MITSUBISHI ELECTRIC

SPLIT-TYPE AIR CONDITIONERS

Revision C:
- MXZ-3E54VA- ER1, MXZ-3E68VA- ER1, MXZ-4E72VA- ER1, MXZ-4E83VA- E2, ET2, ER1, MXZ-5E102VA- E2, ET2, ER1, MXZ-2E53VAHZ- ER1 and MXZ-4E83VAHZ- ER1 have been added.

Please void OBH723 REVISED EDITION-B.

OUTDOOR UNIT

SERVICE MANUAL

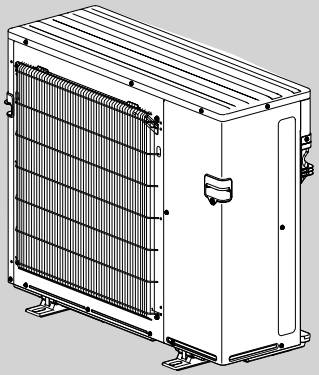
HFC utilized R410A

No. OBH723
REVISED EDITION-C

Models

MXZ-3E54VA - E1, ET1, ER1
MXZ-3E68VA - E1, ET1, ER1
MXZ-4E72VA - E1, ET1, ER1
MXZ-4E83VA - E1, E2, ET1, ET2, ER1
MXZ-5E102VA - E1, E2, ET1, ET2, ER1
MXZ-2E53VAHZ - E1, ER1
MXZ-4E83VAHZ - E1, ER1

Indoor unit service manual
MSZ-EF•VE Series (OBH589)
MSZ-SF•VA Series (OBH555)
MSZ-SF•VE Series (OBH600)
MSZ-FD•VA Series (OBH488)
MSZ-FH•VE Series (OBH623)
MSZ-GA•VA Series (OB378)
MSZ-GE•VA Series (OBH515)
MSZ-GF•VE Series (OBH634)
MFZ-KA•VA Series (OB409)
MFZ-KJ•VE Series (OBH666)
MLZ-KA•VA Series (OBH483)
SLZ-KA•VA Series (OC320)
SEZ-KD•VA Series (HWE07110)
PLA-RP•BA Series (OCH412)
PCA-RP•KA Series (OCH454)
PEAD-RP•JA Series (HWE08130)



MXZ-4E83VA
MXZ-5E102VA
MXZ-2E53VAHZ

NOTE:
RoHS compliant products have <G> mark on the spec name plate.

CONTENTS

Downloaded from www.Manualslib.com manuals search engine

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.

<Preparation before the repair service>

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air conditioner, turn off the power-supply breaker and remove the power plug.
- Discharge the capacitor before the work involving the electric parts.

<Precautions during the repair service>

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigeration cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.

Revision A:

• MXZ-2E53VAHZ- E1 and MXZ-4E83VAHZ- E1 have been added.

• Values of air flow and fan speed for MXZ-5E102VA- E1, ET1 have been modified.

Revision B:

• MXZ-3E54VA- E1, ET1, MXZ-3E68VA- E1, ET1, and MXZ-4E72VA- E1, ET1 have been added.

Revision C:

• MXZ-3E54VA- ER1, MXZ-3E68VA- ER1, MXZ-4E72VA- ER1, MXZ-4E83VA- E2, ET2, ER1, MXZ-5E102VA- E2, ET2, ER1, MXZ-2E53VAHZ- ER1 and MXZ-4E83VAHZ- ER1 have been added.

Downloaded from www.Manualslib.com manuals search engine

1 TECHNICAL CHANGES

MXZ-4E83VA -E1, ET1, ER1
MXZ-5E102VA -E1, ET1, ER1
1. New model

MXZ-2E53VAHZ -E1, ER1
1. New model

MXZ-4E83VAHZ -E1, ER1
1. New model

MXZ-3E54VA -E1, ET1, ER1
MXZ-3E68VA -E1, ET1, ER1
MXZ-4E72VA -E1, ET1, ER1
1. New model

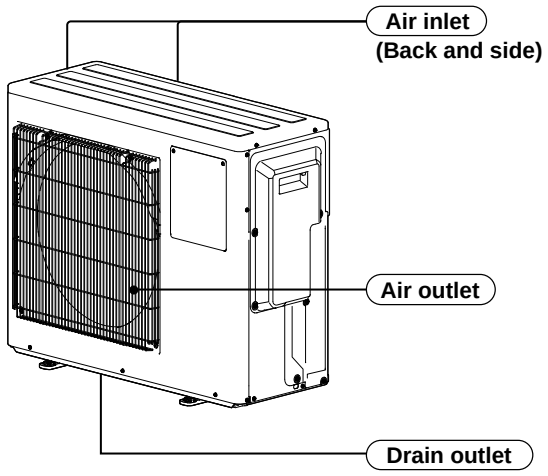
MXZ-4E83VA -E1, ET1 ➔ MXZ-4E83VA -E2, ET2
1. Fan motor has been changed.
2. Outdoor control P.C. board has been changed.

MXZ-5E102VA -E1, ET1 ➔ MXZ-5E102VA -E2, ET2
1. Fan motor has been changed.
2. Outdoor control P.C. board has been changed.

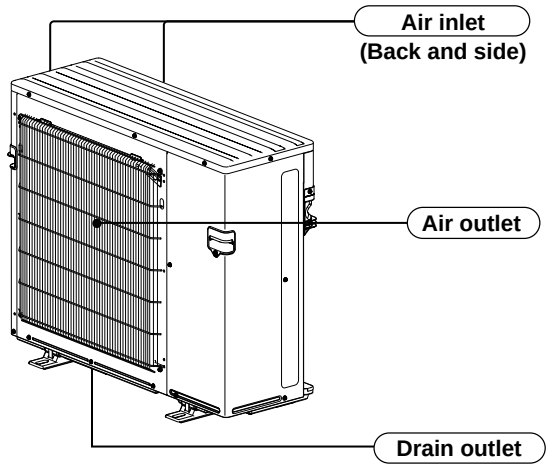
Downloaded from www.Manualslib.com manuals search engine

2 PART NAMES AND FUNCTIONS

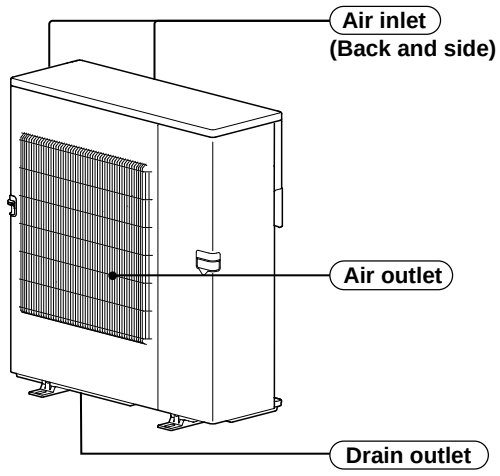
MXZ-3E54VA
MXZ-3E68VA
MXZ-4E72VA



MXZ-4E83VA
MXZ-5E102VA
MXZ-2E53VAHZ



MXZ-4E83VAHZ



ACCESSORIES

Model		MXZ-3E54VA MXZ-3E68VA MXZ-4E72VA	MXZ-4E83VA MXZ-5E102VA
①	Drain socket	1	1
②	Drain cap	2	5

Downloaded from www.Manualslib.com manuals search engine

3 SPECIFICATION

	Outdoor model		**MXZ-3E54VA**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2 to 3	
	Piping total length	m	Max. 50	
	Connecting pipe length	m	Max. 25	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	5.4 (2.9 - 6.8)	7.0 (2.6 - 9.0)
	Breaker capacity	A	25	
Electrical data	Power input (Total) ✻1, ✻2	W	1,350	1,590
	Running current (Total) ✻1, ✻2	A	5.9	7.0
	Power factor (Total) ✻1, ✻2	%	99	
	Starting current (Total) ✻1, ✻2	A	7.0	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			4.00	4.40
Compressor	Model		SNB130FGBH1T	
	Output	W	1,400	
	Current ✻1, ✻2	A	5.72	6.62
	Refrigeration oil (Model)	L	0.7 (NEO22)	
Fan motor	Model		SIC-71FW-F764-2	
	Current ✻1, ✻2	A	0.2	
	Dimensions W x H x D	mm	840 x 710 x 330	
	Weight	kg	58	
Special remarks	Air flow (Rated)	m^3 /h	2,334	2,376
	Sound level (Rated)	dB(A)	50	53
	Fan speed (Rated)	rpm	650	660
	Refrigerant filling capacity (R410A)	kg	2.7	

✻1 Measured under rated operating frequency.
✻2 When connected with indoor units below.
MSZ-EF18VE + MSZ-EF18VE + MSZ-EF18VE
NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)
COOLING INDOOR Dry-bulb temperature 27.0 °C Wet-bulb temperature 19.0 °C
OUTDOOR Dry-bulb temperature 35.0 °C Wet-bulb temperature 24.0 °C
HEATING INDOOR Dry-bulb temperature 20.0 °C
OUTDOOR Dry-bulb temperature 7.0 °C Wet-bulb temperature 6.0 °C

Downloaded from www.Manualslib.com manuals search engine

	Outdoor model		**MXZ-3E68VA**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2 to 3	
	Piping total length	m	Max. 60	
	Connecting pipe length	m	Max. 25	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	6.8 (2.9 - 8.4)	8.6 (2.6 - 10.6)
	Breaker capacity	A	25	
Electrical data	Power input (Total) ✻1, ✻2	W	2,190	2,380
	Running current (Total) ✻1, ✻2	A	9.6	10.5
	Power factor (Total) ✻1, ✻2	%	99	
	Starting current (Total) ✻1, ✻2	A	10.5	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			3.11	3.61
Compressor	Model		SNB172FEGH1T	
	Output	W	1,800	
	Current ✻1, ✻2	A	9.22	10.12
	Refrigeration oil (Model)	L	0.7 (NEO22)	
Fan motor	Model		SIC-71FW-F764-2	
	Current ✻1, ✻2	A	0.2	
	Dimensions W x H x D	mm	840 x 710 x 330	
	Weight	kg	58	
Special remarks	Air flow (Rated)	m^3 /h	2,334	2,376
	Sound level (Rated)	dB(A)	50	53
	Fan speed (Rated)	rpm	650	660
	Refrigerant filling capacity (R410A)	kg	2.7	

✻1 Measured under rated operating frequency.
✻2 When connected with indoor units below.
MSZ-EF18VE + MSZ-EF25VE + MSZ-EF25VE
NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)
COOLING INDOOR Dry-bulb temperature 27.0 °C Wet-bulb temperature 19.0 °C
OUTDOOR Dry-bulb temperature 35.0 °C Wet-bulb temperature 24.0 °C
HEATING INDOOR Dry-bulb temperature 20.0 °C
OUTDOOR Dry-bulb temperature 7.0 °C Wet-bulb temperature 6.0 °C

Downloaded from www.Manualslib.com manuals search engine

	Outdoor model		**MXZ-4E72VA**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2 to 4	
	Piping total length	m	Max. 60	
	Connecting pipe length	m	Max. 25	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	7.2 (3.7 - 8.8)	8.6 (3.4 - 10.7)
	Breaker capacity	A	25	
Electrical data	Power input (Total) ✻1, ✻2	W	2,250	2,280
	Running current (Total) ✻1, ✻2	A	9.9	10.0
	Power factor (Total) ✻1, ✻2	%	99	
	Starting current (Total) ✻1, ✻2	A	10.0	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			3.20	3.77
Compressor	Model		SNB172FEGH1T	
	Output	W	2,000	
	Current ✻1, ✻2	A	9.46	9.56
	Refrigeration oil (Model)	L	0.7 (NEO22)	
Fan motor	Model		SIC-71FW-F764-2	
	Current ✻1, ✻2	A	0.2	
	Dimensions W x H x D	mm	840 x 710 x 330	
	Weight	kg	59	
Special remarks	Air flow (Rated)	m^3 /h	2,334	2,376
	Sound level (Rated)	dB(A)	50	53
	Fan speed (Rated)	rpm	650	660
	Refrigerant filling capacity (R410A)	kg	2.7	

✻1 Measured under rated operating frequency.
✻2 When connected with indoor units below.
MSZ-EF18VE + MSZ-EF18VE + MSZ-EF18VE + MSZ-EF18VE
NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)
COOLING INDOOR Dry-bulb temperature 27.0 °C Wet-bulb temperature 19.0 °C
OUTDOOR Dry-bulb temperature 35.0 °C Wet-bulb temperature 24.0 °C
HEATING INDOOR Dry-bulb temperature 20.0 °C
OUTDOOR Dry-bulb temperature 7.0 °C Wet-bulb temperature 6.0 °C

Downloaded from www.Manualslib.com manuals search engine

	Outdoor model		**MXZ-4E83VA**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2 to 4	
	Piping total length	m	Max. 70	
	Connecting pipe length	m	Max. 25	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	8.3 (3.7 - 9.2)	9.3 (3.4 - 11.6)
	Breaker capacity	A	25	
Electrical data	Power input (Total) ✻1, ✻2	W	2,440	2,000
	Running current (Total) ✻1, ✻2	A	10.7	8.8
	Power factor (Total) ✻1, ✻2	%	99	
	Starting current (Total) ✻1, ✻2	A	10.7	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			3.40	4.65
Compressor	Model		SNB220FAGMC	
	Output	W	2,200	
	Current ✻1, ✻2	A	10.1	8.1
	Refrigeration oil (Model)	L	0.7 (FV50S)	
Fan motor	Model		E1, ET1: SIC-81FW-D888-9 / E2, ET2, ER1: SIC-88FWJ-D888-1	
	Current ✻1, ✻2	A	0.3	
	Dimensions W x H x D	mm	950 x 796 x 330	
	Weight	kg	62	
Special remarks	Air flow (Rated)	m^3 /h	3,336	3,336
	Sound level (Rated)	dB(A)	49	51
	Fan speed (Rated)	rpm	620	620
	Refrigerant filling capacity (R410A)	kg	2.99	

✻1 Measured under rated operating frequency.
✻2 When connected with below indoor units.
MSZ-EF18VE + MSZ-EF18VE + MSZ-EF22VE + MSZ-EF25VE
NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)

COOLING	INDOOR	Dry-bulb temperature	27.0°C	Wet-bulb temperature	19.0°C
	OUTDOOR	Dry-bulb temperature	35.0°C	Wet-bulb temperature	24.0°C
HEATING	INDOOR	Dry-bulb temperature	20.0°C		
	OUTDOOR	Dry-bulb temperature	7.0°C	Wet-bulb temperature	6.0°C

Downloaded from www.Manualslib.com manuals search engine

	Outdoor model		**MXZ-5E102VA**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2 to 5	
	Piping total length	m	Max. 80	
	Connecting pipe length	m	Max. 25	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	10.2 (3.9 - 11.0)	10.5 (4.1 - 14.0)
	Breaker capacity	A	25	
Electrical data	Power input (Total) ✻1, ✻2	W	3,150	2,340
	Running current (Total) ✻1, ✻2	A	13.8	10.3
	Power factor (Total) ✻1, ✻2	%	99	
	Starting current (Total) ✻1, ✻2	A	13.8	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			3.24	4.49
Compressor	Model		SNB220FAGMC	
	Output	W	2,800	
	Current ✻1, ✻2	A	13.0	9.4
	Refrigeration oil (Model)	L	0.7 (FV50S)	
Fan motor	Model		E1, ET1: SIC-81FW-D888-9 / E2, ET2, ER1: SIC-88FWJ-D888-1	
	Current ✻1, ✻2	A	0.5	
	Dimensions W x H x D	mm	950 x 796 x 330	
	Weight	kg	63	
Special remarks	Air flow (Rated)	m^3 /h	E1, ET1: 3,336 / E2, ET2, ER1: 3,906	4,080
	Sound level (Rated)	dB(A)	52	56
	Fan speed (Rated)	rpm	E1, ET1: 620 / E2, ET2, ER1: 720	750
	Refrigerant filling capacity (R410A)	kg	2.99	

✻1 Measured under rated operating frequency.
✻2 When connected with below indoor units.
MSZ-EF18VE + MSZ-EF18VE + MSZ-EF22VE + MSZ-EF22VE + MSZ-EF22VE
NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)
COOLING INDOOR Dry-bulb temperature 27.0°C Wet-bulb temperature 19.0°C
OUTDOOR Dry-bulb temperature 35.0°C Wet-bulb temperature 24.0°C
HEATING INDOOR Dry-bulb temperature 20.0°C
OUTDOOR Dry-bulb temperature 7.0°C Wet-bulb temperature 6.0°C

Downloaded from www.Manualslib.com manuals search engine

	Outdoor model		**MXZ-2E53VAHZ**	
	Outdoor unit power supply		Single phase 230 V, 50 Hz	
System	Indoor units number		2	
	Piping total length	m	Max. 30	
	Connecting pipe length	m	Max. 20	
	Height difference (Indoor ~ Outdoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Height difference (Indoor ~ Indoor)	m	Refer to 7 REFRIGERANT SYSTEM DIAGRAM.	
	Function		Cooling	Heating
	Capacity Rated frequency (Min.-Max.) ✻2	kW	5.3 (1.1 - 6.0)	6.4 (1.0 - 7.0)
	Breaker capacity	A	16/25 ✻3	
Electrical data	Power input (Total) ✻1, ✻2	W	1,290	1,360
	Running current (Total) ✻1, ✻2	A	5.7	6.0
	Power factor (Total) ✻1, ✻2	%	98	
	Starting current (Total) ✻1, ✻2	A	6.0	
Coefficient of performance (C.O.P) (Total) ✻1, ✻2			4.11	4.71
Compressor	Model		SNB220FAGMC	
	Output	W	1,400	
	Current ✻1, ✻2	A	5.3	5.5
	Refrigeration oil (Model)	L	0.7 (FV50S)	
Fan motor	Model		E1: SIC-81FW-D888-9, SIC-88FWJ-D888-1 / ER1: SIC-88FWJ-D888-1	
	Current ✻1, ✻2	A	0.3	
	Dimensions W x H x D	mm	950 x 796 x 330	
	Weight	kg	61	
Special remarks	Air flow (Rated)	m^3 /h	2,820	2,820
	Sound level (Rated)	dB(A)	45	47
	Fan speed (Rated)	rpm	520	520
	Refrigerant filling capacity (R410A)	kg	2.0	

✻1 Measured under rated operating frequency.
✻2 When connected with below indoor units.
✻3 When the amount of current exceeds the allowed value.
MSZ-EF18VE + MSZ-EF35VE

NOTE: Test conditions are based on ISO 5151. (Refrigerant piping length (one way): 5 m)

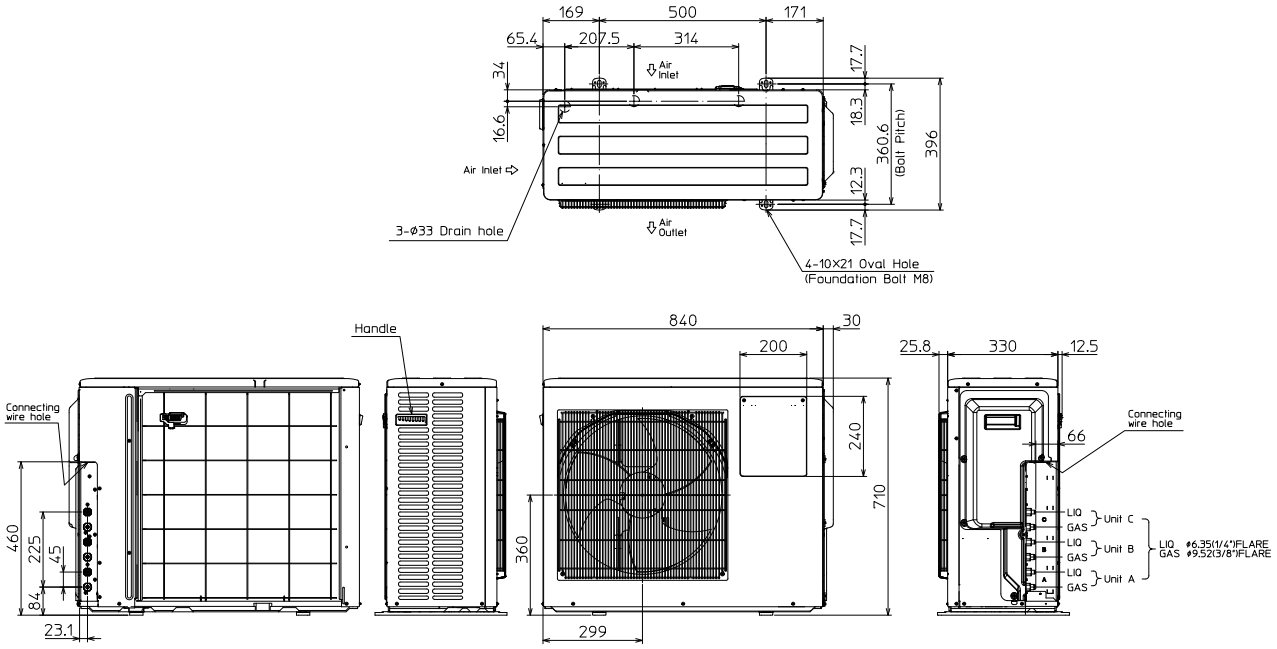
COOLING	INDOOR	Dry-bulb temperature	27.0°C	Wet-bulb temperature	19.0°C
	OUTDOOR	Dry-bulb temperature	35.0°C	Wet-bulb temperature	24.0°C
HEATING	INDOOR	Dry-bulb temperature	20.0°C		
	OUTDOOR	Dry-bulb temperature	7.0°C	Wet-bulb temperature	6.0°C

Downloaded from www.Manualslib.com manuals search engine

5 OUTLINES AND DIMENSIONS

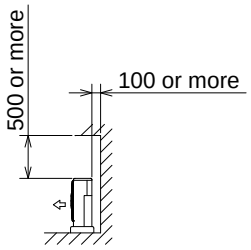
MXZ-3E54VA MXZ-3E68VA

Unit: mm

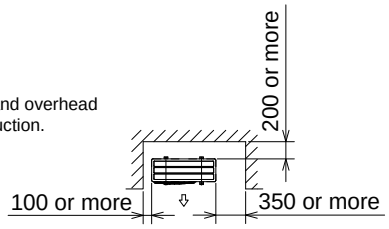


1.Installation space

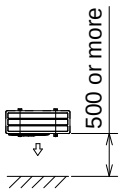
Note : Leave front and both sides free of obstruction.



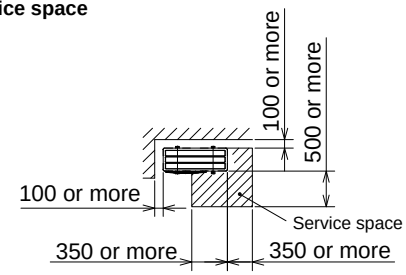
Note : Leave front and overhead free of obstruction.



Note : Leave rear, overhead and both sides free of obstruction.



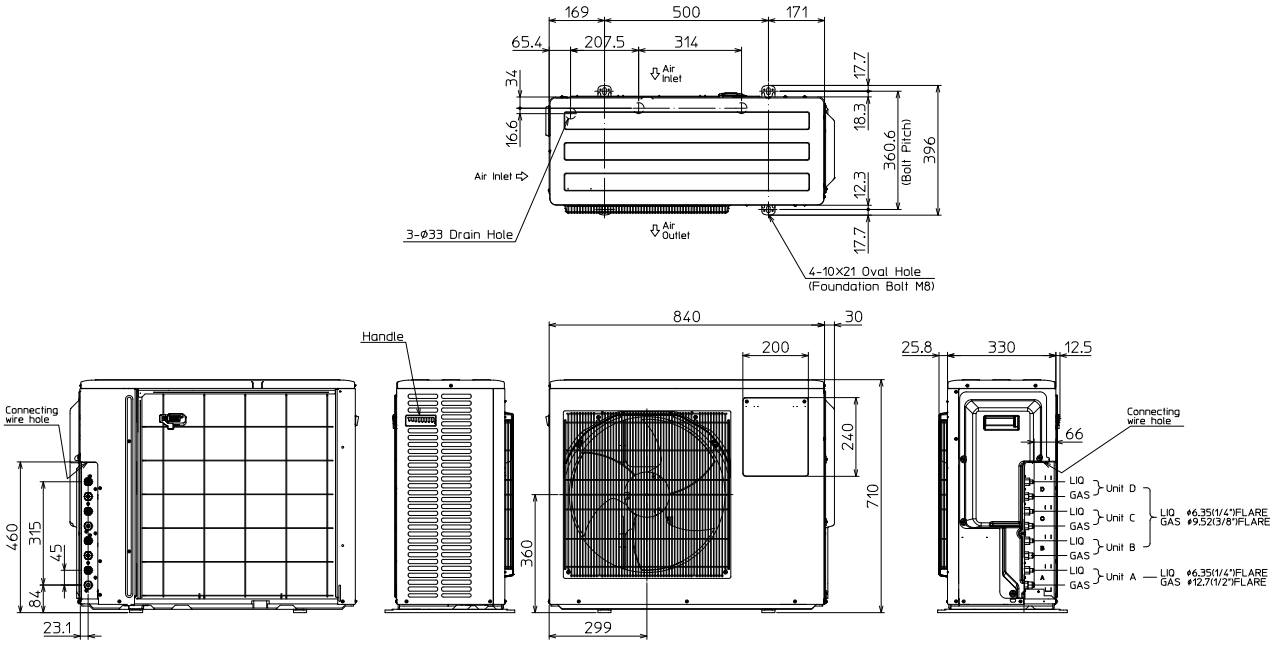
2.Service space



Downloaded from www.Manualslib.com manuals search engine

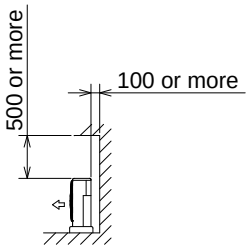
MXZ-4E72VA

Unit: mm

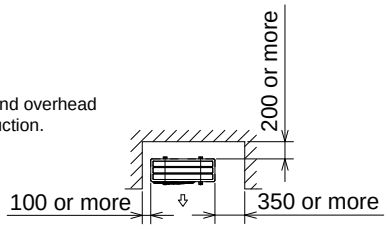


1.Installation space

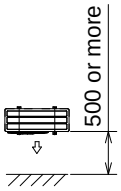
Note : Leave front and both sides free of obstruction.



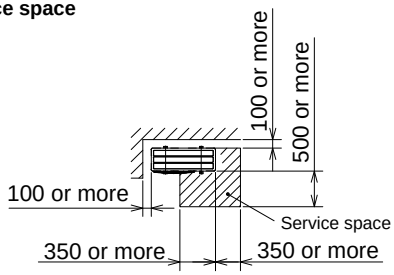
Note : Leave front and overhead free of obstruction.



Note : Leave rear, overhead and both sides free of obstruction.



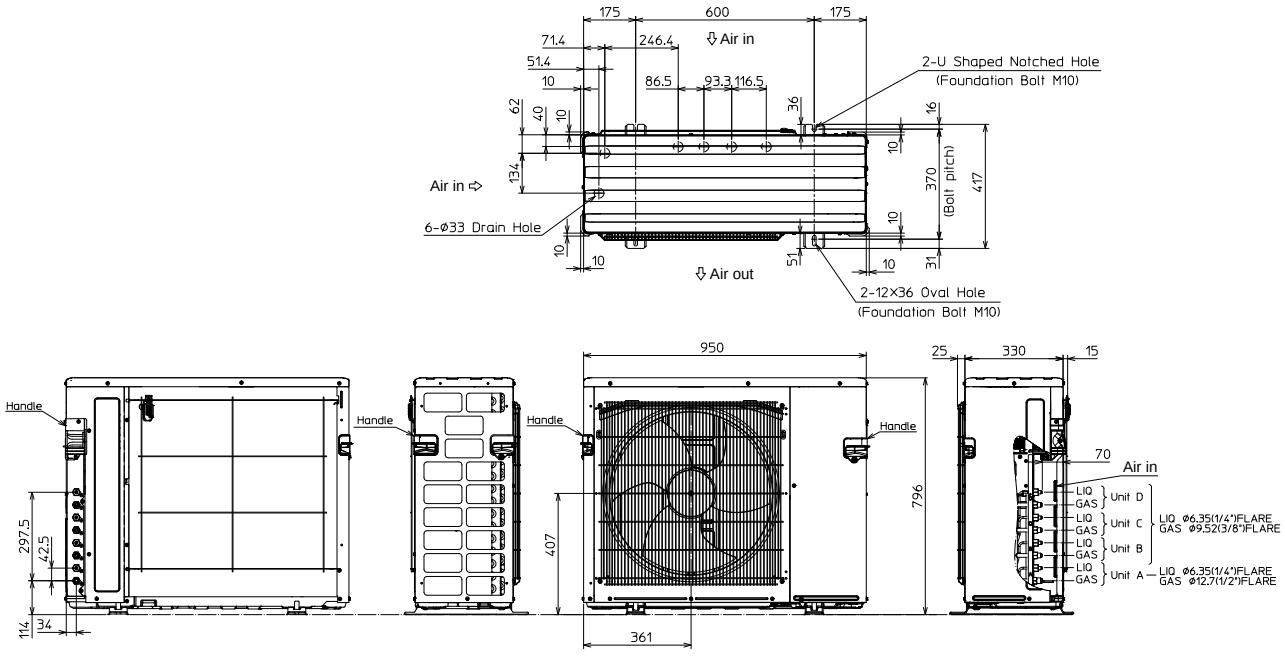
2.Service space



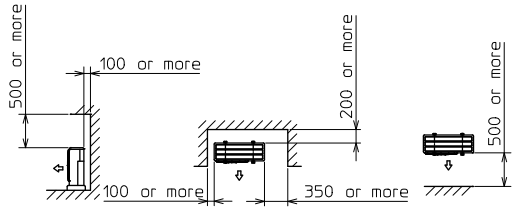
Downloaded from www.Manualslib.com manuals search engine

MXZ-4E83VA

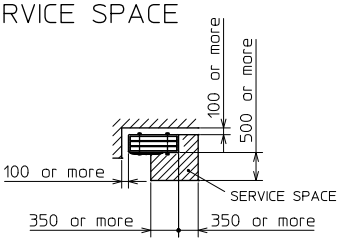
Unit: mm



1.FREE SPACE



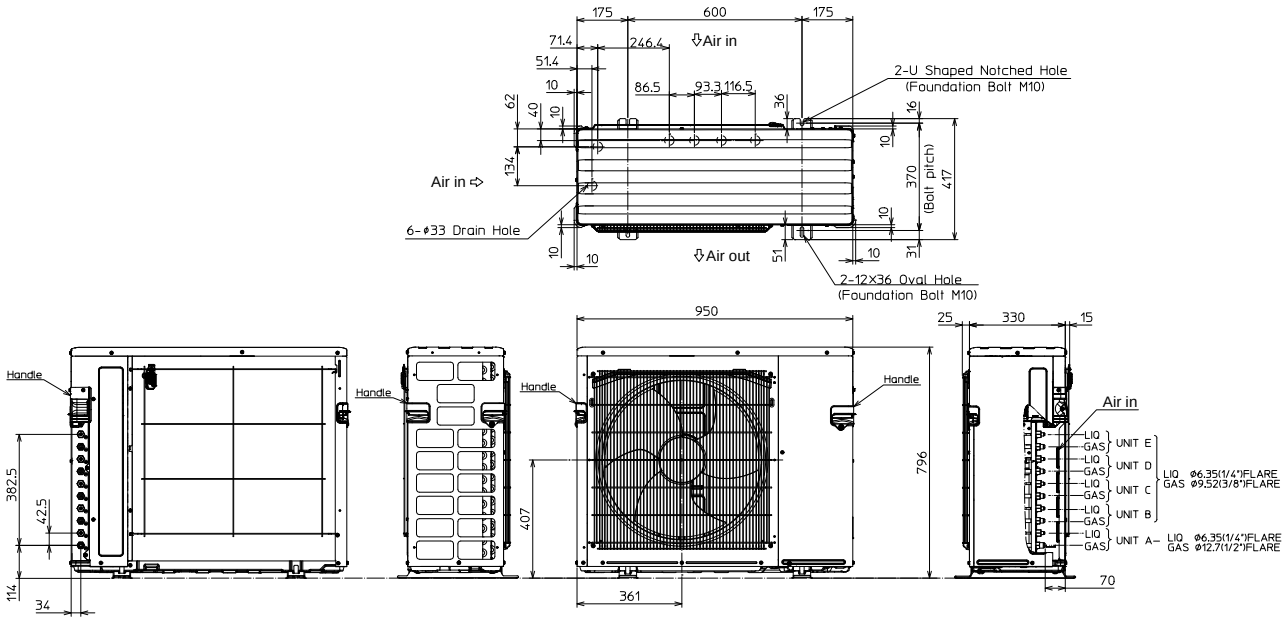
2.SERVICE SPACE



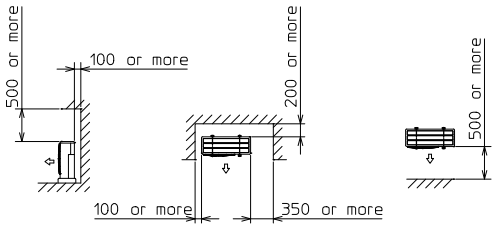
Downloaded from www.Manualslib.com manuals search engine

MXZ-5E102VA

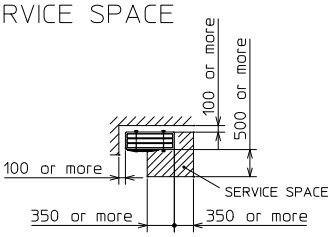
Unit: mm



1.FREE SPACE



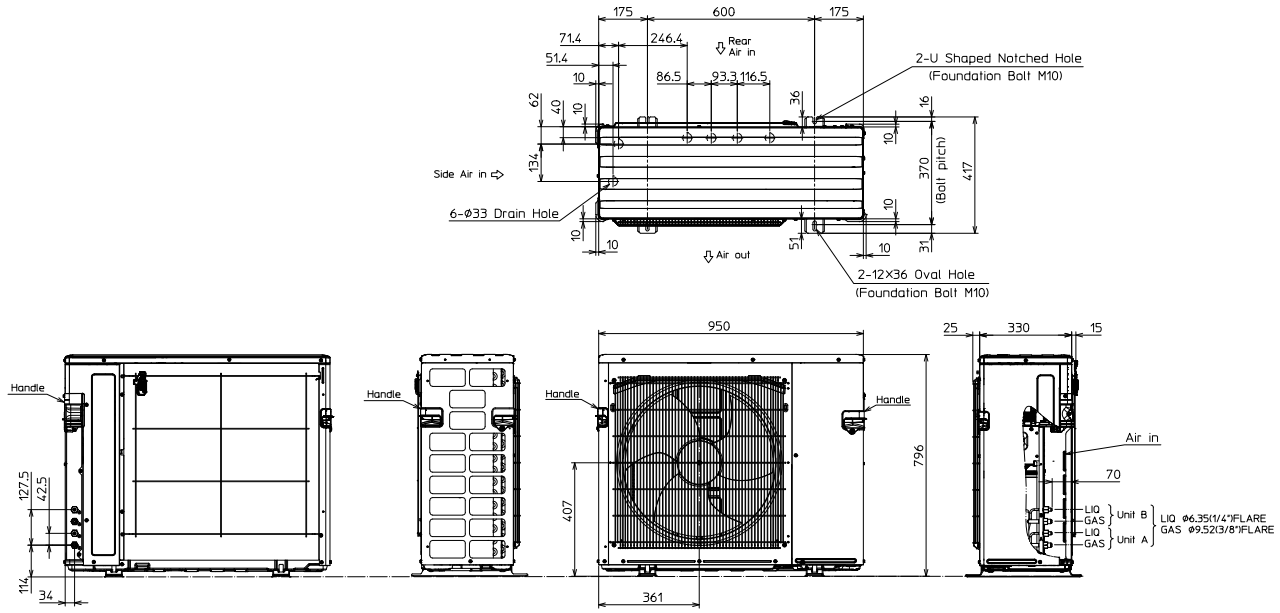
2.SERVICE SPACE



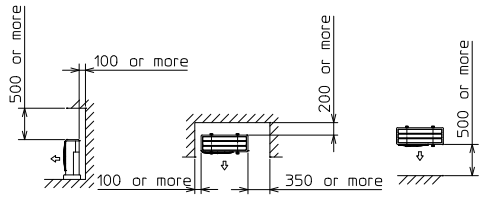
Downloaded from www.Manualslib.com manuals search engine

MXZ-2E53VAHZ

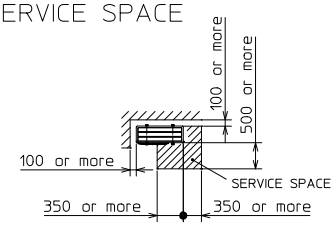
Unit: mm



1.FREE SPACE



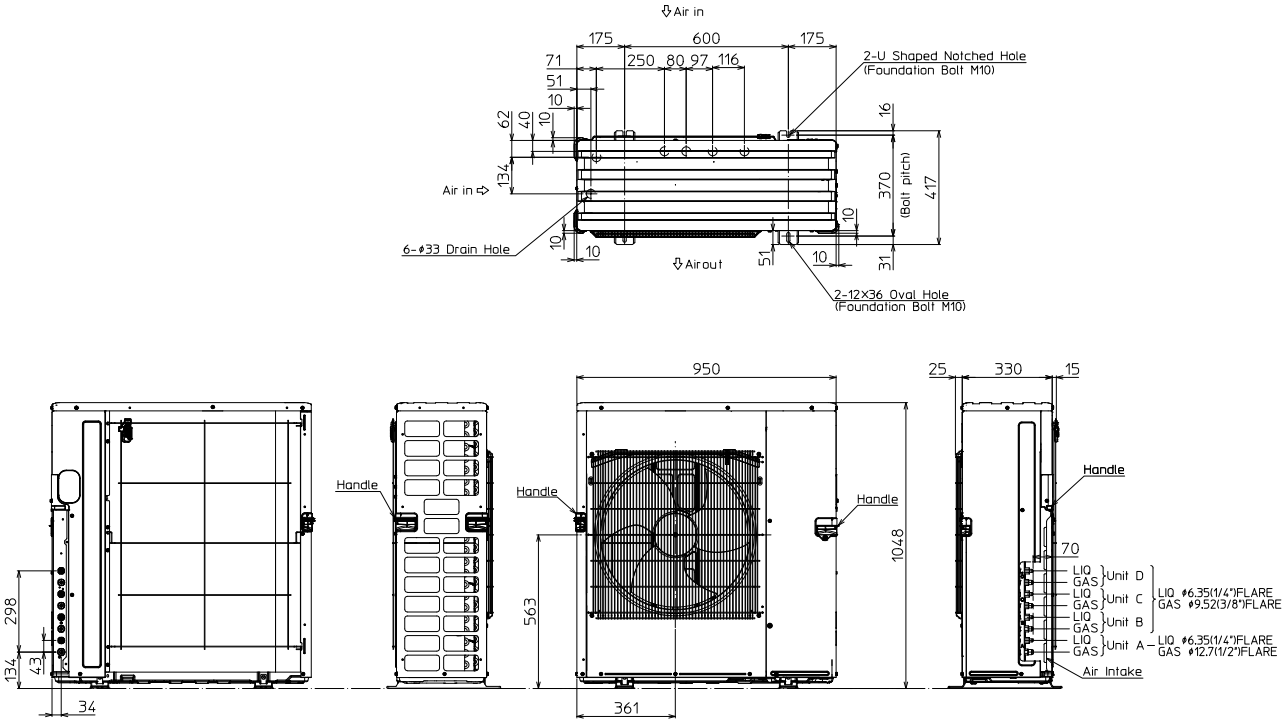
2.SERVICE SPACE



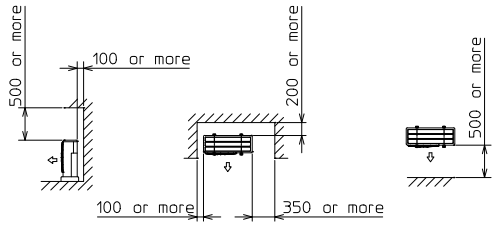
Downloaded from www.Manualslib.com manuals search engine

MXZ-4E83VAHZ

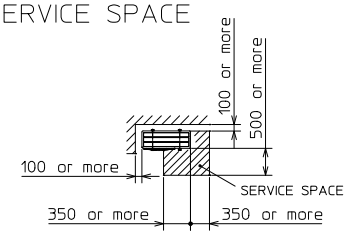
Unit: mm



1.FREE SPACE



2.SERVICE SPACE

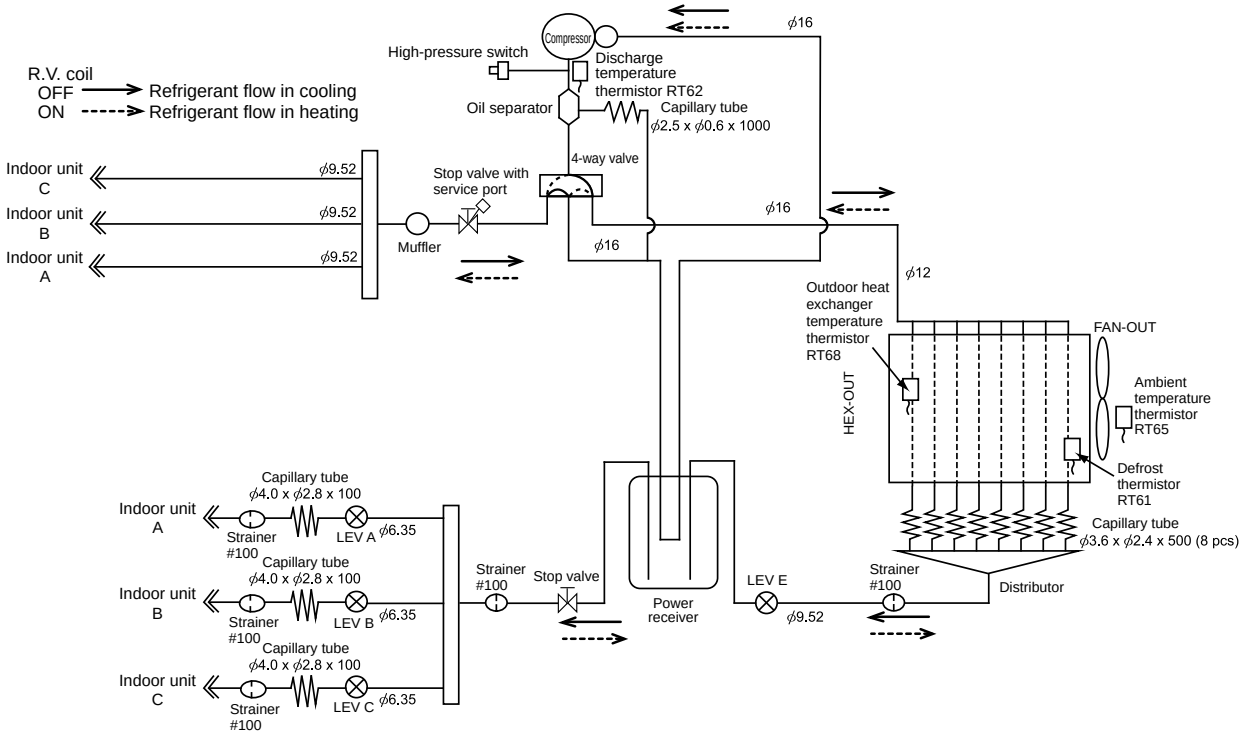


Downloaded from www.Manualslib.com manuals search engine

7 REFRIGERANT SYSTEM DIAGRAM

MXZ-3E54VA

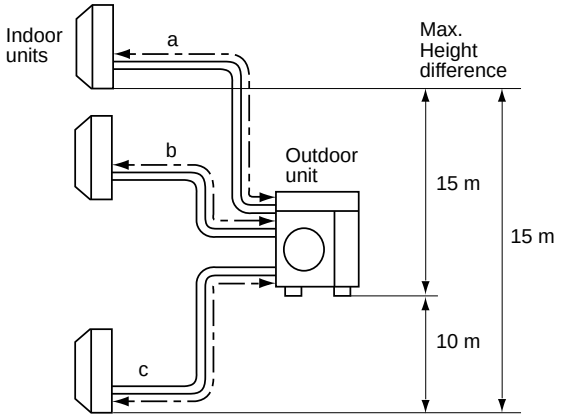
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c)	25 m
Total piping length (a+b+c)	50 m
Bending point for each unit	25
Total bending point	50

✻It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 3 unit total)		
	40 m	45 m	50 m
2,700	0	100	200

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 40)

WHEN CONNECTING TO MFZ-KJ SERIES INDOOR UNIT MXZ-3E54VA

No. of MFZ-KJ indoor units	Refrigerant piping length (L)		Maximum amount of refrigerant
	~ 40 m	~ 50 m	
None	Charge-less (2,700 g)	(L-40) x 20 g/m	2,900 g
1 unit	100 g additional charge (2,800 g)	100 g + (L-40) x 20 g/m	3,000 g
2 units	200 g additional charge (2,900 g)	200 g + (L-40) x 20 g/m	3,100 g
3 units	300 g additional charge (3,000 g)	300 g + (L-40) x 20 g/m	3,200 g

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the right table.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe.
  For further information on Different-diameter pipe, refer to "PARTS CATALOG".

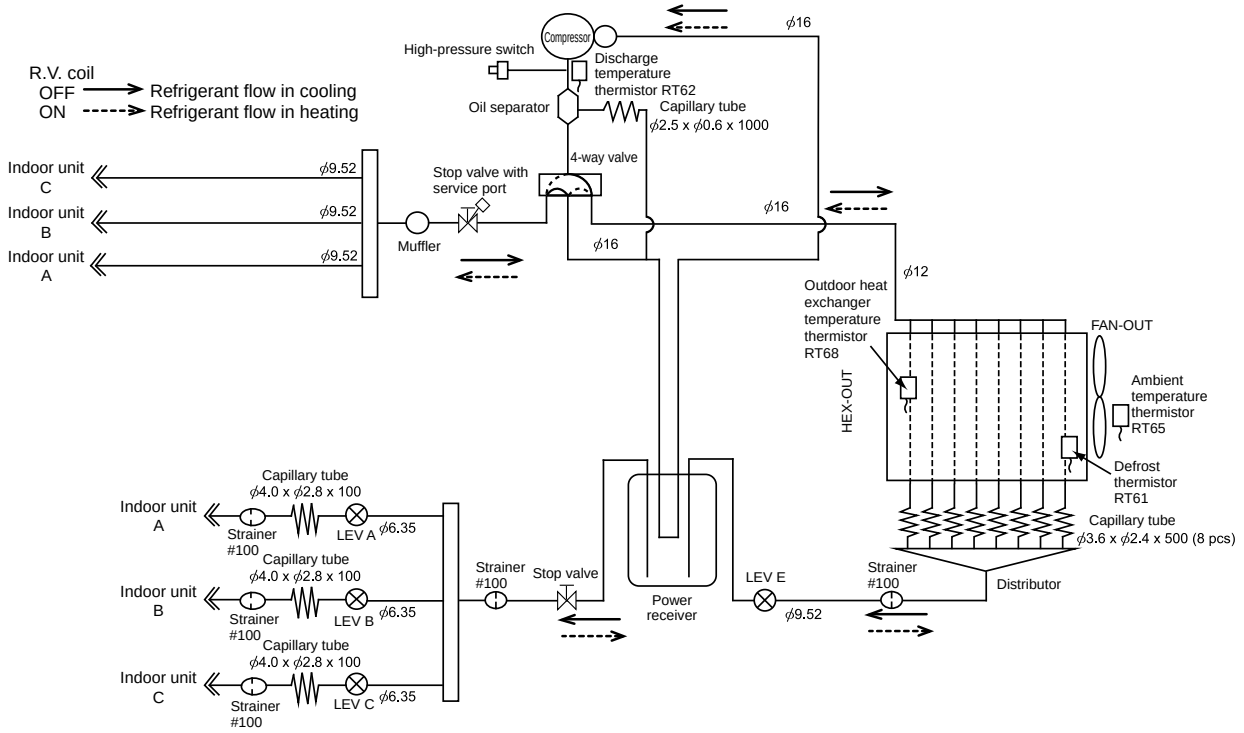
UNIT: mm (inch)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

MXZ-3E68VA

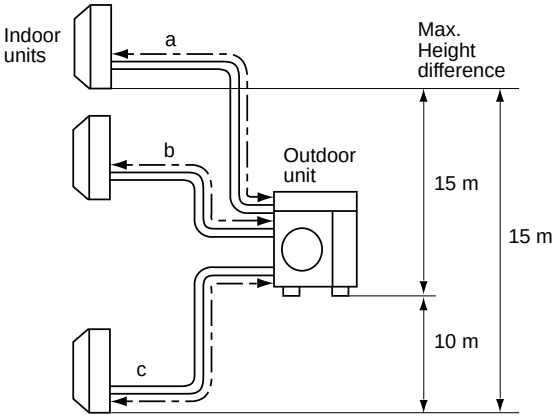
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c)	25 m
Total piping length (a+b+c)	60 m
Bending point for each unit	25
Total bending point	60

✻It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 3 unit total)		
	40 m	50 m	60 m
2,700	0	200	400

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 40)

WHEN CONNECTING TO MFZ-KJ SERIES INDOOR UNIT MXZ-3E68VA

No. of MFZ-KJ indoor units	Refrigerant piping length (L)		Maximum amount of refrigerant
	~ 40 m	~ 60 m	
None	Charge-less (2,700 g)	(L-40) x 20 g/m	3,100 g
1 unit	100 g additional charge (2,800 g)	100 g + (L-40) x 20 g/m	3,200 g
2 units	200 g additional charge (2,900 g)	200 g + (L-40) x 20 g/m	3,300 g
3 units	300 g additional charge (3,000 g)	300 g + (L-40) x 20 g/m	3,400 g

UNIT: mm (inch)

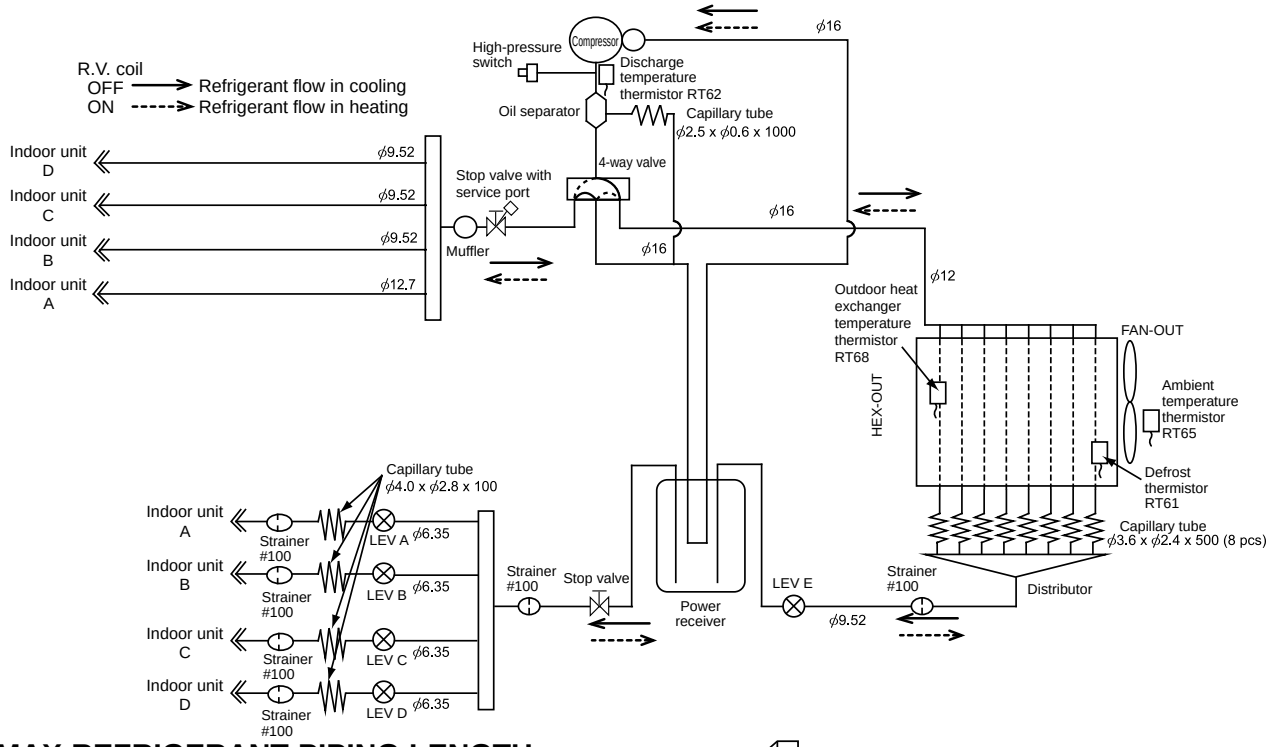
- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the right table.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe.
  For further information on Different-diameter pipe, refer to "PARTS CATALOG".

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

MXZ-4E72VA

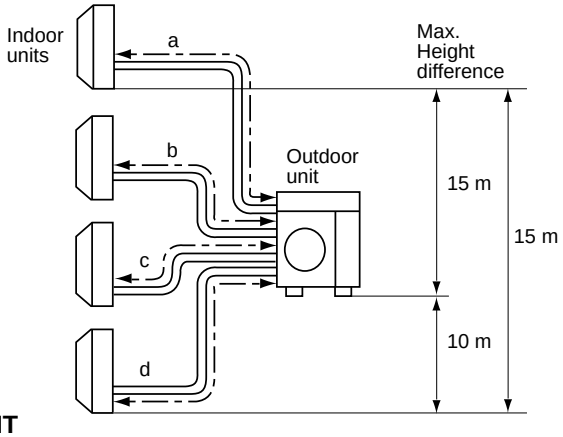
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c, d)	25 m
Total piping length (a+b+c+d)	60 m
Bending point for each unit	25
Total bending point	60

✻It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 4 unit total)		
	40 m	50 m	60 m
2,700	0	200	400

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 40)

WHEN CONNECTING TO MFZ-KJ SERIES INDOOR UNIT MXZ-4E72VA

No. of MFZ-KJ indoor units	Refrigerant piping length (L)		Maximum amount of refrigerant
	~ 40 m	~ 60 m	
None	Charge-less (2,700 g)	(L-40) x 20 g/m	3,100 g
1 unit	100 g additional charge (2,800 g)	100 g + (L-40) x 20 g/m	3,200 g
2 units	200 g additional charge (2,900 g)	200 g + (L-40) x 20 g/m	3,300 g
3 units	300 g additional charge (3,000 g)	300 g + (L-40) x 20 g/m	3,400 g
4 units	400 g additional charge (3,100 g)	400 g + (L-40) x 20 g/m	3,500 g

UNIT: mm (inch)

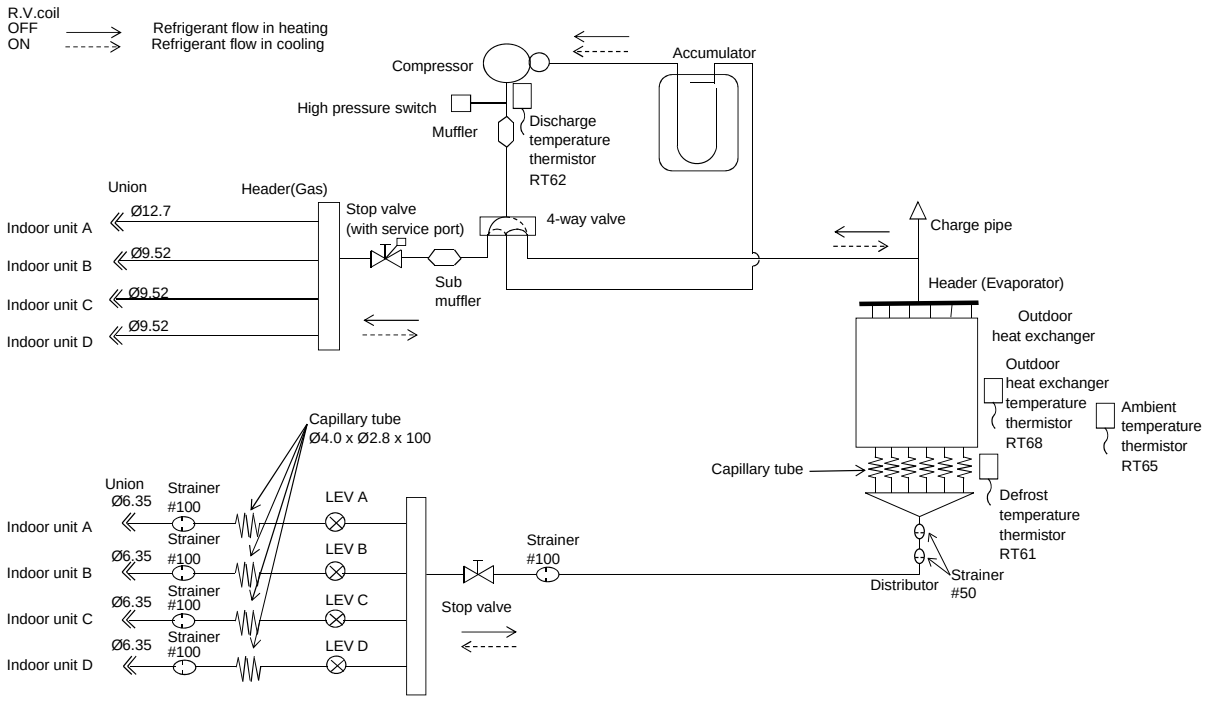
- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the right table.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe.
  For further information on Different-diameter pipe, refer to "PARTS CATALOG".

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit D	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

MXZ-4E83VA

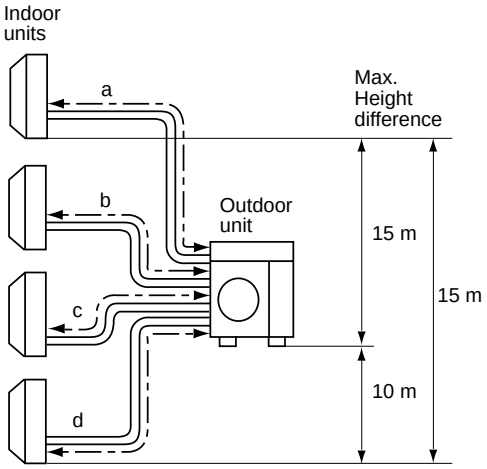
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c, d)	25 m
Total piping length (a+b+c+d)	70 m
Bending point for each unit	25
Total bending point	70

❋It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 4 unit total)			
	25 m	40 m	55 m	70 m
2,990	0	300	600	900

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 25)

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the tables below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe. For further information on Different-diameter pipe, refer to "PARTS CATALOG".

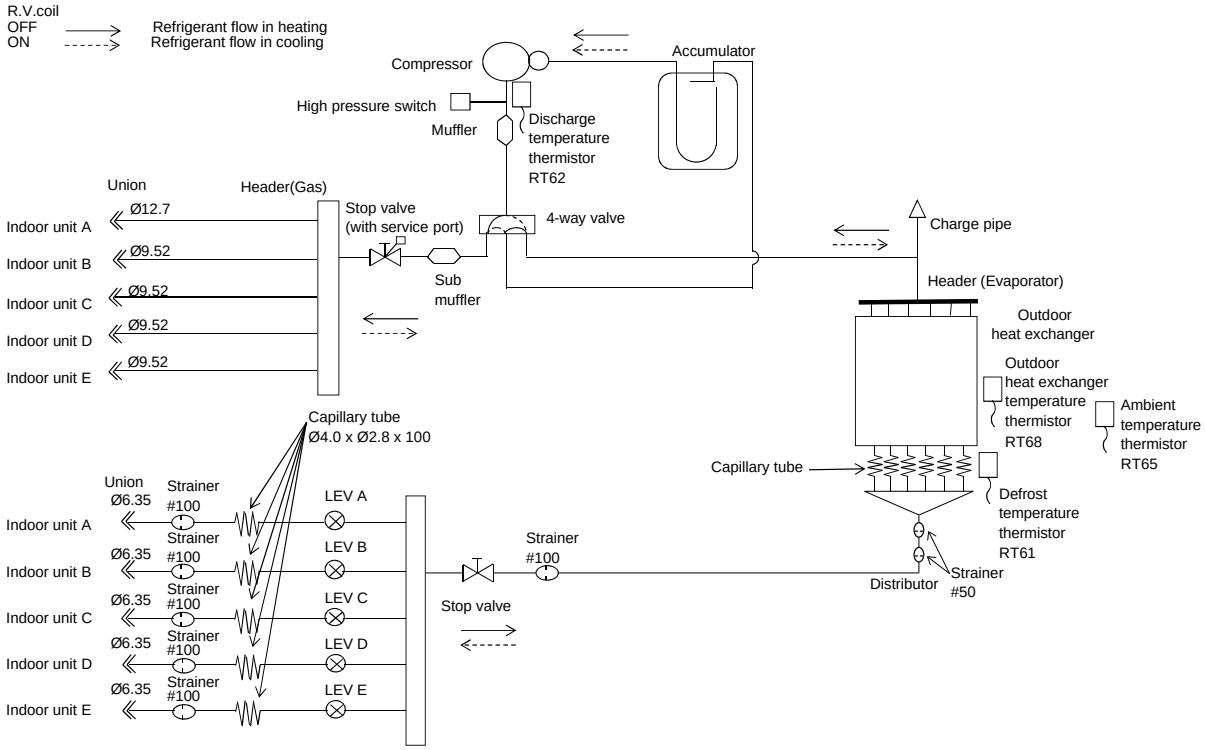
UNIT: mm (inch)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit D	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

MXZ-5E102VA

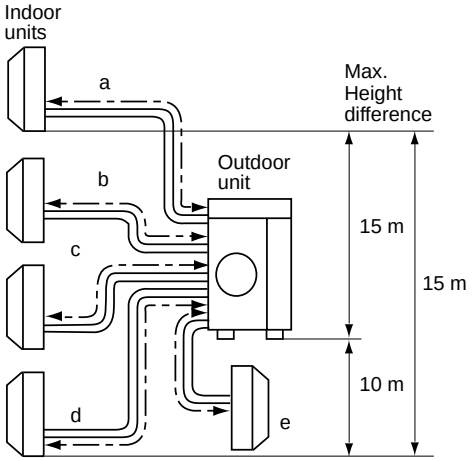
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c, d,e)	25 m
Total piping length (a+b+c+d+e)	80 m
Bending point for each unit	25
Total bending point	80

✻It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 5 unit total)				
	0 m	20 m	40 m	60 m	80 m
2,990	0	400	800	1,200	1,600

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 0)

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the tables below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe. For further information on Different-diameter pipe, refer to "PARTS CATALOG".

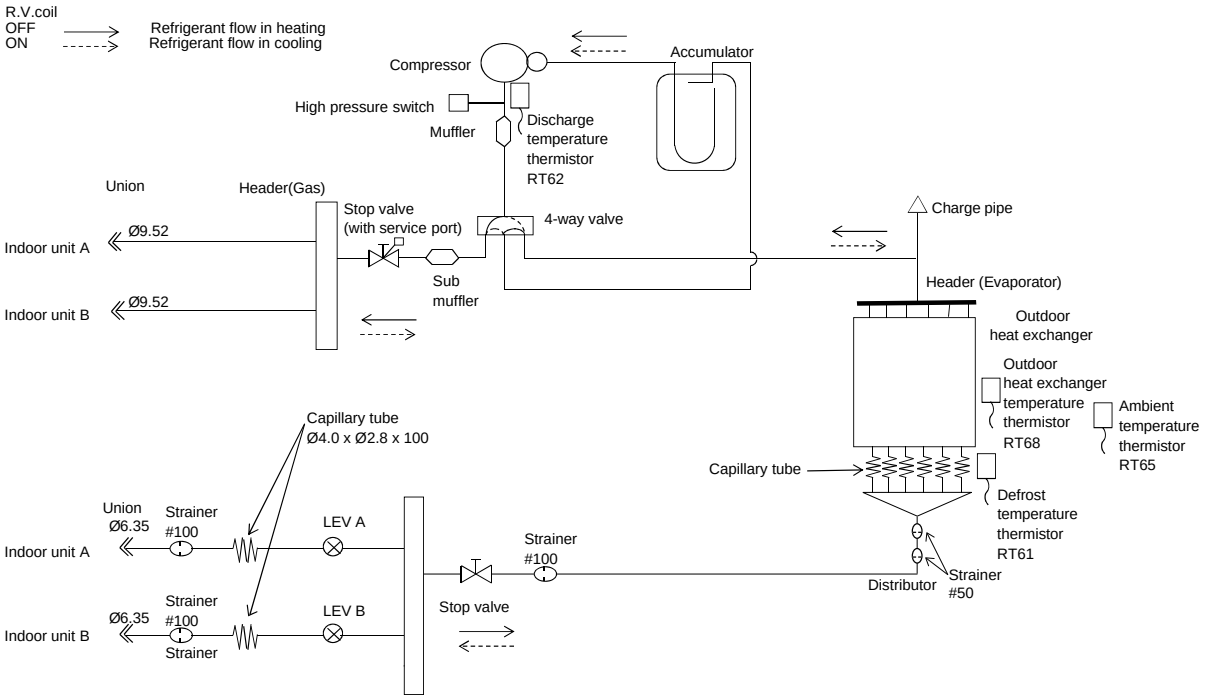
UNIT: mm (inch)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit D	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit E	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

MXZ-2E53VAHZ

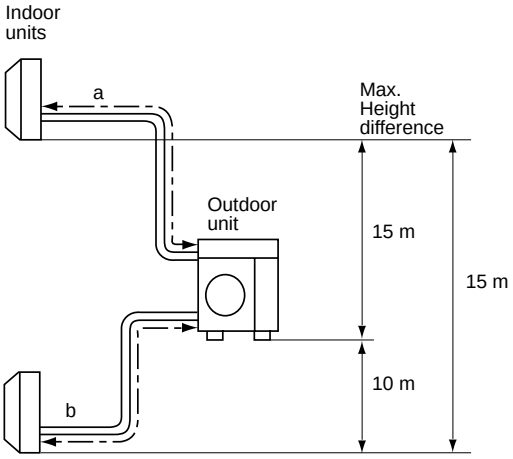
UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b)	20 m
Total piping length (a+b)	30 m
Bending point for each unit	20
Total bending point	30

✻It is irrelevant which unit is higher.



ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 2 unit total)		
	20 m	25 m	30 m
2,000	0	100	200

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 20)

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the tables below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe. For further information on Different-diameter pipe, refer to "PARTS CATALOG".

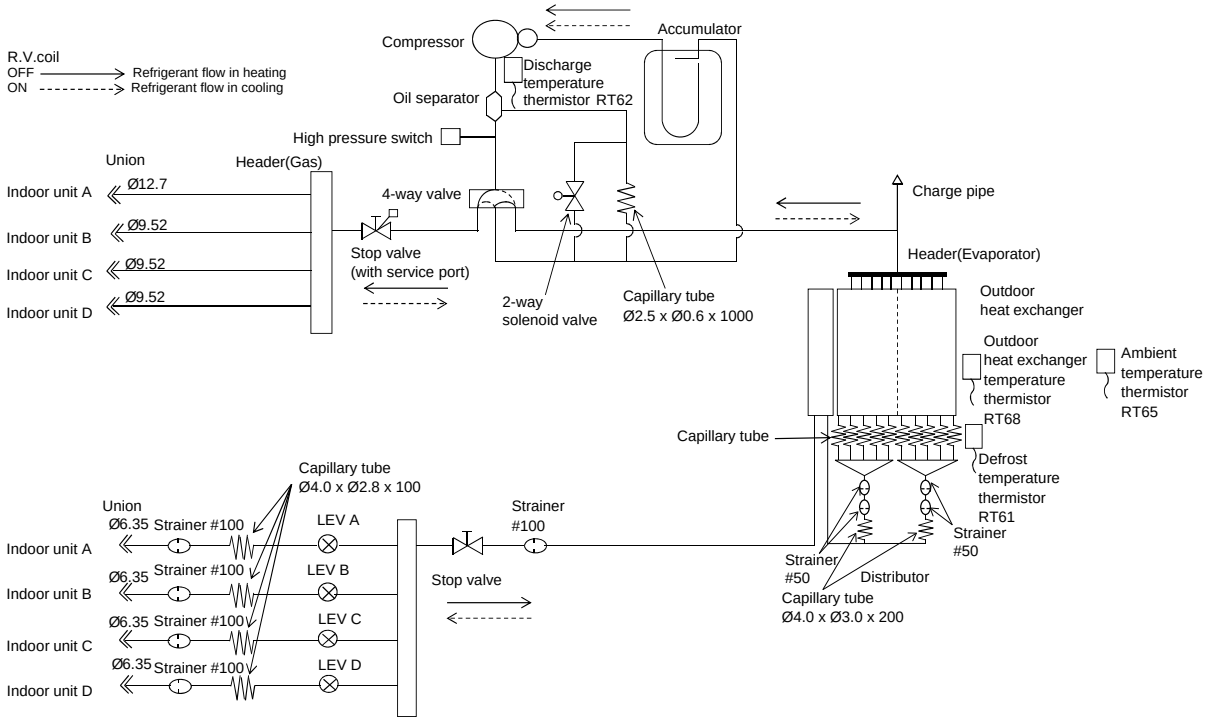
UNIT: mm (inch)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

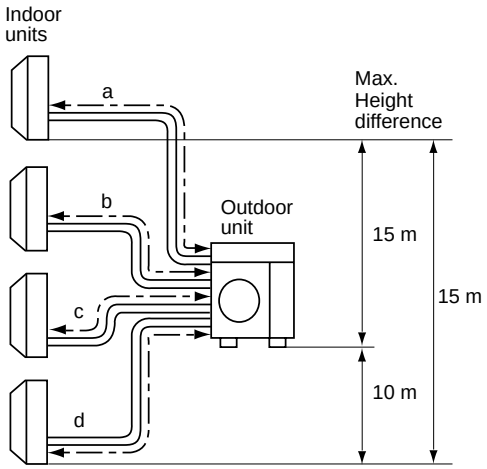
MXZ-4E83VAHZ

UNIT: mm



MAX REFRIGERANT PIPING LENGTH

Piping length each indoor unit (a, b, c, d)	25 m
Total piping length (a+b+c+d)	70 m
Bending point for each unit	25
Total bending point	70



✻It is irrelevant which unit is higher.

ADDITIONAL REFRIGERANT CHARGE

Outdoor unit precharged (g)	Refrigerant piping length (one way, 4 unit total)			
	25 m	40 m	55 m	70 m
3,900	0	300	600	900

Calculation : Xg = 20 g/m x (Refrigerant piping length (m) - 25)

- Refrigerant pipe diameter is different according to indoor unit to be connected. When using extension pipes, refer to the tables below.
- When diameter of refrigerant pipe is different from that of outdoor unit union, use optional Different-diameter pipe. For further information on Different-diameter pipe, refer to "PARTS CATALOG".

UNIT: mm (inch)

Outdoor unit union diameter		
For		
Indoor unit A	Liquid	6.35(1/4)
	Gas	12.7(1/2)
Indoor unit B	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit C	Liquid	6.35(1/4)
	Gas	9.52(3/8)
Indoor unit D	Liquid	6.35(1/4)
	Gas	9.52(3/8)

Downloaded from www.Manualslib.com manuals search engine

PUMPING DOWN

When relocating or disposing of the air conditioner, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

1) Turn off the breaker.
2) Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
3) Fully close the stop valve on the liquid pipe side of the outdoor unit.
4) Turn on the breaker.
5) Start the emergency COOL operation on all the indoor units.
6) When the pressure gauge shows 0.05 to 0 MPa [Gauge] (approximately 0.5 to 0 kgf/cm²), fully close the stop valve on the gas pipe side of the outdoor unit and stop the operation. (Refer to the indoor unit installation manual about the method for stopping the operation.)
   * If too much refrigerant has been added to the air conditioner system, the pressure may not drop to 0.05 to 0 MPa [Gauge] (approximately 0.5 to 0 kgf/cm²), or the protection function may operate due to the pressure increase in the high-pressure refrigerant circuit. If this occurs, use a refrigerant collecting device to collect all of the refrigerant in the system, and then recharge the system with the correct amount of refrigerant after the indoor and outdoor units have been relocated.
7) Turn off the breaker. Remove the pressure gauge and the refrigerant piping.

WARNING

When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes. The compressor may burst and cause injury if any foreign substance, such as air, enters the pipes.

Downloaded from www.Manualslib.com manuals search engine

9 ACTUATOR CONTROL

MXZ-3E54VA MXZ-3E68VA MXZ-4E72VA MXZ-4E83VA MXZ-5E102VA MXZ-2E53VAHZ MXZ-4E83VAHZ

Relation between main sensor and actuator

Sensor	Purpose	Actuator					
		Compres-sor	LEV	Outdoor fan motor	4-way valve	2-way solenoid valve ※1	Defrost heater ※2
Discharge temperature thermistor	Protection	○	○			○	
Indoor coil temperature thermistor	Cooling: Coil frost prevention	○				○	
	Heating: High pressure protection	○	○				
Defrost thermistor	Heating: Defrosting	○	○	○	○		
Fin temperature thermistor	Protection	○		○			
Ambient temperature thermistor	Control/Protection	○	○	○		○	
	Heating: Defrosting (Heater)						○
Outdoor heat exchanger temperature thermistor	Cooling: Control/Protection	○	○	○		○	
Capacity code	Control	○	○				

※1 **MXZ-4E83VAHZ**
※2 **MXZ-2E53VAHZ, 4E83VAHZ**

Downloaded from www.Manualslib.com manuals search engine

10 SERVICE FUNCTIONS

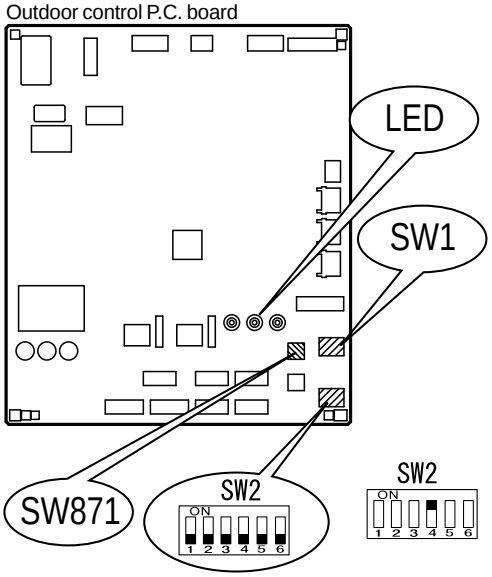
MXZ-3E54VA MXZ-3E68VA MXZ-4E72VA
MXZ-4E83VA MXZ-5E102VA MXZ-2E53VAHZ MXZ-4E83VAHZ

10-1. PRE-HEAT CONTROL

If moisture gets into the refrigerant cycle, or when refrigerant is liquefied and collected in the compressor, it may interfere the start-up of the compressor.
To improve start-up condition, the compressor is energized even while it is not operating.
This is to generate heat at the winding.
The compressor uses about 50 W when pre-heat control is turned ON.
Pre-heat control is ON at initial setting.

[How to deactivate pre-heat control]

① Turn OFF the power supply for the air conditioner before making the setting.
② Set the "4" of SW2 on the outdoor control P.C. board to ON to deactivate pre-heat control function.



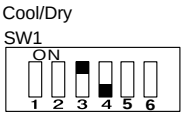
③ Turn ON the power supply for the air conditioner.

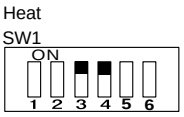
NOTE: Pre-heat control will be turned OFF when the breaker is turned OFF.

10-2. LOCKING THE OPERATION MODE OF THE AIR CONDITIONER (COOL, DRY, HEAT) (MXZ-4E83VAHZ)

With this function, you can lock the operation mode of the outdoor unit.
Once the operation mode is locked to either COOL/DRY mode or HEAT mode, the air conditioner operates in that mode only.
Default setting is required to activate this function.
Please explain about this function to your customers and ask them whether they want to use it.

[How to lock the operation mode]
(1) Turn OFF the power supply and make sure that the LED goes off.
(2) Set SW1 on the outdoor control P.C. board.
(3) Turn ON the power supply.

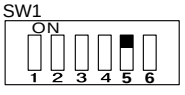




10-3. LOWERING THE OPERATING NOISE OF THE OUTDOOR UNIT (MXZ-4E83VAHZ)

With this function, you can lower the operating noise of the outdoor unit when the operation load is small, for example, during night time in COOL mode.
However, note that the cooling and heating capacity can also be lowered if this function is activated.
Default setting is required to activate this function.
Please explain about this function to your customers and ask them whether they want to use it.

[How to lower the operating noise]
(1) Turn OFF the power supply and make sure that the LED goes off.
(2) Set the "5" Switch of SW1 on the outdoor control P.C. board to ON to enable this function.
(3) Turn ON the power supply.



Downloaded from www.Manualslib.com manuals search engine

10-4. AUTO LINE CORRECTING

Outdoor unit has an auto line correcting function which automatically detects and corrects improper wiring or piping.

Improper wiring or piping can be automatically detected by pressing the piping/wiring correction switch (SW871).
When improper wiring or piping is detected, wiring lines are corrected.
This will be completed in about 10 to 20 minutes.

[How to activate this function]

1. Check that outside temperature is above 0˚C.
   (This function does not work when outside temperature is not above 0˚C.)
2. Check that the stop valves of the liquid pipe and gas pipe are open.
3. Check that the wiring between indoor and outdoor unit is correct.
   (If the wiring is not correct, this function does not work.)
4. Turn ON the power supply and wait at least 1 minute.
5. Press the piping/wiring correction switch (SW871) on the outdoor control P.C. board.
   Do not touch energized parts.

   LED indication during detection:

LED1 (Red)	LED2 (Yellow)	LED3 (Green)
Lighted	Lighted	Once

   LED indication after detection:

LED1 (Red)	LED2 (Yellow)	LED3 (Green)	Indication
Lighted	Not lighted	Lighted	Completed (Problem corrected/ normal)
Once	Once	Once	Not completed (Detection failed)
Other indications			Refer to "SAFETY PRECAUTIONS WHEN LED FLASHES" located behind the service panel.

   ※ Make sure that the valves are open and the pipes are not collapsed or clogged.
6. Press the switch to cancel.

   LED indication after cancel :

LED1 (Red)	LED2 (Yellow)	LED3 (Green)
Lighted	Lighted	Not lighted

NOTE: Indoor unit cannot be operated while this function is activated.
When this function is activated while indoor unit is operating, the operation will be stopped.
Operate indoor unit after the auto line correcting is finished.
Pressing the switch during detection cancels this function.

The record of auto line correcting can be confirmed in the following way:

Press the switch for more than 5 seconds.
LED will show the record of auto correcting for about 30 seconds as shown in the table below:

Number of blinks			Wiring line
LED1 (Red)	LED2 (Yellow)	LED3 (Green)	
Once	Once	Lighted	Not corrected
3 times	3 times	Lighted	Corrected

NOTE: Activate this function to confirm the correct wiring after replacing the outdoor control P.C. board.
(Previous records are deleted when the outdoor control P.C. board is replaced.)
The record cannot be shown if auto line correcting is not canceled (Refer to "How to activate this function").

Downloaded from www.Manualslib.com manuals search engine

10-5. CHANGING THE AMPERE LIMIT (MXZ-2E53VAHZ MXZ-4E83VAHZ)

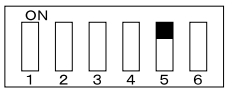
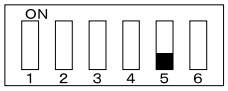
With this function, the amount of current that flows in the outdoor unit can be changed.

NOTE: Use this function only when the amount of current exceeds the allowed value.

[How to change the ampere limit]

(1) Be sure to turn off the main power for the air conditioner before making the setting.
(2) Make the setting referring to the table below.
(3) Turn ON the power supply.

SW2 on the outdoor control P.C. board

SW2	**MXZ-2E53VAHZ**	**MXZ-4E83VAHZ**
	Factory setting 13.6 A	21 A
	18.4 A	Factory setting 25 A

Downloaded from www.Manualslib.com manuals search engine

11 TROUBLESHOOTING

MXZ-3E54VA MXZ-3E68VA MXZ-4E72VA MXZ-4E83VA MXZ-5E102VA MXZ-2E53VAHZ MXZ-4E83VAHZ

11-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following:

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

1) Before servicing the air conditioner, be sure to turn OFF the unit first with the remote controller, and after confirming the horizontal vane is closed, turn OFF the breaker and/or disconnect the power plug.
2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the P.C. board.
3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
4) When removing the P.C. board, hold the edge of the board with care NOT to apply stress on the components.
5) When connecting or disconnecting the connectors, hold the connector housing. DO NOT pull the lead wires.

<Incorrect> <Correct>

Lead wiring **Connector housing**

3. Troubleshooting procedure

1) Check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is flashing on and off before starting service work.
2) Before servicing, check that the connector and terminal are connected properly.
3) When the P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) Refer to 11-2, 11-3 and 11-4.

11-2. FAILURE MODE RECALL FUNCTION

This air conditioner can memorize the abnormal condition which has occurred once.
Even though LED indication listed on the troubleshooting check table (11-4.) disappears, the memorized failure details can be recalled.

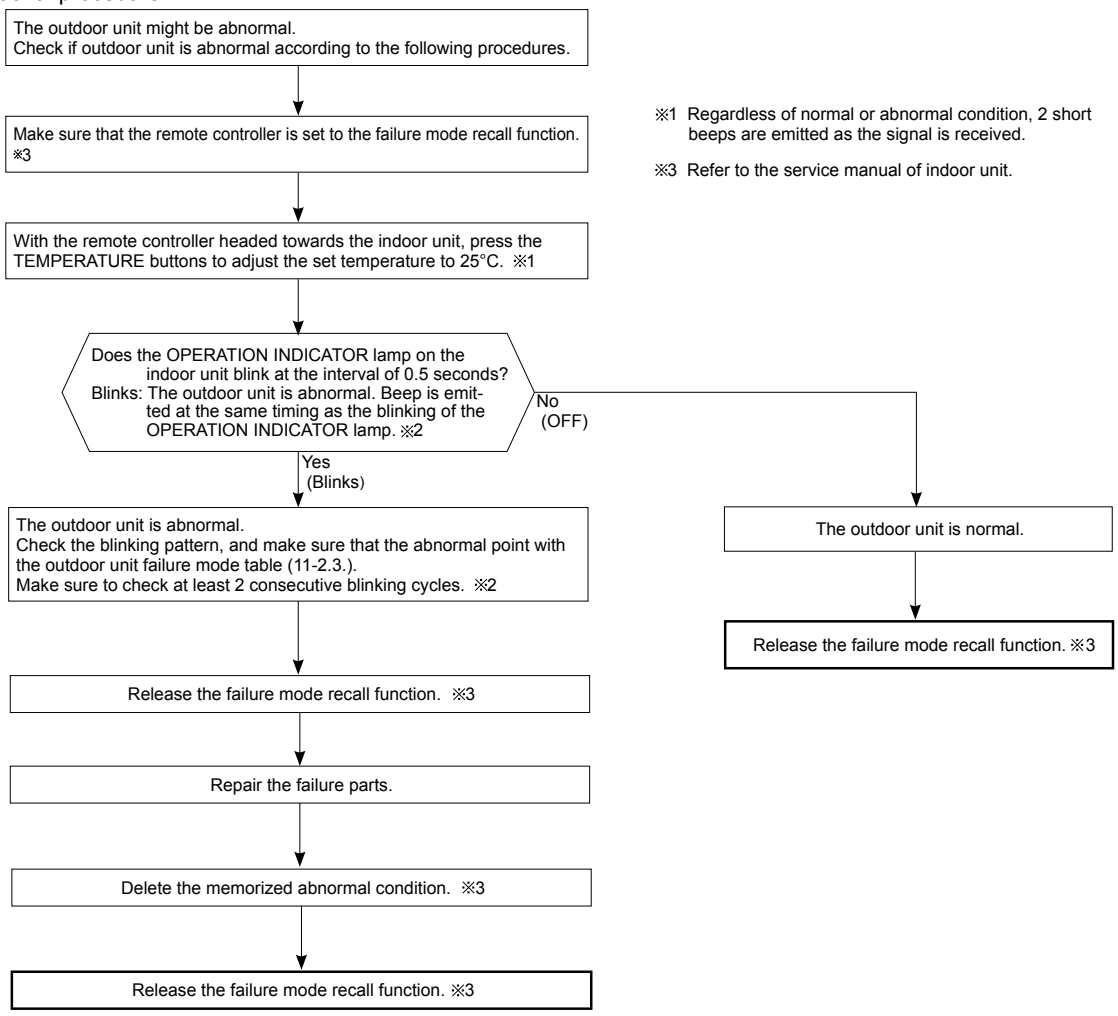
1. Flow chart of failure mode recall function for the indoor/outdoor unit

Refer to the service manual of indoor unit.

Downloaded from www.Manualslib.com manuals search engine

2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

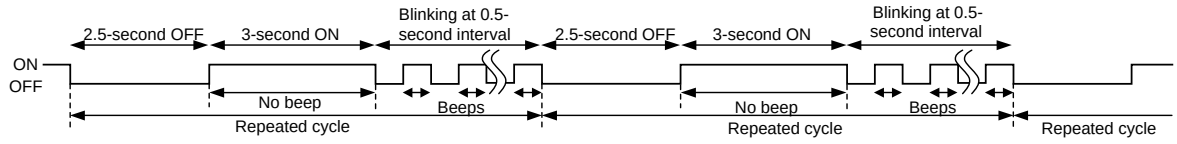


※1 Regardless of normal or abnormal condition, 2 short beeps are emitted as the signal is received.

※3 Refer to the service manual of indoor unit.

NOTE: 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

※2.Blinking pattern when outdoor unit is abnormal:



Downloaded from www.Manualslib.com manuals search engine

3. Outdoor unit failure mode table

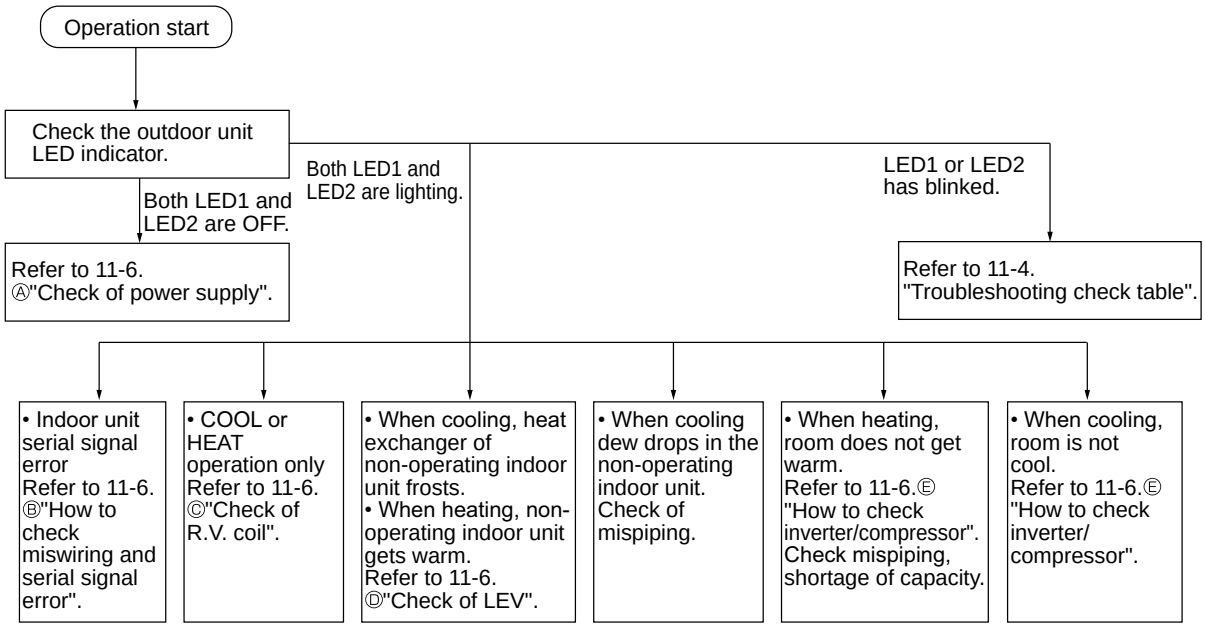
The left lamp of OPERATION INDICATOR lamp (Indoor unit)	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)		Condition	Remedy	Indoor/ outdoor unit failure mode recall function
		LED1	LED2			
OFF	None (Normal)	Lighted	Lighted			
2-time flash	Outdoor power system	Lighted	Lighted	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started, or converter protection cut-out or bus-bar voltage protection cut-out operates 3 consecutive times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-6. Ⓔ "How to check inverter/compressor". • Check the stop valve.	○
3-time flash	Discharge temperature thermistor	Lighted	Once	A thermistor shorts or opens during compressor running.	• Refer to 11-6. Ⓕ "Check of outdoor thermistors".	○
	Defrost thermistor	Lighted	Once			
	Ambient temperature thermistor	Lighted	Twice			
	Fin temperature thermistor	Lighted	3 times			
	P.C. board temperature thermistor	Lighted	4 times		• Replace the outdoor control P.C. board.	
	Outdoor heat exchanger temperature thermistor	Lighted	9 times		• Refer to 11-6. Ⓕ "Check of outdoor thermistors".	
4-time flash	Overcurrent	Once	Not lighted	21 A current flows into power module.	• Reconnect compressor connector. • Refer to 11-6. Ⓔ "How to check inverter/compressor". • Check the stop valve.	—
5-time flash	Discharge temperature	Lighted	Lighted	The discharge temperature exceeds 115°C (**MXZ-3E54/3E68/4E72VA**)/ 106°C(**MXZ-4E83/5E102VA, MXZ-2E52VAHZ**)/ 116°C (**MXZ-4E83VAHZ**) during operation. Compressor can restart if discharge temperature thermistor reads 80°C (**MXZ-3E54/3E68/4E72VA**)/95°C (**MXZ-4E83/5E102VA, MXZ-2E52VAHZ**)/100°C (**MXZ-4E83VAHZ**) or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-6. Ⓓ "Check of LEV".	—
6-time flash	High pressure	Lighted	Lighted	The outdoor heat exchanger temperature exceeds 70°C during cooling or the indoor gas pipe temperature exceeds 70°C during heating.	• Check refrigerant circuit and refrigerant amount. • Check the stop valve.	—
7-time flash	Fin temperature	3 times	Not lighted	The fin temperature exceeds 88°C (**MXZ-3E54/3E68/4E72/4E83/5E102VA, MXZ-2E52VAHZ**)/89°C (**MXZ-4E83VAHZ**) during operation.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 11-6. Ⓖ "Check of outdoor fan motor".	—
	P.C. board temperature	4 times	Not lighted	The P.C. board temperature exceeds 67°C (**MXZ-3E54/3E68/4E72/4E83/5E102VA, MXZ-2E52VAHZ**)/87°C (**MXZ-4E83VAHZ**) during operation.		
8-time flash	Outdoor fan motor	Lighted	Lighted	A failure occurs 3 consecutive times within 30 seconds after the fan gets started.	• Refer to 11-6. Ⓖ "Check of outdoor fan motor".	—
9-time flash	Outdoor control system	Lighted	5 times	Nonvolatile memory data cannot be read properly.	• Replace the outdoor control P.C. board.	○
10-time flash	Low discharge temperature protection	Lighted	Lighted	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-6. Ⓓ "Check of LEV".	—
11-time flash	Communication error between P.C. boards	Lighted	6 times	Communication error occurs between the outdoor control P.C. board and outdoor power P.C. board for more than 10 seconds.	• Check the connecting wire between outdoor control P.C. board and outdoor power P.C. board.	—
				The communication between boards protection cut-out operates 2 consecutive times.		○
	Current sensor	Lighted	7 times	A short or open circuit is detected in the current sensor during compressor operating.	—	—
				Current sensor protection cut-out operates 2 consecutive times.		○
	Zero cross detecting circuit	5 times	Not lighted	Zero cross signal cannot be detected while the compressor is operating.	• Check the connecting wire among outdoor control P.C. board and outdoor power P.C. board.	—
				The protection cut-out of the zero cross detecting circuit operates 10 consecutive times.		○
	Converter	5 times	Not lighted	A failure is detected in the operation of the converter during operation.	• Check the voltage of power supply. • Replace the outdoor power P.C. board.	—
	Bus-bar voltage	5 times	Not lighted	The bus-bar voltage exceeds 400 V or falls to low level during compressor operating.	• Check the voltage of power supply. • Replace the outdoor control P.C. board.	
15-time flash	LEV and drain pump	Lighted	Lighted	The indoor unit detects an abnormality in the LEV and drain pump.	• Refer to 11-6. Ⓓ "Check of LEV". • Check the drain pump of the indoor unit.	—

NOTE: Blinking patterns of this mode differ from the ones of Troubleshooting check table (11-4.).

Downloaded from www.Manualslib.com manuals search engine

11-3. INSTRUCTION OF TROUBLESHOOTING

• Check the indoor unit with referring to the indoor unit service manual, and confirm that there is any problem in the indoor unit.
Then, check the outdoor unit with referring to this page.



Downloaded from www.Manualslib.com manuals search engine

11-4. TROUBLESHOOTING CHECK TABLE

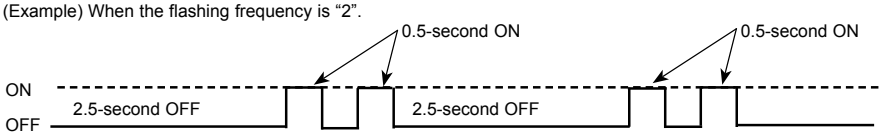
No.	Symptom	Indication		Abnormal point / Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
1	Outdoor unit does not operate.	Lighted	Once	LEV and drain pump	The indoor unit detects an abnormality in the LEV and drain pump.	• Refer to 11-6. Ⓓ "Check of LEV". • Check the drain pump of the indoor unit.
2		Lighted	Twice	Outdoor power system	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started, or converter protection cut-out or bus-bar voltage protection cut-out operates 3 consecutive times within 3 minutes after start-up.	• Check the connection of the compressor connecting wire. • Refer to 11-6. Ⓔ "How to check inverter/compressor". • Check the stop valve.
3		Lighted	3 times	Discharge temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 10 minutes of compressor start-up.	• Refer to 11-6. Ⓕ "Check of outdoor thermistors".
4		Lighted	4 times	Fin temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-6. Ⓕ "Check of outdoor thermistors".
				P. C. board temperature thermistor		• Replace the outdoor control P.C. board.
5		Lighted	5 times	Ambient temperature thermistor	A short or open circuit is detected in the thermistor during operation.	• Refer to 11-6. Ⓕ "Check of outdoor thermistors".
				Outdoor heat exchanger temperature thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating) of compressor start-up.	
				Defrost thermistor	A short circuit is detected in the thermistor during operation, or an open circuit is detected in the thermistor after 5 minutes of compressor start-up.	
6		Lighted	6 times	Zero cross detecting circuit (Outdoor control P.C. board)	Zero cross signal cannot be detected.	• Replace the outdoor control P.C. board.
7		Lighted	7 times	Outdoor control system	The nonvolatile memory data cannot be read properly.	• Replace the outdoor control P.C. board.
8		Lighted	8 times	Current sensor	Current sensor protection cut-out operates 2 consecutive times.	• Replace the outdoor power P.C. board.
9		Lighted	11 times	Communication error between P.C. boards	The communication protection cut-out between boards operates 2 consecutive times.	• Check the connecting wire between outdoor control P.C. board and outdoor power P.C. board.
				M-NET communication error	M-NET adapter P.C. board detects an abnormality in the communication error.	• Check the connecting wire between M-NET adapter P.C. board and outdoor control P.C. board, or terminal block.
10		Lighted	12 times	Zero cross detecting circuit (Outdoor power P.C. board)	The protection cut-out of the zero cross detecting circuit operates 10 consecutive times.	• Replace the outdoor power P.C. board.
11		Lighted	13 times	Current sensor	A short or open circuit is detected in the input current detection circuit during operation.	• Replace the outdoor power P.C. board.
12		Lighted	14 times	Voltage sensor	A short or open circuit is detected in the input voltage detection circuit during operation.	• Replace the outdoor power P.C. board.
13		Lighted	15 times	Relay operation	No relay operation is detected during operation.	• Replace the outdoor power P.C. board.
14	'Outdoor unit stops and restarts 3 minutes later' is repeated.	Twice	Not lighted	IPM protection	Overcurrent is detected after 30 seconds of compressor start-up.	• Reconnect compressor connector. • Refer to 11-6. Ⓔ "How to check inverter/compressor". • Check the stop valve. • Check the power module (PAM module).
				Lock protection	Overcurrent is detected within 30 seconds of compressor start-up.	
15		3 times	Not lighted	Discharge temperature protection	The discharge temperature exceeds 115°C (**MXZ-3E54/3E68/4E72VA**)/ 106°C(**MXZ-4E83/5E102VA, MXZ-2E52VAHZ**)/ 116°C (**MXZ-4E83VAHZ**) during operation. Compressor can restart if discharge temperature thermistor reads 80°C (**MXZ-3E54/3E68/4E72VA**)/ 95°C (**MXZ-4E83/5E102VA, MXZ-2E52VAHZ**)/ 100°C (**MXZ-4E83VAHZ**) or less 3 minutes later.	• Check the amount of gas and refrigerant circuit. • Refer to 11-6. Ⓓ "Check of LEV".
16		4 times	Not lighted	Fin temperature protection	The fin temperature exceeds during operation.	•Check refrigerant circuit and refrigerant amount. •Refer to 11-6. Ⓖ "Check of outdoor fan motor".
				P.C. board temperature protection	The P.C. board temperature exceeds during operation.	
17		5 times	Not lighted	High-pressure protection	High-pressure is detected with the high-pressure switch (HPS) during operation.	• Check around of gas and the refrigerant circuit. • Check the stop valve.
					The outdoor heat exchanger temperature exceeds 70°C during cooling or the indoor gas pipe temperature exceeds 70°C during heating.	
18		6 times	Not lighted	Pre-heating protection	Overcurrent is detected during pre-heating.	• Reconnect compressor connector. • Refer to 11-6.Ⓔ "How to check inverter/compressor". • Check the power module.
19		8 times	Not lighted	Converter protection	A failure is detected in the operation of the converter during operation.	• Replace the outdoor power P.C. board.
20		9 times	Not lighted	Bus-bar voltage protection	The bus-bar voltage exceeds 400 V or falls to low level during compressor operating.	• Check the voltage of power supply. • Replace the outdoor power P.C. board or the outdoor control P.C. board. • Refer to 11-6. Ⓙ "Check of bus-bar voltage".
21		11 times	Not lighted	Low outside temperature protection(cooling)	The ambient became -12°C or less.	—

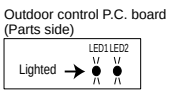
Downloaded from www.Manualslib.com manuals search engine

No.	Symptom	Indication		Abnormal point / Condition	Condition	Remedy
		LED1(Red)	LED2(Yellow)			
22	'Outdoor unit stops and restarts 3 minutes later' is repeated.	13 times	Not lighted	Outdoor fan motor	A failure occurs 3 consecutive times within 30 seconds after the fan gets started.	• Refer to 11-6. Ⓖ "Check of outdoor fan motor".
23		Lighted	8 times	Current sensor protection	A short or open circuit is detected in the current sensor during compressor operating.	• Replace the outdoor power P.C. board.
24		Lighted	11 times	Communication between P.C. boards protection	Communication error occurs between the outdoor control P.C. board and outdoor power P.C. board for more than 10 seconds.	• Check the connecting wire between outdoor control P.C. board and outdoor power P.C. board.
25		Lighted	12 times	Zero cross detecting circuit (Outdoor power P.C. board)	Zero cross signal cannot be detected while the compressor is operating.	• Replace the outdoor power P.C. board.
26	Outdoor unit operates.	Once	Lighted	Primary current protection	The input current exceeds 13.6 A (**MXZ-2E53VAHZ**)/ 15 A (**MXZ-3E54VA/3E68VA/4E72VA**)/18.4 A (**MXZ-4E83VA/5E102VA**)/25 A (**MXZ-4E83VAHZ**).	These symptoms do not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
27		Twice	Lighted	High-pressure protection	The indoor gas pipe temperature exceeds 45°C during heating.	
				Defrosting in cooling	The indoor gas pipe temperature falls 3°C or below during cooling.	
28		3 times	Lighted	Discharge temperature protection	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 50°C(COOL mode)/40°C(HEAT mode) for more than 40 minutes.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-6. Ⓓ "Check of LEV". • Refer to 11-6. Ⓕ "Check of outdoor thermistors".
29		4 times	Lighted	Low discharge temperature protection	The frequency of the compressor is kept 80 Hz or more and the discharge temperature is kept under 39°C for more than 20 minutes.	• Refer to 11-6. Ⓓ "Check of LEV". • Check refrigerant circuit and refrigerant amount.
30		5 times	Lighted	Cooling high-pressure protection	The outdoor heat exchanger temperature exceeds 58°C during operation.	This symptom does not mean any abnormality of the product, but check the following points. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
31		7 times	Lighted	High → Low Pressure bypass valve Cooling evaporating temperature drop prevention control	During cooling operation, the temperature of indoor heat exchanger becomes 3°C or less within 1 hour after the compressor starts running, or it becomes less than 12°C - 16°C* later than that. * It depends on the difference between the set temperature and the room temperature.	This symptom does not mean any abnormality of the product, but check the following points. • Check the indoor filters are not clogged. • Check there is sufficient refrigerant. • Check the indoor/outdoor unit air circulation is not short cycled.
32		11 times	Lighted	M-NET communication error	M-NET adapter P.C. board detects an abnormality in the communication error.	• Check the connecting wire between M-NET adapter P.C. board and outdoor control P.C. board, or terminal block.
33	Outdoor unit operates normally.	7 times	Lighted	High → Low pressure bypass valve High pressure protection control at start-up of heating operation	**MXZ-4E83VAHZ** The room temperature is 24°C or more when 1 or 2 unit(s) start(s) the heating operation.	This symptom does not mean any abnormality of the product.
				High → Low pressure bypass valve Compressor oil tempering control at start-up of heating operation	**MXZ-4E83VAHZ** Both the following are true: • The outside temperature is -2°C or less when the heating operation is started. • [(Discharge temperature) - (Indoor heat exchanger temperature)] < 5°C	
34		8 times	Lighted	Cooling evaporating temperature protection	During cooling operation, the temperature of indoor heat exchanger becomes 7°C - 11°C* or less within 1 hour after the compressor starts running, or it becomes 9°C - 17°C* or less later than that. * It depends on the indoor unit type/model or the difference between the set temperature and the room temperature.	
35		9 times	Lighted	Inverter check mode	The unit is operated with emergency operation switch.	—
36		Lighted	Lighted	Normal	—	—

NOTE 1. The location of LED is illustrated at the right figure. Refer to 11-7.1.
2. LED is lighted during normal operation.

The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is "2".



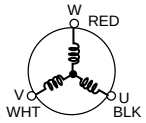
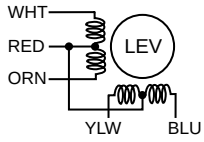


Downloaded from www.Manualslib.com manuals search engine

11-5. TROUBLE CRITERION OF MAIN PARTS

MXZ-3E54VA MXZ-3E68VA MXZ-4E72VA MXZ-4E83VA MXZ-5E102VA MXZ-2E53VAHZ MXZ-4E83VAHZ

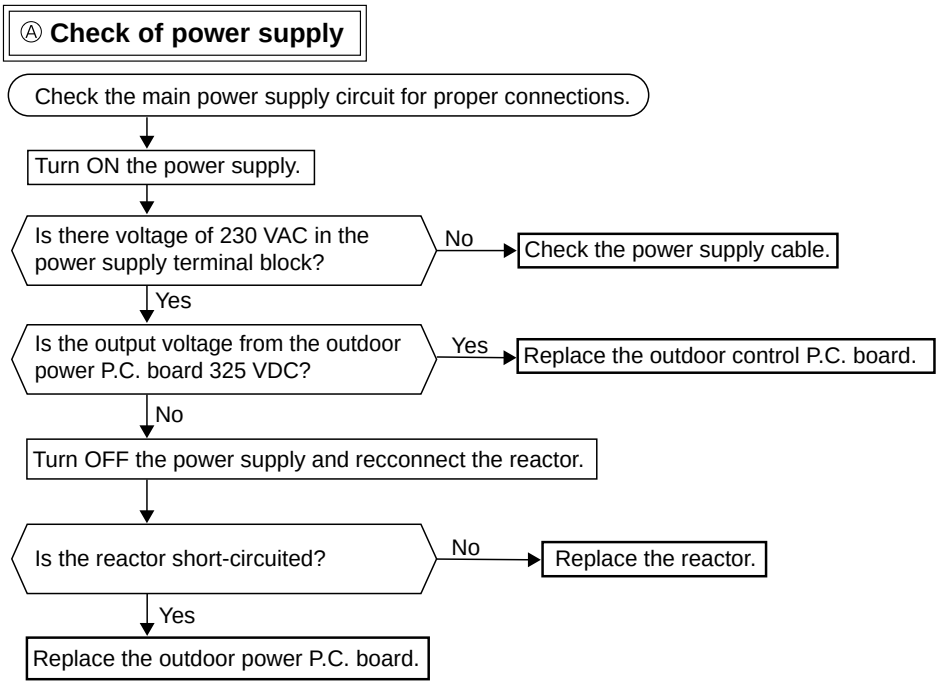
<table>
<tr><th>Part name</th><th>Check method and criterion</th></tr>
<tr><td>Defrost thermistor (RT61)
Fin temperature thermistor (RT64)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance with a tester.

Refer to 11-7. “Test point diagram and voltage”, 1. ”Outdoor control P.C.board”, 2. ”Outdoor power P.C. board”, for the chart of thermistor.</td></tr>
<tr><td>Discharge temperature thermistor (RT62)</td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.
Refer to 11-7. “Test point diagram and voltage”,1. ”Outdoor control P.C. board” for the chart of thermistor.</td></tr>
<tr><td>Compressor
 
</td><td>Measure the resistance between terminals using a tester.
(Winding temperature: -10 °C ~ 40 °C)
<table>
<tr><th colspan="4">Normal (Each phase)</th></tr>
<tr><th>MXZ-3E54VA</th><th>MXZ-3E68/4E72VA</th><th>MXZ-4E83/5E102VA
MXZ-2E53VAHZ</th><th>MXZ-4E83VAHZ</th></tr>
<tr><td>0.86 Ω ~ 1.06 Ω</td><td>0.63 Ω ~ 0.78 Ω</td><td>0.83 Ω ~ 1.03 Ω</td><td>0.77 Ω ~ 0.95 Ω</td></tr>
</table></td></tr>
<tr><td>Outdoor fan motor</td><td>• Refer to 11-6. ⑥.</td></tr>
<tr><td>R.V. coil</td><td>Measure the resistance using a tester. (Part temperature: -10 °C ~ 40 °C)
<table>
<tr><th colspan="3">Normal (Each phase)</th></tr>
<tr><th>MXZ-3E54/3E68/4E72VA</th><th>MXZ-4E83/5E102VA
MXZ-2E53VAHZ</th><th>MXZ-4E83VAHZ</th></tr>
<tr><td>1.26 kΩ ~ 1.62 kΩ</td><td>1.20 kΩ ~ 1.77 kΩ</td><td>1.24 kΩ ~ 1.86 kΩ</td></tr>
</table></td></tr>
<tr><td>Linear expansion valve
 
</td><td>Measure the resistance using a tester. (Part temperature: -10 °C ~ 40 °C)
<table>
<tr><th>Color of lead wire</th><th>Normal</th></tr>
<tr><td>WHT - RED</td><td rowspan="4">37.4 Ω ~ 53.9 Ω</td></tr>
<tr><td>RED - ORN</td></tr>
<tr><td>YLW - RED</td></tr>
<tr><td>RED - BLU</td></tr>
</table></td></tr>
<tr><td>High pressure switch (HPS)</td><td>
<table>
<tr><th colspan="2">Pressure</th><th>Normal</th></tr>
<tr><td rowspan="2">HPS</td><td>3.43 ± 0.15 MPa</td><td>Close</td></tr>
<tr><td>4.41 ± 0.1 MPa</td><td>Open</td></tr>
</table></td></tr>
</table>

Downloaded from www.Manualslib.com manuals search engine

11-6. TROUBLESHOOTING FLOW

Outdoor unit does not operate.



Downloaded from www.Manualslib.com manuals search engine

- **When unit cannot operate neither by the remote controller nor by EMERGENCY OPERATION switch. Indoor unit does not operate.**
- **When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second. Outdoor unit does not operate.**

Ⓑ How to check miswiring and serial signal error (when outdoor unit does not work)

LED indication for communication status

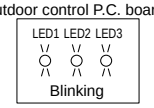
Communication status is indicated by the LED.

Unit status
Blinking: normal communication
Lighting: abnormal communication or not connected

Pattern 1 and 2 is repeatedly displayed alternately. Each pattern is displayed for 15 seconds.

NOTE: "Lighting" in the table below does not indicate abnormal communication.

Outdoor control P.C. board



Pattern	LED 1	LED 2	LED 3
1	Unit A status	Unit B status	Lighted
2	Unit C status	Unit D status	Not lighted
3	Unit E status	———	Blinking

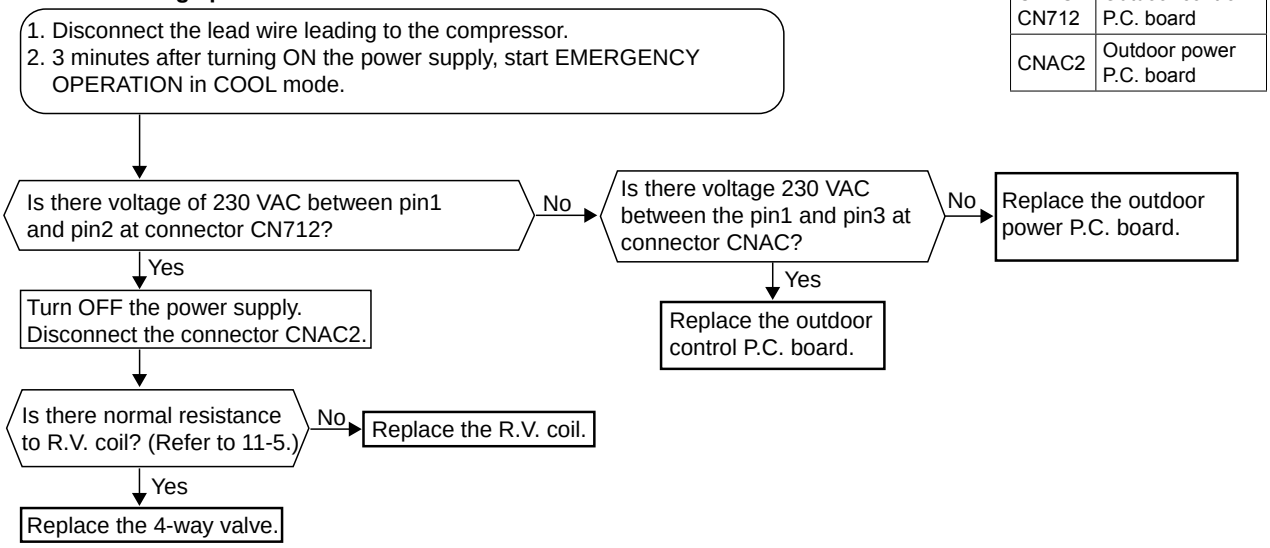
Downloaded from www.Manualslib.com manuals search engine

The cooling operation or heating operation does not operate.

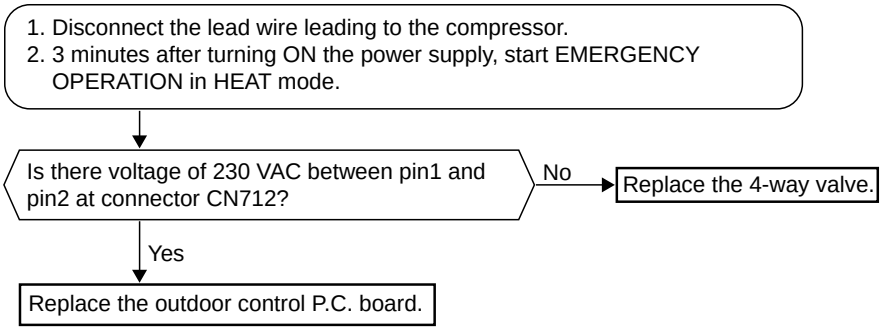
© Check of R.V. coil

CNAC CN712	Outdoor control P.C. board
CNAC2	Outdoor power P.C. board

• When cooling operation does not work.



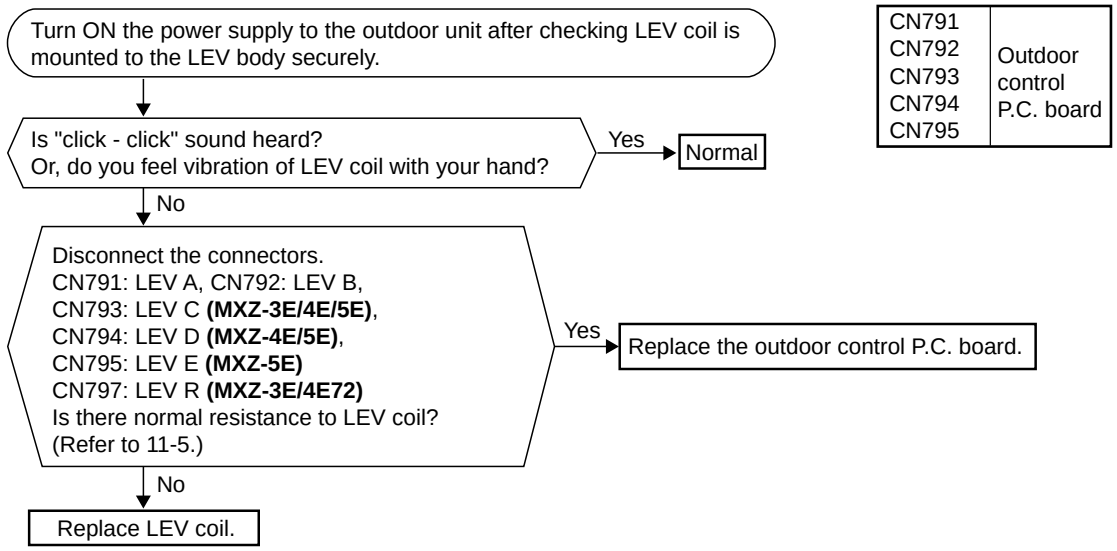
• When heating operation does not work.



Downloaded from www.Manualslib.com manuals search engine

- **When cooling, heat exchanger of non-operating indoor unit frosts.**
- **When heating, non-operating indoor unit gets warm.**

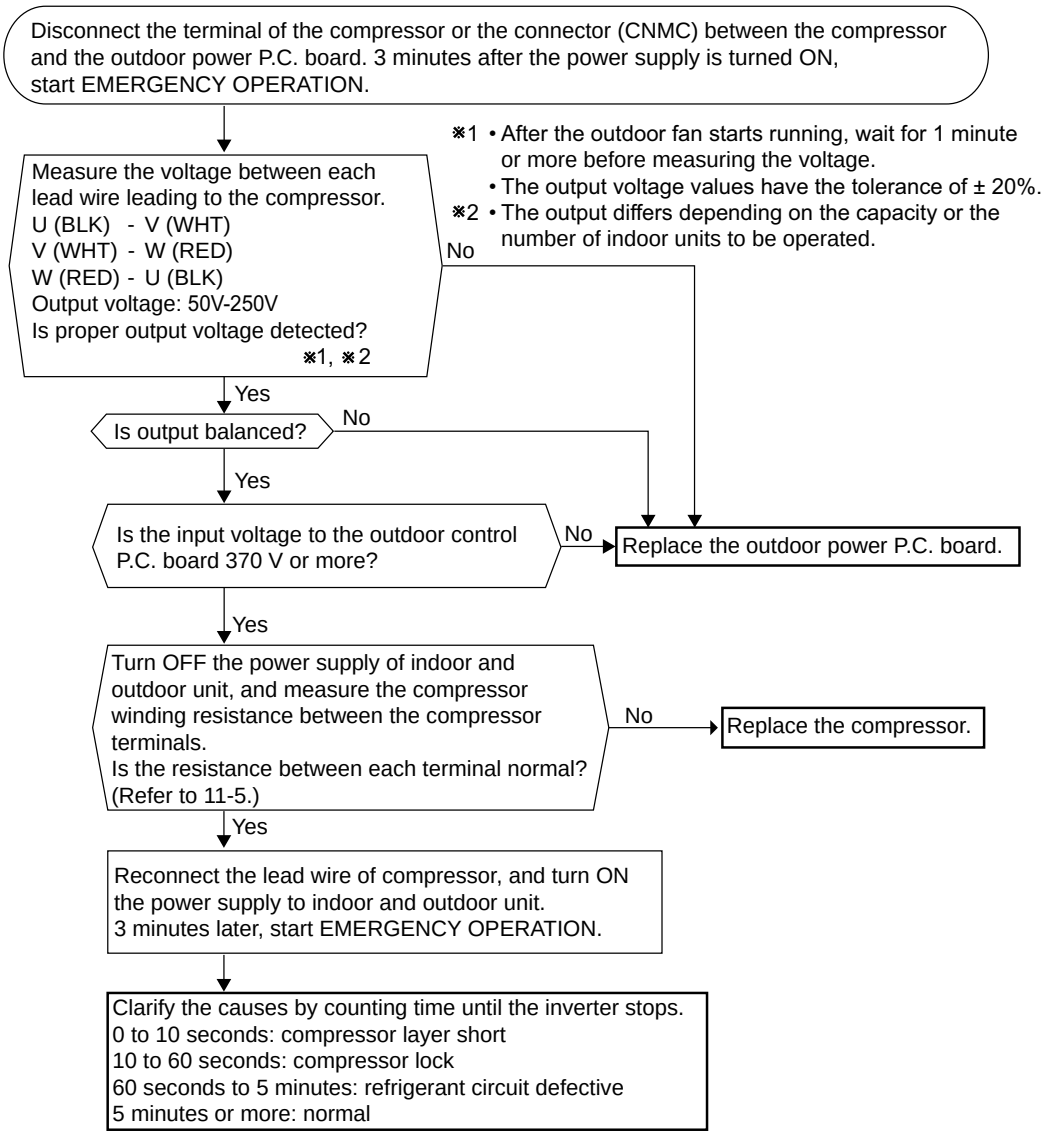
Ⓓ Check of LEV



Downloaded from www.Manualslib.com manuals search engine

- **When heating, room does not get warm.**
- **When cooling, room does not get cool.**

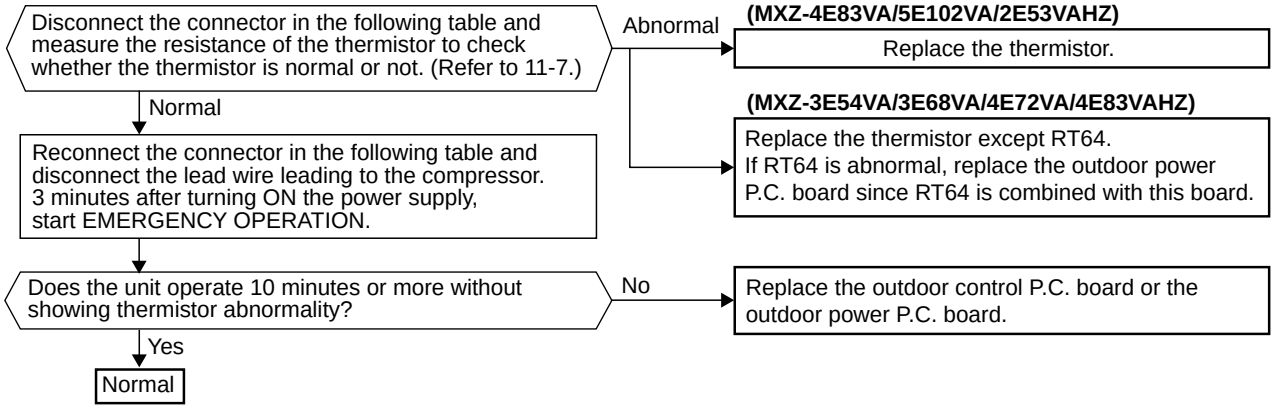
Ⓔ How to check inverter/compressor



Downloaded from www.Manualslib.com manuals search engine

• **When thermistor is abnormal.**

Ⓕ Check of outdoor thermistors

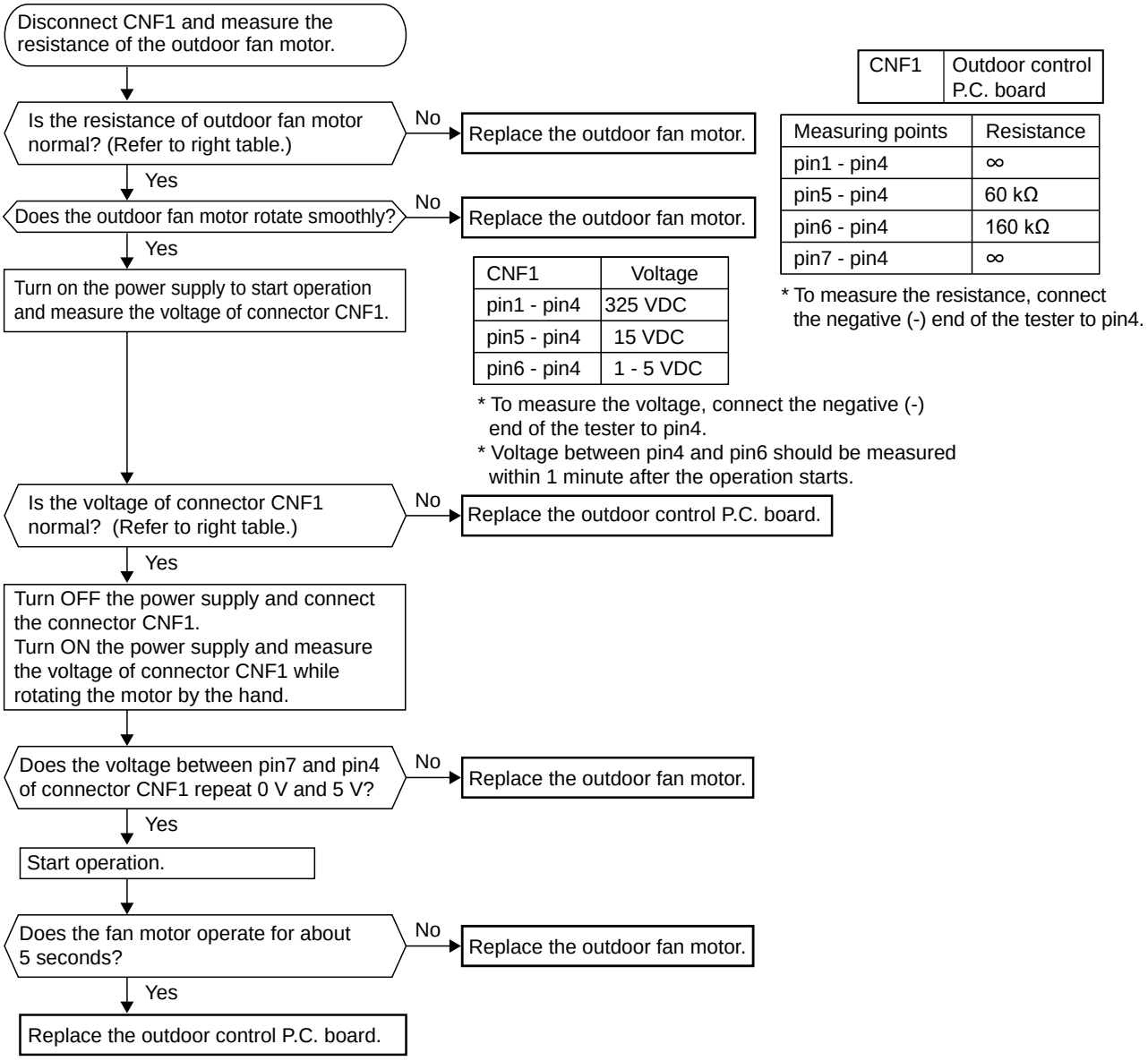


Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CNTH1 pin1 and pin2	Outdoor control P.C. board
Discharge temperature	RT62	Between CNTH1 pin3 and pin4	
Outdoor heat exchanger temperature	RT68	Between CNTH1 pin7 and pin8	
Ambient temperature	RT65	Between CNTH2 pin1 and pin2	
Fin temperature	RT64	Between CN171 pin1 and pin2	Outdoor power P.C. board

Downloaded from www.Manualslib.com manuals search engine

• Fan motor does not operate or stops operating shortly after starting the operation.

Ⓖ Check of outdoor fan motor



CNF1	Outdoor control P.C. board

Measuring points	Resistance
pin1 - pin4	∞
pin5 - pin4	60 kΩ
pin6 - pin4	160 kΩ
pin7 - pin4	∞

* To measure the resistance, connect the negative (-) end of the tester to pin4.

CNF1	Voltage
pin1 - pin4	325 VDC
pin5 - pin4	15 VDC
pin6 - pin4	1 - 5 VDC

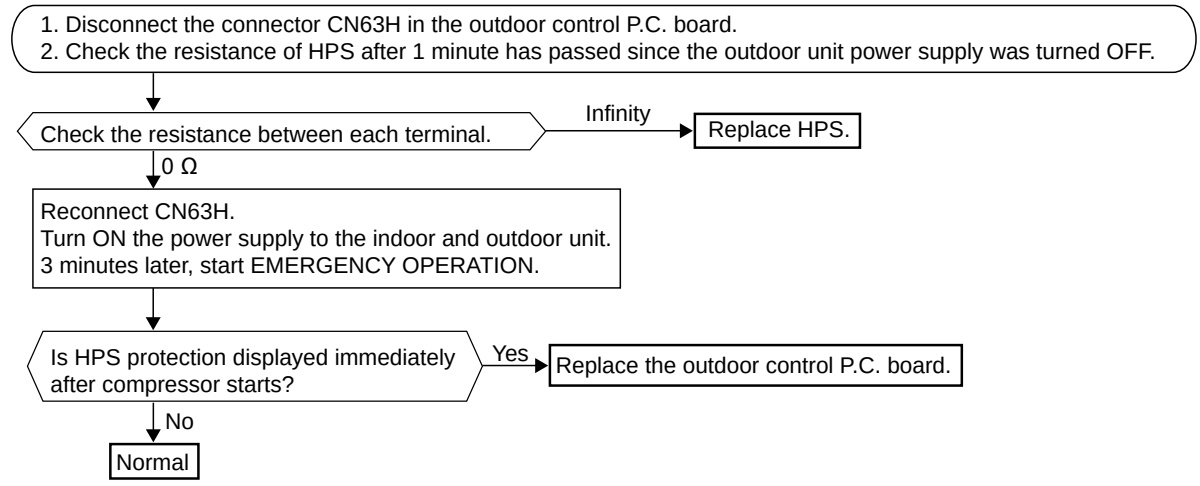
* To measure the voltage, connect the negative (-) end of the tester to pin4.
* Voltage between pin4 and pin6 should be measured within 1 minute after the operation starts.

Downloaded from www.Manualslib.com manuals search engine

• When the operation frequency does not go up from the lowest frequency.

Ⓗ Check of HPS

CN63H	Outdoor control P.C. board

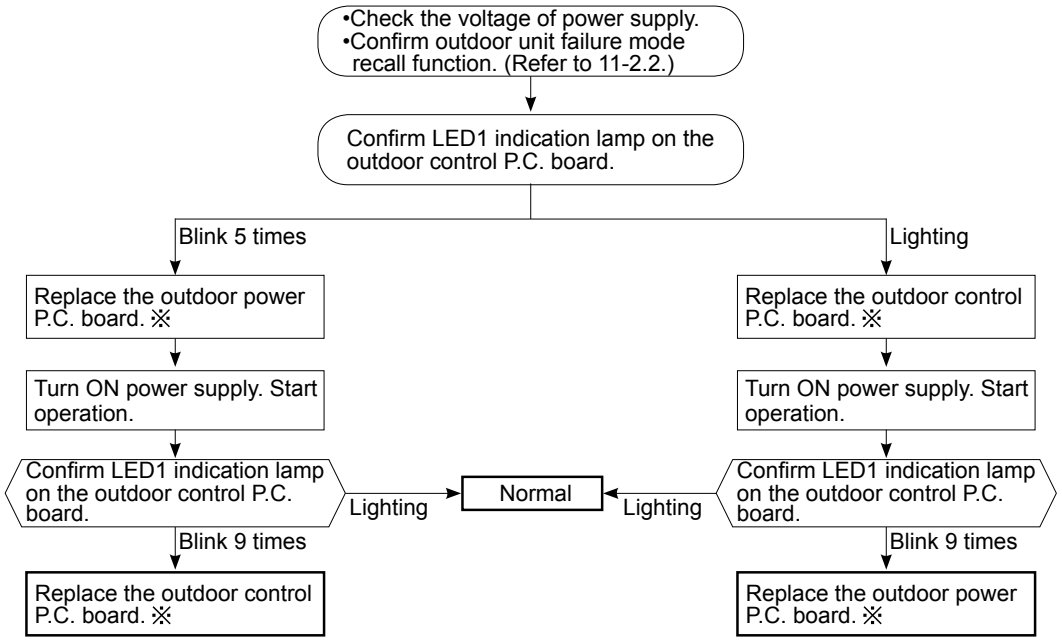


ⓘ The other cases

Indoor unit does not operate. (different operating models in multi system)

- When you try to run 2 indoor units simultaneously, one for cooling and the other for heating, the unit which transmits signal to the outdoor units first decides the operation mode.
- When the above situation occurs, set all the indoor units to the same mode, turn OFF the indoor units, and then turn them back ON.
- Though the top of the indoor unit sometimes gets warm, this does not mean malfunction. The reason is that the refrigerant gas continuously flows into the indoor unit even while it is not operating.

ⓙ Check of bus-bar voltage



※ Turn OFF power supply before removing P.C. board.

Downloaded from www.Manualslib.com manuals search engine