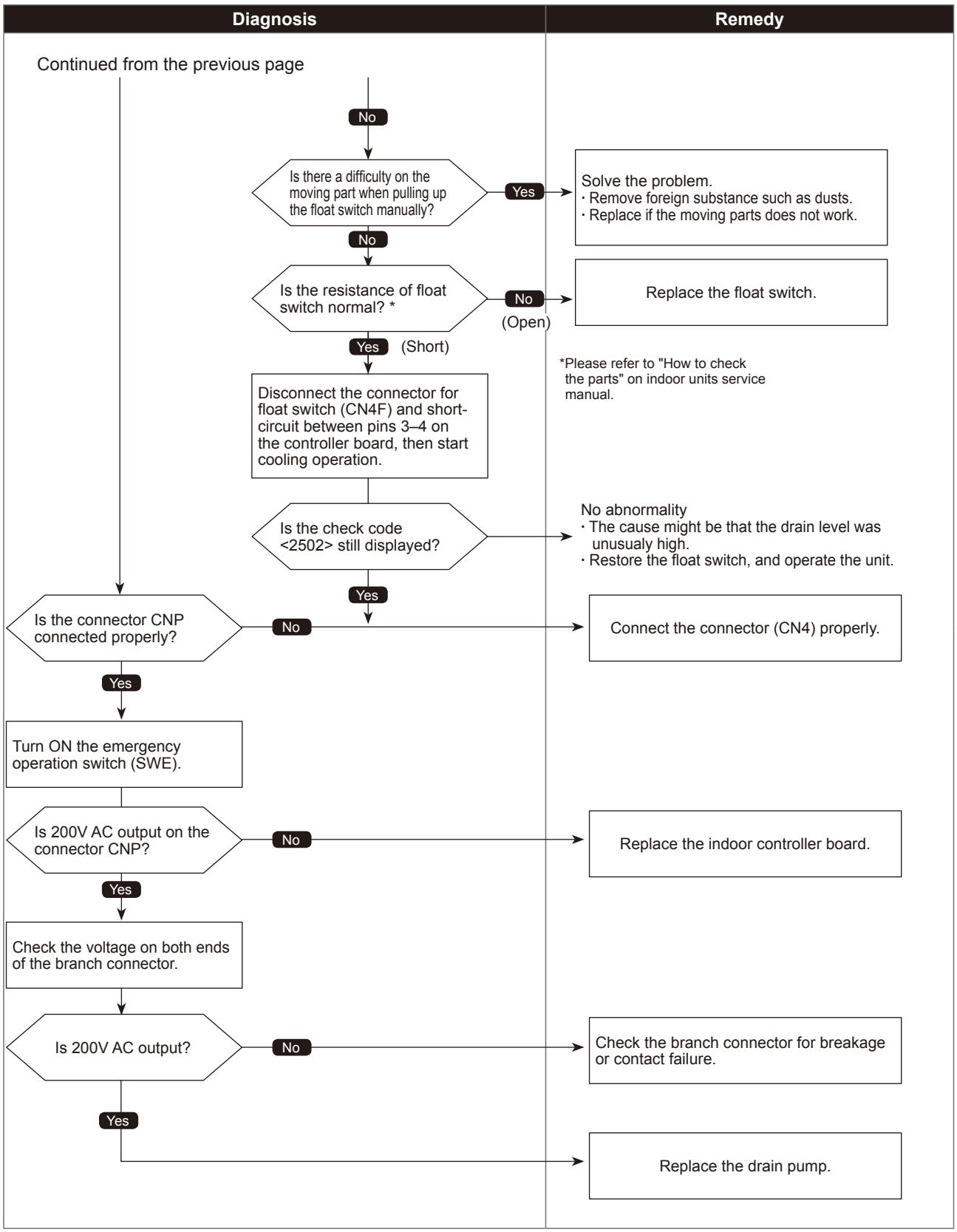
2502

<Float switch models>

Drain overflow protection

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

2503

<Drain sensor models>

Drain senor abnormality

Abnormal points and detection methods	Causes and check points
<Drain sensor models> Abnormal if drain sensor detects to be short/ open .	①Contact failure of connector CN31 ②Characteristic defect of thermistor ③Breakage or contact failure of drain sensor wiring. ④Replace the indoor controller board.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis

[Drain sensor models]

Check the drain sensor connector (CN31) for disconnection or looseness.

Is it connected normally?

No → Connect it properly. Turn the power back ON, then check the operation.

Yes

Is the resistance of thermistor normal?

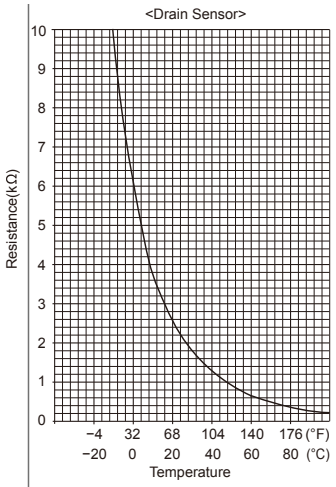
No → Replace the drain sensor.

Yes → Replace the indoor controller board.

<How to check the resistance>

Disconnect the connector for drain sensor from the indoor controller board to check the resistance using a tester.

Temperature		Resistance
0℃	[32°F]	6.0 kΩ
10℃	[50°F]	3.9 kΩ
20℃	[68°F]	2.6 kΩ
25℃	[77°F]	2.2 kΩ
30℃	[86°F]	1.8 kΩ
40℃	[104°F]	1.3 kΩ
60℃	[140°F]	0.6 kΩ



Check code

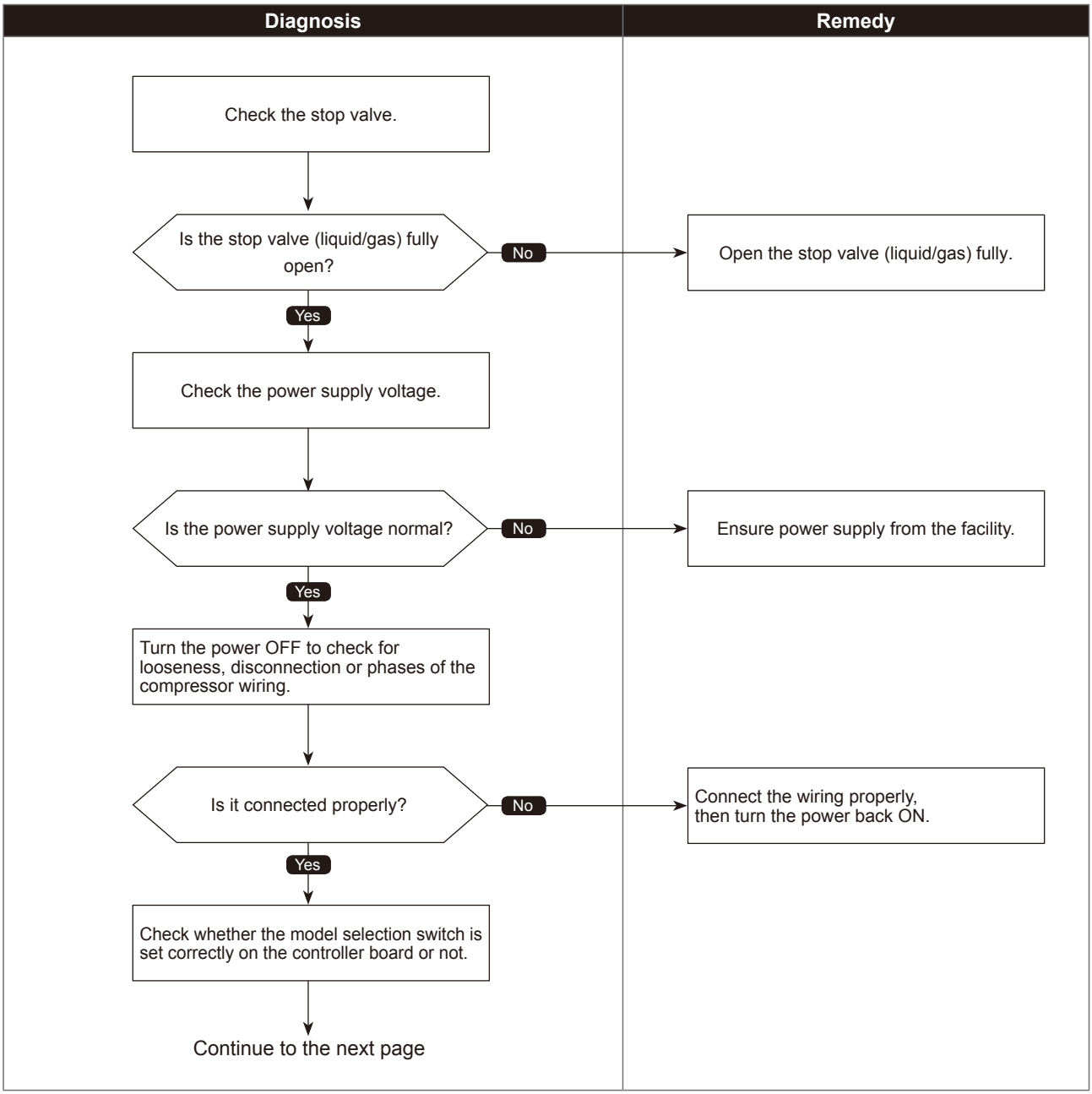
4100

Compressor current interruption (Locked compressor)

Abnormal points and detection methods	Causes and check points
Abnormal if overcurrent of DC bus or compressor is detected 30 seconds after the compressor starts operating.	①Closed stop valve ②Decrease of power supply voltage ③Looseness, disconnection or converse of compressor wiring connection ④Model selection error upon replacement of indoor controller board ⑤Defective compressor ⑥Defective outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



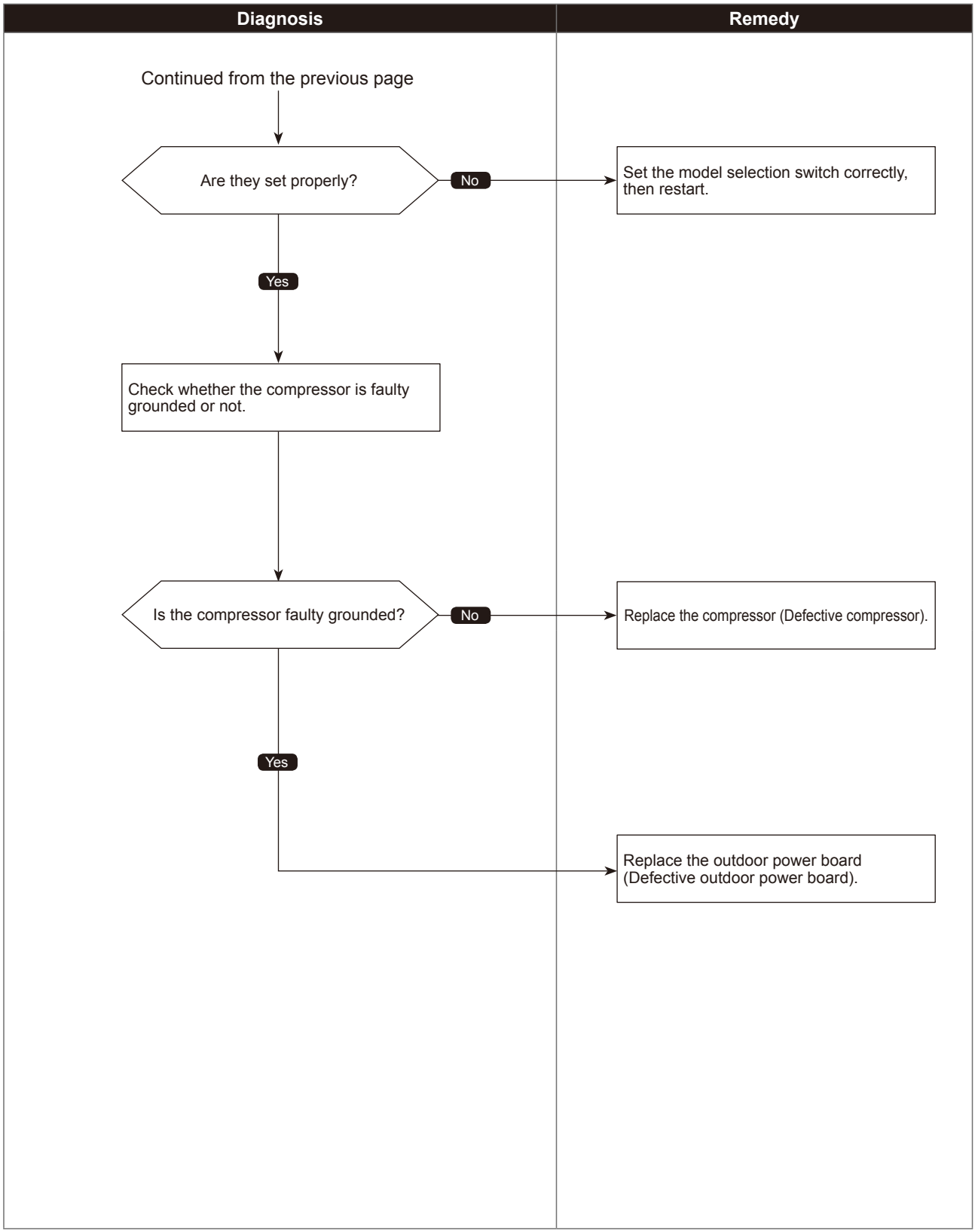
Check code

4100

Compressor current interruption (Locked compressor)

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

4210

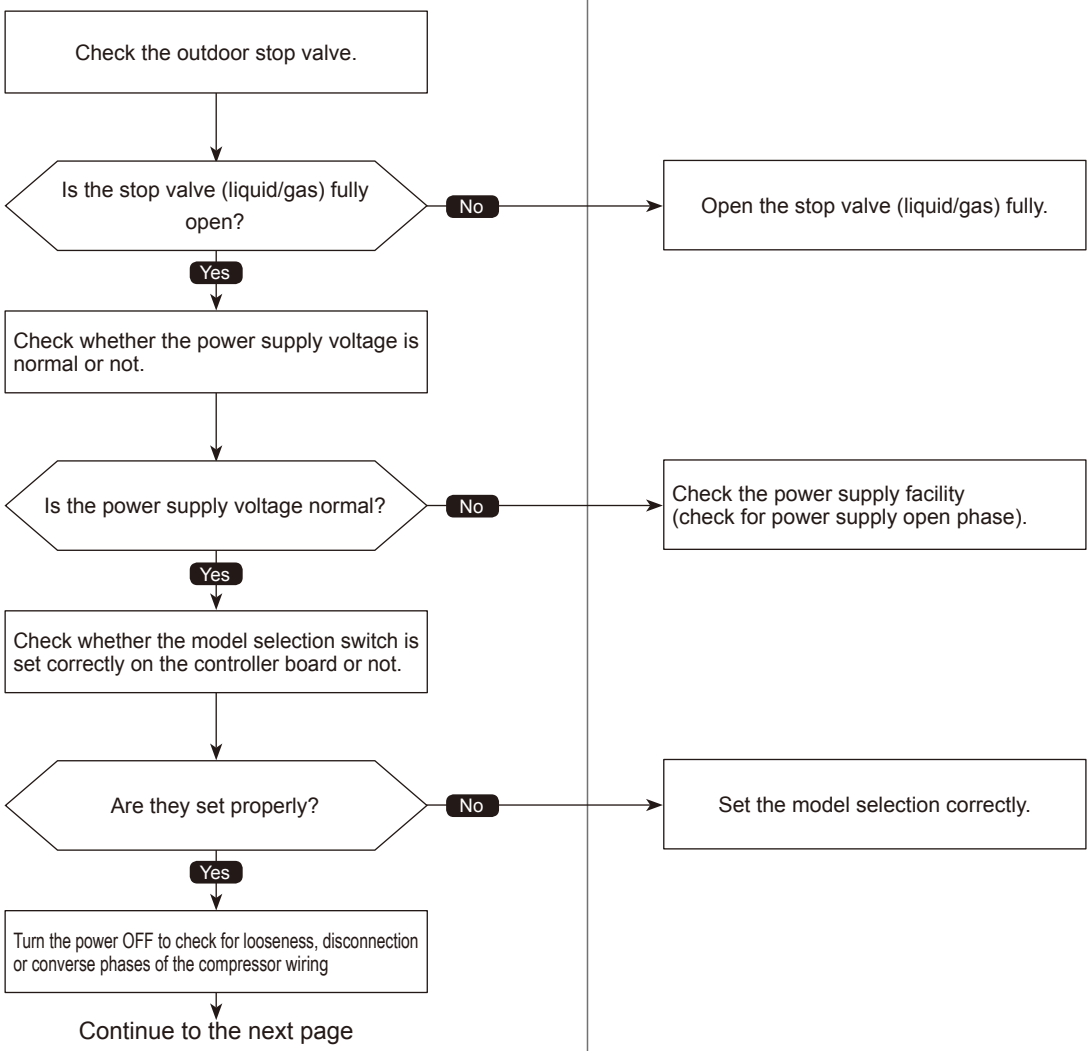
Compressor overcurrent interruption

Abnormal points and detection methods	Causes and check points
Abnormal if overcurrent of DC or the compressor is detected within 30 seconds after the compressor starts operating.	①Closed outdoor stop valve ②Decrease of power supply voltage ③Looseness, disconnection or reverse phase of compressor wiring connection ④Malfunction of indoor/outdoor fan ⑤Short-cycle of indoor/outdoor unit ⑥Model selection error upon replacement of outdoor controller board ⑦Malfunction of input circuit on outdoor controller board ⑧Defective compressor ⑨Defective outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy



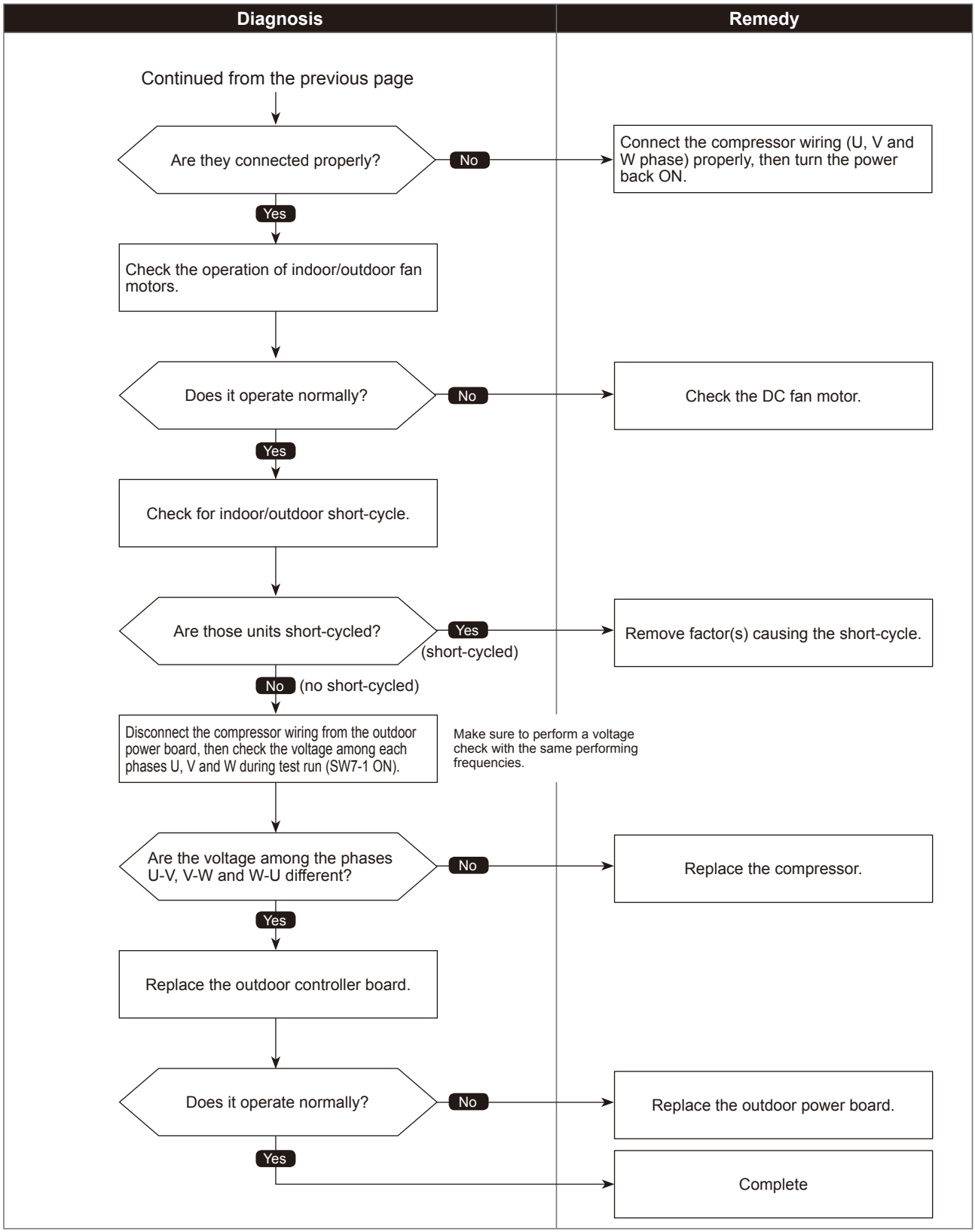
Check code

4210

Compressor overcurrent interruption

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

4220

Voltage shortage/Overvoltage/PAM error/L1 open-phase/ Power synchronization signal error

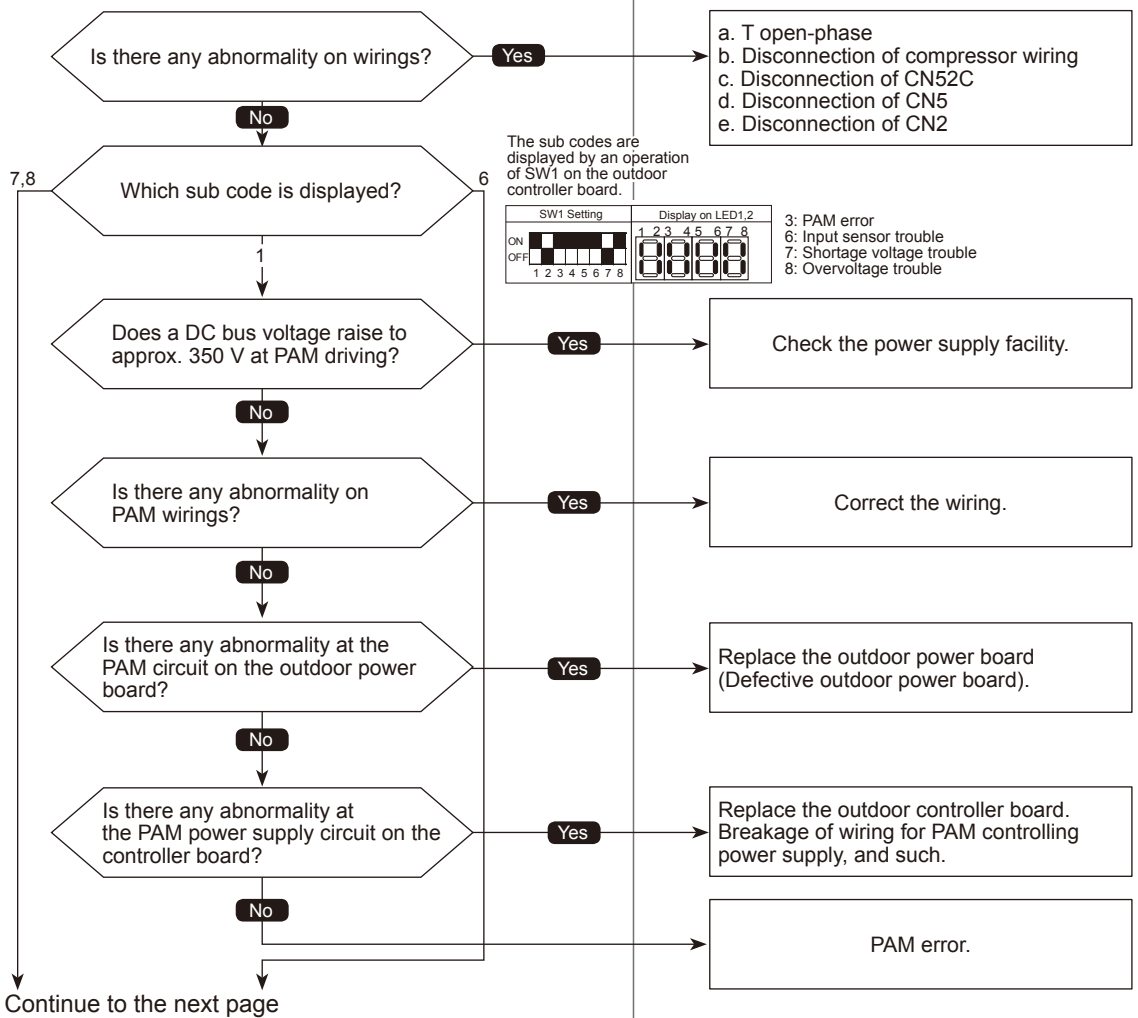
Abnormal points and detection methods	Causes and check points
Abnormal if any of following symptoms are detected; ●Decrease of DC bus voltage to 200V ●Increase of DC bus voltage to 400V ●DC bus voltage stays at 310V or lower for consecutive 10 seconds Note: The detection is active only when the operational frequency is 40 Hz or more, or the compressor current is 6A or more.	①Decrease/increase of power supply voltage, or T open-phase ②Disconnection of compressor wiring ③Malfunction of 52C ④Disconnection or contact failure of CN52C ⑤Defective outdoor power board ⑥Malfunction of 52C driving circuit on outdoor controller board ⑦Disconnection of CN5 ⑧Disconnection of CN2 ⑨Malfunction of primary current detecting circuit on outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis



Check code

4220

Voltage shortage/Overvoltage/PAM error/L1 open-phase/ Power synchronization signal error

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis	Remedy

Continued from the previous page

Is CN5 connected properly without any contact failure?

No → Correct the CN5 wiring.

Yes

Is there any breakage of ACCT on the noise filter board?

Yes → Malfunction of noise filter ACCT.

No → Replace the outdoor power board (Defective outdoor power board).

Check the bus voltage read by the microprocessor with an operation of SW1 on the outdoor controller board.

The bus voltage can be displayed by an operation of SW1 on the outdoor controller board.

SW1 Setting	Display on LED1,2	Unit
ON / OFF 1 2 3 4 5 6 7 8	0–999.9	V

Is the power supply normal?

No → Decrease of power supply voltage. L1 open-phase.

Yes

Check the bus voltage at the test points listed below on the outdoor power board using a tester.
V model: CNDC 1–2pin
Y model: N2–P2

Is the bus voltage normal?

No → Replace the outdoor power board (Defective outdoor power board).

Yes

The difference of the voltage between the one read by the LED1 and 2, and the one at the testpoints listed above is large.

Yes → Replace the outdoor power board (Trouble of an input current detection circuit is suspected.).

No → Check the power supply facility (Check if a receiving electricity is lowered).

Check code

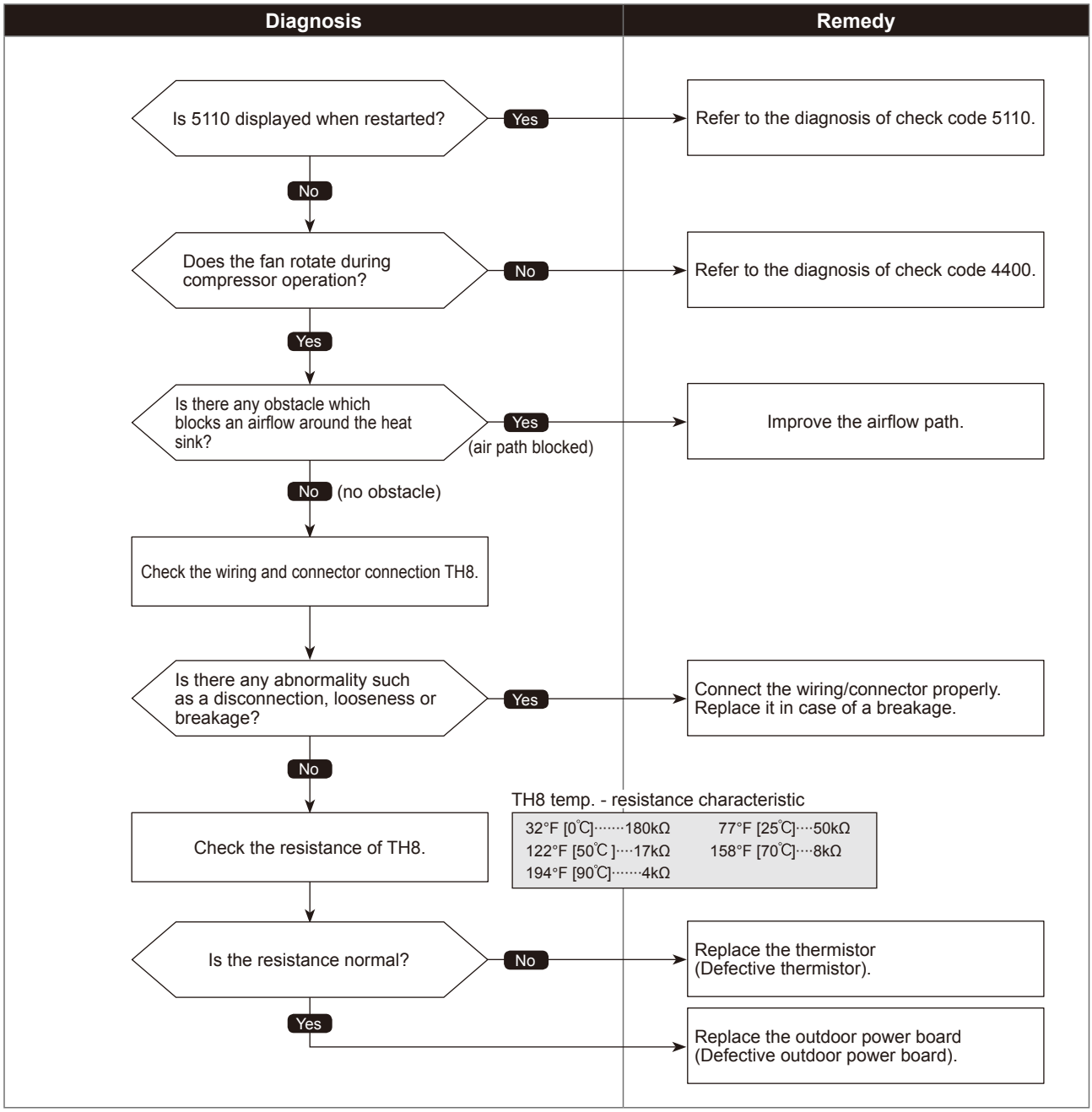
4230

Heat sink temperature trouble

Abnormal points and detection methods	Causes and check points
Abnormal if TH8 detects a temperature outside the specified range during compressor operation. TH8: Thermistor <Heat sink>	①Blocked outdoor fan ②Malfunction of outdoor fan motor ③Blocked airflow path ④Rise of ambient temperature ⑤Characteristic defect of thermistor ⑥Malfunction of input circuit on outdoor power board ⑦Malfunction of outdoor fan driving circuit

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

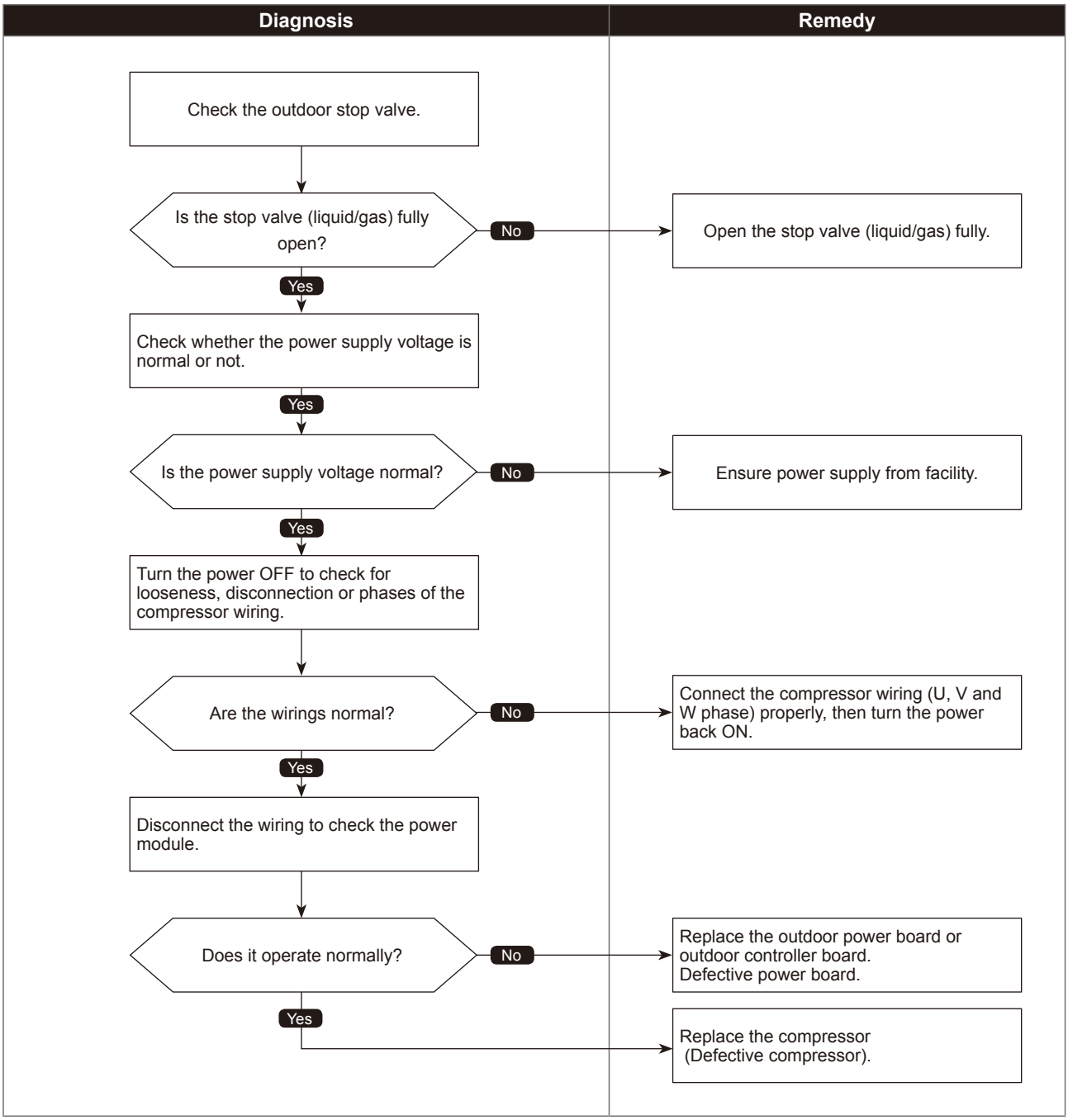
4250

Power module trouble

Abnormal points and detection methods	Causes and check points
Abnormal if overcurrent of DC bus or compressor is detected 30seconds after the compressor starts operating. To determine the source of abnormality, either the compressor or the power module, drive the power module forcedly.	①Closed outdoor stop valve ②Decrease of power supply voltage ③Disconnection, looseness or conversed connection of compressor wiring ④Defective compressor ⑤Defective outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

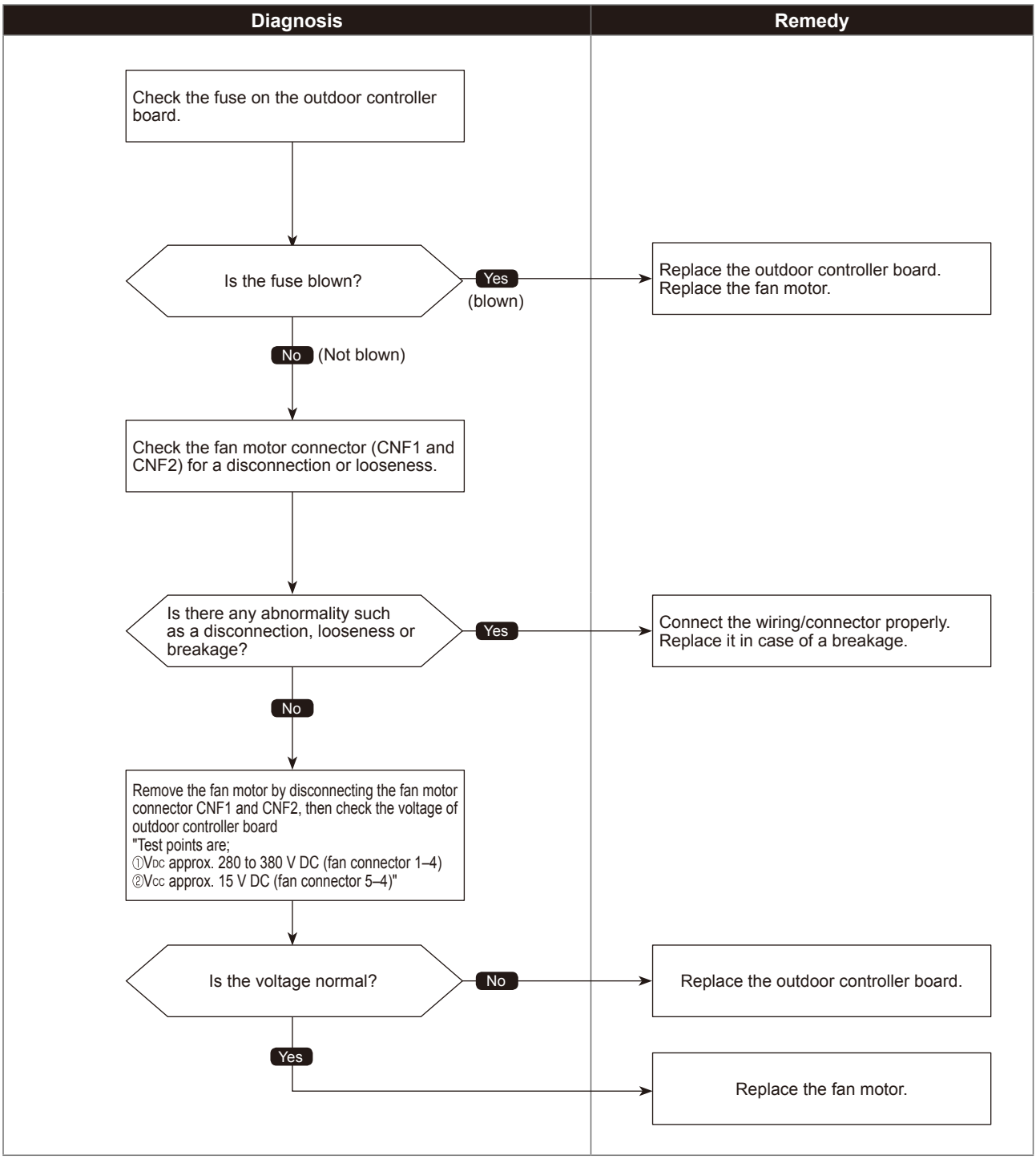
4400

Rotational frequency of outdoor fan motor trouble

Abnormal points and detection methods	Causes and check points
Abnormal if no rotational frequency is detected, or detected a value outside the specified range during fan motor operation.	①Malfunction of fan motor ②Disconnection of CNF connector ③Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

5101

Compressor temperature thermistor (TH4) open/short

<Detected in outdoor unit>

Abnormal points and detection methods	Causes and check points
Abnormal if TH4 detects to be open/short. (The open/short detection is disabled for 10 minutes after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open: 37.4°F [3℃] or less Short: 422.6°F [217℃] or more TH4: Thermistor <Compressor>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis

Check the wiring and connector connection of TH4

Is there any abnormality such as a disconnection, looseness or breakage?

Yes → Connect the wiring/connector properly. Replace the connector in case of a breakage.

No

Disconnect the connector to check the resistance of TH4 using a tester.

Is the detected resistance normal?

No → Replace the thermistor.

Yes

Check a temperature of TH4.

The detected temperature of TH4 can be displayed by an operation of SW1 on the outdoor controller board.

SW1 Setting	Display on LED1, 2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	°F

Is the detected temperature normal?

No → Replace the controller board (Malfunction of thermistor circuit).

Yes → No abnormality (A connector contact failure is suspected).

Check code

5102

Suction pipe temperature thermistor (TH6) open/short

<Detected in outdoor unit>

Abnormal points and detection methods	Causes and check points
Abnormal if TH6 detects to be open/short. (The open/short detection is disabled during 10 seconds to 10 minutes. after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open:−40°F [−40℃] or less Short: 194°F [90℃] or more TH6: Thermistor <Suction pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis

Check the wiring and connector connection of TH6.

Is there any abnormality such as a disconnection, looseness or breakage?

Yes → Connect the wiring/connector properly. Replace it in case of a breakage.

No

Disconnect the connector to check the resistance of TH6 using a tester.

Is the detected resistance normal?

No → Replace the thermistor.

Yes

Check a temperature of TH6.

The detected temperature of TH6 can be displayed by an operation of SW1 on the outdoor controller board.

SW1 Setting	Display on LED1,2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	°F

Is the detected temperature normal?

No → Replace the controller board (Malfunction of thermistor circuit).

Yes → No abnormality (A connector contact failure is suspected).

Check code

5101, 5102, 5103

Air inlet thermistor trouble (TH21)
Liquid pipe temperature thermistor trouble (TH22)
Gas pipe temperature thermistor trouble (TH23)

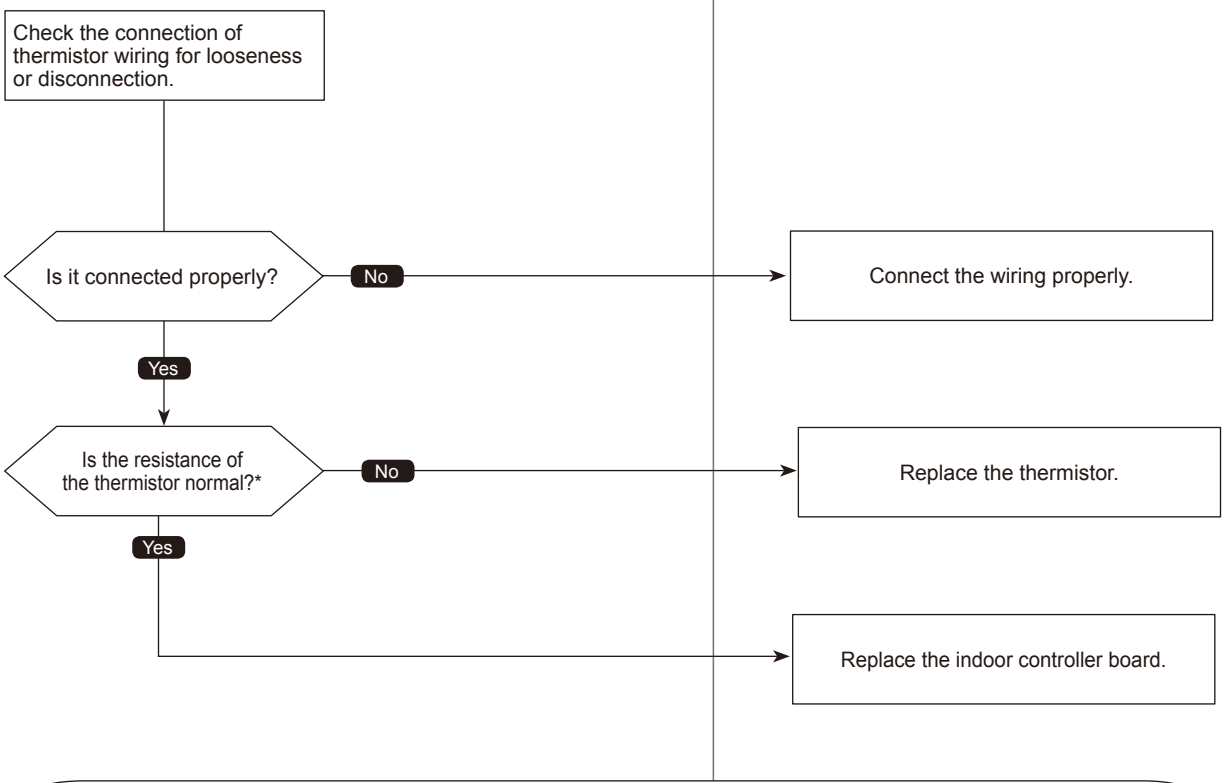
<Detected in indoor unit>

Abnormal points and detection methods	Causes and check points
Abnormal if any of the following thermistor detected to be open/ short. TH21: Air inlet thermistor TH22: Liquid pipe temperature thermistor TH23: Gas pipe temperature thermistor	① Contact failure of connectors ② Characteristic defect of thermistor ③ Disconnection or contact failure of thermistor ④ Defective indoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis



Remedy

< Thermistors for low temperature>

■ Check code and trouble

Check code	Thermistor	Connector	Trouble
5101	TH21	CN20	Air inlet thermistor trouble
5102	TH22	CN44/CN21	Liquid piping temperature thermistor trouble
5103	TH23	CN44/CN29	Gas piping temperature thermistor trouble

■ Thermistor characteristic

Turn the power OFF to remove the connector for the thermistor, then check the resistance with a tester.
(At the ambient temperature 50 to 86°F [10 to 30℃])

Normal	Abnormal
4.3 to 9.6kΩ	Open or short

* Symbols for thermistors and connectors may be different depending on the model. Please refer to its wiring diagram.

Check code

5105

Outdoor liquid pipe temperature thermistor (TH3) open/short

Abnormal points and detection methods	Causes and check points
Abnormal if TH3 detects to be open/short. (The open/short detection is disabled during 10 seconds to 10 minutes. after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open: −40°F [−40℃] or less Short: 194°F [90℃] or more TH3: Thermistor <Outdoor liquid pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis	Remedy
Check the wiring and connector connection of TH3.	
Is there any abnormality such as a disconnection, looseness or breakage? Yes	Connect the wiring/connector properly Replace it in case of a breakage.
No	
Disconnect the connector to check the resistance of TH3 using a tester.	
Is the detected resistance normal? No	Replace the thermistor.
Yes	
Check a temperature of TH3.	The detected temperature of TH3 can be displayed by an operation of SW1 on the outdoor controller board.
Is the detected temperature normal? No	Replace the controller board (Malfunction of thermistor circuit).
Yes	No abnormality (A connector contact failure is suspected).

SW1 Setting	Display on LED1, 2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	°F

Check code

5106

Ambient thermistor (TH7) open/short

Abnormal points and detection methods	Causes and check points
Abnormal if TH7 detects to be open/short Open: −40°F [-40℃] or less Short: 194°F [90℃] or more TH7: Thermistor <Ambient>	①Disconnection or contact failure of connectors ②Characteristic defect of thermistor ③Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis

Check the wiring and connector connection of TH7.

Is there any abnormality such as a disconnection, looseness or breakage?

Yes → Connect the wiring/connector properly. Replace it in case of a breakage.

No

Disconnect the connector to check the resistance of TH7 using a tester.

Is the detected resistance normal?

No → Replace the thermistor.

Yes

Check a temperature of TH7.

The detected temperature of TH7 can be displayed by an operation of SW1 on the outdoor controller board.

SW1 Setting	Display on LED1, 2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	°F

Is the detected temperature normal?

No → Replace the controller board (Malfunction of thermistor circuit).

Yes → No abnormality (A connector contact failure is suspected).

Check code

5109

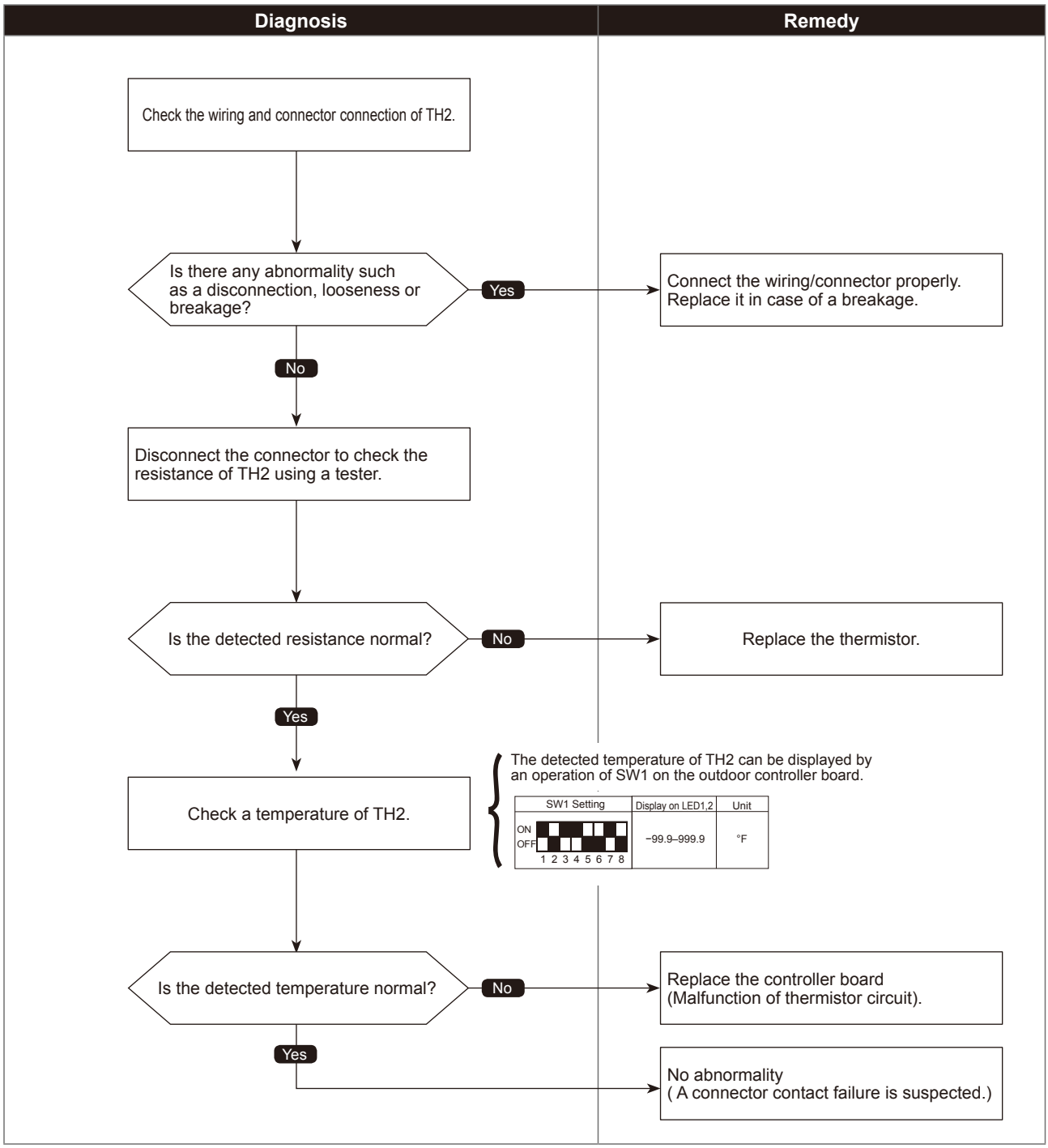
HIC pipe temperature thermistor (TH2) open/short

Abnormal points and detection methods	Causes and check points
Abnormal if TH2 detects to be open/short. Open: –40°F [–40℃] or less Short: 194°F [90℃] or more TH2: Thermistor <HIC pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



Check code

5110

Heat sink temperature thermistor(TH8) open/short

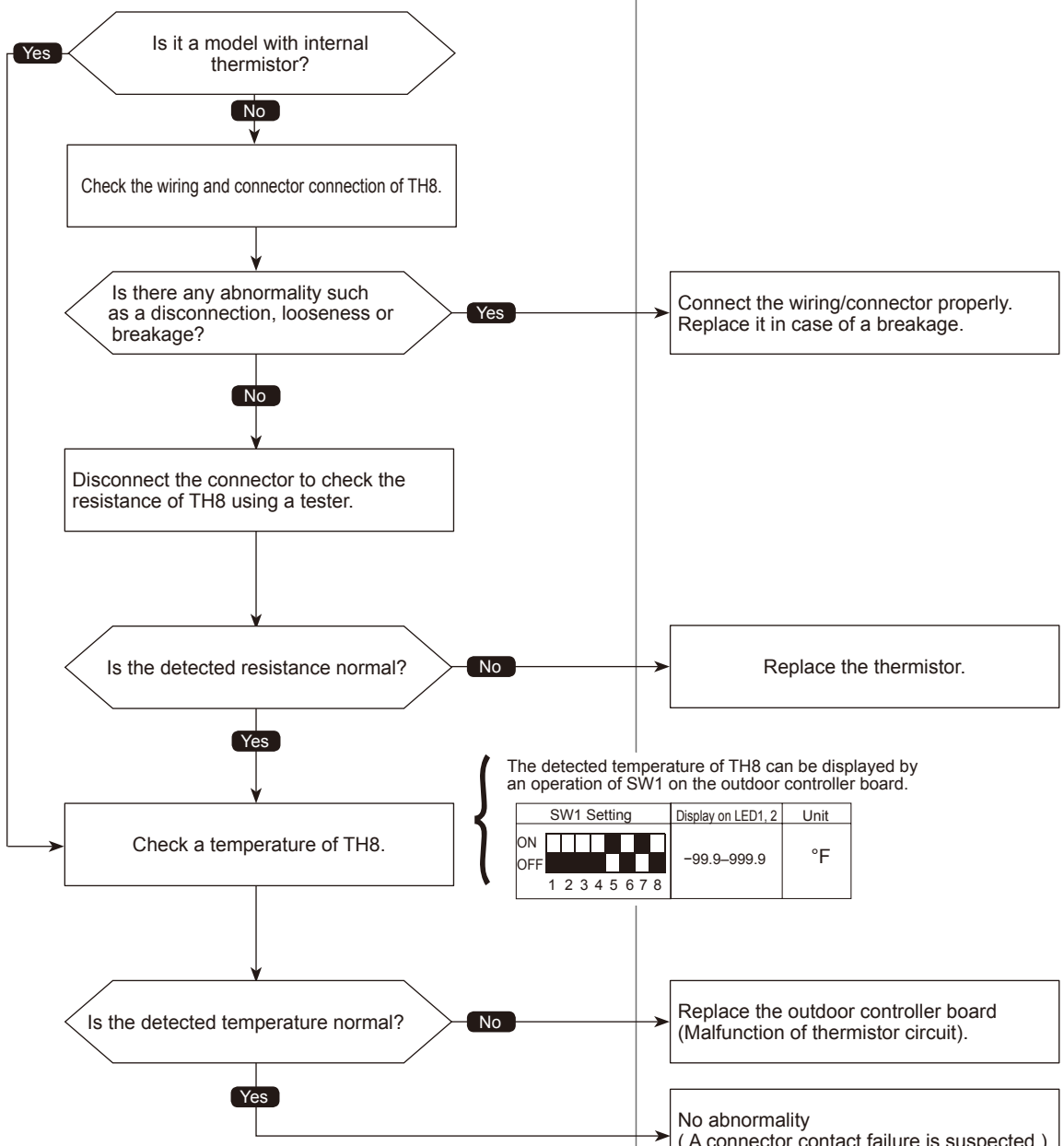
Abnormal points and detection methods	Causes and check points
Abnormal if TH8 detects to be open/short. Open: −31.2°F [−35.1℃] or less Short: 338.5°F [170.3℃] or more TH8: Thermistor <Heat sink>	①Disconnection or contact failure of connectors ②Characteristic defect of thermistor ③Defective outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis



Remedy

Check code

5201

High-pressure sensor (63HS) trouble

Abnormal points and detection methods	Causes and check points
① When the detected pressure in the high-pressure sensor is 1 kgf/cm² [14.2 PSIG] or less during operation, the compressor stops operation and enters into an anti-restart mode for 3 minutes. ② When the detected pressure is 1 kgf/cm² [14.2 PSIG] immediately before restarting, the compressor falls into an abnormal stop with a check code <5201>. ③ For 3 minutes after compressor restarting, during defrosting operation, and for 3 minutes after returning from defrosting operation, above mentioned symptoms are not determined as abnormal.	① Defective high-pressure sensor ② Decrease of internal pressure caused by gas leakage ③ Disconnection or contact failure of connector ④ Malfunction of input circuit on outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis	Remedy
Check the wiring and connector connection.	63HS: High-pressure sensor
Is there any abnormality such as a disconnection, looseness or breakage? — Yes	Connect the wiring/connector properly. Replace it in case of a breakage.
No	
Check an internal pressure of the refrigerant circuit.	
Is the detected internal pressure normal? — No	Check the refrigerant circuit, and refill refrigerant after repairing the leakage.
Yes	
Check the detected pressure in 63HS, then compare it with the internal pressure.	The detected pressure in 63HS can be displayed by an operation of SW1 on the outdoor controller board.
Is the detected pressure normal? — No	Replace the 63HS.
	Replace the outdoor controller board.

SW1 Setting	Display on LED1, 2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	kgf/cm² [PSIG]

Check code

5202

Low-pressure sensor (63LS) trouble

Abnormal points and detection methods	Causes and check points
① When the detected pressure in the low-pressure sensor is −2.3kgf/cm² [−32.7 PSIG] or less, or 23.1kgf/cm² [328.6 PSIG] or more during operation, the compressor stops operation with a check code <5202>. ② For 3 minutes after compressor restarting, during defrosting operation, and for 3 minutes after returning from defrosting operation, above mentioned symptoms are not determined as abnormal.	① Defective low-pressure sensor ② Decrease of internal pressure caused by gas leakage ③ Disconnection or contact failure of connector ④ Malfunction of input circuit on outdoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

Diagnosis	Remedy
Check the wiring and connector connection.	63LS: Low-pressure sensor
Is there any abnormality such as a disconnection, looseness or breakage? — Yes	Connect the wiring/connector properly. Replace it in case of a breakage.
No	
Check an internal pressure of the refrigerant circuit.	
Is the detected internal pressure normal? — No	Check the refrigerant circuit, and refill refrigerant after repairing the leakage.
Yes	
Check the detected pressure in 63LS, then compare it with the internal pressure.	The detected pressure in 63LS can be displayed by an operation of SW1 on the outdoor controller board.
Is the detected pressure normal? — No	Replace the 63LS.
	Replace the outdoor controller board.

SW1 Setting	Display on LED1,2	Unit
ON / OFF 1 2 3 4 5 6 7 8	−99.9–999.9	kgf/cm² [PSIG]

Check code

5300

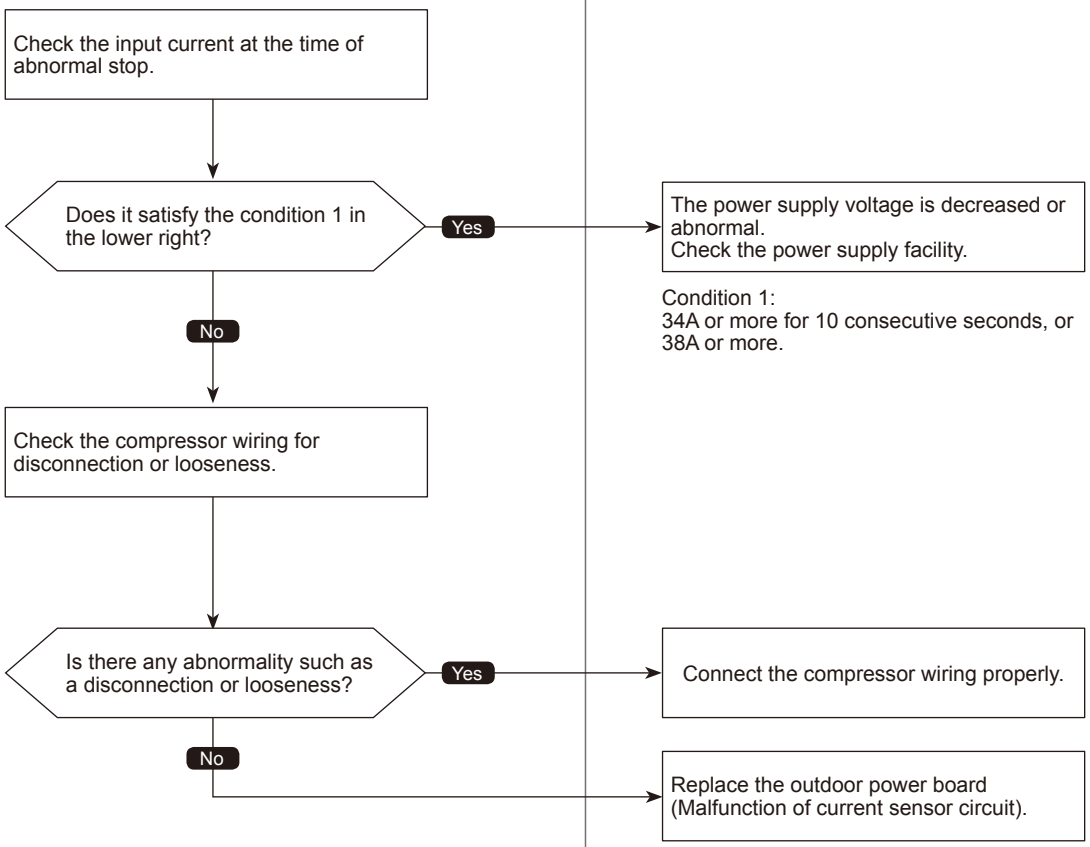
Primary current error

Abnormal points and detection methods	Causes and check points
Abnormal if the detected current sensor input value (primary current) during compressor operation is outside the specified range.	①Decrease/ trouble of power supply voltage ②Disconnection of compressor wiring ③Input sensor trouble on outdoor power board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy



Check code

5701

Models equipped with the float switch

Contact failure of drain float switch

Abnormal points and detection methods	Causes and check points
<Models equipped with the float switch> Abnormal if the connector on the drain float switch side CN4F is detected to be disconnected.	①Contact failure of connector CN4F ②Defective indoor controller board

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis	Remedy

<Models equipped with the float switch>

Disconnect and reconnect the connector for float switch on the indoor controller board side, then turn the power back ON.

Is the check code <5701> still displayed?

No → No abnormality.
A connector or wiring contact failure is suspected.

Yes

Check if it is short-circuited between pins 3–4 of the connector (CN4F) on the float switch side.

Is it short-circuited?

No → Replace the connector for float switch.

Yes → Replace the indoor controller board.

Check code

6600

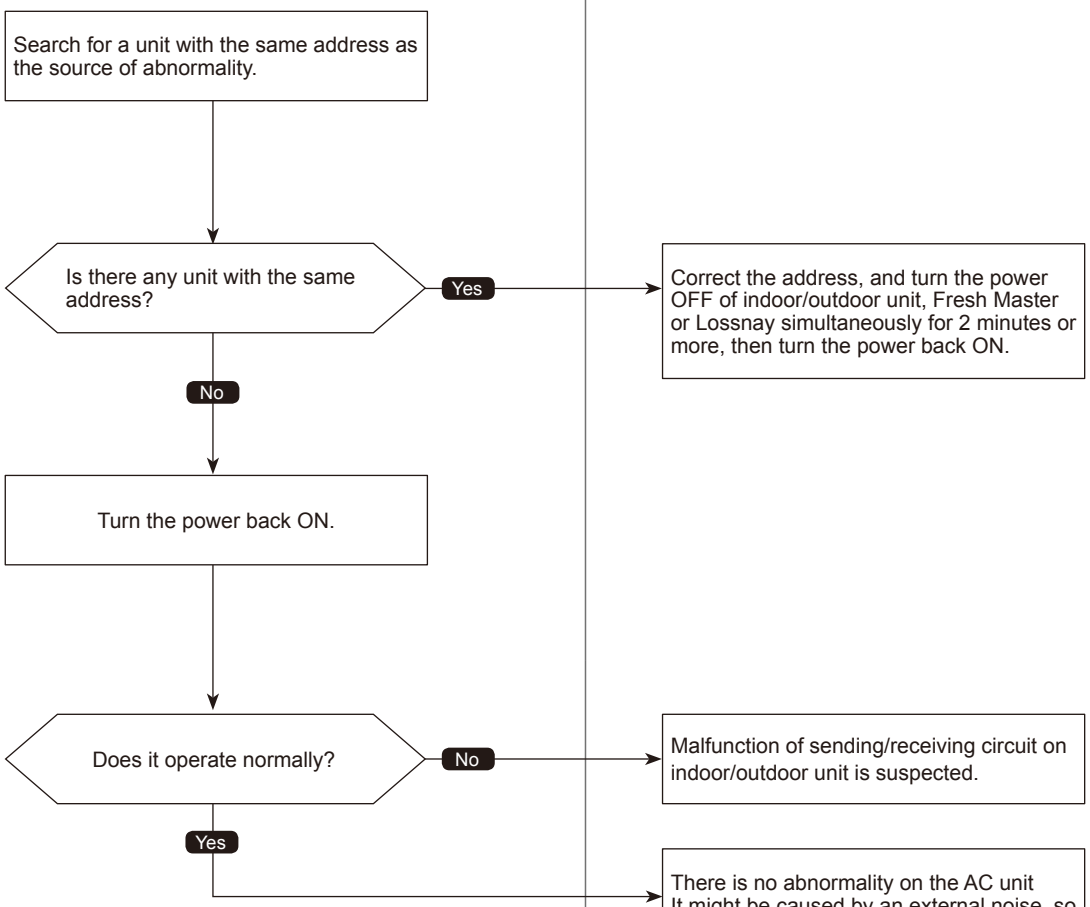
Duplex address error

Abnormal points and detection methods	Causes and check points
Abnormal if 2 or more units with the same address are existing.	① There are 2 units or more with the same address in their controller among outdoor unit, indoor unit, Fresh Master, Lossnay or remote controller ② Noise interference on indoor/outdoor connectors

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy



Check code

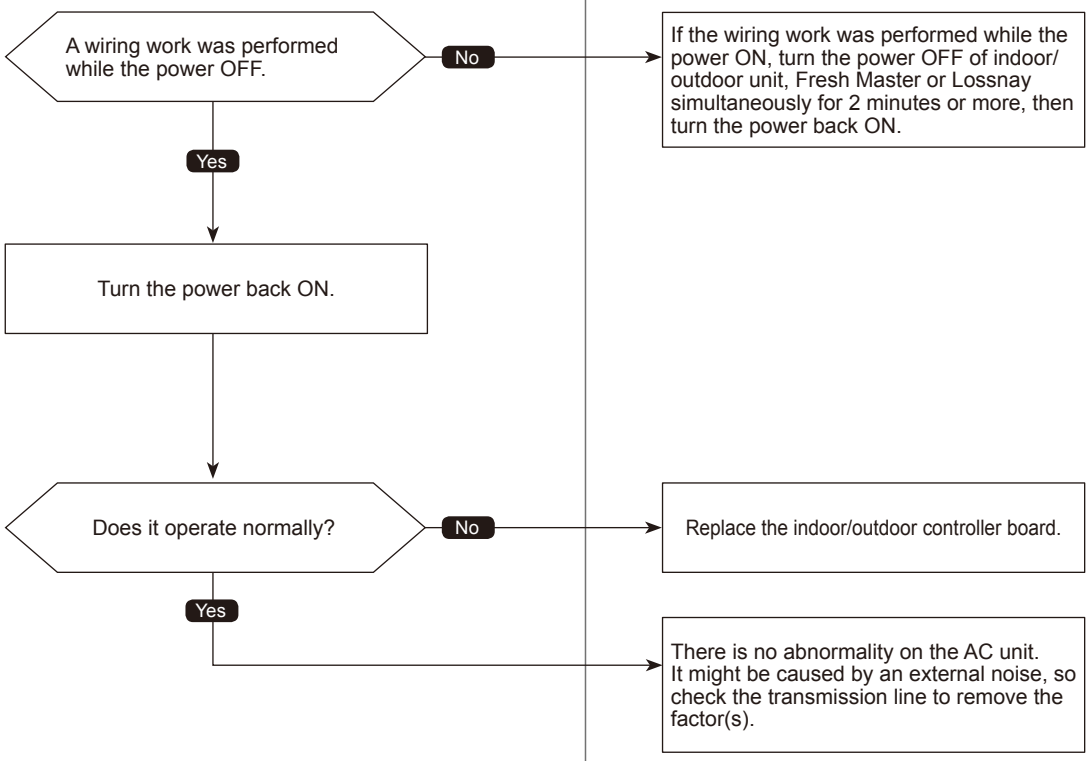
6602

Transmission processor H/W error

Abnormal points and detection methods	Causes and check points
Abnormal if the transmission line shows "1" although the transmission processor transmitted "0".	①A transmitting data collision occurred because of a wiring work or polarity change has performed while the power is ON on either of the indoor/outdoor unit, Fresh Master or Lossnay ②Malfunction of transmitting circuit on transmission processor ③ Noise interference on indoor/outdoor connectors

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
	

Check code

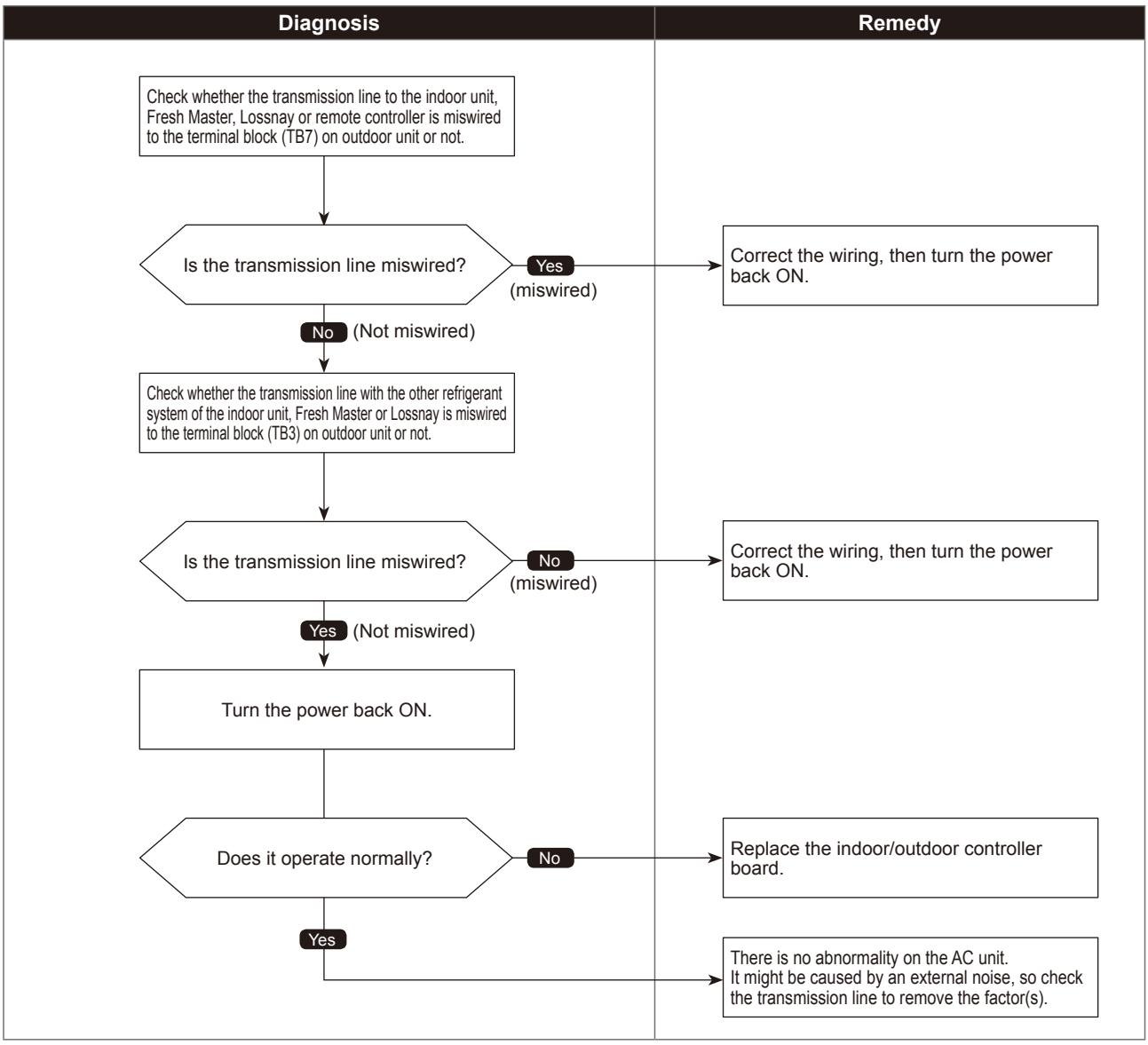
6603

Transmission bus BUSY error

Abnormal points and detection methods	Causes and check points
①Over error by collision Abnormal if no-transmission status caused by a transmitting data collision is consecutive for 8 to 10minutes. ②Abnormal if a status, that data is not allowed on the transmission line because of noise and such, is consecutive for 8 to 10 minutes	①The transmission processor is unable to transmit due to a short-cycle voltage such as noise is mixed on the transmission line. ②The transmission processor is unable to transmit due to an increase of transmission data amount caused by a miswiring of the terminal block (transmission line) (TB3) and the terminal block (centralized control line) (TB7) on the outdoor unit. ③The share on transmission line becomes high due to a mixed transmission caused by a malfunction of repeater on the outdoor unit, which is a function to connect/disconnect transmission from/to control system and centralized control system.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

6606

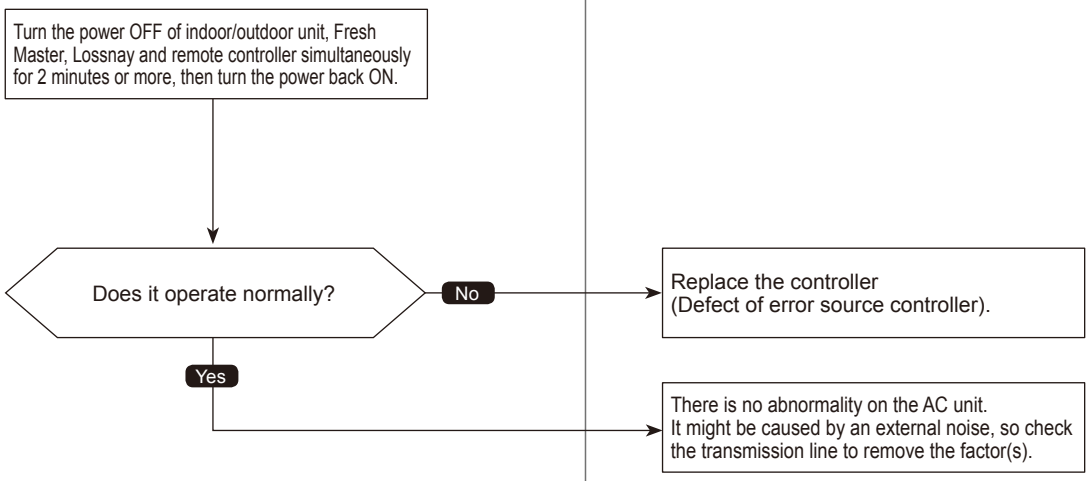
Signal communication error with transmission processor

Abnormal points and detection methods	Causes and check points
① Abnormal if the data of unit/transmission processor were not normally transmitted. ② Abnormal if the address transmission from the unit processor was not normally transmitted.	① Accidental disturbance such as noise or lightning surge ② Hardware malfunction of transmission processor

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy



Check code

6607

No ACK error

Abnormal points and detection methods	Causes and check points
① Represents a common error detection An abnormality detected by the sending side controller when receiving no ACK from the receiving side, though signal was once sent. The sending side searches the error in 30 seconds interval for 6 times continuously.	① The previous address unit does not exist since the address switch was changed while in electric continuity status. ② Decline of transmission voltage/signal caused by tolerance over on transmission line ·At the furthest end: 200 m ·On remote controller line: (12 m) ③ Decline of transmission voltage/ signal due to unmatched transmission line types ·Types for shield line: CVVS, CPEVS ·Line diameter: 1.25 ㎟ or more ④ Decline of transmission voltage/ signal due to excessive number of connected units ⑤ Malfunction due to accidental disturbance such as noise or lightning surge ⑥ Defect of error source controller
② The cause of displayed address and attribute is on the outdoor unit side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the outdoor unit.	① Contact failure of indoor/outdoor unit transmission line ② Disconnection of transmission connector (CN2M) on indoor unit ③ Malfunction of sending/receiving circuit on indoor/ outdoor unit
③ The cause of displayed address and attribute is on the indoor unit side An abnormality detected by the remote controller if receiving no ACK when sending data from the remote controller to the indoor unit.	① While operating with multi refrigerant system indoor units, an abnormality is detected when the indoor unit transmit signal to the remote controller during the other refrigerant-system outdoor unit is turned OFF, or within 2 minutes after it turned back ON. ② Contact failure of indoor unit or remote controller transmission line ③ Disconnection of transmission connector (CN2M) on indoor unit ④ Malfunction of sending/receiving circuit on indoor unit or remote controller
④ The cause of the displayed address and attribute is on the remote controller side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the remote controller.	① While operating with multi refrigerant system indoor units, an abnormality is detected when the indoor unit transmit signal to the remote controller during the other refrigerant-system outdoor unit is turned OFF, or within 2 minutes after it turned back ON. ② Contact failure of indoor unit or remote controller transmission line ③ Disconnection of transmission connector (CN2M) on indoor unit ④ Malfunction of sending/receiving circuit on indoor unit or remote controller

Check code

6607

No ACK error

Abnormal points and detection methods	Causes and check points
⑤ The cause of displayed address and attribute is on the Fresh Master side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the Fresh Master.	①While the indoor unit is operating with multi refrigerant system Fresh Master, an abnormality is detected when the indoor unit transmits signal to the remote controller while the outdoor unit with the same refrigerant system as the Fresh Master is turned OFF, or within 2 minutes after it turned back ON. ②Contact failure of indoor unit or Fresh Master transmission line ③Disconnection of transmission connector (CN2M) on indoor unit or Fresh Master ④Malfunction of sending/receiving circuit on indoor unit or Fresh Master
⑥ The cause of displayed address and attribute is on Lossnay side An abnormality detected by the indoor unit if receiving no ACK when the indoor unit transmit signal to the Lossnay.	①An abnormality is detected when the indoor unit transmits signal to Lossnay while the Lossnay is turned OFF. ②While the indoor unit is operating with the other refrigerant Lossnay, an abnormality is detected when the indoor unit transmits signal to the Lossnay while the outdoor unit with the same refrigerant system as the Lossnay is turned OFF, or within 2 minutes after it turned back ON. ③Contact failure of indoor unit or Lossnay transmission line ④Disconnection of transmission connector (CN2M) on indoor unit ⑤ Malfunction of sending/receiving circuit on indoor unit or Lossnay
⑦The controller of displayed address and attribute is not recognized.	①The previous address unit does not exist since the address switch was changed while in electric continuity status. ②An abnormality detected at transmitting from the indoor unit since the Fresh Master/Lossnay address are changed after synchronized setting of Fresh Master/Lossnay by the remote controller.

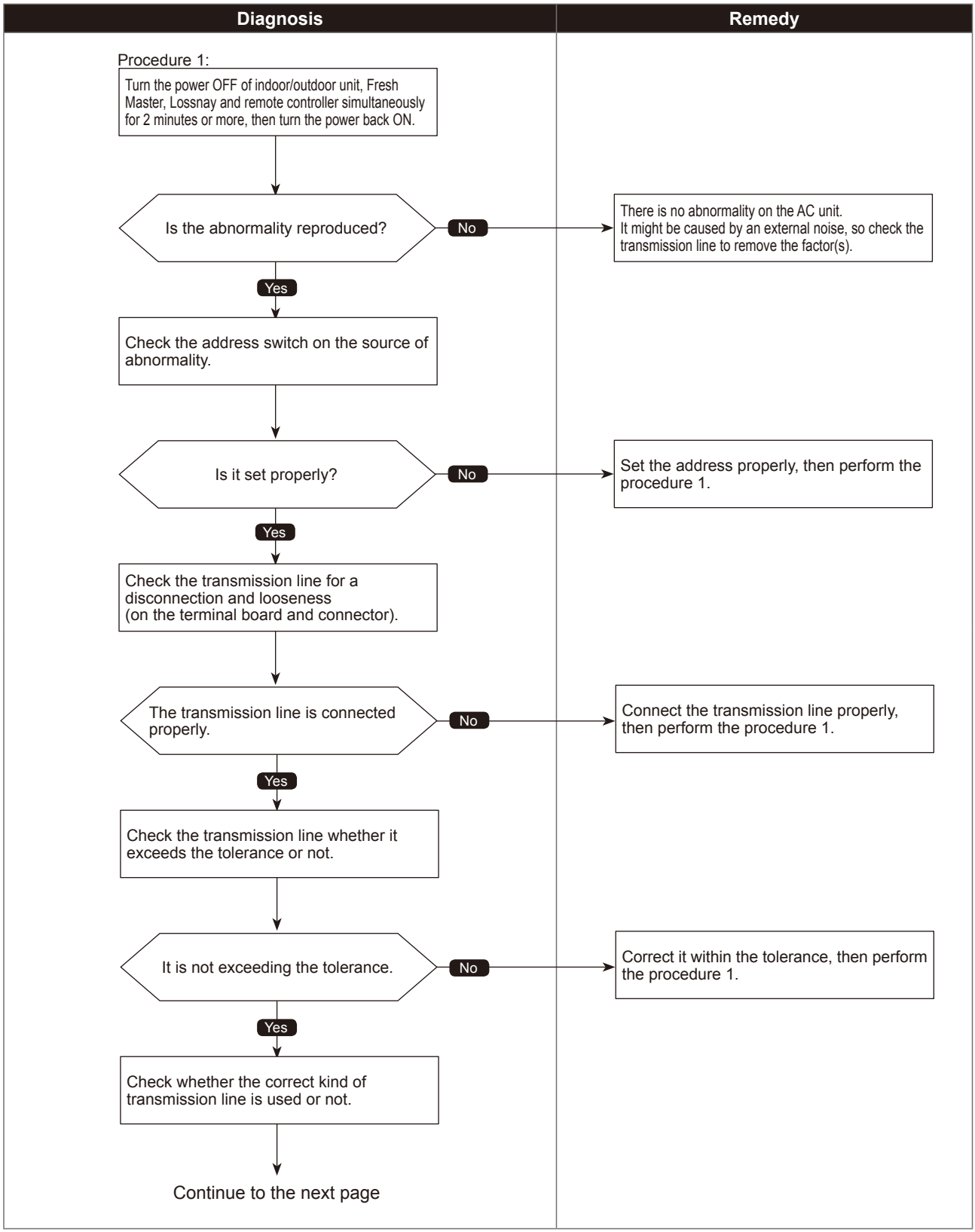
Check code

6607

No ACK error

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



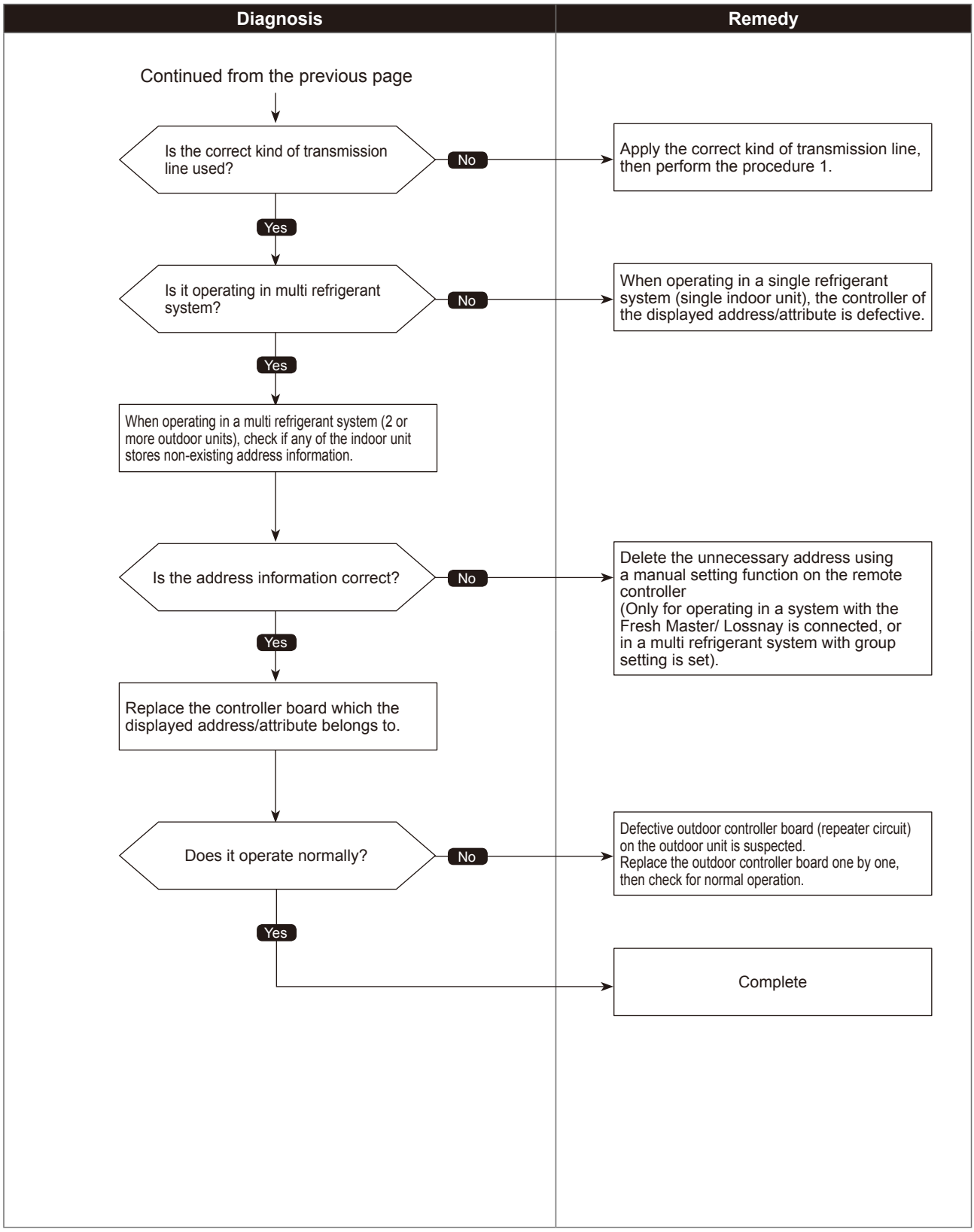
Check code

6607

No ACK error

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

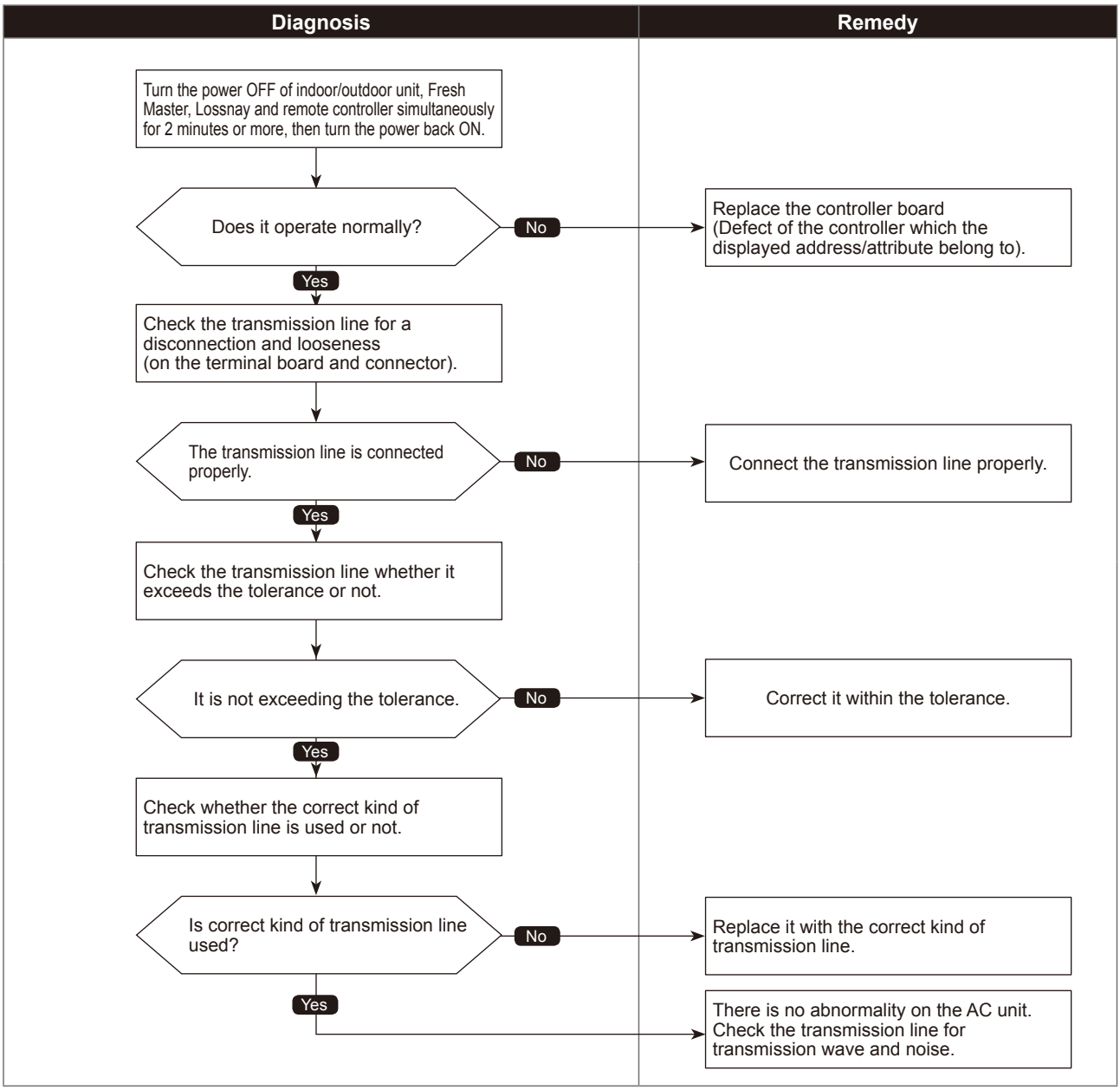
6608

No response frame error

Abnormal points and detection methods	Causes and check points
Abnormal if receiving no response command while already received ACK. The sending side searches the error in 30 seconds interval for 6 times continuously.	①Continuous failure of transmission due to noise etc ②Decline of transmission voltage/signal caused by tolerance over on transmission line ·At the furthest end: 200 m ·On remote controller line: (12 m) ③Decline of transmission voltage/ signal due to unmatched transmission line types ·Types for shield line: CVVS, CPEVS ·Line diameter: 1.25 ㎟ or more ④Accidental malfunction of error source controller

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

6831
6834

MA communication receive error

Abnormal points and detection methods	Causes and check points
Detected in remote controller or indoor unit: ①When the main or sub remote controller cannot receive signal from indoor unit which has the "0" address. ②When the sub remote controller cannot receive signal. ③When the indoor controller board cannot receive signal from remote controller or another indoor unit. ④When the indoor controller board cannot receve signal.	①Contact failure of remote controller wirings ②Irregular Wiring (A wiring length, number of connecting remote controllers or indoor units, or a wiring thickness does not meet the conditions specified in the chapter "Electrical Work" in the indoor unit Installation Manual.) ③Malfunction of the remote controller sending/ receiving circuit on indoor unit with the LED2 is blinking. ④Malfunction of the remote controller sending/ receiving circuit ⑤ Remote controller transmitting error caused by noise interference

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis

Disconnect and reconnect the connector CN3A, then turn the power back ON.

Is the check code <6831> or <6834>still displayed?

No → No abnormality
A connector or wiring contact failure is suspected.

Yes

Check the remote controller for main-sub setting.

Is there only 1 remote controller set as the main controller?

No → Set one remote controller to main remote controller, and the other to sub.

Yes

Conduct the Remote Controller Diagnosis 2 or more times.

Note:
It takes 6 sec. at maximum until the result is displayed.

Is "RC OK" displayed on all remote controllers?

No

Yes → Is "RC NG" displayed?

Yes

No

Turn the power back ON.

Is "RC 6832" or "ERC01"–"ERC66" displayed?

Yes → No abnormality
It might be caused by an external noise, so check the transmission line.

No → Replace the remote controller.

Does "HO"or "Please wait" disappear within 6 minutes?

No → Replace the indoor controller board with the LED2 is blinking.

Yes

Continue to the next page

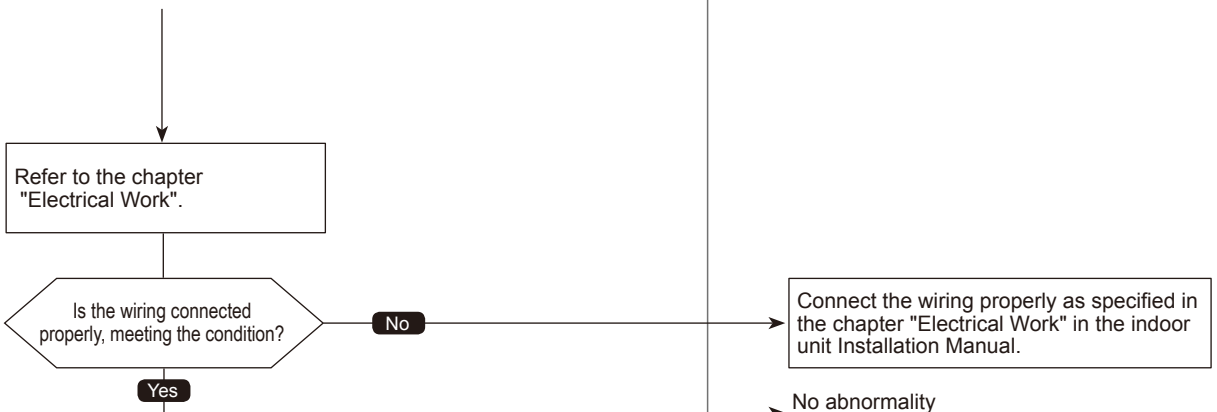
Check code

6831
6834

MA communication receive error

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis	Remedy
Continued from the previous page 	Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual. No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).

Check code

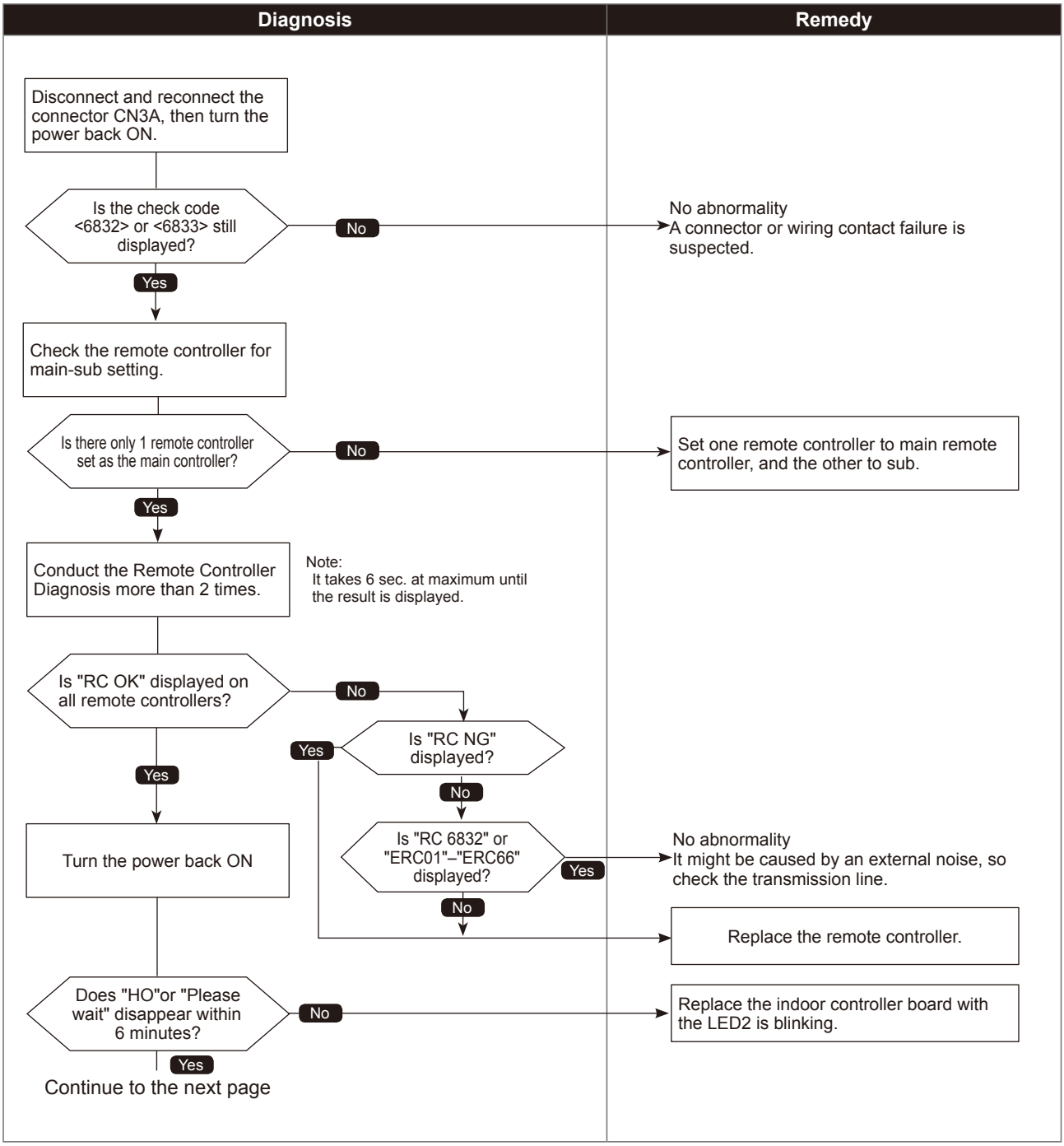
6832
6833

MA communication send error

Abnormal points and detection methods	Causes and check points
Detected in remote controller or indoor unit.	① There are 2 remote controllers set as main. ② Malfunction of remote controller sending/receiving circuit ③ Malfunction of sending/receiving circuit on indoor controller board ④ Remote controller transmitting error caused by noise interference

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards



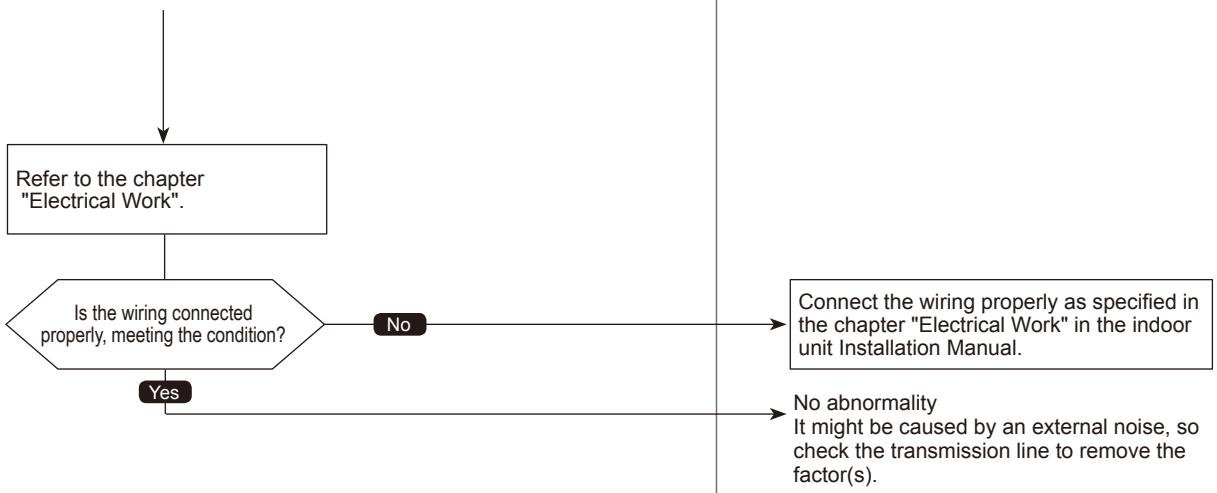
Check code

6832
6833

MA communication send error

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards

Diagnosis	Remedy
Continued from the previous page 	Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual. No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).

Check code

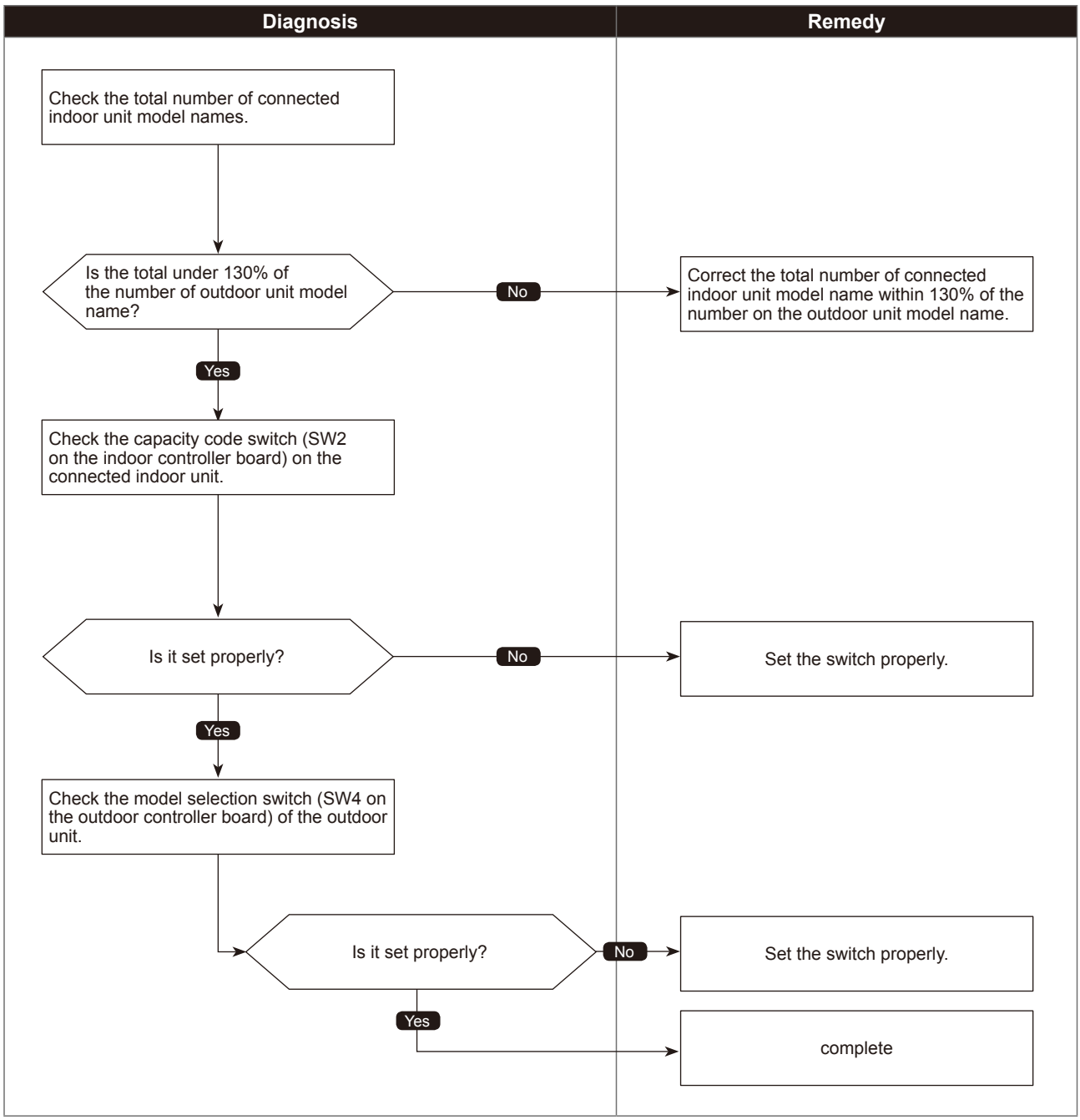
7100

Total capacity error

Abnormal points and detection methods	Causes and check points
When the total of the number on connected indoor unit model names exceeds the specified capacity level (130% of the number on the outdoor unit model name), a check code <7100> is displayed.	① The total of number on connected indoor unit model names exceeds the specified capacity level: · 4C36: up to code 29 · 5C42: up to code 35 · 8C48: up to code 40 ② The model name code of the outdoor unit is registered wrongly.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

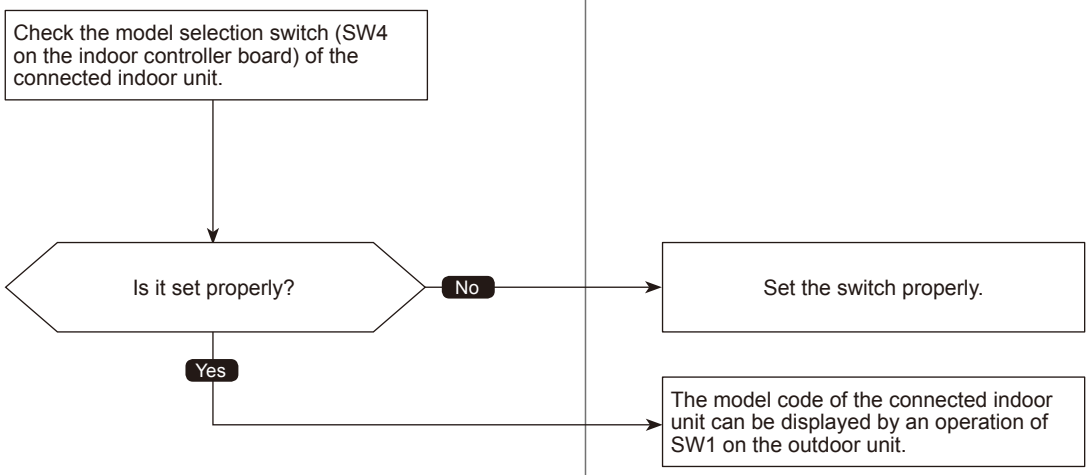
7101

Capacity code error

Abnormal points and detection methods	Causes and check points
When the capacity of connected indoor unit is over, a check code <7101> is displayed.	The model name of connected indoor unit (model code) is read as incompatible. The connectable indoor units are: ·P6 to P36 model (code 4 to 20)

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
	

Check code

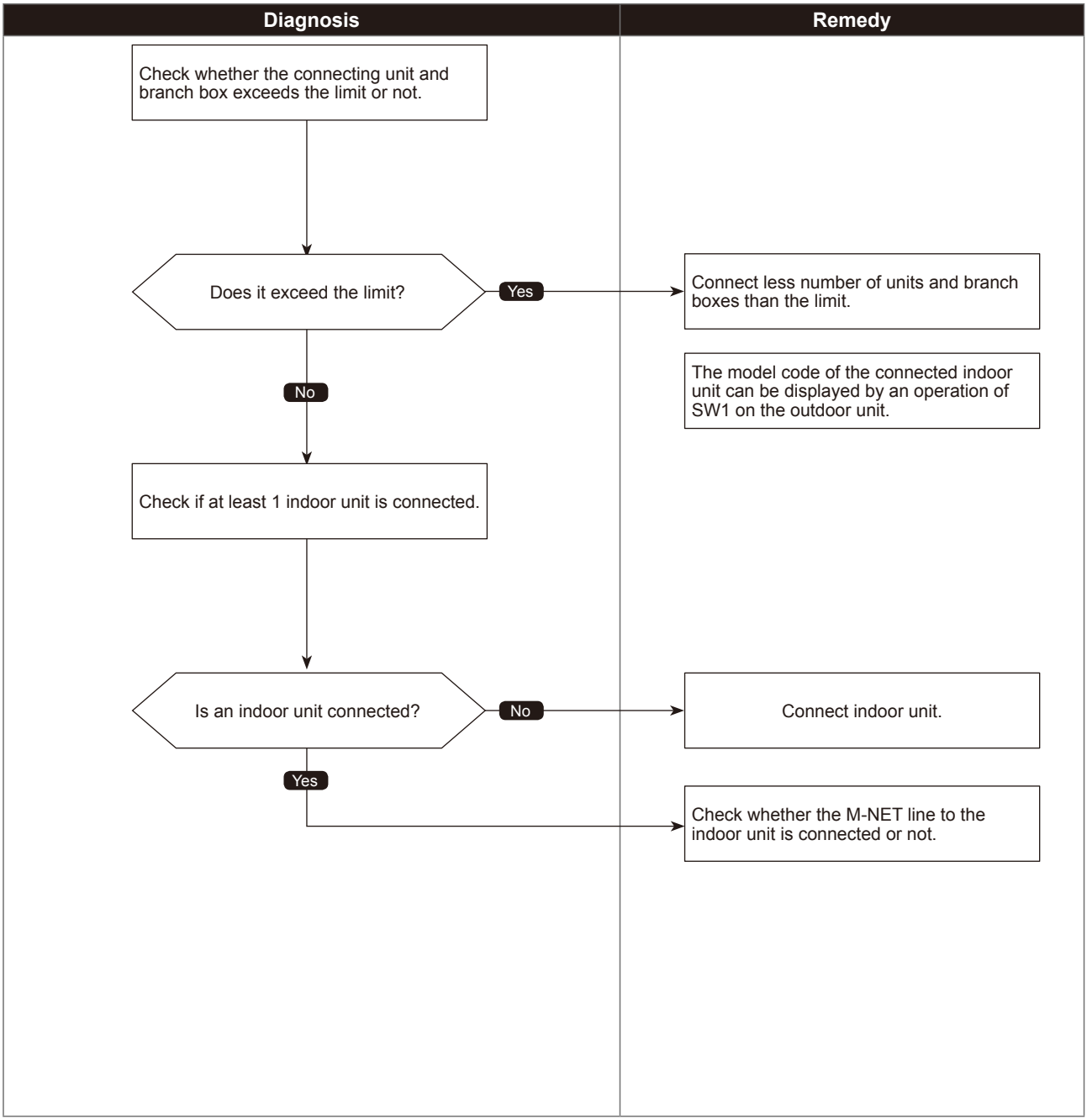
7102

Connecting excessive number of units and branch boxes

Abnormal points and detection methods	Causes and check points
When the connected indoor units or branch boxes exceed the limit, a check code <7102> is displayed.	Connecting more indoor units and branch boxes than the limit. Abnormal if connecting status does not comply with the following limit; ①Connectable up to 4 (4C36), 5 (5C42), 8 (8C48) units ②Connect at least 1 indoor unit (Abnormal if connected none) ③Connectable up to 2 branch boxes

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

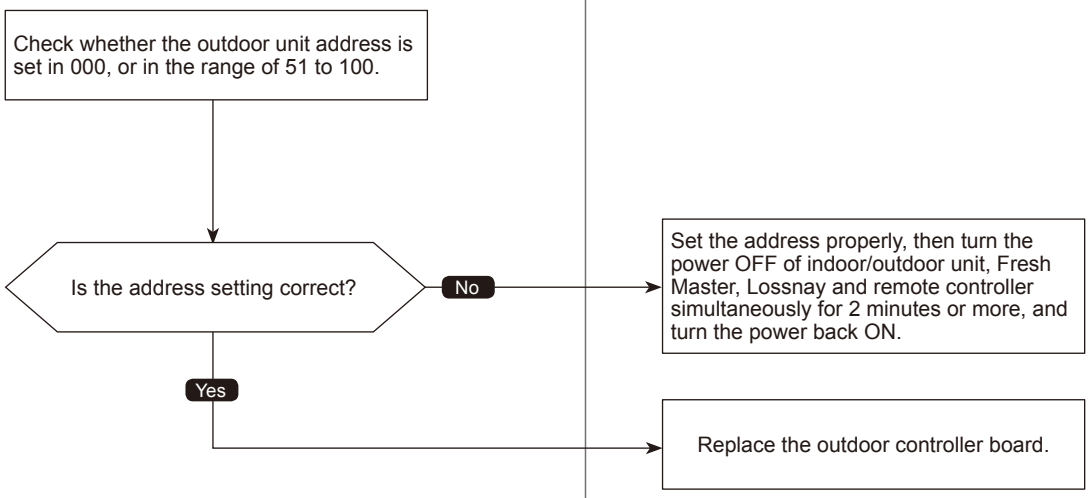
7105

Address setting error

Abnormal points and detection methods	Causes and check points
The address setting of outdoor unit is wrong.	Wrongly set address of indoor unit The outdoor unit is not set in 000, or in the range of 51 to 100.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
	

Check code

7130

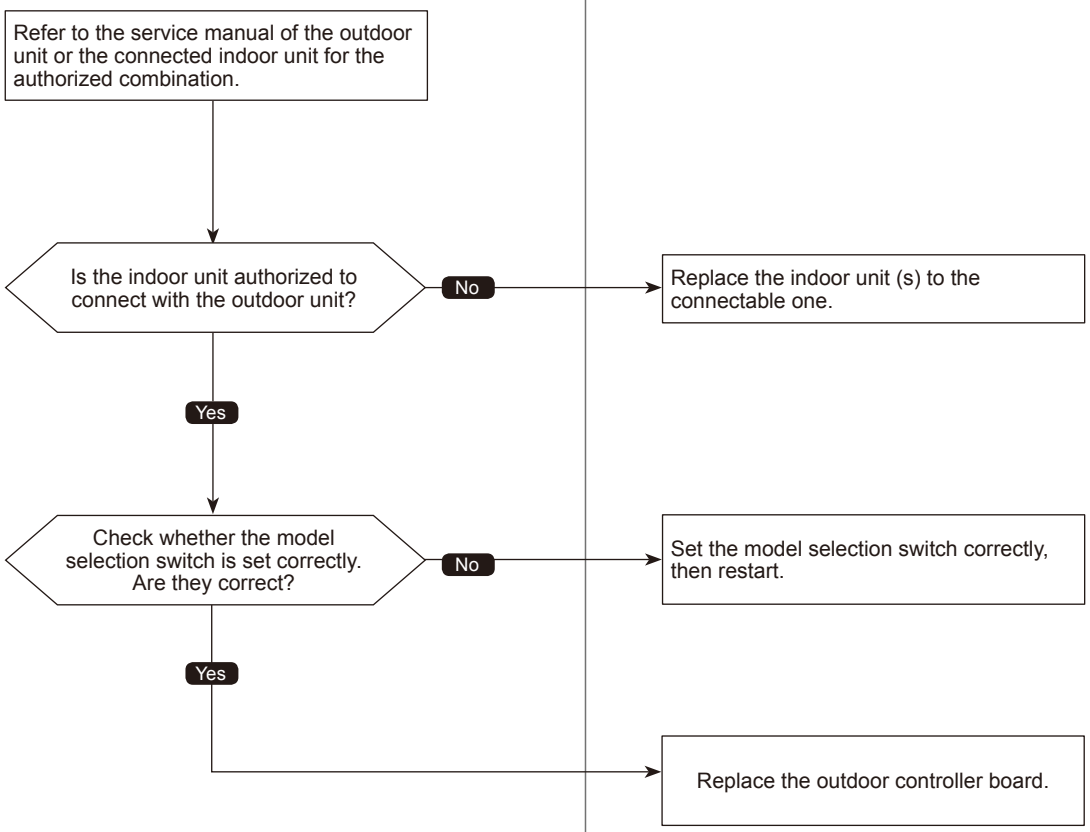
Incompatible unit combination error

Abnormal points and detection methods	Causes and check points
When the connected indoor unit is not connectable with the outdoor unit, the outdoor unit detects the error at start-up.	Connecting indoor unit (s) which is not authorized to connect to the outdoor unit.

●Diagnosis of defectives

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis



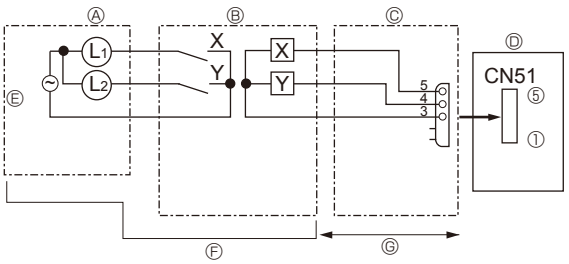
Remedy

8-5. TROUBLESHOOTING BY INFERIOR PHENOMENA

Phenomena	Factor	Countermeasure
1. Remote controller display works normally and the unit performs cooling operation, however, the capacity cannot be fully obtained. (The air does not cool well.)	① Refrigerant shortage	① If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.
	② Filter clogging	② Open intake grille and check the filter. Clean the filter by removing dirt or dust on it.
	③ Heat exchanger clogging	③ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.
	④ Air duct short cycle	④ Remove the blockage.
2. Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	① Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault.	① Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. Replace linear expansion valve.
	② Refrigerant shortage	② If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage.
	③ Lack of insulation for refrigerant piping	③ Check the insulation.
	④ Filter clogging	④ Open intake grille and check the filter. Clean the filter by removing dirt or dust on it.
	⑤ Heat exchanger clogging	⑤ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger.
	⑥ Air duct short cycle	⑥ Remove the blockage.
	⑦ Bypass circuit of outdoor unit fault	⑦ Check refrigerant system during operation.
3.① For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ② For 3 minutes after temperature adjuster turns on, the compressor will not stop operating even if temperature adjuster is turned off. (Compressor stops operating immediately when turning off by the remote controller.)	① ② Normal operation (For protection of compressor)	① ② Normal operation
4. The compressor that is running soon after powered on is slow to speed up.	The rate of speed-up is kept at 2 Hz/ min. during 4 hours after powered on. This can prevent a compressor failure that occurs when a non-energized compressor speeds up rapidly with refrigerant collected in the compressor.	Normal operation

8-6. OUTDOOR UNIT INPUT/OUTPUT CONNECTOR

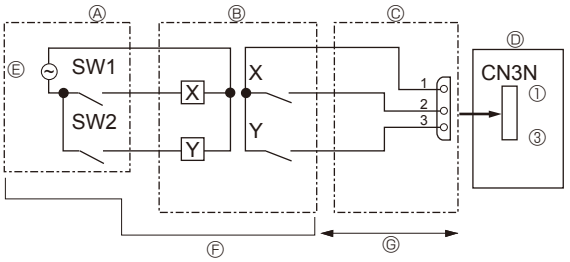
● **State (CN51)**



Ⓐ Distant control board
Ⓑ Relay circuit
Ⓒ External output adapter (PAC-SA88HA-E)
Ⓓ Outdoor unit control board
Ⓔ Lamp power supply
Ⓕ Procure locally
Ⓖ Max. 10 m

L_1: Error display lamp
L_2: Compressor operation lamp
X, Y: Relay (Coil standard of 0.9W or less for 12 V DC)
X, Y: Relay (1mA DC)

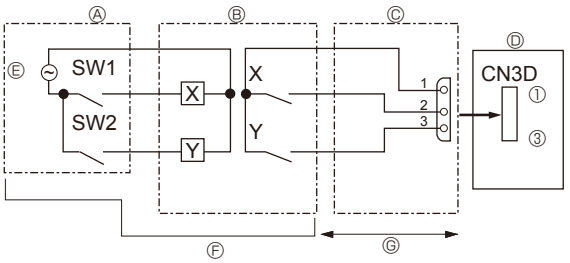
● **Auto change over (CN3N)**



Ⓐ Remote control panel
Ⓑ Relay circuit
Ⓒ External input adapter (PAC-SC36NA-E)
Ⓓ Outdoor unit control board
Ⓔ Relay power supply
Ⓕ Procure locally
Ⓖ Max. 10 m

	ON	OFF
SW1	Heating	Cooling
SW2	Validity of SW1	Invalidity of SW1

● **Silent Mode / Demand Control (CN3D)**

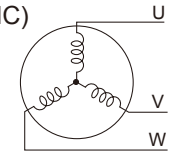
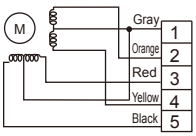
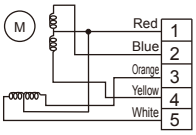


Ⓐ Remote control panel
Ⓑ Relay circuit
Ⓒ External input adapter (PAC-SC36NA-E)
Ⓓ Outdoor unit control board
Ⓔ Relay power supply
Ⓕ Procure locally
Ⓖ Max. 10 m

The silent mode and the demand control are selected by switching the DIP switch 9-2 on outdoor controller board.
It is possible to set it to the following power consumption (compared with ratings) by setting SW1, 2.

	Outdoor controller board DIP SW9-2	SW1	SW2	Function
Silent mode	OFF	ON	—	Silent mode operation
Demand control	ON	OFF	OFF	100% (Normal)
		ON	OFF	75%
		ON	ON	50%
		OFF	ON	0% (Stop)

8-7. HOW TO CHECK THE PARTS
OUTDOOR UNIT: MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ MXZ-8C48NA

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Thermistor (TH3)
<Outdoor liquid pipe>
Thermistor (TH4)
<Compressor>
Thermistor (TH6)
<Suction pipe>
Thermistor (TH7)
<Ambient>
Thermistor (TH8)
<Heat Sink></td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 50 to 80˚F [10 to 30 ˚C])
<table>
<tr><th></th><th>Normal</th><th>Abnormal</th></tr>
<tr><td>TH4</td><td>160 to 410 kΩ</td><td rowspan="4">Open or short</td></tr>
<tr><td>TH3
TH6
TH7</td><td>4.3 to 9.6 kΩ</td></tr>
<tr><td>TH8*</td><td>39 to 105 kΩ</td></tr>
</table>
* TH8 is internal thermistor of power module. (Y)</td></tr>
<tr><td>Fan motor (MF1, MF2)</td><td>Refer to next page.</td></tr>
<tr><td>Solenoid valve coil
<4-way valve>
(21S4)</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 68°F [20 ˚C])
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1567.5 ± 156.8 Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Motor for compressor
(MC)
 
</td><td>Measure the resistance between the terminals with a tester.
(Winding temperature 68°F [20 ˚C])
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>0.305 Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Solenoid valve coil
<Bypass valve>
(SV1)
<Switching valve>
(SV2)**</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 68°F [20 ˚C])
<table>
<tr><th>Normal</th><th>Abnormal</th></tr>
<tr><td>1197 ± 10 Ω</td><td>Open or short</td></tr>
</table></td></tr>
<tr><td>Linear expansion Valve
(LEV-A)
 
</td><td>
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>Gray - Black</td><td>Gray - Red</td><td>Gray - Yellow</td><td>Gray - Orange</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">46 ± 3 Ω</td></tr>
</table></td></tr>
<tr><td>Linear expansion Valve
(LEV-B)
 
</td><td>
<table>
<tr><th colspan="4">Normal</th><th>Abnormal</th></tr>
<tr><td>Red - White</td><td>Red - Orange</td><td>Red - Yellow</td><td>Red - Blue</td><td rowspan="2">Open or short</td></tr>
<tr><td colspan="4">46 ± 4 Ω</td></tr>
</table></td></tr>
</table>

**MXZ-NAHZ only.

Check method of DC fan motor (fan motor / outdoor multi controller circuit board)

① Notes

1. High voltage is applied to the connecter (CNF1, 2) for the fan motor. Pay attention to the service.
2. Do not pull out the connector (CNF1, 2) for the motor with the power supply on.
   (It causes trouble of the outdoor multi controller circuit board and fan motor.)

② Self check

Symptom : The outdoor fan can not turn around.

Fuse check
Check the fuse (F500) on outdoor controller board.

↓

Did the fuse blow? → Yes → Replace outdoor multi controller circuit board (MULTI.B.) and fan motor (MF1, 2).

↓ No

Wiring contact check
Contact of fan motor connector (CNF1, 2)

↓

Is there contact failure? → Yes → Recover wiring.

↓ No

Power supply check(Remove the connector (CNF1, 2))
Measure the voltage in the outdoor multi controller circuit board.
TEST POINT ① : V_{DC} (between 1 (+) and 4 (-) of the fan connector): V_{DC} 290–330 V DC(When PAM stops), 350 V DC (When PAM is operating)
TEST POINT ② : V_{CC} (between 5 (+) and 4 (-) of the fan connector): V_{CC} 15 V DC

↓

Is the voltage normal? → Yes → Replace the fan motor.

↓ No

Replace outdoor multi controller circuit board.

↓

Check the operation. → OK → END

↓ NG

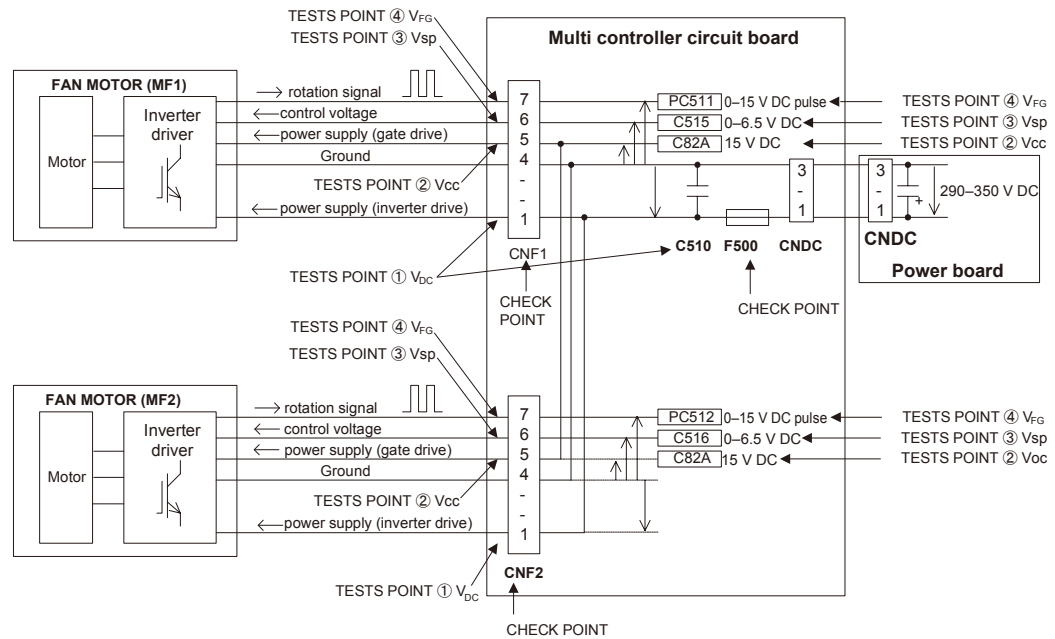
Replace the fan motor.

Replace the fan motor. ↓ Yes

Check the operation of fan. → OK → END

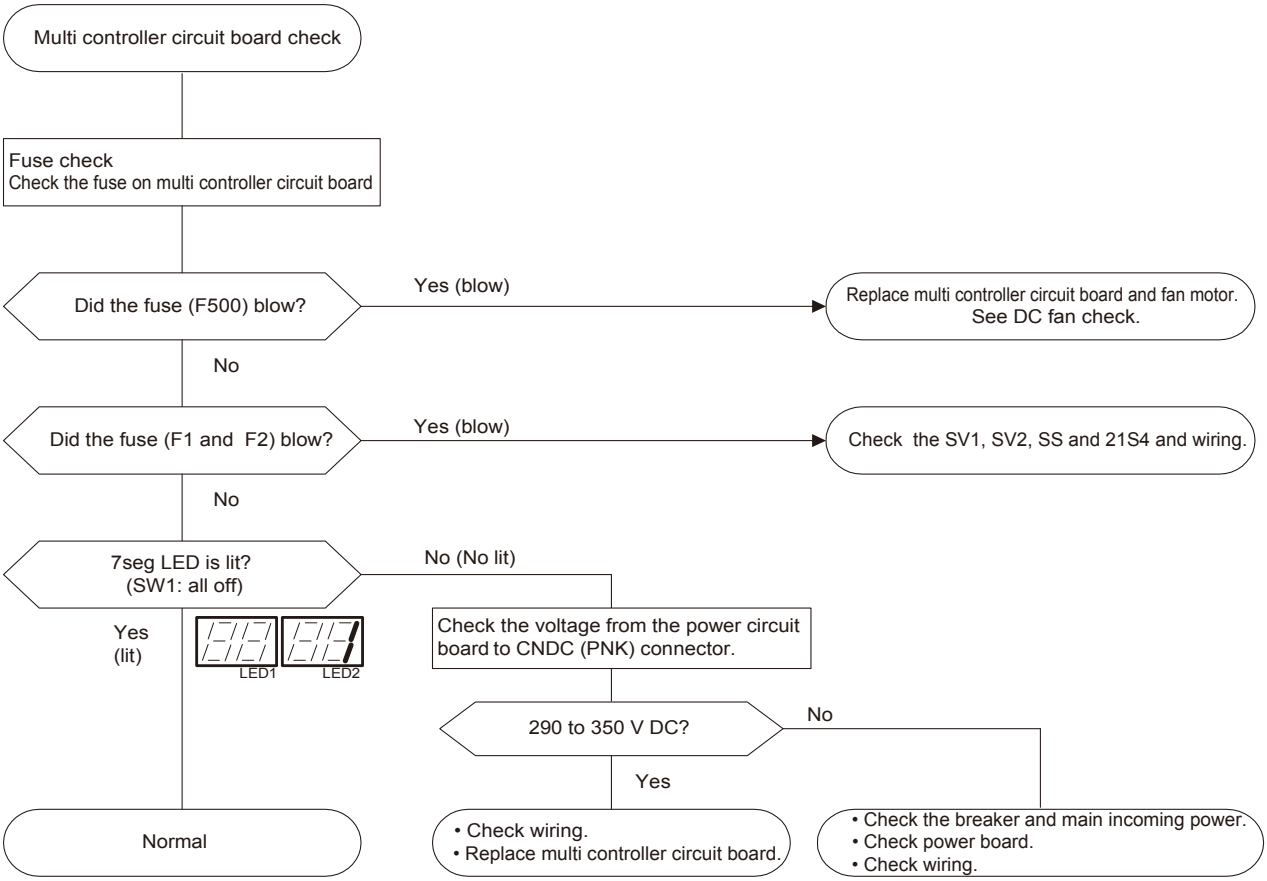
↓ NG

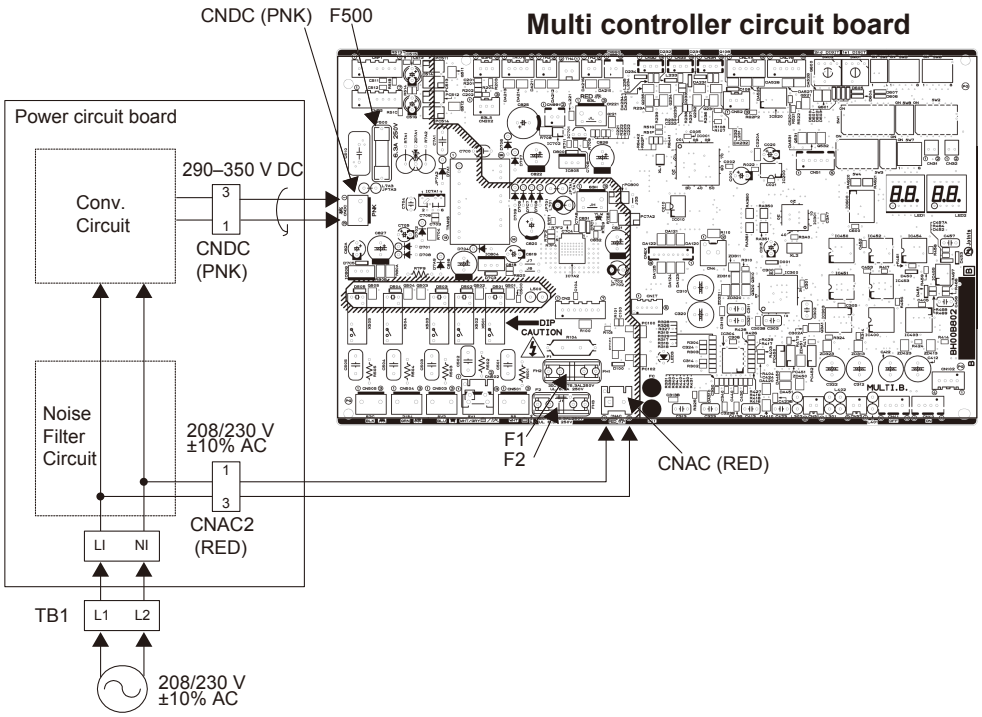
Replace outdoor multi controller circuit board.



· The inverter control P.C. board is built in the fan motor of this outdoor unit.
· When F500 that is on multi controller board is blown, change the fan motor and multi controller board at the same time (F500 is impossisble to changae).
· For outdoor unit, there are 2 fan motors (up and down; MF1/MF2), it is possible to connect to either CNF1 or CNF2 on the board.
· It is abnormal when the abnormlity is detected from either both fan motors or only one side.

Check method of multi controller circuit board





Check method of power circuit board

Power circuit board check

Note: To check the voltage of the parts on this board with a tester is difficult due to its location. Test points are limited.

Is the voltage of main incoming power 208/230 V±10% AC?
- No → • Check the breaker and power supply.
- Yes ↓

Is the voltage of CNAC (RED) on multi controller circuit board 208/230 V±10% AC?
- No → • Check wiring. • Replace power circuit board.
- Yes ↓

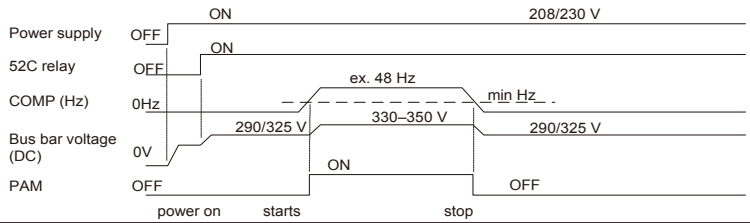
Is the voltage between M1 and M2 on TB3 (M-NET transmission) 24–30 V DC?
- No → • Check wiring. • Check M-NET power circuit board.
- Yes ↓

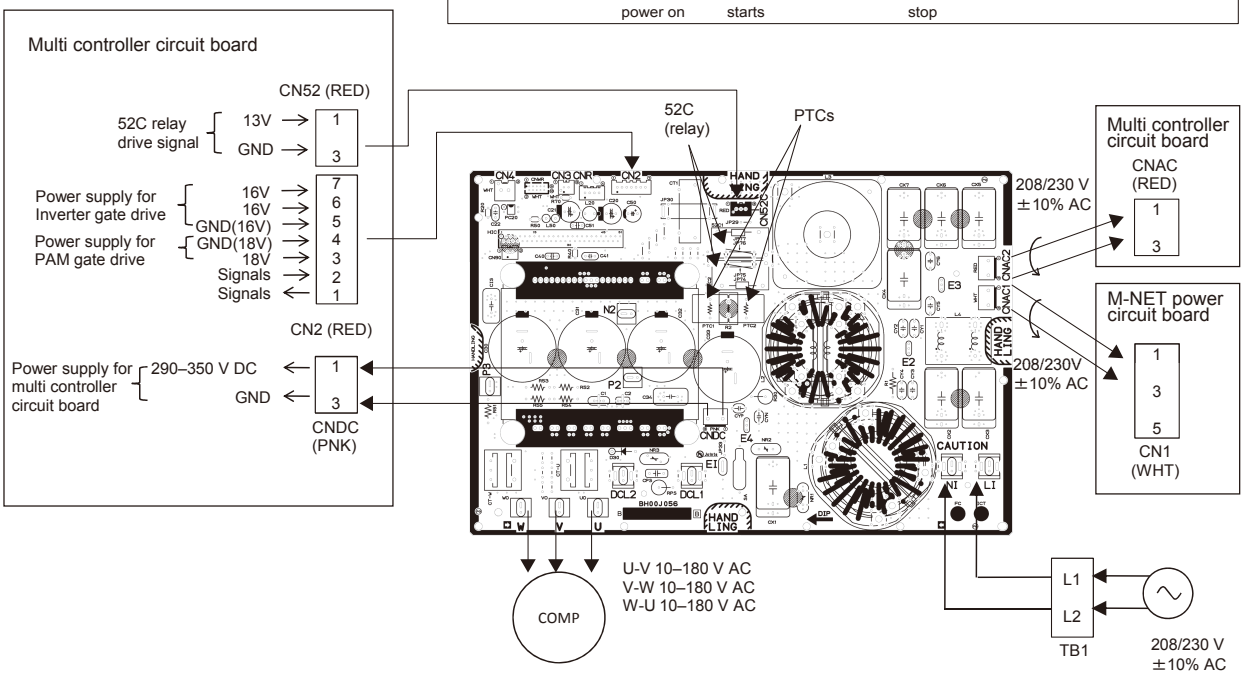
Is the voltage of CNDC(PNK) on multi board 290–350 V DC?
- No → Turn off the incoming power supply and check the resistance of PTC1,2 on the Power circuit board.
  - PTC1,2 = open ?
    - No (normal) → • Check wiring. • Check power circuit board. • Retry after the temperature of the PTC1,2 drops to 125°C or less
    - Yes (open) → •Replace Noise filter board and check 52C-relay,wiring,power circuit board .
- Yes ↓

Is the voltage of the compressor (U-V, U-W and V-W) balanced?
- No → • Check wiring. • Check model setting switch SW4 on the multi controller board. • Replace power board.
- Yes ↓

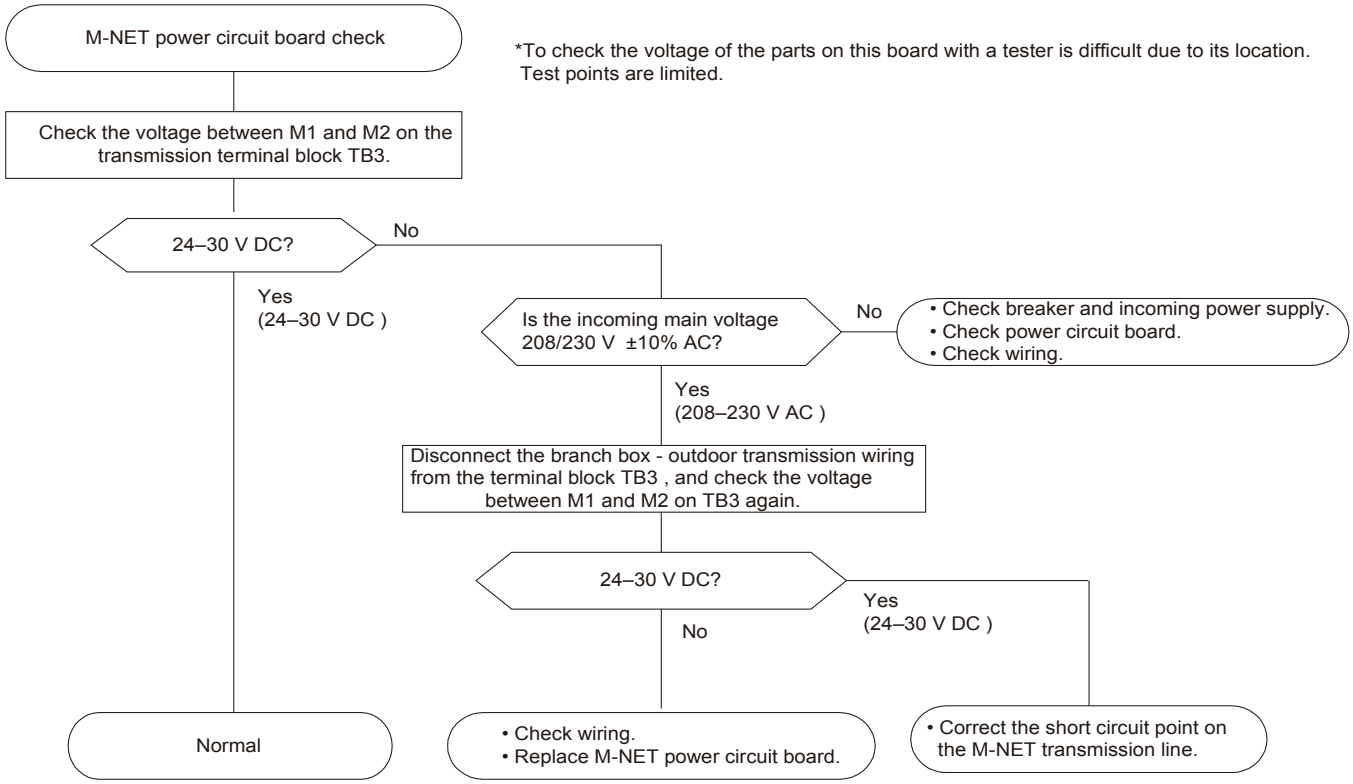
Normal

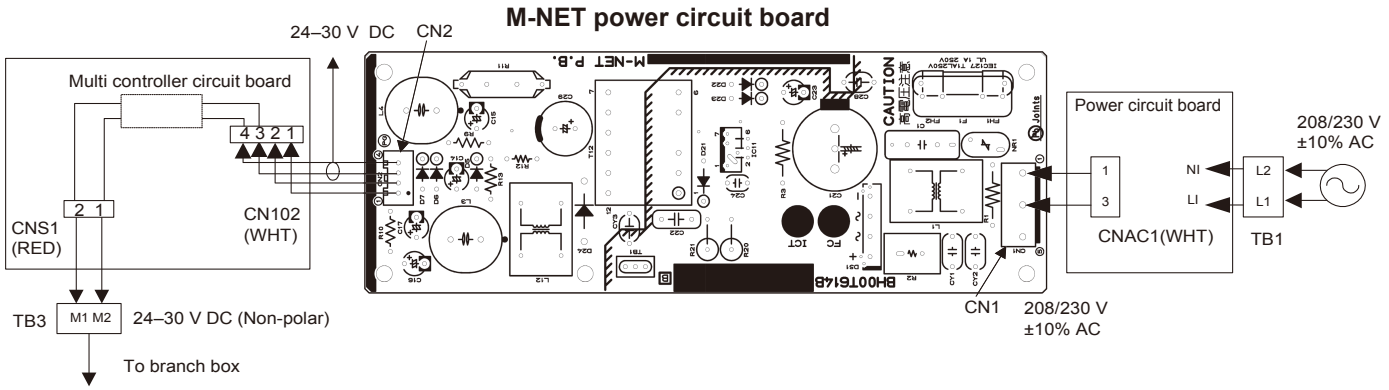
TIME CHART





Check method of M-NET power circuit board





8-8. HOW TO CHECK THE COMPONENTS

<Thermistor Characteristic Graph>

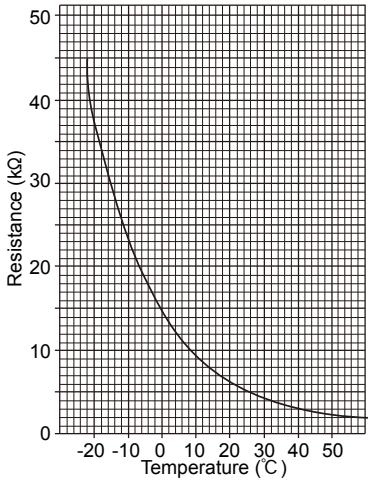
Low temperature thermistors

- Thermistor <HIC pipe> (TH2)
- Thermistor <Outdoor liquid pipe> (TH3)
- Thermistor <Suction pipe> (TH6)
- Thermistor <Ambient> (TH7)

Thermistor R0 = 15 kΩ ± 3 %
B constant = 3480 ± 2 %

$$R_t = 15\exp\{3480(\frac{1}{273+t} - \frac{1}{273})\}$$

32˚F [0℃]	15 kΩ	86˚F [30℃]	4.3 kΩ
50˚F [10℃]	9.6 kΩ	104˚F [40℃]	3.0 kΩ
68˚F [20℃]	6.3 kΩ		
77˚F [25℃]	5.2 kΩ		



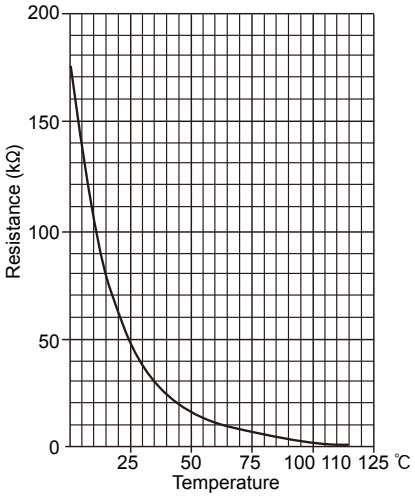
Medium temperature thermistor (Only YKM)

- Thermistor <Heat sink> (TH8)

Thermistor R50 = 17 kΩ ± 2 %
B constant = 4170 ± 3 %

$$R_t = 17\exp\{4170(\frac{1}{273+t} - \frac{1}{323})\}$$

32˚F [0℃]	180 kΩ
77˚F [25℃]	50 kΩ
122˚F [50℃]	17 kΩ
158˚F [70℃]	8 kΩ
194˚F [90℃]	4 kΩ



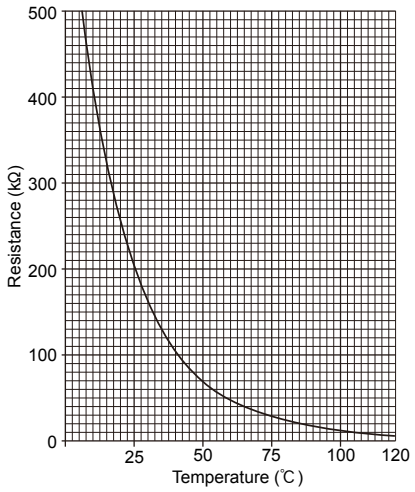
High temperature thermistor

- Thermistor <Compressor> (TH4)

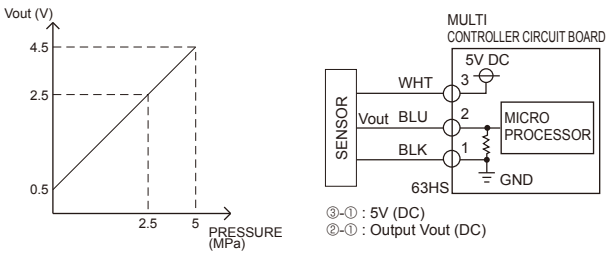
Thermistor R120 = 7.465 kΩ ± 2 %
B constant = 4057 ± 2 %

$$R_t = 7.465\exp\{4057(\frac{1}{273+t} - \frac{1}{393})\}$$

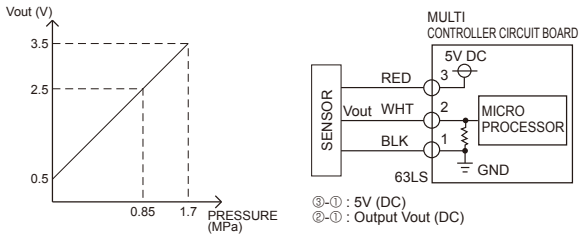
68˚F [20℃]	250 kΩ	158˚F [70℃]	34 kΩ
86˚F [30℃]	160 kΩ	176˚F [80℃]	24 kΩ
104˚F [40℃]	104 kΩ	194˚F [90℃]	17.5 kΩ
122˚F [50℃]	70 kΩ	212˚F [100℃]	13.0 kΩ
140˚F [60℃]	48 kΩ	230˚F [110℃]	9.8 kΩ



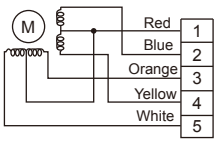
<HIGH PRESSURE SENSOR>



<LOW PRESSURE SENSOR>



BRANCH BOX : PAC-MKA50BC PAC-MKA30BC

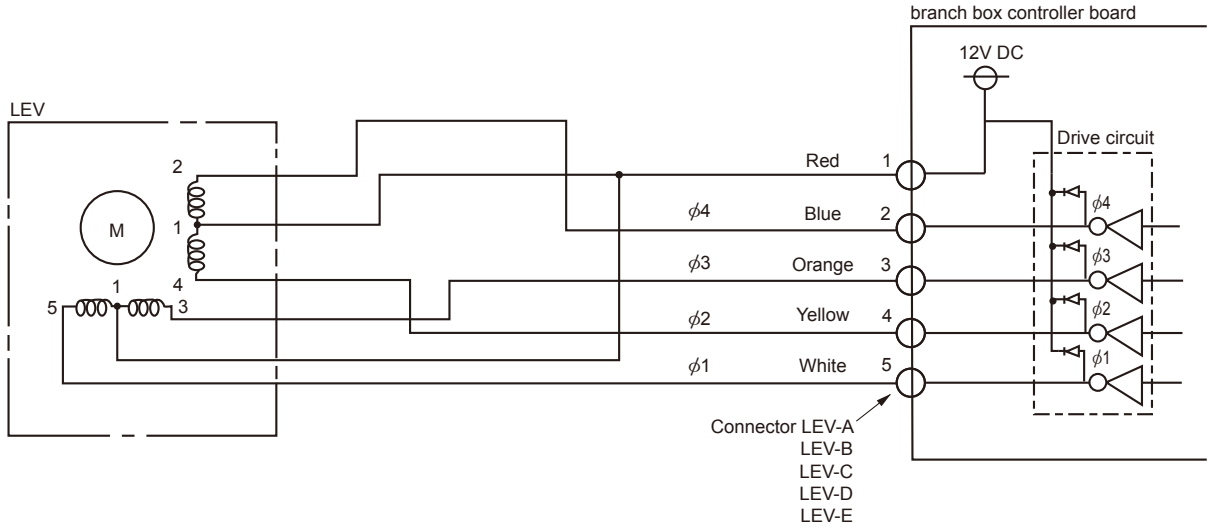
<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Thermistor (TH-A–E)
<Gas pipe></td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 50 to 86°F [10 to 30℃])
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3 to 9.6kΩ</td><td>Open or short</td></tr></table></td></tr>
<tr><td>Linear expansion valve
(LEV-A–E)
  </td><td>Disconnect the connector then measure the resistance with a tester.
(Winding temperature 68°F [20℃])
<table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>Red - White</td><td>Red - Orange</td><td>Red - Yellow</td><td>Red - Blue</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">46 ± 4Ω</td></tr></table></td></tr>
</table>

Linear expansion valve (LEV) in Branch box

(1) Operation summary of the linear expansion valve

- Linear expansion valve open/close through stepping motor after receiving the pulse signal from the branch box controller board.
- Valve position can be changed in proportion to the number of pulse signal.

<Connection between the branch box controller board and the linear expansion valve>



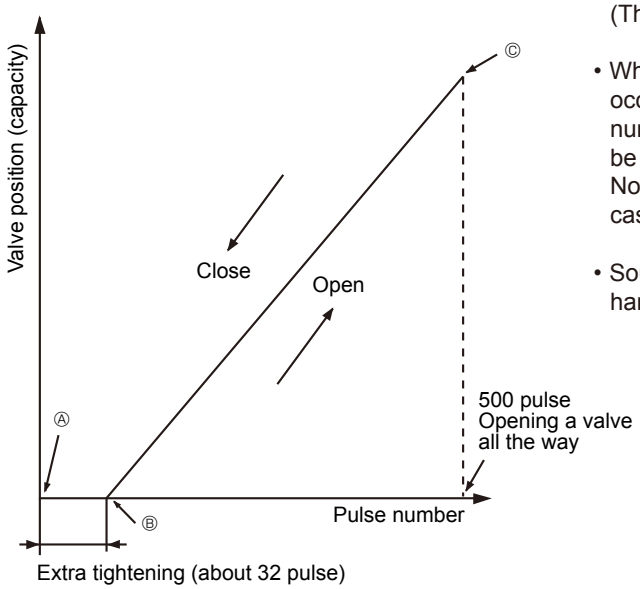
<Output pulse signal and the valve operation>

Output (Phase)	Output							
	1	2	3	4	5	6	7	8
ϕ1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
ϕ2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
ϕ3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
ϕ4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Opening a valve : 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8
Closing a valve : 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1
The output pulse shifts in above order.

- When linear expansion valve operation stops, all output phases become OFF.

(2) Linear expansion valve operation

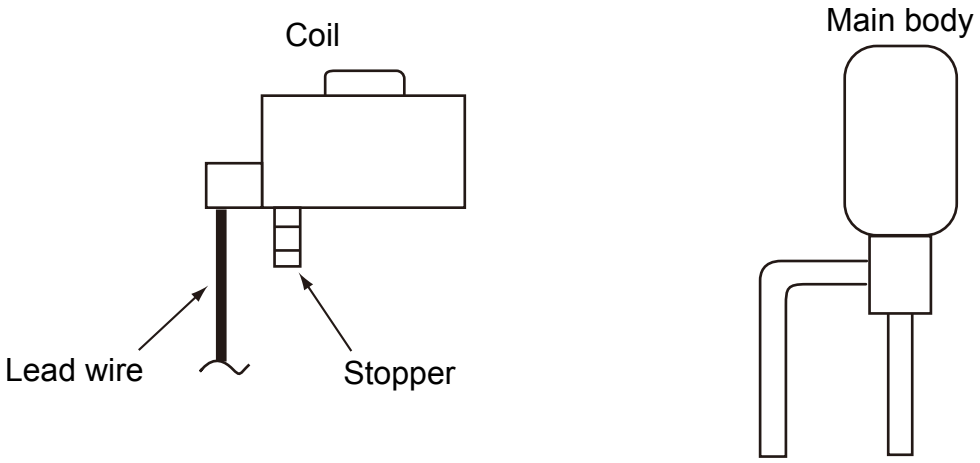


- When the switch is turned on, 700 pulse closing valve signal will be sent till it goes to **A** point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)
- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve : however, when the pulse number moves from **B** to **A** or when the valve is locked, sound can be heard.
  No sound is heard when the pulse number moves from **B** to **A** in case coil is burnt out or motor is locked by open-phase.
- Sound can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

(3) How to attach and detach the coil of linear expansion valve

<Composition>

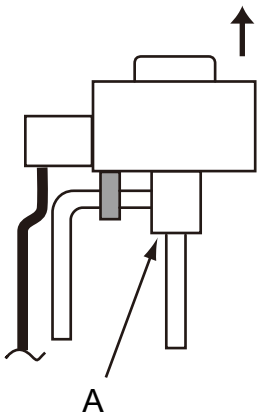
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and detach the coil by pulling it upward.

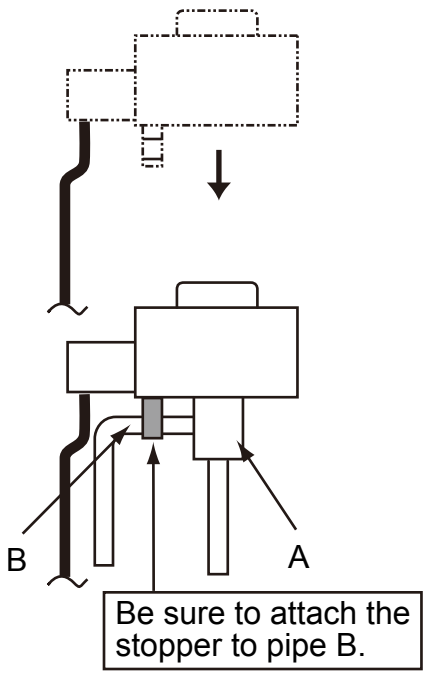
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to pressure.



<How to attach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and attach the coil by inserting it downward into the main body. Then securely attach the coil stopper to pipe B. (At this time, be careful that stress is not added to lead wire and main body is not wound by lead wire.) If the stopper is not firmly attached to pipe B, coil may be detached from the main body and that can cause defective operation of linear expansion valve.

To prevent piping stress, be sure to attach the coil holding the main body of linear expansion valve firmly. Otherwise pipe may break.



Troubleshooting

Problem	Check point	Corrective measure
Locked expansion valve	If the linear expansion valve becomes locked and the motor is still operating, the motor will emit a clicking noise and will not function. This clicking noise indicates an abnormality.	Replace the linear expansion valve.
Short circuit or broken circuit in expansion valve motor coil	Use an all-purpose electrical meter to measure the resistance between the different coils (red-white, red-orange, brown-yellow, brown-blue). Normal resistance is within a range of 46Ω ± 4%.	Replace the linear expansion valve.
Valve does not close completely.	In order to check the linear expansion valve, operate 1 indoor unit in the fan mode and another in the cooling mode. Then, use the outdoor multi controller board to operate the monitor and check the pipe temperature of the indoor unit. The linear expansion valve should be fully closed when the fan is operating. The temperature measured by the temperature sensor will drop if there is any leakage. If the measured temperature is significantly lower than that on the remote controller, this indicates that the valve is not closed. It is not necessary to replace the linear expansion valve if the leak of refrigerant is small and does not cause a malfunction.	Replace the linear expansion valve if there is a major leak of refrigerant.
Incorrect connection or connection failure	① Check improperly connected connector terminals and the wire colors. ② Remove the connector on the controller board side and check electrical conductance.	Continuity check of wrong part

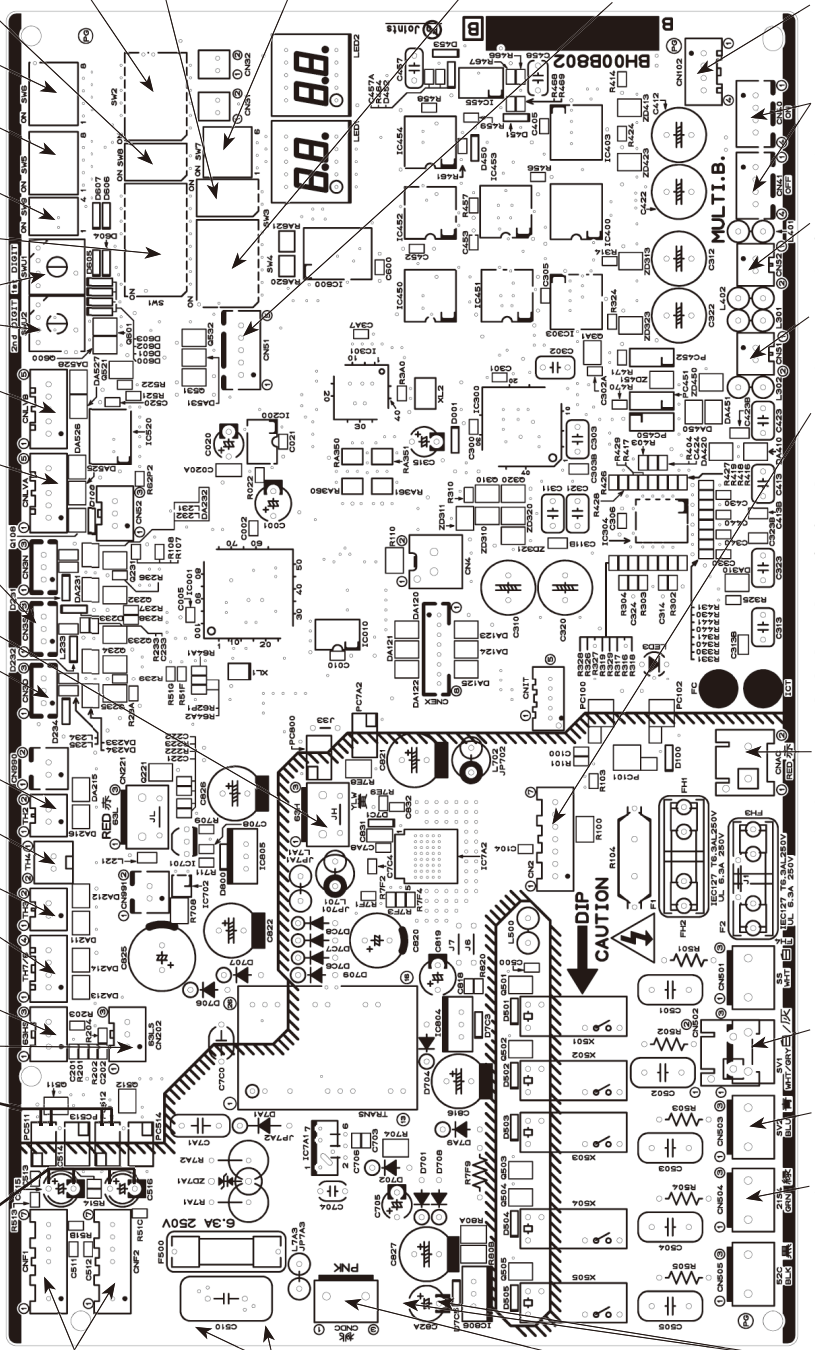
8-9. TEST POINT DIAGRAM

Outdoor multi controller circuit board

MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ

MXZ-8C48NA

<CAUTION> TEST POINT ① is high voltage.



SW8
Model selection

SW2
Pump down

SW3
Test run

SW7
Forced defrost

SW4
Model selection

CN51
External signal output

SW6
Function selection

SW5
Function selection

SW9
Function selection

SW1
Display selection
(Self diagnosis)

SWU2, SWU1
Address setting

CNLVB
Electronic expansion Valve

CNLVA
Electronic expansion Valve

CN3S
Input of demand control

63H
High pressure switch

CN3D
Input of demand control

TH2 Thermistor
<Hic pipe>

TH4 Thermistor
<Compressor>

TH3 Thermistor
<Outdoor liquid pipe>

TH7/TH6 Thermistor
<Ambient/ Suction pipe>

63HS
High pressure sensor

63LS
Low pressure sensor

V_{FG} (TEST POINT④)
(Voltage between pin3 and pin4 of PC511 or PC512) :
(Same as CNF1,2 ⑦(+)–④(−))

CN102
Connect to the M-P.B
(M-NET power circuit board)

CN40,CN41
Centralized control power supply/ For storing jumper connector selection

CNS2
Transmission wire of centralized control

CNS1
Branch box/ outdoor unit connecting wire

CN2
Connect to the outdoor power circuit board
①–⑤:
Power circuit board → Transmitting signal to the multi controller board
(0–5 V DC)
②–⑤: Zero cross signal
(0–5 V DC)
③–④: Not used
⑥–⑤: 16 V DC
⑦–⑤: 16 V DC

CNAC
Power supply for multi controller circuit board
208/230 V AC

SV1
Bypass valve

SV2

21S4
Four-way valve

V_{SP}
(Voltage between pins of C515 and C516) :
0 V DC (when stopped)
1–6.5 V DC (when operated)
(Same as CNF1,2 ⑥(+)–④(−))

CNF1, 2
Connect to fan motors
①–④ : 290V–350 V DC (V)
⑤–④ : 15 V DC
⑥–④ : 0–6.5 V DC
⑦–④ : 15 V DC(when stopped)
0–15 V DC pulse
(when operated)

V_{DC} (TEST POINT①)
(Voltage between pins of C510)
: 290V–350 V DC (V)
(Same as CNF1,2 ①(+)–④(−))

CNDC
290V–350 V DC (V)
(①(+)–③(−))

V_{CC} (TEST POINT②)
(Voltage between pins of C82A) : 15 V DC
(Same as CNF1,2 ⑤(+)–④(−))

Outdoor power circuit board
MXZ-4C36NAHZ
MXZ-5C42NAHZ
MXZ-8C48NAHZ
MXZ-8C48NA

Brief Check of POWER MODULE
Usually, they are in a state of being short-circuited if they are broken.
Measure the resistance in the following points (connectors, etc.).
If they are short-circuited, it means that they are broken.
1. Check of POWER MODULE
 ① Check of DIODE circuit
 R - L1 , S - L1 , R - N1 , S - N1
 ② Check of IGBT circuit
 L2 - N1
 ③ Check of INVERTER circuit
 P - U , P - V , P - W , N1 - U , N1 - V , N1 - W

Note: The marks R , S , L1 , L2 , P , N1 , U , V and W shown in the diagram are not actually printed on the board.

CN2
Connect to the outdoor controller circuit board (CN2)
①–⑤: Transmitting signal to outdoor controller circuit board ((0–5 V DC)
②–⑤: Zero cross signal (0–5 V DC)
③–④: 18 V DC
⑥–⑤: 16 V DC
⑦–⑤: 16 V DC

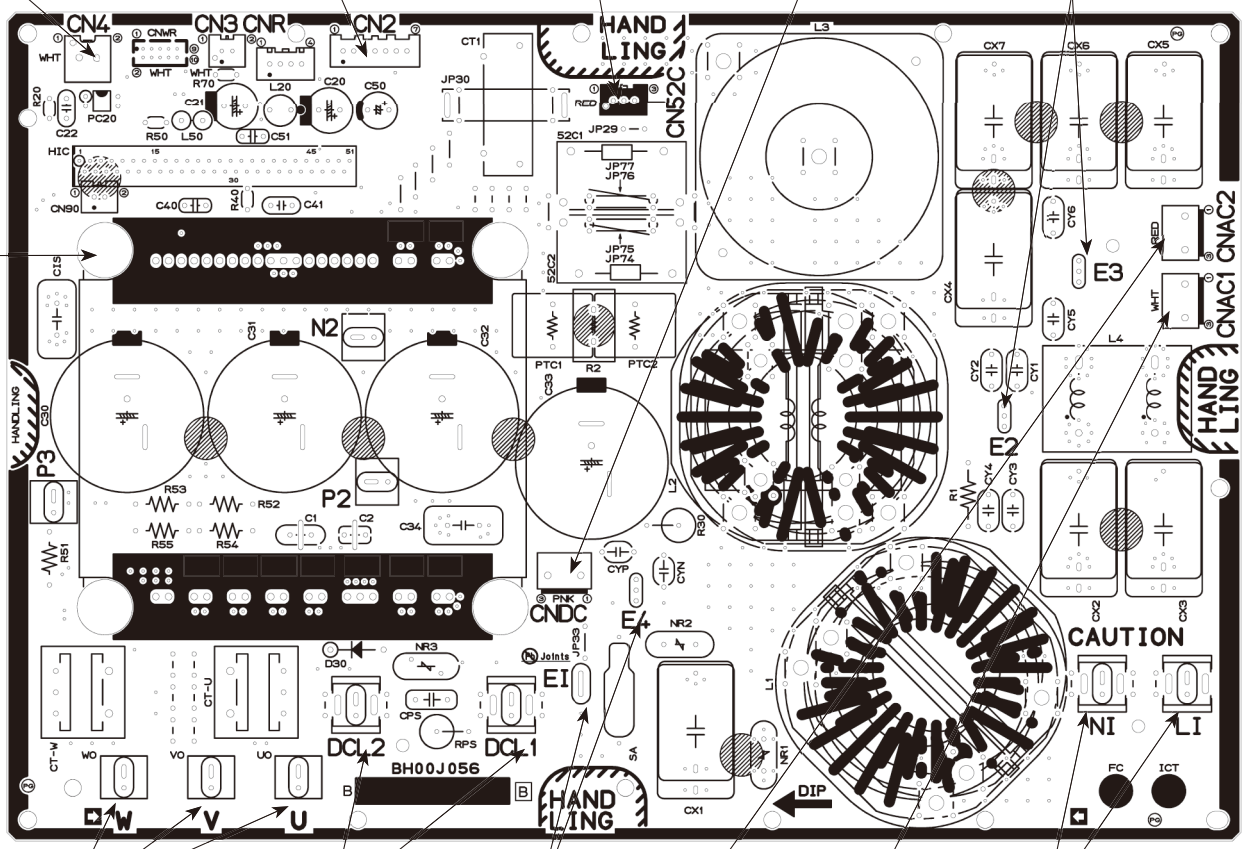
CN4
Connect to the outdoor controller circuit board (CN4)

CN52C
52C driving signal
Connect to the outdoor controller circuit board (CN52)

CNDC
290–350 V DC (①+, ③−)
Connect to the outdoor controller circuit board (CNDC)

E2, E3
Connect to the electrical parts box

Power module



U/V/W
Connect to the compressor (MC) Voltage among phases: 10–180 V AC

DCL1, DCL2
Connect to DCL

EI, E4
Connect to the electrical parts box

CNAC2
208/230 V AC
Connect to the outdoor multi controller circuit board (CNAC)

CNAC1
208/230 V AC
Connect to the M-NET power circuit board (CN1)

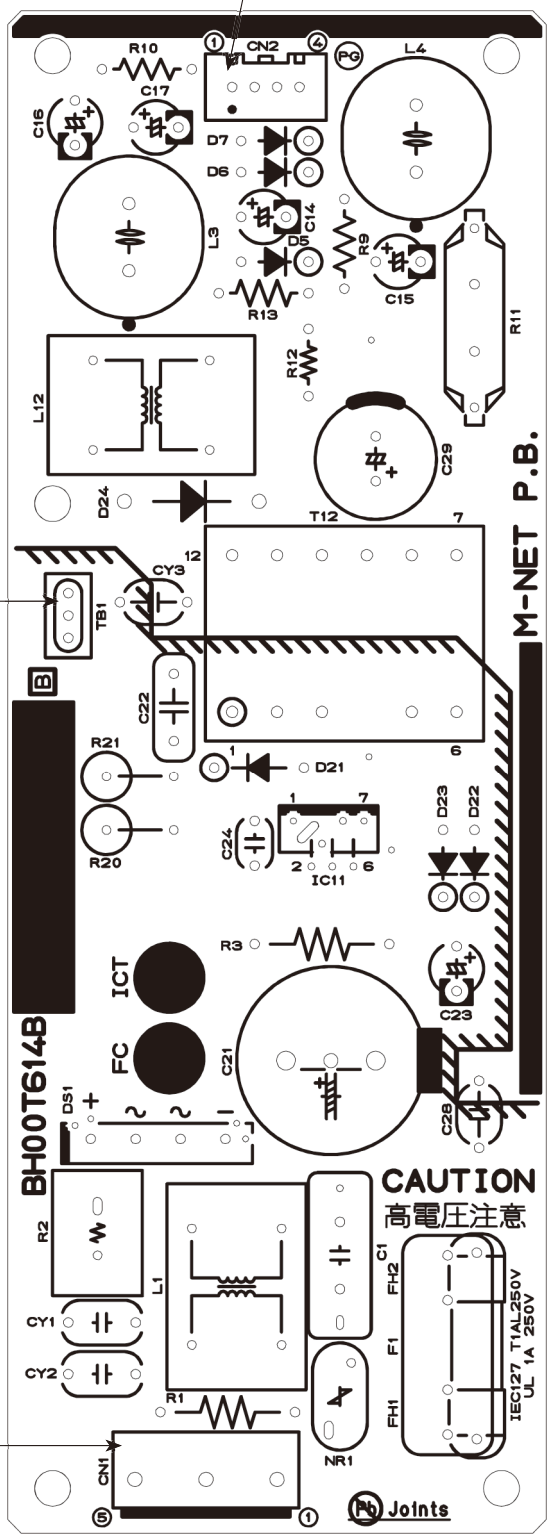
NI, LI
Voltage of 208/230 V AC is input (Connect to the terminal block (TB1))

M-NET power circuit board
MXZ-4C36NAHZ
MXZ-5C42NAHZ
MXZ-8C48NAHZ
MXZ-8C48NA

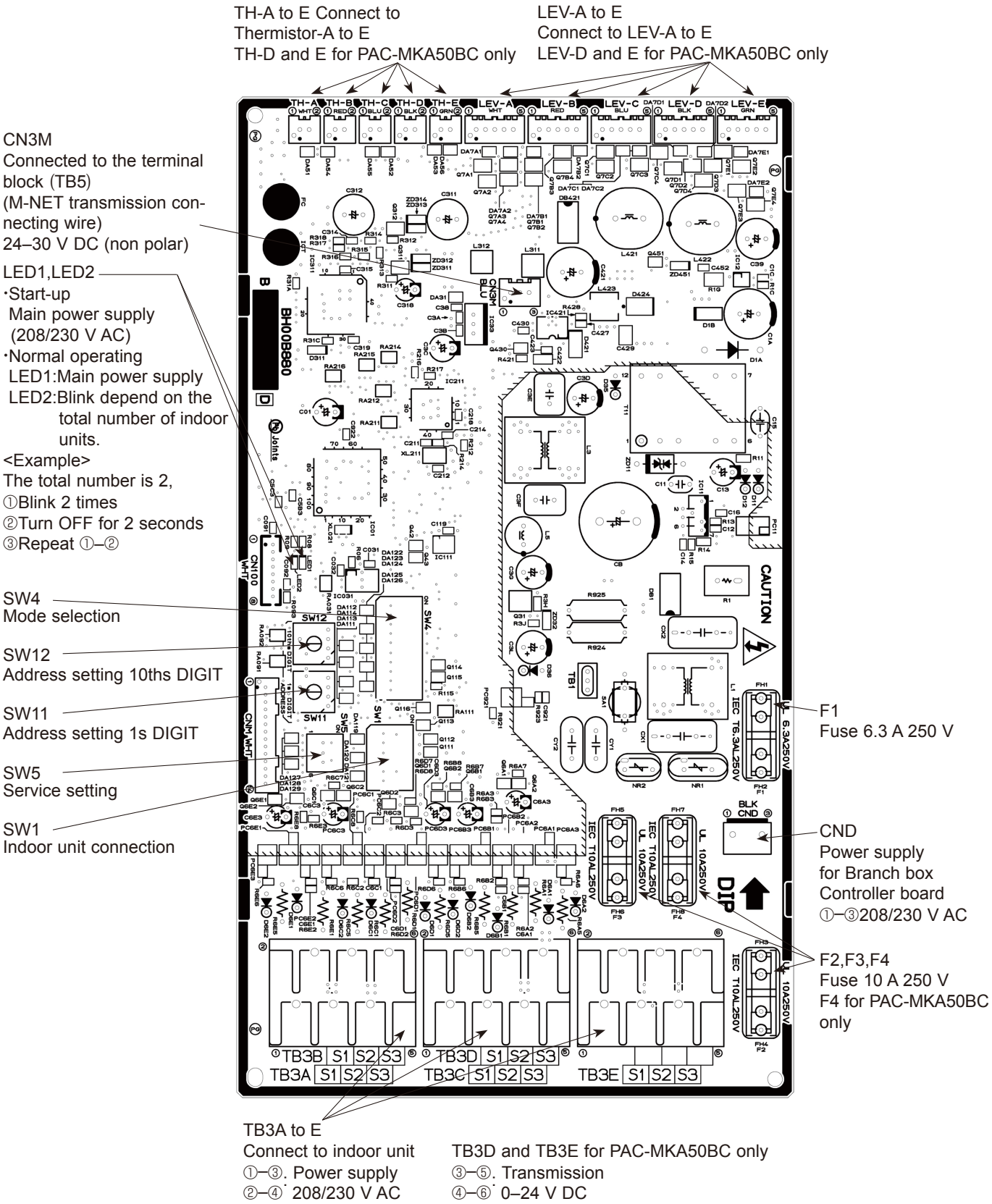
CN2
Connect to the outdoor multi controller circuit board (CN102)
①–②: 24–30 V DC
③–④: 24–30 V DC

TB1
Connect to the electrical parts box

CN1
Connect to the outdoor power circuit board (CNAC1)
①–③: 220–240 V AC



Branch box controller board
PAC-MKA50BC
PAC-MKA30BC

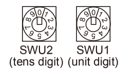
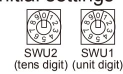
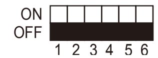
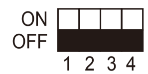
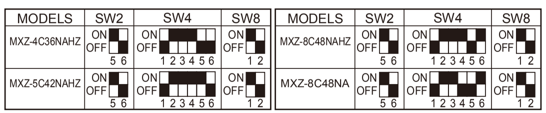
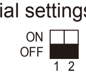


8-10. INTERNAL SWITCH FUNCTION TABLE

(1) Function of switches

MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ MXZ-8C48NA

The black square (■) indicates a switch position.

Switch	Step	Function	Operation in Each Switch Setting: ON	OFF	When to Set	Remarks	Purpose	Additional Information
SWU1 unit digit SWU2 tens digit	Rotary switch				Before turning the power ON	<Initial settings> 		
SW1 Digital Display Switch	1–8				Can be set either during operation or not.	<Initial settings> 		
SW2 Function Switch	1	Selects operating system startup	With centralized controller	Without centralized controller	Before turning the power ON	<Initial settings> 	Turn ON when the centralized controller is connected to the outdoor unit.	—
	2	Connection Information Clear Switch	Clear	Do not clear			When relocating units or connecting additional units.	—
	3	Abnormal data clear switch input	Clear abnormal data	Normal	OFF to ON any time after the power is turned on.		To delete an error history.	
	4	Pump down	Run adjustment mode	Normal	During compressor running		To facilitate outdoor unit the pumping down operation. Frequency = Fixed to 65 Hz Indoor-electronic expansion valve = Fully open Outdoor fan step = Fixed to 10	Please refer to a section referring to the pumping down on outdoor units Installation Manuals. It might not be possible to collect all the refrigerant if the amount is excessive.
SW2-5, 6/ SW4/ SW8 Model Switch	1–6	MODEL SELECTION 1:ON 0:OFF 			Before the power is turned ON.	<Initial settings> Set for each capacity.	—	—
SW3 Trial operation	1	ON/OFF from outdoor unit*1	ON	OFF	Any time after the power is turned ON.	<Initial settings> 	—	—
	2	Mode setting	Heating	Cooling			—	—
SW5 Function switch	1	Demand control setting for Australia	Australia setting	Normal	Can be set when off or during operation	<Initial settings> 	Turn ON to activate the demand control for Australia.	(Do not turn this ON if the unit is in outside Australia)
	2	Change the indoor unit's LEV opening at start-up	Enable	Normal			To set the LEV opening at start-up higher than usual. (+150 pulses) To improve the operation with the LEV almost clogged.	The refrigerant flow noise at start-up become louder.
	3	—	—	—			—	—
	4	—	—	—	OFF to ON during compressor running.		—	—
	5	Change the indoor unit's LEV opening at defrost	Enable	Normal	Can be set when OFF or during operation		To set the LEV opening higher than usual during defrosting operation. (Only Qj ≦ 10 is valid, + 300 pulses) To avoid the discharge temperature increase and provide efficient defrosting operation.	The refrigerant flow noise during the defrosting operation becomes louder.
	6	Switching the target sub cool (Heating mode)	Enable	Normal			To decrease the target sub cool value. To reduce the discharge temperature decrease due to refrigerant liquid accumulation in the units.	A refrigerant flow noise might be generated if the sub cool value is too small.

*1 Test run on PWFY series cannot be run by the outdoor unit. Use a switch on the indoor unit or a remote controller to perform test run.

Continue to the next page

Switch	Step	Function	Operation in Each Switch Setting			Remarks	Purpose	Additional Information
			ON	OFF	When to Set			
SW5 function switch	7	During the outdoor unit is in HEAT operation, slightly opens the electronic expansion valve on the indoor unit which is in FAN, STOP, COOL or thermo-OFF*3.	Active	Inactive	Can be set when OFF or during operation	<Initial settings> ON / OFF 1 2 3 4 5 6 7 8	To open the LEV opening higher for units other than in HEAT operation. To avoid a refrigerant shortage (less capacity) due to refrigerant liquid accumulation in the units which is not in operation.	A refrigerant flow noise might be generated in units other than the one in operation.
	8	During the outdoor unit is in operation, fully opens the electronic expansion valve on the indoor unit which is in FAN, COOL, STOP, or thermo-OFF.*4	Enable	Normal	Before turning the power ON.		To reduce the room temperature increase by setting the LEV opening lower for the units in thermo-OFF operation.	The refrigerant is more likely to collect in the units with thermo-OFF operation, and causing the units refrigerant shortage. (Results in less capacity and increase of discharge temperature.)
SW6 function switch	1	—	—	—	—	<Initial settings> ON / OFF 1 2 3 4 5 6	—	—
	2	Switch of current limitation reading in a different way	Enable	Normal	Before turning the power ON.		To lower the primary current limit by 3A. This switch is used for a single phase model with a breaker capacity 30A. (32A is the specified value)	The performance of the unit might be somewhat reduced since the frequency would not rise enough due to the lowered current limitation.
	3	—	—	—	—		—	—
	4	Change of defrosting control	Enable (For high humidity)	Normal	Can be set when OFF or during operation		To shorten the defrosting prohibition time in high humidity (or heavy snow) region, in order to reduce malfunctions caused by frost .	The performance of the HEAT operation is somewhat reduced since the defrosting operation is frequently performed.
	5	—	—	—			—	—
	6	Switching the target discharge pressure (Pdm)	Enable	Normal		SW6-6: OFF / ON Target Pdm (kg/cm²): 29.5 / 31.5	To raise the performance by setting the PDm higher during HEAT operation.	Power consumption is raised due to a higher frequency. (The performance would not be raise at the maximum operating frequency.)
	7	Switching (1) the target evaporation temperature (ETm)	Enable	Normal		SW6-7: OFF / ON / OFF / ON SW6-8: OFF / OFF / ON / ON Target ETm (℃): 9 / 11 / 6 / 14	To raise/reduce the performance by changing the target ETm during COOL operation. Switch to raise the performance: raises the performance Switch to reduce the performance: prevents dew condensation	Switching it to raise the performance, it raises the power consumption, and produces more dew condensation. Switching it to reduce the performance, it makes the performance insufficient.
	8	Switching (2) the target evaporation temperature (ETm)	Enable	Normal				
SW7 function switch	1	Ignore current sensor abnormality	Enable	Normal	After turning the power ON.	<Initial settings> MXZ-8C48NA ON / OFF 1 2 3 4 5 6	To perform a test run for electrical parts alone without running the compressor.	Make sure to connect the connectors to the compressor after checking the electrical parts.Be careful not to get electrical shock while working on electrical parts.
	2	Setting to energize the freeze stat heater (optional part)	During heating operation only*5	Include when the heating operation is OFF.*6	Can be set when OFF or during operation		It reduces snow on the base, even it blows inside the unit, by setting the base heater ON while the HEAT operation is stopped.	Power consumption raises while the operation is stopped.
	3	—	—	—	—		—	—
	4	Maximum frequency down at 1 hour after COOL operation	Enable	Normal	Can be set when OFF or during operation	MXZ-4C36/5C42/8C48NAHZ ON / OFF 1 2 3 4 5 6	To reduce dew condensation on the indoor unit by lowering the frequency.	The performance might be insufficient.
	5	—	—	—			—	—
	6	Forced defrost	Forced defrost	Normal	During compressor running in HEAT mode.		Turn ON when it is necessary to perform the defrosting operation forcedly. (Effective only at start-up, or 10 minutes after the last defrosting operation)	It performs the defrosting operation forcedly. (HEAT operation is stopped temporarily.)
SW9 Function Switch	1	Auto change over from remote controller (IC with the minimum address)	Enable*2	Disable	Before turning the power ON	<Initial settings> ON / OFF 1 2	Enables the indoor unit with the minimum address to select AUTO mode, and switches the operation mode of the other indoor units to the same mode.	Cannot be set when the centralized control is ON.
	2	Switching the Silent/ Demand mode	Demand control	Silent mode	Can be set when OFF or during operation		—	About the Silent mode/Demand control setting, refer to "8-6. OUTDOOR UNIT INPUT/OUTPUT CONNECTOR".

*2 When a PWFY series is connected, this function is always disable regardless of the switch.
*3 SW5-7 Opens the indoor-electronic expancion valve as a countermeasure against the indoor unit in FAN, COOL, STOP, or thermo-OFF operation with refrigerant-shortage status due to an accumulation of liquid refrigerant in the indoor unit.
*4 SW5-8 Countermeasure against room temperature rise for indoor unit in FAN, COOL, and thermo-OFF (heating) mode.
*5 During heating operation and the ambient temperature is 39°F [4℃] or below, the freeze prevention heater is energized.
*6 During heating mode is OFF (include thermo-OFF in cooling mode), and the ambient temperature is 39°F [4℃] or below, the freeze prevention heater is energized.

The black square (■) indicates a switch position.

<table>
<tr><th>Switch</th><th>Step</th><th>Function</th><th colspan="2">Operation in Each Switch Setting
ON / OFF</th><th>When to Set</th><th>Remarks</th><th>Additional Information</th></tr>
<tr><td>SWU11
Unit digit address setting
SW12
Tens digit address setting</td><td>Rotary switch</td><td>SW12 (Tens digit) SW11 (Unit digit)
How to set addresses
Example: if address is "3", remain SW12 (for over 10) at "0", and match SW11 (for 1 to 9) with "3".</td><td colspan="2"></td><td>Before turning the power ON</td><td><Initial settings>
SW12 (Tens digit) SW11 (Unit digit)</td><td>—</td></tr>
<tr><td>SW1
Indoor unit connection</td><td>1–5</td><td><table><tr><th></th><th></th><th>OFF</th><th>ON</th></tr><tr><td>SW1-1</td><td>INDOOR UNIT-A</td><td>NOT CONNECT</td><td>CONNECT</td></tr><tr><td>SW1-2</td><td>INDOOR UNIT-B</td><td>NOT CONNECT</td><td>CONNECT</td></tr><tr><td>SW1-3</td><td>INDOOR UNIT-C</td><td>NOT CONNECT</td><td>CONNECT</td></tr><tr><td>SW1-4*1</td><td>INDOOR UNIT-D</td><td>NOT CONNECT</td><td>CONNECT</td></tr><tr><td>SW1-5*1</td><td>INDOOR UNIT-E</td><td>NOT CONNECT</td><td>CONNECT</td></tr><tr><td>SW1-6</td><td>NOT USED</td><td></td><td></td></tr></table></td><td colspan="2"></td><td>Before turning the power ON</td><td><Initial settings>
ON / OFF
1 2 3 4 5 6</td><td>After each indoor unit is conncted to the outdoor unit, turn ON the switch corresponding to each indoor unit. For example, when the indoor units are connected to INDOOR UNIT-A and C, turn SW1-1 and SW1-3 to ON.</td></tr>
<tr><td rowspan="4">SW4
Mode selection</td><td>1</td><td>Change temperature indication</td><td>Farrenheit temperature</td><td>Celsius temperature</td><td>Before turning the power ON</td><td rowspan="4"><Initial settings>
ON / OFF
1 2 3 4 5 6 7 8 9 10</td><td rowspan="4">—</td></tr>
<tr><td>2</td><td>Power-supply voltage setting</td><td>230 V</td><td>208 V</td><td>Set at factory only</td></tr>
<tr><td>3</td><td>Change operation if M-NET communication error occurs.</td><td>Stop operation</td><td>Continued operation</td><td rowspan="2">Before turning the power ON</td></tr>
<tr><td>4</td><td>Automatic restoration when the power comes back ON.*2</td><td>Inactive</td><td>Active</td></tr>
<tr><td>5–10</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>SW5
Service setting</td><td>1–3</td><td>Change INDOOR UNIT No. for monitoring</td><td colspan="2">Refer to "8-12. BRANCH BOX FUNCTIONS".</td><td>Cen be activated at any time</td><td><Initial settings>
ON / OFF
1 2 3 4 5 6</td><td>—</td></tr>
</table>

*1 PAC-MKA50BC only

*2 When the unit is at automatic restoration, item(s) set with the remote controller during the power return to automatic restoration may not be properly activated.
Note that the automatic restoration starts after the unit has stopped once.

(2) Function of connector

MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ MXZ-8C48NA

Types	Connector	Function	Action by Pin short operation		Effective timing
			Pin 1-2 Short	Pin 2-3 Short	
Connector	CN31	LEV opening function (at start-up)	Open a little bit	Normal	When power supply ON

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
0	00000000	Relay output display	Compressor operation	52C	21S4	SV1	(SV2)			Always lighting	ON: light on OFF: light off
		Check display	0000~9999 (Alternating display of addresses and check code)								•When abnormality occurs, check display.
1	10000000	Indoor unit check status	No.1 unit check	No.2 unit check	No.3 unit check	No.4 unit check	No.5 unit check	No.6 unit check	No.7 unit check	No.8 unit check	Check: light on Normal: light off
2	01000000	Protection input	High-pressure abnormality	Superheat due to low discharge temperature	Compressor shell temperature abnormality	TH4 abnormality	TH3 abnormality	Outdoor fan rotation frequency abnormality	TH7 abnormality	TH8 abnormality	Display detected microprocessor protection or abnormality
3	11000000	Protection input	Heat sink overheating	Compressor over current interception	Voltage abnormality	Insufficient refrigerant amount abnormality	Current sensor/ primary current abnormality		63HS abnormality	start over current interception abnormality delay	
4	00100000	Protection input	Abnormality in the number of indoor units	Address double setting abnormality	Indoor unit capacity error	Over capacity	Indoor unit address error	Outdoor unit address error	Current sensor open/short	serial communication abnormality (outdoor unit)	
5	10100000	Abnormality delay display 1	High-pressure abnormality delay	Superheat due to low discharge temperature delay	Compressor shell temperature abnormality delay	TH4 abnormality delay	TH3 abnormality delay	Outdoor fan rotation frequency abnormality delay	TH7 abnormality delay	TH8 abnormality delay	Display all abnormalities remaining in abnormality delay
6	01100000	Abnormality delay display 2	Heat sink overheating delay	Compressor over current interception delay	Voltage abnormality delay	Insufficient refrigerant amount abnormality delay	Current sensor/ primary current abnormality delay		63HS abnormality delay	start over current interception abnormality delay	
7	11100000	Abnormality delay display 3	63LS abnormality delay	TH2 abnormality delay	4-way valve abnormality delay	Delay caused by blocked valve in cooling mode	Power module abnormality delay	TH6 abnormality delay	Current sensor open/short delay		
8	00010000	Abnormality delay history 1	High-pressure abnormality delay	Superheat due to low discharge temperature delay	Compressor shell temperature abnormality delay	TH4 abnormality delay	TH3 abnormality delay	Outdoor fan rotation frequency abnormality delay	TH7 abnormality delay	TH8 abnormality delay	Display all abnormalities remaining in abnormality delay
9	10010000	Abnormality delay history 2	Heat sink overheating delay	Compressor over current interception delay	Voltage abnormality delay	Insufficient refrigerant amount abnormality delay	Current sensor/ primary current abnormality delay		63HS abnormality delay	start over current interception abnormality delay	
10	01010000	Abnormality delay history 3	63LS abnormality delay	TH2 abnormality delay	4-way valve abnormality delay	Delay caused by blocked valve in cooling mode	Power module abnormality delay	TH6 abnormality delay	Current sensor open/short delay		
11	11010000	Abnormality code history 1 (the latest)	Alternating display of addresses 0000–9999 and abnormality code (including abnormality delay code)								• Display abnormalities up to present (including abnormality terminals) • History record in 1 is the latest; records become older in sequence; history record in 10 is the oldest.
12	00110000	Abnormality code history 2									
13	10110000	Abnormality code history 3									
14	01110000	Abnormality code history 4									
15	11110000	Abnormality code history 5									
16	00001000	Abnormality code history 6									
17	10001000	Abnormality code history 7									
18	01001000	Abnormality code history 8									
19	11001000	Abnormality code history 9									
20	00101000	Abnormality code history 10 (the oldest)									
21	10101000	Cumulative time	0–9999 (unit: 1 hour)								Display of cumulative compressor operating time
22	01101000	Cumulative time	0–9999 (unit: 10 hour)								
23	11101000	Outdoor unit operation display	Excitation Current	Restart after 3 minutes	Compressor operation	Abnormality(detection)					
24	00011000	Indoor unit operation mode	No.1 unit mode	No.2 unit mode	No.3 unit mode	No.4 unit mode	No.5 unit mode	No.6 unit mode	No.7 unit mode	No.8 unit mode	Cooling : light on, Heating: light blinking Stop fan: light off
25	10011000	Indoor unit operation display	No.1 unit operation	No.2 unit operation	No.3 unit operation	No.4 unit operation	No.5 unit operation	No.6 unit operation	No.7 unit operation	No.8 unit operation	Thermo ON : light on Thermo OFF : light off

Delay code	Abnormality delay	Delay code	Abnormality delay
1202	Discharge/Comp. temperature abnormality	1402	High-pressure abnormality
	Thermistor <Compressor>(TH4) abnormality		High-pressure sensor (63HS) abnormality
1205	Thermistor <Outdoor liquid pipe> (TH3) abnormality	1600	Over charge refrigerant abnormality
1211	Thermistor <Suction pipe> (TH6) abnormality	1601	Insufficient refrigerant abnormality
1214	Thermistor <Heat sink> (TH8) abnormality	4320	Frequency converter insufficient wiring voltage abnormality
1221	Thermistor <Ambient> (TH7) abnormality	4330	Heat sink temperature abnormality
		4350	power module abnormality

SW:setting
0....OFF
1....ON

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
26	01011000	Capacity code (No. 1 indoor unit)	0–255								•Display of indoor unit capacity code •The No. 1 unit will start from the address with the lowest number
27	11011000	Capacity code (No. 2 indoor unit)									
28	00111000	Capacity code (No. 3 indoor unit)									
29	10111000	Capacity code (No. 4 indoor unit)									
30	01111000	Capacity code (No. 5 indoor unit)									
31	11111000	IC1 operation mode	OFF	Fan	Cooling thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF			•Display of indoor unit operating mode
32	00000100	IC2 operation mode									
33	10000100	IC3 operation mode									
34	01000100	IC4 operation mode									
35	11000100	IC5 operation mode									
36	00100100	OC operation mode	ON/OFF	Heating/Cooling	Abnormal/normal	DEFROST/NO	Refrigerant pull back/no	Excitation current/no	3-min.delay/no		Light on/light off
37	10100100	External connection status	P97:Autochange over permission CN3N1–3 input	P96:Autochange over fixed mode CN3N1–2 input	P95:Undefined CN3S1–2 input	P94:Demand CN3D1-3 input	P93:Silent CN3D1-2 input				Input: light off No input: light on
38	01100100	Communication demand capacity	0–255								display of communication demand capacity
39	11100100	Number of compressor ON/OFF	0000–9999 (unit: x10)								
40	00010100	Compressor operating current	0–999.9 (A)								
41	10010100	Input current of outdoor unit	0–999.9 (A)								
42	01010100	Thermo-ON operating time	0000–9999 (unit: x10)								
43	11010100	Total capacity of thermo-ON	0–255								
44	00110100	Number of indoor units	0–255								
45	10110100	DC bus voltage	0–999.9 (V)								
46	01110100	State of LEV control	Td over heat prevention	SHd decrease prevention	Min.Sj correction depends on Td	Min.Sj correction depends on Shd	LEV opening correction depends on Pd	LEV opening correction depends on Td	Correction of high compression ratio prevention		
47	11110100	State of compressor frequency control 1	Condensing temperature limit control	Compressor temperature control		Discharge temp. (heating) backup	Pd abnormality control (heating)	Pd Back up (heating)		Freeze prevention control	
48	00001100	State of compressor frequency control 2	Heat sink over heat prevention control	Secondary current control	Input current control		Frequency restrain of receipt voltage change	Low pressure decrease prevention	SHd control		
49	10001100	Protection input	63LS abnormality	HIC abnormality			4-way valve disconnection abnormality	Frozen protection	TH6 abnormality	Power module abnormality	
50	01001100	The second current value when microprocessor of POWER BOARD abnormality is detected	0–999.9[Arms]								
51	11001100	The radiator panel temperature when microprocessor of POWER BOARD abnormality is detected	−99.9–999.9 (Short/Open:−99.9 or 999.9)								

State of compressor frequency(Hz) control (Words)	Content
Discharge pressure control	Hz control by pressure limitation
Compressor temperature control	Hz control by discharge temperature limitation
SV control	Hz control by bypass valve
Abnormal rise of Pd control	Control that restrains abnormal rise of discharge pressure
Heat sink over heat prevention control	Heat sink over heat prevention control
Secondary current control	Secondary current control
Input current contol	Input current contol
Hz correction of receipt voltage decrease prevention	Max.Hz correction control due to voltage decrease
Hz restrain of receipt voltage change	Max.Hz correction control due to receipt voltage change

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
52	00101100	Outdoor LEV-A opening pulse	0–2000								Display of opening pulse of outdoor LEV
53	10101100	Outdoor LEV-A opening pulse abnormality delay									
54	01101100	Outdoor LEV-A opening pulse abnormality									
55	11101100	Outdoor LEV-B opening pulse									
56	00011100	Outdoor LEV-B opening pulse abnormality delay									
57	10011100	Outdoor LEV-B opening pulse abnormality									
58	01011100	63LS (Low-pressure)kgf/cm2	−99.99–999.9 (Short/open: −99.9 or 999.9) [PSIG]								Display of data from sensor and thermistor
59	11011100	63LS abnormality delay	−99.99–999.9 (Short/open: −99.9 or 999.9)								
60	00111100	63 LS abnormality									
61	10111100	TH2 (HIC pipe) °C	−99.99–999.9 (Short/open: −99.9 or 999.9) [°F]								
62	01111100	TH2(HIC) abnormality delay	−99.99–999.9 (Short/open: −99.9 or 999.9)								
63	11111100	TH2 (HIC) abnormality									
64	00000010	Operational frequency	0–FF (16 progressive)								Display of actual operating frequency
65	10000010	Target frequency	0–255								Display of target frequency
66	01000010	Outdoor fan control step number	0–15								Display of number of outdoor fan control steps (target)
69	10100010	IC1 LEV Opening pulse	0–2000								Display of opening pulse of indoor LEV
70	01100010	IC2 LEV Opening pulse									
71	11100010	IC3 LEV Opening pulse									
72	00010010	IC4 LEV Opening pulse									
73	10010010	IC5 LEV Opening pulse									
74	01010010	High-pressure sensor (Pd) kgf/cm2	−99.99–999.9 (Short/open: −99.9 or 999.9) [PSIG]								Display of outdoor subcool (SC) data and detection data from high-pressure sensor and each thermistor
75	11010010	TH4(Compressor)(Td) data °C	−99.99–999.9 (Short/open: −99.9 or 999.9) [°F]								
76	00110010	TH6(Suction pipe) (ET) data °C									
77	10110010	TH7(Ambient) data °C									
78	01110010	TH3(Outdoor liquid pipe) data °C									
80	00001010	TH8(Heat sink) data °C									
81	10001010	IC1 TH23 (Gas) °C	−99.99–999.9 (When indoor unit is not connected, it is displayed as0.) −99.99–999.9								
82	01001010	IC2 TH23 (Gas) °C									
83	11001010	IC3 TH23 (Gas) °C									
84	00101010	IC4 TH23 (Gas) °C									
85	10101010	IC5 TH23 (Gas) °C									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
86	01101010	C1 TH22 (Liquid) °C	−99.99–999.9 (When the indoor unit is not connected, it is displayed as 0.)								Display of outdoor subcool (SC) data
87	11101010	IC2 TH22 (Liquid) °C									
88	00011010	IC3 TH22 (Liquid) °C									
89	10011010	IC4 TH22 (Liquid) °C									
90	01011010	IC5 TH22 (Liquid) °C									
91	11011010	IC1 TH21 (Intake) °C									
92	00111010	IC2 TH21 (Intake) °C									
93	10111010	IC3 TH21 (Intake) °C									
94	01111010	IC4 TH21 (Intake) °C									
95	11111010	IC5 TH21 (Intake) °C									
96	00000110	Outdoor SC (cooling) °C	−99.99–999.9								
97	10000110	Target subcool °C	0.0 ~ 20.0								
98	01000110	IC1 SC/SH °C	−99.99–999.9 during heating: subcool (SC)/during cooling: superheat (SH)								Display of indoor SC/SH data
99	11000110	IC2 SC/SH °C									
100	00100110	IC3 SC/SH °C									
101	10100110	IC4 SC/SH °C									
102	01100110	IC5 SC/SH °C									
103	11100110	Discharge superheat (SHd) °C	−99.99–999.9								Display of target subcool step data
105	10010110	Target Pd display (heating) kgf/F	Pdm (0.0–30.0)								Display of all control target data
106	01010110	Target ET display (cooling) °C	ETm (−2.0–23.0)								
107	11010110	Target outdoor SC (cooling) °C	SCm (0.0–20.0)								
108	00110110	Target indoor SC/SH (IC1) °C	SCm/SHm (0.0–20.0)								
109	10110110	Target indoor SC/SH (IC2) °C									
110	01110110	Target indoor SC/SH (IC3) °C									
111	11110110	Target indoor SC/SH (IC4) °C									
112	00001110	Target indoor SC/SH (IC5) °C									
113	10001110	Indoor unitcheck status	No.9 unit check	No.10 unit check	No.11 unit check	No.12 unit check					Check: light on Normal: light off
114	01001110	Indoor unit operation mode	No.9 unit mode	No.10 unit mode	No.11 unit mode	No.12 unit mode					COOL/DRY: light on HEAT: light flashing FAN/STOP: light off
115	11001110	Indoor unit operation display	No.9 unit operation	No.10 unit operation	No.11 unit operation	No.12 unit operation					Thermo-ON: light on Thermo-OFF: light off
116	00101110	IC9 operation mode	OFF	Fan	Cooling Thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF			Display of indoor unit operation mode
117	10101110	IC10 operation mode									
118	01101110	IC11 operation mode									
119	11101110	IC12 operation mode									
120	00011110	Target indoor SC/SH (IC9) °C	SCm/SHm (0.0–20.0)								Display of all control target data
121	10011110	Target indoor SC/SH (IC10) °C									
122	01011110	Target indoor SC/SH (IC11) °C									
123	11011110	Target indoor SC/SH (IC12) °C									
124	00111110	IC9 LEV opening pulse abnormality delay	0–2000								Display of opening pulse of indoor LEV at time of abnormality delay
125	10111110	IC10 LEV opening pulse abnormality delay									
126	01111110	IC11 LEV opening pulse abnormality delay									
127	11111110	IC12 LEV opening pulse abnormality delay									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
128	00000001	Actual frequency of abnormality delay	0–FF (16 progressive)								Display of actual frquency at time of abnormality delay
129	10110001	Fan step number at time of abnormality delay	0–5								Display of fan step number at time of abnormality delay
131	11000001	IC1 LEV opening pulse abnormality delay	0–2000								Delay of opening pulse of indoor LEV at time of abnormality delay
132	00100001	IC2 LEV opening pulse abnormality delay									
133	1010000	IC3 LEV opening pulse abnormality delay									
134	0110000	IC4 LEV opening pulse abnormality delay									
135	11100001	IC5 LEV opening pulse abnormality delay									
136	00010001	High-pressure sensor data at time of abnormality delay kgf/cm2	−99.99–999.9								Display of data from high-pressure sensor, all thermistors, and SC/SH at time of abnormality delay
137	10010001	TH4 (Compressor) sensor data at time of abnormality delay °C									
138	01010001	TH6 (Suction pipe) sensor data at time of abnormality delay °C									
139	11010001	TH3 (Outdoor liquid pipe) sensor data at time of abnormality delay °C									
140	00110001	TH8 (Heat sink) sensor data at time of abnormality delay °C									
141	10110001	OC SC (cooling) at time of abnormality delay °C									
142	01110001	IC1 SC/SH at time of abnormality delay °C									
143	11110001	IC2 SC/SH at time of abnormality delay °C									
144	00001001	IC3 SC/SH at time of abnormality delay °C									
145	10001001	IC4 SC/SH at time of abnormality delay °C									
146	01001001	IC5 SC/SH at time of abnormality delay °C									
147	11001001	IC9 SC/SH at time of abnormality delay °C									
148	00100001	IC10 SC/SH at time of abnormality delay °C									
149	10101001	IC11 SC/SH at time of abnormality delay °C	−99.99–999.9								Display of data from high-pressure sensor, all thermistors, and SC/SH at time of abnormality delay
150	01101001	IC12 SC/SH at time of abnormality delay °C									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
151	11101001	IC9 LEV opening pulse at time of abnormality	0–2000								Display of opening pulse of indoor LEV at time of abnormality
152	00011001	IC10 LEV opening pulse at time of abnormality									
153	10011001	IC11 LEV opening pulse at time of abnormality									
154	01011001	IC12 LEV opening pulse at time of abnormality									
155	11011001	IC9 SC/SH at time of abnormality	−99.99–999.9								Display of data from high-pressure sensor, all thermistors, and SC/SH at time of abnormality
156	00111001	IC10 SC/SH at time of abnormality									
157	10111001	IC11 SC/SH at time of abnormality									
158	01111001	IC12 SC/SH at time of abnormality									
159	11111001	IC9 Capacity code	0–255								Display of indoor unit capacity code
160	00000101	IC10 Capacity code									
161	10000101	IC11 Capacity code									
162	01000101	IC12 Capacity code									
163	11000101	IC9 SC/SH	−99.99–999.9								Display of indoor SC/SH data
164	00100101	IC10 SC/SH									
165	10100101	IC11 SC/SH									
166	01100101	IC12 SC/SH									
170	01010101	ROM version monitor									Display of version data of ROM
171	11010101	ROM type									Display of ROM type
172	00110101	Check sum mode									Display of check sum code of ROM
173	10110101	IC9 TH23 (Gas) °C	−99.99–999.9 (Short/open: −99.9 or 999.9) [°F]								Display if detection data from each indoor thermistor
174	01110101	IC10 TH23 (Gas) °C									
175	11110101	IC11 TH23 (Gas) °C									
176	00001101	IC12 TH23 (Gas) °C									
177	10001101	IC9 TH22 (Liquid) °C									
178	01001101	IC10 TH22 (Liquid) °C									
179	11001101	IC11 TH22 (Liquid) °C									
180	00101101	IC12 TH22 (Liquid) °C									
185	10011101	IC9 TH21 (Intake) °C									
186	01011101	IC10 TH21 (Intake) °C									
187	11011101	IC11 TH21 (Intake) °C									
188	00111101	IC12 TH21 (Intake) °C									
189	10111101	4420 Error history	-	-	ACTM error	-	-	Current sensor	Under voltage	Over voltage	
192	00000011	Actual frequency of abnormality	0–FF (16progressive)								Display of actual frequency at time of abnormality
193	10000011	Fan step number at time of abnormality	0–15								Display of fan step number at time of abnormality

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
195	11000011	IC1 LEV opening pulse at time of abnormality									Display of opening pulse of indoor LEV at time of abnormality
196	00100011	IC2 LEV opening pulse at time of abnormality									
197	10100011	IC3 LEV opening pulse at time of abnormality									
198	01100011	IC4 LEV opening pulse at time of abnormality									
199	11100011	IC5 LEV opening pulse at time of abnormality									
200	00010011	High-pressure sensor data at time of abnormality	−99.99–999.9								Display of data from high-pressure sensor, all thermistors, and SC/SH at time of abnormality.
201	10010011	TH4 (Compressor) sensor data at time of abnormality									
202	01010011	TH6 (Suction pipe) sensor data at time of abnormality									
203	11010011	TH3 (Outdoor liquid pipe) sensor data at time of abnormality									
204	00110011	TH8 (Heat sink) sensor data at time of abnormality									
205	10110011	OC SC (cooling) at time of abnormality	−99.99–999.9								Display of data from high-pressure sensor, all thermistors, and SC/SH at time of abnormality.
206	01110011	IC1 SC/SH at time of abnormality									
207	11110011	IC2 SC/SH at time of abnormality									
208	00001011	IC3 SC/SH at time of abnormality									
209	10001011	IC4 SC/SH at time of abnormality									
210	01001011	IC5 SC/SH at time of abnormality									
211	11001011	IC6 Capacity code	0–255								Display of indoor unit capacity code
212	00101011	IC7 Capacity code									
213	10101011	IC8 Capacity code									
214	01101011	IC6 operation mode	OFF	Fan	Cooling thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF			Display of indoor unit operation mode
215	11101011	IC7 operation mode									
216	00011011	IC8 operation mode									
217	10011011	IC6 LEV opening pulse	0–2000								Display of opening pulse of indoor LEV
218	01011001	IC7 LEV opening pulse									
219	11011001	IC8 LEV opening pulse									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
220	00111011	IC6 TH23 (Gas) °C	−99.99–999.9 (Short/open: −99.9 or 999.9) [°F]								Display if detection data from each indoor thermistor
221	10111011	IC7 TH23 (Gas) °C									
222	01111011	IC8 TH23 (Gas) °C									
223	11111011	IC6 TH22 (liquid) °C									
224	00000111	IC7 TH22 (liquid) °C									
225	10000111	IC8 TH22(liquid) °C									
226	01000111	IC6 TH21 (intake) °C									
227	11000111	IC7 TH21 (intake) °C									
228	00100111	IC8 TH21 (intake) °C									
229	10100111	IC6 SC/SH	during heating: subcool (SC)/during cooling: superheat (SH)								Display of indoor SC/SH data
230	01100111	IC7 SC/SH									
231	11100111	IC8 SC/SH									
232	00010111	Target indoor SC/SH (IC6) °C	SCm/SHm (0.0–20.0)								Display of all control target data
233	10010111	Target indoor SC/SH (IC7) °C									
234	01010111	Target indoor SC/SH (IC8) °C									
235	11010111	IC6 LEV opening pulse abnormality delay	0–2000								Display of opening pulse of indoor LEV at time of abnormality delay
236	00110111	IC7 LEV opening pulse abnormality delay									
237	10110111	IC8 LEV opening pulse abnormality delay									
238	01110111	IC6 SC/SH at time of abnormality delay °C	−99.99–999.9								Display data from high-pressure sensor, all thermistors and SC/SH at time of abnormality.
239	11110111	IC7 SC/SH at time of abnormality delay °C									
240	00001111	IC8 SC/SH at time of abnormality delay °C									
241	10001111	IC6 LEV opening pulse at time of abnormality	0–2000								Display of opening pulse of indoor LEV at time of abnormality
242	01001111	IC7EV opening pulse at time of abnormality									
243	11001111	IC8 LEV opening pulse at time of abnormality									
244	00101111	IC6 SC/SH at time of abnormality	−99.99–999.9								Display data from high-pressure sensor, all thermistors and SC/SH at time of abnormality.
245	10101111	IC7 SC/SH at time of abnormality									
246	01101111	IC8 SC/SH at time of abnormality									
250	01011111	IC9 LEV opening pulse	0–2000								Display of opening pulse of indoor LEV
251	11011111	IC10 LEV opening pulse									
252	00111111	IC11 LEV opening pulse									
253	10111111	IC12 LEV opening pulse									

8-12. BRANCH BOX FUNCTIONS

<Branch box unit operation monitor function>

[When option part 'A-Control Service Tool (PAC-SK52ST)' is connected to branch box controller board (CNM)]

Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of check code by controlling DIP SW2 on 'A-Control Service Tool'.

<Table1> SW5 setting The black square (■) indicates a switch position.

SW5 setting	Detail
ON 1 2 3 4 5 6	Common
ON 1 2 3 4 5 6	Indoor-A
ON 1 2 3 4 5 6	Indoor-B
ON 1 2 3 4 5 6	Indoor-C
ON 1 2 3 4 5 6	Indoor-D
ON 1 2 3 4 5 6	Indoor-E

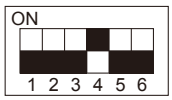
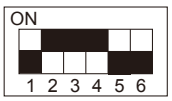
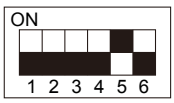
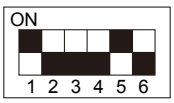
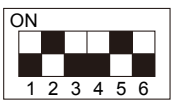
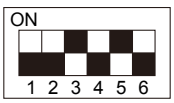
Operation indicator:
- SW2 - Use to set the displayed item
- SW5 - Use to set the displayed unit

<Table2> Functions The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
ON 1 2 3 4 5 6	Common	Status of branch box	**During start-up** 0.5 sec. 0.5 sec. □– →–□ **During error detection** Displays a check code, and M-NET address of the unit which the check code was detected. Example: If the check code 2520 is detected in the address3, 0.5 sec 0.5 sec 0.5 sec 2.0 sec 03 →25 →20 →□□ **During no power supply** F8 **Other** Displays the number of units in operation. 0 to 5	—
	Individual unit	Status of branch box	**During start-up** 0.5 sec. 0.5 sec. □– →–□ **During error detection** Displays a check code, and M-NET address of the selected unit. **During no power supply** F8 **Other** Displays an operation mode of the selected unit. 0: Stop C: Cool/ Dry H: Heat d: Defrost	—

*1 Refer to the <Table 1> for the appropriate setting for the function.

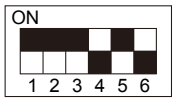
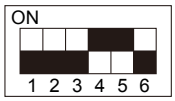
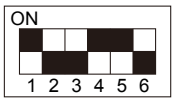
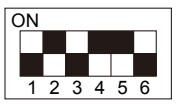
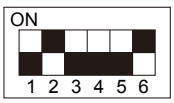
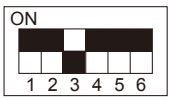
The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
	Common	Not used	—	—
	Individual unit	Actual opening pulse of LEV (Direct-operated conversion value) 0 to 500	0 to 500 (When it is 100 pulse or more, it displays a hundredth, tens, and unit digit by turns.) Example: When 150 pulse, 0.5 sec 0.5 sec 2.0 sec □1 →50 →□□	Pulse
	Common	Not used	—	—
	Individual unit	Error history	Displays a check code, and M-NET address of the unit which the check code was detected. Example: If the check code 2520 is detected in the address3, 0.5 sec 0.5 sec 0.5 sec 2.0 sec 03 →25 →20 →□□	Code display
	Common	The number of unit (s) operating in Thermo-ON	0 to 5	Number
	Individual unit	Operating status of unit	83: Abnormal 00: Stop 06: Forced stop 0C: Defrost 29: Hot adjust mode 05: Standby mode 2A: Auxiliary heater is ON. 0A: Thermo-ON 01: In operation	Code display
	Common	The number of indoor unit (s) conencted to this branch box.	0 to 5	Number
	Individual unit	M-NET address	00 to FF Displays an M-NET address of the selected unit.	Code display
	Common	Not used	—	—
	Individual unit	Capacity setting in Qj	03 to 50	Code display
	Common	Not used	—	—
	Individual unit	Indoor thermistor <pipe temperature/ liquid> (TH2)	−38 to 190 [−39 to 88] (When the temperature is 0°F or less, "−" and temperature are displayed by turns.) Example: When −5°F, 0.5 sec 0.5 sec 2.0 sec −□ →□5 →□□	°F [℃]*2

*1 Refer to the <Table 1> for the appropriate setting for the function.

*2 SW4-1 OFF = ℃, ON = °F

The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
	Common	Not used	—	—
	Individual unit	Indoor thermistor <pipe temperature/ 2-phase> (TH5)	−38 to 190 [−39 to 88] (When the temperature is 0°F or less, "−" and temperature are displayed by turns.) Example: When −5°F, 0.5 sec 0.5 sec 2.0 sec −□ →□5 →□□	°F [℃]*2
	Common	Not used	—	—
	Individual unit	Branch box pipe thermistor (TH-A, B, C, D, E)	−43 to 196 [−42 to 91] (When the temperature is 0°F or less, "−" and temperature are displayed by turns.) Example: When −5°F, 0.5 sec 0.5 sec 2.0 sec −□ →□5 →□□	°F [℃]*2
	Common	Not used	—	—
	Individual unit	Indoor thermistor <room temperature> (TH1)	43 to 102 [8 to 39]	°F [℃]*2
	Common	Not used	—	—
	Individual unit	Set temperature of indoor unit	61 to 88 [10 to 31]	°F [℃]*2
	Common	S/W version	Displays a S/W version number. Example: If it is a ver. 12.34, 0.5 sec 0.5 sec 2.0 sec 12 →34 →□□	Code display
	Individual unit			
	Common	Not used	—	—
	Individual unit	LEV opening pulse (gear opeated value)	0 to 2000	Pulse
	Common	S/W ROM check sum	0000 to FFFF Example: If it is 0BC9h, 0.5 sec 0.5 sec 2.0 sec 0b →C9 →□□	Code display
	Individual unit			

*1 Refer to the <Table 1> for the appropriate setting for the function.

*2 SW4-1 OFF = ℃, ON = °F

8-13. SELECTING FUNCTIONS USING THE REMOTE CONTROLLER

Each function can be set as necessary using the remote controller. The setting of function for each unit can only be done by the remote controller. Select function available from the <Table 1> .

(1) Functions available when setting the unit number to 00

Note that the functions in the table below are available only when P-series indoor unit and the wired remote controller is used.

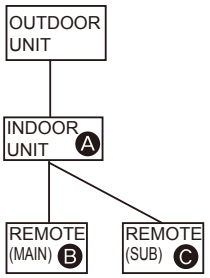
<Table 1> Function selections

Function	Settings	Mode No.	Setting No.	● : Initial setting (when sent from the factory)	Remarks
Power failure automatic recovery	OFF	01	1		The setting can be made to each indoor unit individually.
	ON*		2	●	
Indoor temperature detecting	Average data from each indoor unit	02	1	●	
	Data from the indoor unit with remote controller		2		
	Data from main remote controller		3		
LOSSNAY connectivity	Not supported	03	1	●	
	Supported (Indoor unit does not intake outdoor air through LOSSNAY)		2		
	Supported (Indoor unit intakes outdoor air through LOSSNAY)		3		
Power supply voltage	230V	04	1	●	
	208V		2		
Frost prevention temperature	36°F [2℃] (Normal)	15	1		
	37°F [3℃]		2	●	
Humidifier control	When the compressor operates, the humidifier also operates.	16	1	●	
	When the fan operates, the humidifier also operates.		2		

* After the power supply returns, the indoor unit will not operate for 3 minutes (Some kind of indoor units operate for 30 seconds, after that, it stops for 3 minutes). This is normal operation.

Meaning of "Function setting"

Mode02:indoor temperature detecting

No.	Indoor temperature(ta)=			
No.1	Average data of the sensor on all the indoor units*	Initial setting	ta=A	ta=A
No.2	The data of the sensor on the indoor unit that is connected with remote controller		ta=A	ta=A
No.3	The data of the sensor on main remote controller		ta=B	ta=B

*Since the setting is applied to each indoor unit while branch box is connected, the indoor unit is controlled based on the sensor data of itself, not the average data.

9 PRECAUTIONS AGAINST REFRIGERANT LEAKAGE

9-1. PRECAUTIONS AGAINST REFRIGERANT LEAKAGE

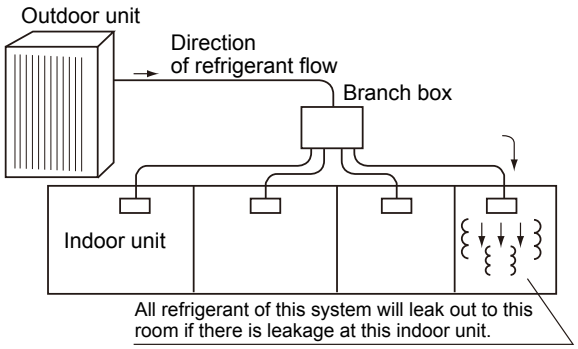
9-1-1. Introduction

R410A refrigerant of this air conditioner is non-toxic and non-flammable but leaking of large amount from an indoor unit into the room where the unit is installed may be deleterious. To prevent possible injury, the rooms should be large enough to keep the R410A concentration specified by ISO 5149-1 as follows.

Maximum concentration
Maximum refrigerant concentration of R410A of a room is 0.44kg/m³ accordance with ISO 5149-1.
To facilitate calculation, the maximum concentration is expressed in units of kg/m³ (kg of R410A per m³)

Maximum concentration of R410A: 0.44kg/m³

(ISO 5149-1)



9-1-2. Confirming procedure of R410A concentration

Follow (1) to (3) to confirm the R410A concentration and take appropriate treatment, if necessary.

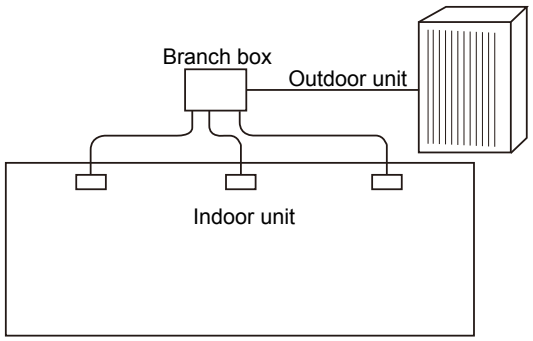
(1) Calculate total refrigerant amount by each refrigerant system. Total refrigerant amount is precharged refrigerant at ex-factory plus additional charged amount at field installation.

Note:
When single refrigeration system consists of several independent refrigeration circuit, figure out the total refrigerant amount by each independent refrigerant circuit.

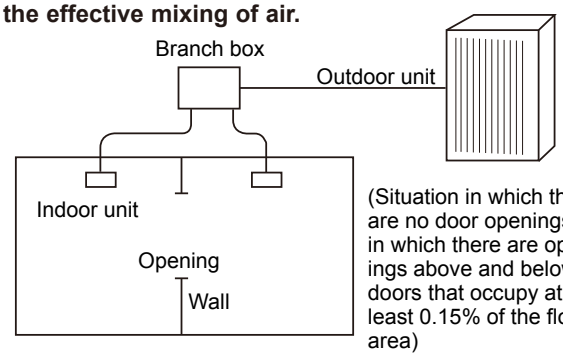
(2) Calculate room volumes (m³) and find the room with the smallest volume

The part with ☐ represents the room with the smallest volume.

(a) Situation in which there are no partitions

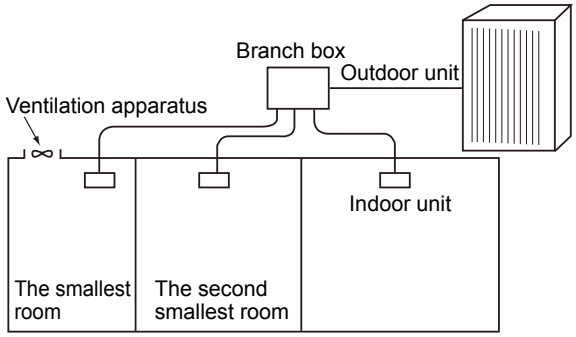


(b) There are partitions, but there are openings that allow the effective mixing of air.



(Situation in which there are no door openings or in which there are openings above and below doors that occupy at least 0.15% of the floor area)

(c) If the smallest room has mechanical ventilation apparatus that is linked to a household gas detection and alarm device, the calculations should be performed for the second smallest room.



(3) Use the results of calculations (1) and (2) to calculate the refrigerant concentration:

$$\frac{\text{Total refrigerant in the refrigerating unit (kg)}}{\text{The smallest room in which an indoor unit has been installed (m³)}} \leqq \text{Maximum concentration (kg/m³)}$$

Maximum concentration of R410A:0.44kg/m³

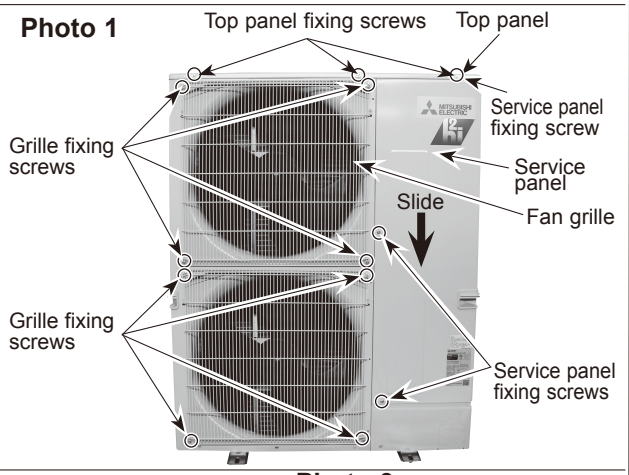
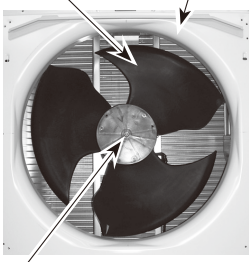
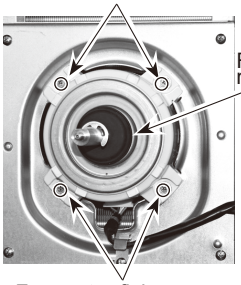
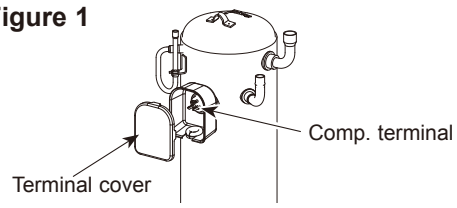
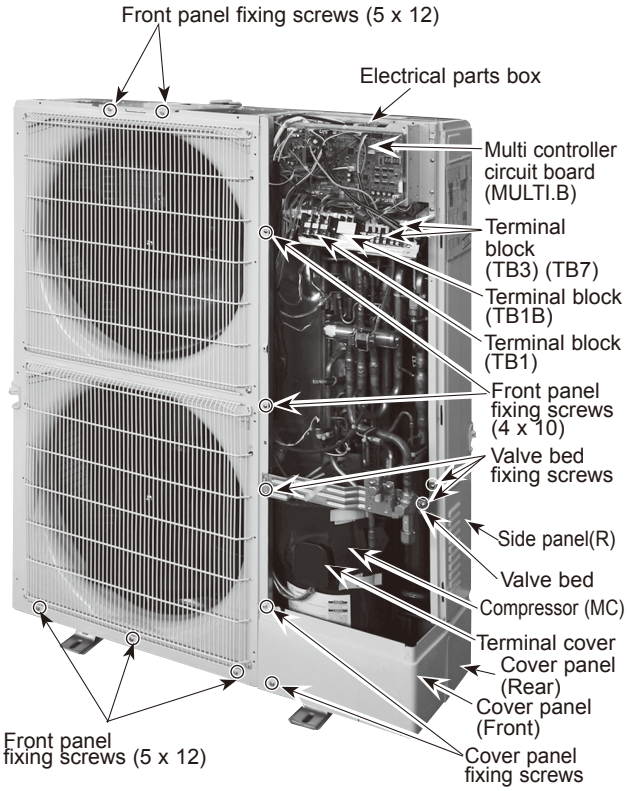
If the calculation results do not exceed the maximum concentration, perform the same calculations for the larger second and third room, etc., until it has been determined that nowhere the maximum concentration will be exceeded.

10 DISASSEMBLY PROCEDURE

10-1. OUTDOOR UNIT

MXZ-4C36NAHZ MXZ-5C42NAHZ MXZ-8C48NAHZ

Note: Turn OFF the power supply before disassembly.

OPERATING PROCEDURE	PHOTOS & ILLUSTRATION
1. Removing the service panel and top panel (1) Remove 3 service panel fixing screws (5 × 12), then slide the hook on the right downward to remove the service panel. (2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it.	**Photo 1** 
2. Removing the fan motor (MF1, MF2) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 4 fan grille fixing screws (5 × 12) to detach the fan grille. (See photo 1) (4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2) (5) Disconnect the connectors, CNF1 and CNF2 on the multi controller circuit board in the electrical parts box. (6) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (See Photo 3)	**Photo 2** Propeller Front panel  Nut **Photo 3** Fan motor fixing screws  Fan motor Fan motor fixing screws
3. Removing the electrical parts box (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connecting wire from terminal block. (4) Remove all of the following connectors from multi controller circuit board; <Diagram symbol in the connector housing> • Fan motor (CNF1, CNF2) • Thermistor <HIC pipe> (TH2) • Thermistor <Outdoor liquid pipe> (TH3) • Thermistor <Compressor> (TH4) • Thermistor <Suction pipe/Ambient, Outdoor> (TH7/6) • High pressure switch (63H) • High pressure sensor (63HS) • Low pressure sensor (63LS) • 4-way valve (21S4) • Bypass valve (SV1, SV2) • Electronic expansion valve (LEV-A, LEV-B) • Base heater (SS) Pull out the disconnected wire from the electrical parts box. (5) Remove the terminal cover and disconnect the compressor lead wire from the comp. terminal. (See Figure 1.) **Note: The terminal cover can be easily removed by using a blade of flathead screwdriver.** **Figure 1**  	**Photo 4** 

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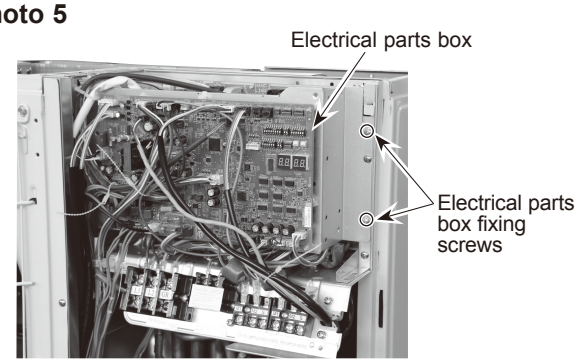
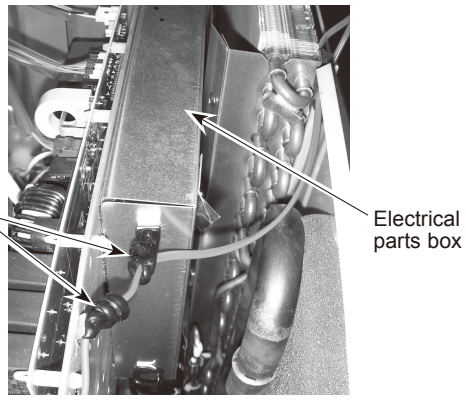
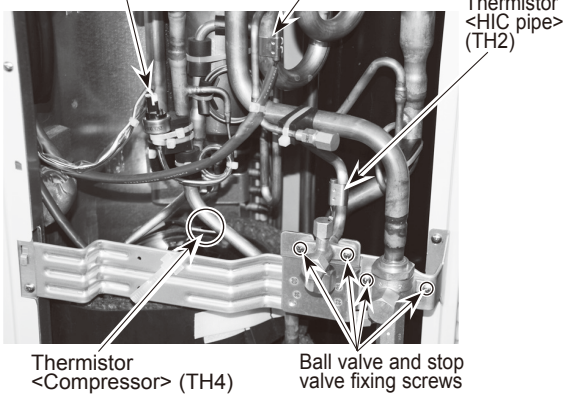
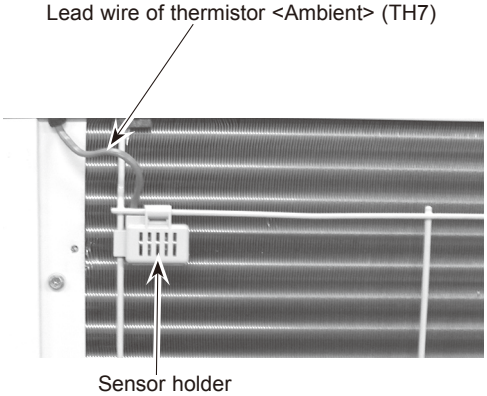
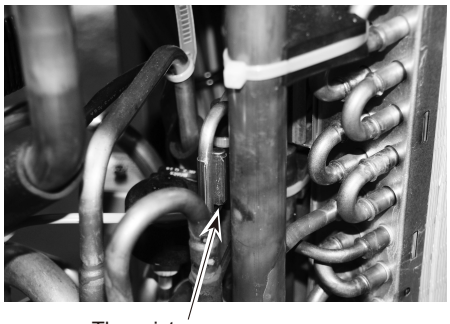
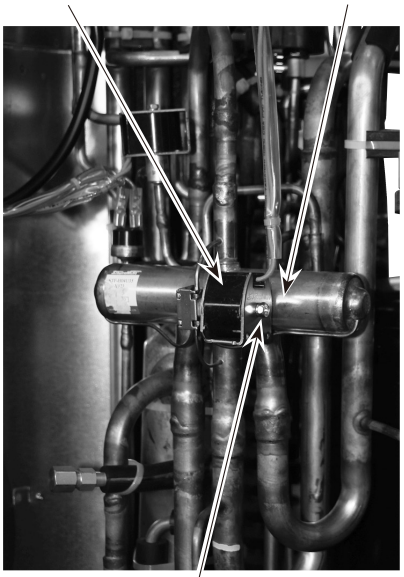
From the previous page.

OPERATING PROCEDURE	PHOTOS & ILLUSTRATION
(6) Remove 2 electrical parts box fixing screws (4 × 10), then detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.	**Photo 5** 
4. Removing the thermistor <Suction pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector, TH7/6 (red), on the multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on the side of the electrical parts box, and next to it. (5) Pull out the thermistor <Suction pipe> (TH6) from the sensor holder. **Note: When replacing thermistor <Suction pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together.** **Refer to procedure No.5 below to remove thermistor <Ambient> (TH7).**	**Photo 6**  **Photo 7** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (red) on the multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on top of the electrical parts box. (See Photo 6) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <Suction pipe> (TH6), since they are combined together.** **Refer to procedure No.4 above to remove thermistor <Suction pipe> (TH6).**	**Photo 8** 

OPERATING PROCEDURE	PHOTOS
6. Removing the thermistor <Outdoor liquid pipe> (TH3) and thermistor <Compressor> (TH4), thermistor <HIC pipe> (TH2) (1) Remove the service panel. (See Photo 1) (2) Disconnect the connectors, TH3 (white) and TH4 (white), TH2 (black) on the multi controller circuit board in the electrical parts box. (3) Loosen the clamp for the lead wire in the rear of the electrical parts box. (4) Pull out the thermistor <Outdoor liquid pipe> (TH3) and thermistor <Compressor> (TH4) from the sensor holder. (See Photo 7 and 9)	**Photo 9**  Thermistor <Outdoor liquid pipe> (TH3)
7. Removing the 4-way valve coil (21S4) (1) Remove the service panel. (See Photo 1) **[Removing the 4-way valve coil]** (2) Remove 4-way valve coil fixing screw (M5 × 7). (3) Remove the 4-way valve coil by sliding the coil toward you. (4) Disconnect the connector 21S4 (green) on the multi controller circuit board in the electrical parts box.	**Photo 10** 4-way valve coil (21S4) 4-way valve  4-way valve coil fixing screw
8. Removing the 4-way valve (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box (See photo 5) (4) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16), then remove the valve bed. (See Photo 4 and 7) (5) Remove 2 cover panel fixing screws (5 x 12), then slide the cover panel (front) upward to remove it. (The cover panel (front) is fixed to the cover panel (rear) with a hook on the rear side. (See Photo 4) (6) Remove the cover panel (rear) fixing screws (2 for right side and 2 for rear/ 5 x 12), then slide the cover panel (rear) upward to remove it. (See Photo 4) (The cover panel (rear) is fixed to the side panel (R) with 2 screws.) (7) Remove 3 side panel (R) fixing screws (5 × 12) in the rear of the unit, then slide the side panel (R) upward to remove it. (The side panel (R) is fixed to the side plate with hooks on the rear side.) (8) Remove the 4-way valve coil. (See Photo 10) (9) Recover refrigerant. (10) Remove the welded part of 4-way valve. **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the side panel (R).** **Note 3: When installing the 4-way valve, cover it with a wet cloth to prevent it from heating (248°F [120°C] or more), then braze the pipes so that the inside of pipes are not oxidized.**	

OPERATING PROCEDURE

9. Removing bypass valve coil (SV1, SV2) and bypass valve

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the cover panel (front). (Refer to procedure 8(5))
(4) Remove the cover panel (rear) (Refer to procedure 8(6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Remove the bypass valve coil fixing screw (M4 × 6).
(7) Remove the bypass valve coil by sliding the coil upward.
(8) Disconnect the connector SV1 (gray) or SV2 (blue) on the multi controller circuit board in the electrical parts box.
(9) Remove the electrical parts box. (See photo 5)
(10) Recover refrigerant.
(11) Remove the welded part of bypass valve.

Refer to the notes below.

10. Removing the high pressure switch (63H) and high pressure sensor (63HS)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the cover panel (front). (Refer to procedure 8(5))
(4) Remove the cover panel (rear) (Refer to procedure 8(6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Pull out the lead wire of high pressure switch and high pressure sensor.
(7) Remove the electrical parts box. (See Photo 5)
(8) Recover refrigerant.
(9) Remove the welded part of high pressure switch and high pressure sensor.

Refer to the notes below.

11. Removing the low pressure sensor (63LS)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the cover panel (front). (Refer to procedure 8(5))
(4) Remove the cover panel (rear) (Refer to procedure 8(6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Disconnect the connector 63LS (blue) on the multi controller circuit board in the electrical parts box.
(7) Remove the electrical parts box. (See Photo 5)
(8) Recover refrigerant.
(9) Remove the welded part of low pressure sensor.

Refer to the notes below.

12. Removing electronic expansion valve (LEV-A, LEV-B)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the cover panel (front). (Refer to procedure 8(5))
(4) Remove the cover panel (rear) (Refer to procedure 8(6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Remove the electrical expansion valve coil. (See Photo 11,12)
(7) Remove the electrical parts box. (See Photo 5)
(8) Recover refrigerant.
(9) Remove the welded part of electrical expansion valve.

Refer to the notes on the right.

PHOTOS

Photo 11

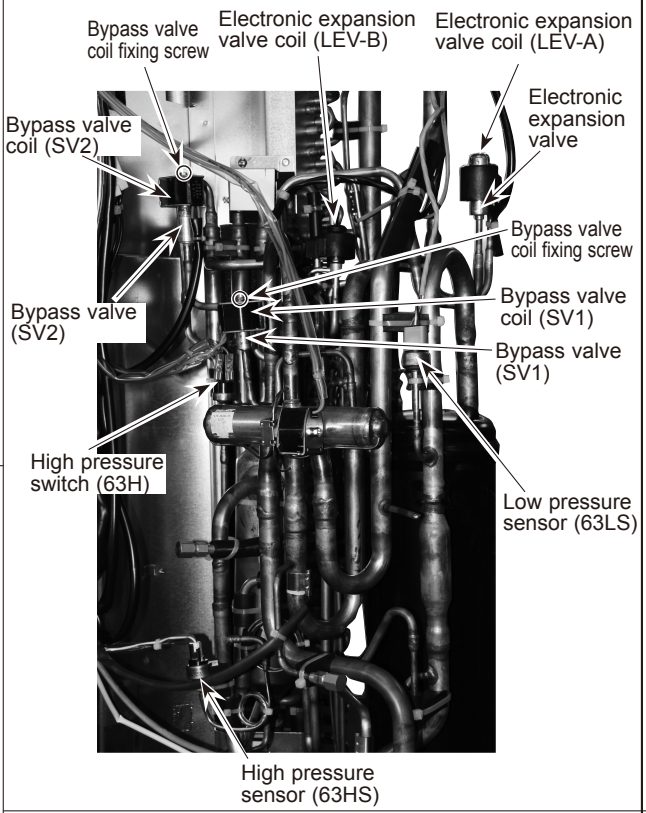


Photo 12

Notes:

1. Recover refrigerant without spreading it in the air.
2. The welded part can be removed easily by removing the side panel (R).
3. When installing the following parts, cover it with a wet cloth to prevent it from heating as the temperature below, then braze the pipes so that the inside of pipes are not oxidized;
- **Bypass valve (procedure 9), 248°F [120°C] or more**
- **High pressure switch and high pressure sensor (procedure 10), 212°F [100°C] or more**
- **Low pressure sensor (procedure 11), 212°F [100°C] or more**
- **LEV (procedure 12), 248°F [120°C] or more**

OPERATING PROCEDURE

13. Removing the compressor (MC)

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove 2 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 4)
(4) Remove front panel fixing screws, 5 (5x12) and 2 (4 x 10) and remove the front panel. (See Photo 4)
(5) Remove 4 back cover panel fixing screws (5 × 12) and remove the back cover panel.
(6) Remove the electrical parts box. (See Photo 5)
(7) Remove the valve bed. (Refer to procedure 8 (4))
(8) Remove the cover panel (front). (Refer to procedure 8(5))
(9) Remove the cover panel (rear) (Refer to procedure 8(6))
(10) Remove the side panel (R). (Refer to procedure 8 (7))
(11) Remove 3 separator fixing screws (4 × 10) and remove the separator. (See Figure 2)
(12) Recover refrigerant.
(13) Remove the 3 compressor fixing nuts for motor using spanner or adjustable wrench.
(14) Remove the welded pipe of motor for compressor inlet and outlet and then remove the compressor.

Note: Recover refrigerant without spreading it in the air.

PHOTOS

Photo 13

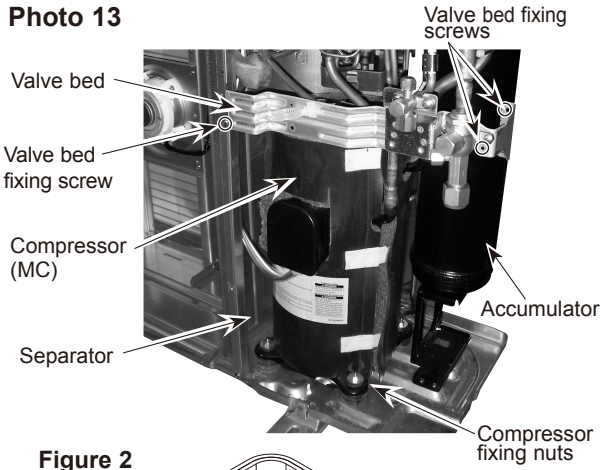
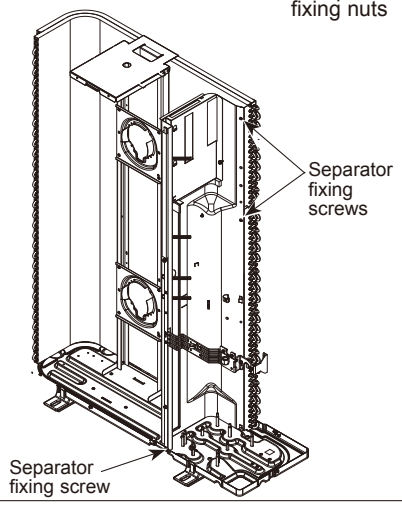


Figure 2



14. Removing the accumulator

Note: Recover refrigerant without spreading it in the air.

(1) Remove the service panel. (See Photo 1)
(2) Remove the top panel. (See Photo 1)
(3) Remove the front cover panel. (Refer to procedure 13 (3))
(4) Remove the back cover panel. (Refer to procedure 13 (5))
(5) Remove the electrical parts box. (See Photo 5)
(6) Remove the valve bed. (See procedure 8 (4))
(7) Remove the cover panel (front). (Refer to procedure 8(5))
(8) Remove the cover panel (rear) (Refer to procedure 8(6))
(9) Remove the side panel (R). (Refer to procedure 8 (7))
(10) Recover refrigerant.
(11) Remove 2 welded pipes of accumulator inlet and outlet.
(12) Remove 2 accumulator leg fixing screws (4 × 10). (See Photo 15)

Photo 14

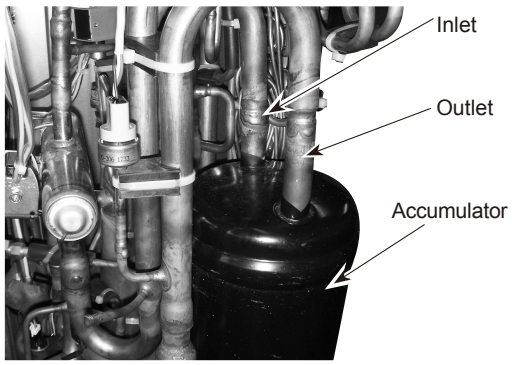
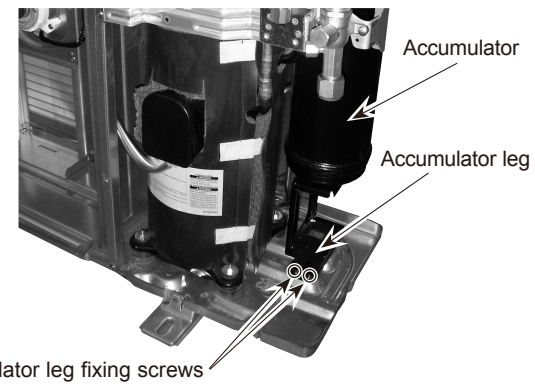
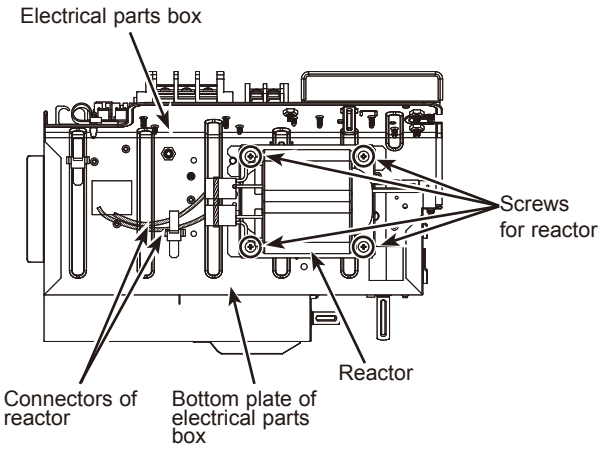
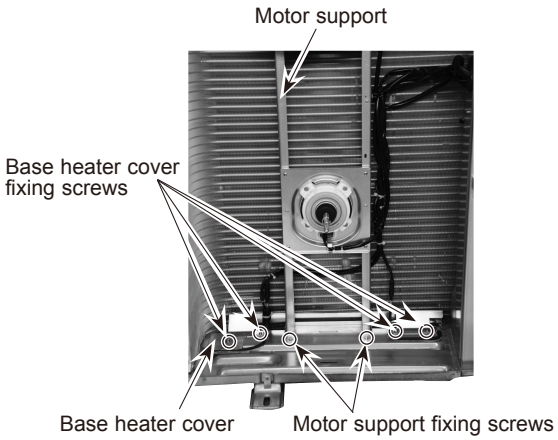


Photo 15



OPERATING PROCEDURE	PHOTOS
15. Removing the reactor (DCL) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove the electrical parts box (See photo 5) (4) Remove 4 screws for reactor (4 x 10) to remove the reactor. (See Figure 3)	**Figure 3** 
16. Removing the base heater (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 4 fan grille fixing screws (5 × 12) to detach the fan grille. (See photo 1) (4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2) (5) Remove all of the following connectors from multi controller circuit board; <Diagram symbol in the connector housing> • Fan motor (CNF1, CNF2) • Base heater (SS) Pull out the disconnected wire from the electrical parts box. (See Photo 4) (6) Pull out the disconnected wire from the electrical parts box. (7) Remove 2 motor support fixing screws (5 x 12), then remove the motor support with fan motor still attached. (See Photo 16) (8) Remove 4 base heater cover fixing screws (4 x 10), then remove the base heater cover. (9) Remove the base heater. (See Photo 17)	**Photo 16**  **Photo 17** 

MXZ-8C48NA

Note: Turn OFF the power supply before disassembly.

OPERATING PROCEDURE

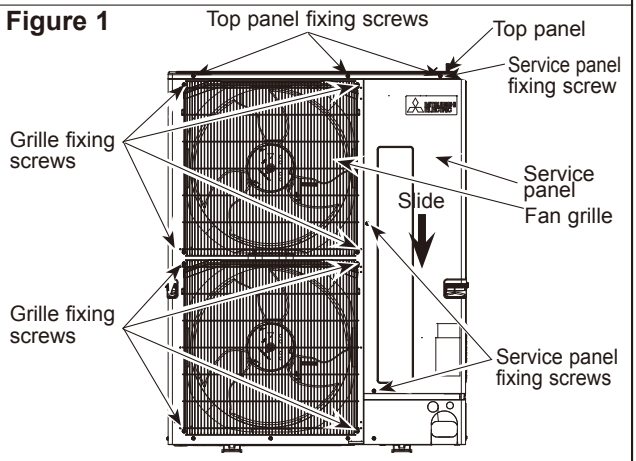
1. Removing the service panel and top panel

(1) Remove 3 service panel fixing screws (5 × 12) and slide the hook on the right downward to remove the service panel.

(2) Remove screws (3 for front, 3 for rear/5 × 12) of the top panel and remove it.

PHOTOS & ILLUSTRATION

Figure 1



2. Removing the fan motor (MF1, MF2)

(1) Remove the service panel. (See Figure 1)

(2) Remove the top panel. (See Figure 1)

(3) Remove 4 fan grille fixing screws (5 × 12) to detach the fan grille. (See Figure 1)

(4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 1.)

(5) Disconnect the connectors, CNF1 and CNF2 on multi controller circuit board in electrical parts box.

(6) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (See Photo 2)

Photo 1

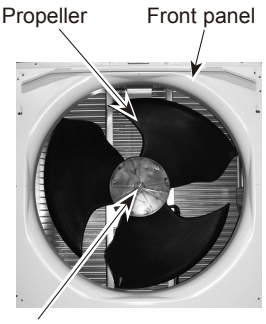
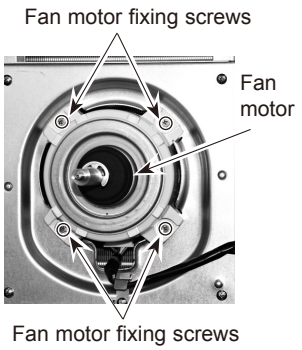


Photo 2



3. Removing the electrical parts box

(1) Remove the service panel. (See Figure 1)

(2) Remove the top panel. (See Figure 1)

(3) Disconnect the connecting wire from terminal block.

(4) Remove all the following connectors from multi controller circuit board;
<Diagram symbol in the connector housing>
- Fan motor (CNF1, CNF2)
- Thermistor <HIC pipe> (TH2)
- Thermistor <Outdoor liquid pipe> (TH3)
- Thermistor <Compressor> (TH4)
- Thermistor <Suction pipe/Ambient, Outdoor> (TH7/6)
- High pressure switch (63H)
- High pressure sensor (63HS)
- Low pressure sensor (63LS)
- 4-way valve (21S4)
- Bypass valve (SV1)
- Electronic expansion valve (LEV-A, LEV-B)

Pull out the disconnected wire from the electrical parts box.

(5) Remove the terminal cover and disconnect the compressor lead wire from the comp. terminal. (See Figure 2.)

Note: The terminal cover can be easily removed by using a blade of flathead screwdriver.

Figure 2

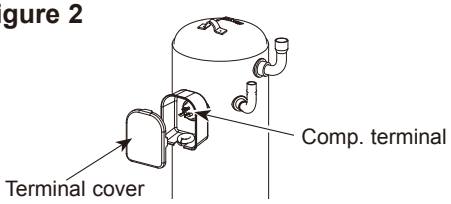
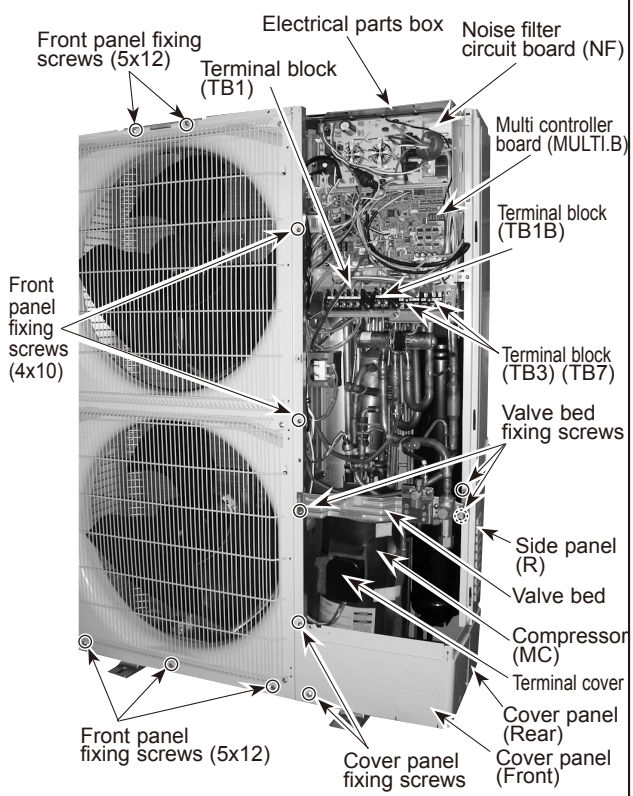


Photo 3



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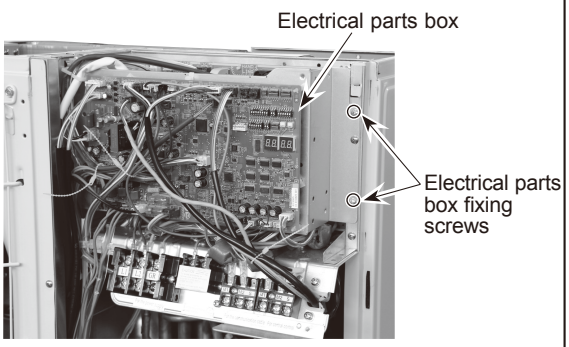
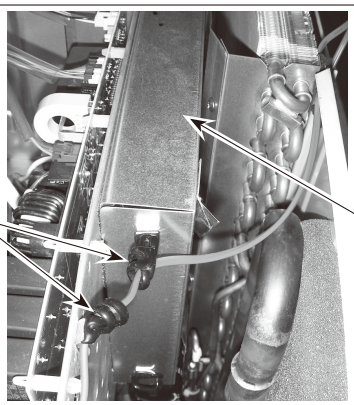
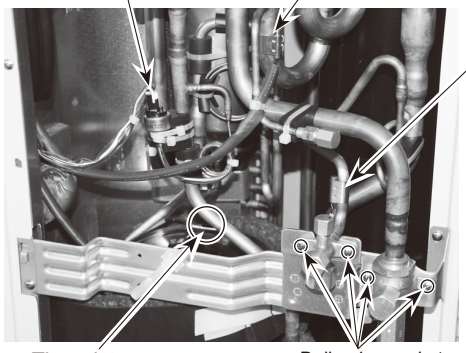
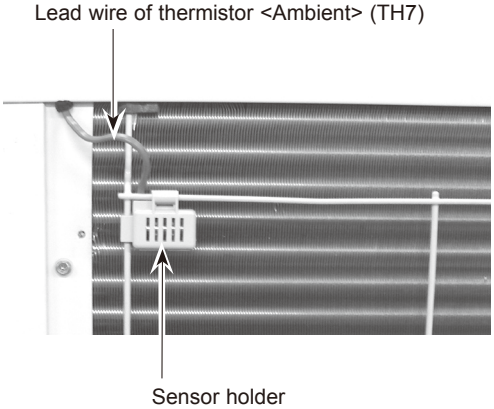
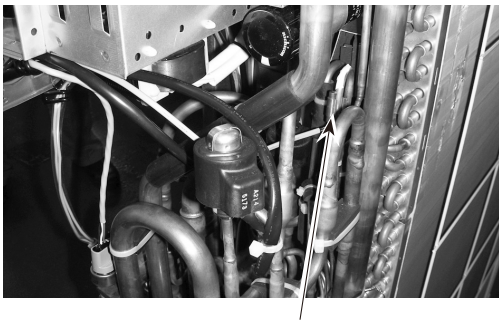
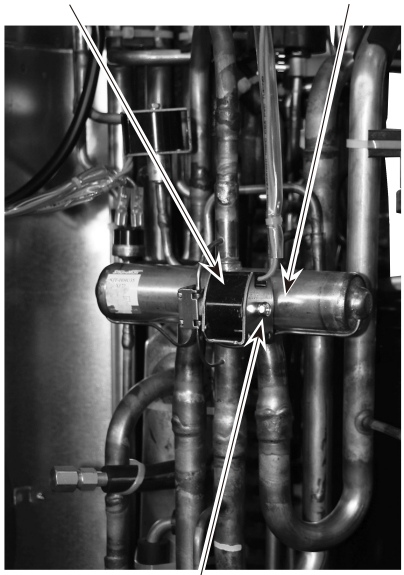
OPERATING PROCEDURE	PHOTOS & ILLUSTRATION
(6) Remove 2 electrical parts box fixing screws (4 × 10) and detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.	**Photo 4** 
4. Removing the thermistor <Suction pipe> (TH6) (1) Remove the service panel. (See Figure 1) (2) Remove the top panel. (See Figure 1) (3) Disconnect the connector, TH7/6 (red), on the Multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on top of the electrical parts box. (5) Pull out the thermistor <Suction pipe> (TH6) from the sensor holder. **Note: When replacing thermistor <Suction pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together.** **Refer to procedure No.5 below to remove thermistor <Ambient> (TH7).**	**Photo 5**  **Photo 6** 
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Figure 1) (2) Remove the top panel. (See Figure 1) (3) Disconnect the connector TH7/6 (red) on the multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on top of the electrical parts box. (See Photo 5.) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. **Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <Suction pipe> (TH6), since they are combined together.** **Refer to procedure No.4 above to remove thermistor <Suction pipe> (TH6).**	**Photo 7** 

OPERATING PROCEDURE	PHOTOS
6. Removing the thermistor <Outdoor liquid pipe> (TH3) and thermistor <Compressor> (TH4), thermistor <HIC pipe> (TH2) (1) Remove the service panel. (See Figure 1) (2) Disconnect the connectors, TH3 (white) and TH4 (white), TH2 (black) on the multi controller circuit board in the electrical parts box. (3) Loosen the clamp for the lead wire in the rear of the electrical parts box. (4) Pull out the thermistor <Outdoor liquid pipe> (TH3) and thermistor <Compressor> (TH4) from the sensor holder. (See Photo 6 and 8)	**Photo 8**  Thermistor <Outdoor liquid pipe> (TH3)
7. Removing the 4-way valve coil (21S4) (1) Remove the service panel. (See Figure 1) **[Removing the 4-way valve coil]** (2) Remove 4-way valve coil fixing screw (M5 × 7). (3) Remove the 4-way valve coil by sliding the coil toward you. (4) Disconnect the connector 21S4 (green) on the multi controller circuit board in the electrical parts box.	**Photo 9** 4-way valve coil (21S4) 4-way valve  4-way valve coil fixing screw
8. Removing the 4-way valve (1) Remove the service panel. (See Figure 1) (2) Remove the top panel. (See Figure 1) (3) Remove the electrical parts box. (See Photo 4) (4) Remove 3 valve bed fixing screws (4 × 10) and 4 ball valve and stop valve fixing screws (5 × 16) and then remove the valve bed. (See Photo 3 and 6) (5) Remove 2 cover panel fixing screws (5 x 12), then slide the cover panel (front) upward to remove it. (The cover panel (front) is fixed to the cover panel (rear) with a hook on the rear side. (See Photo 3) (6) Remove the cover panel (rear) fixing screws (2 for right side and 2 for rear/ 5 x 12), then slide the cover panel (rear) upward to remove it. (See Photo 3) (The cover panel (rear) is fixed to the side panel (R) with 2 screws.) (7) Remove 3 side panel (R) fixing screws (5 × 12) in the rear of the unit, then slide the side panel (R) upward to remove it. (The side panel (R) is fixed to the side plate with hooks on the rear side.) (8) Remove the 4-way valve coil. (See Photo 9) (9) Recover refrigerant. (10) Remove the welded part of 4-way valve. **Note 1: Recover refrigerant without spreading it in the air.** **Note 2: The welded part can be removed easily by removing the side panel (R).** **Note 3: When installing the four-way valve, cover it with a wet cloth to prevent it from heating (120°C or more), then braze the pipes so that the inside of pipes are not oxidized.**	

OPERATING PROCEDURE

9. Removing bypass valve coil (SV1) and bypass valve

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove the cover panel (front). (Refer to procedure 8 (5))
(4) Remove the cover panel (rear). (Refer to procedure 8 (6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Remove the bypass valve coil fixing screw (M4 × 6).
(7) Remove the bypass valve coil by sliding the coil upward.
(8) Disconnect the connector SV1 (gray) on the multi controller circuit board in the electrical parts box.
(9) Remove the electrical parts box. (See Photo 4)
(10) Recover refrigerant.
(11) Remove the welded part of bypass valve.

Refer to the notes below.

10. Removing the high pressure switch (63H) and high pressure sensor (63HS)

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove the cover panel (front). (Refer to procedure 8 (5))
(4) Remove the cover panel (rear). (Refer to procedure 8 (6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Pull out the lead wire of high pressure switch and high pressure sensor.
(7) Remove the electrical parts box. (See Photo 4)
(8) Recover refrigerant.
(9) Remove the welded part of high pressure switch and high pressure sensor.

Refer to the notes below.

11. Removing the low pressure sensor (63LS)

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove the cover panel (front). (Refer to procedure 8 (5))
(4) Remove the cover panel (rear). (Refer to procedure 8 (6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Disconnect the connector 63LS (blue) on the multi controller circuit board in the electrical parts box.
(7) Remove the electrical parts box. (See Photo 4)
(8) Recover refrigerant.
(9) Remove the welded part of low pressure sensor.

Refer to the notes below.

12. Removing electrical expansion valve (LEV-A, LEV-B)

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove the cover panel (front). (Refer to procedure 8 (5))
(4) Remove the cover panel (rear). (Refer to procedure 8 (6))
(5) Remove the side panel (R). (Refer to procedure 8 (7))
(6) Remove the electrical expansion valve coil. (See Photo 10,11)
(7) Remove the electrical parts box. (See Photo 4)
(8) Recover refrigerant.
(9) Remove the welded part of electrical expansion valve.

Refer to the notes on the right.

PHOTOS

Photo 10

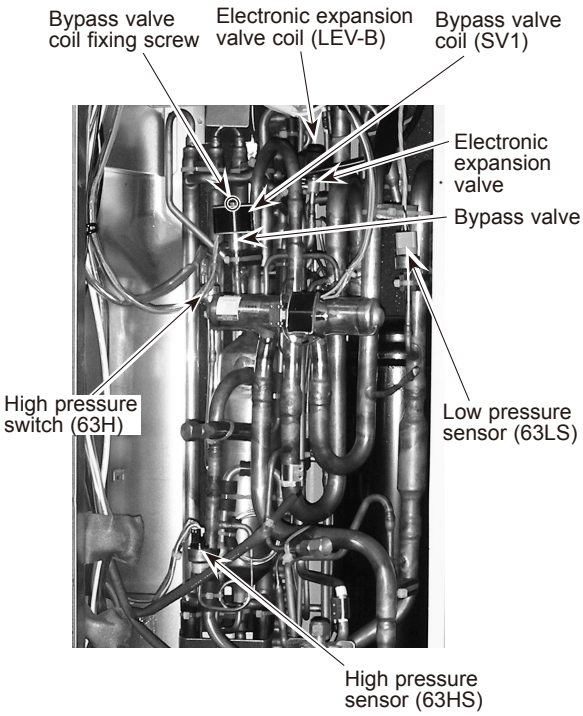
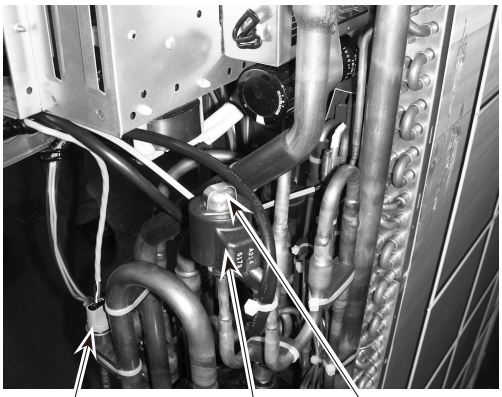


Photo 11



Notes:

1. Recover refrigerant without spreading it in the air.
2. The welded part can be removed easily by removing the side panel (R).
3. When installing the following parts, cover it with a wet cloth to prevent it from heating as the temperature below, then braze the pipes so that the inside of pipes are not oxidized;
- **Bypass valve (procedure 9), 248°F [120°C] or more**
- **High pressure switch and high pressure sensor (procedure 10), 212°F [100°C] or more**
- **Low pressure sensor (procedure 11), 212°F [100°C] or more**
- **LEV (procedure 12), 248°F [120°C] or more**

OPERATING PROCEDURE	PHOTOS

13. Removing the compressor (MC)

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove 2 front cover panel fixing screws (5 × 12) and remove the front cover panel. (See Photo 3)
(4) Remove front panel fixing screws, 5 (5x12) and 2 (4 x 10) and remove the front panel. (See Photo 3)
(5) Remove 4 back cover panel fixing screws (5 × 12) and remove the back cover panel.
(6) Remove the electrical parts box. (See Photo 4)
(7) Remove the valve bed. (Refer to procedure 8 (4))
(8) Remove the cover panel (front). (Refer to procedure 8 (5))
(9) Remove the cover panel (rear). (Refer to procedure 8 (6))
(10) Remove the right side panel. (Refer to procedure 8 (7))
(11) Remove 3 separator fixing screws (4 × 10) and remove the separator. (See Figure 3)
(12) Recover refrigerant.
(13) Remove the 3 compressor fixing nuts for motor using spanner or adjustable wrench.
(14) Remove the welded pipe of motor for compressor inlet and outlet and then remove the compressor.

Note: Recover refrigerant without spreading it in the air.

Photo 13

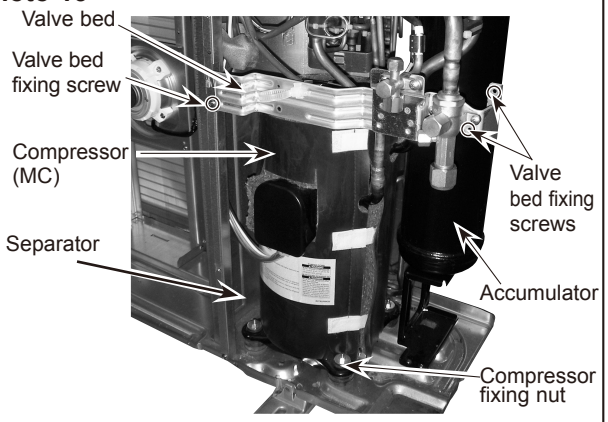
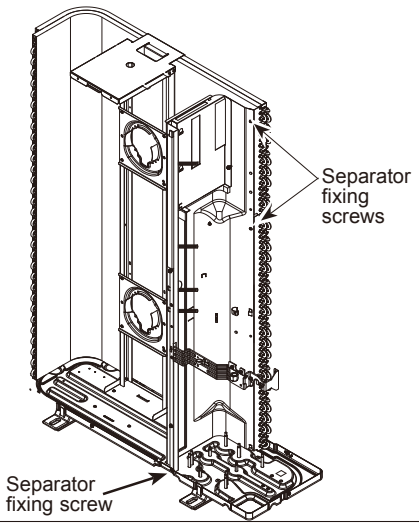


Figure 3



14. Removing the accumulator

Note: Recover refrigerant without spreading it in the air.

(1) Remove the service panel. (See Figure 1)
(2) Remove the top panel. (See Figure 1)
(3) Remove the front cover panel. (Refer to procedure 13 (3))
(4) Remove the back cover panel. (Refer to procedure 13 (5))
(5) Remove the electrical parts box. (See Photo 4)
(6) Remove the valve bed. (Refer to procedure 8 (4))
(7) Remove the cover panel (front). (Refer to procedure 8 (5))
(8) Remove the cover panel (rear). (Refer to procedure 8 (6))
(9) Remove the side panel (R). (Refer to procedure 8 (7))
(10) Recover refrigerant.
(11) Remove 2 welded pipes of accumulator inlet and outlet.
(12) Remove 2 accumulator leg fixing screws (4 × 10). (See Photo 15)

Photo 14

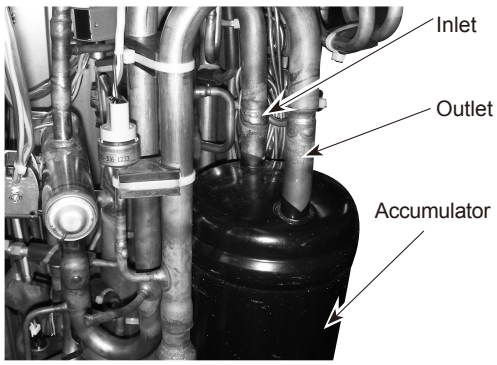
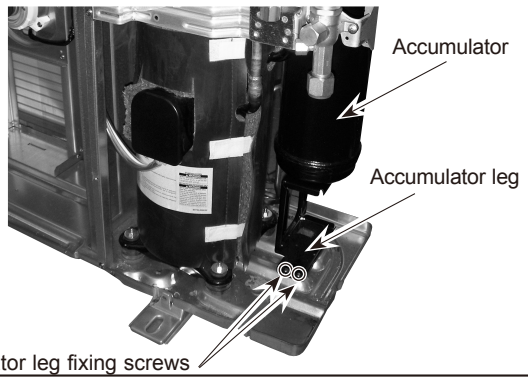
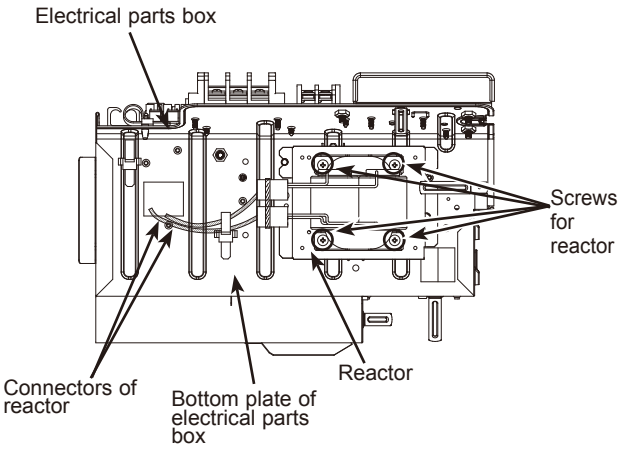
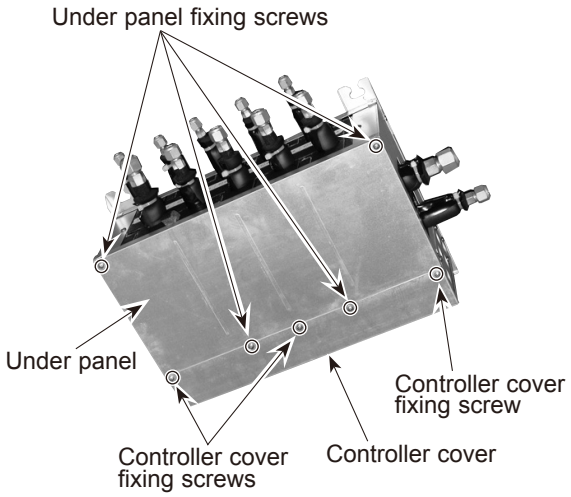
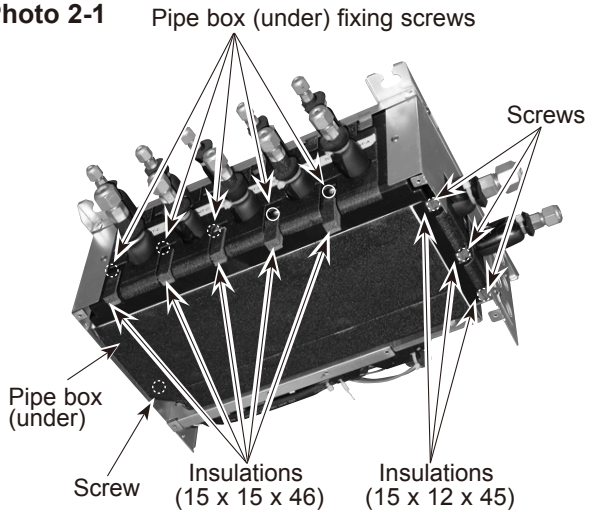
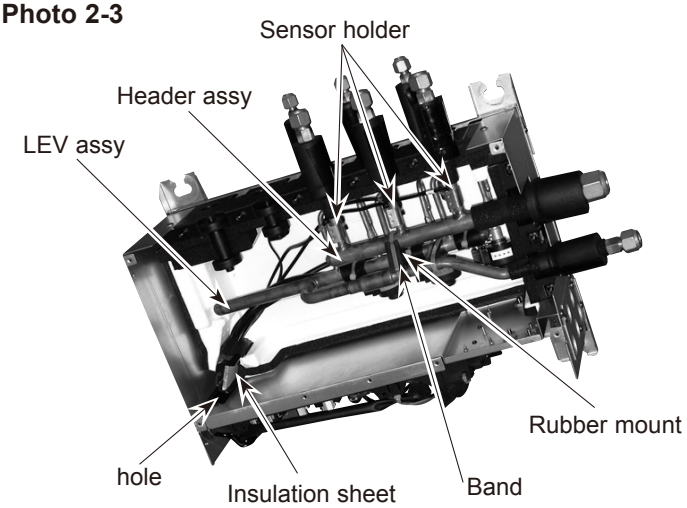
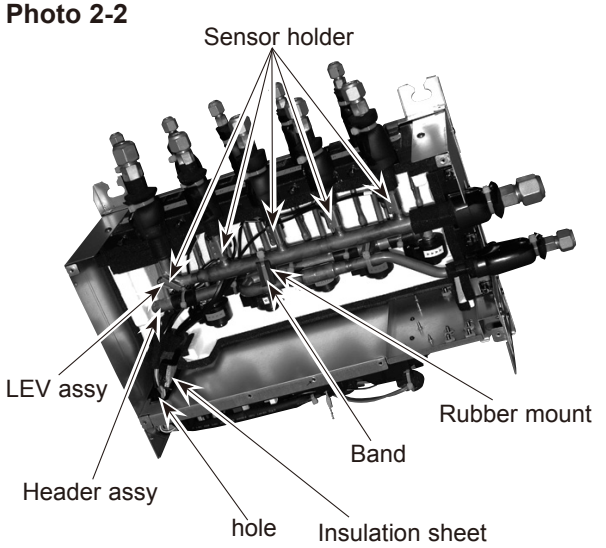


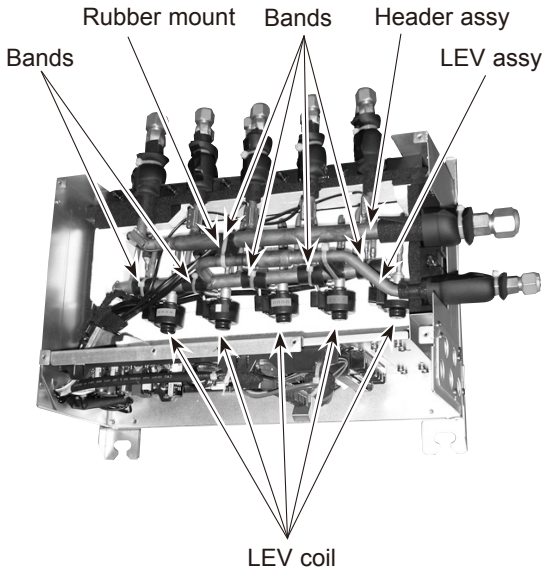
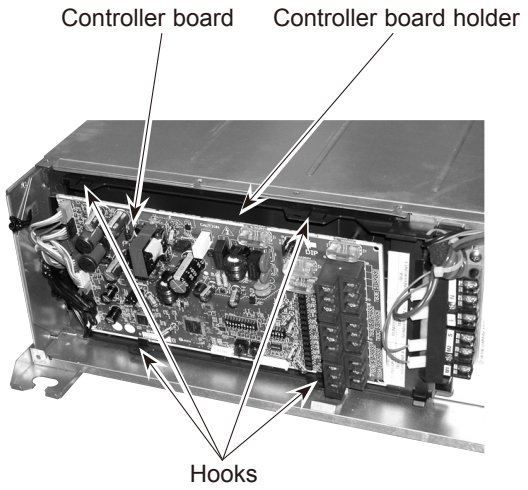
Photo 15



OPERATING PROCEDURE	PHOTOS
15. Removing the reactor (DCL) (1) Remove the service panel. (See Figure 1) (2) Remove the top panel. (See Figure 1) (3) Remove the electrical parts box (See photo 4) (4) Remove 4 screws for reactor (4 x 10) to remove the reactor. (See Figure 4)	**Figure 4** 

10-2. BRANCH BOX : PACMKA50BC PAC-MKA30BC PHOTO : PAC-MKA50BC

OPERATING PROCEDURE	PHOTOS
1. Removing the controller cover and under panel (1) Remove 3 controller cover fixing screws (4 × 10) to detach the controller cover. (See Photo 1) (2) Remove 4 under panel fixing screws (4 × 10) to remove the under panel. (See Photo 1)	**Photo 1** 
2. Removing the thermistor (TH-A–E*) (1) Remove the controller cover. (See Photo 1) (2) Remove the under panel. (See Photo 1) (3) Remove 8 insulations, then remove 9 pipe box (under) fixing screws (4 x 10). (See Photo 2-1) (4) Pull out the thermistor(s), TH-A–E, from the sensor holders mounted on the gas pipe. (See Photo 2-2) (5) Loosen the insulation sheet which bundles the thermistor connectors. (6) Loosen the side clamps, then disconnect the connector(s) on the controller board. (7) Pull out the lead wire(s) through the hole to the controller board side. *TH-A–C for PAC-MKA30BC. (See Photo 2-3)	**Photo 2-1** 
Photo 2-3  	**Photo 2-2** 

OPERATING PROCEDURE	PHOTOS
3. Removing the LEV coil (LEV-A–E*) (1) Remove the controller cover. (See Photo 1) (2) Remove the under cover. (See Photo 1) (3) Remove 8 insulations, then remove 9 pipe cover fixing screws (4 x 10). (See Photo 2-1) (4) Cut the bands that fixes the lead wire, then pull out the LEV coil(s) (LEV-A–E*). (See Photo 3) (5) Loosen the insulation sheet which bundles the LEV lead wires. (6) Loosen the side clamps, then disconnect the connector(s) on the controller board. (7) Pull out the lead wire(s) through the hole to the controller board side. (See Photo 2-2 or 2-3) *LEV-A–C for PAC-MKA30BC. (See Photo 2-3)	**Photo 3** 
4. Removing the controller board (1) Remove the controller cover. (See Photo 1) (2) Loosen the side clamps, then disconnect the connectors on the controller board. (3) Pick an upper edge of the controller board, then pull forward. The controller board is fixed to the controller board holder with 4 hooks. (See Photo 4) (4) Remove the controller board from the controller board holder.	**Photo 4** 

OPERATING PROCEDURE

5. Removing the LEV assy

(1) Remove the controller cover. (See Photo 1)
(2) Remove the under panel. (See Photo 1)
(3) Remove 8 the insulations, then remove 9 pipe cover fixing screws (4 x 10). (See Photo 2-1)
(4) Loosen the side clamps, then disconnect the LEV connectors on the controller board.
(5) Pull out the lead wires through the hole to the controller board side.

<Removing the header assy>

(6) Cut the band which fixes the header assy and LEV assy together, then remove the rubber mount. (See Photo 3)
(7) Remove the header assy. (See Photo 5-1)

<Disassembling the pipe box>

(8) Remove 2 side panel fixing screws (4 x 10). (See Photo 5-1)
(9) Pull out the pipe box (top) and separate it from the side panel. (See Photo 5-2)
(10) Turn the pipe box (top) upside down. (See Photo 5-3).
(11) Remove 5 insulations, then remove 5 pipe box (top) fixing screws (4 x 10).
(12) Turn the pipe box (top) upside down again, facing the pipe side up.
(13) Separate the pipe box (center) from the pipe box (top). (See Photo 5-4.)
(14) Remove the LEV assy.

<Pipe box cap only for PAC-MKA30BC>

The pipe box caps are placed in 2 unused pipe holes between the pipe box top, center and under. (See Photo 5-5)

Photo 5-4

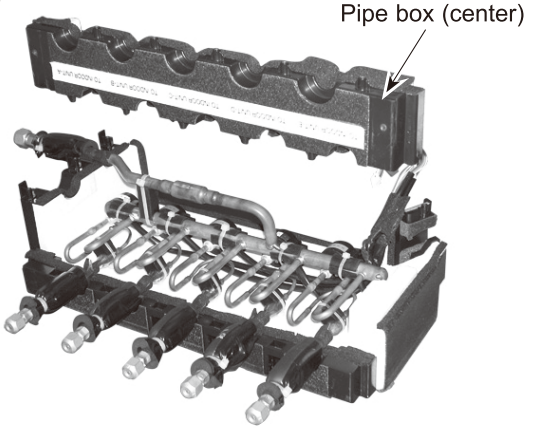
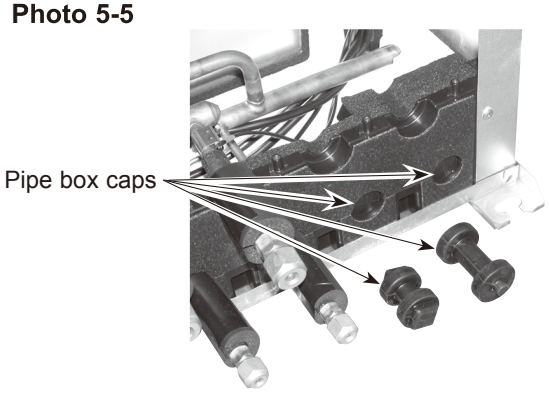


Photo 5-5



PHOTOS

Photo 5-1

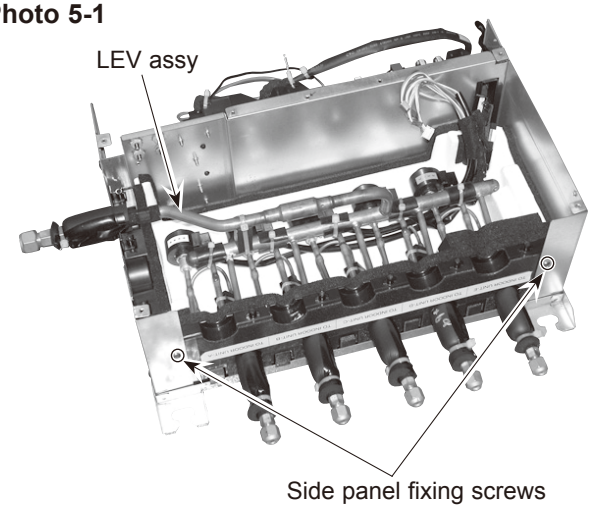


Photo 5-2

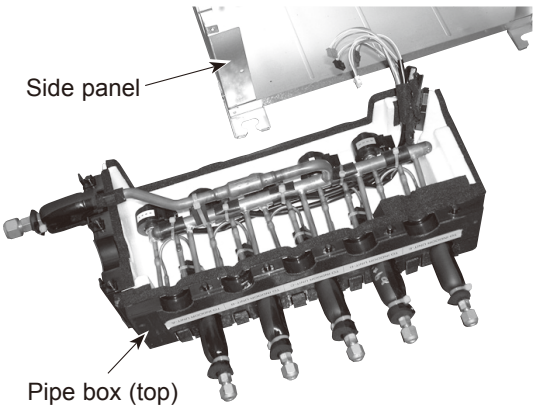
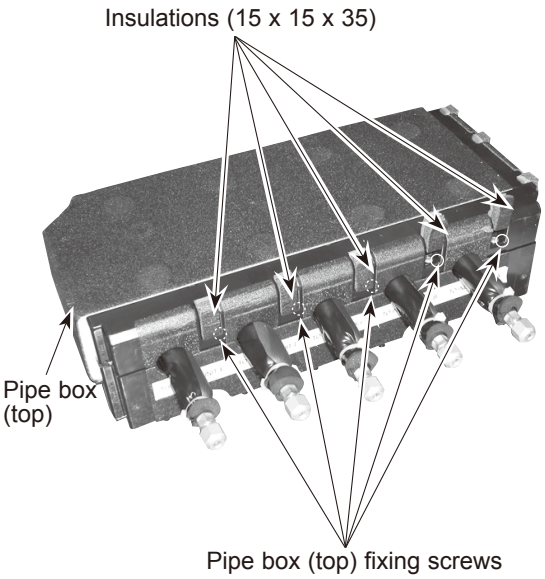


Photo 5-3



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