MITSUBISHI ELECTRIC

Changes for the Better

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

Revision C:
MUH-GA25VB -E3 has been added.

Please void OB387 REVISED EDITION-B.

OUTDOOR UNIT

SERVICE MANUAL

HFC utilized R410A

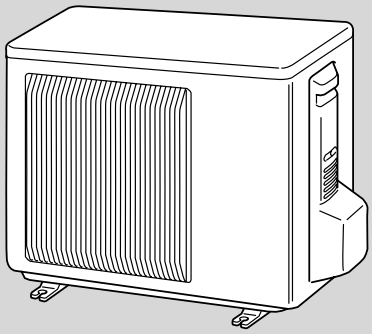
No. OB387
REVISED EDITION-C

Wireless type
Models

MUH-GA20VB-E1
MUH-GA20VB-E2
MUH-GA25VB-E1
MUH-GA25VB-E2
MUH-GA25VB-E3
MUH-GA35VB-E1
MUH-GA35VB-E3

Indoor unit service manual

MSC-GA• VB Series	(OB385)
MSC-CA• VB Series	(OB393)
MSC-CB• VB Series	(OB439)



MUH-GA20VB
MUH-GA25VB
MUH-GA35VB

CONTENTS

NOTE:
- This service manual describes technical data of outdoor units.
- RoHS compliant products have <G> mark on the spec name plate. For servicing of RoHS compliant products, refer to the RoHS Parts List.

CE

Revision A:
MUH-GA20VB-E2 and MUH-GA25VB-E2 have been added.

Revision B:
MUH-GA35VB-E3 has been added.

Revision C:
MUH-GA25VB-E3 has been added.

1 TECHNICAL CHANGES

MUH-A07YV-E1 ➔ MUH-GA20VB-E1
1. Indication of capacity has been changed. (BTU base ➔ kw)
2. Dimension of outdoor unit has been changed. (W 780 mm × H 540 mm × D 255 mm ➔ W 800 mm × H 550 mm × D 285 mm)
3. Stop valve cover has been added.
4. Outdoor fan motor has been changed. (RC6V20-AB ➔ RA6V21-AD)
5. Outdoor fan motor capacitor has been changed.
6. Compressor capacitor has been changed.
7. Outdoor heat exchanger has been changed. (L-BEND ➔ FLAT)

MUH-A09YV-E1 ➔ MUH-GA25VB-E1
1. Indication of capacity has been changed. (BTU base ➔ kw)
2. Dimension of outdoor unit has been changed. (W 780 mm × H 540 mm × D 255 mm ➔ W 800 mm × H 550 mm × D 285 mm)
3. Stop valve cover has been added.
4. Outdoor fan motor has been changed. (RA6V33-FB ➔ RA6V33-KB)
5. Outdoor fan motor capacitor has been changed.
6. Compressor capacitor has been changed.
7. Outdoor heat exchanger has been changed. (2 Row ➔ 1 Row)

MUH-A12YV-E1 ➔ MUH-GA35VB-E1
1. Indication of capacity has been changed. (BTU base ➔ kw)
2. Dimension of outdoor unit has been changed. (W 780 mm × H 540 mm × D 255 mm ➔ W 800 mm × H 550 mm × D 285 mm)
3. Stop valve cover has been added.
4. Outdoor fan motor has been changed. (RA6V33-FB ➔ RA6V33-KB)
5. Outdoor fan motor capacitor has been changed.
6. Compressor capacitor has been changed.
7. Size of stop valve (gas) has been changed. (ø12.7 ➔ ø9.52)
8. Outdoor heat exchanger has been changed. (2 Row ➔ 1 Row)

MUH-GA20VB-E1 ➔ MUH-GA20VB-E2
1. Compressor has been changed. (BN092VHST ➔ KN092VDMHC)
2. Compressor capacitor has been changed.
3. Capillary tube has been changed.
4. Refrigerant filling capacity has been changed. (0.65 kg ➔ 0.60 kg)
5. Deicer P.C. board has been changed.

MUH-GA25VB-E1 ➔ MUH-GA25VB-E2
1. Compressor has been changed. (RN104VHSHT ➔ KN104VTMHC)
2. Compressor capacitor has been changed.
3. Capillary tube has been changed.
4. Refrigerant filling capacity has been changed. (0.80 kg ➔ 0.65 kg)
5. Deicer P.C. board has been changed.

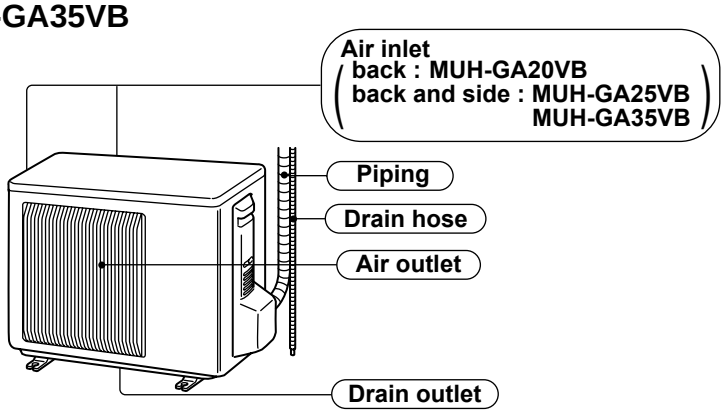
MUH-GA35VB-E1 ➔ MUH-GA35VB-E3
1. Outdoor heat exchanger has been changed. (1 Row ➔ 2 Row)
2. Refrigerant filling capacity has been changed. (0.80 kg ➔ 1.05 kg)
3. Outdoor unit weight has been changed. (35 kg ➔ 39 kg)

MUH-GA25VB-E2 ➔ MUH-GA25VB-E3
1. Outdoor heat exchanger has been changed. (1 Row ➔ 2 Row)
2. Refrigerant filling capacity has been changed. (0.65 kg ➔ 0.95 kg)
3. Outdoor unit weight has been changed. (30 kg ➔ 34 kg)
4. Capillary tube has been changed.

2 PART NAMES AND FUNCTIONS

OUTDOOR UNIT

MUH-GA20VB
MUH-GA25VB
MUH-GA35VB



ACCESSORIES

MUH-GA20VB
MUH-GA25VB
MUH-GA35VB

<Outdoor unit: MUH type>

①	Drain socket	1

3 SPECIFICATION

Outdoor model			MUH-GA20VB - E1		MUH-GA20VB - E2	
Outdoor unit power supply			Single phase 230 V, 50 Hz		Single phase 230 V, 50 Hz	
Function			Cooling	Heating	Cooling	Heating
Capacity	Capacity	kW	2.3	2.5	2.3	2.5
	Dehumidification	ℓ/h	0.9	—	0.9	—
	Outdoor air flow	m^3/h	1,800		1,800	
Electrical data	Breaker capacity	A	10		10	
	Running current	A	3.00	2.86	3.00	2.86
	Power input	W	680	655	680	655
	Auxiliary heater	A(kW)	—		—	
	Power factor	%	99	100	99	100
	Starting current	A	21		15.5	
	Compressor motor current	A	2.76	2.62	2.76	2.62
	Fan motor current	A	0.25		0.25	
Coefficient of performance (C.O.P)			3.22	3.62	3.22	3.62
Compressor	Model		RN092VHSHT		KN092VDMHC	
	Output	W	600		650	
	Winding resistance (at 20℃)	Ω	C-R 3.87 C-S 6.14		C-R 3.62 C-S 5.40	
Fan motor	Model		RA6V21-AD		RA6V21-AD	
	Winding resistance (at 20℃)	Ω	WHT-BLK 366 BLK-RED 274		WHT-BLK 366 BLK-RED 274	
	Dimensions W × H × D	mm	800 × 550 × 285		800 × 550 × 285	
	Weight	kg	32		29	
Special remarks	Sound level	dB	47		47	
	Fan speed	rpm	745		745	
	Fan speed regulator		1		1	
	Refrigerant filling capacity (R410A)	kg	0.65		0.60	
	Refrigeration oil (Model)	cc	350 (NEO22)		350 (NEO22)	

NOTE: Test conditions are based on ISO 5151.
Cooling: Indoor Dry-bulb temperature 27°C Wet-bulb temperature19°C
Outdoor Dry-bulb temperature 35°C Wet-bulb temperature24°C
Heating: Indoor Dry-bulb temperature 20°C
Outdoor Dry-bulb temperature 7°C Wet-bulb temperature 6°C
Indoor-Outdoor piping length: 5 m

Outdoor model			MUH-GA25VB - E1		MUH-GA25VB - E2		MUH-GA25VB - E3		MUH-GA35VB - E1		MUH-GA35VB - E3	
Outdoor unit power supply			Single phase 230 V, 50 Hz		Single phase 230 V, 50 Hz		Single phase 230 V, 50 Hz		Single phase 230 V, 50 Hz		Single phase 230 V, 50 Hz	
Function			Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating
Capacity	Capacity	kW	2.65	3.0	2.65	3.0	2.65	3.0	3.5	3.7	3.5	3.7
	Dehumidification	ℓ/h	1.1	—	1.1	—	1.1	—	1.7	—	1.7	—
	Outdoor air flow	m³/h	1,902		1,902		1,902		1,902		1,902	
Electrical data	Breaker capacity	A	10		10		10		10		10	
	Running current	A	3.43	3.43	3.43	3.43	3.43	3.43	4.65	4.34	4.65	4.34
	Power input	W	785	785	785	785	785	785	1,050	980	1,050	980
	Auxiliary heater	A(kW)	—		—		—		—		—	
	Power factor	%	100	100	100	100	100	100	98	98	98	98
	Starting current	A	22		19		19		27		27	
	Compressor motor current	A	3.10	3.10	3.10	3.10	3.10	3.10	4.32	4.01	4.32	4.01
	Fan motor current	A	0.33		0.33		0.33		0.33		0.33	
Coefficient of performance (C.O.P)			3.23	3.66	3.23	3.66	3.23	3.66	3.21	3.63	3.21	3.63
Compressor	Model		RN104VHSHT		KN104VTMHC		KN104VTMHC		RN135VHSHT		RN135VHSHT	
	Output	W	700		700		700		900		900	
	Winding resistance (at 20℃)	Ω	C-R 3.40 C-S 4.56		C-R 3.62 C-S 5.40		C-R 3.62 C-S 5.40		C-R 2.79 C-S 3.36		C-R 2.79 C-S 3.36	
Fan motor	Model		RA6V33-KB		RA6V33-KB		RA6V33-KB		RA6V33-KB		RA6V33-KB	
	Winding resistance (at 20℃)	Ω	WHT-BLK 215 BLK-RED 307		WHT-BLK 215 BLK-RED 307		WHT-BLK 215 BLK-RED 307		WHT-BLK 215 BLK-RED 307		WHT-BLK 215 BLK-RED 307	
	Dimensions W × H × D	mm	800 × 550 × 285		800 × 550 × 285		800 × 550 × 285		800 × 550 × 285		800 × 550 × 285	
	Weight	kg	32		30		34		35		39	
Special remarks	Sound level	dB	49		49		49		49		49	
	Fan speed	rpm	855		855		855		855		855	
	Fan speed regulator		1		1		1		1		1	
	Refrigerant filling capacity (R410A)	kg	0.80		0.65		0.95		0.80		1.05	
	Refrigeration oil (Model)	cc	350 (NEO22)		350 (NEO22)		350 (NEO22)		620 (NEO22)		620 (NEO22)	

NOTE : Test conditions are based on ISO 5151.

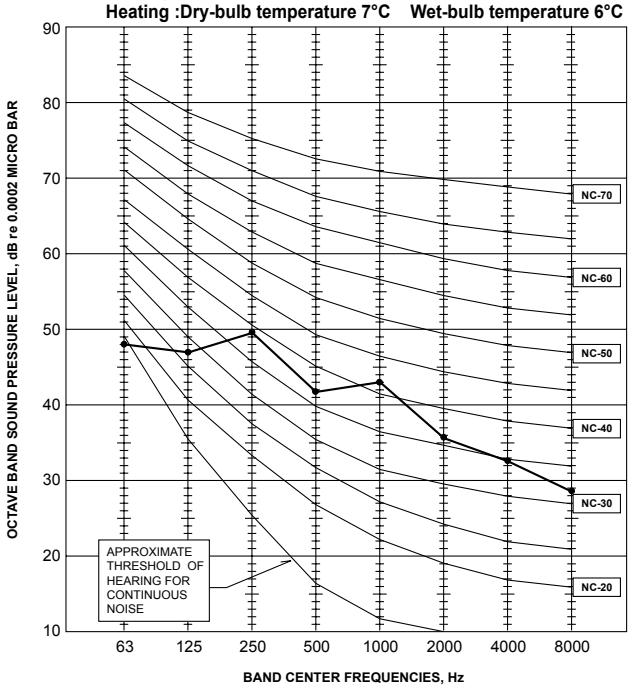
Cooling: Indoor Dry-bulb temperature 27°C Wet-bulb temperature 19°C
Outdoor Dry-bulb temperature 35°C Wet-bulb temperature 24°C
Heating: Indoor Dry-bulb temperature 20°C
Outdoor Dry-bulb temperature 7°C Wet-bulb temperature 6°C
Indoor-Outdoor piping length: 5 m

4 NOISE CRITERIA CURVES

MUH-GA20VB

FUNCTION	SPL(dB(A))	LINE
COOLING	47	
HEATING		

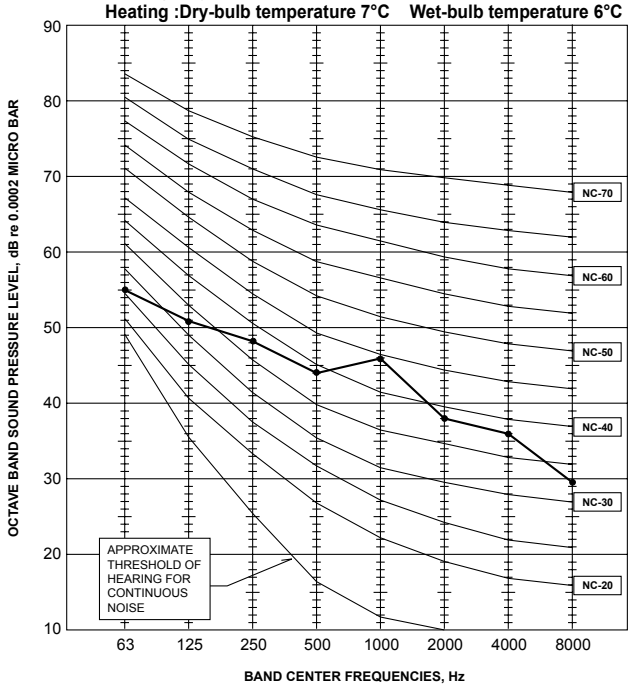
Test conditions,
Cooling :Dry-bulb temperature35°C Wet-bulb temperature24°C
Heating :Dry-bulb temperature 7°C Wet-bulb temperature 6°C

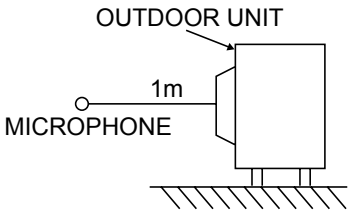


MUH-GA25VB
MUH-GA35VB

FUNCTION	SPL(dB(A))	LINE
COOLING	49	
HEATING		

Test conditions,
Cooling :Dry-bulb temperature35°C Wet-bulb temperature24°C
Heating :Dry-bulb temperature 7°C Wet-bulb temperature 6°C



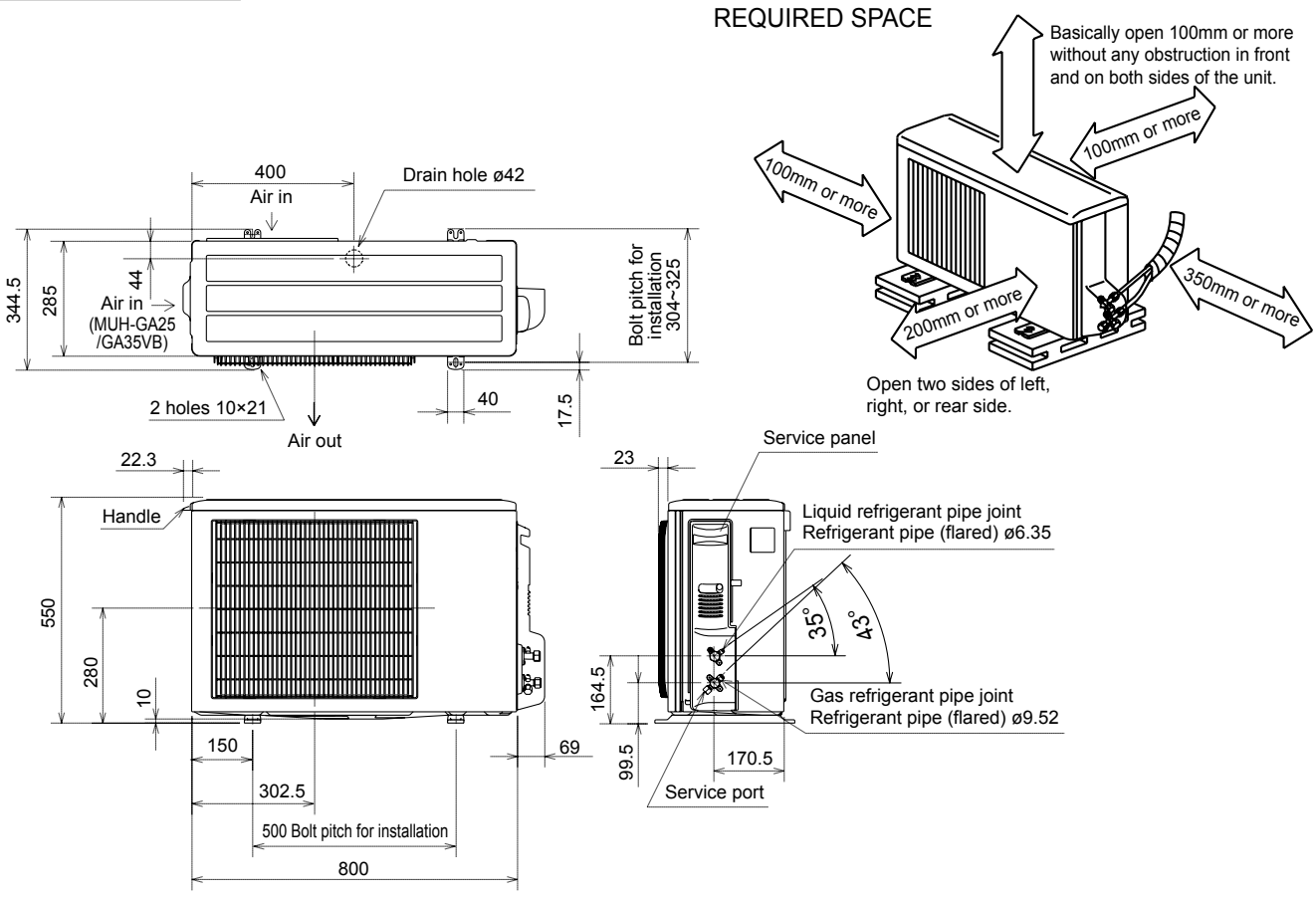


5 OUTLINES AND DIMENSIONS

MUH-GA20VB MUH-GA25VB MUH-GA35VB

Unit: mm

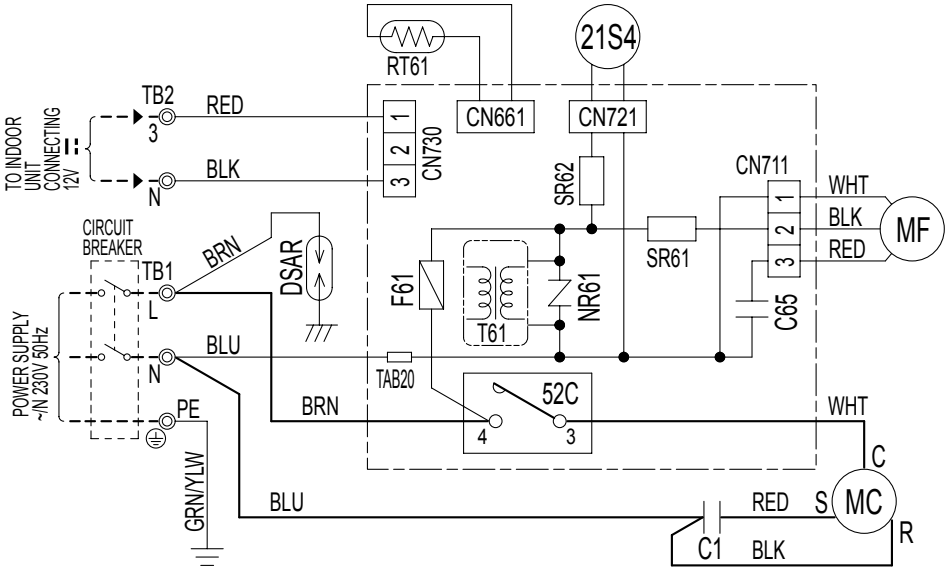
OUTDOOR UNIT



6 WIRING DIAGRAM

MUH-GA20VB MUH-GA25VB-E1,E2 MUH-GA35VB

OUTDOOR UNIT

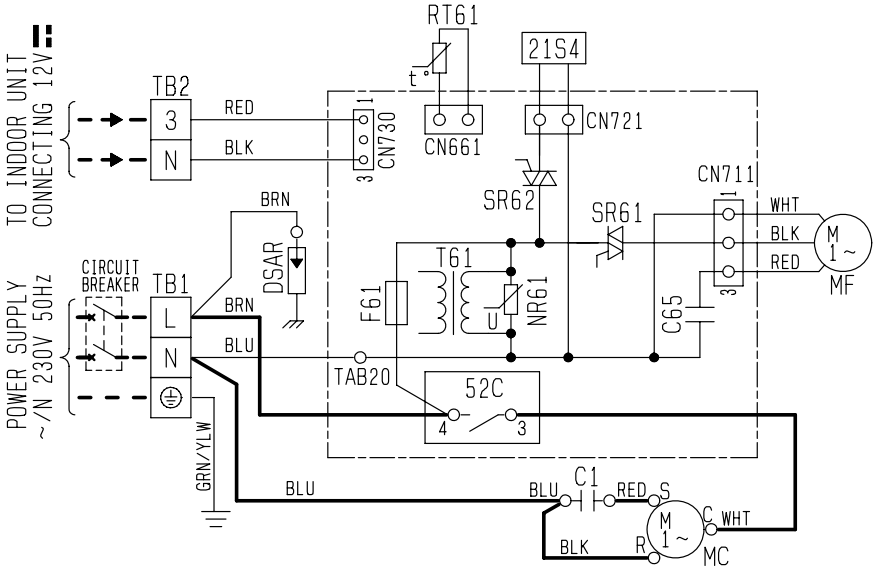


SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C1	COMPRESSOR CAPACITOR	MF	OUTDOOR FAN MOTOR (INNER FUSE)	T61	TRANSFORMER
C65	OUTDOOR FAN CAPACITOR			TB1,TB2	TERMINAL BLOCK
DSAR	SURGE ABSORBER	NR61	VARISTOR	21S4	R.V. COIL
F61	FUSE(T2AL250V)	RT61	DEFROST THERMISTOR	52C	COMPRESSOR CONTACTOR
MC	COMPRESSOR(INNER PROTECTOR)	SR61,SR62	SOLID STATE RELAY		

NOTE:1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only. (For field wiring)
3. Symbols below indicate.
◎: Terminal block, □□□□ Connector

MUH-GA25VB-E3

OUTDOOR UNIT



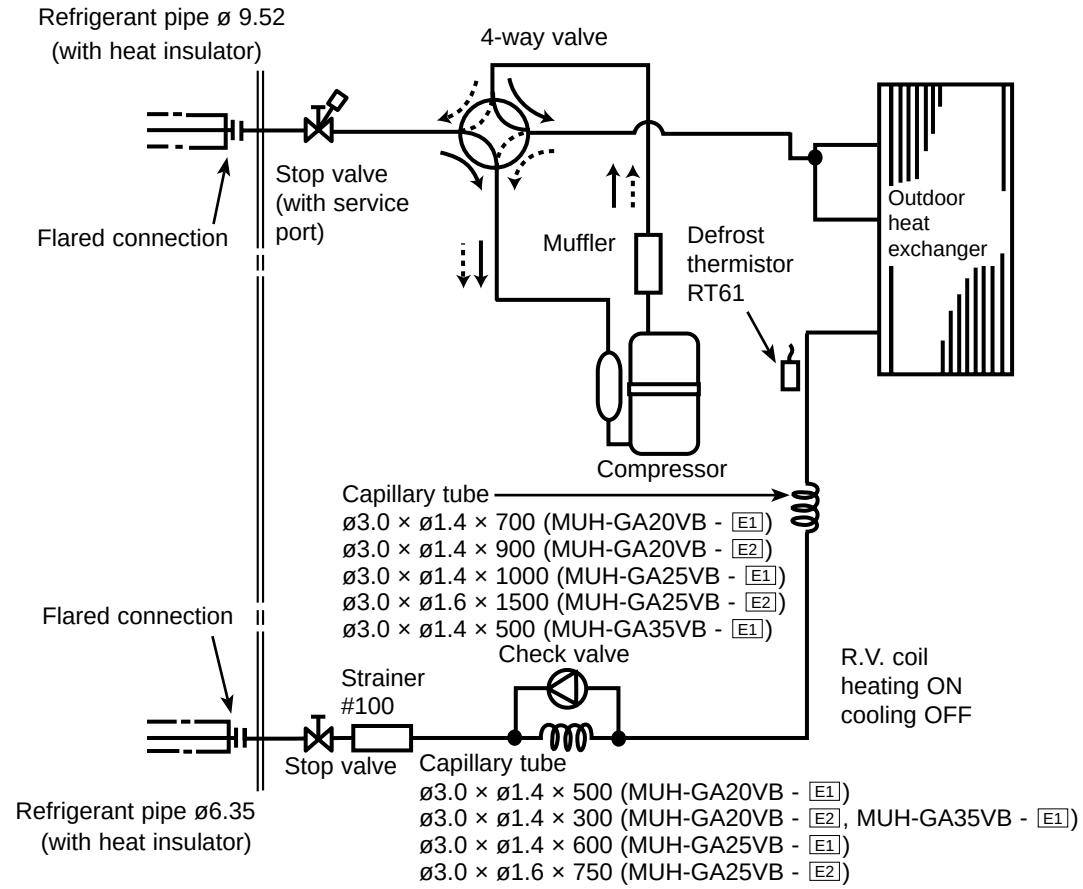
SYMBOL	NAME
C1	COMPRESSOR CAPACITOR
C65	FAN MOTOR CAPACITOR
DSAR	SURGE ABSORBER
F61	FUSE(T2AL250V)
MC	COMPRESSOR(INNER PROTECTOR)
MF	FAN MOTOR(INNER FUSE)
NR61	VARISTOR
RT61	DEFROST THERMISTOR
SR61,SR62	SOLID STATE RELAY
T61	TRANSFORMER
TB1,TB2	TERMINAL BLOCK
21S4	REVERSING VALVE SOLENOID COIL
52C	COMPRESSOR CONTACTOR

NOTES:
1. Use copper conductors only (For field wiring).
2. Since the indoor and outdoor unit connecting wires have polarity, connect them according to the numbers (3, N).
3. Symbols below indicate.
□□□:Terminal block ◎◎◎:Connector

7 REFRIGERANT SYSTEM DIAGRAM

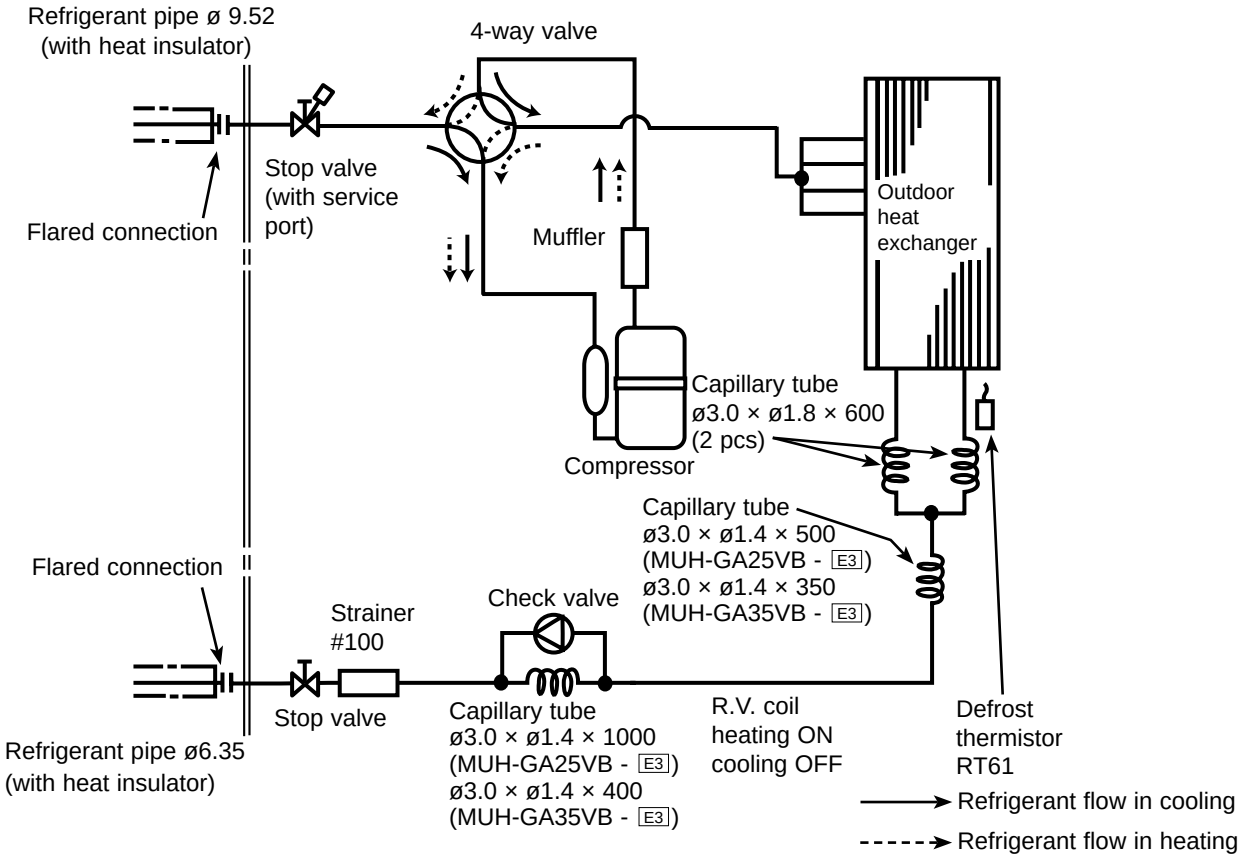
MUH-GA20VB MUH-GA25VB-E1, E2 MUH-GA35VB-E1 **Unit :mm**

OUTDOOR UNIT



MUH-GA25VB-E3 MUH-GA35VB-E3

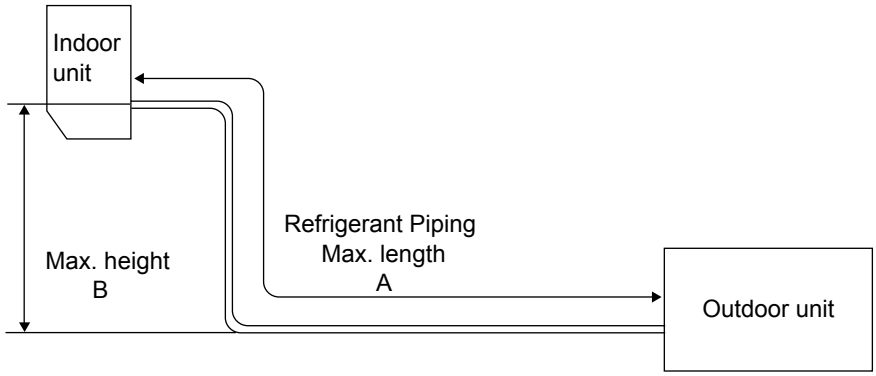
OUTDOOR UNIT



MAX. REFRIGERANT PIPING LENGTH

Model	Refrigerant piping: m		Piping size O.D: mm		Length of connecting pipe: m	
	Max. length A	Max. height B	Gas	Liquid	Indoor unit	Outdoor unit
MUH-GA20VB **MUH-GA25VB**	20	10	9.52	6.35	Gas 0.43 Liquid 0.5	Gas 0 Liquid 0
MUH-GA35VB	25					

MAX. HEIGHT DIFFERENCE



ADDITIONAL REFRIGERANT CHARGE(R410A: g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)				
		7 m	10 m	15 m	20 m	25 m
MUH-GA20VB - E1	650	0	60	160	260	
MUH-GA20VB - E2	600					
MUH-GA25VB - E1	800					
MUH-GA25VB - E2	650					
MUH-GA25VB - E3	950					
MUH-GA35VB - E1	800					360
MUH-GA35VB - E3	1050					

Calculation : Xg = 20 g/m × (A-7)m

8 PERFORMANCE CURVES

MUH-GA20VB MUH-GA25VB MUH-GA35VB

The standard specifications apply only to the operation of the air conditioner under normal conditions, since operating conditions vary according to the areas where these units are installed. The following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

(1) GUARANTEED VOLTAGE

198~264 V

(2) AIR FLOW

Air flow should be set at MAX.

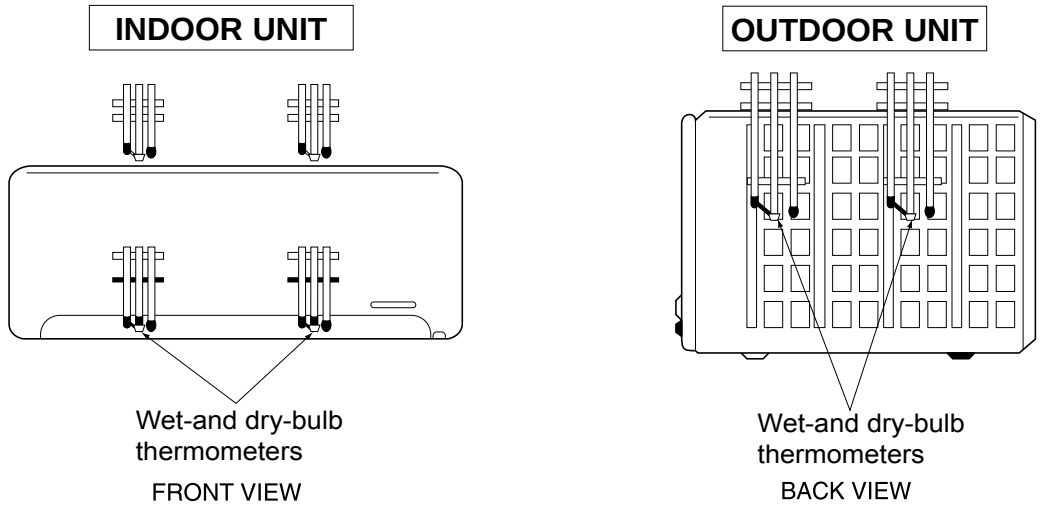
(3) MAIN READINGS

(1) Indoor intake air wet-bulb temperature:	°CWB	Cooling
(2) Indoor outlet air wet-bulb temperature:	°CWB	
(3) Outdoor intake air dry-bulb temperature:	°CDB	
(4) Total input:	W	
(5) Indoor intake air dry-bulb temperature:	°CDB	Heating
(6) Outdoor intake air wet-bulb temperature:	°CWB	
(7) Total input:	W	

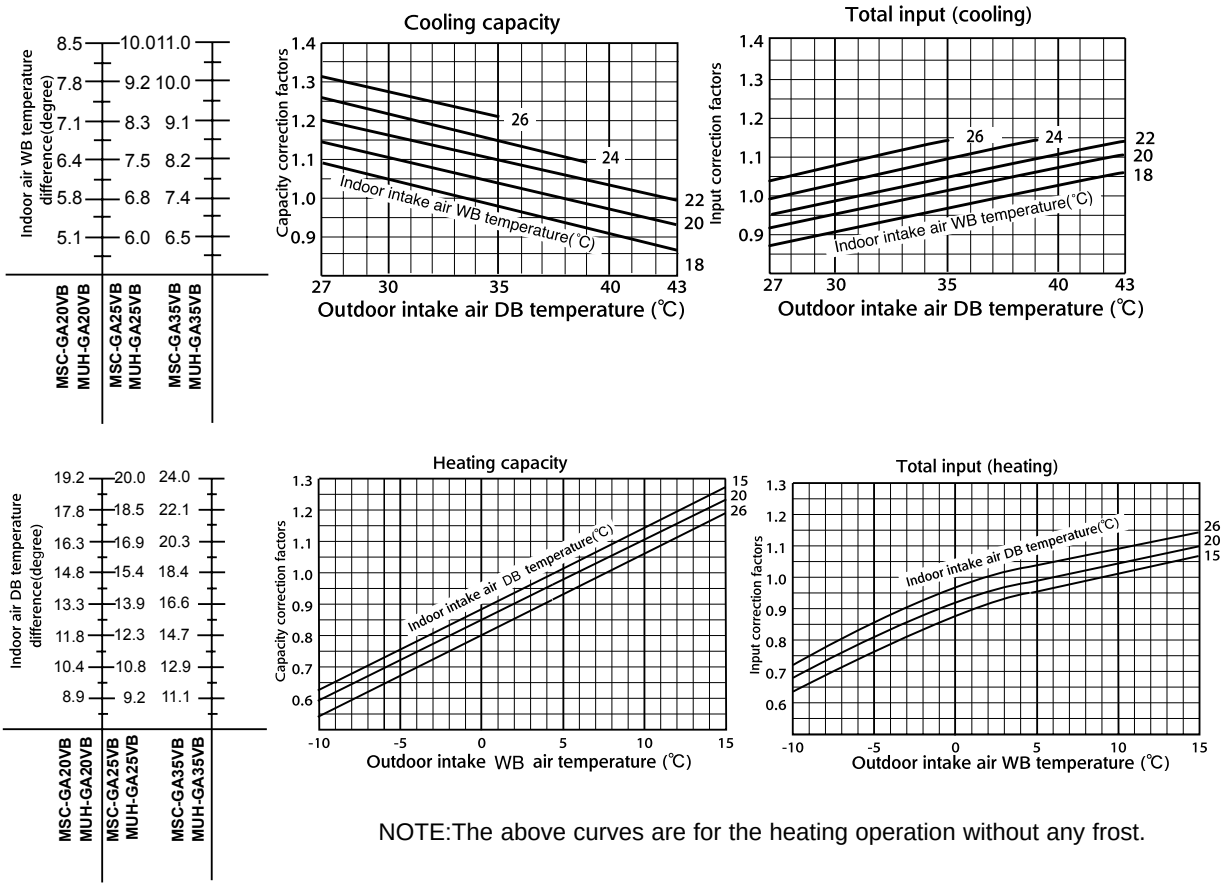
Indoor air wet/dry-bulb temperature difference on the left side of the following chart shows the difference between the indoor intake air wet/dry-bulb temperature and the indoor outlet air wet/dry-bulb temperature for your reference at service.

How to measure the indoor air wet-bulb/dry-bulb temperature difference

1. Attach at least 2 sets of wet-and dry-bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet-and dry-bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
2. Attach at least 2 sets of wet-and dry-bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY OPERATION switch once (twice) to start the EMERGENCY COOL (HEAT) MODE.
6. When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
7. 10 minutes later, measure temperature again and check that the temperature does not change.



8-1.CAPACITY AND THE INPUT CURVES



NOTE:The above curves are for the heating operation without any frost.

8-2.OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT
COOL operation

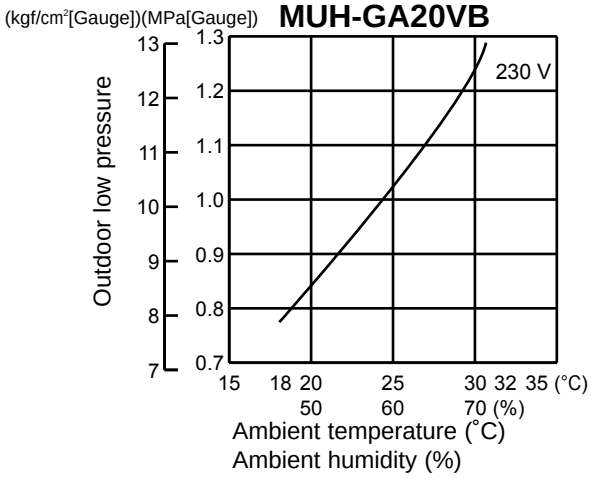
① Both indoor and outdoor unit are under the same temperature/humidity condition.

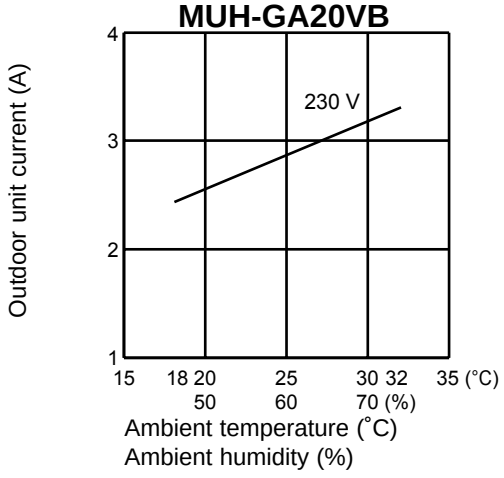
Dry-bulb temperature	Relative humidity(%)
20	50
25	60
30	70

② Air flow should be set at MAX.

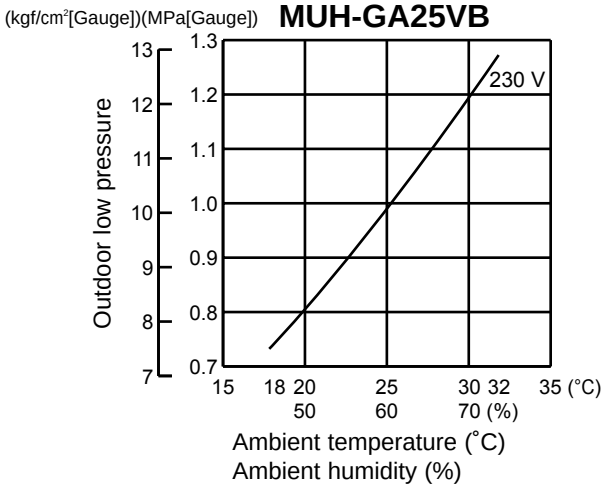
③ The unit of pressure has been changed to MPa on the international system of units (SI unit system).
The conversion factor is: **1(MPa[Gauge]) =10.2(kgf/cm² [Gauge])**

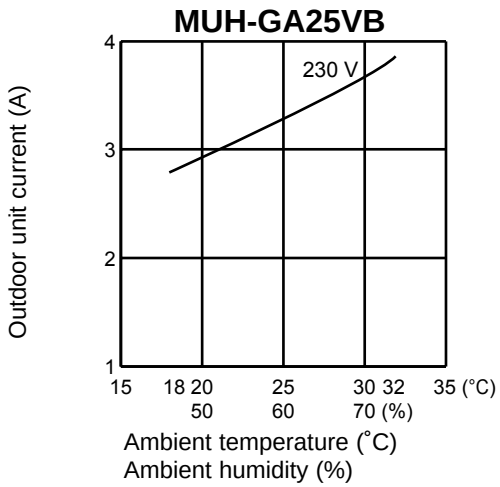
MUH-GA20VB



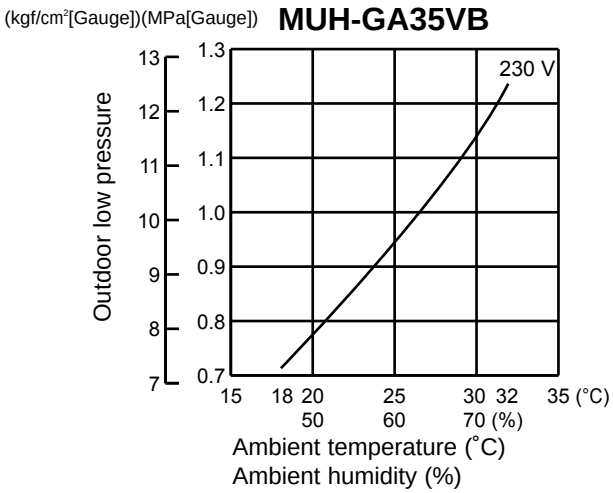


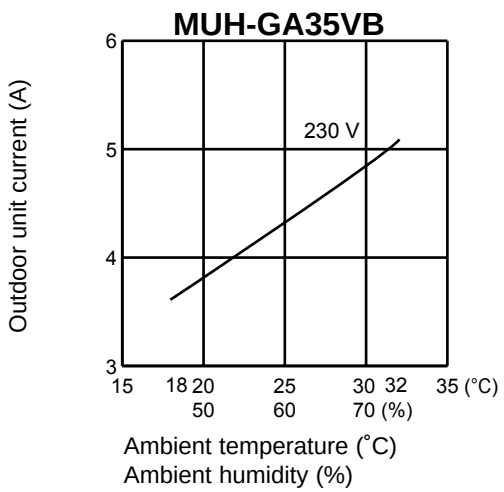
MUH-GA25VB





MUH-GA35VB



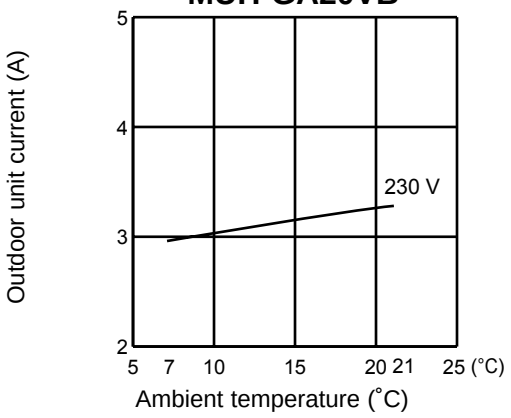


HEAT operation

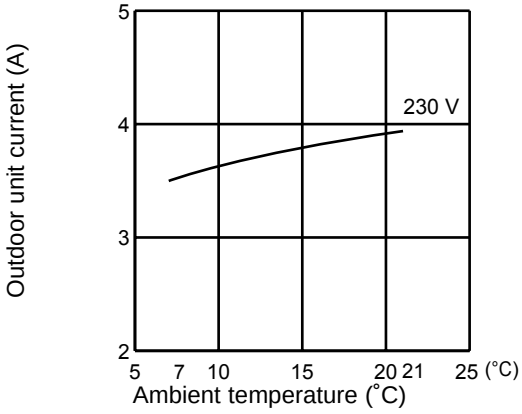
Condition indoor:Dry bulb temperature 20.0°C
Wet bulb temperature 14.5°C

Outdoor:Dry bulb temperature 7,15,20°C
Wet bulb temperature 6,12,14.5°C

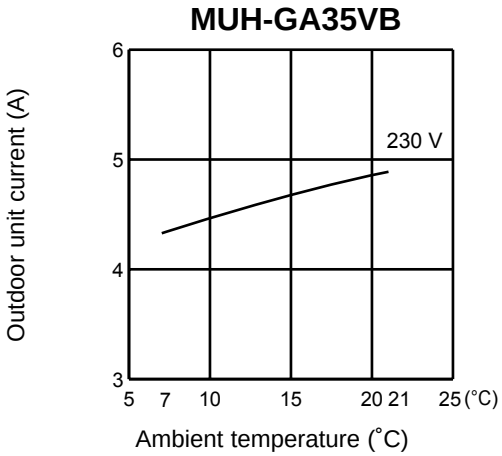
MUH-GA20VB



MUH-GA25VB



MUH-GA35VB



PERFORMANCE DATA
COOL operation (230V)

MSC-GA20VB : MUH-GA20VB

CAPACITY : 2.3(kW) SHF : 0.74 INPUT : 715(W)

		OUTDOOR DB(℃)															
INDOOR	INDOOR	21				25				27				30			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	2.70	1.51	0.56	572	2.59	1.45	0.56	601	2.48	1.39	0.56	629	2.39	1.34	0.56	658
21	20	2.82	1.24	0.44	601	2.70	1.19	0.44	636	2.62	1.15	0.44	651	2.53	1.11	0.44	679
22	18	2.70	1.62	0.60	572	2.59	1.55	0.60	601	2.48	1.49	0.60	629	2.39	1.44	0.60	658
22	20	2.82	1.35	0.48	601	2.70	1.30	0.48	636	2.62	1.26	0.48	651	2.53	1.21	0.48	679
22	22	2.93	1.06	0.36	622	2.83	1.02	0.36	661	2.76	0.99	0.36	679	2.65	0.95	0.36	708
23	18	2.70	1.73	0.64	572	2.59	1.66	0.64	601	2.48	1.59	0.64	629	2.39	1.53	0.64	658
23	20	2.82	1.47	0.52	601	2.70	1.41	0.52	636	2.62	1.36	0.52	651	2.53	1.32	0.52	679
23	22	2.93	1.17	0.40	622	2.83	1.13	0.40	661	2.76	1.10	0.40	679	2.65	1.06	0.40	708
24	18	2.70	1.84	0.68	572	2.59	1.76	0.68	601	2.48	1.69	0.68	629	2.39	1.63	0.68	658
24	20	2.82	1.58	0.56	601	2.70	1.51	0.56	636	2.62	1.47	0.56	651	2.53	1.42	0.56	679
24	22	2.93	1.29	0.44	622	2.83	1.24	0.44	661	2.76	1.21	0.44	679	2.65	1.16	0.44	708
24	24	3.08	0.99	0.32	651	2.97	0.95	0.32	686	2.90	0.93	0.32	708	2.81	0.90	0.32	744
25	18	2.70	1.95	0.72	572	2.59	1.86	0.72	601	2.48	1.79	0.72	629	2.39	1.72	0.72	658
25	20	2.82	1.69	0.60	601	2.70	1.62	0.60	636	2.62	1.57	0.60	651	2.53	1.52	0.60	679
25	22	2.93	1.41	0.48	622	2.83	1.36	0.48	661	2.76	1.32	0.48	679	2.65	1.27	0.48	708
25	24	3.08	1.11	0.36	651	2.97	1.07	0.36	686	2.90	1.04	0.36	708	2.81	1.01	0.36	744
26	18	2.70	2.05	0.76	572	2.59	1.97	0.76	601	2.48	1.89	0.76	629	2.39	1.82	0.76	658
26	20	2.82	1.80	0.64	601	2.70	1.73	0.64	636	2.62	1.68	0.64	651	2.53	1.62	0.64	679
26	22	2.93	1.52	0.52	622	2.83	1.47	0.52	661	2.76	1.44	0.52	679	2.65	1.38	0.52	708
26	24	3.08	1.23	0.40	651	2.97	1.19	0.40	686	2.90	1.16	0.40	708	2.81	1.12	0.40	744
26	26	3.17	0.89	0.28	686	3.08	0.86	0.28	722	3.04	0.85	0.28	744	2.94	0.82	0.28	765
27	18	2.70	2.16	0.80	572	2.59	2.07	0.80	601	2.48	1.99	0.80	629	2.39	1.91	0.80	658
27	20	2.82	1.92	0.68	601	2.70	1.84	0.68	636	2.62	1.78	0.68	651	2.53	1.72	0.68	679
27	22	2.93	1.64	0.56	622	2.83	1.58	0.56	661	2.76	1.55	0.56	679	2.65	1.48	0.56	708
27	24	3.08	1.36	0.44	651	2.97	1.31	0.44	686	2.90	1.28	0.44	708	2.81	1.23	0.44	744
27	26	3.17	1.02	0.32	686	3.08	0.99	0.32	722	3.04	0.97	0.32	744	2.94	0.94	0.32	765
28	18	2.70	2.27	0.84	572	2.59	2.17	0.84	601	2.48	2.09	0.84	629	2.39	2.01	0.84	658
28	20	2.82	2.03	0.72	601	2.70	1.95	0.72	636	2.62	1.89	0.72	651	2.53	1.82	0.72	679
28	22	2.93	1.76	0.60	622	2.83	1.70	0.60	661	2.76	1.66	0.60	679	2.65	1.59	0.60	708
28	24	3.08	1.48	0.48	651	2.97	1.42	0.48	686	2.90	1.39	0.48	708	2.81	1.35	0.48	744
28	26	3.17	1.14	0.36	686	3.08	1.11	0.36	722	3.04	1.09	0.36	744	2.94	1.06	0.36	765
29	18	2.70	2.38	0.88	572	2.59	2.28	0.88	601	2.48	2.19	0.88	629	2.39	2.10	0.88	658
29	20	2.82	2.14	0.76	601	2.70	2.05	0.76	636	2.62	1.99	0.76	651	2.53	1.92	0.76	679
29	22	2.93	1.88	0.64	622	2.83	1.81	0.64	661	2.76	1.77	0.64	679	2.65	1.69	0.64	708
29	24	3.08	1.60	0.52	651	2.97	1.54	0.52	686	2.90	1.51	0.52	708	2.81	1.46	0.52	744
29	26	3.17	1.27	0.40	686	3.08	1.23	0.40	722	3.04	1.21	0.40	744	2.94	1.18	0.40	765
30	18	2.70	2.49	0.92	572	2.59	2.38	0.92	601	2.48	2.29	0.92	629	2.39	2.20	0.92	658
30	20	2.82	2.25	0.80	601	2.70	2.16	0.80	636	2.62	2.10	0.80	651	2.53	2.02	0.80	679
30	22	2.93	1.99	0.68	622	2.83	1.92	0.68	661	2.76	1.88	0.68	679	2.65	1.80	0.68	708
30	24	3.08	1.73	0.56	651	2.97	1.66	0.56	686	2.90	1.62	0.56	708	2.81	1.57	0.56	744
30	26	3.17	1.40	0.44	686	3.08	1.36	0.44	722	3.04	1.34	0.44	744	2.94	1.30	0.44	765
31	18	2.70	2.59	0.96	572	2.59	2.48	0.96	601	2.48	2.38	0.96	629	2.39	2.30	0.96	658
31	20	2.82	2.37	0.84	601	2.70	2.27	0.84	636	2.62	2.20	0.84	651	2.53	2.13	0.84	679
31	22	2.93	2.11	0.72	622	2.83	2.04	0.72	661	2.76	1.99	0.72	679	2.65	1.90	0.72	708
31	24	3.08	1.85	0.60	651	2.97	1.78	0.60	686	2.90	1.74	0.60	708	2.81	1.68	0.60	744
31	26	3.17	1.52	0.48	686	3.08	1.48	0.48	722	3.04	1.46	0.48	744	2.94	1.41	0.48	765
32	18	2.70	2.70	1.00	572	2.59	2.59	1.00	601	2.48	2.48	1.00	629	2.39	2.39	1.00	658
32	20	2.82	2.48	0.88	601	2.70	2.38	0.88	636	2.62	2.31	0.88	651	2.53	2.23	0.88	679
32	22	2.93	2.23	0.76	622	2.83	2.15	0.76	661	2.76	2.10	0.76	679	2.65	2.01	0.76	708
32	24	3.08	1.97	0.64	651	2.97	1.90	0.64	686	2.90	1.85	0.64	708	2.81	1.80	0.64	744
32	26	3.17	1.65	0.52	686	3.08	1.60	0.52	722	3.04	1.58	0.52	744	2.94	1.53	0.52	765

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
COOL operation (230V)

MSC-GA20VB : MUH-GA20VB

CAPACITY : 2.3(kW) SHF : 0.74 INPUT : 715(W)

		OUTDOOR DB(℃)											
INDOOR	INDOOR	35				40				43			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	2.25	1.26	0.56	701	2.07	1.16	0.56	744	1.99	1.11	0.56	758
21	20	2.37	1.04	0.44	729	2.21	0.97	0.44	765	2.13	0.94	0.44	787
22	18	2.25	1.35	0.60	701	2.07	1.24	0.60	744	1.99	1.19	0.60	758
22	20	2.37	1.14	0.48	729	2.21	1.06	0.48	765	2.13	1.02	0.48	787
22	22	2.51	0.90	0.36	758	2.35	0.84	0.36	801	2.27	0.82	0.36	815
23	18	2.25	1.44	0.64	701	2.07	1.32	0.64	744	1.99	1.27	0.64	758
23	20	2.37	1.23	0.52	729	2.21	1.15	0.52	765	2.13	1.11	0.52	787
23	22	2.51	1.00	0.40	758	2.35	0.94	0.40	801	2.27	0.91	0.40	815
24	18	2.25	1.53	0.68	701	2.07	1.41	0.68	744	1.99	1.35	0.68	758
24	20	2.37	1.33	0.56	729	2.21	1.24	0.56	765	2.13	1.19	0.56	787
24	22	2.51	1.10	0.44	758	2.35	1.03	0.44	801	2.27	1.00	0.44	815
24	24	2.65	0.85	0.32	787	2.48	0.79	0.32	822	2.42	0.77	0.32	840
25	18	2.25	1.62	0.72	701	2.07	1.49	0.72	744	1.99	1.43	0.72	758
25	20	2.37	1.42	0.60	729	2.21	1.32	0.60	765	2.13	1.28	0.60	787
25	22	2.51	1.20	0.48	758	2.35	1.13	0.48	801	2.27	1.09	0.48	815
25	24	2.65	0.95	0.36	787	2.48	0.89	0.36	822	2.42	0.87	0.36	840
26	18	2.25	1.71	0.76	701	2.07	1.57	0.76	744	1.99	1.51	0.76	758
26	20	2.37	1.52	0.64	729	2.21	1.41	0.64	765	2.13	1.36	0.64	787
26	22	2.51	1.30	0.52	758	2.35	1.22	0.52	801	2.27	1.18	0.52	815
26	24	2.65	1.06	0.40	787	2.48	0.99	0.40	822	2.42	0.97	0.40	840
26	26	2.78	0.78	0.28	815	2.62	0.73	0.28	851	2.54	0.71	0.28	869
27	18	2.25	1.80	0.80	701	2.07	1.66	0.80	744	1.99	1.59	0.80	758
27	20	2.37	1.61	0.68	729	2.21	1.50	0.68	765	2.13	1.45	0.68	787
27	22	2.51	1.40	0.56	758	2.35	1.31	0.56	801	2.27	1.27	0.56	815
27	24	2.65	1.16	0.44	787	2.48	1.09	0.44	822	2.42	1.06	0.44	840
27	26	2.78	0.89	0.32	815	2.62	0.84	0.32	851	2.54	0.81	0.32	869
28	18	2.25	1.89	0.84	701	2.07	1.74	0.84	744	1.99	1.67	0.84	758
28	20	2.37	1.71	0.72	729	2.21	1.59	0.72	765	2.13	1.53	0.72	787
28	22	2.51	1.50	0.60	758	2.35	1.41	0.60	801	2.27	1.36	0.60	815
28	24	2.65	1.27	0.48	787	2.48	1.19	0.48	822	2.42	1.16	0.48	840
28	26	2.78	1.00	0.36	815	2.62	0.94	0.36	851	2.54	0.91	0.36	869
29	18	2.25	1.98	0.88	701	2.07	1.82	0.88	744	1.99	1.75	0.88	758
29	20	2.37	1.80	0.76	729	2.21	1.68	0.76	765	2.13	1.62	0.76	787
29	22	2.51	1.60	0.64	758	2.35	1.50	0.64	801	2.27	1.45	0.64	815
29	24	2.65	1.38	0.52	787	2.48	1.29	0.52	822	2.42	1.26	0.52	840
29	26	2.78	1.11	0.40	815	2.62	1.05	0.40	851	2.54	1.02	0.40	869
30	18	2.25	2.07	0.92	701	2.07	1.90	0.92	744	1.99	1.83	0.92	758
30	20	2.37	1.90	0.80	729	2.21	1.77	0.80	765	2.13	1.70	0.80	787
30	22	2.51	1.70	0.68	758	2.35	1.60	0.68	801	2.27	1.54	0.68	815
30	24	2.65	1.48	0.56	787	2.48	1.39	0.56	822	2.42	1.35	0.56	840
30	26	2.78	1.22	0.44	815	2.62	1.15	0.44	851	2.54	1.12	0.44	869
31	18	2.25	2.16	0.96	701	2.07	1.99	0.96	744	1.99	1.91	0.96	758
31	20	2.37	1.99	0.84	729	2.21	1.85	0.84	765	2.13	1.79	0.84	787
31	22	2.51	1.81	0.72	758	2.35	1.69	0.72	801	2.27	1.63	0.72	815
31	24	2.65	1.59	0.60	787	2.48	1.49	0.60	822	2.42	1.45	0.60	840
31	26	2.78	1.34	0.48	815	2.62	1.26	0.48	851	2.54	1.22	0.48	869
32	18	2.25	2.25	1.00	701	2.07	2.07	1.00	744	1.99	1.99	1.00	758
32	20	2.37	2.08	0.88	729	2.21	1.94	0.88	765	2.13	1.87	0.88	787
32	22	2.51	1.91	0.76	758	2.35	1.78	0.76	801	2.27	1.72	0.76	815
32	24	2.65	1.69	0.64	787	2.48	1.59	0.64	822	2.42	1.55	0.64	840
32	26	2.78	1.45	0.52	815	2.62	1.36	0.52	851	2.54	1.32	0.52	869

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
COOL operation (230V)

MSC-GA25VB : MUH-GA25VB

CAPACITY : 2.65(kW) SHF : 0.70 INPUT : 820(W)

		OUTDOOR DB(℃)															
INDOOR	INDOOR	21				25				27				30			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	3.11	1.62	0.52	656	2.98	1.55	0.52	689	2.86	1.49	0.52	722	2.76	1.43	0.52	754
21	20	3.25	1.30	0.40	689	3.11	1.25	0.40	730	3.02	1.21	0.40	746	2.92	1.17	0.40	779
22	18	3.11	1.74	0.56	656	2.98	1.67	0.56	689	2.86	1.60	0.56	722	2.76	1.54	0.56	754
22	20	3.25	1.43	0.44	689	3.11	1.37	0.44	730	3.02	1.33	0.44	746	2.92	1.28	0.44	779
22	22	3.38	1.08	0.32	713	3.26	1.04	0.32	759	3.18	1.02	0.32	779	3.05	0.98	0.32	812
23	18	3.11	1.87	0.60	656	2.98	1.79	0.60	689	2.86	1.72	0.60	722	2.76	1.65	0.60	754
23	20	3.25	1.56	0.48	689	3.11	1.49	0.48	730	3.02	1.45	0.48	746	2.92	1.40	0.48	779
23	22	3.38	1.22	0.36	713	3.26	1.17	0.36	759	3.18	1.14	0.36	779	3.05	1.10	0.36	812
24	18	3.11	1.99	0.64	656	2.98	1.91	0.64	689	2.86	1.83	0.64	722	2.76	1.76	0.64	754
24	20	3.25	1.69	0.52	689	3.11	1.62	0.52	730	3.02	1.57	0.52	746	2.92	1.52	0.52	779
24	22	3.38	1.35	0.40	713	3.26	1.30	0.40	759	3.18	1.27	0.40	779	3.05	1.22	0.40	812
24	24	3.55	0.99	0.28	746	3.42	0.96	0.28	787	3.34	0.93	0.28	812	3.23	0.91	0.28	853
25	18	3.11	2.12	0.68	656	2.98	2.03	0.68	689	2.86	1.95	0.68	722	2.76	1.87	0.68	754
25	20	3.25	1.82	0.56	689	3.11	1.74	0.56	730	3.02	1.69	0.56	746	2.92	1.63	0.56	779
25	22	3.38	1.49	0.44	713	3.26	1.43	0.44	759	3.18	1.40	0.44	779	3.05	1.34	0.44	812
25	24	3.55	1.14	0.32	746	3.42	1.09	0.32	787	3.34	1.07	0.32	812	3.23	1.03	0.32	853
26	18	3.11	2.24	0.72	656	2.98	2.15	0.72	689	2.86	2.06	0.72	722	2.76	1.98	0.72	754
26	20	3.25	1.95	0.60	689	3.11	1.87	0.60	730	3.02	1.81	0.60	746	2.92	1.75	0.60	779
26	22	3.38	1.62	0.48	713	3.26	1.56	0.48	759	3.18	1.53	0.48	779	3.05	1.46	0.48	812
26	24	3.55	1.28	0.36	746	3.42	1.23	0.36	787	3.34	1.20	0.36	812	3.23	1.16	0.36	853
26	26	3.66	0.88	0.24	787	3.55	0.85	0.24	828	3.50	0.84	0.24	853	3.39	0.81	0.24	877
27	18	3.11	2.37	0.76	656	2.98	2.27	0.76	689	2.86	2.18	0.76	722	2.76	2.09	0.76	754
27	20	3.25	2.08	0.64	689	3.11	1.99	0.64	730	3.02	1.93	0.64	746	2.92	1.87	0.64	779
27	22	3.38	1.76	0.52	713	3.26	1.69	0.52	759	3.18	1.65	0.52	779	3.05	1.58	0.52	812
27	24	3.55	1.42	0.40	746	3.42	1.37	0.40	787	3.34	1.34	0.40	812	3.23	1.29	0.40	853
27	26	3.66	1.02	0.28	787	3.55	0.99	0.28	828	3.50	0.98	0.28	853	3.39	0.95	0.28	877
28	18	3.11	2.49	0.80	656	2.98	2.39	0.80	689	2.86	2.29	0.80	722	2.76	2.20	0.80	754
28	20	3.25	2.21	0.68	689	3.11	2.12	0.68	730	3.02	2.05	0.68	746	2.92	1.98	0.68	779
28	22	3.38	1.89	0.56	713	3.26	1.83	0.56	759	3.18	1.78	0.56	779	3.05	1.71	0.56	812
28	24	3.55	1.56	0.44	746	3.42	1.50	0.44	787	3.34	1.47	0.44	812	3.23	1.42	0.44	853
28	26	3.66	1.17	0.32	787	3.55	1.14	0.32	828	3.50	1.12	0.32	853	3.39	1.09	0.32	877
29	18	3.11	2.62	0.84	656	2.98	2.50	0.84	689	2.86	2.40	0.84	722	2.76	2.32	0.84	754
29	20	3.25	2.34	0.72	689	3.11	2.24	0.72	730	3.02	2.18	0.72	746	2.92	2.10	0.72	779
29	22	3.38	2.03	0.60	713	3.26	1.96	0.60	759	3.18	1.91	0.60	779	3.05	1.83	0.60	812
29	24	3.55	1.70	0.48	746	3.42	1.64	0.48	787	3.34	1.60	0.48	812	3.23	1.55	0.48	853
29	26	3.66	1.32	0.36	787	3.55	1.28	0.36	828	3.50	1.26	0.36	853	3.39	1.22	0.36	877
30	18	3.11	2.74	0.88	656	2.98	2.62	0.88	689	2.86	2.52	0.88	722	2.76	2.43	0.88	754
30	20	3.25	2.47	0.76	689	3.11	2.37	0.76	730	3.02	2.30	0.76	746	2.92	2.22	0.76	779
30	22	3.38	2.16	0.64	713	3.26	2.09	0.64	759	3.18	2.04	0.64	779	3.05	1.95	0.64	812
30	24	3.55	1.85	0.52	746	3.42	1.78	0.52	787	3.34	1.74	0.52	812	3.23	1.68	0.52	853
30	26	3.66	1.46	0.40	787	3.55	1.42	0.40	828	3.50	1.40	0.40	853	3.39	1.36	0.40	877
31	18	3.11	2.86	0.92	656	2.98	2.74	0.92	689	2.86	2.63	0.92	722	2.76	2.54	0.92	754
31	20	3.25	2.60	0.80	689	3.11	2.49	0.80	730	3.02	2.42	0.80	746	2.92	2.33	0.80	779
31	22	3.38	2.30	0.68	713	3.26	2.22	0.68	759	3.18	2.16	0.68	779	3.05	2.07	0.68	812
31	24	3.55	1.99	0.56	746	3.42	1.91	0.56	787	3.34	1.87	0.56	812	3.23	1.81	0.56	853
31	26	3.66	1.61	0.44	787	3.55	1.56	0.44	828	3.50	1.54	0.44	853	3.39	1.49	0.44	877
32	18	3.11	2.99	0.96	656	2.98	2.86	0.96	689	2.86	2.75	0.96	722	2.76	2.65	0.96	754
32	20	3.25	2.73	0.84	689	3.11	2.62	0.84	730	3.02	2.54	0.84	746	2.92	2.45	0.84	779
32	22	3.38	2.43	0.72	713	3.26	2.35	0.72	759	3.18	2.29	0.72	779	3.05	2.19	0.72	812
32	24	3.55	2.13	0.60	746	3.42	2.05	0.60	787	3.34	2.00	0.60	812	3.23	1.94	0.60	853
32	26	3.66	1.76	0.48	787	3.55	1.70	0.48	828	3.50	1.68	0.48	853	3.39	1.63	0.48	877

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
COOL operation (230V)

MSC-GA25VB : MUH-GA25VB

CAPACITY : 2.65(kW) SHF : 0.70 INPUT : 820(W)

		OUTDOOR DB(℃)											
INDOOR	INDOOR	35				40				43			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	2.60	1.35	0.52	804	2.39	1.24	0.52	853	2.29	1.19	0.52	869
21	20	2.73	1.09	0.40	836	2.54	1.02	0.40	877	2.45	0.98	0.40	902
22	18	2.60	1.45	0.56	804	2.39	1.34	0.56	853	2.29	1.28	0.56	869
22	20	2.73	1.20	0.44	836	2.54	1.12	0.44	877	2.45	1.08	0.44	902
22	22	2.89	0.92	0.32	869	2.70	0.86	0.32	918	2.61	0.84	0.32	935
23	18	2.60	1.56	0.60	804	2.39	1.43	0.60	853	2.29	1.38	0.60	869
23	20	2.73	1.31	0.48	836	2.54	1.22	0.48	877	2.45	1.18	0.48	902
23	22	2.89	1.04	0.36	869	2.70	0.97	0.36	918	2.61	0.94	0.36	935
24	18	2.60	1.66	0.64	804	2.39	1.53	0.64	853	2.29	1.47	0.64	869
24	20	2.73	1.42	0.52	836	2.54	1.32	0.52	877	2.45	1.27	0.52	902
24	22	2.89	1.16	0.40	869	2.70	1.08	0.40	918	2.61	1.04	0.40	935
24	24	3.05	0.85	0.28	902	2.86	0.80	0.28	943	2.78	0.78	0.28	964
25	18	2.60	1.77	0.68	804	2.39	1.62	0.68	853	2.29	1.56	0.68	869
25	20	2.73	1.53	0.56	836	2.54	1.42	0.56	877	2.45	1.37	0.56	902
25	22	2.89	1.27	0.44	869	2.70	1.19	0.44	918	2.61	1.15	0.44	935
25	24	3.05	0.98	0.32	902	2.86	0.92	0.32	943	2.78	0.89	0.32	964
26	18	2.60	1.87	0.72	804	2.39	1.72	0.72	853	2.29	1.65	0.72	869
26	20	2.73	1.64	0.60	836	2.54	1.53	0.60	877	2.45	1.47	0.60	902
26	22	2.89	1.39	0.48	869	2.70	1.30	0.48	918	2.61	1.25	0.48	935
26	24	3.05	1.10	0.36	902	2.86	1.03	0.36	943	2.78	1.00	0.36	964
26	26	3.21	0.77	0.24	935	3.02	0.73	0.24	976	2.93	0.70	0.24	996
27	18	2.60	1.97	0.76	804	2.39	1.81	0.76	853	2.29	1.74	0.76	869
27	20	2.73	1.75	0.64	836	2.54	1.63	0.64	877	2.45	1.57	0.64	902
27	22	2.89	1.50	0.52	869	2.70	1.41	0.52	918	2.61	1.36	0.52	935
27	24	3.05	1.22	0.40	902	2.86	1.14	0.40	943	2.78	1.11	0.40	964
27	26	3.21	0.90	0.28	935	3.02	0.85	0.28	976	2.93	0.82	0.28	996
28	18	2.60	2.08	0.80	804	2.39	1.91	0.80	853	2.29	1.83	0.80	869
28	20	2.73	1.86	0.68	836	2.54	1.73	0.68	877	2.45	1.67	0.68	902
28	22	2.89	1.62	0.56	869	2.70	1.51	0.56	918	2.61	1.46	0.56	935
28	24	3.05	1.34	0.44	902	2.86	1.26	0.44	943	2.78	1.22	0.44	964
28	26	3.21	1.03	0.32	935	3.02	0.97	0.32	976	2.93	0.94	0.32	996
29	18	2.60	2.18	0.84	804	2.39	2.00	0.84	853	2.29	1.93	0.84	869
29	20	2.73	1.97	0.72	836	2.54	1.83	0.72	877	2.45	1.76	0.72	902
29	22	2.89	1.73	0.60	869	2.70	1.62	0.60	918	2.61	1.57	0.60	935
29	24	3.05	1.46	0.48	902	2.86	1.37	0.48	943	2.78	1.34	0.48	964
29	26	3.21	1.15	0.36	935	3.02	1.09	0.36	976	2.93	1.05	0.36	996
30	18	2.60	2.29	0.88	804	2.39	2.10	0.88	853	2.29	2.02	0.88	869
30	20	2.73	2.07	0.76	836	2.54	1.93	0.76	877	2.45	1.86	0.76	902
30	22	2.89	1.85	0.64	869	2.70	1.73	0.64	918	2.61	1.67	0.64	935
30	24	3.05	1.58	0.52	902	2.86	1.49	0.52	943	2.78	1.45	0.52	964
30	26	3.21	1.28	0.40	935	3.02	1.21	0.40	976	2.93	1.17	0.40	996
31	18	2.60	2.39	0.92	804	2.39	2.19	0.92	853	2.29	2.11	0.92	869
31	20	2.73	2.18	0.80	836	2.54	2.04	0.80	877	2.45	1.96	0.80	902
31	22	2.89	1.96	0.68	869	2.70	1.84	0.68	918	2.61	1.77	0.68	935
31	24	3.05	1.71	0.56	902	2.86	1.60	0.56	943	2.78	1.56	0.56	964
31	26	3.21	1.41	0.44	935	3.02	1.33	0.44	976	2.93	1.29	0.44	996
32	18	2.60	2.49	0.96	804	2.39	2.29	0.96	853	2.29	2.20	0.96	869
32	20	2.73	2.29	0.84	836	2.54	2.14	0.84	877	2.45	2.06	0.84	902
32	22	2.89	2.08	0.72	869	2.70	1.95	0.72	918	2.61	1.88	0.72	935
32	24	3.05	1.83	0.60	902	2.86	1.72	0.60	943	2.78	1.67	0.60	964
32	26	3.21	1.54	0.48	935	3.02	1.45	0.48	976	2.93	1.41	0.48	996

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
COOL operation (230V)

MSC-GA35VB : MUH-GA35VB

CAPACITY : 3.5(kW) SHF : 0.66 INPUT : 1090(W)

		OUTDOOR DB(℃)															
INDOOR	INDOOR	21				25				27				30			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	4.11	1.97	0.48	872	3.94	1.89	0.48	916	3.78	1.81	0.48	959	3.64	1.75	0.48	1003
21	20	4.29	1.54	0.36	916	4.11	1.48	0.36	970	3.99	1.44	0.36	992	3.85	1.39	0.36	1036
22	18	4.11	2.14	0.52	872	3.94	2.05	0.52	916	3.78	1.97	0.52	959	3.64	1.89	0.52	1003
22	20	4.29	1.72	0.40	916	4.11	1.65	0.40	970	3.99	1.60	0.40	992	3.85	1.54	0.40	1036
22	22	4.46	1.25	0.28	948	4.31	1.21	0.28	1008	4.20	1.18	0.28	1036	4.03	1.13	0.28	1079
23	18	4.11	2.30	0.56	872	3.94	2.21	0.56	916	3.78	2.12	0.56	959	3.64	2.04	0.56	1003
23	20	4.29	1.89	0.44	916	4.11	1.81	0.44	970	3.99	1.76	0.44	992	3.85	1.69	0.44	1036
23	22	4.46	1.43	0.32	948	4.31	1.38	0.32	1008	4.20	1.34	0.32	1036	4.03	1.29	0.32	1079
24	18	4.11	2.47	0.60	872	3.94	2.36	0.60	916	3.78	2.27	0.60	959	3.64	2.18	0.60	1003
24	20	4.29	2.06	0.48	916	4.11	1.97	0.48	970	3.99	1.92	0.48	992	3.85	1.85	0.48	1036
24	22	4.46	1.61	0.36	948	4.31	1.55	0.36	1008	4.20	1.51	0.36	1036	4.03	1.45	0.36	1079
24	24	4.69	1.13	0.24	992	4.52	1.08	0.24	1046	4.41	1.06	0.24	1079	4.27	1.02	0.24	1134
25	18	4.11	2.63	0.64	872	3.94	2.52	0.64	916	3.78	2.42	0.64	959	3.64	2.33	0.64	1003
25	20	4.29	2.23	0.52	916	4.11	2.14	0.52	970	3.99	2.07	0.52	992	3.85	2.00	0.52	1036
25	22	4.46	1.79	0.40	948	4.31	1.72	0.40	1008	4.20	1.68	0.40	1036	4.03	1.61	0.40	1079
25	24	4.69	1.31	0.28	992	4.52	1.26	0.28	1046	4.41	1.23	0.28	1079	4.27	1.20	0.28	1134
26	18	4.11	2.80	0.68	872	3.94	2.68	0.68	916	3.78	2.57	0.68	959	3.64	2.48	0.68	1003
26	20	4.29	2.40	0.56	916	4.11	2.30	0.56	970	3.99	2.23	0.56	992	3.85	2.16	0.56	1036
26	22	4.46	1.96	0.44	948	4.31	1.89	0.44	1008	4.20	1.85	0.44	1036	4.03	1.77	0.44	1079
26	24	4.69	1.50	0.32	992	4.52	1.44	0.32	1046	4.41	1.41	0.32	1079	4.27	1.37	0.32	1134
26	26	4.83	0.97	0.20	1046	4.69	0.94	0.20	1101	4.62	0.92	0.20	1134	4.48	0.90	0.20	1166
27	18	4.11	2.96	0.72	872	3.94	2.84	0.72	916	3.78	2.72	0.72	959	3.64	2.62	0.72	1003
27	20	4.29	2.57	0.60	916	4.11	2.47	0.60	970	3.99	2.39	0.60	992	3.85	2.31	0.60	1036
27	22	4.46	2.14	0.48	948	4.31	2.07	0.48	1008	4.20	2.02	0.48	1036	4.03	1.93	0.48	1079
27	24	4.69	1.69	0.36	992	4.52	1.63	0.36	1046	4.41	1.59	0.36	1079	4.27	1.54	0.36	1134
27	26	4.83	1.16	0.24	1046	4.69	1.13	0.24	1101	4.62	1.11	0.24	1134	4.48	1.08	0.24	1166
28	18	4.11	3.13	0.76	872	3.94	2.99	0.76	916	3.78	2.87	0.76	959	3.64	2.77	0.76	1003
28	20	4.29	2.74	0.64	916	4.11	2.63	0.64	970	3.99	2.55	0.64	992	3.85	2.46	0.64	1036
28	22	4.46	2.32	0.52	948	4.31	2.24	0.52	1008	4.20	2.18	0.52	1036	4.03	2.09	0.52	1079
28	24	4.69	1.88	0.40	992	4.52	1.81	0.40	1046	4.41	1.76	0.40	1079	4.27	1.71	0.40	1134
28	26	4.83	1.35	0.28	1046	4.69	1.31	0.28	1101	4.62	1.29	0.28	1134	4.48	1.25	0.28	1166
29	18	4.11	3.29	0.80	872	3.94	3.15	0.80	916	3.78	3.02	0.80	959	3.64	2.91	0.80	1003
29	20	4.29	2.92	0.68	916	4.11	2.80	0.68	970	3.99	2.71	0.68	992	3.85	2.62	0.68	1036
29	22	4.46	2.50	0.56	948	4.31	2.41	0.56	1008	4.20	2.35	0.56	1036	4.03	2.25	0.56	1079
29	24	4.69	2.06	0.44	992	4.52	1.99	0.44	1046	4.41	1.94	0.44	1079	4.27	1.88	0.44	1134
29	26	4.83	1.55	0.32	1046	4.69	1.50	0.32	1101	4.62	1.48	0.32	1134	4.48	1.43	0.32	1166
30	18	4.11	3.45	0.84	872	3.94	3.31	0.84	916	3.78	3.18	0.84	959	3.64	3.06	0.84	1003
30	20	4.29	3.09	0.72	916	4.11	2.96	0.72	970	3.99	2.87	0.72	992	3.85	2.77	0.72	1036
30	22	4.46	2.68	0.60	948	4.31	2.58	0.60	1008	4.20	2.52	0.60	1036	4.03	2.42	0.60	1079
30	24	4.69	2.25	0.48	992	4.52	2.17	0.48	1046	4.41	2.12	0.48	1079	4.27	2.05	0.48	1134
30	26	4.83	1.74	0.36	1046	4.69	1.69	0.36	1101	4.62	1.66	0.36	1134	4.48	1.61	0.36	1166
31	18	4.11	3.62	0.88	872	3.94	3.47	0.88	916	3.78	3.33	0.88	959	3.64	3.20	0.88	1003
31	20	4.29	3.26	0.76	916	4.11	3.13	0.76	970	3.99	3.03	0.76	992	3.85	2.93	0.76	1036
31	22	4.46	2.86	0.64	948	4.31	2.76	0.64	1008	4.20	2.69	0.64	1036	4.03	2.58	0.64	1079
31	24	4.69	2.44	0.52	992	4.52	2.35	0.52	1046	4.41	2.29	0.52	1079	4.27	2.22	0.52	1134
31	26	4.83	1.93	0.40	1046	4.69	1.88	0.40	1101	4.62	1.85	0.40	1134	4.48	1.79	0.40	1166
32	18	4.11	3.78	0.92	872	3.94	3.62	0.92	916	3.78	3.48	0.92	959	3.64	3.35	0.92	1003
32	20	4.29	3.43	0.80	916	4.11	3.29	0.80	970	3.99	3.19	0.80	992	3.85	3.08	0.80	1036
32	22	4.46	3.03	0.68	948	4.31	2.93	0.68	1008	4.20	2.86	0.68	1036	4.03	2.74	0.68	1079
32	24	4.69	2.63	0.56	992	4.52	2.53	0.56	1046	4.41	2.47	0.56	1079	4.27	2.39	0.56	1134
32	26	4.83	2.13	0.44	1046	4.69	2.06	0.44	1101	4.62	2.03	0.44	1134	4.48	1.97	0.44	1166

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
COOL operation (230V)

MSC-GA35VB : MUH-GA35VB

CAPACITY : 3.5(kW) SHF : 0.66 INPUT : 1090(W)

		OUTDOOR DB(℃)											
INDOOR	INDOOR	35				40				43			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	3.43	1.65	0.48	1068	3.15	1.51	0.48	1134	3.03	1.45	0.48	1155
21	20	3.61	1.30	0.36	1112	3.36	1.21	0.36	1166	3.24	1.17	0.36	1199
22	18	3.43	1.78	0.52	1068	3.15	1.64	0.52	1134	3.03	1.57	0.52	1155
22	20	3.61	1.44	0.40	1112	3.36	1.34	0.40	1166	3.24	1.30	0.40	1199
22	22	3.82	1.07	0.28	1155	3.57	1.00	0.28	1221	3.45	0.97	0.28	1243
23	18	3.43	1.92	0.56	1068	3.15	1.76	0.56	1134	3.03	1.70	0.56	1155
23	20	3.61	1.59	0.44	1112	3.36	1.48	0.44	1166	3.24	1.42	0.44	1199
23	22	3.82	1.22	0.32	1155	3.57	1.14	0.32	1221	3.45	1.10	0.32	1243
24	18	3.43	2.06	0.60	1068	3.15	1.89	0.60	1134	3.03	1.82	0.60	1155
24	20	3.61	1.73	0.48	1112	3.36	1.61	0.48	1166	3.24	1.55	0.48	1199
24	22	3.82	1.37	0.36	1155	3.57	1.29	0.36	1221	3.45	1.24	0.36	1243
24	24	4.03	0.97	0.24	1199	3.78	0.91	0.24	1254	3.68	0.88	0.24	1281
25	18	3.43	2.20	0.64	1068	3.15	2.02	0.64	1134	3.03	1.94	0.64	1155
25	20	3.61	1.87	0.52	1112	3.36	1.75	0.52	1166	3.24	1.68	0.52	1199
25	22	3.82	1.53	0.40	1155	3.57	1.43	0.40	1221	3.45	1.38	0.40	1243
25	24	4.03	1.13	0.28	1199	3.78	1.06	0.28	1254	3.68	1.03	0.28	1281
26	18	3.43	2.33	0.68	1068	3.15	2.14	0.68	1134	3.03	2.06	0.68	1155
26	20	3.61	2.02	0.56	1112	3.36	1.88	0.56	1166	3.24	1.81	0.56	1199
26	22	3.82	1.68	0.44	1155	3.57	1.57	0.44	1221	3.45	1.52	0.44	1243
26	24	4.03	1.29	0.32	1199	3.78	1.21	0.32	1254	3.68	1.18	0.32	1281
26	26	4.24	0.85	0.20	1243	3.99	0.80	0.20	1297	3.87	0.77	0.20	1324
27	18	3.43	2.47	0.72	1068	3.15	2.27	0.72	1134	3.03	2.18	0.72	1155
27	20	3.61	2.16	0.60	1112	3.36	2.02	0.60	1166	3.24	1.94	0.60	1199
27	22	3.82	1.83	0.48	1155	3.57	1.71	0.48	1221	3.45	1.65	0.48	1243
27	24	4.03	1.45	0.36	1199	3.78	1.36	0.36	1254	3.68	1.32	0.36	1281
27	26	4.24	1.02	0.24	1243	3.99	0.96	0.24	1297	3.87	0.93	0.24	1324
28	18	3.43	2.61	0.76	1068	3.15	2.39	0.76	1134	3.03	2.30	0.76	1155
28	20	3.61	2.31	0.64	1112	3.36	2.15	0.64	1166	3.24	2.07	0.64	1199
28	22	3.82	1.98	0.52	1155	3.57	1.86	0.52	1221	3.45	1.79	0.52	1243
28	24	4.03	1.61	0.40	1199	3.78	1.51	0.40	1254	3.68	1.47	0.40	1281
28	26	4.24	1.19	0.28	1243	3.99	1.12	0.28	1297	3.87	1.08	0.28	1324
29	18	3.43	2.74	0.80	1068	3.15	2.52	0.80	1134	3.03	2.42	0.80	1155
29	20	3.61	2.45	0.68	1112	3.36	2.28	0.68	1166	3.24	2.20	0.68	1199
29	22	3.82	2.14	0.56	1155	3.57	2.00	0.56	1221	3.45	1.93	0.56	1243
29	24	4.03	1.77	0.44	1199	3.78	1.66	0.44	1254	3.68	1.62	0.44	1281
29	26	4.24	1.36	0.32	1243	3.99	1.28	0.32	1297	3.87	1.24	0.32	1324
30	18	3.43	2.88	0.84	1068	3.15	2.65	0.84	1134	3.03	2.54	0.84	1155
30	20	3.61	2.60	0.72	1112	3.36	2.42	0.72	1166	3.24	2.33	0.72	1199
30	22	3.82	2.29	0.60	1155	3.57	2.14	0.60	1221	3.45	2.07	0.60	1243
30	24	4.03	1.93	0.48	1199	3.78	1.81	0.48	1254	3.68	1.76	0.48	1281
30	26	4.24	1.52	0.36	1243	3.99	1.44	0.36	1297	3.87	1.39	0.36	1324
31	18	3.43	3.02	0.88	1068	3.15	2.77	0.88	1134	3.03	2.66	0.88	1155
31	20	3.61	2.74	0.76	1112	3.36	2.55	0.76	1166	3.24	2.46	0.76	1199
31	22	3.82	2.44	0.64	1155	3.57	2.28	0.64	1221	3.45	2.21	0.64	1243
31	24	4.03	2.09	0.52	1199	3.78	1.97	0.52	1254	3.68	1.91	0.52	1281
31	26	4.24	1.69	0.40	1243	3.99	1.60	0.40	1297	3.87	1.55	0.40	1324
32	18	3.43	3.16	0.92	1068	3.15	2.90	0.92	1134	3.03	2.79	0.92	1155
32	20	3.61	2.88	0.80	1112	3.36	2.69	0.80	1166	3.24	2.59	0.80	1199
32	22	3.82	2.59	0.68	1155	3.57	2.43	0.68	1221	3.45	2.34	0.68	1243
32	24	4.03	2.25	0.56	1199	3.78	2.12	0.56	1254	3.68	2.06	0.56	1281
32	26	4.24	1.86	0.44	1243	3.99	1.76	0.44	1297	3.87	1.70	0.44	1324

NOTE Q :Total capacity (kW) SHF :Sensible heat factor DB :Dry-bulb temperature
SHC :Sensible heat capacity (kW) INPUT :Total power input (W) WB :Wet-bulb temperature

PERFORMANCE DATA
HEAT operation (230V)

MSC-GA20VB : MUH-GA20VB

CAPACITY : 2.5(kW) INPUT : 690(W)

	OUTDOOR WB(℃)													
INDOOR	-10		-5		0		5		10		15		20	
DB(℃)	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	1.58	449	1.90	538	2.23	607	2.55	656	2.88	697	3.18	718	3.50	731
21	1.50	483	1.80	573	2.13	635	2.43	683	2.75	718	3.05	738	3.36	766
26	1.35	518	1.68	607	1.98	669	2.30	718	2.63	752	2.93	773	3.25	794

MSC-GA25VB : MUH-GA25VB

CAPACITY : 3.0(kW) INPUT : 820(W)

	OUTDOOR WB(℃)													
INDOOR	-10		-5		0		5		10		15		20	
DB(℃)	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	1.89	533	2.28	640	2.67	722	3.06	779	3.45	828	3.81	853	4.20	869
21	1.80	574	2.16	681	2.55	754	2.91	812	3.30	853	3.66	877	4.04	910
26	1.62	615	2.01	722	2.37	795	2.76	853	3.15	894	3.51	918	3.90	943

MSC-GA35VB : MUH-GA35VB

CAPACITY : 3.7(kW) INPUT : 1020(W)

	OUTDOOR WB(℃)													
INDOOR	-10		-5		0		5		10		15		20	
DB(℃)	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT	Q	INPUT
15	2.33	663	2.81	796	3.29	898	3.77	969	4.26	1030	4.70	1061	5.18	1081
21	2.22	714	2.66	847	3.15	938	3.59	1010	4.07	1061	4.51	1091	4.98	1132
26	2.00	765	2.48	898	2.92	989	3.40	1061	3.89	1112	4.33	1142	4.81	1173

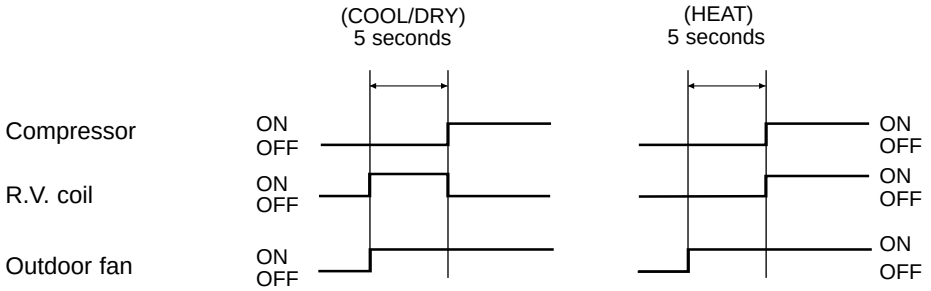
NOTE Q:Total capacity (kW) INPUT:Total power input (W) DB:Dry-bulb temperature WB:Wet-bulb temperature

9 ACTUATOR CONTROL

R.V. coil control

Heating	ON
Cooling	OFF
Dry	OFF

NOTE: The 4-way valve reverses for 5 seconds right before start-up of the compressor.



10 SERVICE FUNCTIONS

MUH-GA20VB
MUH-GA25VB
MUH-GA35VB

10-1. COMPULSORY DEFROSTING MODE FOR SERVICE

By short circuit of the connector JPDS and JPSG on the outdoor deicer P.C. board, defrosting mode can be accomplished regardless of the defrost interval restriction. (Refer to 11-5.)
Defrost thermistor RT61 must read below -3°C.

10-2. CHANGE IN DEFROST SETTING

<JRF> When the JRF wire of the deicer P.C. board is cut, the defrost interval time will be changed.
<JRG> When the JRG wire of the deicer P.C. board is cut, the defrost temperature will be changed.(Refer to 11-5.)

MODEL	Jumper wire	Change point
MUH-GA20VB MUH-GA25VB	JRF	Defrost interval time changes from 40 minutes to 15 minutes.
MUH-GA35VB	JRG	Defrost start temperature changes from -3℃ to 0℃.

11 TROUBLESHOOTING

MUH-GA20VB
MUH-GA25VB
MUH-GA35VB

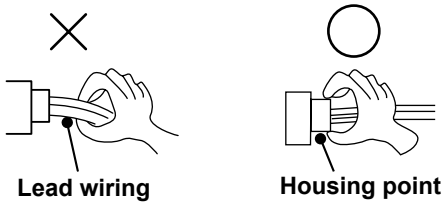
11-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following:

1) Check the power supply voltage.
2) Check the indoor/outdoor connecting wire for mis-wiring.

2. Take care the following during servicing.

1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and then 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 electronic control P.C. board.
3) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
4) When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.

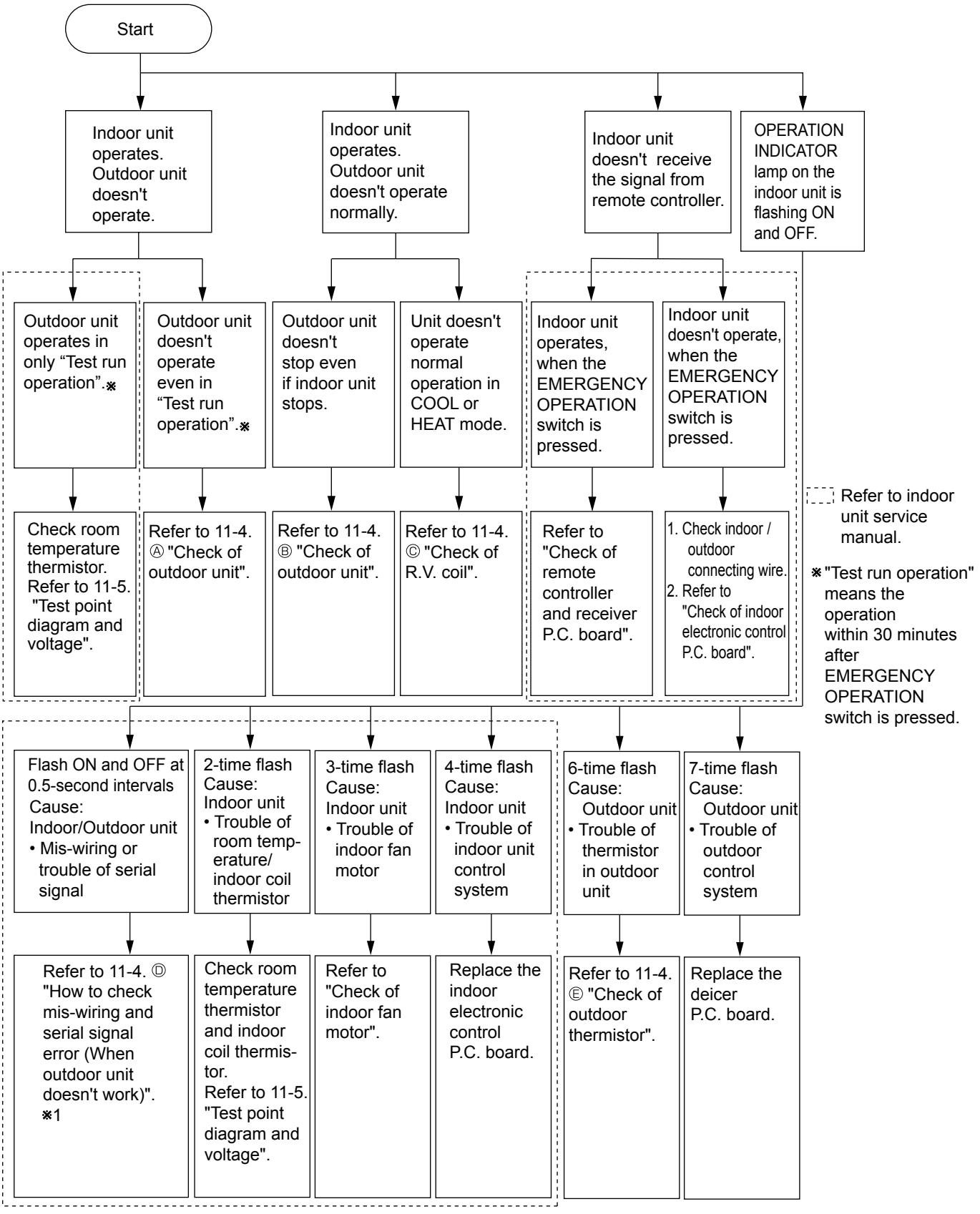


3. Troubleshooting procedure

1) First, 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) If the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
3) When troubleshooting, refer to 11-2. “Instruction of troubleshooting”.

11-2. INSTRUCTION OF TROUBLESHOOTING

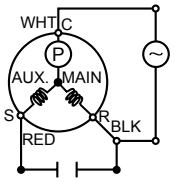
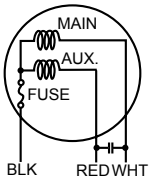
MUH-GA20VB MUH-GA25VB MUH-GA35VB



※1.<The case of the trouble of the serial signal>
When the power is turned OFF and then turned ON again, the indication shows "the trouble of mis-wiring".

11-3. TROUBLE CRITERION OF MAIN PARTS

MUH-GA20VB MUH-GA25VB MUH-GA35VB

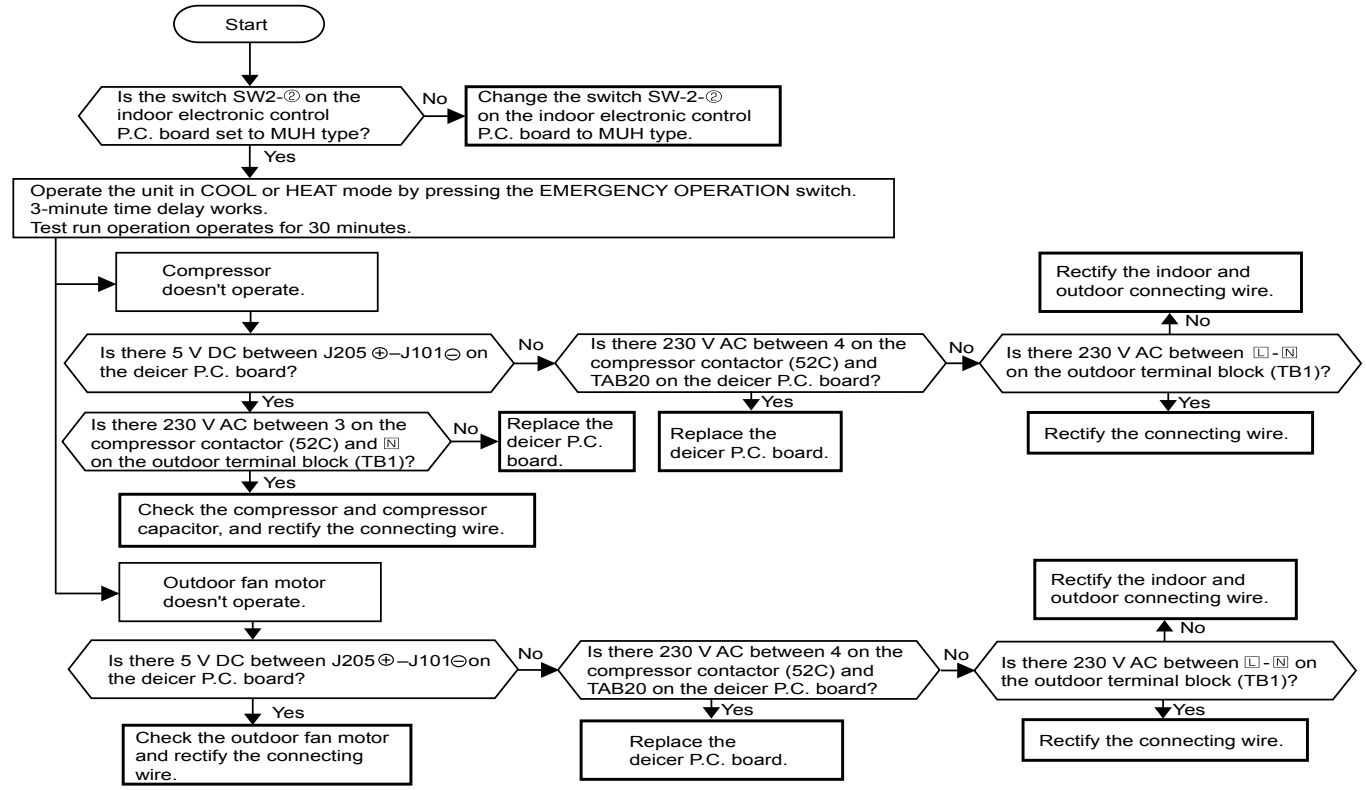
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT63)</td><td>Measure the resistance with a tester.
(Part temperature –10°C ~ 40°C)
Refer to 11-5. “Test point diagram and voltage”, “Outdoor deicer P.C. board”, the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor (MC)
INNER PROTECTOR
MUH-GA20/GA25VB- E1
150± 5°C OPEN
90±10°C CLOSE
MUH-GA20/GA25VB- E2, E3
160± 5°C OPEN
90±10°C CLOSE
MUH-GA35VB
155± 5°C OPEN
90±10°C CLOSE</td><td>Measure the resistance between the terminals with a tester.
(Coil wiring temperature –10°C ~ 40°C)
<table><tr><th rowspan="2">Terminal</th><th colspan="5">Normal</th></tr><tr><th>MUH-GA20VB- E1</th><th>MUH-GA20VB- E2</th><th>MUH-GA25VB- E1</th><th>MUH-GA25VB- E2, E3</th><th>MUH-GA35VB</th></tr><tr><td>C-R</td><td>3.41~4.18 Ω</td><td>3.19~3.91 Ω</td><td>2.99~3.67 Ω</td><td>3.19~3.91 Ω</td><td>2.46~3.01 Ω</td></tr><tr><td>C-S</td><td>5.41~6.63 Ω</td><td>4.76~5.83 Ω</td><td>4.02~4.92 Ω</td><td>4.76~5.83 Ω</td><td>2.96~3.63 Ω</td></tr></table></td><td>  </td></tr>
<tr><td>Outdoor fan motor (MF)
INNER FUSE
145± 2°C
CUT OFF</td><td>Measure the resistance between the terminals with a tester.
(Coil wiring temperature –10°C ~ 40°C)
<table><tr><th rowspan="2">Color of lead wire</th><th colspan="2">Normal</th></tr><tr><th>MUH-GA20VB</th><th>MUH-GA25/GA35VB</th></tr><tr><td>WHT-BLK</td><td>323 ~ 396 Ω</td><td>189 ~ 233 Ω</td></tr><tr><td>BLK-RED</td><td>241 ~ 296 Ω</td><td>270 ~ 332 Ω</td></tr></table></td><td>  </td></tr>
</table>

Ⓟ INNER PROTECTOR

11-4. TROUBLESHOOTING FLOW

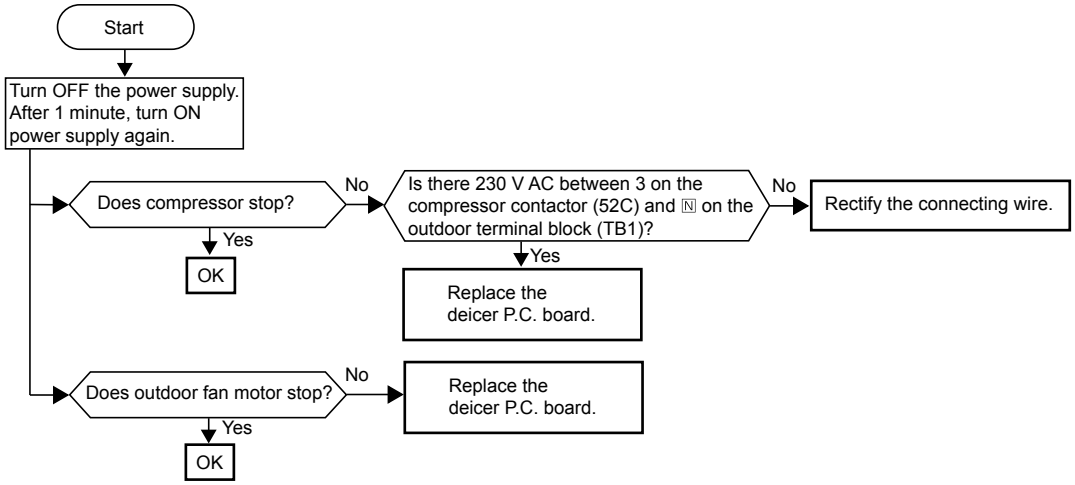
Compressor and/or outdoor fan motor doesn’t operate.

Ⓐ Check of outdoor unit



Compressor and/or outdoor fan motor doesn't stop.

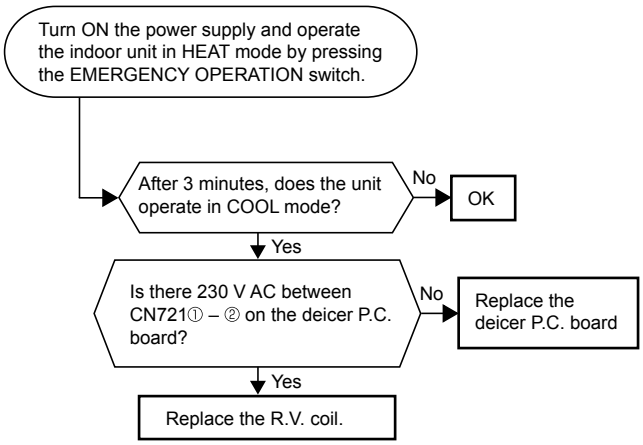
Ⓑ Check of outdoor unit



Ⓒ Check of R.V. coil

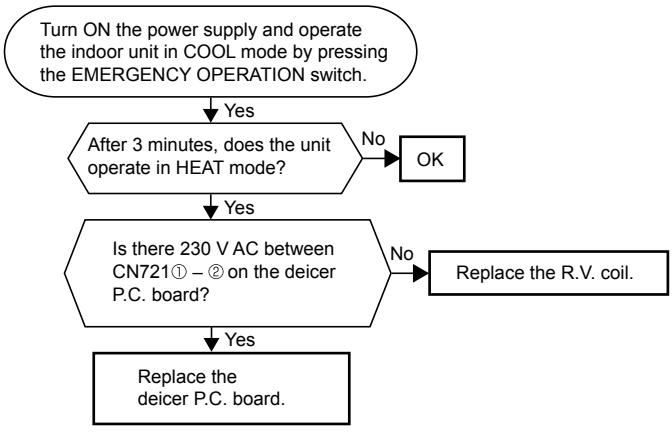
Unit operates COOL mode even if it is set to HEAT mode.

※ First, measure the resistance of R.V. coil to confirm it is disconnected or is not short-circuit.



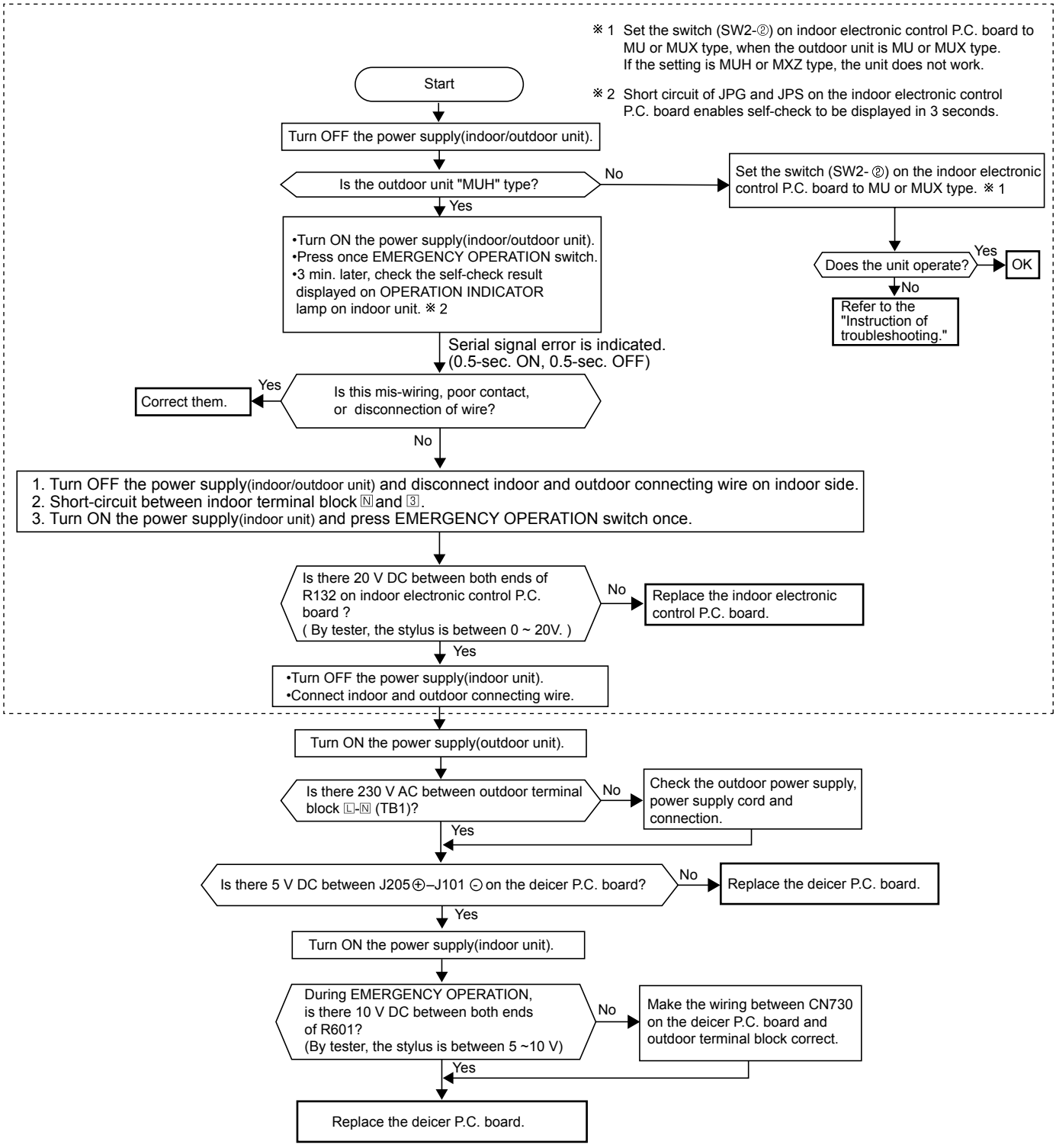
Unit operates HEAT mode even if it is set to COOL mode.

※ First, measure the resistance of R.V. coil to confirm it is disconnected or is not short-circuit.



When OPERATION INDICATOR lamp flashes 0.5-second intervals.
Outdoor unit does not operate.

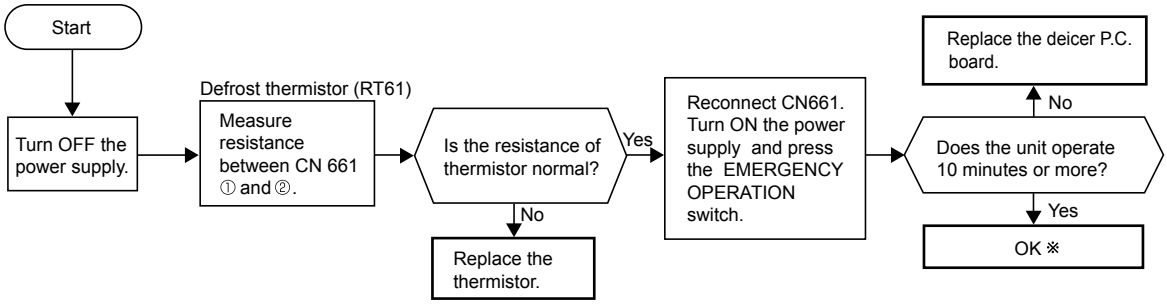
Ⓓ How to check mis-wiring and serial signal error



Refer to indoor unit service manual.

When OPERATION INDICATOR lamp flashes 6-time.
Thermistors in the outdoor unit are abnormal.

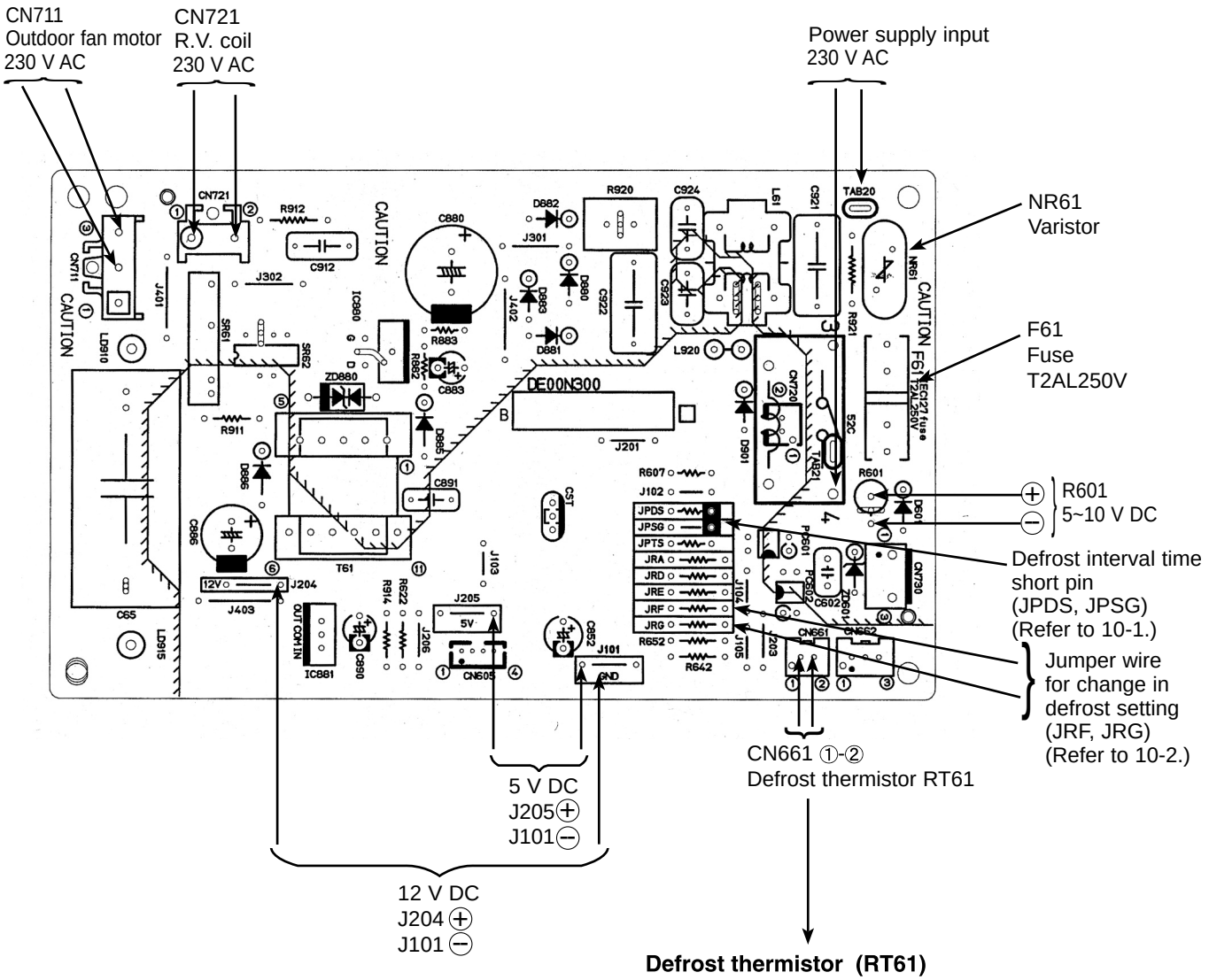
Ⓔ Check of outdoor thermistor

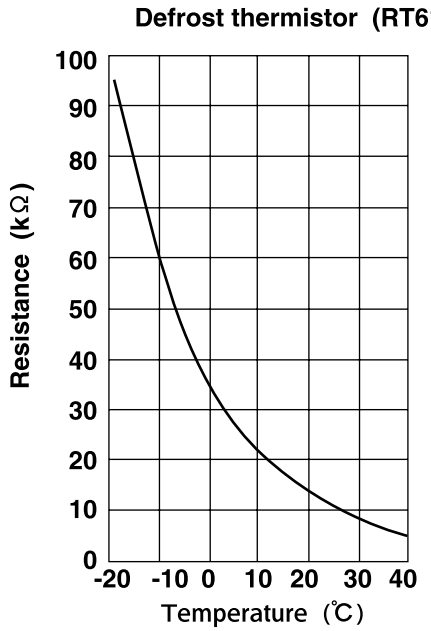


※ Defective contact of the connector is considered.

11-5. TEST POINT DIAGRAM AND VOLTAGE

MUH-GA20VB
MUH-GA25VB
MUH-GA35VB
Outdoor deicer P.C. board



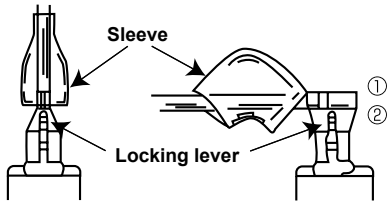


12 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

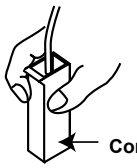
The terminal which has the locking mechanism can be detached as shown below.
There are two types (Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.



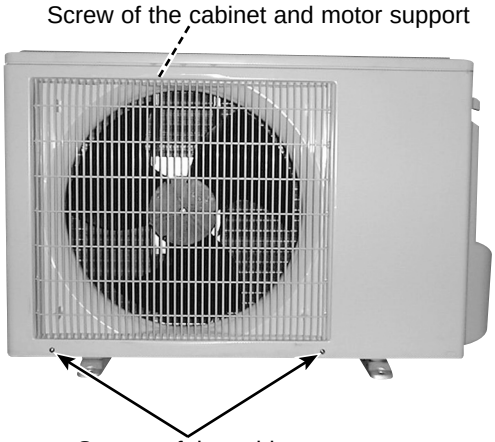
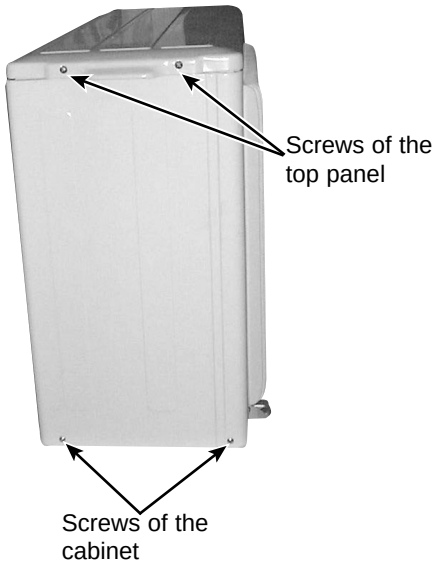
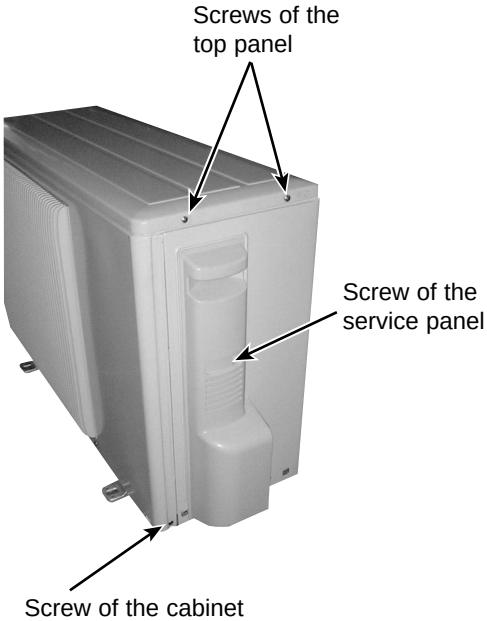
① Slide the sleeve.
② Pull the terminal while pushing the locking lever.

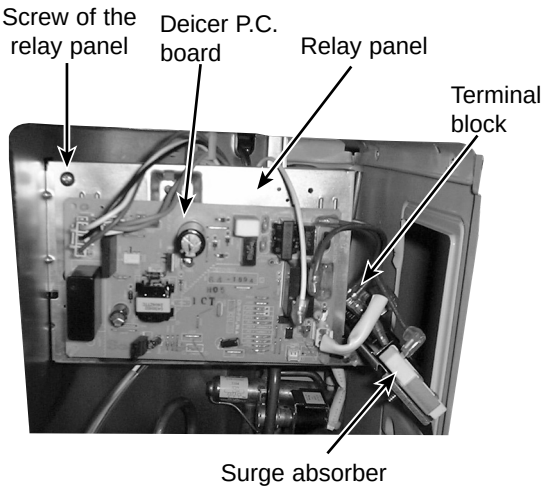
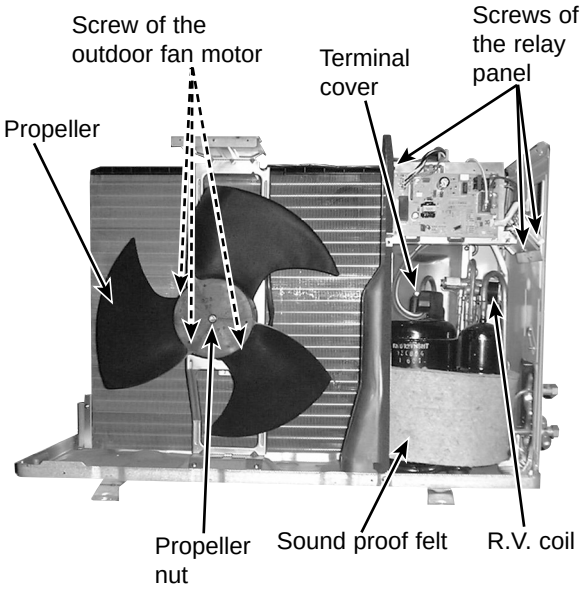
(2) The terminal with this connector has the locking mechanism.

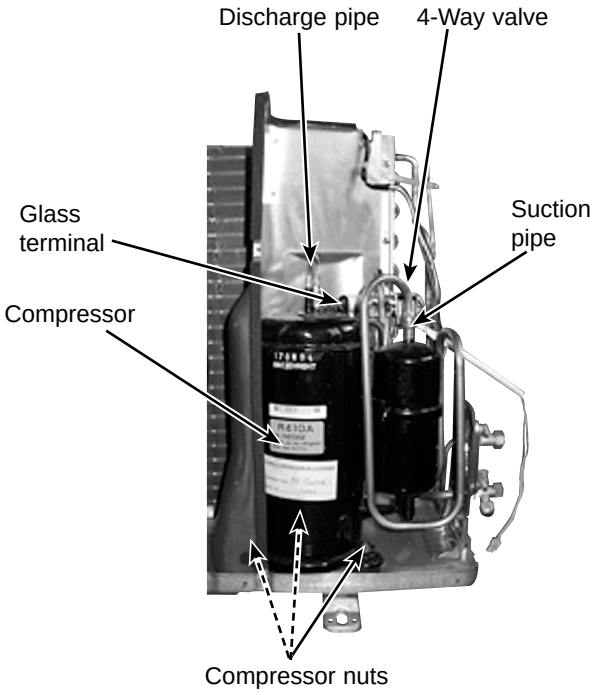


① Hold the sleeve, and pull out the terminal slowly.

MUH-GA20VB MUH-GA25VB MUH-GA35VB OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the top panel. (2) Remove the screw of the service panel. (3) Remove the screws of the cabinet. (4) Remove the screws of the cabinet and motor support. (5) Remove the service panel, and remove the screw from the insides. (6) Remove the top panel. (7) Remove the cabinet.	**Photo 1**  **Photo 2** **MUH-GA20VB** 
Photo 3  	

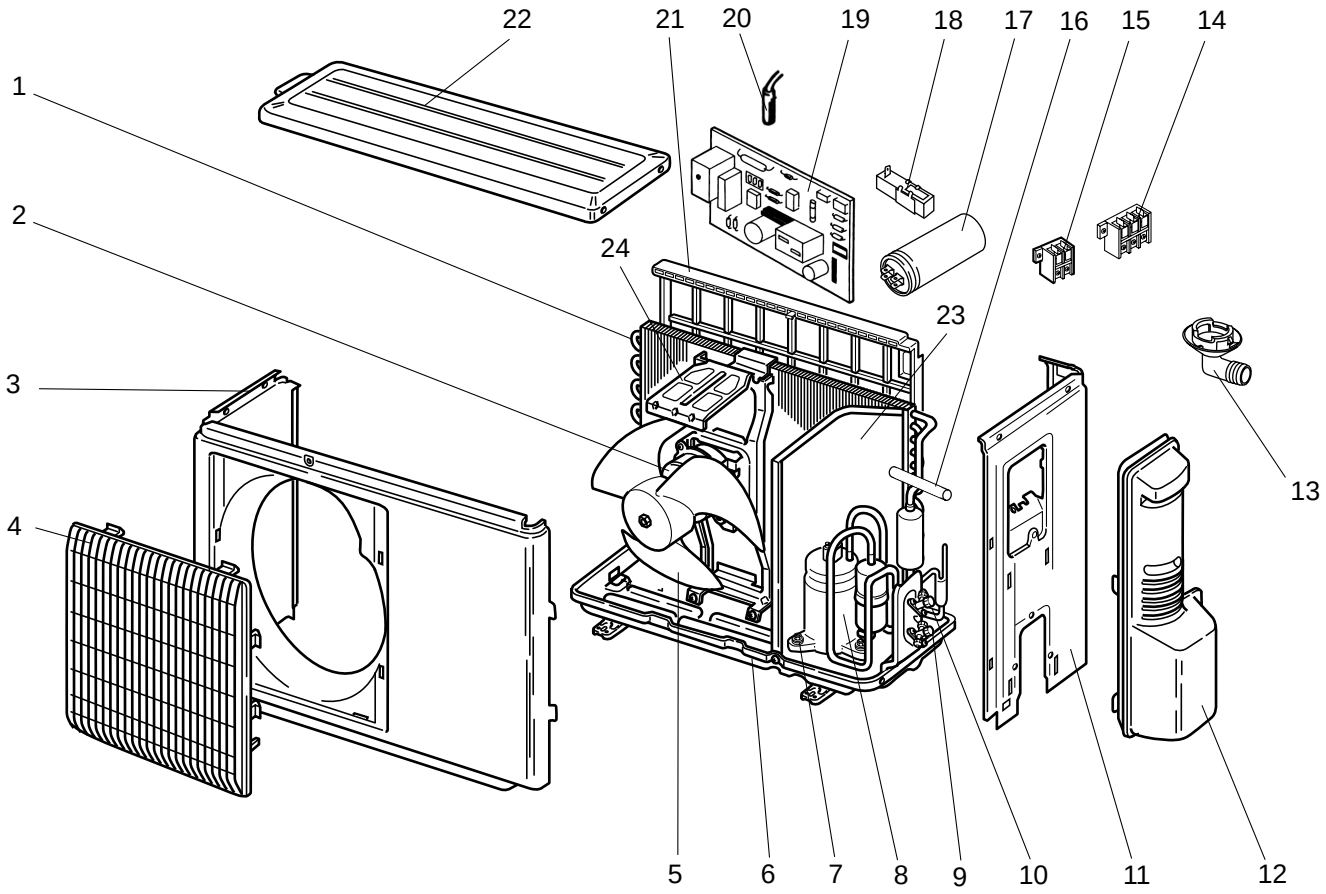
OPERATING PROCEDURE	PHOTOS
2. Removing the deicer P.C. board (1) Remove the service panel and the cabinet. (Refer to 1.) (2) Disconnect all the connectors and the terminals on the deicer P.C. board. (3) Remove the deicer P.C. board.	**Photo 4** 
3. Removing the propeller and the outdoor fan motor (1) Remove the cabinet. (Refer to 1.) (2) Remove the propeller nut. (3) Remove the propeller. **NOTE: Loose the propeller in the rotating direction for removal.** When attaching the propeller, align the mark on the propeller and the motor shaft cut section. Set the propeller in position by using the cut on the shaft and the mark on the propeller. (4) Disconnect the outdoor fan motor connector. (5) Remove screws fixing the fan motor. (6) Remove the outdoor fan motor.	**Photo 5** **MUH-GA20VB** 

OPERATING PROCEDURE	PHOTOS
4. Removing the compressor (1) Remove the cabinet. (Refer to 1.) (2) Remove the relay panel. (3) Remove the soundproof felt. (4) Remove the terminal cover on the compressor. (5) Disconnect lead wires from the glass terminal of the compressor. (6) Recover gas from the refrigerant circuit. **NOTE:** Recover gas from the pipes until the pressure gauge shows 0 kg/cm^2 (0 MPa). (7) Disconnect the welded part of the discharge pipe. (8) Disconnect the welded part of the suction pipe. (9) Remove nuts fixing the compressor. (10) Remove the compressor.	**Photo 6** 

13 PARTS LIST (non-RoHS compliant)

MUH-GA20VB MUH-GA25VB MUH-GA35VB

13-1. OUTDOOR UNIT
STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



This figure shows MUH-GA20VB.

PARTS LIST (non-RoHS compliant)

MUH-GA20VB MUH-GA25VB MUH-GA35VB

13-1. OUTDOOR UNIT
STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

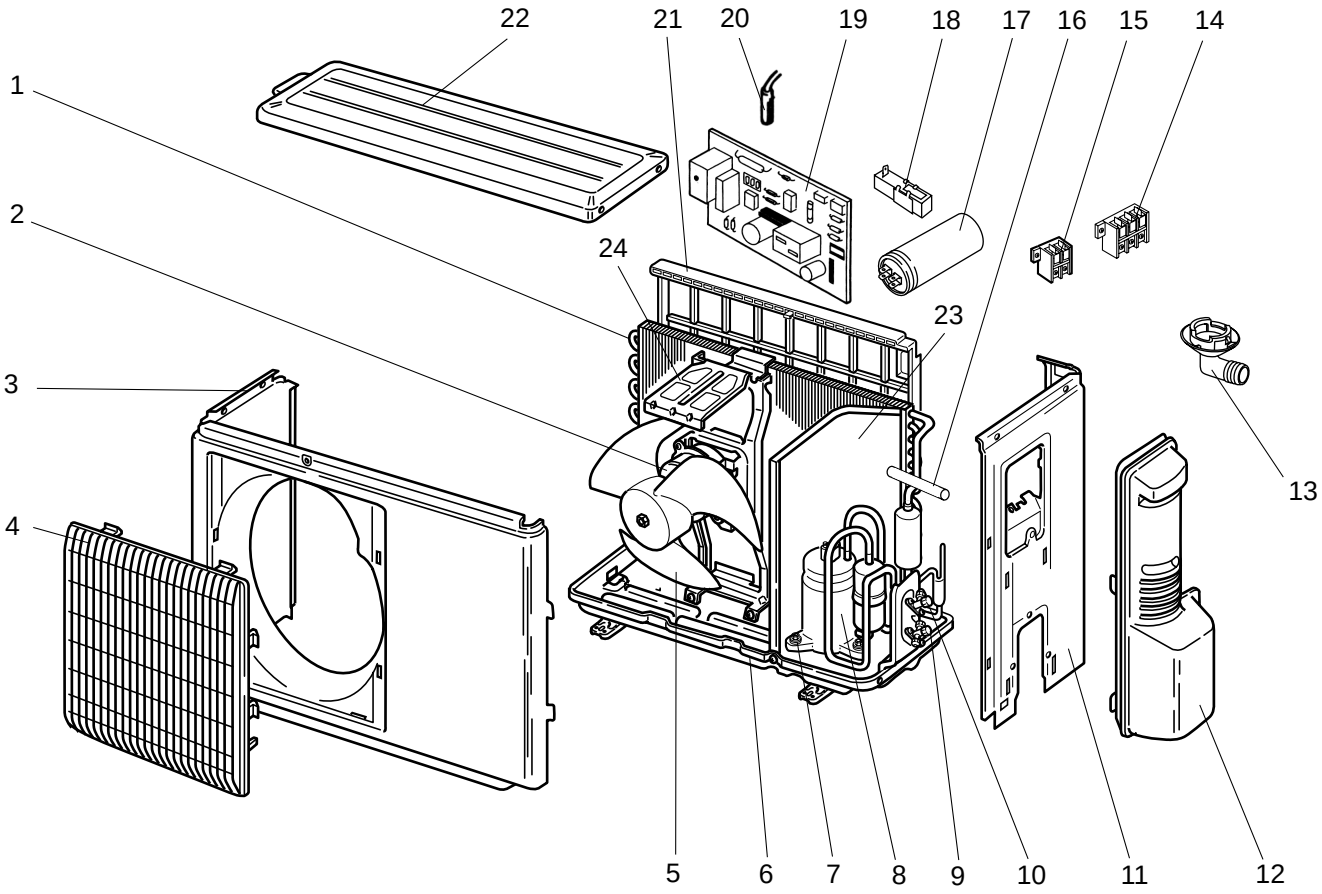
Part numbers that are circled are not shown in the illustration.

No.	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit			Remarks
				MUH-GA20VB -	MUH-GA25VB -	MUH-GA35VB -	
				E1	E1	E1	
1	E02 904 630	OUTDOOR HEAT EXCHANGER		1			
	E02 905 630	OUTDOOR HEAT EXCHANGER			1		
	E02 906 630	OUTDOOR HEAT EXCHANGER				1	
2	E02 904 301	OUTDOOR FAN MOTOR	MF	1			RA6V21-□□
	E02 905 301	OUTDOOR FAN MOTOR	MF		1	1	RA6V33-□□
3	E02 899 232	CABINET		1			
	E02 903 232	CABINET			1	1	
4	E02 927 521	GRILLE		1	1	1	
5	E02 665 501	PROPELLER		1	1	1	
6	E02 899 290	BASE		1			
	E02 905 290	BASE			1	1	
7	E02 075 506	COMPRESSOR RUBBER SET		3	3	3	3RUBBERS/SET
8	E02 742 900	COMPRESSOR	MC	1			RN092VHSHT
	E02 753 900	COMPRESSOR	MC		1		RN104VHSHT
	E02 754 900	COMPRESSOR	MC			1	RN135VHSHT
9	E02 904 661	STOP VALVE (GAS)		1	1	1	ø9.52
10	E02 904 662	STOP VALVE (LIQUID)		1	1	1	ø6.35
11	E02 901 233	BACK PANEL		1			
	E02 927 233	BACK PANEL			1	1	
12	E02 927 245	SERVICE PANEL		1	1	1	
13	E02 838 704	DRAIN SOCKET		1	1	1	
14	E02 817 374	TERMINAL BLOCK	TB1	1	1	1	3P
15	E02 836 374	TERMINAL BLOCK	TB2	1	1	1	2P
16	E02 927 961	4-WAY VALVE		1	1		
	E02 931 961	4-WAY VALVE				1	
17	E02 742 353	COMPRESSOR CAPACITOR	C1	1			20μF/440 V AC
	E02 665 353	COMPRESSOR CAPACITOR	C1		1		25μF/440 V AC
	E02 900 353	COMPRESSOR CAPACITOR	C1			1	30μF/440 V AC
18	E02 895 383	SURGE ABSORBER	DSAR	1	1	1	
19	E02 904 451	DEICER P.C. BOARD		1			
	E02 905 451	DEICER P.C. BOARD			1	1	
20	E02 906 310	DEFROST THERMISTOR	RT61	1	1	1	
21	E02 899 523	CONDENSER NET		1			
	E02 838 523	CONDENSER NET			1	1	
22	E02 927 297	TOP PANEL		1	1	1	
23	E02 899 293	SEPARATOR		1	1	1	
24	E02 899 515	MOTOR SUPPORT		1	1	1	
㉕	E02 904 490	R. V. COIL	21S4	1	1		
	E02 906 490	R. V. COIL	21S4			1	
㉖	E02 095 382	FUSE	F61	1	1	1	T2AL250V
㉗	E02 820 385	VARISTOR	NR61	1	1	1	
㉘	E02 891 642	CHECK VALVE		1	1	1	
㉙	E02 408 936	CAPILLARY TUBE		1			ø3.0 × ø1.4 × 700
㉚	E02 156 936	CAPILLARY TUBE		1		1	ø3.0 × ø1.4 × 500
㉛	E02 024 936	CAPILLARY TUBE			1		ø3.0 × ø1.4 × 1000
㉜	E02 339 936	CAPILLARY TUBE			1		ø3.0 × ø1.4 × 600
㉝	E02 282 936	CAPILLARY TUBE				1	ø3.0 × ø1.4 × 300

14 RoHS PARTS LIST (RoHS compliant)

MUH-GA20VB MUH-GA25VB MUH-GA35VB

14-1. OUTDOOR UNIT
STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



This figure shows MUH-GA20VB.

RoHS PARTS LIST (RoHS compliant)

MUH-GA20VB MUH-GA25VB MUH-GA35VB

14-1. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

No.	RoHS	Part No.	Part name	Symbol in Wiring Diagram	Q'ty/unit							Remarks
					MUH-GA20VB-		MUH-GA25VB-			MUH-GA35VB-		
					E1	E2	E1	E2	E3	E1	E3	
1	G	E12 904 630	OUTDOOR HEAT EXCHANGER		1	1						
	G	E12 905 630	OUTDOOR HEAT EXCHANGER				1	1				
	G	E12 906 630	OUTDOOR HEAT EXCHANGER							1		
	G	E12 A86 630	OUTDOOR HEAT EXCHANGER						1		1	
2	G	E12 904 301	OUTDOOR FAN MOTOR	MF	1	1						RA6V21-□□
	G	E12 905 301	OUTDOOR FAN MOTOR	MF			1	1	1	1	1	RA6V33-□□
3	G	E12 899 232	CABINET		1	1						
	G	E12 903 232	CABINET				1	1	1	1	1	
4	G	E12 927 521	GRILLE		1	1	1	1	1	1	1	
5	G	E12 665 501	PROPELLER		1	1	1	1	1	1	1	
6	G	E12 899 290	BASE		1							
	G	E12 905 290	BASE				1			1	1	
	G	E12 B14 290	BASE			1						
	G	E12 D04 290	BASE					1	1			
7	G	E12 075 506	COMPRESSOR RUBBER SET		3		3			3	3	3RUBBERS/SET
	G	E12 065 506	COMPRESSOR RUBBER SET			3		3	3			3RUBBERS/SET
8	G	E12 742 900	COMPRESSOR	MC	1							RN092VHSHT
	G	E12 753 900	COMPRESSOR	MC			1					RN104VHSHT
	G	E12 754 900	COMPRESSOR	MC						1	1	RN135VHSHT
	G	E12 B14 900	COMPRESSOR	MC		1						KN092VDMHC
	G	E12 B17 900	COMPRESSOR	MC				1	1			KN104VTMHC
9	G	E12 904 661	STOP VALVE (GAS)		1	1	1	1	1	1	1	ø9.52
10	G	E12 904 662	STOP VALVE (LIQUID)		1		1			1		ø6.35
	G	E12 B16 662	STOP VALVE (LIQUID)			1		1	1		1	ø6.35
11	G	E12 901 233	BACK PANEL		1	1						
	G	E12 927 233	BACK PANEL				1	1	1	1	1	
12	G	E12 927 245	SERVICE PANEL		1	1	1	1	1	1	1	
13	G	E12 838 704	DRAIN SOCKET		1	1	1	1	1	1	1	
14	G	E12 817 374	TERMINAL BLOCK	TB1	1	1	1	1	1	1	1	3P
15	G	E12 836 374	TERMINAL BLOCK	TB2	1	1	1	1	1	1	1	2P
16	G	E12 927 961	4-WAY VALVE		1	1	1	1	1			
	G	E12 931 961	4-WAY VALVE							1	1	
17	G	E12 742 353	COMPRESSOR CAPACITOR	C1	1							20μF /440 V AC
	G	E12 665 353	COMPRESSOR CAPACITOR	C1		1	1	1	1			25μF /440 V AC
	G	E12 900 353	COMPRESSOR CAPACITOR	C1						1	1	30μF /440 V AC
18	G	E12 895 383	SURGE ABSORBER	DSAR	1	1	1	1	1	1	1	
19	G	E12 904 451	DEICER P.C. BOARD		1							
	G	E12 905 451	DEICER P.C. BOARD				1			1	1	
	G	E12 B16 451	DEICER P.C. BOARD			1						
	G	E12 B17 451	DEICER P.C. BOARD					1	1			
20	G	E12 906 310	DEFROST THERMISTOR	RT61	1	1	1	1	1	1	1	
21	G	E12 899 523	CONDENSER NET		1	1						
	G	E12 838 523	CONDENSER NET				1	1		1		
	G	E12 929 523	CONDENSER NET						1		1	
22	G	E12 927 297	TOP PANEL		1	1	1	1	1	1	1	
23	G	E12 899 293	SEPARATOR		1	1	1	1		1		
	G	E12 900 293	SEPARATOR						1		1	
24	G	E12 899 515	MOTOR SUPPORT		1	1	1	1		1		
	G	E12 900 515	MOTOR SUPPORT						1		1	
㉕	G	E12 904 490	R. V. COIL	21S4	1	1	1	1	1			
	G	E12 906 490	R. V. COIL	21S4						1	1	
㉖	G	E12 095 382	FUSE	F61	1	1	1	1	1	1	1	T2AL250V
㉗	G	E12 820 385	VARISTOR	NR61	1	1	1	1	1	1	1	
㉘	G	E12 891 642	CHECK VALVE		1	1	1	1	1	1	1	
㉙	G	E12 408 936	CAPILLARY TUBE		1							ø3.0 × ø1.4 × 700
	G	E12 156 936	CAPILLARY TUBE		1					1		ø3.0 × ø1.4 × 500
	G	E12 024 936	CAPILLARY TUBE				1					ø3.0 × ø1.4 × 1000
	G	E12 339 936	CAPILLARY TUBE				1					ø3.0 × ø1.4 × 600
	G	E12 282 936	CAPILLARY TUBE			1				1		ø3.0 × ø1.4 × 300
	G	E12 B14 936	CAPILLARY TUBE			1						ø3.0 × ø1.4 × 900
	G	E12 B17 936	CAPILLARY TUBE					1				ø3.0 × ø1.6 × 1500
	G	E12 139 936	CAPILLARY TUBE					1				ø3.0 × ø1.6 × 750
	G	E12 A86 936	CAPILLARY TUBE								1	ø3.0 × ø1.4 × 350
	G	E12 642 936	CAPILLARY TUBE								1	ø3.0 × ø1.4 × 400
	G	E12 735 936	CAPILLARY TUBE						2		2	ø3.0 × ø1.8 × 600
	G	E12 156 936	CAPILLARY TUBE						1			ø3.0 × ø1.4 × 500
	G	E12 024 936	CAPILLARY TUBE						1			ø3.0 × ø1.4 × 1000

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Distributed in Apr. 2008. No.OB387 REVISED EDITION-C 6
Distributed in May 2007. No.OB387 REVISED EDITION-B 6
Distributed in May 2006. No.OB387 REVISED EDITION-A 6
Distributed in Feb. 2005. No.OB387 6
Made in Japan

New publication, effective Apr. 2008
Specifications subject to change without notice.