MITSUBISHI ELECTRIC

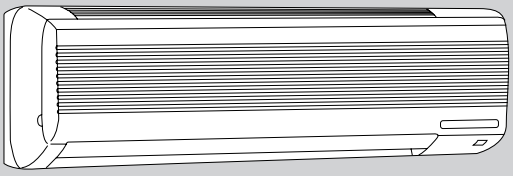
SPLIT-TYPE AIR CONDITIONERS

No. OB271

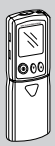
SERVICE MANUAL

Wireless type Models

MS-18RV - E1 (WH) · MU-18RV - E1
MS-24RV - E1 (WH) · MU-24RV - E1
MS-30RV - E1 (WH) · MU-30RV - E1



MS-18RV - E1
MS-24RV - E1



CONTENTS

CE

1 TECHNICAL CHANGES

MS-18NV -E4→MS-18RV -E1
MS-24NV -E2→MS-24RV -E1

1. Remote controller has been changed.
   - SLEEP MODE function has removed.
   - ECONO COOL operation has added.
   - SWING button is removed, but SWING MODE function is available by VANE CONTROL button.

MS-30RV -E1

New model

MU-18NV -E4→MU-18RV -E1
MU-24NV -E2→MU-24RV -E1

1. Outdoor model name has changed.

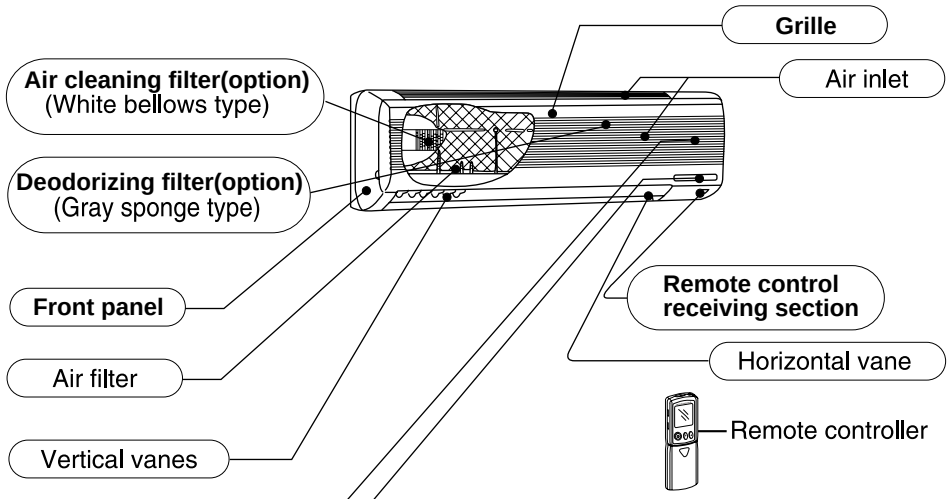
MU-30RV -E1

New model

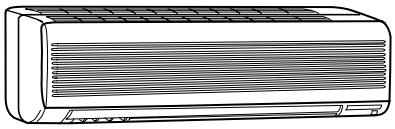
2 PART NAMES AND FUNCTIONS

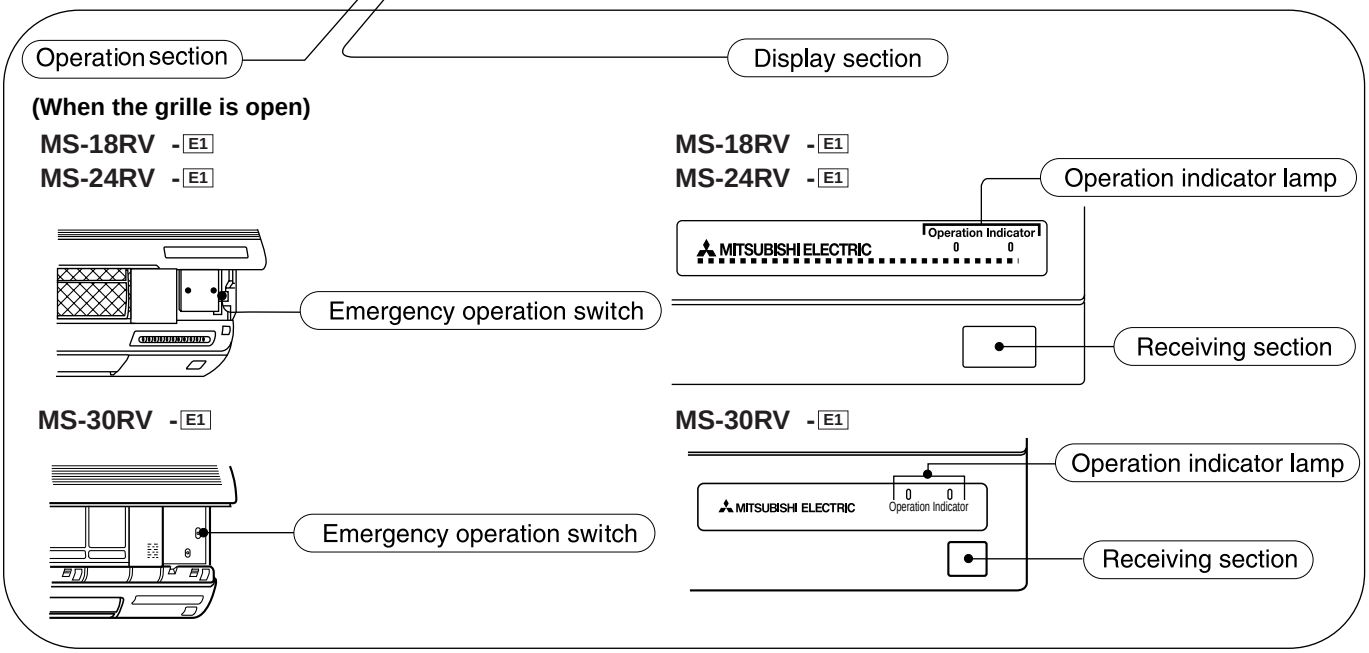
INDOOR UNIT

MS-18RV -E1
MS-24RV -E1



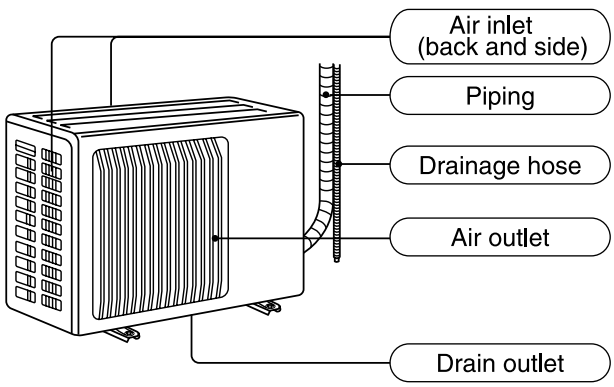
MS-30RV -E1



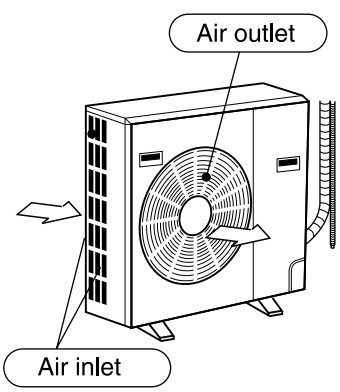


OUTDOOR UNIT

MU-18RV -E1
MU-24RV -E1



MU-30RV -E1



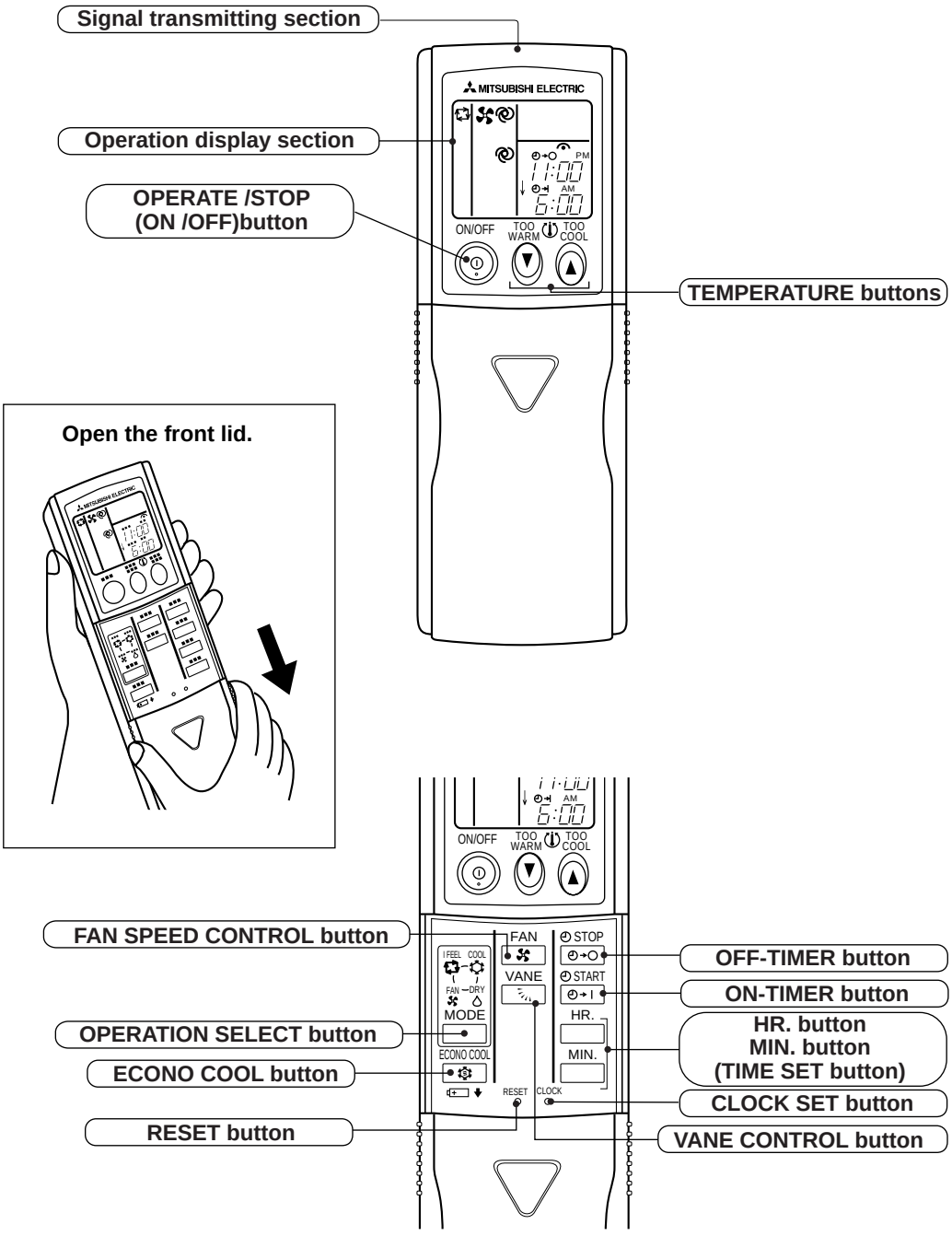
ACCESSORIES

Indoor unit

		MS-18RV- E1 MS-24RV- E1	MS-30RV- E1
①	Installation plate	1	1
②	Installation plate fixing screw 4 × 25 mm	6	7
③	Remote controller mouting hardware	1	1
④	Fixing screw for ③ × 3.5 × 1.6 mm (Black)	2	2
⑤	Battery (AAA) for remote controller	2	2
⑥	Wireless remote controller	1	1
⑦	Felt tape (Used for left or left-rear piping)	1	1

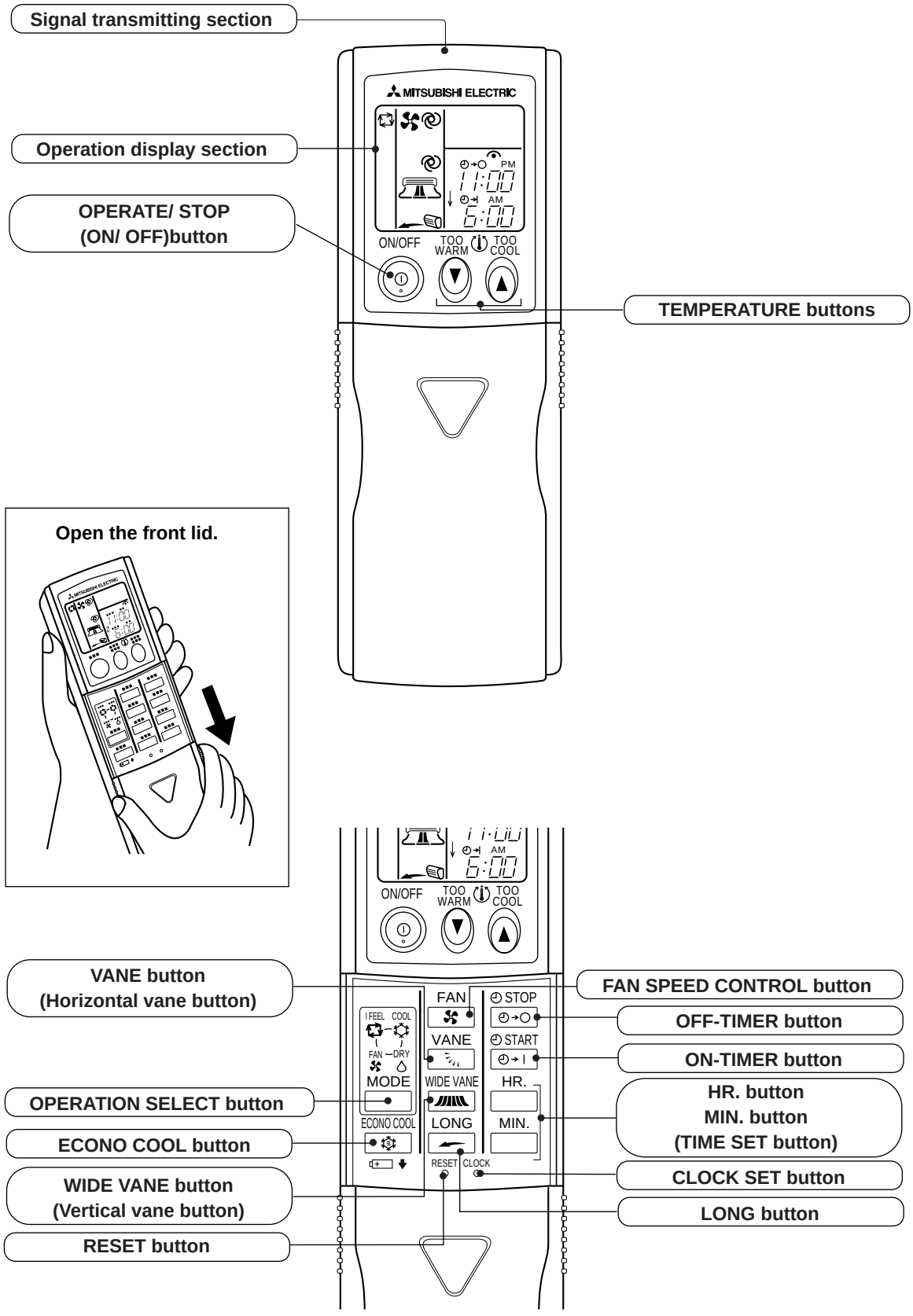
REMOTE CONTROLLER

MS-18RV -E1
MS-24RV -E1



REMOTE CONTROLLER

MS-30RV -E1



3 SPECIFICATION

Indoor model			**MS-18RV -** E1	**MS-24RV -** E1
Function			Cooling	Cooling
Power supply			Single phase 220-240V, 50Hz	Single phase 220-240V, 50Hz
Capacity	Capacity	kW	5.1	6.4
	Dehumidification	ℓ /h	2.5	3.4
	Air flow(High)	m³ /h	756	816
Electrical data	Power outlet	A	15	25
	Running current	A	9.1	12.9-12.6
	Power input	W	1,910-2,010	2,780-2,900
	Auxiliary heater	A(kW)	—	—
	Power factor	%	95-92	98-96
	Starting current	A	51-55	59
	Fan motor current	A	0.25	0.29
Coefficient of performance(C.O.P)			2.67-2.54	2.30-2.21
Fan motor	Model		RA4V27-EF	RA4V27-EE
	Winding resistance(at20℃)	Ω	WHT-BLK 183.8 BLK-RED 250.5	WHT-BLK 183.8 BLK-RED 250.5
	Dimensions W×H×D	mm	1,015×320×190	1,015×320×190
	Weight	kg	14	14
Special remarks	Air direction		5	5
	Sound level (High)	dB	42	45
	Fan speed (High)	rpm	1,180	1,260
	Fan speed regulator		3	3
	Thermistor RT11(at25℃)	kΩ	10	10
	Thermistor RT12(at25℃)	kΩ	10	10
Outdoor model			**MU-18RV -** E1	**MU-24RV -** E1
Capacity	Air flow	m³ /h	2,340-2,400	2,286-2,358
Electrical data	Compressor motor current	A	8.46	12.06-11.76
	Fan motor current	A	0.39	0.55
Compressor	Model		PH-33VPET	NH-47VMDT
	Output	W	1,500	2,200
	Winding resistance(at20℃)	Ω	C-R 1.08 C-S 2.18	C-R 0.96 C-S 2.07
Fan motor	Model		RA6V50-OG	RA6V60-AC
	Winding resistance(at20℃)	Ω	WHT-BLK 116.4 BLK-RED 111.0	WHT-BLK 81.1 BLK-RED 102.2 BLK-YLW 92.2
	Dimensions W×H×D	mm	850×605×290	850×605×290
	Weight	kg	48	61
Special remarks	Sound level(High)	dB	52	53
	Fan speed(High)	rpm	830-860	860-886
	Fan speed regulator		1	2
	Refrigerant filling capacity(R22)	kg	1.05	2.15
	Refrigerating oil (Model)	cc	900 (MS32N1)	1,200 (MS32N1)

NOTE:Test conditions are based on JIS C 9612.
Cooling : Indoor DB 27°C / WB 19°C
Outdoor DB 35°C / WB (24°C)

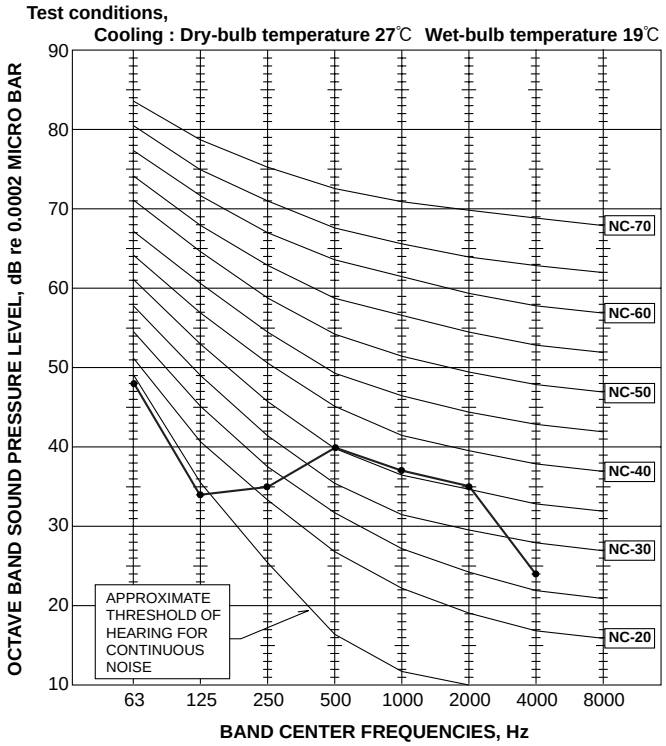
Indoor model			**MS-30RV -** E1
Function			Cooling
Power supply			Single phase 220-240V, 50Hz
Capacity	Capacity	kW	8.4
	Dehumidification	ℓ /h	4.5
	Air flow(High)	m³ /h	960
Electrical data	Power outlet	A	25
	Running current	A	15.7-15.8
	Power input	W	3,380-3,520
	Auxiliary heater	A(kW)	—
	Power factor	%	98-93
	Starting current	A	82-84
	Fan motor current	A	0.33-0.35
Coefficient of performance(C.O.P)			2.49-2.39
Fan motor	Model		RC4V40-AA
	Winding resistance(at20℃)	Ω	WHT-BLK 138.2 BLK-RED 159.0
	Dimensions W×H×D	mm	1,100×325×227
	Weight	kg	16
Special remarks	Air direction		5
	Sound level (High)	dB	47
	Fan speed (High)	rpm	1,280
	Fan speed regulator		3
	Thermistor RT11(at25℃)	kΩ	10
	Thermistor RT12(at25℃)	kΩ	10
	Thermistor RT13(at25℃)	kΩ	10
	Outdoor model		**MU-30RV -** E1
Capacity	Air flow	m³ /h	2,880-3,000
Electrical data	Compressor motor current	A	14.81-14.87
	Fan motor current	A	0.56-0.58
Compressor	Model		NH-56VNHT
	Output	W	2,700
	Winding resistance(at20℃)	Ω	C-R 0.66 C-S 1.58
Fan motor	Model		RA6V75-AA
	Winding resistance(at20℃)	Ω	WHT-BLK 62.8 BLK-YLW 55.9 YLW-RED 26.0
	Dimensions W×H×D	mm	870×850×295
	Weight	kg	78
Special remarks	Sound level(High)	dB	55
	Fan speed(High)	rpm	790-820
	Fan speed regulator		2
	Refrigerant filling capacity(R22)	kg	2.40
	Refrigerating oil (Model)	cc	1,200 (MS32N1)
	Thermistor RT62(at25℃)	kΩ	231.44
	Thermistor RT63(at0℃)	kΩ	33.18

NOTE:Test conditions are based on JIS C 9612.
Cooling : Indoor DB 27°C / WB 19°C
Outdoor DB 35°C / WB (24°C)

4 NOISE CRITERIA CURVES

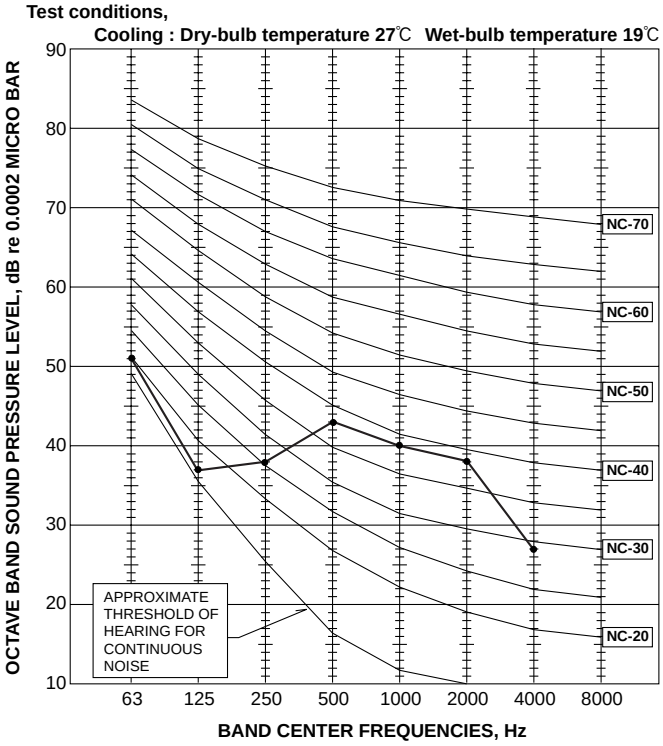
MS-18RV - E1

NOTCH	SPL(dB(A))	LINE
High	42	●——●



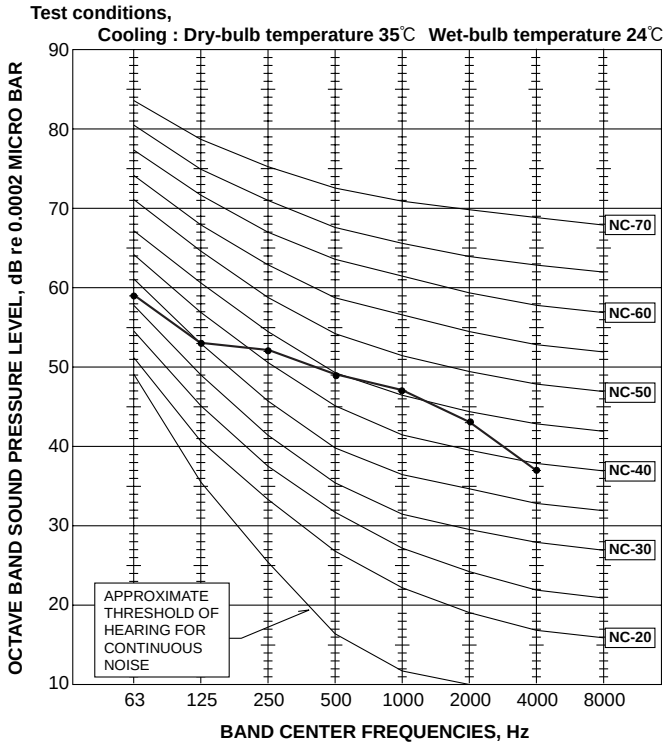
MS-24RV - E1

NOTCH	SPL(dB(A))	LINE
High	45	●——●



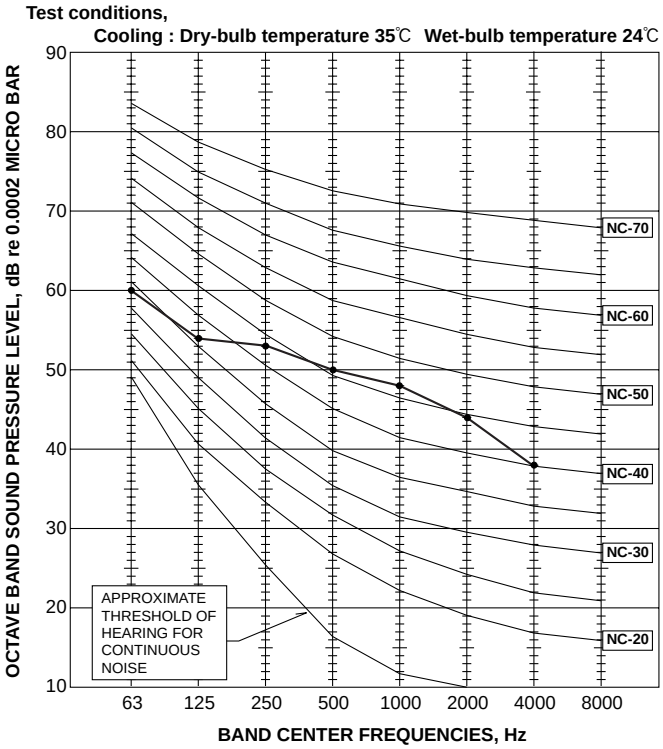
MU-18RV - E1

NOTCH	SPL(dB(A))	LINE
High	52	●——●



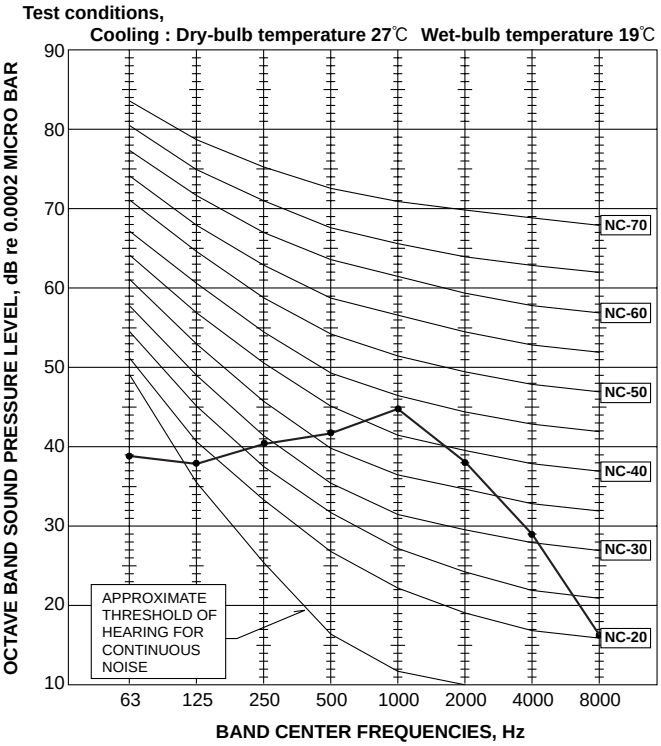
MU-24RV - E1

NOTCH	SPL(dB(A))	LINE
High	53	●——●



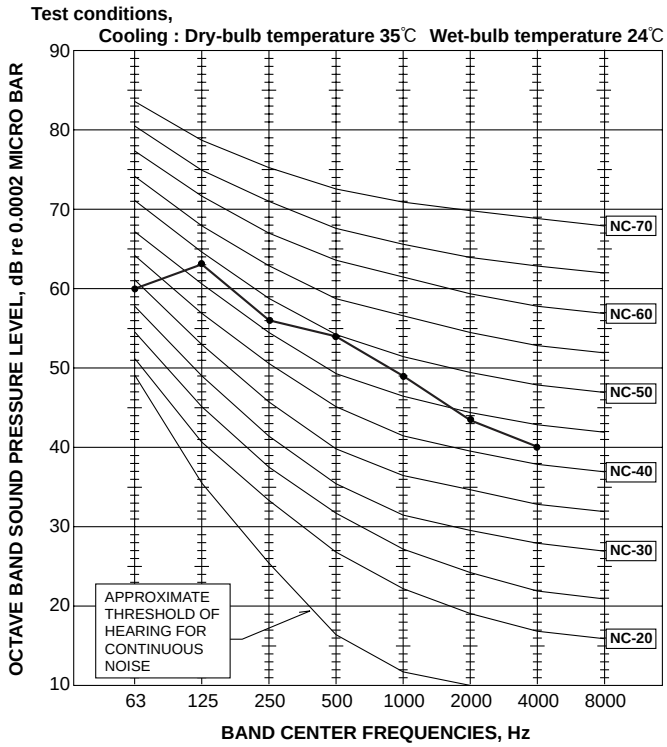
MS-30RV -E1

NOTCH	SPL(dB(A))	LINE
High	47	●——●



MU-30RV -E1

NOTCH	SPL(dB(A))	LINE
High	55	●——●

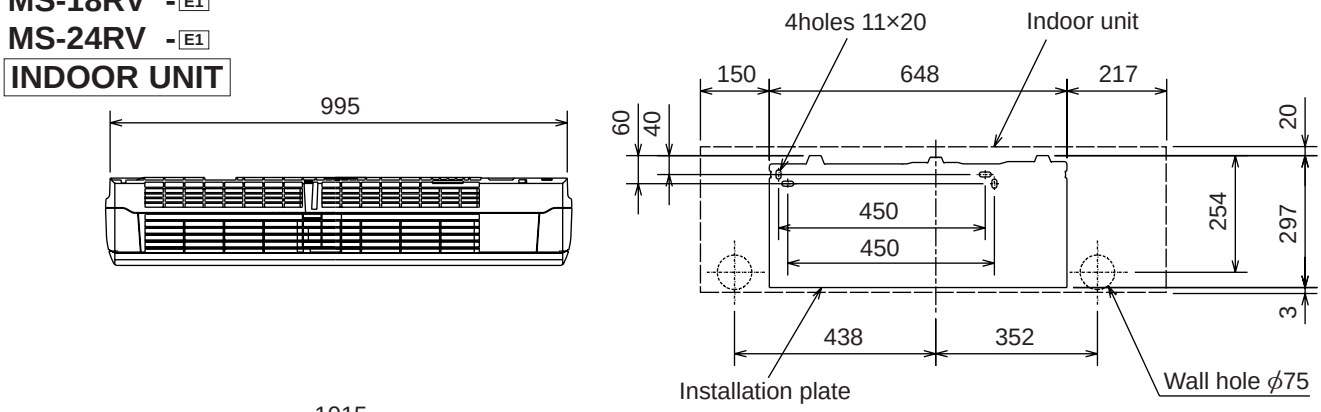


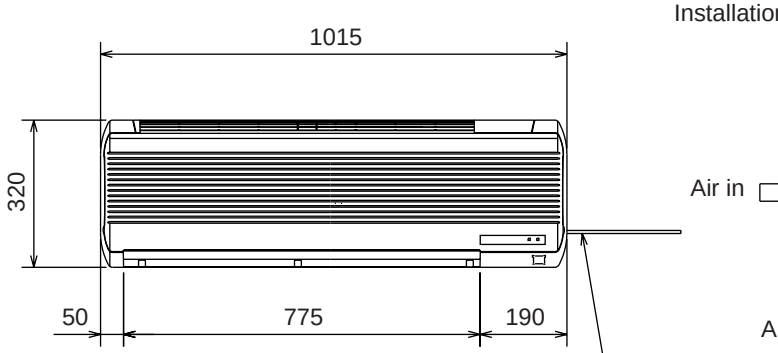
5 OUTLINES AND DIMENSIONS

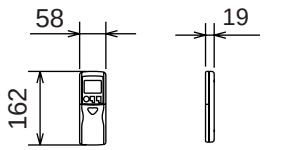
Unit : mm

MS-18RV -E1
MS-24RV -E1

INDOOR UNIT



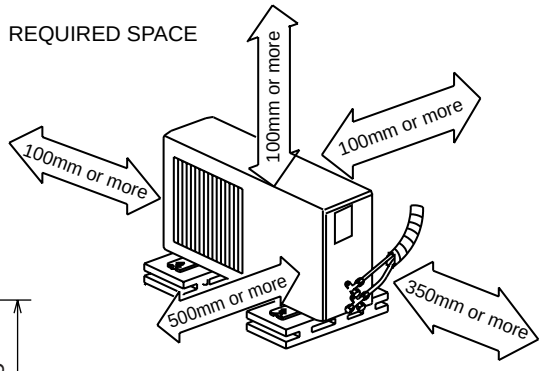


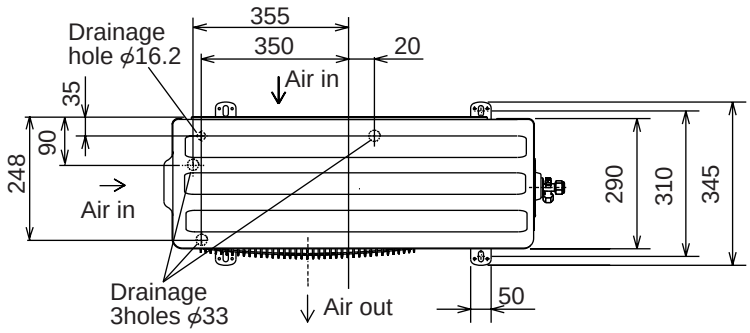


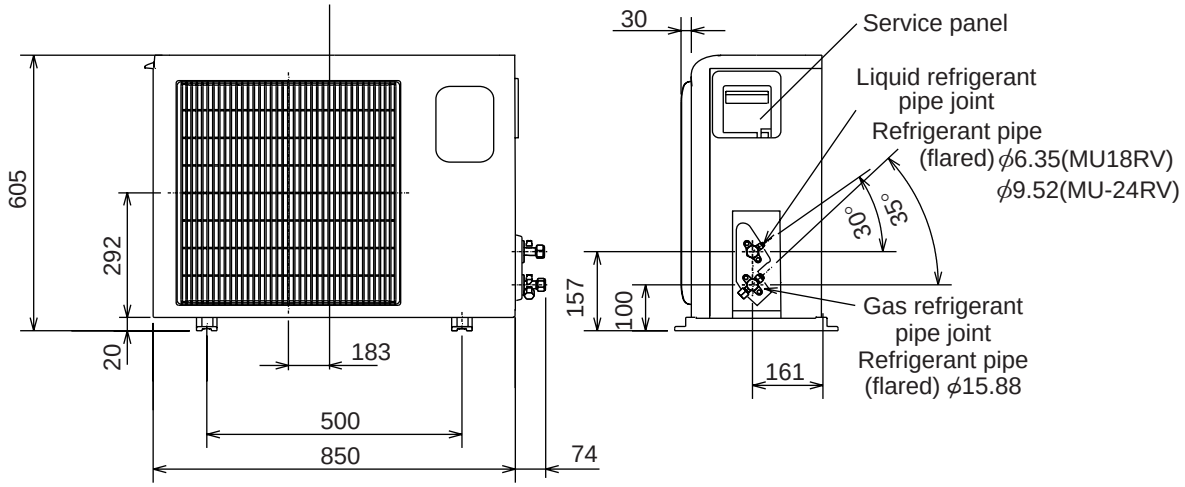
Wireless remote controller

MU-18RV -E1
MU-24RV -E1

OUTDOOR UNIT



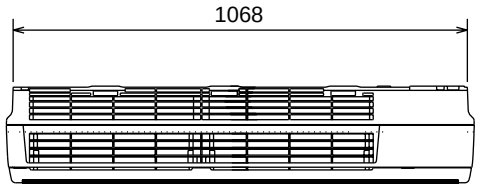


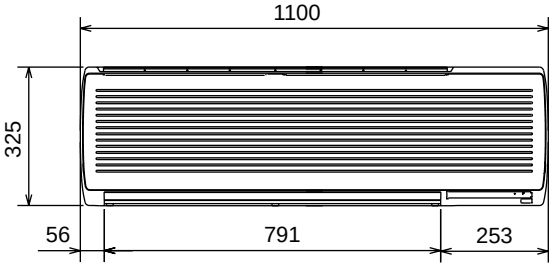


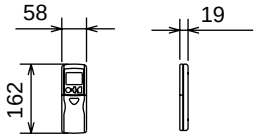
MS-30RV - E1

Unit: mm

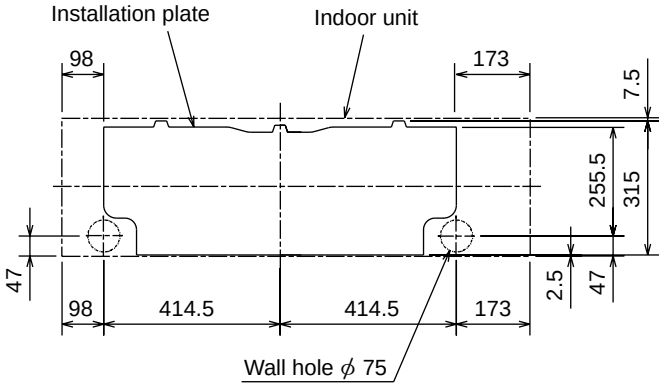
INDOOR UNIT

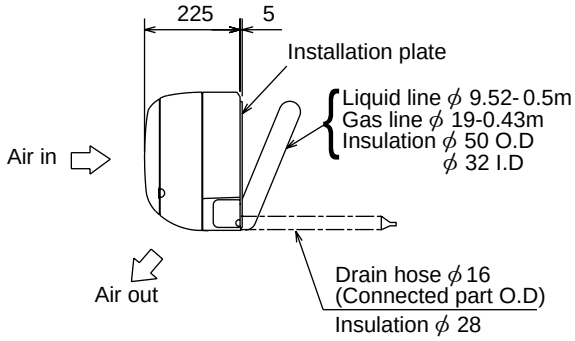






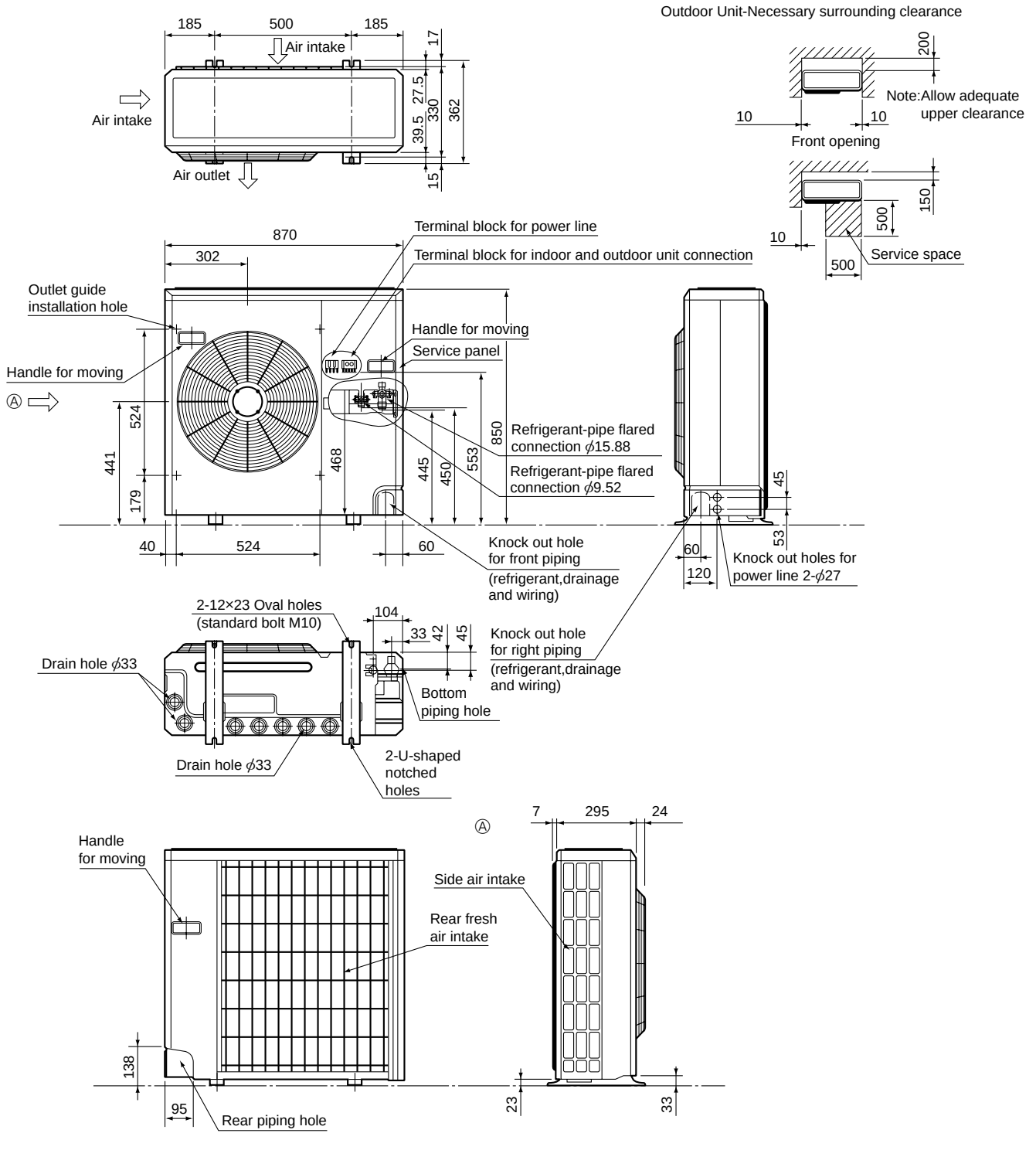
Wireless remote controller





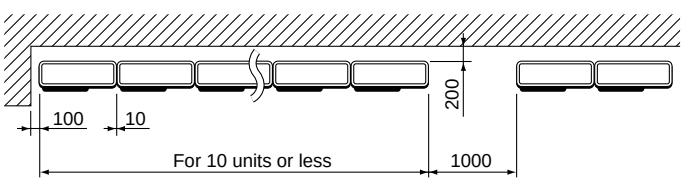
MU-30RV - E1 **Unit: mm**

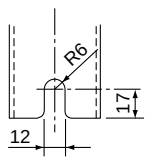
OUTDOOR UNIT

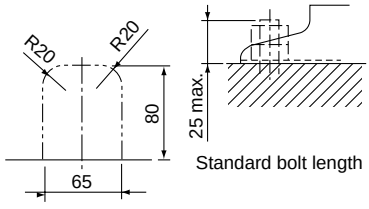


Outdoor Unit-Necessary surrounding clearance
(Concentrated installation)

The upper side must be open.





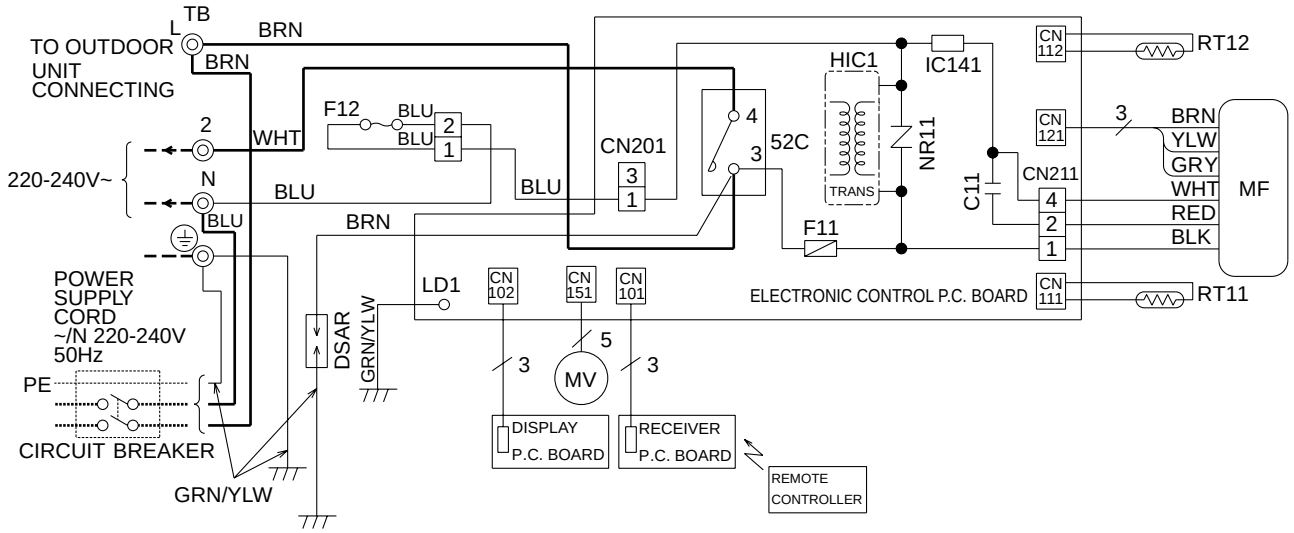


Front right piping holes-detail figures

6 WIRING DIAGRAM

MS-18RV - E1

INDOOR UNIT MODEL WIRING DIAGRAM



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	IC141	HYBRID IC	RT12	INDOOR COIL THERMISTOR
DSAR	SURGE ABSORBER	MF	INDOOR FAN MOTOR(INNER FUSE)	TB	TERMINAL BLOCK
F11	FUSE(3.15A)	MV	VANE MOTOR	52C	CONTACTOR
F12	THERMAL FUSE(93°C)	NR11	VARISTOR		
HIC1	DC / DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR		

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

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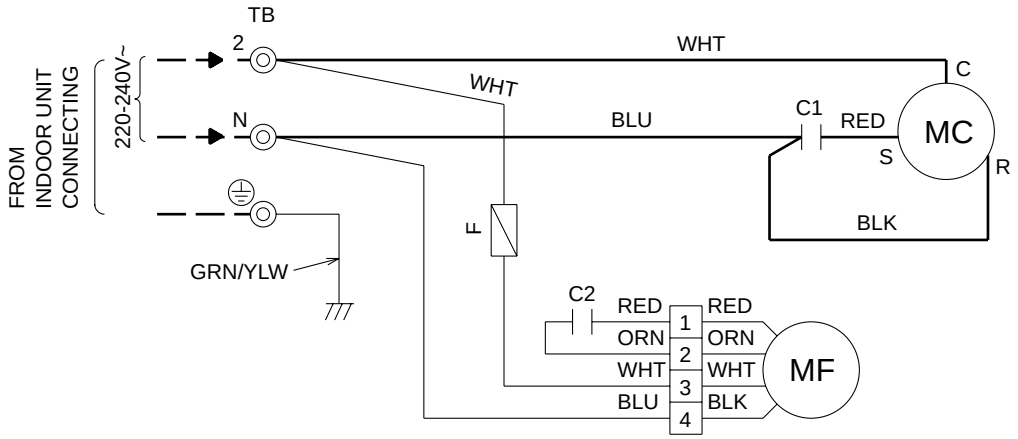
MU-18RV - E1

OUTDOOR UNIT MODEL WIRING DIAGRAM



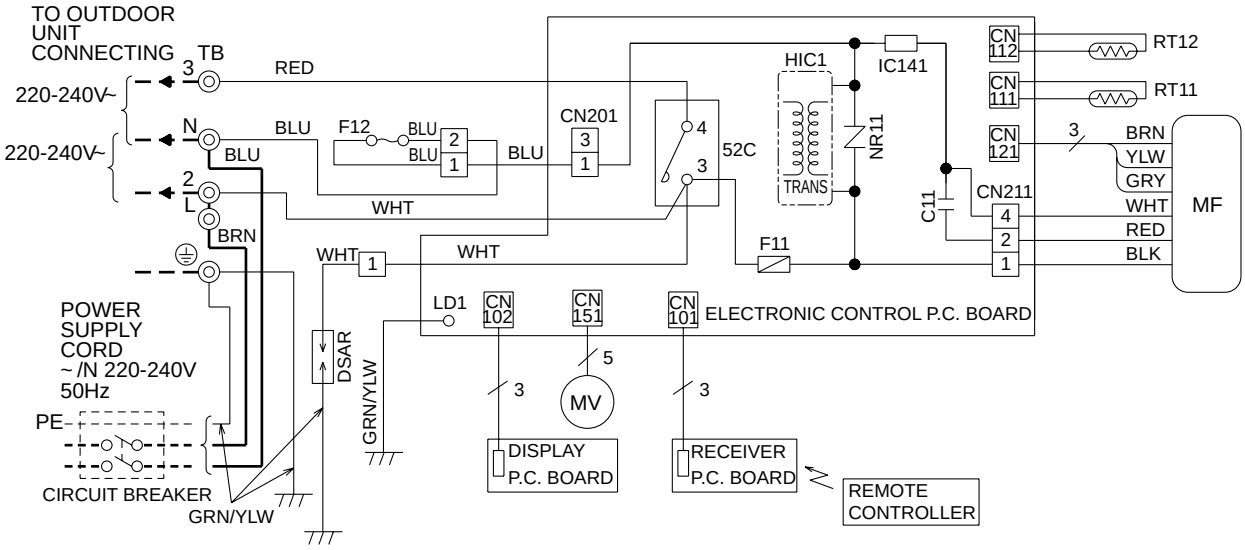
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C1	COMPRESSOR CAPACITOR	F	FUSE(2A)	MF	OUTDOOR FAN MOTOR(INNER PROTECTOR)
C2	OUTDOOR FAN CAPACITOR	MC	COMPRESSOR(INNER PROTECTOR)	TB	TERMINAL BLOCK

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

SG79J002H01

MS-24RV - E1

INDOOR UNIT MODEL WIRING DIAGRAM



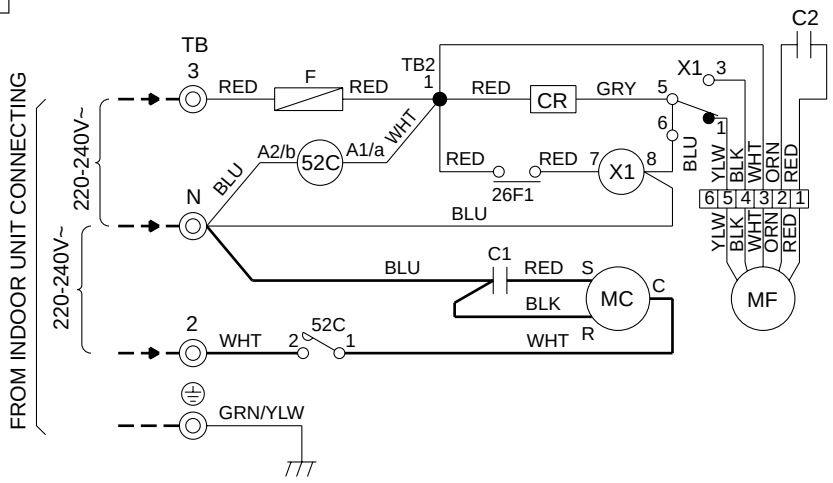
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	IC141	HYBRID IC	RT12	INDOOR COIL THERMISTOR
DSAR	SURGE ABSORBER	MF	INDOOR FAN MOTOR(INNER FUSE)	TB	TERMINAL BLOCK
F11	FUSE(3.15A)	MV	VANE MOTOR	52C	CONTACTOR
F12	THERMAL FUSE(93°C)	NR11	VARISTOR		
HIC1	DC / DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR		

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

VG79B020H01

MU-24RV - E1

OUTDOOR UNIT MODEL WIRING DIAGRAM



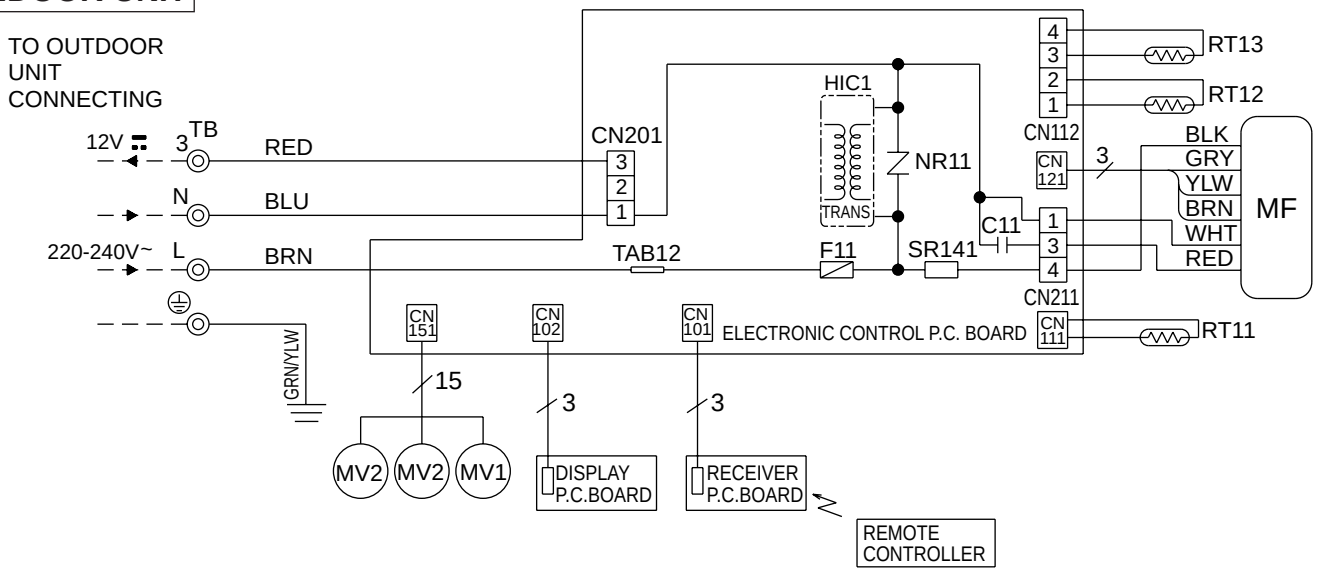
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CR	CR SURGE ABSORBER	MC	COMPRESSOR (INNER PROTECTOR)	X1	FAN MOTOR RELAY
C1	COMPRESSOR CAPACITOR	MF	OUTDOOR FAN MOTOR (INNER PROTECTOR)	26F1	THERMOSTAT (AIR FLOW CONTORL)
C2	OUTDOOR FAN CAPACITOR	TB	TERMINAL BLOCK	52C	COMPRESSOR CONTACTOR
F	FUSE(2A)	TB2	TERMINAL BLOCK		

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

SG79J003H01

MS-30RV -E1 MODEL WIRING DIAGRAM

INDOOR UNIT



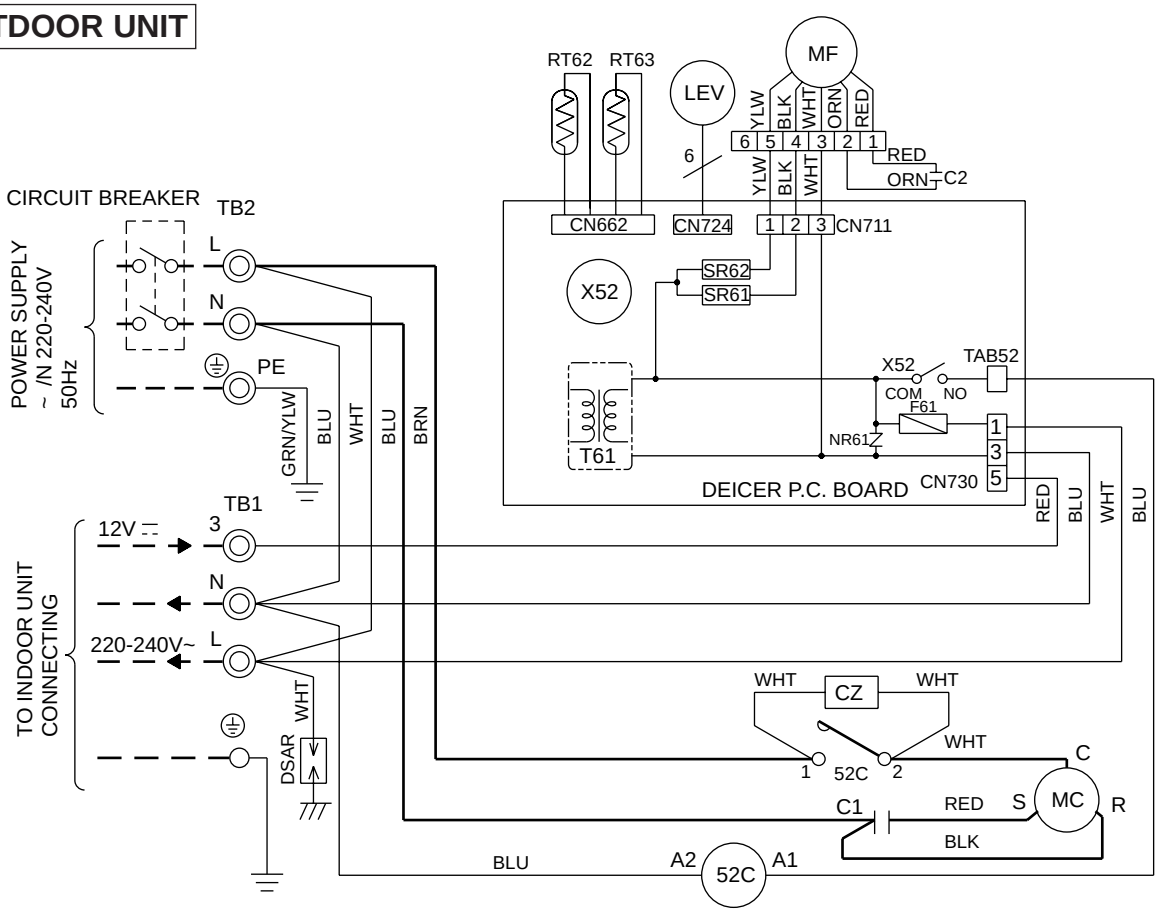
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV2	VANE MOTOR(VERTICAL)	SR141	SOLID STATE RELAY
F11	FUSE(3.15A)	NR11	VARISTOR	TB	TERMINAL BLOCK
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR		
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR (MAIN)		
MV1	VANE MOTOR(HORIZONTAL)	RT13	INDOOR COIL THERMISTOR (SUB)		

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

SG79J148H01

MU-30RV - E1 MODEL WIRING DIAGRAM

OUTDOOR UNIT



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CZ	CZ SURGE ABSORBER	MF	OUTDOOR FAN MOTOR (INNER PROTECTOR)	TB2	TERMINAL BLOCK
C1	COMPRESSOR CAPACITOR	NR61	VARISTOR	T61	TRANSFORMER
C2	OUTDOOR FAN CAPACITOR	RT62	DISCHARGE TEMPERATURE THERMISTOR	X52	CONTACTOR
DSAR	SURGE ABSORBER	RT63	AMBIENT TEMPERATURE THERMISTOR	52C	COMPRESSOR CONTACTOR
F61	FUSE(3.15A)	SR61	SOLID STATE RELAY		
LEV	EXPANSION VALVE COIL	SR62	SOLID STATE RELAY		
MC	COMPRESSOR (INNER PROTECTOR)	TB1	TERMINAL BLOCK		

SG79J153H02

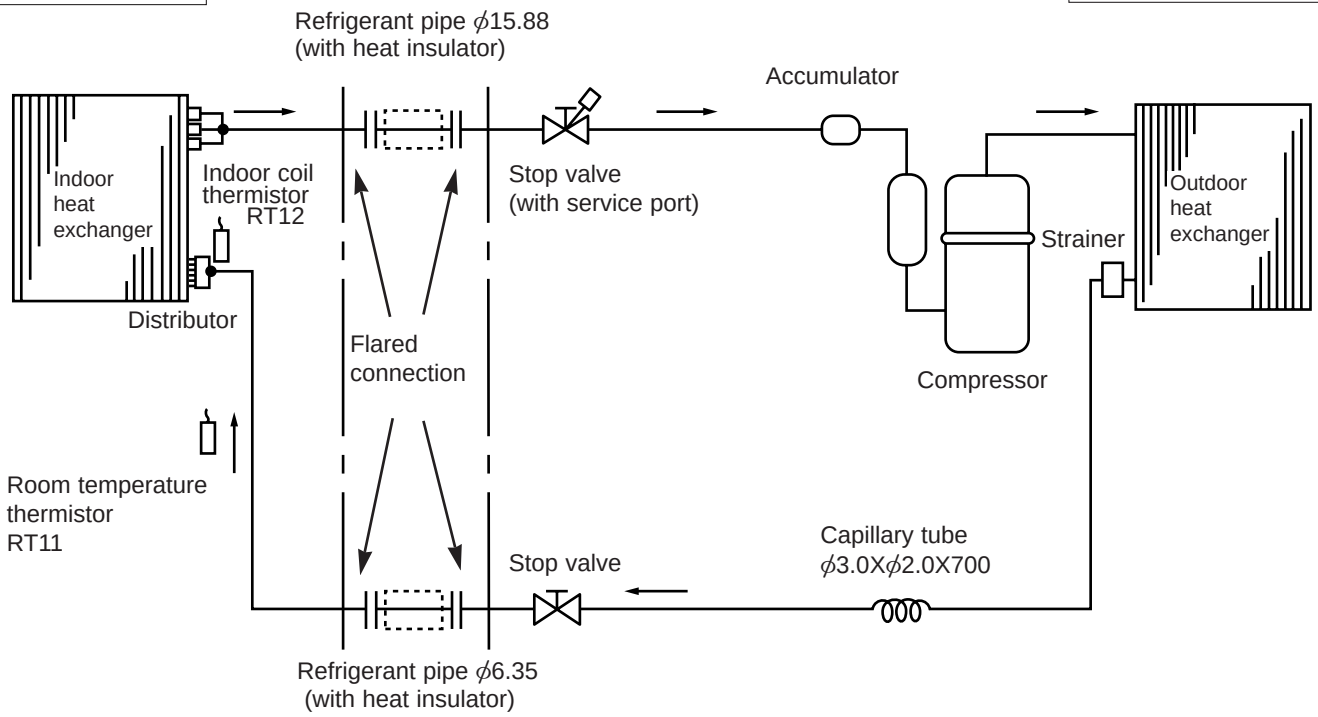
NOTE 1. Use copper conductors only (For field wiring).
2. Since the indoor and outdoor unit connecting wires have polarity, connect them according to the numbers (3,N, L).
3. Symbols below indicate.
◎: Terminal block, □□□□ : Connector

7 REFRIGERANT SYSTEM DIAGRAM

Unit:mm

MS-18RV -E1 **INDOOR UNIT**

MU-18RV -E1 **OUTDOOR UNIT**

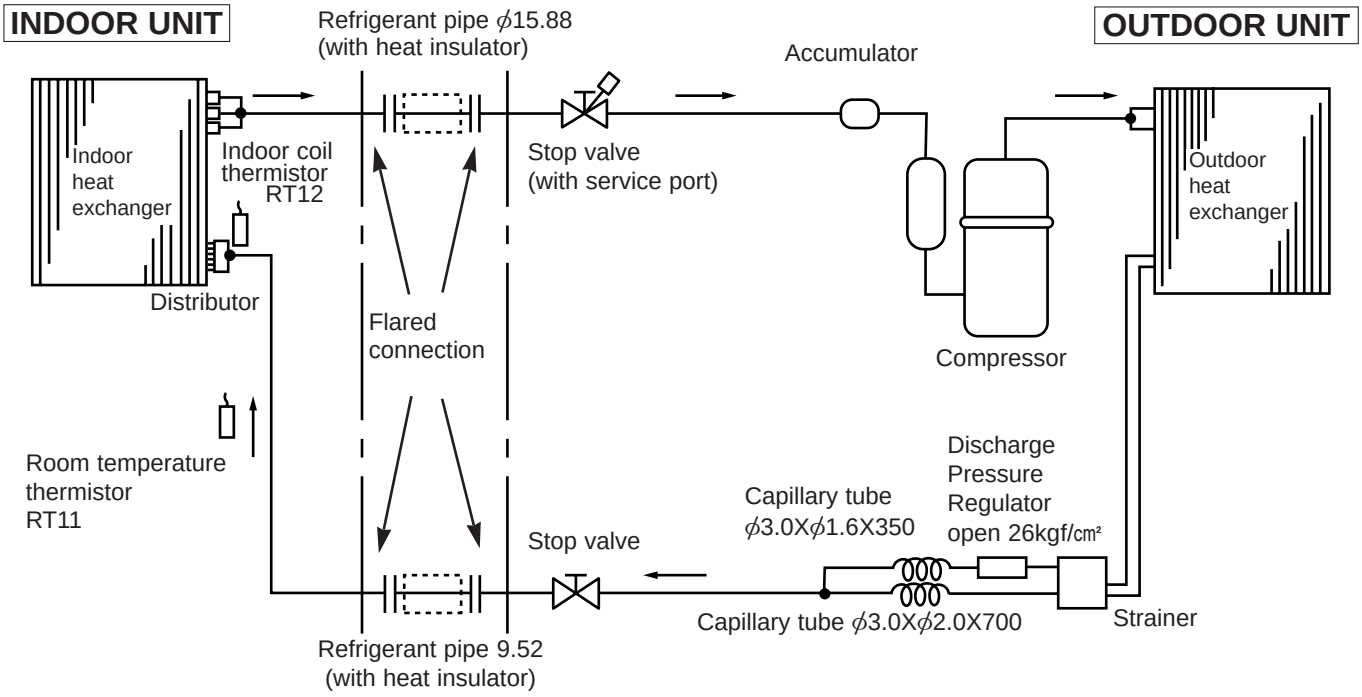


Refrigerant flow in cooling

Unit:mm

MS-24RV -E1 **INDOOR UNIT**

MU-24RV -E1 **OUTDOOR UNIT**



Refrigerant flow in cooling

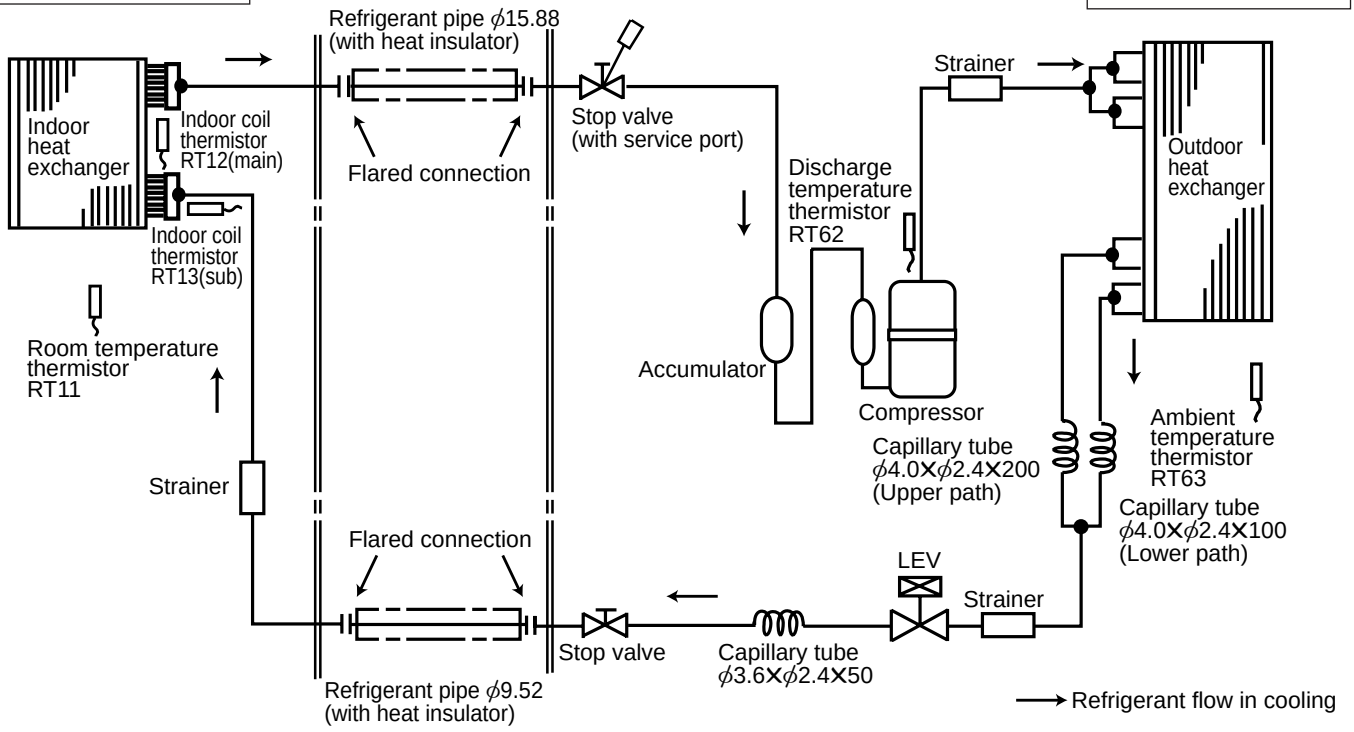
Unit:mm

MS-30RV - E1

INDOOR UNIT

MU-30RV - E1

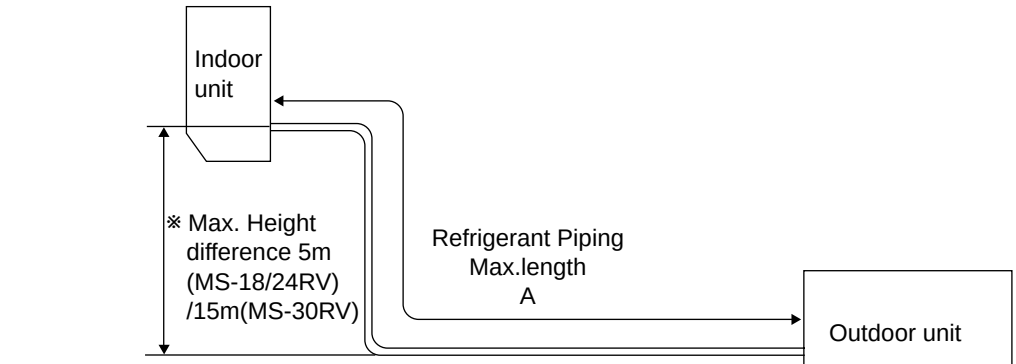
OUTDOOR UNIT



MAX. REFRIGERANT PIPING LENGTH

Model	Refrigerant piping Max. length : m A	Piping size O.D : mm		Length of connecting pipe : m	
		Gas	Liquid	Indoor unit	Outdoor unit
MS-18RV - E1 **MU-18RV -** E1	15	15.88	6.35	Gas 0.43 Liquid 0.5	Gas 0 Liquid 0
MS-24RV - E1 **MU-24RV -** E1			9.52		
MS-30RV - E1 **MU-30RV -** E1	30				

MAX. HEIGHT DIFFERENCE



※ Height difference should be within 5m(MS-18/24RV) /15m(MS-30RV) regardless of which unit, indoor or outdoor position is high.

ADDITIONAL REFRIGERANT CHARGE(R22 : g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)		
		7m	10m	15m
MS-18RV - E1 **MU-18RV -** E1	1,050	0	45	120
MS-24RV - E1 **MU-24RV -** E1	2,150			

Calculation : Xg=15g/mx(Refrigerant piping length (m)-7)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MS-30RV -E1 **MU-30RV -**E1	2,400	0	45	120	195	270	345

Calculation : Xg=15g/m×(Refrigerant piping length(m)-7)

8 PERFORMANCE CURVES

MS-18RV -E1 MU-18RV -E1
MS-24RV -E1 MU-24RV -E1
MS-30RV -E1 MU-30RV -E1

The standard data contained in these 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 ~ 264V

(2) AIR FLOW

Air flow should be set at MAX.

(3) MAIN READINGS

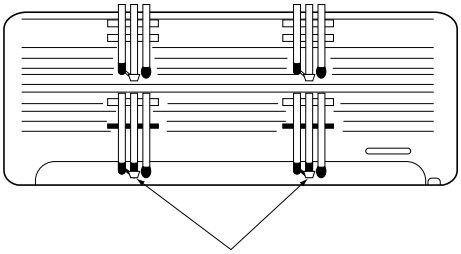
(1) Indoor intake air wet-bulb temperature :°CWB
(2) Indoor outlet air wet-bulb temperature :°CWB } Cooling
(3) Outdoor intake air dry-bulb temperature :°CDB
(4) Total input :W

Indoor air wet/dry-bulb temperature difference on the left side of the chart on this page 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 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 to start the EMERGENCY COOL 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.

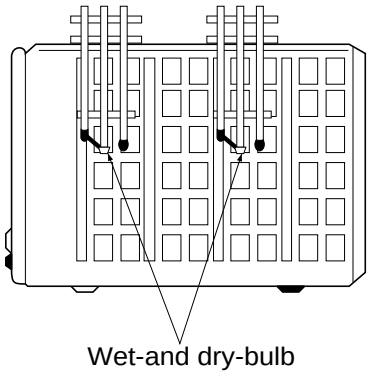
INDOOR UNIT



Wet-and dry-bulb thermometers

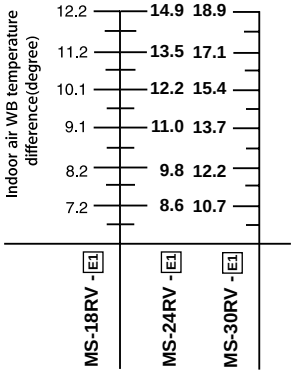
FRONT VIEW

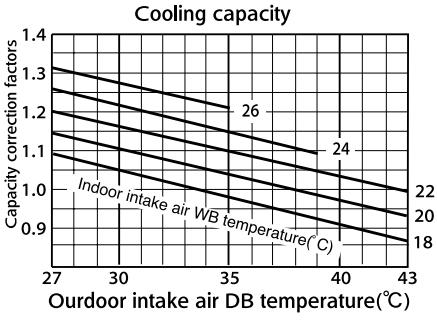
OUTDOOR UNIT

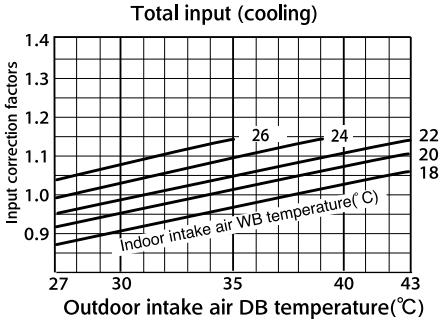


Wet-and dry-bulb thermometers

BACK VIEW







OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT
COOL operation

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

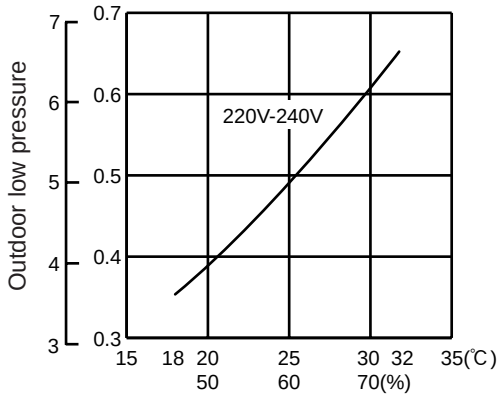
Dry-bulb temperature	Relative humidity(%)
20	50
25	60
30	70

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/㎠[Gauge])**

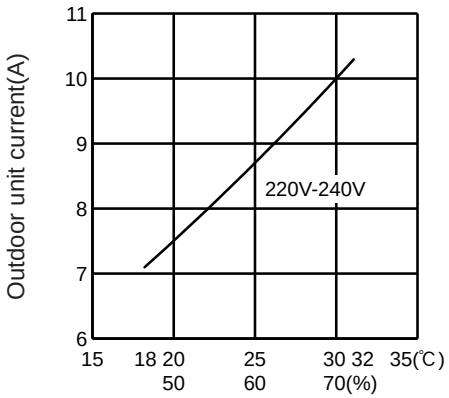
(kgf/㎠[Gauge])(MPa[Gauge])

MU-18RV -E1



Ambient temperature(˚C)Ambient humidity(%)

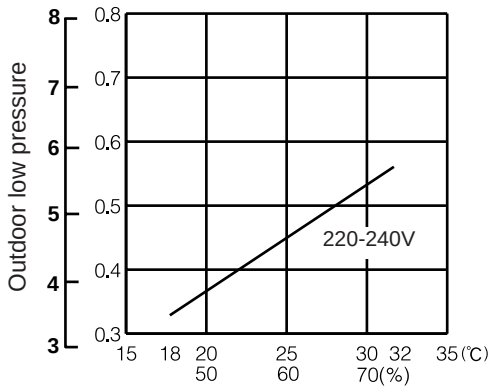
MU-18RV -E1



Ambient temperature(˚C)Ambient humidity(%)

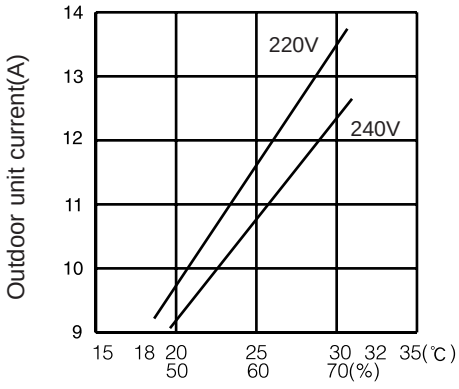
(kgf/㎠[Gauge])(MPa[Gauge])

MU-24RV -E1



Ambient temperature(˚C)Ambient humidity(%)

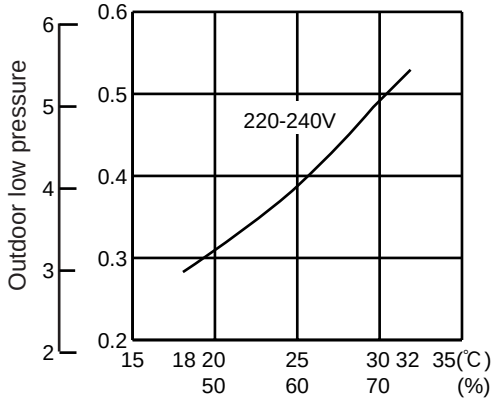
MU-24RV -E1



Ambient temperature(˚C)Ambient humidity(%)

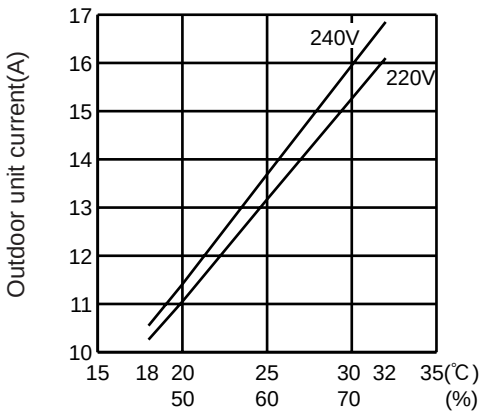
(kgf/㎠[Gauge])(MPa[Gauge])

MU-30RV -E1



Ambient temperature(˚C)Ambient humidity(%)

MU-30RV -E1



Ambient temperature(˚C)Ambient humidity(%)

PERFORMANCE DATA
COOL operation
MS-18RV -E1 : MU-18RV -E1 (220V)

CAPACITY: 5.1(kW) SHF : 0.66 INPUT: 1910(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.99	2.88	0.48	1528	5.74	2.75	0.48	1604	5.51	2.64	0.48	1681	5.30	2.55	0.48	1757
21	20	6.25	2.25	0.36	1604	5.99	2.16	0.36	1700	5.81	2.09	0.36	1738	5.61	2.02	0.36	1815
22	18	5.99	3.12	0.52	1528	5.74	2.98	0.52	1604	5.51	2.86	0.52	1681	5.30	2.76	0.52	1757
22	20	6.25	2.50	0.40	1604	5.99	2.40	0.40	1700	5.81	2.33	0.40	1738	5.61	2.24	0.40	1815
22	22	6.50	1.82	0.28	1662	6.27	1.76	0.28	1767	6.12	1.71	0.28	1815	5.87	1.64	0.28	1891
23	18	5.99	3.36	0.56	1528	5.74	3.21	0.56	1604	5.51	3.08	0.56	1681	5.30	2.97	0.56	1757
23	20	6.25	2.75	0.44	1604	5.99	2.64	0.44	1700	5.81	2.56	0.44	1738	5.61	2.47	0.44	1815
23	22	6.50	2.08	0.32	1662	6.27	2.01	0.32	1767	6.12	1.96	0.32	1815	5.87	1.88	0.32	1891
24	18	5.99	3.60	0.60	1528	5.74	3.44	0.60	1604	5.51	3.30	0.60	1681	5.30	3.18	0.60	1757
24	20	6.25	3.00	0.48	1604	5.99	2.88	0.48	1700	5.81	2.79	0.48	1738	5.61	2.69	0.48	1815
24	22	6.50	2.34	0.36	1662	6.27	2.26	0.36	1767	6.12	2.20	0.36	1815	5.87	2.11	0.36	1891
24	24	6.83	1.64	0.24	1738	6.58	1.58	0.24	1834	6.43	1.54	0.24	1891	6.22	1.49	0.24	1986
25	18	5.99	3.84	0.64	1528	5.74	3.67	0.64	1604	5.51	3.53	0.64	1681	5.30	3.39	0.64	1757
25	20	6.25	3.25	0.52	1604	5.99	3.12	0.52	1700	5.81	3.02	0.52	1738	5.61	2.92	0.52	1815
25	22	6.50	2.60	0.40	1662	6.27	2.51	0.40	1767	6.12	2.45	0.40	1815	5.87	2.35	0.40	1891
25	24	6.83	1.91	0.28	1738	6.58	1.84	0.28	1834	6.43	1.80	0.28	1891	6.22	1.74	0.28	1986
26	18	5.99	4.07	0.68	1528	5.74	3.90	0.68	1604	5.51	3.75	0.68	1681	5.30	3.61	0.68	1757
26	20	6.25	3.50	0.56	1604	5.99	3.36	0.56	1700	5.81	3.26	0.56	1738	5.61	3.14	0.56	1815
26	22	6.50	2.86	0.44	1662	6.27	2.76	0.44	1767	6.12	2.69	0.44	1815	5.87	2.58	0.44	1891
26	24	6.83	2.19	0.32	1738	6.58	2.11	0.32	1834	6.43	2.06	0.32	1891	6.22	1.99	0.32	1986
26	26	7.04	1.41	0.20	1834	6.83	1.37	0.20	1929	6.73	1.35	0.20	1986	6.53	1.31	0.20	2044
27	18	5.99	4.31	0.72	1528	5.74	4.13	0.72	1604	5.51	3.97	0.72	1681	5.30	3.82	0.72	1757
27	20	6.25	3.75	0.60	1604	5.99	3.60	0.60	1700	5.81	3.49	0.60	1738	5.61	3.37	0.60	1815
27	22	6.50	3.12	0.48	1662	6.27	3.01	0.48	1767	6.12	2.94	0.48	1815	5.87	2.82	0.48	1891
27	24	6.83	2.46	0.36	1738	6.58	2.37	0.36	1834	6.43	2.31	0.36	1891	6.22	2.24	0.36	1986
27	26	7.04	1.69	0.24	1834	6.83	1.64	0.24	1929	6.73	1.62	0.24	1986	6.53	1.57	0.24	2044
28	18	5.99	4.55	0.76	1528	5.74	4.36	0.76	1604	5.51	4.19	0.76	1681	5.30	4.03	0.76	1757
28	20	6.25	4.00	0.64	1604	5.99	3.84	0.64	1700	5.81	3.72	0.64	1738	5.61	3.59	0.64	1815
28	22	6.50	3.38	0.52	1662	6.27	3.26	0.52	1767	6.12	3.18	0.52	1815	5.87	3.05	0.52	1891
28	24	6.83	2.73	0.40	1738	6.58	2.63	0.40	1834	6.43	2.57	0.40	1891	6.22	2.49	0.40	1986
28	26	7.04	1.97	0.28	1834	6.83	1.91	0.28	1929	6.73	1.88	0.28	1986	6.53	1.83	0.28	2044
29	18	5.99	4.79	0.80	1528	5.74	4.59	0.80	1604	5.51	4.41	0.80	1681	5.30	4.24	0.80	1757
29	20	6.25	4.25	0.68	1604	5.99	4.07	0.68	1700	5.81	3.95	0.68	1738	5.61	3.81	0.68	1815
29	22	6.50	3.64	0.56	1662	6.27	3.51	0.56	1767	6.12	3.43	0.56	1815	5.87	3.28	0.56	1891
29	24	6.83	3.01	0.44	1738	6.58	2.89	0.44	1834	6.43	2.83	0.44	1891	6.22	2.74	0.44	1986
29	26	7.04	2.25	0.32	1834	6.83	2.19	0.32	1929	6.73	2.15	0.32	1986	6.53	2.09	0.32	2044
30	18	5.99	5.03	0.84	1528	5.74	4.82	0.84	1604	5.51	4.63	0.84	1681	5.30	4.46	0.84	1757
30	20	6.25	4.50	0.72	1604	5.99	4.31	0.72	1700	5.81	4.19	0.72	1738	5.61	4.04	0.72	1815
30	22	6.50	3.90	0.60	1662	6.27	3.76	0.60	1767	6.12	3.67	0.60	1815	5.87	3.52	0.60	1891
30	24	6.83	3.28	0.48	1738	6.58	3.16	0.48	1834	6.43	3.08	0.48	1891	6.22	2.99	0.48	1986
30	26	7.04	2.53	0.36	1834	6.83	2.46	0.36	1929	6.73	2.42	0.36	1986	6.53	2.35	0.36	2044
31	18	5.99	5.27	0.88	1528	5.74	5.05	0.88	1604	5.51	4.85	0.88	1681	5.30	4.67	0.88	1757
31	20	6.25	4.75	0.76	1604	5.99	4.55	0.76	1700	5.81	4.42	0.76	1738	5.61	4.26	0.76	1815
31	22	6.50	4.16	0.64	1662	6.27	4.01	0.64	1767	6.12	3.92	0.64	1815	5.87	3.75	0.64	1891
31	24	6.83	3.55	0.52	1738	6.58	3.42	0.52	1834	6.43	3.34	0.52	1891	6.22	3.24	0.52	1986
31	26	7.04	2.82	0.40	1834	6.83	2.73	0.40	1929	6.73	2.69	0.40	1986	6.53	2.61	0.40	2044
32	18	5.99	5.51	0.92	1528	5.74	5.28	0.92	1604	5.51	5.07	0.92	1681	5.30	4.88	0.92	1757
32	20	6.25	5.00	0.80	1604	5.99	4.79	0.80	1700	5.81	4.65	0.80	1738	5.61	4.49	0.80	1815
32	22	6.50	4.42	0.68	1662	6.27	4.27	0.68	1767	6.12	4.16	0.68	1815	5.87	3.99	0.68	1891
32	24	6.83	3.83	0.56	1738	6.58	3.68	0.56	1834	6.43	3.60	0.56	1891	6.22	3.48	0.56	1986
32	26	7.04	3.10	0.44	1834	6.83	3.01	0.44	1929	6.73	2.96	0.44	1986	6.53	2.87	0.44	2044

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
MS-18RV -E1 : MU-18RV -E1 (220V)

CAPACITY: 5.1(kW) SHF : 0.66 INPUT: 1910(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.00	2.40	0.48	1872	4.59	2.20	0.48	1986	4.41	2.12	0.48	2025	4.23	2.03	0.48	2063
21	20	5.25	1.89	0.36	1948	4.90	1.76	0.36	2044	4.72	1.70	0.36	2101	4.54	1.63	0.36	2158
22	18	5.00	2.60	0.52	1872	4.59	2.39	0.52	1986	4.41	2.29	0.52	2025	4.23	2.20	0.52	2063
22	20	5.25	2.10	0.40	1948	4.90	1.96	0.40	2044	4.72	1.89	0.40	2101	4.54	1.82	0.40	2158
22	22	5.56	1.56	0.28	2025	5.20	1.46	0.28	2139	5.02	1.41	0.28	2177	4.85	1.36	0.28	2216
23	18	5.00	2.80	0.56	1872	4.59	2.57	0.56	1986	4.41	2.47	0.56	2025	4.23	2.37	0.56	2063
23	20	5.25	2.31	0.44	1948	4.90	2.15	0.44	2044	4.72	2.08	0.44	2101	4.54	2.00	0.44	2158
23	22	5.56	1.78	0.32	2025	5.20	1.66	0.32	2139	5.02	1.61	0.32	2177	4.85	1.55	0.32	2216
24	18	5.00	3.00	0.60	1872	4.59	2.75	0.60	1986	4.41	2.65	0.60	2025	4.23	2.54	0.60	2063
24	20	5.25	2.52	0.48	1948	4.90	2.35	0.48	2044	4.72	2.26	0.48	2101	4.54	2.18	0.48	2158
24	22	5.56	2.00	0.36	2025	5.20	1.87	0.36	2139	5.02	1.81	0.36	2177	4.85	1.74	0.36	2216
24	24	5.87	1.41	0.24	2101	5.51	1.32	0.24	2197	5.36	1.29	0.24	2244	5.20	1.25	0.24	2292
25	18	5.00	3.20	0.64	1872	4.59	2.94	0.64	1986	4.41	2.82	0.64	2025	4.23	2.71	0.64	2063
25	20	5.25	2.73	0.52	1948	4.90	2.55	0.52	2044	4.72	2.45	0.52	2101	4.54	2.36	0.52	2158
25	22	5.56	2.22	0.40	2025	5.20	2.08	0.40	2139	5.02	2.01	0.40	2177	4.85	1.94	0.40	2216
25	24	5.87	1.64	0.28	2101	5.51	1.54	0.28	2197	5.36	1.50	0.28	2244	5.20	1.46	0.28	2292
26	18	5.00	3.40	0.68	1872	4.59	3.12	0.68	1986	4.41	3.00	0.68	2025	4.23	2.88	0.68	2063
26	20	5.25	2.94	0.56	1948	4.90	2.74	0.56	2044	4.72	2.64	0.56	2101	4.54	2.54	0.56	2158
26	22	5.56	2.45	0.44	2025	5.20	2.29	0.44	2139	5.02	2.21	0.44	2177	4.85	2.13	0.44	2216
26	24	5.87	1.88	0.32	2101	5.51	1.76	0.32	2197	5.36	1.71	0.32	2244	5.20	1.66	0.32	2292
26	26	6.17	1.23	0.20	2177	5.81	1.16	0.20	2273	5.64	1.13	0.20	2321	5.46	1.09	0.20	2368
27	18	5.00	3.60	0.72	1872	4.59	3.30	0.72	1986	4.41	3.18	0.72	2025	4.23	3.05	0.72	2063
27	20	5.25	3.15	0.60	1948	4.90	2.94	0.60	2044	4.72	2.83	0.60	2101	4.54	2.72	0.60	2158
27	22	5.56	2.67	0.48	2025	5.20	2.50	0.48	2139	5.02	2.41	0.48	2177	4.85	2.33	0.48	2216
27	24	5.87	2.11	0.36	2101	5.51	1.98	0.36	2197	5.36	1.93	0.36	2244	5.20	1.87	0.36	2292
27	26	6.17	1.48	0.24	2177	5.81	1.40	0.24	2273	5.64	1.35	0.24	2321	5.46	1.31	0.24	2368
28	18	5.00	3.80	0.76	1872	4.59	3.49	0.76	1986	4.41	3.35	0.76	2025	4.23	3.22	0.76	2063
28	20	5.25	3.36	0.64	1948	4.90	3.13	0.64	2044	4.72	3.02	0.64	2101	4.54	2.90	0.64	2158
28	22	5.56	2.89	0.52	2025	5.20	2.71	0.52	2139	5.02	2.61	0.52	2177	4.85	2.52	0.52	2216
28	24	5.87	2.35	0.40	2101	5.51	2.20	0.40	2197	5.36	2.14	0.40	2244	5.20	2.08	0.40	2292
28	26	6.17	1.73	0.28	2177	5.81	1.63	0.28	2273	5.64	1.58	0.28	2321	5.46	1.53	0.28	2368
29	18	5.00	4.00	0.80	1872	4.59	3.67	0.80	1986	4.41	3.53	0.80	2025	4.23	3.39	0.80	2063
29	20	5.25	3.57	0.68	1948	4.90	3.33	0.68	2044	4.72	3.21	0.68	2101	4.54	3.09	0.68	2158
29	22	5.56	3.11	0.56	2025	5.20	2.91	0.56	2139	5.02	2.81	0.56	2177	4.85	2.71	0.56	2216
29	24	5.87	2.58	0.44	2101	5.51	2.42	0.44	2197	5.36	2.36	0.44	2244	5.20	2.29	0.44	2292
29	26	6.17	1.97	0.32	2177	5.81	1.86	0.32	2273	5.64	1.80	0.32	2321	5.46	1.75	0.32	2368
30	18	5.00	4.20	0.84	1872	4.59	3.86	0.84	1986	4.41	3.71	0.84	2025	4.23	3.56	0.84	2063
30	20	5.25	3.78	0.72	1948	4.90	3.53	0.72	2044	4.72	3.40	0.72	2101	4.54	3.27	0.72	2158
30	22	5.56	3.34	0.60	2025	5.20	3.12	0.60	2139	5.02	3.01	0.60	2177	4.85	2.91	0.60	2216
30	24	5.87	2.82	0.48	2101	5.51	2.64	0.48	2197	5.36	2.57	0.48	2244	5.20	2.50	0.48	2292
30	26	6.17	2.22	0.36	2177	5.81	2.09	0.36	2273	5.64	2.03	0.36	2321	5.46	1.96	0.36	2368
31	18	5.00	4.40	0.88	1872	4.59	4.04	0.88	1986	4.41	3.88	0.88	2025	4.23	3.73	0.88	2063
31	20	5.25	3.99	0.76	1948	4.90	3.72	0.76	2044	4.72	3.59	0.76	2101	4.54	3.45	0.76	2158
31	22	5.56	3.56	0.64	2025	5.20	3.33	0.64	2139	5.02	3.22	0.64	2177	4.85	3.10	0.64	2216
31	24	5.87	3.05	0.52	2101	5.51	2.86	0.52	2197	5.36	2.78	0.52	2244	5.20	2.71	0.52	2292
31	26	6.17	2.47	0.40	2177	5.81	2.33	0.40	2273	5.64	2.25	0.40	2321	5.46	2.18	0.40	2368
32	18	5.00	4.60	0.92	1872	4.59	4.22	0.92	1986	4.41	4.06	0.92	2025	4.23	3.89	0.92	2063
32	20	5.25	4.20	0.80	1948	4.90	3.92	0.80	2044	4.72	3.77	0.80	2101	4.54	3.63	0.80	2158
32	22	5.56	3.78	0.68	2025	5.20	3.54	0.68	2139	5.02	3.42	0.68	2177	4.85	3.29	0.68	2216
32	24	5.87	3.28	0.56	2101	5.51	3.08	0.56	2197	5.36	3.00	0.56	2244	5.20	2.91	0.56	2292
32	26	6.17	2.72	0.44	2177	5.81	2.56	0.44	2273	5.64	2.48	0.44	2321	5.46	2.40	0.44	2368

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
MS-18RV -E1 : MU-18RV -E1 (240V)

CAPACITY: 5.1(kW) SHF : 0.66 INPUT: 2010(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.99	2.88	0.48	1608	5.74	2.75	0.48	1688	5.51	2.64	0.48	1769	5.30	2.55	0.48	1849
21	20	6.25	2.25	0.36	1688	5.99	2.16	0.36	1789	5.81	2.09	0.36	1829	5.61	2.02	0.36	1910
22	18	5.99	3.12	0.52	1608	5.74	2.98	0.52	1688	5.51	2.86	0.52	1769	5.30	2.76	0.52	1849
22	20	6.25	2.50	0.40	1688	5.99	2.40	0.40	1789	5.81	2.33	0.40	1829	5.61	2.24	0.40	1910
22	22	6.50	1.82	0.28	1749	6.27	1.76	0.28	1859	6.12	1.71	0.28	1910	5.87	1.64	0.28	1990
23	18	5.99	3.36	0.56	1608	5.74	3.21	0.56	1688	5.51	3.08	0.56	1769	5.30	2.97	0.56	1849
23	20	6.25	2.75	0.44	1688	5.99	2.64	0.44	1789	5.81	2.56	0.44	1829	5.61	2.47	0.44	1910
23	22	6.50	2.08	0.32	1749	6.27	2.01	0.32	1859	6.12	1.96	0.32	1910	5.87	1.88	0.32	1990
24	18	5.99	3.60	0.60	1608	5.74	3.44	0.60	1688	5.51	3.30	0.60	1769	5.30	3.18	0.60	1849
24	20	6.25	3.00	0.48	1688	5.99	2.88	0.48	1789	5.81	2.79	0.48	1829	5.61	2.69	0.48	1910
24	22	6.50	2.34	0.36	1749	6.27	2.26	0.36	1859	6.12	2.20	0.36	1910	5.87	2.11	0.36	1990
24	24	6.83	1.64	0.24	1829	6.58	1.58	0.24	1930	6.43	1.54	0.24	1990	6.22	1.49	0.24	2090
25	18	5.99	3.84	0.64	1608	5.74	3.67	0.64	1688	5.51	3.53	0.64	1769	5.30	3.39	0.64	1849
25	20	6.25	3.25	0.52	1688	5.99	3.12	0.52	1789	5.81	3.02	0.52	1829	5.61	2.92	0.52	1910
25	22	6.50	2.60	0.40	1749	6.27	2.51	0.40	1859	6.12	2.45	0.40	1910	5.87	2.35	0.40	1990
25	24	6.83	1.91	0.28	1829	6.58	1.84	0.28	1930	6.43	1.80	0.28	1990	6.22	1.74	0.28	2090
26	18	5.99	4.07	0.68	1608	5.74	3.90	0.68	1688	5.51	3.75	0.68	1769	5.30	3.61	0.68	1849
26	20	6.25	3.50	0.56	1688	5.99	3.36	0.56	1789	5.81	3.26	0.56	1829	5.61	3.14	0.56	1910
26	22	6.50	2.86	0.44	1749	6.27	2.76	0.44	1859	6.12	2.69	0.44	1910	5.87	2.58	0.44	1990
26	24	6.83	2.19	0.32	1829	6.58	2.11	0.32	1930	6.43	2.06	0.32	1990	6.22	1.99	0.32	2090
26	26	7.04	1.41	0.20	1930	6.83	1.37	0.20	2030	6.73	1.35	0.20	2090	6.53	1.31	0.20	2151
27	18	5.99	4.31	0.72	1608	5.74	4.13	0.72	1688	5.51	3.97	0.72	1769	5.30	3.82	0.72	1849
27	20	6.25	3.75	0.60	1688	5.99	3.60	0.60	1789	5.81	3.49	0.60	1829	5.61	3.37	0.60	1910
27	22	6.50	3.12	0.48	1749	6.27	3.01	0.48	1859	6.12	2.94	0.48	1910	5.87	2.82	0.48	1990
27	24	6.83	2.46	0.36	1829	6.58	2.37	0.36	1930	6.43	2.31	0.36	1990	6.22	2.24	0.36	2090
27	26	7.04	1.69	0.24	1930	6.83	1.64	0.24	2030	6.73	1.62	0.24	2090	6.53	1.57	0.24	2151
28	18	5.99	4.55	0.76	1608	5.74	4.36	0.76	1688	5.51	4.19	0.76	1769	5.30	4.03	0.76	1849
28	20	6.25	4.00	0.64	1688	5.99	3.84	0.64	1789	5.81	3.72	0.64	1829	5.61	3.59	0.64	1910
28	22	6.50	3.38	0.52	1749	6.27	3.26	0.52	1859	6.12	3.18	0.52	1910	5.87	3.05	0.52	1990
28	24	6.83	2.73	0.40	1829	6.58	2.63	0.40	1930	6.43	2.57	0.40	1990	6.22	2.49	0.40	2090
28	26	7.04	1.97	0.28	1930	6.83	1.91	0.28	2030	6.73	1.88	0.28	2090	6.53	1.83	0.28	2151
29	18	5.99	4.79	0.80	1608	5.74	4.59	0.80	1688	5.51	4.41	0.80	1769	5.30	4.24	0.80	1849
29	20	6.25	4.25	0.68	1688	5.99	4.07	0.68	1789	5.81	3.95	0.68	1829	5.61	3.81	0.68	1910
29	22	6.50	3.64	0.56	1749	6.27	3.51	0.56	1859	6.12	3.43	0.56	1910	5.87	3.28	0.56	1990
29	24	6.83	3.01	0.44	1829	6.58	2.89	0.44	1930	6.43	2.83	0.44	1990	6.22	2.74	0.44	2090
29	26	7.04	2.25	0.32	1930	6.83	2.19	0.32	2030	6.73	2.15	0.32	2090	6.53	2.09	0.32	2151
30	18	5.99	5.03	0.84	1608	5.74	4.82	0.84	1688	5.51	4.63	0.84	1769	5.30	4.46	0.84	1849
30	20	6.25	4.50	0.72	1688	5.99	4.31	0.72	1789	5.81	4.19	0.72	1829	5.61	4.04	0.72	1910
30	22	6.50	3.90	0.60	1749	6.27	3.76	0.60	1859	6.12	3.67	0.60	1910	5.87	3.52	0.60	1990
30	24	6.83	3.28	0.48	1829	6.58	3.16	0.48	1930	6.43	3.08	0.48	1990	6.22	2.99	0.48	2090
30	26	7.04	2.53	0.36	1930	6.83	2.46	0.36	2030	6.73	2.42	0.36	2090	6.53	2.35	0.36	2151
31	18	5.99	5.27	0.88	1608	5.74	5.05	0.88	1688	5.51	4.85	0.88	1769	5.30	4.67	0.88	1849
31	20	6.25	4.75	0.76	1688	5.99	4.55	0.76	1789	5.81	4.42	0.76	1829	5.61	4.26	0.76	1910
31	22	6.50	4.16	0.64	1749	6.27	4.01	0.64	1859	6.12	3.92	0.64	1910	5.87	3.75	0.64	1990
31	24	6.83	3.55	0.52	1829	6.58	3.42	0.52	1930	6.43	3.34	0.52	1990	6.22	3.24	0.52	2090
31	26	7.04	2.82	0.40	1930	6.83	2.73	0.40	2030	6.73	2.69	0.40	2090	6.53	2.61	0.40	2151
32	18	5.99	5.51	0.92	1608	5.74	5.28	0.92	1688	5.51	5.07	0.92	1769	5.30	4.88	0.92	1849
32	20	6.25	5.00	0.80	1688	5.99	4.79	0.80	1789	5.81	4.65	0.80	1829	5.61	4.49	0.80	1910
32	22	6.50	4.42	0.68	1749	6.27	4.27	0.68	1859	6.12	4.16	0.68	1910	5.87	3.99	0.68	1990
32	24	6.83	3.83	0.56	1829	6.58	3.68	0.56	1930	6.43	3.60	0.56	1990	6.22	3.48	0.56	2090
32	26	7.04	3.10	0.44	1930	6.83	3.01	0.44	2030	6.73	2.96	0.44	2090	6.53	2.87	0.44	2151

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
MS-18RV -E1 : MU-18RV -E1 (240V)

CAPACITY: 5.1(kW) ISHF : 0.66 NPUT: 2010(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	5.00	2.40	0.48	1970	4.59	2.20	0.48	2090	4.41	2.12	0.48	2131	4.23	2.03	0.48	2171
21	20	5.25	1.89	0.36	2050	4.90	1.76	0.36	2151	4.72	1.70	0.36	2211	4.54	1.63	0.36	2271
22	18	5.00	2.60	0.52	1970	4.59	2.39	0.52	2090	4.41	2.29	0.52	2131	4.23	2.20	0.52	2171
22	20	5.25	2.10	0.40	2050	4.90	1.96	0.40	2151	4.72	1.89	0.40	2211	4.54	1.82	0.40	2271
22	22	5.56	1.56	0.28	2131	5.20	1.46	0.28	2251	5.02	1.41	0.28	2291	4.85	1.36	0.28	2332
23	18	5.00	2.80	0.56	1970	4.59	2.57	0.56	2090	4.41	2.47	0.56	2131	4.23	2.37	0.56	2171
23	20	5.25	2.31	0.44	2050	4.90	2.15	0.44	2151	4.72	2.08	0.44	2211	4.54	2.00	0.44	2271
23	22	5.56	1.78	0.32	2131	5.20	1.66	0.32	2251	5.02	1.61	0.32	2291	4.85	1.55	0.32	2332
24	18	5.00	3.00	0.60	1970	4.59	2.75	0.60	2090	4.41	2.65	0.60	2131	4.23	2.54	0.60	2171
24	20	5.25	2.52	0.48	2050	4.90	2.35	0.48	2151	4.72	2.26	0.48	2211	4.54	2.18	0.48	2271
24	22	5.56	2.00	0.36	2131	5.20	1.87	0.36	2251	5.02	1.81	0.36	2291	4.85	1.74	0.36	2332
24	24	5.87	1.41	0.24	2211	5.51	1.32	0.24	2312	5.36	1.29	0.24	2362	5.20	1.25	0.24	2412
25	18	5.00	3.20	0.64	1970	4.59	2.94	0.64	2090	4.41	2.82	0.64	2131	4.23	2.71	0.64	2171
25	20	5.25	2.73	0.52	2050	4.90	2.55	0.52	2151	4.72	2.45	0.52	2211	4.54	2.36	0.52	2271
25	22	5.56	2.22	0.40	2131	5.20	2.08	0.40	2251	5.02	2.01	0.40	2291	4.85	1.94	0.40	2332
25	24	5.87	1.64	0.28	2211	5.51	1.54	0.28	2312	5.36	1.50	0.28	2362	5.20	1.46	0.28	2412
26	18	5.00	3.40	0.68	1970	4.59	3.12	0.68	2090	4.41	3.00	0.68	2131	4.23	2.88	0.68	2171
26	20	5.25	2.94	0.56	2050	4.90	2.74	0.56	2151	4.72	2.64	0.56	2211	4.54	2.54	0.56	2271
26	22	5.56	2.45	0.44	2131	5.20	2.29	0.44	2251	5.02	2.21	0.44	2291	4.85	2.13	0.44	2332
26	24	5.87	1.88	0.32	2211	5.51	1.76	0.32	2312	5.36	1.71	0.32	2362	5.20	1.66	0.32	2412
26	26	6.17	1.23	0.20	2291	5.81	1.16	0.20	2392	5.64	1.13	0.20	2442	5.46	1.09	0.20	2492
27	18	5.00	3.60	0.72	1970	4.59	3.30	0.72	2090	4.41	3.18	0.72	2131	4.23	3.05	0.72	2171
27	20	5.25	3.15	0.60	2050	4.90	2.94	0.60	2151	4.72	2.83	0.60	2211	4.54	2.72	0.60	2271
27	22	5.56	2.67	0.48	2131	5.20	2.50	0.48	2251	5.02	2.41	0.48	2291	4.85	2.33	0.48	2332
27	24	5.87	2.11	0.36	2211	5.51	1.98	0.36	2312	5.36	1.93	0.36	2362	5.20	1.87	0.36	2412
27	26	6.17	1.48	0.24	2291	5.81	1.40	0.24	2392	5.64	1.35	0.24	2442	5.46	1.31	0.24	2492
28	18	5.00	3.80	0.76	1970	4.59	3.49	0.76	2090	4.41	3.35	0.76	2131	4.23	3.22	0.76	2171
28	20	5.25	3.36	0.64	2050	4.90	3.13	0.64	2151	4.72	3.02	0.64	2211	4.54	2.90	0.64	2271
28	22	5.56	2.89	0.52	2131	5.20	2.71	0.52	2251	5.02	2.61	0.52	2291	4.85	2.52	0.52	2332
28	24	5.87	2.35	0.40	2211	5.51	2.20	0.40	2312	5.36	2.14	0.40	2362	5.20	2.08	0.40	2412
28	26	6.17	1.73	0.28	2291	5.81	1.63	0.28	2392	5.64	1.58	0.28	2442	5.46	1.53	0.28	2492
29	18	5.00	4.00	0.80	1970	4.59	3.67	0.80	2090	4.41	3.53	0.80	2131	4.23	3.39	0.80	2171
29	20	5.25	3.57	0.68	2050	4.90	3.33	0.68	2151	4.72	3.21	0.68	2211	4.54	3.09	0.68	2271
29	22	5.56	3.11	0.56	2131	5.20	2.91	0.56	2251	5.02	2.81	0.56	2291	4.85	2.71	0.56	2332
29	24	5.87	2.58	0.44	2211	5.51	2.42	0.44	2312	5.36	2.36	0.44	2362	5.20	2.29	0.44	2412
29	26	6.17	1.97	0.32	2291	5.81	1.86	0.32	2392	5.64	1.80	0.32	2442	5.46	1.75	0.32	2492
30	18	5.00	4.20	0.84	1970	4.59	3.86	0.84	2090	4.41	3.71	0.84	2131	4.23	3.56	0.84	2171
30	20	5.25	3.78	0.72	2050	4.90	3.53	0.72	2151	4.72	3.40	0.72	2211	4.54	3.27	0.72	2271
30	22	5.56	3.34	0.60	2131	5.20	3.12	0.60	2251	5.02	3.01	0.60	2291	4.85	2.91	0.60	2332
30	24	5.87	2.82	0.48	2211	5.51	2.64	0.48	2312	5.36	2.57	0.48	2362	5.20	2.50	0.48	2412
30	26	6.17	2.22	0.36	2291	5.81	2.09	0.36	2392	5.64	2.03	0.36	2442	5.46	1.96	0.36	2492
31	18	5.00	4.40	0.88	1970	4.59	4.04	0.88	2090	4.41	3.88	0.88	2131	4.23	3.73	0.88	2171
31	20	5.25	3.99	0.76	2050	4.90	3.72	0.76	2151	4.72	3.59	0.76	2211	4.54	3.45	0.76	2271
31	22	5.56	3.56	0.64	2131	5.20	3.33	0.64	2251	5.02	3.22	0.64	2291	4.85	3.10	0.64	2332
31	24	5.87	3.05	0.52	2211	5.51	2.86	0.52	2312	5.36	2.78	0.52	2362	5.20	2.71	0.52	2412
31	26	6.17	2.47	0.40	2291	5.81	2.33	0.40	2392	5.64	2.25	0.40	2442	5.46	2.18	0.40	2492
32	18	5.00	4.60	0.92	1970	4.59	4.22	0.92	2090	4.41	4.06	0.92	2131	4.23	3.89	0.92	2171
32	20	5.25	4.20	0.80	2050	4.90	3.92	0.80	2151	4.72	3.77	0.80	2211	4.54	3.63	0.80	2271
32	22	5.56	3.78	0.68	2131	5.20	3.54	0.68	2251	5.02	3.42	0.68	2291	4.85	3.29	0.68	2332
32	24	5.87	3.28	0.56	2211	5.51	3.08	0.56	2312	5.36	3.00	0.56	2362	5.20	2.91	0.56	2412
32	26	6.17	2.72	0.44	2291	5.81	2.56	0.44	2392	5.64	2.48	0.44	2442	5.46	2.40	0.44	2492

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
MS-24RV -E1 : MU-24RV -E1 (220V)

CAPACITY: 6.4(kW) SHF : 0.64 INPUT: 2780(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	7.52	3.46	0.46	2224	7.20	3.31	0.46	2335	6.91	3.18	0.46	2446	6.66	3.06	0.46	2558
21	20	7.84	2.67	0.34	2335	7.52	2.56	0.34	2474	7.30	2.48	0.34	2530	7.04	2.39	0.34	2641
22	18	7.52	3.76	0.50	2224	7.20	3.60	0.50	2335	6.91	3.46	0.50	2446	6.66	3.33	0.50	2558
22	20	7.84	2.98	0.38	2335	7.52	2.86	0.38	2474	7.30	2.77	0.38	2530	7.04	2.68	0.38	2641
22	22	8.16	2.12	0.26	2419	7.87	2.05	0.26	2572	7.68	2.00	0.26	2641	7.36	1.91	0.26	2752
23	18	7.52	4.06	0.54	2224	7.20	3.89	0.54	2335	6.91	3.73	0.54	2446	6.66	3.59	0.54	2558
23	20	7.84	3.29	0.42	2335	7.52	3.16	0.42	2474	7.30	3.06	0.42	2530	7.04	2.96	0.42	2641
23	22	8.16	2.45	0.30	2419	7.87	2.36	0.30	2572	7.68	2.30	0.30	2641	7.36	2.21	0.30	2752
24	18	7.52	4.36	0.58	2224	7.20	4.18	0.58	2335	6.91	4.01	0.58	2446	6.66	3.86	0.58	2558
24	20	7.84	3.61	0.46	2335	7.52	3.46	0.46	2474	7.30	3.36	0.46	2530	7.04	3.24	0.46	2641
24	22	8.16	2.77	0.34	2419	7.87	2.68	0.34	2572	7.68	2.61	0.34	2641	7.36	2.50	0.34	2752
24	24	8.58	1.89	0.22	2530	8.26	1.82	0.22	2669	8.06	1.77	0.22	2752	7.81	1.72	0.22	2891
25	18	7.52	4.66	0.62	2224	7.20	4.46	0.62	2335	6.91	4.29	0.62	2446	6.66	4.13	0.62	2558
25	20	7.84	3.92	0.50	2335	7.52	3.76	0.50	2474	7.30	3.65	0.50	2530	7.04	3.52	0.50	2641
25	22	8.16	3.10	0.38	2419	7.87	2.99	0.38	2572	7.68	2.92	0.38	2641	7.36	2.80	0.38	2752
25	24	8.58	2.23	0.26	2530	8.26	2.15	0.26	2669	8.06	2.10	0.26	2752	7.81	2.03	0.26	2891
26	18	7.52	4.96	0.66	2224	7.20	4.75	0.66	2335	6.91	4.56	0.66	2446	6.66	4.39	0.66	2558
26	20	7.84	4.23	0.54	2335	7.52	4.06	0.54	2474	7.30	3.94	0.54	2530	7.04	3.80	0.54	2641
26	22	8.16	3.43	0.42	2419	7.87	3.31	0.42	2572	7.68	3.23	0.42	2641	7.36	3.09	0.42	2752
26	24	8.58	2.57	0.30	2530	8.26	2.48	0.30	2669	8.06	2.42	0.30	2752	7.81	2.34	0.30	2891
26	26	8.83	1.59	0.18	2669	8.58	1.54	0.18	2808	8.45	1.52	0.18	2891	8.19	1.47	0.18	2975
27	18	7.52	5.26	0.70	2224	7.20	5.04	0.70	2335	6.91	4.84	0.70	2446	6.66	4.66	0.70	2558
27	20	7.84	4.55	0.58	2335	7.52	4.36	0.58	2474	7.30	4.23	0.58	2530	7.04	4.08	0.58	2641
27	22	8.16	3.75	0.46	2419	7.87	3.62	0.46	2572	7.68	3.53	0.46	2641	7.36	3.39	0.46	2752
27	24	8.58	2.92	0.34	2530	8.26	2.81	0.34	2669	8.06	2.74	0.34	2752	7.81	2.65	0.34	2891
27	26	8.83	1.94	0.22	2669	8.58	1.89	0.22	2808	8.45	1.86	0.22	2891	8.19	1.80	0.22	2975
28	18	7.52	5.56	0.74	2224	7.20	5.33	0.74	2335	6.91	5.11	0.74	2446	6.66	4.93	0.74	2558
28	20	7.84	4.86	0.62	2335	7.52	4.66	0.62	2474	7.30	4.52	0.62	2530	7.04	4.36	0.62	2641
28	22	8.16	4.08	0.50	2419	7.87	3.94	0.50	2572	7.68	3.84	0.50	2641	7.36	3.68	0.50	2752
28	24	8.58	3.26	0.38	2530	8.26	3.14	0.38	2669	8.06	3.06	0.38	2752	7.81	2.97	0.38	2891
28	26	8.83	2.30	0.26	2669	8.58	2.23	0.26	2808	8.45	2.20	0.26	2891	8.19	2.13	0.26	2975
29	18	7.52	5.87	0.78	2224	7.20	5.62	0.78	2335	6.91	5.39	0.78	2446	6.66	5.19	0.78	2558
29	20	7.84	5.17	0.66	2335	7.52	4.96	0.66	2474	7.30	4.82	0.66	2530	7.04	4.65	0.66	2641
29	22	8.16	4.41	0.54	2419	7.87	4.25	0.54	2572	7.68	4.15	0.54	2641	7.36	3.97	0.54	2752
29	24	8.58	3.60	0.42	2530	8.26	3.47	0.42	2669	8.06	3.39	0.42	2752	7.81	3.28	0.42	2891
29	26	8.83	2.65	0.30	2669	8.58	2.57	0.30	2808	8.45	2.53	0.30	2891	8.19	2.46	0.30	2975
30	18	7.52	6.17	0.82	2224	7.20	5.90	0.82	2335	6.91	5.67	0.82	2446	6.66	5.46	0.82	2558
30	20	7.84	5.49	0.70	2335	7.52	5.26	0.70	2474	7.30	5.11	0.70	2530	7.04	4.93	0.70	2641
30	22	8.16	4.73	0.58	2419	7.87	4.57	0.58	2572	7.68	4.45	0.58	2641	7.36	4.27	0.58	2752
30	24	8.58	3.94	0.46	2530	8.26	3.80	0.46	2669	8.06	3.71	0.46	2752	7.81	3.59	0.46	2891
30	26	8.83	3.00	0.34	2669	8.58	2.92	0.34	2808	8.45	2.87	0.34	2891	8.19	2.79	0.34	2975
31	18	7.52	6.47	0.86	2224	7.20	6.19	0.86	2335	6.91	5.94	0.86	2446	6.66	5.72	0.86	2558
31	20	7.84	5.80	0.74	2335	7.52	5.56	0.74	2474	7.30	5.40	0.74	2530	7.04	5.21	0.74	2641
31	22	8.16	5.06	0.62	2419	7.87	4.88	0.62	2572	7.68	4.76	0.62	2641	7.36	4.56	0.62	2752
31	24	8.58	4.29	0.50	2530	8.26	4.13	0.50	2669	8.06	4.03	0.50	2752	7.81	3.90	0.50	2891
31	26	8.83	3.36	0.38	2669	8.58	3.26	0.38	2808	8.45	3.21	0.38	2891	8.19	3.11	0.38	2975
32	18	7.52	6.77	0.90	2224	7.20	6.48	0.90	2335	6.91	6.22	0.90	2446	6.66	5.99	0.90	2558
32	20	7.84	6.12	0.78	2335	7.52	5.87	0.78	2474	7.30	5.69	0.78	2530	7.04	5.49	0.78	2641
32	22	8.16	5.39	0.66	2419	7.87	5.20	0.66	2572	7.68	5.07	0.66	2641	7.36	4.86	0.66	2752
32	24	8.58	4.63	0.54	2530	8.26	4.46	0.54	2669	8.06	4.35	0.54	2752	7.81	4.22	0.54	2891
32	26	8.83	3.71	0.42	2669	8.58	3.60	0.42	2808	8.45	3.55	0.42	2891	8.19	3.44	0.42	2975

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
MS-24RV -E1 : MU-24RV -E1 (220V)
CAPACITY: 6.4(kW) SHF : 0.64 INPUT: 2780(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	6.27	2.89	0.46	2724	5.76	2.65	0.46	2891	5.54	2.55	0.46	2947	5.31	2.44	0.46	3002
21	20	6.59	2.24	0.34	2836	6.14	2.09	0.34	2975	5.92	2.01	0.34	3058	5.70	1.94	0.34	3141
22	18	6.27	3.14	0.50	2724	5.76	2.88	0.50	2891	5.54	2.77	0.50	2947	5.31	2.66	0.50	3002
22	20	6.59	2.50	0.38	2836	6.14	2.33	0.38	2975	5.92	2.25	0.38	3058	5.70	2.16	0.38	3141
22	22	6.98	1.81	0.26	2947	6.53	1.70	0.26	3114	6.30	1.64	0.26	3169	6.08	1.58	0.26	3225
23	18	6.27	3.39	0.54	2724	5.76	3.11	0.54	2891	5.54	2.99	0.54	2947	5.31	2.87	0.54	3002
23	20	6.59	2.77	0.42	2836	6.14	2.58	0.42	2975	5.92	2.49	0.42	3058	5.70	2.39	0.42	3141
23	22	6.98	2.09	0.30	2947	6.53	1.96	0.30	3114	6.30	1.89	0.30	3169	6.08	1.82	0.30	3225
24	18	6.27	3.64	0.58	2724	5.76	3.34	0.58	2891	5.54	3.21	0.58	2947	5.31	3.08	0.58	3002
24	20	6.59	3.03	0.46	2836	6.14	2.83	0.46	2975	5.92	2.72	0.46	3058	5.70	2.62	0.46	3141
24	22	6.98	2.37	0.34	2947	6.53	2.22	0.34	3114	6.30	2.14	0.34	3169	6.08	2.07	0.34	3225
24	24	7.36	1.62	0.22	3058	6.91	1.52	0.22	3197	6.72	1.48	0.22	3267	6.53	1.44	0.22	3336
25	18	6.27	3.89	0.62	2724	5.76	3.57	0.62	2891	5.54	3.43	0.62	2947	5.31	3.29	0.62	3002
25	20	6.59	3.30	0.50	2836	6.14	3.07	0.50	2975	5.92	2.96	0.50	3058	5.70	2.85	0.50	3141
25	22	6.98	2.65	0.38	2947	6.53	2.48	0.38	3114	6.30	2.40	0.38	3169	6.08	2.31	0.38	3225
25	24	7.36	1.91	0.26	3058	6.91	1.80	0.26	3197	6.72	1.75	0.26	3267	6.53	1.70	0.26	3336
26	18	6.27	4.14	0.66	2724	5.76	3.80	0.66	2891	5.54	3.65	0.66	2947	5.31	3.51	0.66	3002
26	20	6.59	3.56	0.54	2836	6.14	3.32	0.54	2975	5.92	3.20	0.54	3058	5.70	3.08	0.54	3141
26	22	6.98	2.93	0.42	2947	6.53	2.74	0.42	3114	6.30	2.65	0.42	3169	6.08	2.55	0.42	3225
26	24	7.36	2.21	0.30	3058	6.91	2.07	0.30	3197	6.72	2.02	0.30	3267	6.53	1.96	0.30	3336
26	26	7.74	1.39	0.18	3169	7.30	1.31	0.18	3308	7.07	1.27	0.18	3378	6.85	1.23	0.18	3447
27	18	6.27	4.39	0.70	2724	5.76	4.03	0.70	2891	5.54	3.88	0.70	2947	5.31	3.72	0.70	3002
27	20	6.59	3.82	0.58	2836	6.14	3.56	0.58	2975	5.92	3.43	0.58	3058	5.70	3.30	0.58	3141
27	22	6.98	3.21	0.46	2947	6.53	3.00	0.46	3114	6.30	2.90	0.46	3169	6.08	2.80	0.46	3225
27	24	7.36	2.50	0.34	3058	6.91	2.35	0.34	3197	6.72	2.28	0.34	3267	6.53	2.22	0.34	3336
27	26	7.74	1.70	0.22	3169	7.30	1.61	0.22	3308	7.07	1.56	0.22	3378	6.85	1.51	0.22	3447
28	18	6.27	4.64	0.74	2724	5.76	4.26	0.74	2891	5.54	4.10	0.74	2947	5.31	3.93	0.74	3002
28	20	6.59	4.09	0.62	2836	6.14	3.81	0.62	2975	5.92	3.67	0.62	3058	5.70	3.53	0.62	3141
28	22	6.98	3.49	0.50	2947	6.53	3.26	0.50	3114	6.30	3.15	0.50	3169	6.08	3.04	0.50	3225
28	24	7.36	2.80	0.38	3058	6.91	2.63	0.38	3197	6.72	2.55	0.38	3267	6.53	2.48	0.38	3336
28	26	7.74	2.01	0.26	3169	7.30	1.90	0.26	3308	7.07	1.84	0.26	3378	6.85	1.78	0.26	3447
29	18	6.27	4.89	0.78	2724	5.76	4.49	0.78	2891	5.54	4.32	0.78	2947	5.31	4.14	0.78	3002
29	20	6.59	4.35	0.66	2836	6.14	4.06	0.66	2975	5.92	3.91	0.66	3058	5.70	3.76	0.66	3141
29	22	6.98	3.77	0.54	2947	6.53	3.53	0.54	3114	6.30	3.40	0.54	3169	6.08	3.28	0.54	3225
29	24	7.36	3.09	0.42	3058	6.91	2.90	0.42	3197	6.72	2.82	0.42	3267	6.53	2.74	0.42	3336
29	26	7.74	2.32	0.30	3169	7.30	2.19	0.30	3308	7.07	2.12	0.30	3378	6.85	2.05	0.30	3447
30	18	6.27	5.14	0.82	2724	5.76	4.72	0.82	2891	5.54	4.54	0.82	2947	5.31	4.36	0.82	3002
30	20	6.59	4.61	0.70	2836	6.14	4.30	0.70	2975	5.92	4.14	0.70	3058	5.70	3.99	0.70	3141
30	22	6.98	4.05	0.58	2947	6.53	3.79	0.58	3114	6.30	3.66	0.58	3169	6.08	3.53	0.58	3225
30	24	7.36	3.39	0.46	3058	6.91	3.18	0.46	3197	6.72	3.09	0.46	3267	6.53	3.00	0.46	3336
30	26	7.74	2.63	0.34	3169	7.30	2.48	0.34	3308	7.07	2.40	0.34	3378	6.85	2.33	0.34	3447
31	18	6.27	5.39	0.86	2724	5.76	4.95	0.86	2891	5.54	4.76	0.86	2947	5.31	4.57	0.86	3002
31	20	6.59	4.88	0.74	2836	6.14	4.55	0.74	2975	5.92	4.38	0.74	3058	5.70	4.22	0.74	3141
31	22	6.98	4.33	0.62	2947	6.53	4.05	0.62	3114	6.30	3.91	0.62	3169	6.08	3.77	0.62	3225
31	24	7.36	3.68	0.50	3058	6.91	3.46	0.50	3197	6.72	3.36	0.50	3267	6.53	3.26	0.50	3336
31	26	7.74	2.94	0.38	3169	7.30	2.77	0.38	3308	7.07	2.69	0.38	3378	6.85	2.60	0.38	3447
32	18	6.27	5.64	0.90	2724	5.76	5.18	0.90	2891	5.54	4.98	0.90	2947	5.31	4.78	0.90	3002
32	20	6.59	5.14	0.78	2836	6.14	4.79	0.78	2975	5.92	4.62	0.78	3058	5.70	4.44	0.78	3141
32	22	6.98	4.60	0.66	2947	6.53	4.31	0.66	3114	6.30	4.16	0.66	3169	6.08	4.01	0.66	3225
32	24	7.36	3.97	0.54	3058	6.91	3.73	0.54	3197	6.72	3.63	0.54	3267	6.53	3.53	0.54	3336
32	26	7.74	3.25	0.42	3169	7.30	3.06	0.42	3308	7.07	2.97	0.42	3378	6.85	2.88	0.42	3447

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
MS-24RV -E1 : MU-24RV -E1 (240V)

CAPACITY: 6.4(kW) SHF : 0.64 INPUT: 2900(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	7.52	3.46	0.46	2320	7.20	3.31	0.46	2436	6.91	3.18	0.46	2552	6.66	3.06	0.46	2668
21	20	7.84	2.67	0.34	2436	7.52	2.56	0.34	2581	7.30	2.48	0.34	2639	7.04	2.39	0.34	2755
22	18	7.52	3.76	0.50	2320	7.20	3.60	0.50	2436	6.91	3.46	0.50	2552	6.66	3.33	0.50	2668
22	20	7.84	2.98	0.38	2436	7.52	2.86	0.38	2581	7.30	2.77	0.38	2639	7.04	2.68	0.38	2755
22	22	8.16	2.12	0.26	2523	7.87	2.05	0.26	2683	7.68	2.00	0.26	2755	7.36	1.91	0.26	2871
23	18	7.52	4.06	0.54	2320	7.20	3.89	0.54	2436	6.91	3.73	0.54	2552	6.66	3.59	0.54	2668
23	20	7.84	3.29	0.42	2436	7.52	3.16	0.42	2581	7.30	3.06	0.42	2639	7.04	2.96	0.42	2755
23	22	8.16	2.45	0.30	2523	7.87	2.36	0.30	2683	7.68	2.30	0.30	2755	7.36	2.21	0.30	2871
24	18	7.52	4.36	0.58	2320	7.20	4.18	0.58	2436	6.91	4.01	0.58	2552	6.66	3.86	0.58	2668
24	20	7.84	3.61	0.46	2436	7.52	3.46	0.46	2581	7.30	3.36	0.46	2639	7.04	3.24	0.46	2755
24	22	8.16	2.77	0.34	2523	7.87	2.68	0.34	2683	7.68	2.61	0.34	2755	7.36	2.50	0.34	2871
24	24	8.58	1.89	0.22	2639	8.26	1.82	0.22	2784	8.06	1.77	0.22	2871	7.81	1.72	0.22	3016
25	18	7.52	4.66	0.62	2320	7.20	4.46	0.62	2436	6.91	4.29	0.62	2552	6.66	4.13	0.62	2668
25	20	7.84	3.92	0.50	2436	7.52	3.76	0.50	2581	7.30	3.65	0.50	2639	7.04	3.52	0.50	2755
25	22	8.16	3.10	0.38	2523	7.87	2.99	0.38	2683	7.68	2.92	0.38	2755	7.36	2.80	0.38	2871
25	24	8.58	2.23	0.26	2639	8.26	2.15	0.26	2784	8.06	2.10	0.26	2871	7.81	2.03	0.26	3016
26	18	7.52	4.96	0.66	2320	7.20	4.75	0.66	2436	6.91	4.56	0.66	2552	6.66	4.39	0.66	2668
26	20	7.84	4.23	0.54	2436	7.52	4.06	0.54	2581	7.30	3.94	0.54	2639	7.04	3.80	0.54	2755
26	22	8.16	3.43	0.42	2523	7.87	3.31	0.42	2683	7.68	3.23	0.42	2755	7.36	3.09	0.42	2871
26	24	8.58	2.57	0.30	2639	8.26	2.48	0.30	2784	8.06	2.42	0.30	2871	7.81	2.34	0.30	3016
26	26	8.83	1.59	0.18	2784	8.58	1.54	0.18	2929	8.45	1.52	0.18	3016	8.19	1.47	0.18	3103
27	18	7.52	5.26	0.70	2320	7.20	5.04	0.70	2436	6.91	4.84	0.70	2552	6.66	4.66	0.70	2668
27	20	7.84	4.55	0.58	2436	7.52	4.36	0.58	2581	7.30	4.23	0.58	2639	7.04	4.08	0.58	2755
27	22	8.16	3.75	0.46	2523	7.87	3.62	0.46	2683	7.68	3.53	0.46	2755	7.36	3.39	0.46	2871
27	24	8.58	2.92	0.34	2639	8.26	2.81	0.34	2784	8.06	2.74	0.34	2871	7.81	2.65	0.34	3016
27	26	8.83	1.94	0.22	2784	8.58	1.89	0.22	2929	8.45	1.86	0.22	3016	8.19	1.80	0.22	3103
28	18	7.52	5.56	0.74	2320	7.20	5.33	0.74	2436	6.91	5.11	0.74	2552	6.66	4.93	0.74	2668
28	20	7.84	4.86	0.62	2436	7.52	4.66	0.62	2581	7.30	4.52	0.62	2639	7.04	4.36	0.62	2755
28	22	8.16	4.08	0.50	2523	7.87	3.94	0.50	2683	7.68	3.84	0.50	2755	7.36	3.68	0.50	2871
28	24	8.58	3.26	0.38	2639	8.26	3.14	0.38	2784	8.06	3.06	0.38	2871	7.81	2.97	0.38	3016
28	26	8.83	2.30	0.26	2784	8.58	2.23	0.26	2929	8.45	2.20	0.26	3016	8.19	2.13	0.26	3103
29	18	7.52	5.87	0.78	2320	7.20	5.62	0.78	2436	6.91	5.39	0.78	2552	6.66	5.19	0.78	2668
29	20	7.84	5.17	0.66	2436	7.52	4.96	0.66	2581	7.30	4.82	0.66	2639	7.04	4.65	0.66	2755
29	22	8.16	4.41	0.54	2523	7.87	4.25	0.54	2683	7.68	4.15	0.54	2755	7.36	3.97	0.54	2871
29	24	8.58	3.60	0.42	2639	8.26	3.47	0.42	2784	8.06	3.39	0.42	2871	7.81	3.28	0.42	3016
29	26	8.83	2.65	0.30	2784	8.58	2.57	0.30	2929	8.45	2.53	0.30	3016	8.19	2.46	0.30	3103
30	18	7.52	6.17	0.82	2320	7.20	5.90	0.82	2436	6.91	5.67	0.82	2552	6.66	5.46	0.82	2668
30	20	7.84	5.49	0.70	2436	7.52	5.26	0.70	2581	7.30	5.11	0.70	2639	7.04	4.93	0.70	2755
30	22	8.16	4.73	0.58	2523	7.87	4.57	0.58	2683	7.68	4.45	0.58	2755	7.36	4.27	0.58	2871
30	24	8.58	3.94	0.46	2639	8.26	3.80	0.46	2784	8.06	3.71	0.46	2871	7.81	3.59	0.46	3016
30	26	8.83	3.00	0.34	2784	8.58	2.92	0.34	2929	8.45	2.87	0.34	3016	8.19	2.79	0.34	3103
31	18	7.52	6.47	0.86	2320	7.20	6.19	0.86	2436	6.91	5.94	0.86	2552	6.66	5.72	0.86	2668
31	20	7.84	5.80	0.74	2436	7.52	5.56	0.74	2581	7.30	5.40	0.74	2639	7.04	5.21	0.74	2755
31	22	8.16	5.06	0.62	2523	7.87	4.88	0.62	2683	7.68	4.76	0.62	2755	7.36	4.56	0.62	2871
31	24	8.58	4.29	0.50	2639	8.26	4.13	0.50	2784	8.06	4.03	0.50	2871	7.81	3.90	0.50	3016
31	26	8.83	3.36	0.38	2784	8.58	3.26	0.38	2929	8.45	3.21	0.38	3016	8.19	3.11	0.38	3103
32	18	7.52	6.77	0.90	2320	7.20	6.48	0.90	2436	6.91	6.22	0.90	2552	6.66	5.99	0.90	2668
32	20	7.84	6.12	0.78	2436	7.52	5.87	0.78	2581	7.30	5.69	0.78	2639	7.04	5.49	0.78	2755
32	22	8.16	5.39	0.66	2523	7.87	5.20	0.66	2683	7.68	5.07	0.66	2755	7.36	4.86	0.66	2871
32	24	8.58	4.63	0.54	2639	8.26	4.46	0.54	2784	8.06	4.35	0.54	2871	7.81	4.22	0.54	3016
32	26	8.83	3.71	0.42	2784	8.58	3.60	0.42	2929	8.45	3.55	0.42	3016	8.19	3.44	0.42	3103

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
MS-24RV -E1 : MU-24RV -E1 (240V)
CAPACITY: 6.4(kW) SHF : 0.64 INPUT: 2900(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	6.27	2.89	0.46	2842	5.76	2.65	0.46	3016	5.54	2.55	0.46	3074	5.31	2.44	0.46	3132
21	20	6.59	2.24	0.34	2958	6.14	2.09	0.34	3103	5.92	2.01	0.34	3190	5.70	1.94	0.34	3277
22	18	6.27	3.14	0.50	2842	5.76	2.88	0.50	3016	5.54	2.77	0.50	3074	5.31	2.66	0.50	3132
22	20	6.59	2.50	0.38	2958	6.14	2.33	0.38	3103	5.92	2.25	0.38	3190	5.70	2.16	0.38	3277
22	22	6.98	1.81	0.26	3074	6.53	1.70	0.26	3248	6.30	1.64	0.26	3306	6.08	1.58	0.26	3364
23	18	6.27	3.39	0.54	2842	5.76	3.11	0.54	3016	5.54	2.99	0.54	3074	5.31	2.87	0.54	3132
23	20	6.59	2.77	0.42	2958	6.14	2.58	0.42	3103	5.92	2.49	0.42	3190	5.70	2.39	0.42	3277
23	22	6.98	2.09	0.30	3074	6.53	1.96	0.30	3248	6.30	1.89	0.30	3306	6.08	1.82	0.30	3364
24	18	6.27	3.64	0.58	2842	5.76	3.34	0.58	3016	5.54	3.21	0.58	3074	5.31	3.08	0.58	3132
24	20	6.59	3.03	0.46	2958	6.14	2.83	0.46	3103	5.92	2.72	0.46	3190	5.70	2.62	0.46	3277
24	22	6.98	2.37	0.34	3074	6.53	2.22	0.34	3248	6.30	2.14	0.34	3306	6.08	2.07	0.34	3364
24	24	7.36	1.62	0.22	3190	6.91	1.52	0.22	3335	6.72	1.48	0.22	3408	6.53	1.44	0.22	3480
25	18	6.27	3.89	0.62	2842	5.76	3.57	0.62	3016	5.54	3.43	0.62	3074	5.31	3.29	0.62	3132
25	20	6.59	3.30	0.50	2958	6.14	3.07	0.50	3103	5.92	2.96	0.50	3190	5.70	2.85	0.50	3277
25	22	6.98	2.65	0.38	3074	6.53	2.48	0.38	3248	6.30	2.40	0.38	3306	6.08	2.31	0.38	3364
25	24	7.36	1.91	0.26	3190	6.91	1.80	0.26	3335	6.72	1.75	0.26	3408	6.53	1.70	0.26	3480
26	18	6.27	4.14	0.66	2842	5.76	3.80	0.66	3016	5.54	3.65	0.66	3074	5.31	3.51	0.66	3132
26	20	6.59	3.56	0.54	2958	6.14	3.32	0.54	3103	5.92	3.20	0.54	3190	5.70	3.08	0.54	3277
26	22	6.98	2.93	0.42	3074	6.53	2.74	0.42	3248	6.30	2.65	0.42	3306	6.08	2.55	0.42	3364
26	24	7.36	2.21	0.30	3190	6.91	2.07	0.30	3335	6.72	2.02	0.30	3408	6.53	1.96	0.30	3480
26	26	7.74	1.39	0.18	3306	7.30	1.31	0.18	3451	7.07	1.27	0.18	3524	6.85	1.23	0.18	3596
27	18	6.27	4.39	0.70	2842	5.76	4.03	0.70	3016	5.54	3.88	0.70	3074	5.31	3.72	0.70	3132
27	20	6.59	3.82	0.58	2958	6.14	3.56	0.58	3103	5.92	3.43	0.58	3190	5.70	3.30	0.58	3277
27	22	6.98	3.21	0.46	3074	6.53	3.00	0.46	3248	6.30	2.90	0.46	3306	6.08	2.80	0.46	3364
27	24	7.36	2.50	0.34	3190	6.91	2.35	0.34	3335	6.72	2.28	0.34	3408	6.53	2.22	0.34	3480
27	26	7.74	1.70	0.22	3306	7.30	1.61	0.22	3451	7.07	1.56	0.22	3524	6.85	1.51	0.22	3596
28	18	6.27	4.64	0.74	2842	5.76	4.26	0.74	3016	5.54	4.10	0.74	3074	5.31	3.93	0.74	3132
28	20	6.59	4.09	0.62	2958	6.14	3.81	0.62	3103	5.92	3.67	0.62	3190	5.70	3.53	0.62	3277
28	22	6.98	3.49	0.50	3074	6.53	3.26	0.50	3248	6.30	3.15	0.50	3306	6.08	3.04	0.50	3364
28	24	7.36	2.80	0.38	3190	6.91	2.63	0.38	3335	6.72	2.55	0.38	3408	6.53	2.48	0.38	3480
28	26	7.74	2.01	0.26	3306	7.30	1.90	0.26	3451	7.07	1.84	0.26	3524	6.85	1.78	0.26	3596
29	18	6.27	4.89	0.78	2842	5.76	4.49	0.78	3016	5.54	4.32	0.78	3074	5.31	4.14	0.78	3132
29	20	6.59	4.35	0.66	2958	6.14	4.06	0.66	3103	5.92	3.91	0.66	3190	5.70	3.76	0.66	3277
29	22	6.98	3.77	0.54	3074	6.53	3.53	0.54	3248	6.30	3.40	0.54	3306	6.08	3.28	0.54	3364
29	24	7.36	3.09	0.42	3190	6.91	2.90	0.42	3335	6.72	2.82	0.42	3408	6.53	2.74	0.42	3480
29	26	7.74	2.32	0.30	3306	7.30	2.19	0.30	3451	7.07	2.12	0.30	3524	6.85	2.05	0.30	3596
30	18	6.27	5.14	0.82	2842	5.76	4.72	0.82	3016	5.54	4.54	0.82	3074	5.31	4.36	0.82	3132
30	20	6.59	4.61	0.70	2958	6.14	4.30	0.70	3103	5.92	4.14	0.70	3190	5.70	3.99	0.70	3277
30	22	6.98	4.05	0.58	3074	6.53	3.79	0.58	3248	6.30	3.66	0.58	3306	6.08	3.53	0.58	3364
30	24	7.36	3.39	0.46	3190	6.91	3.18	0.46	3335	6.72	3.09	0.46	3408	6.53	3.00	0.46	3480
30	26	7.74	2.63	0.34	3306	7.30	2.48	0.34	3451	7.07	2.40	0.34	3524	6.85	2.33	0.34	3596
31	18	6.27	5.39	0.86	2842	5.76	4.95	0.86	3016	5.54	4.76	0.86	3074	5.31	4.57	0.86	3132
31	20	6.59	4.88	0.74	2958	6.14	4.55	0.74	3103	5.92	4.38	0.74	3190	5.70	4.22	0.74	3277
31	22	6.98	4.33	0.62	3074	6.53	4.05	0.62	3248	6.30	3.91	0.62	3306	6.08	3.77	0.62	3364
31	24	7.36	3.68	0.50	3190	6.91	3.46	0.50	3335	6.72	3.36	0.50	3408	6.53	3.26	0.50	3480
31	26	7.74	2.94	0.38	3306	7.30	2.77	0.38	3451	7.07	2.69	0.38	3524	6.85	2.60	0.38	3596
32	18	6.27	5.64	0.90	2842	5.76	5.18	0.90	3016	5.54	4.98	0.90	3074	5.31	4.78	0.90	3132
32	20	6.59	5.14	0.78	2958	6.14	4.79	0.78	3103	5.92	4.62	0.78	3190	5.70	4.44	0.78	3277
32	22	6.98	4.60	0.66	3074	6.53	4.31	0.66	3248	6.30	4.16	0.66	3306	6.08	4.01	0.66	3364
32	24	7.36	3.97	0.54	3190	6.91	3.73	0.54	3335	6.72	3.63	0.54	3408	6.53	3.53	0.54	3480
32	26	7.74	3.25	0.42	3306	7.30	3.06	0.42	3451	7.07	2.97	0.42	3524	6.85	2.88	0.42	3596

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
MS-30RV -E1 : MU-30RV -E1 (220V)

CAPACITY: 8.4(kW) SHF : 0.62 INPUT: 3380(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	9.87	4.34	0.44	2704	9.45	4.16	0.44	2839	9.07	3.99	0.44	2974	8.74	3.84	0.44	3110
21	20	10.29	3.29	0.32	2839	9.87	3.16	0.32	3008	9.58	3.06	0.32	3076	9.24	2.96	0.32	3211
22	18	9.87	4.74	0.48	2704	9.45	4.54	0.48	2839	9.07	4.35	0.48	2974	8.74	4.19	0.48	3110
22	20	10.29	3.70	0.36	2839	9.87	3.55	0.36	3008	9.58	3.45	0.36	3076	9.24	3.33	0.36	3211
22	22	10.71	2.57	0.24	2941	10.33	2.48	0.24	3127	10.08	2.42	0.24	3211	9.66	2.32	0.24	3346
23	18	9.87	5.13	0.52	2704	9.45	4.91	0.52	2839	9.07	4.72	0.52	2974	8.74	4.54	0.52	3110
23	20	10.29	4.12	0.40	2839	9.87	3.95	0.40	3008	9.58	3.83	0.40	3076	9.24	3.70	0.40	3211
23	22	10.71	3.00	0.28	2941	10.33	2.89	0.28	3127	10.08	2.82	0.28	3211	9.66	2.70	0.28	3346
24	18	9.87	5.53	0.56	2704	9.45	5.29	0.56	2839	9.07	5.08	0.56	2974	8.74	4.89	0.56	3110
24	20	10.29	4.53	0.44	2839	9.87	4.34	0.44	3008	9.58	4.21	0.44	3076	9.24	4.07	0.44	3211
24	22	10.71	3.43	0.32	2941	10.33	3.31	0.32	3127	10.08	3.23	0.32	3211	9.66	3.09	0.32	3346
24	24	11.26	2.25	0.20	3076	10.84	2.17	0.20	3245	10.58	2.12	0.20	3346	10.25	2.05	0.20	3515
25	18	9.87	5.92	0.60	2704	9.45	5.67	0.60	2839	9.07	5.44	0.60	2974	8.74	5.24	0.60	3110
25	20	10.29	4.94	0.48	2839	9.87	4.74	0.48	3008	9.58	4.60	0.48	3076	9.24	4.44	0.48	3211
25	22	10.71	3.86	0.36	2941	10.33	3.72	0.36	3127	10.08	3.63	0.36	3211	9.66	3.48	0.36	3346
25	24	11.26	2.70	0.24	3076	10.84	2.60	0.24	3245	10.58	2.54	0.24	3346	10.25	2.46	0.24	3515
26	18	9.87	6.32	0.64	2704	9.45	6.05	0.64	2839	9.07	5.81	0.64	2974	8.74	5.59	0.64	3110
26	20	10.29	5.35	0.52	2839	9.87	5.13	0.52	3008	9.58	4.96	0.52	3076	9.24	4.80	0.52	3211
26	22	10.71	4.28	0.40	2941	10.33	4.13	0.40	3127	10.08	4.03	0.40	3211	9.66	3.86	0.40	3346
26	24	11.26	3.15	0.28	3076	10.84	3.03	0.28	3245	10.58	2.96	0.28	3346	10.25	2.87	0.28	3515
26	26	11.59	1.85	0.16	3245	11.26	1.80	0.16	3414	11.09	1.77	0.16	3515	10.75	1.72	0.16	3617
27	18	9.87	6.71	0.68	2704	9.45	6.43	0.68	2839	9.07	6.17	0.68	2974	8.74	5.94	0.68	3110
27	20	10.29	5.76	0.56	2839	9.87	5.53	0.56	3008	9.58	5.36	0.56	3076	9.24	5.17	0.56	3211
27	22	10.71	4.71	0.44	2941	10.33	4.55	0.44	3127	10.08	4.44	0.44	3211	9.66	4.25	0.44	3346
27	24	11.26	3.60	0.32	3076	10.84	3.47	0.32	3245	10.58	3.39	0.32	3346	10.25	3.28	0.32	3515
27	26	11.59	2.32	0.20	3245	11.26	2.25	0.20	3414	11.09	2.22	0.20	3515	10.75	2.15	0.20	3617
28	18	9.87	7.11	0.72	2704	9.45	6.80	0.72	2839	9.07	6.53	0.72	2974	8.74	6.29	0.72	3110
28	20	10.29	6.17	0.60	2839	9.87	5.92	0.60	3008	9.58	5.75	0.60	3076	9.24	5.54	0.60	3211
28	22	10.71	5.14	0.48	2941	10.33	4.96	0.48	3127	10.08	4.84	0.48	3211	9.66	4.64	0.48	3346
28	24	11.26	4.05	0.36	3076	10.84	3.90	0.36	3245	10.58	3.81	0.36	3346	10.25	3.69	0.36	3515
28	26	11.59	2.78	0.24	3245	11.26	2.70	0.24	3414	11.09	2.66	0.24	3515	10.75	2.58	0.24	3617
29	18	9.87	7.50	0.76	2704	9.45	7.18	0.76	2839	9.07	6.89	0.76	2974	8.74	6.64	0.76	3110
29	20	10.29	6.59	0.64	2839	9.87	6.32	0.64	3008	9.58	6.13	0.64	3076	9.24	5.91	0.64	3211
29	22	10.71	5.57	0.52	2941	10.33	5.37	0.52	3127	10.08	5.24	0.52	3211	9.66	5.02	0.52	3346
29	24	11.26	4.50	0.40	3076	10.84	4.33	0.40	3245	10.58	4.23	0.40	3346	10.25	4.10	0.40	3515
29	26	11.59	3.25	0.28	3245	11.26	3.15	0.28	3414	11.09	3.10	0.28	3515	10.75	3.01	0.28	3617
30	18	9.87	7.90	0.80	2704	9.45	7.56	0.80	2839	9.07	7.26	0.80	2974	8.74	6.99	0.80	3110
30	20	10.29	7.00	0.68	2839	9.87	6.71	0.68	3008	9.58	6.51	0.68	3076	9.24	6.28	0.68	3211
30	22	10.71	6.00	0.56	2941	10.33	5.79	0.56	3127	10.08	5.64	0.56	3211	9.66	5.41	0.56	3346
30	24	11.26	4.95	0.44	3076	10.84	4.77	0.44	3245	10.58	4.66	0.44	3346	10.25	4.51	0.44	3515
30	26	11.59	3.71	0.32	3245	11.26	3.60	0.32	3414	11.09	3.55	0.32	3515	10.75	3.44	0.32	3617
31	18	9.87	8.29	0.84	2704	9.45	7.94	0.84	2839	9.07	7.62	0.84	2974	8.74	7.34	0.84	3110
31	20	10.29	7.41	0.72	2839	9.87	7.11	0.72	3008	9.58	6.89	0.72	3076	9.24	6.65	0.72	3211
31	22	10.71	6.43	0.60	2941	10.33	6.20	0.60	3127	10.08	6.05	0.60	3211	9.66	5.80	0.60	3346
31	24	11.26	5.40	0.48	3076	10.84	5.20	0.48	3245	10.58	5.08	0.48	3346	10.25	4.92	0.48	3515
31	26	11.59	4.17	0.36	3245	11.26	4.05	0.36	3414	11.09	3.99	0.36	3515	10.75	3.87	0.36	3617
32	18	9.87	8.69	0.88	2704	9.45	8.32	0.88	2839	9.07	7.98	0.88	2974	8.74	7.69	0.88	3110
32	20	10.29	7.82	0.76	2839	9.87	7.50	0.76	3008	9.58	7.28	0.76	3076	9.24	7.02	0.76	3211
32	22	10.71	6.85	0.64	2941	10.33	6.61	0.64	3127	10.08	6.45	0.64	3211	9.66	6.18	0.64	3346
32	24	11.26	5.85	0.52	3076	10.84	5.63	0.52	3245	10.58	5.50	0.52	3346	10.25	5.33	0.52	3515
32	26	11.59	4.64	0.40	3245	11.26	4.50	0.40	3414	11.09	4.44	0.40	3515	10.75	4.30	0.40	3617

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
MS-30RV -E1 : MU-30RV -E1 (220V)

CAPACITY: 8.4(kW) SHF : 0.62 INPUT: 3380(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	8.23	3.62	0.44	3312	7.56	3.33	0.44	3515	7.27	3.20	0.44	3583	6.97	3.07	0.44	3650
21	20	8.65	2.77	0.32	3448	8.06	2.58	0.32	3617	7.77	2.49	0.32	3718	7.48	2.39	0.32	3819
22	18	8.23	3.95	0.48	3312	7.56	3.63	0.48	3515	7.27	3.49	0.48	3583	6.97	3.35	0.48	3650
22	20	8.65	3.11	0.36	3448	8.06	2.90	0.36	3617	7.77	2.80	0.36	3718	7.48	2.69	0.36	3819
22	22	9.16	2.20	0.24	3583	8.57	2.06	0.24	3786	8.27	1.99	0.24	3853	7.98	1.92	0.24	3921
23	18	8.23	4.28	0.52	3312	7.56	3.93	0.52	3515	7.27	3.78	0.52	3583	6.97	3.63	0.52	3650
23	20	8.65	3.46	0.40	3448	8.06	3.23	0.40	3617	7.77	3.11	0.40	3718	7.48	2.99	0.40	3819
23	22	9.16	2.56	0.28	3583	8.57	2.40	0.28	3786	8.27	2.32	0.28	3853	7.98	2.23	0.28	3921
24	18	8.23	4.61	0.56	3312	7.56	4.23	0.56	3515	7.27	4.07	0.56	3583	6.97	3.90	0.56	3650
24	20	8.65	3.81	0.44	3448	8.06	3.55	0.44	3617	7.77	3.42	0.44	3718	7.48	3.29	0.44	3819
24	22	9.16	2.93	0.32	3583	8.57	2.74	0.32	3786	8.27	2.65	0.32	3853	7.98	2.55	0.32	3921
24	24	9.66	1.93	0.20	3718	9.07	1.81	0.20	3887	8.82	1.76	0.20	3972	8.57	1.71	0.20	4056
25	18	8.23	4.94	0.60	3312	7.56	4.54	0.60	3515	7.27	4.36	0.60	3583	6.97	4.18	0.60	3650
25	20	8.65	4.15	0.48	3448	8.06	3.87	0.48	3617	7.77	3.73	0.48	3718	7.48	3.59	0.48	3819
25	22	9.16	3.30	0.36	3583	8.57	3.08	0.36	3786	8.27	2.98	0.36	3853	7.98	2.87	0.36	3921
25	24	9.66	2.32	0.24	3718	9.07	2.18	0.24	3887	8.82	2.12	0.24	3972	8.57	2.06	0.24	4056
26	18	8.23	5.27	0.64	3312	7.56	4.84	0.64	3515	7.27	4.65	0.64	3583	6.97	4.46	0.64	3650
26	20	8.65	4.50	0.52	3448	8.06	4.19	0.52	3617	7.77	4.04	0.52	3718	7.48	3.89	0.52	3819
26	22	9.16	3.66	0.40	3583	8.57	3.43	0.40	3786	8.27	3.31	0.40	3853	7.98	3.19	0.40	3921
26	24	9.66	2.70	0.28	3718	9.07	2.54	0.28	3887	8.82	2.47	0.28	3972	8.57	2.40	0.28	4056
26	26	10.16	1.63	0.16	3853	9.58	1.53	0.16	4022	9.28	1.49	0.16	4107	8.99	1.44	0.16	4191
27	18	8.23	5.60	0.68	3312	7.56	5.14	0.68	3515	7.27	4.94	0.68	3583	6.97	4.74	0.68	3650
27	20	8.65	4.85	0.56	3448	8.06	4.52	0.56	3617	7.77	4.35	0.56	3718	7.48	4.19	0.56	3819
27	22	9.16	4.03	0.44	3583	8.57	3.77	0.44	3786	8.27	3.64	0.44	3853	7.98	3.51	0.44	3921
27	24	9.66	3.09	0.32	3718	9.07	2.90	0.32	3887	8.82	2.82	0.32	3972	8.57	2.74	0.32	4056
27	26	10.16	2.03	0.20	3853	9.58	1.92	0.20	4022	9.28	1.86	0.20	4107	8.99	1.80	0.20	4191
28	18	8.23	5.93	0.72	3312	7.56	5.44	0.72	3515	7.27	5.23	0.72	3583	6.97	5.02	0.72	3650
28	20	8.65	5.19	0.60	3448	8.06	4.84	0.60	3617	7.77	4.66	0.60	3718	7.48	4.49	0.60	3819
28	22	9.16	4.39	0.48	3583	8.57	4.11	0.48	3786	8.27	3.97	0.48	3853	7.98	3.83	0.48	3921
28	24	9.66	3.48	0.36	3718	9.07	3.27	0.36	3887	8.82	3.18	0.36	3972	8.57	3.08	0.36	4056
28	26	10.16	2.44	0.24	3853	9.58	2.30	0.24	4022	9.28	2.23	0.24	4107	8.99	2.16	0.24	4191
29	18	8.23	6.26	0.76	3312	7.56	5.75	0.76	3515	7.27	5.52	0.76	3583	6.97	5.30	0.76	3650
29	20	8.65	5.54	0.64	3448	8.06	5.16	0.64	3617	7.77	4.97	0.64	3718	7.48	4.78	0.64	3819
29	22	9.16	4.76	0.52	3583	8.57	4.46	0.52	3786	8.27	4.30	0.52	3853	7.98	4.16	0.52	3921
29	24	9.66	3.86	0.40	3718	9.07	3.63	0.40	3887	8.82	3.53	0.40	3972	8.57	3.43	0.40	4056
29	26	10.16	2.85	0.28	3853	9.58	2.68	0.28	4022	9.28	2.60	0.28	4107	8.99	2.52	0.28	4191
30	18	8.23	6.59	0.80	3312	7.56	6.05	0.80	3515	7.27	5.81	0.80	3583	6.97	5.58	0.80	3650
30	20	8.65	5.88	0.68	3448	8.06	5.48	0.68	3617	7.77	5.28	0.68	3718	7.48	5.08	0.68	3819
30	22	9.16	5.13	0.56	3583	8.57	4.80	0.56	3786	8.27	4.63	0.56	3853	7.98	4.47	0.56	3921
30	24	9.66	4.25	0.44	3718	9.07	3.99	0.44	3887	8.82	3.88	0.44	3972	8.57	3.77	0.44	4056
30	26	10.16	3.25	0.32	3853	9.58	3.06	0.32	4022	9.28	2.97	0.32	4107	8.99	2.88	0.32	4191
31	18	8.23	6.91	0.84	3312	7.56	6.35	0.84	3515	7.27	6.10	0.84	3583	6.97	5.86	0.84	3650
31	20	8.65	6.23	0.72	3448	8.06	5.81	0.72	3617	7.77	5.59	0.72	3718	7.48	5.38	0.72	3819
31	22	9.16	5.49	0.60	3583	8.57	5.14	0.60	3786	8.27	4.96	0.60	3853	7.98	4.79	0.60	3921
31	24	9.66	4.64	0.48	3718	9.07	4.35	0.48	3887	8.82	4.23	0.48	3972	8.57	4.11	0.48	4056
31	26	10.16	3.66	0.36	3853	9.58	3.45	0.36	4022	9.28	3.34	0.36	4107	8.99	3.24	0.36	4191
32	18	8.23	7.24	0.88	3312	7.56	6.65	0.88	3515	7.27	6.39	0.88	3583	6.97	6.14	0.88	3650
32	20	8.65	6.58	0.76	3448	8.06	6.13	0.76	3617	7.77	5.91	0.76	3718	7.48	5.68	0.76	3819
32	22	9.16	5.86	0.64	3583	8.57	5.48	0.64	3786	8.27	5.30	0.64	3853	7.98	5.11	0.64	3921
32	24	9.66	5.02	0.52	3718	9.07	4.72	0.52	3887	8.82	4.59	0.52	3972	8.57	4.46	0.52	4056
32	26	10.16	4.07	0.40	3853	9.58	3.83	0.40	4022	9.28	3.71	0.40	4107	8.99	3.60	0.40	4191

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
MS-30RV -E1 : MU-30RV -E1 (240V)

CAPACITY: 8.4(kW) SHF : 0.62 INPUT: 3520(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	21				25				27				30			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	9.87	4.34	0.44	2816	9.45	4.16	0.44	2657	9.07	3.99	0.44	3098	8.74	3.84	0.44	3238
21	20	10.29	3.29	0.32	2957	9.87	3.16	0.32	3133	9.58	3.06	0.32	3203	9.24	2.96	0.32	3344
22	18	9.87	4.74	0.48	2816	9.45	4.54	0.48	2957	9.07	4.35	0.48	3098	8.74	4.19	0.48	3238
22	20	10.29	3.70	0.36	2957	9.87	3.55	0.36	3133	9.58	3.45	0.36	3203	9.24	3.33	0.36	3344
22	22	10.71	2.57	0.24	3062	10.33	2.48	0.24	3256	10.08	2.42	0.24	3344	9.66	2.32	0.24	3485
23	18	9.87	5.13	0.52	2816	9.45	4.91	0.52	2957	9.07	4.72	0.52	3098	8.74	4.54	0.52	3238
23	20	10.29	4.12	0.40	2957	9.87	3.95	0.40	3133	9.58	3.83	0.40	3203	9.24	3.70	0.40	3344
23	22	10.71	3.00	0.28	3062	10.33	2.89	0.28	3256	10.08	2.82	0.28	3344	9.66	2.70	0.28	3485
24	18	9.87	5.53	0.56	2816	9.45	5.29	0.56	2957	9.07	5.08	0.56	3098	8.74	4.89	0.56	3238
24	20	10.29	4.53	0.44	2957	9.87	4.34	0.44	3133	9.58	4.21	0.44	3203	9.24	4.07	0.44	3344
24	22	10.71	3.43	0.32	3062	10.33	3.31	0.32	3256	10.08	3.23	0.32	3344	9.66	3.09	0.32	3485
24	24	11.26	2.25	0.20	3203	10.84	2.17	0.20	3379	10.58	2.12	0.20	3485	10.25	2.05	0.20	3661
25	18	9.87	5.92	0.60	2816	9.45	5.67	0.60	2957	9.07	5.44	0.60	3098	8.74	5.24	0.60	3238
25	20	10.29	4.94	0.48	2957	9.87	4.74	0.48	3133	9.58	4.60	0.48	3203	9.24	4.44	0.48	3344
25	22	10.71	3.86	0.36	3062	10.33	3.72	0.36	3256	10.08	3.63	0.36	3344	9.66	3.48	0.36	3485
25	24	11.26	2.70	0.24	3203	10.84	2.60	0.24	3379	10.58	2.54	0.24	3485	10.25	2.46	0.24	3661
26	18	9.87	6.32	0.64	2816	9.45	6.05	0.64	2957	9.07	5.81	0.64	3098	8.74	5.59	0.64	3238
26	20	10.29	5.35	0.52	2957	9.87	5.13	0.52	3133	9.58	4.98	0.52	3203	9.24	4.80	0.52	3344
26	22	10.71	4.28	0.40	3062	10.33	4.13	0.40	3256	10.08	4.03	0.40	3344	9.66	3.86	0.40	3485
26	24	11.26	3.15	0.28	3203	10.84	3.03	0.28	3379	10.58	2.96	0.28	3485	10.25	2.87	0.28	3661
26	26	11.59	1.85	0.16	3379	11.26	1.80	0.16	3555	11.09	1.77	0.16	3661	10.75	1.72	0.16	3766
27	18	9.87	6.71	0.68	2816	9.45	6.43	0.68	2957	9.07	6.17	0.68	3098	8.74	5.94	0.68	3238
27	20	10.29	5.76	0.56	2957	9.87	5.53	0.56	3133	9.58	5.36	0.56	3203	9.24	5.17	0.56	3344
27	22	10.71	4.71	0.44	3062	10.33	4.55	0.44	3256	10.08	4.44	0.44	3344	9.66	4.25	0.44	3485
27	24	11.26	3.60	0.32	3203	10.84	3.47	0.32	3379	10.58	3.39	0.32	3485	10.25	3.28	0.32	3661
27	26	11.59	2.32	0.20	3379	11.26	2.25	0.20	3555	11.09	2.22	0.20	3661	10.75	2.15	0.20	3766
28	18	9.87	7.11	0.72	2816	9.45	6.80	0.72	2957	9.07	6.53	0.72	3098	8.74	6.29	0.72	3238
28	20	10.29	6.17	0.60	2957	9.87	5.92	0.60	3133	9.58	5.75	0.60	3203	9.24	5.54	0.60	3344
28	22	10.71	5.14	0.48	3062	10.33	4.96	0.48	3256	10.08	4.84	0.48	3344	9.66	4.64	0.48	3485
28	24	11.26	4.05	0.36	3203	10.84	3.90	0.36	3379	10.58	3.81	0.36	3485	10.25	3.69	0.36	3661
28	26	11.59	2.78	0.24	3379	11.26	2.70	0.24	3555	11.09	2.66	0.24	3661	10.75	2.58	0.24	3766
29	18	9.87	7.50	0.76	2816	9.45	7.18	0.76	2957	9.07	6.89	0.76	3098	8.74	6.64	0.76	3238
29	20	10.29	6.59	0.64	2957	9.87	6.32	0.64	3133	9.58	6.13	0.64	3203	9.24	5.91	0.64	3344
29	22	10.71	5.57	0.52	3062	10.33	5.37	0.52	3256	10.08	5.24	0.52	3344	9.66	5.02	0.52	3485
29	24	11.26	4.50	0.40	3203	10.84	4.33	0.40	3379	10.58	4.23	0.40	3485	10.25	4.10	0.40	3661
29	26	11.59	3.25	0.28	3379	11.26	3.15	0.28	3555	11.09	3.10	0.28	3661	10.75	3.01	0.28	3766
30	18	9.87	7.90	0.80	2816	9.45	7.56	0.80	2957	9.07	7.26	0.80	3098	8.74	6.99	0.80	3238
30	20	10.29	7.00	0.68	2957	9.87	6.71	0.68	3133	9.58	6.51	0.68	3203	9.24	6.28	0.68	3344
30	22	10.71	6.00	0.56	3062	10.33	5.79	0.56	3256	10.08	5.64	0.56	3344	9.66	5.41	0.56	3485
30	24	11.26	4.95	0.44	3203	10.84	4.77	0.44	3379	10.58	4.66	0.44	3485	10.25	4.51	0.44	3661
30	26	11.59	3.71	0.32	3379	11.26	3.60	0.32	3555	11.09	3.55	0.32	3661	10.75	3.44	0.32	3766
31	18	9.87	8.29	0.84	2816	9.45	7.94	0.84	2957	9.07	7.62	0.84	3098	8.74	7.34	0.84	3238
31	20	10.29	7.41	0.72	2957	9.87	7.11	0.72	3133	9.58	6.89	0.72	3203	9.24	6.65	0.72	3344
31	22	10.71	6.43	0.60	3062	10.33	6.20	0.60	3256	10.08	6.05	0.60	3344	9.66	5.80	0.60	3485
31	24	11.26	5.40	0.48	3203	10.84	5.20	0.48	3379	10.58	5.08	0.48	3485	10.25	4.92	0.48	3661
31	26	11.59	4.17	0.36	3379	11.26	4.05	0.36	3555	11.09	3.99	0.36	3661	10.75	3.87	0.36	3766
32	18	9.87	8.69	0.88	2816	9.45	8.32	0.88	2957	9.07	7.98	0.88	3098	8.74	7.69	0.88	3238
32	20	10.29	7.82	0.76	2957	9.87	7.50	0.76	3133	9.58	7.28	0.76	3203	9.24	7.02	0.76	3344
32	22	10.71	6.85	0.64	3062	10.33	6.61	0.64	3256	10.08	6.45	0.64	3344	9.66	6.18	0.64	3485
32	24	11.26	5.85	0.52	3203	10.84	5.63	0.52	3379	10.58	5.50	0.52	3485	10.25	5.33	0.52	3661
32	26	11.59	4.64	0.40	3379	11.26	4.50	0.40	3555	11.09	4.44	0.40	3661	10.75	4.30	0.40	3766

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
MS-30RV -E1 : MU-30RV -E1 (240V)
CAPACITY: 8.4(kW) SHF : 0.62 INPUT: 3520(W)

		OUTDOOR DB(℃)															
INDOOR DB(℃)	INDOOR WB(℃)	35				40				43				46			
		Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	8.23	3.62	0.44	3450	7.56	3.33	0.44	3661	7.27	3.20	0.44	3731	6.97	3.07	0.44	3802
21	20	8.65	2.77	0.32	3590	8.06	2.58	0.32	3766	7.77	2.49	0.32	3872	7.48	2.39	0.32	3978
22	18	8.23	3.95	0.48	3450	7.56	3.63	0.48	3661	7.27	3.49	0.48	3731	6.97	3.35	0.48	3802
22	20	8.65	3.11	0.36	3590	8.06	2.90	0.36	3766	7.77	2.80	0.36	3872	7.48	2.69	0.36	3978
22	22	9.16	2.20	0.24	3731	8.57	2.06	0.24	3942	8.27	1.99	0.24	4013	7.98	1.92	0.24	4083
23	18	8.23	4.28	0.52	3450	7.56	3.93	0.52	3661	7.27	3.78	0.52	3731	6.97	3.63	0.52	3802
23	20	8.65	3.46	0.40	3590	8.06	3.23	0.40	3766	7.77	3.11	0.40	3872	7.48	2.99	0.40	3978
23	22	9.16	2.56	0.28	3731	8.57	2.40	0.28	3942	8.27	2.32	0.28	4013	7.98	2.23	0.28	4083
24	18	8.23	4.61	0.56	3450	7.56	4.23	0.56	3661	7.27	4.07	0.56	3731	6.97	3.90	0.56	3802
24	20	8.65	3.81	0.44	3590	8.06	3.55	0.44	3766	7.77	3.42	0.44	3872	7.48	3.29	0.44	3978
24	22	9.16	2.93	0.32	3731	8.57	2.74	0.32	3942	8.27	2.65	0.32	4013	7.98	2.55	0.32	4083
24	24	9.66	1.93	0.20	3872	9.07	1.81	0.20	4048	8.82	1.76	0.20	4136	8.57	1.71	0.20	4224
25	18	8.23	4.94	0.60	3450	7.56	4.54	0.60	3661	7.27	4.36	0.60	3731	6.97	4.18	0.60	3802
25	20	8.65	4.15	0.48	3590	8.06	3.87	0.48	3766	7.77	3.73	0.48	3872	7.48	3.59	0.48	3978
25	22	9.16	3.30	0.36	3731	8.57	3.08	0.36	3942	8.27	2.98	0.36	4013	7.98	2.87	0.36	4083
25	24	9.66	2.32	0.24	3872	9.07	2.18	0.24	4048	8.82	2.12	0.24	4136	8.57	2.06	0.24	4224
26	18	8.23	5.27	0.64	3450	7.56	4.84	0.64	3661	7.27	4.65	0.64	3731	6.97	4.46	0.64	3802
26	20	8.65	4.50	0.52	3590	8.06	4.19	0.52	3766	7.77	4.04	0.52	3872	7.48	3.89	0.52	3978
26	22	9.16	3.66	0.40	3731	8.57	3.43	0.40	3942	8.27	3.31	0.40	4013	7.98	3.19	0.40	4083
26	24	9.66	2.70	0.28	3872	9.07	2.54	0.28	4048	8.82	2.47	0.28	4136	8.57	2.40	0.28	4224
26	26	10.16	1.63	0.16	4013	9.58	1.53	0.16	4189	9.28	1.49	0.16	4277	8.99	1.44	0.16	4365
27	18	8.23	5.60	0.68	3450	7.56	5.14	0.68	3661	7.27	4.94	0.68	3731	6.97	4.74	0.68	3802
27	20	8.65	4.85	0.56	3590	8.06	4.52	0.56	3766	7.77	4.35	0.56	3872	7.48	4.19	0.56	3978
27	22	9.16	4.03	0.44	3731	8.57	3.77	0.44	3942	8.27	3.64	0.44	4013	7.98	3.51	0.44	4083
27	24	9.66	3.09	0.32	3872	9.07	2.90	0.32	4048	8.82	2.82	0.32	4136	8.57	2.74	0.32	4224
27	26	10.16	2.03	0.20	4013	9.58	1.92	0.20	4189	9.28	1.86	0.20	4277	8.99	1.80	0.20	4365
28	18	8.23	5.93	0.72	3450	7.56	5.44	0.72	3661	7.27	5.23	0.72	3731	6.97	5.02	0.72	3802
28	20	8.65	5.19	0.60	3590	8.06	4.84	0.60	3766	7.77	4.66	0.60	3872	7.48	4.49	0.60	3978
28	22	9.16	4.39	0.48	3731	8.57	4.11	0.48	3942	8.27	3.97	0.48	4013	7.98	3.83	0.48	4083
28	24	9.66	3.48	0.36	3872	9.07	3.27	0.36	4048	8.82	3.18	0.36	4136	8.57	3.08	0.36	4224
28	26	10.16	2.44	0.24	4013	9.58	2.30	0.24	4189	9.28	2.23	0.24	4277	8.99	2.16	0.24	4365
29	18	8.23	6.26	0.76	3450	7.56	5.75	0.76	3661	7.27	5.52	0.76	3731	6.97	5.30	0.76	3802
29	20	8.65	5.54	0.64	3590	8.06	5.16	0.64	3766	7.77	4.97	0.64	3872	7.48	4.78	0.64	3978
29	22	9.16	4.76	0.52	3731	8.57	4.46	0.52	3942	8.27	4.30	0.52	4013	7.98	4.15	0.52	4083
29	24	9.66	3.86	0.40	3872	9.07	3.63	0.40	4048	8.82	3.53	0.40	4136	8.57	3.43	0.40	4224
29	26	10.16	2.85	0.28	4013	9.58	2.68	0.28	4189	9.28	2.60	0.28	4277	8.99	2.52	0.28	4365
30	18	8.23	6.59	0.80	3450	7.56	6.05	0.80	3661	7.27	5.81	0.80	3731	6.97	5.58	0.80	3802
30	20	8.65	5.88	0.68	3590	8.06	5.48	0.68	3766	7.77	5.28	0.68	3872	7.48	5.08	0.68	3978
30	22	9.16	5.13	0.56	3731	8.57	4.80	0.56	3942	8.27	4.63	0.56	4013	7.98	4.47	0.56	4083
30	24	9.66	4.25	0.44	3872	9.07	3.99	0.44	4048	8.82	3.88	0.44	4136	8.57	3.77	0.44	4224
30	26	10.16	3.25	0.32	4013	9.58	3.06	0.32	4189	9.28	2.97	0.32	4277	8.99	2.88	0.32	4365
31	18	8.23	6.91	0.84	3450	7.56	6.35	0.84	3661	7.27	6.10	0.84	3731	6.97	5.86	0.84	3802
31	20	8.65	6.23	0.72	3590	8.06	5.81	0.72	3766	7.77	5.59	0.72	3872	7.48	5.38	0.72	3978
31	22	9.16	5.49	0.60	3731	8.57	5.14	0.60	3942	8.27	4.96	0.60	4013	7.98	4.79	0.60	4083
31	24	9.66	4.64	0.48	3872	9.07	4.35	0.48	4048	8.82	4.23	0.48	4136	8.57	4.11	0.48	4224
31	26	10.16	3.66	0.36	4013	9.58	3.45	0.36	4189	9.28	3.34	0.36	4277	8.99	3.24	0.36	4365
32	18	8.23	7.24	0.88	3450	7.56	6.65	0.88	3661	7.27	6.39	0.88	3731	6.97	6.14	0.88	3802
32	20	8.65	6.58	0.76	3590	8.06	6.13	0.76	3766	7.77	5.91	0.76	3872	7.48	5.68	0.76	3978
32	22	9.16	5.86	0.64	3731	8.57	5.48	0.64	3942	8.27	5.30	0.64	4013	7.98	5.11	0.64	4083
32	24	9.66	5.02	0.52	3872	9.07	4.72	0.52	4048	8.82	4.59	0.52	4136	8.57	4.46	0.52	4224
32	26	10.16	4.07	0.40	4013	9.58	3.83	0.40	4189	9.28	3.71	0.40	4277	8.99	3.60	0.40	4365

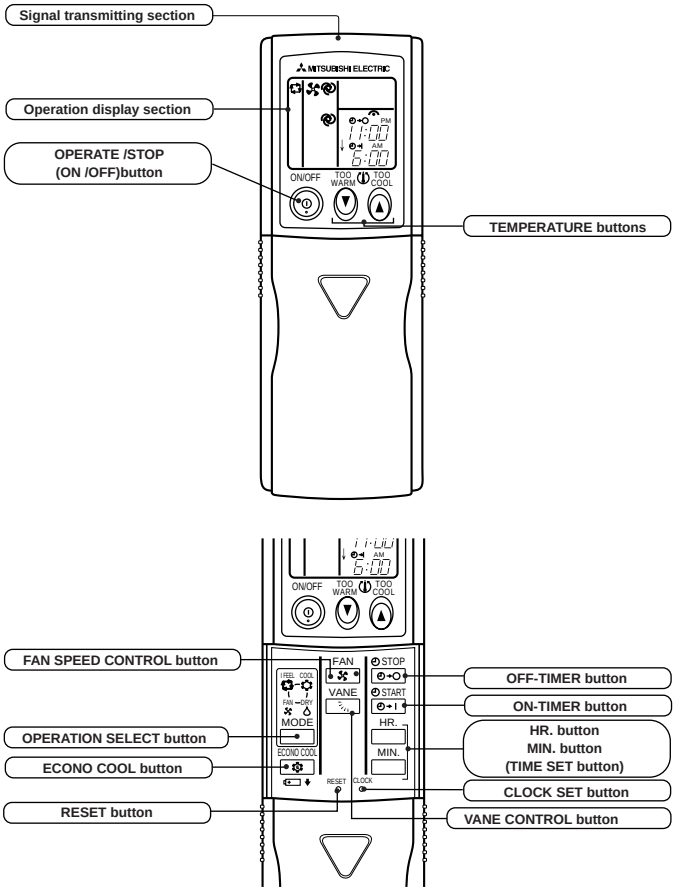
NOTE Q : Total capacity (kW) SHF : Sensible heat factor DB: Dry-bulb temperature
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB: Wet-bulb temperature

9 MICROPROCESSOR CONTROL

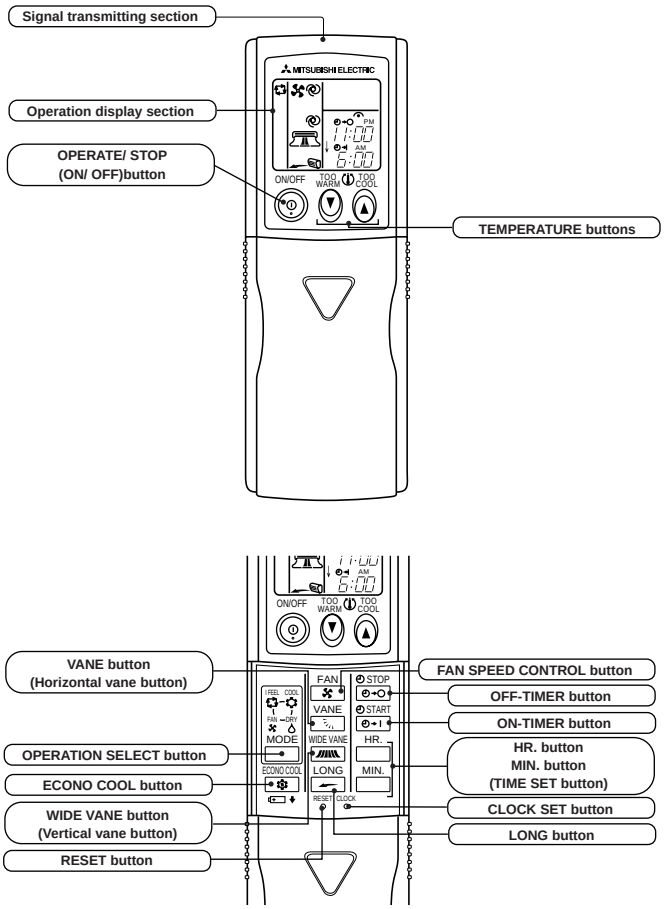
MS-18RV -E1 MS-24RV -E1 MS-30RV -E1

WIRELESS REMOTE CONTROLLER

MS-18RV -E1 MS-24RV -E1



MS-30RV -E1



INDOOR UNIT DISPLAY SECTION

Operation Indicator lamp

The operation indicator at the right side of the indoor unit indicates the operation state.

• The following indication does not depend on the shape of lamp.

Operation Indicator ■ **lighted** □ **not lighted**

Indication	Operation state	Difference between set temperature and room temperature
■ ■	This shows that the air conditioner is operating to reach the target temperature. Please wait until the target temperature is obtained.	Approx. 2 ℃ or more
■ □	This shows that the room temperature is approaching the target temperature.	Approx. 2 ℃ or less

Once the operation mode are set, the same operation mode can be repeated by simply turning the OPERATE/STOP(ON/OFF) button ON.
Indoor unit receives the signal with a beep tone.
When the system turns off, 3-minute time delay will operate to protect system from overload and compressor will not restart for 3 minutes.

9-1. "I FEEL CONTROL" (▭) OPERATION

(1) Press OPERATE/STOP(ON/OFF) button on the remote controller. OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.

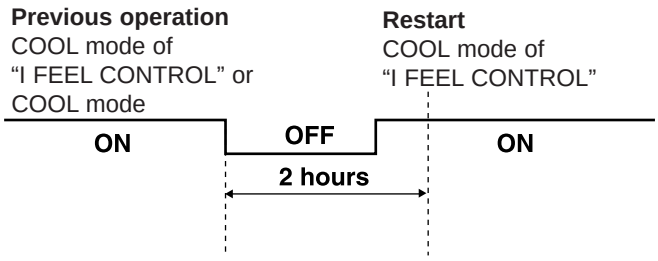
(2) Select "I FEEL CONTROL"(▭) mode with the OPERATION SELECT button.

(3) The operation mode is determined by the room temperature at start-up of the operation.

Initial room temperature	mode
25℃ or more	COOL mode of "I FEEL CONTROL"
more than 13℃, less than 25℃	DRY mode of "I FEEL CONTROL"

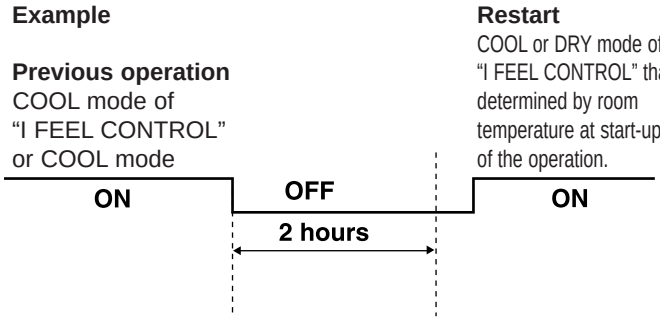
- Once the mode is fixed, the mode does not change by room temperature afterwards.
- Under the ON-TIMER (◴→|) operation, the mode is determined according to the room temperature at the set time the operation starts.
- When the system is stopped on the remote controller, and restarted within 2 hours in “I FEEL CONTROL” (▭) mode, the system operates in previous mode automatically regardless of the room temperature.

Operation timer chart
Example



When the system is restarted after 2 hours and more, the operation mode is determined by the room temperature at start-up of the operation.

Operation timer chart
Example



(4) The initial set temperature is decided by the initial room temperature.

Mode	Initial room temperature	Initial set temperature	
COOL mode of "I FEEL CONTROL"	26℃ or more	24℃	※1
	25℃ to 26℃	Initial room temperature minus 2℃	
DRY mode of "I FEEL CONTROL"	more than13℃, less than 25℃	Initial room temperature minus 2℃	

※1 When the system is restarted with the remote controller, the system operates with the previous set temperature regardless of the room temperature at restart.
The set temperature is calculated by the previous set temperature.

(5) TEMPERATURE buttons

In “I FEEL CONTROL” (▭) mode, set temperature is decided by the microprocessor based on the room temperature. In addition, set temperature can be controlled by TOO WARM or TOO COOL buttons when you feel too cool or too warm. Each time the TOO WARM or TOO COOL button is pressed the indoor unit receives the signal and emits a beep tone.

- **Fuzzy control**

When the TOO COOL or TOO WARM button is pressed the microprocessor changes the set temperature, considering the room temperature, the frequency of pressing TOO COOL or TOO WARM button and the user’s preference to heat or cool. So this is called “Fuzzy control”, and works only in “I FEEL CONTROL” mode.
In DRY mode of “I FEEL CONTROL”, the set temperature doesn’t change.

… To raise the set temperature 1~2 degrees(°C)

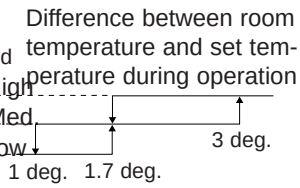
… To lower the set temperature 1~2 degrees(°C)

9-1-1. COOL mode of “I FEEL CONTROL”

1. Indoor fan speed control

Indoor fan operates at the set speed by FAN SPEED CONTROL button.
In AUTO the fan speed is as follows.

Initial temperature difference	Fan speed
Room temperature minus set temperature : 3 degrees or more	High
Room temperature minus set temperature : Between 1 and 1.7 degrees	Med
Room temperature minus set temperature : less than 1 degree	Low



2. Coil frost prevention

① Temperature control

<MS-18/24RV>

When the indoor coil thermistor RT12 reads -1°C or below, the coil frost prevention mode starts immediately.
However, the coil frost prevention doesn’t work for 5 minutes since the compressor has started.
The indoor fan operates at the set speed and the compressor stops for 5 minutes.
After that, if RT12still reads below -1°C this mode is prolonged until the RT12 reads over -1°C.

<MS-30RV>

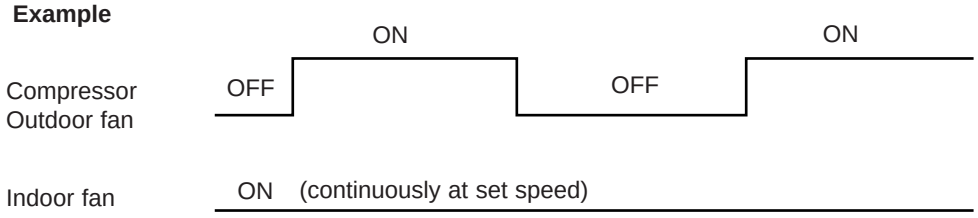
When the indoor coil thermistor RT12 or RT13 reads -1°C or below, the coil frost prevention mode starts immediately.
However the coil frost prevention doesn’t work for 5 minutes since the compressor has started.
The indoor fan operates at the set speed and the compressor stops for 5 minutes.
After that, if RT12 or RT13 still reads below -1°C this mode prolonged until the RT12 and RT13 reads over -1°C.

② Time control

When the three conditions as follows have been satisfied for 1 hour and 45 minutes, compressor stops for 3 minutes.
a. Compressor has been continuously operating.
b. Indoor fan speed is Low or Med..
c. Room temperature is below 26°C.
When compressor stops, the accumulated time is cancelled and when compressor restarts, time counting starts from the beginning.
Time counting also stops temporarily when the indoor fan speed becomes High or the room temperature exceeds 26°C. However, when two of the above conditions (b.and c.) are satisfied again.Time accumulation is resumed.

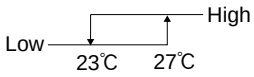
Operation chart

Example



3. Outdoor fan speed control <MS-30RV only>

Outdoor fan speed is controlled according to the temperature of ambient temperature thermistor RT63.
Outdoor fan Low operation : When the outside temperature decreases to 23°C or less.
Until the outside temperature goes to 27°C or more.
Outdoor fan High operation : Until the outside temperature decreases to 23°C or less.
When the outside temperature goes to 27°C or more.



NOTE : When indoor fan speed is Low except FAN operation mode and the outside temperature is 29℃ or less, the outdoor fan operates at Low.
Outdoor fan Low operation is cancelled according to the following conditions(① or ②):
① When the operation is not changed and the outside temperature goes to 31℃ or more.
② When the operation is changed. (Change to FAN operation mode / Change of the indoor fan speed)

4. Discharge temperature protection <MS-30RV only>

The compressor is controlled by the temperature of discharge temperature thermistor RT62 for excess rise protection of compressor discharge pressure.

• Compressor
When the temperature of discharge temperature thermistor RT62 goes to 120℃ or more, the compressor is turned OFF.
After 3 minutes since the compressor has been turned OFF, if the temperature of discharge temperature thermistor RT62 becomes 100℃ or less, the compressor is turned ON.

9-1-2. DRY mode of "I FEEL CONTROL"

The system for dry operation uses the same refrigerant circuit as the cooling circuit.
The compressor and the indoor fan are controlled by the room temperature.
By such controls, indoor flow amounts will be reduced in order to lower humidity without much room temperature decrease.

1. Indoor fan speed control

Indoor fan operates at the set speed by FAN SPEED CONTROL button.
However, in AUTO fan operation, fan speed becomes Low.

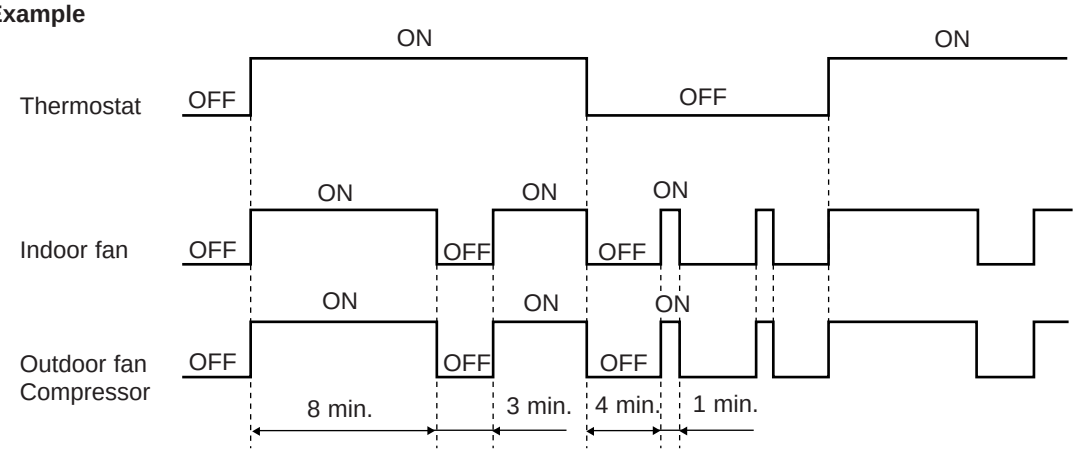
2. The operation of the compressor and indoor / outdoor fan

Compressor operates by room temperature control and time control.
Set temperature is controlled to fall 2°C from initial room temperature.
Indoor fan and outdoor fan operate in the same cycle as the compressor.

- When the room temperature is 23°C or over:
  When the thermostat is ON, the compressor repeats 8 minutes ON and 3 minutes OFF.
  When the thermostat is OFF, the compressor repeats 4 minutes OFF and 1 minute ON.
- When the room temperature is under 23°C.
  When the thermostat is ON, the compressor repeats 2 minutes ON and 3 minutes OFF.
  When the thermostat is OFF, the compressor repeats 4 minutes OFF and 1 minute ON.

Operation time chart

Example



3. Coil frost prevention

The operation is as same as coil frost prevention during COOL mode of "I FEEL CONTROL".
Indoor fan operates at the set speed and the compressor stops for 5minutes, because protection (Coil frost prevention)has the priority. However when coil frost prevention works while the compressor is not operating, it's speed becomes Low.

4. Outdoor fan control <MS-30RV only>

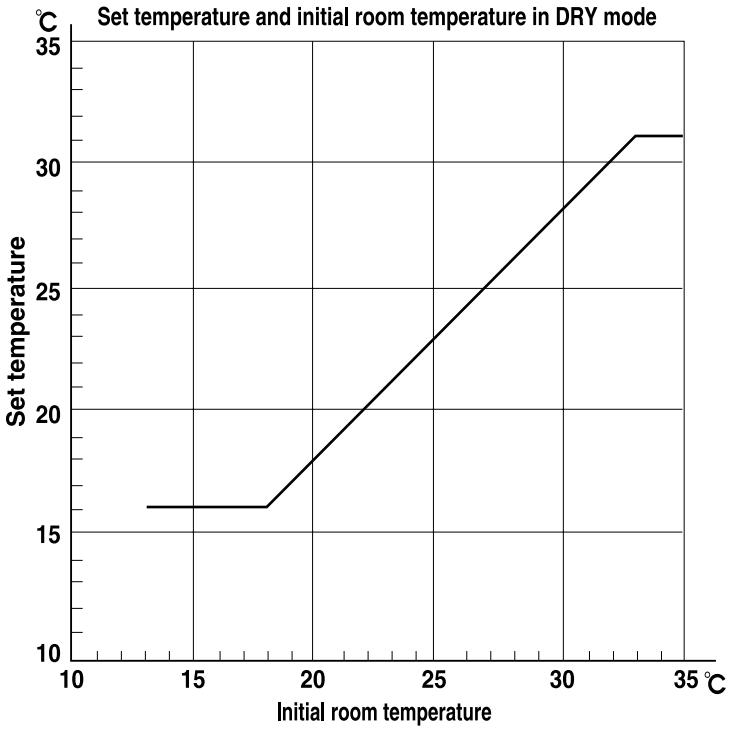
Outdoor fan control is as same as one of COOL mode of "I FEEL CONTROL".

9-2. COOL (✿) OPERATION

(1) Press OPERATE/STOP(ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
(2) Select COOL mode with the OPERATION SELECT button.
(3) Press the TEMPERATURE buttons.
(TOO WARM or TOO COOL button) to select the desired temperature.
The setting range is 16 ~ 31°C.
※ Indoor fan continues to operate regardless of thermostat's OFF-ON at set speed.
※ Coil frost prevention is as same as COOL mode of "I FEEL CONTROL".

9-3. DRY (△) OPERATION

(1) Press OPERATE/STOP(ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns on with a beep tone.
(2) Select DRY mode with the OPERATION SELECT button.
(3) The microprocessor reads the room temperature and determines the set temperature. Set temperature is as shown on the right chart.
Thermostat (SET TEMP.) does not work.
The other operations are same as DRY mode of "I FEEL CONTROL".
(4) DRY operation will not function when the room temperature is 13°C or below.

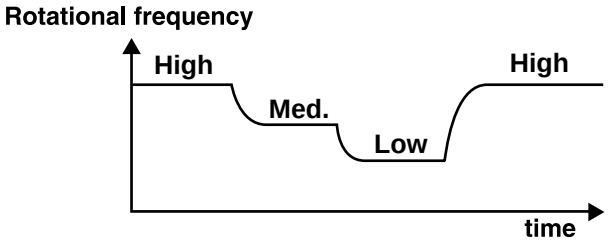


9-4. FAN(✿)OPERATION

(1) Press OPERATE/STOP(ON/OFF) button.
OPERATION INDICATOR lamp of the indoor unit turns ON with a beep tone.
(2) Select FAN mode with the OPERATION SELECT button.
(3) Select the desired fan speed. When AUTO, it becomes Low.
Only indoor fan operates. Outdoor unit does not operate.

9-5. FAN MOTOR CONTROL

(1) Rotational frequency feedback control
The indoor fan motor is equipped with a rotational frequency sensor, and outputs signal to the microprocessor to feedback the rotational frequency. Comparing the current rotational frequency with the target rotational frequency (High,Med.,Low), the microprocessor controls IC141(MS-18/24RV), SR141(MS-30RV) and adjusts fan motor electric current to make the current rotational frequency close to the target rotational frequency. With this control, when the fan speed is switched, the rotational frequency changes smoothly.



(2) Fan motor lock-up protection
When the rotational frequency feedback signal has not output for 12 seconds, (or when the microprocessor cannot detect the signal for 12 seconds) the fan motor is regarded locked-up. Then the electric current to the fan motor is shut off. 3 minutes later, the electric current is applied to the fan motor again. During the fan motor lock-up, the OPERATION INDICATOR lamp flashes on and off to show the fan motor abnormality. (Refer to page 49.)

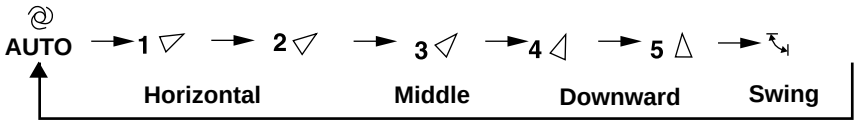
9-6. AUTO VANE OPERATION

1.Horizontal vane

(1) Vane motor drive

These models are equipped with a stepping motor for the horizontal vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approx. 12V) transmitted from microprocessor.

(2) The horizontal vane angle and mode change as follows by pressing the VANE CONTROL button(MS-18/24RV)/ VANE button(MS-30RV).



(3) Positioning

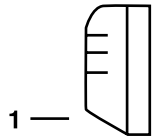
The vane is once pressed to the vane stopper below to confirm the standard position and then set to the desired angle. Confirming of standard position is performed in case of follows.

(a) When the OPERATE/STOP(ON/OFF) button is pressed(POWER ON/OFF).
(b) When the vane control is changed from AUTO to MANUAL.
(c) When the SWING is finished.
(d) When the test run starts.
(e) When the power supply turns ON.

(4) VANE AUTO ( ) mode

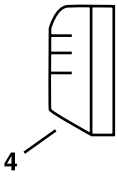
In VANE AUTO mode, the microprocessor automatically determines the horizontal vane angle and operation to make the optimum room-temperature distribution.

① In COOL and DRY operation



Vane angle is fixed to Angle 1.

② In FAN operation



Vane angle is fixed to Angle 4.

(5) STOP (operation OFF) and ON-TIMER standby.

When the following cases occur, the horizontal vane returns to the closed position.

(a) When the OPERATE/STOP(ON/OFF) button is pressed (POWER OFF).
(b) When the operation is stopped by the emergency operation.
(c) When the ON-TIMER is on standby.

(6) Dew prevention

During COOL or DRY operation at Vane Angle 4 or 5 when the compressor cumulative operation time exceeds 1 hour, the vane angle automatically changes to Angle 1 for dew prevention.

(7) SWING MODE ( )

By selecting SWING mode with the VANE CONTROL button(MS-18/24RV)/ VANE button(MS-30RV), the horizontal vane swings vertically. The remote controller displays " ".

(8) ECONO COOL ( ) operation (ECONOmical operation)
When the ECONO COOL button is pressed in COOL mode, set temperature is automatically set 2°C higher than that in COOL mode.
Also the horizontal vane swings in various cycle according to the temperature of indoor heat exchanger(Tp(※ 1)).
SWING operation makes you feel cooler than set temperature. So, even though the set temperature is higher than that in COOL mode, the air conditioner can keep comfort. As a result, energy can be saved.
ECONO COOL operation is cancelled when the ECONO COOL button is pressed once again or VANE CONTROL button(MS-18/24RV)/ VANE button(MS-30RV) is pressed or LONG button(MS-30RV only) is pressed or change to other operation mode.

NOTE : ECONO COOL operation does not work in COOL mode of "I FEEL CONTROL".

SWING operation

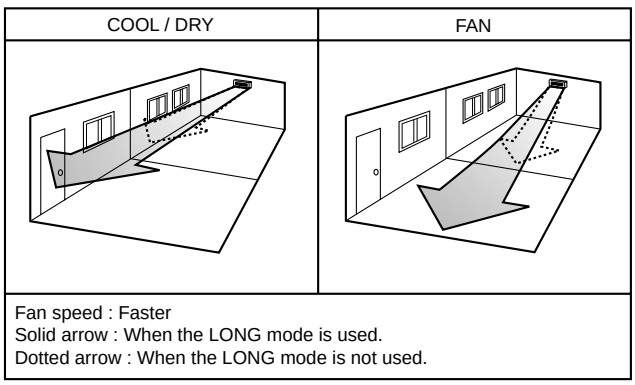
※ 1 Tp :•Value of RT12(MS-18/24RV)
•Minimum value of indoor coil thermistor (main) RT12 and indoor coil thermistor (sub) RT13 (MS-30RV)

In swing operation of ECONO COOL operation air flow is initially blew out upward(levelly).
According to the temperature of indoor coil thermistor Tp(※ 1) at starting of this operation, next downward blow time is decided. Then when the downward blow has been finished, next upward blow time is decided.
For initial 10 minutes the swing operation is performed in table G~H for quick cooling(but G : Tp(※ 1) is 24℃ or less).
Also, after 10 minutes when the difference of set temperature and room temperature is more than 2℃, the swing operation is performed in table D~H for more cooling(but D: Tp(※ 1) is 20℃ or less).
The air conditioner repeats the swing operation in various cycle as follows.

	Temperature of Tp(※ 1)	Downward blow time (sec.)	Upward(level) blow time (sec.)
A	15°C or less	2	23
B	15°C to 17°C	5	20
C	17°C to 18°C	8	17
D	18°C to 20°C	11	14
E	20°C to 21°C	14	11
F	21°C to 22°C	17	8
G	22°C to 24°C	20	5
H	more than 24°C	23	2

(9) LONG MODE ( ) **<MS-30RV only>**
By pressing the LONG button indoor fan speed becomes faster than setting fan speed on the remote controller, and the horizontal vane moves to the position for LONG mode. The remote controller displays " ". LONG mode is cancelled when the LONG button is pressed once again or the VANE button is pressed or in COOL mode ECONO COOL button is pressed.

• In the following example, the vertical vane is set to (front.).



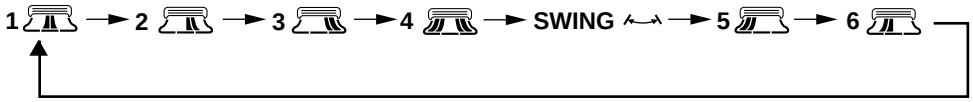
Fan speed : Faster
Solid arrow : When the LONG mode is used.
Dotted arrow : When the LONG mode is not used.

2. Vertical vane <MS-30RV only>

(1) Vane motor drive

This model is equipped with a stepping motor for the vertical vane. The rotating direction, speed, and angle of the motor are controlled by pulse signals (approx. 12V) transmitted from indoor microprocessor.

(2) The vertical vane angle and mode changes as follows by pressing the WIDE VANE button.



(3) Positioning

The vane is once pressed to the vane stopper to confirm the standard position and then set to the desired angle. Confirming of standard position is performed in case of follows.

(a) When the OPERATE/STOP(ON/OFF) button is pressed (POWER ON/OFF).

(b) When the SWING is started or finished.

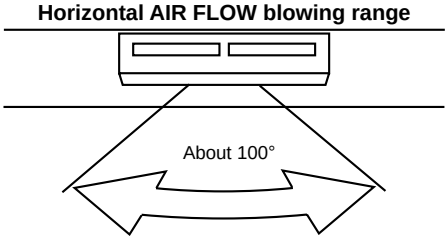
(c) When the power supply turns ON.

(4) SWING MODE ( )

By selecting SWING mode with the WIDE VANE button, the vertical vane swings horizontally. The remote controller displays " ". The vane moves right and left in the width of Angle 4 repeatedly.

(5) WIDE MODE ( )

By selecting WIDE mode with the WIDE VANE button, indoor fan speed becomes faster than setting fan speed on the remote controller(※). The remote controller displays " ".



※ Indoor fan speed becomes faster than setting fan speed on the remote controller even when or is selected.

9-7. TIMER OPERATION

1. How to set the timer

(1) Press OPERATE/STOP(ON/OFF) button to start the air conditioner.

(2) Check that the current time is set correctly.

NOTE : Timer operation will not work without setting the current time. Initially "AM0:00" blinks at the current time display of TIMER MONITOR, so set the current time correctly with CLOCK SET button.

(3) Press ON/OFF TIMER buttons to select the operation.

"ON-TIMER" button... AUTO START operation (ON timer)

"OFF-TIMER" button... AUTO STOP operation (OFF timer)

(4) Press HR. and MIN. button (TIME set button) to set the timer. Time setting is 10-minute units.

HR. and MIN. button will work when " " or " " mark is flashing.

These marks disappear in 1 minute.

After setting the ON timer, check that OPERATION INDICATOR lamp of the indoor unit lights.

NOTE1 : Be sure to place the remote controller at the position where its signal can reach the air conditioner even during TIMER operation, or the set time may deviate within the range of about 10 minutes.

NOTE2 : Reset the timer in the following cases, or the set time may deviate and other malfunctions may occur.

- A power failure occurs.
- The circuit breaker functions.

2. Cancel

TIMER setting can be cancelled with the ON/OFF TIMER buttons.

To cancel the ON timer, press the "ON-TIMER" button.

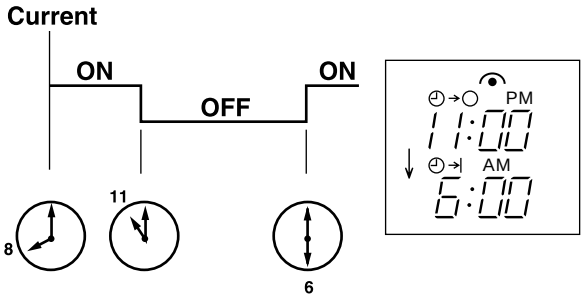
To cancel the OFF timer, press the "OFF-TIMER" button.

TIMER is cancelled and the display of set time disappears.

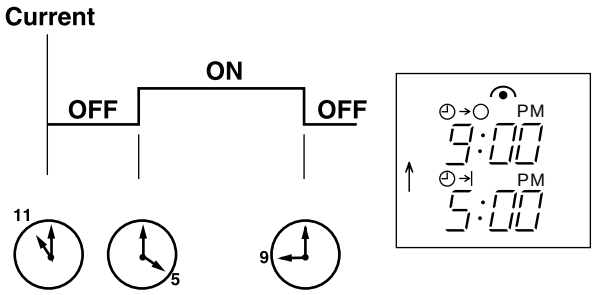
PROGRAM TIMER

- The OFF timer and ON timer can be used in combination.
- " ↑ "and " ↓ " display shows the order of the OFF timer and ON timer operation.

(Example 1) The current time is 8:00 PM.
The unit turns off at 11:00 PM, and on at 6:00 AM.



(Example 2) The current time is 11:00 AM.
The unit turns on at 5:00 PM, and off at 9:00 PM.



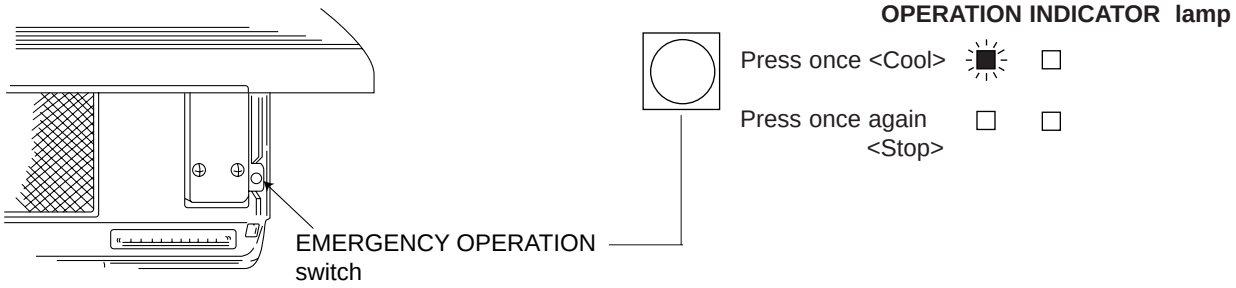
NOTE : TIMER setting will be cancelled by power failure or breaker functioning.

9-8. EMERGENCY-TEST OPERATION

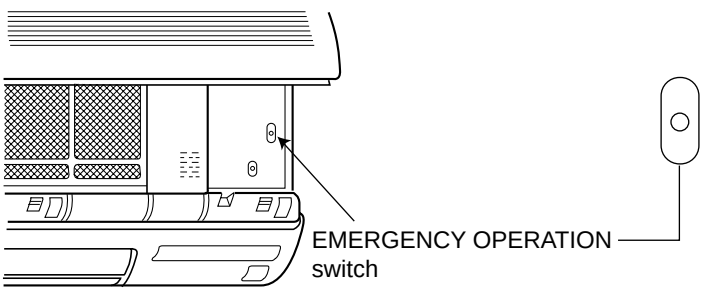
In case of test run operation or emergency operation, use the EMERGENCY OPERATION switch on the front of the indoor unit. Emergency operation is available when the remote controller is missing, has failed or the batteries of remote controller run down. The unit will start and the OPERATION INDICATOR lamp will light.
The first 30 minutes of operation is the test run operation. This operation is for servicing. The indoor fan speed runs at High speed and the system is in continuous operation. (The thermostat is ON.)
After 30 minutes of test run operation the system shifts to EMERGENCY COOL MODE with a set temperature of 24°C. The fan speed shifts to Med. speed.
The coil frost prevention works even in emergency operation.
In the test run or emergency operation, the horizontal vane operates in VANE AUTO ( ) mode.
Emergency operation continues until the EMERGENCY OPERATION switch is pressed again or the unit receives any signal from the remote controller. In case of latter normal operation will start.

NOTE : Do not press the EMERGENCY OPERATION switch during normal operation.

MS-18RV - E1
MS-24RV - E1



MS-30RV - E1



9-9. LEV control <MS-30RV only>

LEV (Expansion valve) is controlled by “Thermostat ON” commands given from the unit.

Basic specification	Controlled range	Minimum : 54 pulse, Maximum : 500 pulse
	Drive speed	30 ~ 90 pulse / second
	Opening set	The setting is always in opening direction. (When closing LEV, open the LEV to adjust to set opening after closing the LEV at once.)
General operation	Stop of indoor unit	Opening in stop : 150 pulse → LEV opening is set to becomes 500 pulse after 3 minutes passed.
	Remote controller ON	LEV positioning (LEV is closed completely at once)
	Power ON (Breaker ON)	LEV is positioned. However, afterwards, LEV is not positioned at the first remote controller ON.
	Approximate for 2 minutes since compressor has started.	Opening is set by the initial opening. (Initial opening is set according to each operation modes and outer temperature conditions.)
	From approximate 2 minutes to approximate 13 minutes (for 11 minutes) since compressor has started.	Opening is set by standard opening. (Standard opening is set according to each operation modes and outer temperature conditions.)
	After 13 minutes passed since compressor has started.	LEV opening is corrected to be once every 2 minutes so that discharge temperature becomes the target discharge temperature. (When the discharge temperature is lower than target one : LEV is corrected in closed direction, when the discharge temperature is higher than target one : LEV is corrected in opening direction.)
	At thermostat OFF	Opening in stop : 150 pulse → LEV is set to the initial opening after about 3 minutes passed.
	At thermostat ON	Same as the starting of compressor operation
	At remote controller OFF	Opening in stop : 150 pulse → LEV is set so that the opening is opened completely at the speed of 4 pulse every 5 seconds in opening after about 3 minutes passed.

(1) LEV opening correction by discharge temperature

The LEV opening is corrected according to the temperature difference between target discharge temperature (Tb) and actual discharge temperature (Ta).

① The LEV correction is used properly for two kinds according to the LEV opening status at operation off.

Rank	Opening immediately before having stopped last time	
	100 pulse or less	100 pulse or more
Ta (℃)	Cooling	Cooling
more than Tb+10	5	20
Tb+5 to Tb+10	2	10
Tb+2 to Tb+5	1	2
Tb-2 to Tb+2	0	0
Tb-5 to Tb-2	-1	-2
Tb-10 to Tb-5	-2	-5
less than Tb-10	-5	-10

NOTE : Discharge temperature : Ta, Target discharge temperature : Tb

② When the temperature difference △RT between indoor coil thermistor (main) RT12 and indoor coil thermistor (sub) RT13 in the indoor unit is 2℃ or more for a fixed time at cool or dry operation, the target discharge temperature is changed. After the temperature is changed, when temperature difference △RT is 3℃ or more, the target temperature is changed again. The LEV opening is controlled based on the changed target discharge temperature and the temperature difference △RT.

Ta (℃)	△RT		
	less than 2℃	2℃ or more and less than 3℃	3℃ or more
more than Tb+10	20	60	60
Tb+5 to Tb+10	10	20	20
Tb+2 to Tb+5	2	2	2
Tb-2 to Tb+2	0	0	0
Tb-5 to Tb-2	-2	-2	-2
Tb-10 to Tb-5	-5	-5	-5
less than Tb-10	-10	-10	-10

NOTE : Discharge temperature : Ta, Target discharge temperature : Tb

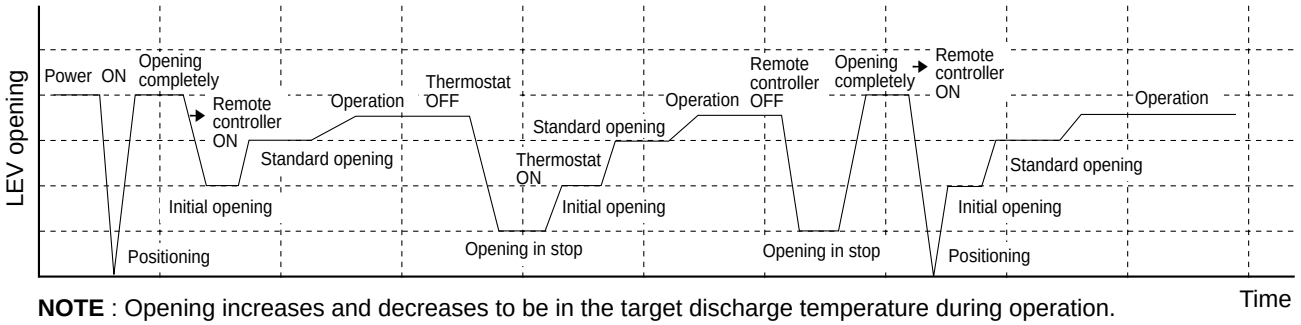
The target discharge temperature (Tb) is set according to the operation mode or the unit status as follows.

Operation mode	Tb (℃)
COOL (Normal)	90
COOL (△RT is less than 2℃, or △RT is 2℃ or more and less than 3℃.)	75
COOL (△RT is 3 ℃ or more.)	65

NOTE : Target discharge temperature : Tb

NOTE : When the discharge temperature (Ta) is 50℃ or less on the cool operation LEV opening is set in 54 pulse.
When this state continues for 20 minutes, the compressor is stopped and restarts in 3 minutes.
When the compressor is stopped, the indoor unit indicates the abnormality of refrigerant system and stops.
(OPERATION INDICATOR lamp is 10-time flashing on and off.)

(2) LEV time chart



NOTE : Opening increases and decreases to be in the target discharge temperature during operation.

10 SERVICE FUNCTIONS

MS-18RV -E1
MS-24RV -E1
MS-30RV -E1

10-1. TIMER SHORT MODE

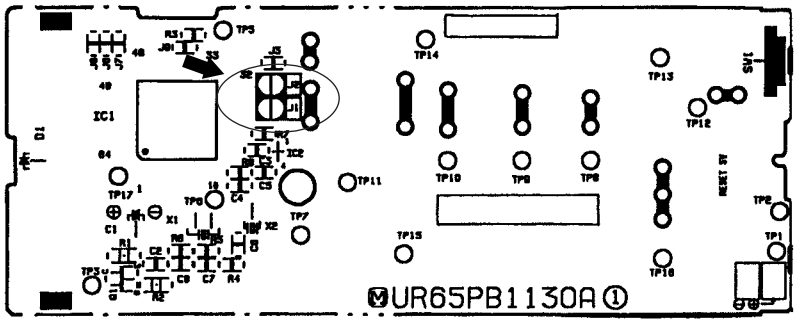
For service, set time can be shortened by short circuit of JPG and JPS the electronic control P.C. board.
The time will be shortened as follows. (Refer to page 58 or 59.)
Set time : 1 minute ➔ 1-second
Set time : 3 minute ➔ 3-second (It takes 3 minutes for the compressor to start operation. However, the starting time is shortened by short circuit of JPG and JPS.)

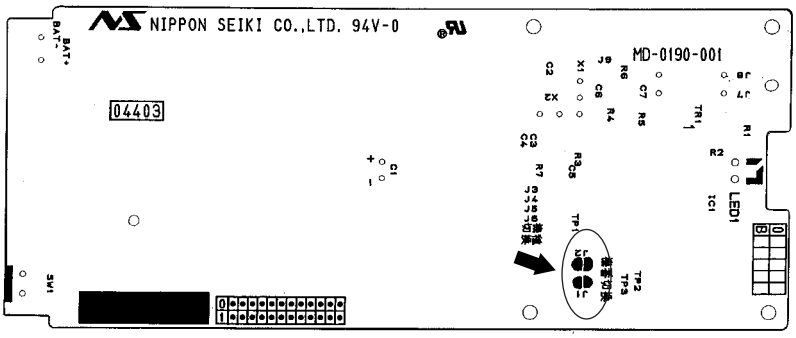
10-2. P.C. BOARD MODIFICATION FOR INDIVIDUAL OPERATION

A maximum of 4 indoor units with wireless remote controllers can be used in a room.
In this case, to operate each indoor unit individually by each remote controller, P.C. boards of remote controller must be modified according to the number of the indoor unit.

How to modify the remote controller P.C. board

Remove batteries before modification.
The board has a print as shown below :





NOTE : For remodelling, take out the batteries and push the OPERATE/STOP(ON/OFF) button twice or 3 times at first.
After finish remodelling, put back the batteries then push the RESET button.

The P.C. board has the print “J1” and “J2”. Solder “J1” and “J2” according to the number of indoor unit as shown in Table 1.
After modification, push the RESET button.

Table 1

	1 unit operation	2 units operation	3 units operation	4 units operation
No. 1 unit	No modification	Same as at left	Same as at left	Same as at left
No. 2 unit	–	Solder J1	Same as at left	Same as at left
No. 3 unit	–	–	Solder J2	Same as at left
No. 4 unit	–	–	–	Solder both J1 and J2

NOTE :

At power supply failure or installation, indoor unit deletes the memory about remote controller. When the power supply is turned on and indoor unit receives the first signals from the remote controller, the remote controller number is designated as the indoor unit number. Therefore at and after the second time indoor unit accepts the remote controller of the initial setting number.
At setting-error, turn the power supply off to cancel the individual operation and then turn the power supply on to restart the setting.

10-3. AUTO RESTART FUNCTION

When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor electronic control P.C.board. The “AUTO RESTART FUNCTION” sets to work the moment power has restored after power failure. Then, the unit will restart automatically. However if the unit is operated in “I FEEL CONTROL.” mode before power failure, the operation is not memorized. In “I FEEL CONTROL.” mode, the operation is decided by the initial room temperature.

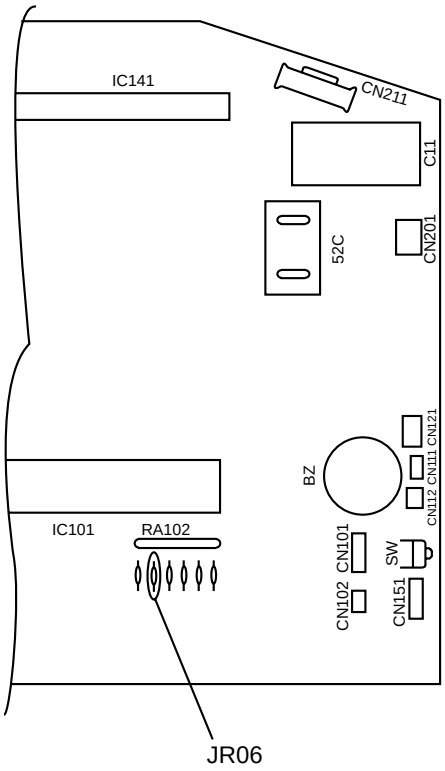
How to set “AUTO RESTART FUNCTION”

①Turn off the main power for the unit.

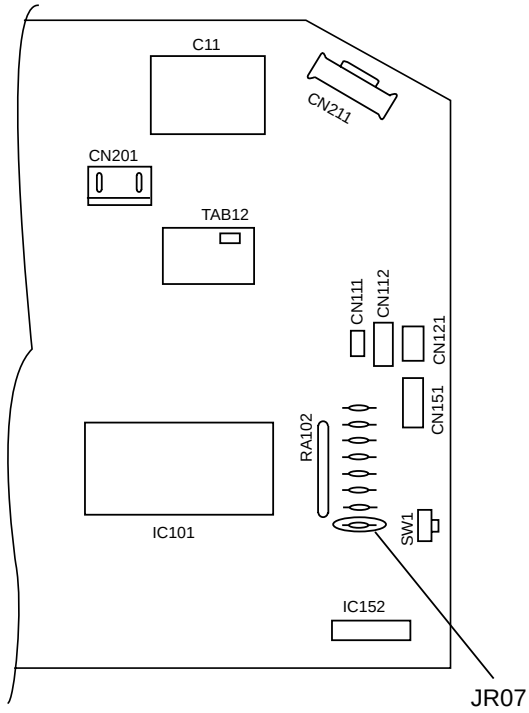
②Remove the electronic control P.C. board and the display P.C.board. (Refer to page 61 or 63.)

③Cut the RESISTOR JR06(MS-18/24RV)/ JR07(MS-30RV) on the indoor electronic control P.C.board. (Refer to page 58 or 59.)

MS-18/24RV



MS-30RV



Operation

①If the main power (220-240V AC) has been cut, the operation settings remain.

②After the power is restored, the unit restarts automatically according to the memory.(However, it takes at least 3 minutes for the compressor to start running.)

NOTE:

- The operation settings are memorized when 10 seconds have passed after the indoor unit was operated with the remote controller.
- If main power is turned off or a power failure occurs while AUTO START/STOP timer is active, the timer setting is cancelled.
- If the unit has been off with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is off.
- To prevent breaker off due to the rush of starting current, systematize other home appliances not to turn on at the same time.
- When some air conditioners are connected to the same supply system, if they are operated before power failure, the starting current of all the compressors may flow simultaneously at restart.
  Therefore, the special counter-measures are required to prevent the main voltage-drop or the rush of the starting current by adding to the system that allows the units to start one by one.

11 TROUBLESHOOTING

MS-18RV -E1 MU-18RV -E1
MS-24RV -E1 MU-24RV -E1
MS-30RV -E1 MU-30RV -E1

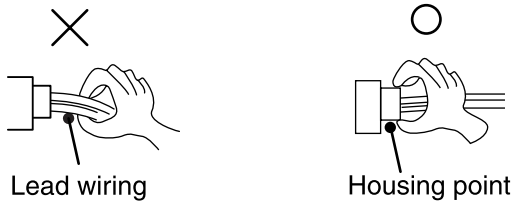
11-1. Cautions on troubleshooting

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 first turn off the remote controller to stop the unit, 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

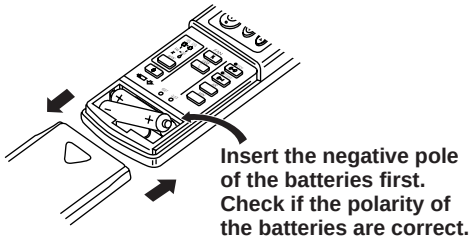
1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing on and off before starting service work.
2) Before servicing that the connector and terminal are connected properly.
3) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) When troubleshooting, refer to the flow chart on page 48 and the check table on page 49.

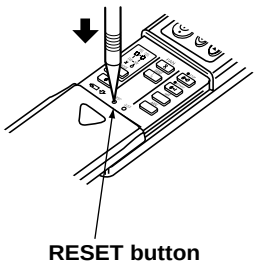
4. How to replace batteries

Weak batteries may cause the remote controller malfunction.
In this case, replace the batteries to operate the remote controller normally.

① Remove the front lid and insert batteries. Then reattach the front lid.

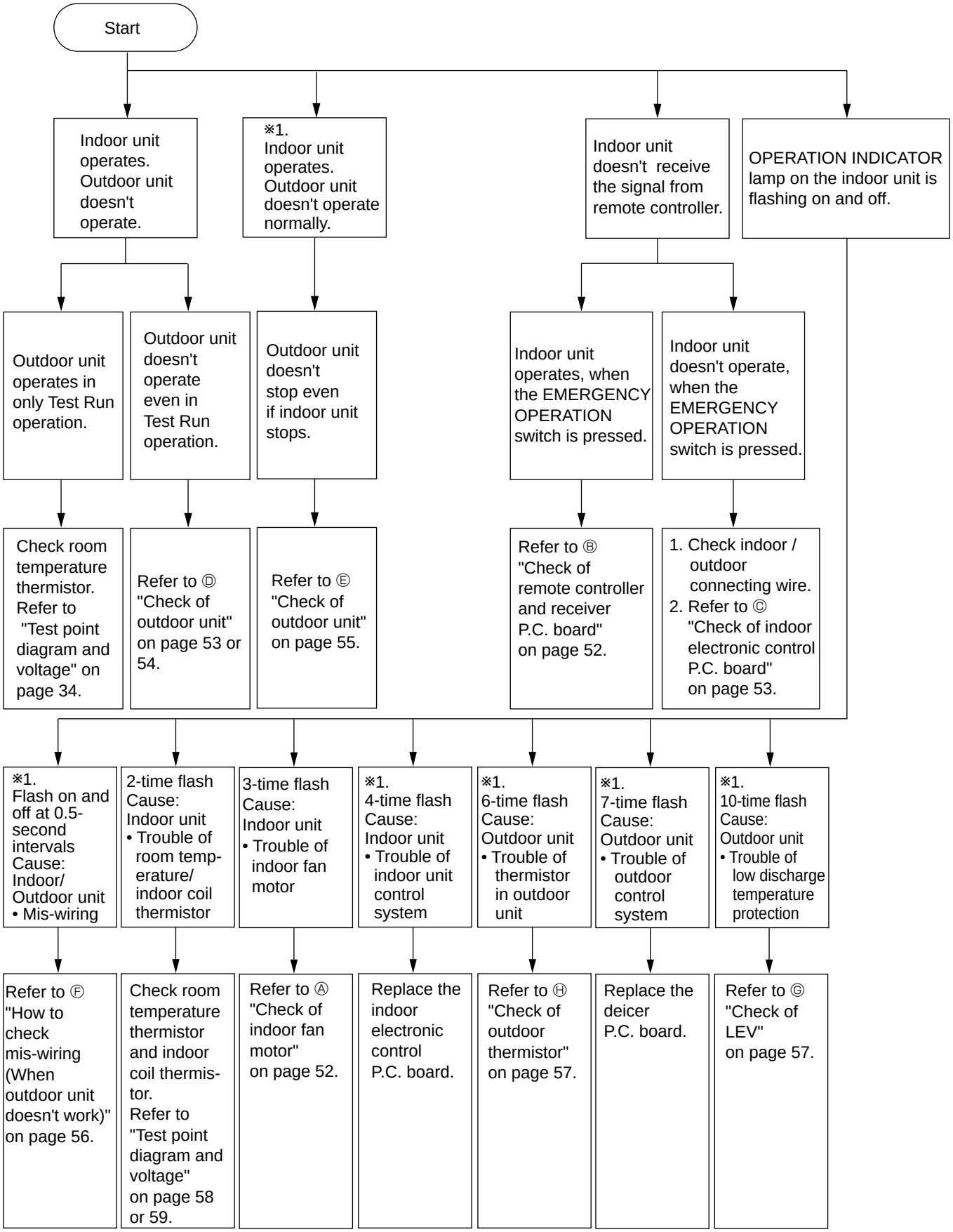
② Press the RESET button with tip end of ball point pen or the like, and then use the remote controller.





NOTE : 1. If the RESET button is not pressed, the remote controller may not operate correctly.
2. In these illustrations remote controller of MS-18/24RV are used.

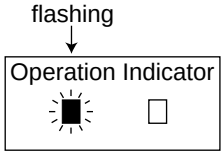
11-2. Instruction of troubleshooting



※1. These indications are only for MS-30RV.

1. Troubleshooting check table

• The following indication does not depend on the shape of lamp.



· Flashing of the OPERATION INDICATOR lamp (on the left-hand side) indicates possible abnormalities.
· The OPERATION INDICATOR lamp (on the left-hand side) is lighted during normal operation.

Before taking measures, make sure that the symptom reappears for accurate troubleshooting.
Self check table

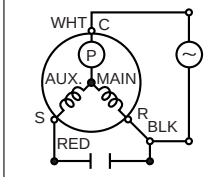
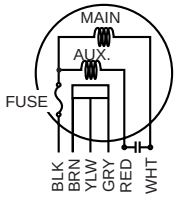
No.	Abnormal point	Operation indicator lamp	Symptom	Detection method	Checkpoint
1 ※1.	Mis-Wiring	0.5-second ON 0.5-second OFF	Outdoor unit does not operate.	3 minutes after power supply turns ON, when serial signal is not received.	• Refer to Ⓕ "How to check mis-wiring " on page 56.
2	Indoor coil thermistor Room tempera-ture thermistor	2-time flash 2.5-second OFF	Outdoor unit does not operate.	Detect Indoor coil/room temperature thermistor short or open circuit every 8 seconds during operation.	• Refer to the characteristics of main indoor coil thermistor, sub indoor coil thermistor, and room temperature thermistor on page 58 or 59.
3	Indoor fan motor	3-time flash 2.5-second OFF	Indoor fan repeats 12 seconds ON and 3 minutes OFF. When the indoor fan breaks, the fan keeps stopping.	When rotational frequency feedback signal is not emitting during 12-second indoor fan operation.	• Refer to Ⓐ "Check of indoor fan motor" on page 52.
4 ※1.	Indoor control system	4-time flash 2.5-second OFF	Outdoor unit does not operate.	When it cannot properly read data in the nonvolatile memory of the indoor electronic control P.C. board.	• Replace the indoor electronic control P.C. board.
5 ※1.	Outdoor thermistors	6-time flash 2.5-second OFF	Outdoor unit does not operate.	<Thermistor short> Thermistors are abnormal when they short after compressor start-up. <Thermistor open> Thermistors are abnormal when they open after compressor start-up. However, discharge temperature thermistor is abnormal when open circuit is detected more than 10 minutes after compressor start-up.	• Replace the deicer P.C. board. Refer to Ⓗ "Check of outdoor thermistor" on page 57. • Re-connect the connector.
6 ※1.	Outdoor control system	7-time flash 2.5-second OFF	Outdoor unit does not operate.	When it cannot properly read data in the nonvolatile memory of the deicer P.C. board, outdoor unit stops.	• Replace the deicer P.C. board.
7 ※1.	Low discharge temperature protection	10-time flash 2.5-second OFF	Outdoor unit does not operate.	When discharge temperature has been 50℃ or less on cool operation, or is 49℃ or less on heat operation for 20 minutes.	• Refer to Ⓖ "Check of LEV" on page 57. • Check refrigerant circuit and refrigerant amount.

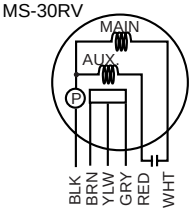
NOTE : When the indoor unit has started operation and the above detection method has detected an abnormality (the first detection after the power ON), the indoor electronic control P.C. board turns OFF the indoor fan motor with the OPERATION INDICATOR lamp flashing on and off.

※1. These indications are only for MS-30RV.

MS-18RV -E1 MU-18RV -E1
MS-24RV -E1 MU-24RV -E1
MS-30RV -E1 MU-30RV -E1

2. Trouble criterion of main parts

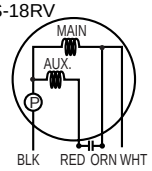
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Room temperature thermistor(RT11)
Indoor coil thermistor (RT12(main), RT13(sub))</td><td>Measure the resistance with a tester.
(Part temperature 10˚C ~ 30˚C)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>8 kΩ ~ 20 kΩ</td><td>Open or short-circuit</td></tr></table></td><td></td></tr>
<tr><td>Discharge temperature thermistor(RT62)
<MS-30RV only></td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.
(Part temperature 0˚C ~ 40˚C)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>120 kΩ ~ 800 kΩ</td><td>Open or short-circuit</td></tr></table></td><td></td></tr>
<tr><td>Ambient temperature thermistor(RT63)
<MS-30RV only></td><td>Measure the resistance with a tester.
(Part temperature –10˚C ~ 40˚C)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>5 kΩ ~ 60 kΩ</td><td>Open or short-circuit</td></tr></table></td><td></td></tr>
<tr><td>Compressor(MC)</td><td>Measure the resistance between the terminals with a tester.
(Part temperature –10˚C ~ 40˚C)
<table><tr><th rowspan="2">Terminal</th><th colspan="3">Normal</th><th>Abnormal</th></tr><tr><th>MS-18RV</th><th>MS-24RV</th><th>MS-30RV</th><th rowspan="2">Open or short-circuit</th></tr><tr><td>C – R</td><td>0.95 ~ 1.17 Ω</td><td>0.84 ~ 1.04 Ω</td><td>0.58 ~ 0.71 Ω</td></tr><tr><td>C – S</td><td>1.92 ~ 2.36 Ω</td><td>1.82 ~ 2.24 Ω</td><td>1.39 ~ 1.70 Ω</td></tr></table></td><td> 
</td></tr>
<tr><td rowspan="2">Indoor fan motor(MF)</td><td>Motor part
Measure the resistance between the terminals with a tester.
(Part temperature 10˚C ~ 30˚C)
<table><tr><th rowspan="2">Color of lead wire</th><th colspan="2">Normal</th><th>Abnormal</th></tr><tr><th>MS-18/24RV</th><th>MS-30RV</th><th rowspan="2">Open or short-circuit</th></tr><tr><td>WHT – BLK</td><td>176 ~ 192 Ω</td><td>133 ~ 144 Ω</td></tr><tr><td>BLK – RED</td><td>240 ~ 261 Ω</td><td>153 ~ 165 Ω</td></tr></table></td><td rowspan="2">MS-18/24RV
 

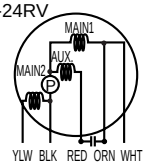
MS-30RV
 
</td></tr>
<tr><td>Sensor part
Measure the voltage power ON.
<table><tr><th>Color of lead wire</th><th>Normal</th><th>Abnormal</th></tr><tr><td>BRN – YLW</td><td>4.5 ~ 5.5V</td><td rowspan="2">Remain 0V or 5V</td></tr><tr><td>YLW – GRY</td><td>(When fan revolved one time)
0V➔5V➔0V
(Approx.)</td></tr></table></td></tr>
</table>

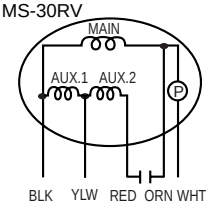
Ⓟ : INNER PROTECTOR

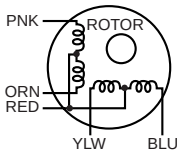
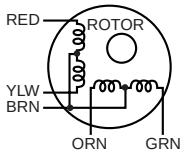
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Outdoor fan moter(MF)</td><td>Measure the resistance between the terminals with a tester.
(Part temperature –10˚C ~ 40˚C)

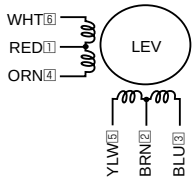
<table>
<tr><td rowspan="2">Color of lead wire</td><td colspan="2">Normal</td><td>Abnormal</td></tr>
<tr><td>MS-18RV</td><td>MS-24RV</td><td rowspan="4">Open or short circuit</td></tr>
<tr><td>WHT – BLK</td><td>102 ~ 126 Ω</td><td>71 ~ 88 Ω</td></tr>
<tr><td>BLK – RED</td><td>97 ~ 120 Ω</td><td>90 ~ 111 Ω</td></tr>
<tr><td>BLK – YLW</td><td>————</td><td>81 ~ 100 Ω</td></tr>
</table>

<table>
<tr><td rowspan="2">Color of lead wire</td><td>Normal</td><td>Abnormal</td></tr>
<tr><td>MS-30RV</td><td rowspan="4">Open or short circuit</td></tr>
<tr><td>WHT – BLK</td><td>55.4 ~ 67.7 Ω</td></tr>
<tr><td>BLK – YLW</td><td>49.3 ~ 60.3 Ω</td></tr>
<tr><td>YLW – RED</td><td>22.9 ~ 28.0 Ω</td></tr>
</table>
</td><td>MS-18RV
 

MS-24RV
 

MS-30RV
 
</td></tr>
<tr><td>Vane motor(MV)

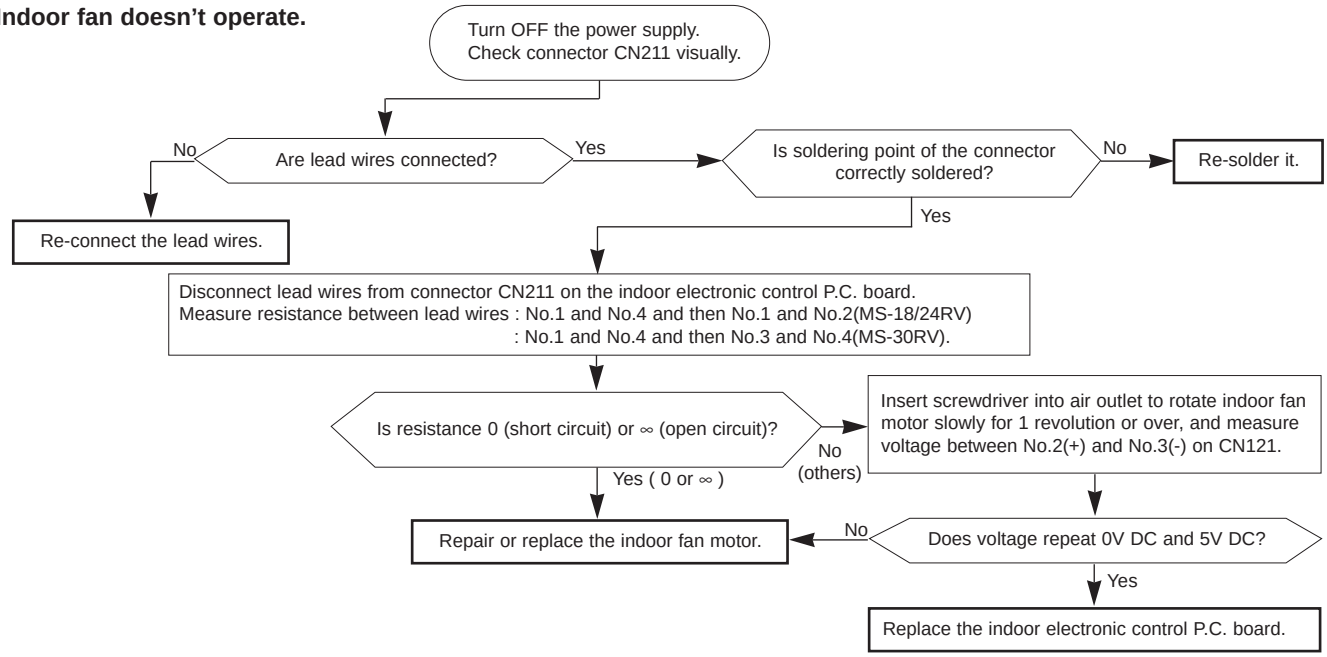
<MS-18/24RV only></td><td>Measure the resistance between the terminals with a tester.
(Part temperature10°C ~ 30°C)
<table>
<tr><td>Normal</td><td>Abnormal</td></tr>
<tr><td>RED-other one</td><td rowspan="2">Open or short-circuit</td></tr>
<tr><td>358 ~ 388 Ω</td></tr>
</table></td><td> 
</td></tr>
<tr><td>Horizontal vane motor(MV1)
Vertical vane motor(MV2)
<MS-30RV only></td><td>Measure the resistance between the terminal with a tester.
(Part temperature10°C ~ 30°C)
<table>
<tr><td>Normal</td><td>Abnormal</td></tr>
<tr><td>BRN-other one</td><td rowspan="2">Open or short-circuit</td></tr>
<tr><td>282 ~ 306 Ω</td></tr>
</table></td><td> 
</td></tr>
<tr><td>LEV(Expansion valve)

<MS-30RV only></td><td>Measure the resistance with a tester.
(Part temperature : –10˚C ~ 40˚C)
<table>
<tr><td>Color of lead wire</td><td>Normal</td><td>Abnormal</td></tr>
<tr><td>WHT – RED</td><td rowspan="4">30.3 ~ 37.0 Ω</td><td rowspan="4">Open or short-circuit</td></tr>
<tr><td>RED – ORN</td></tr>
<tr><td>YLW – BRN</td></tr>
<tr><td>BRN – BLU</td></tr>
</table></td><td> 
</td></tr>
</table>

Ⓟ : INNER PROTECTOR

Ⓐ Check of indoor fan motor

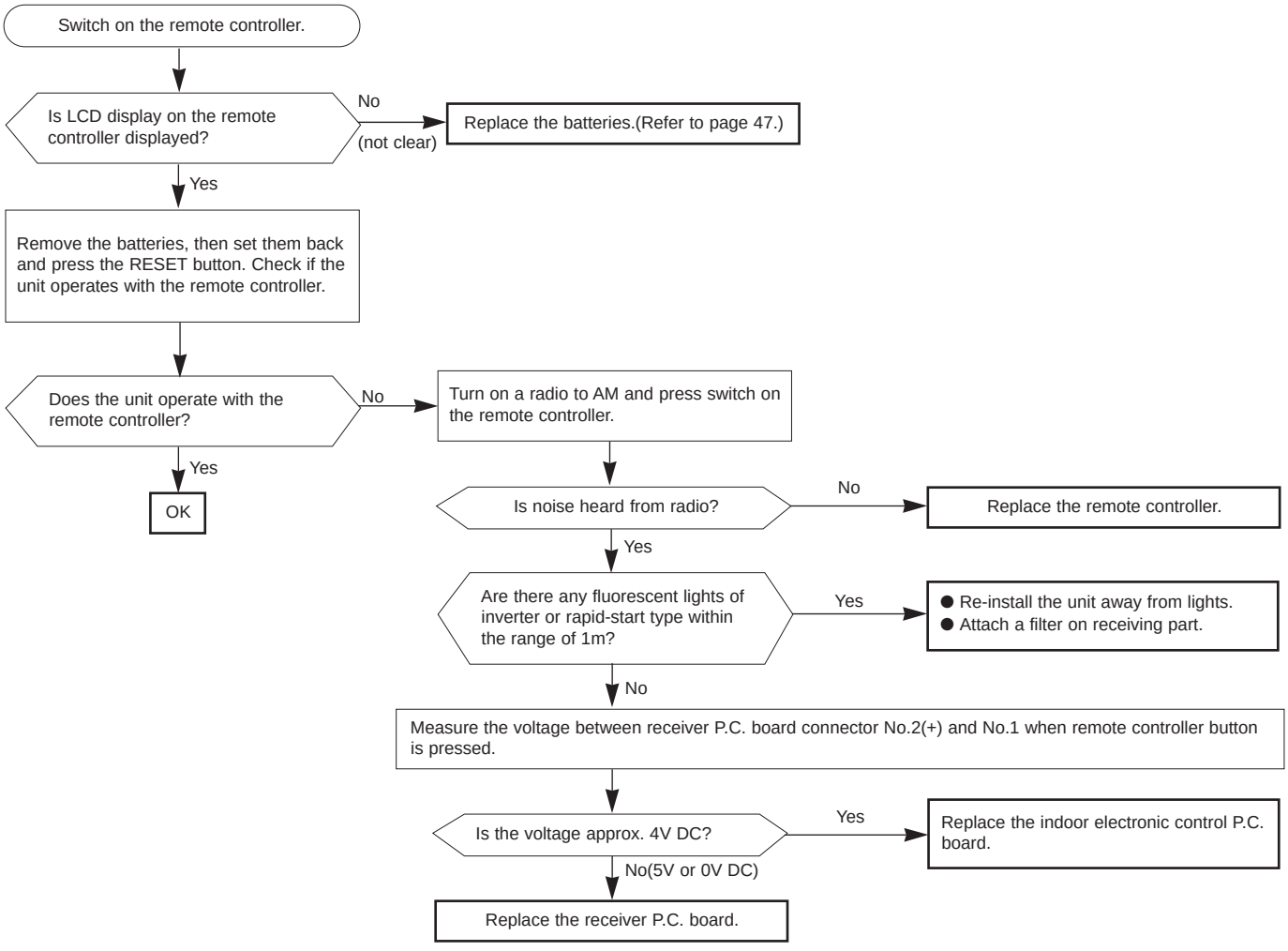
Indoor fan doesn't operate.



Ⓑ Check of remote controller and receiver P.C. board

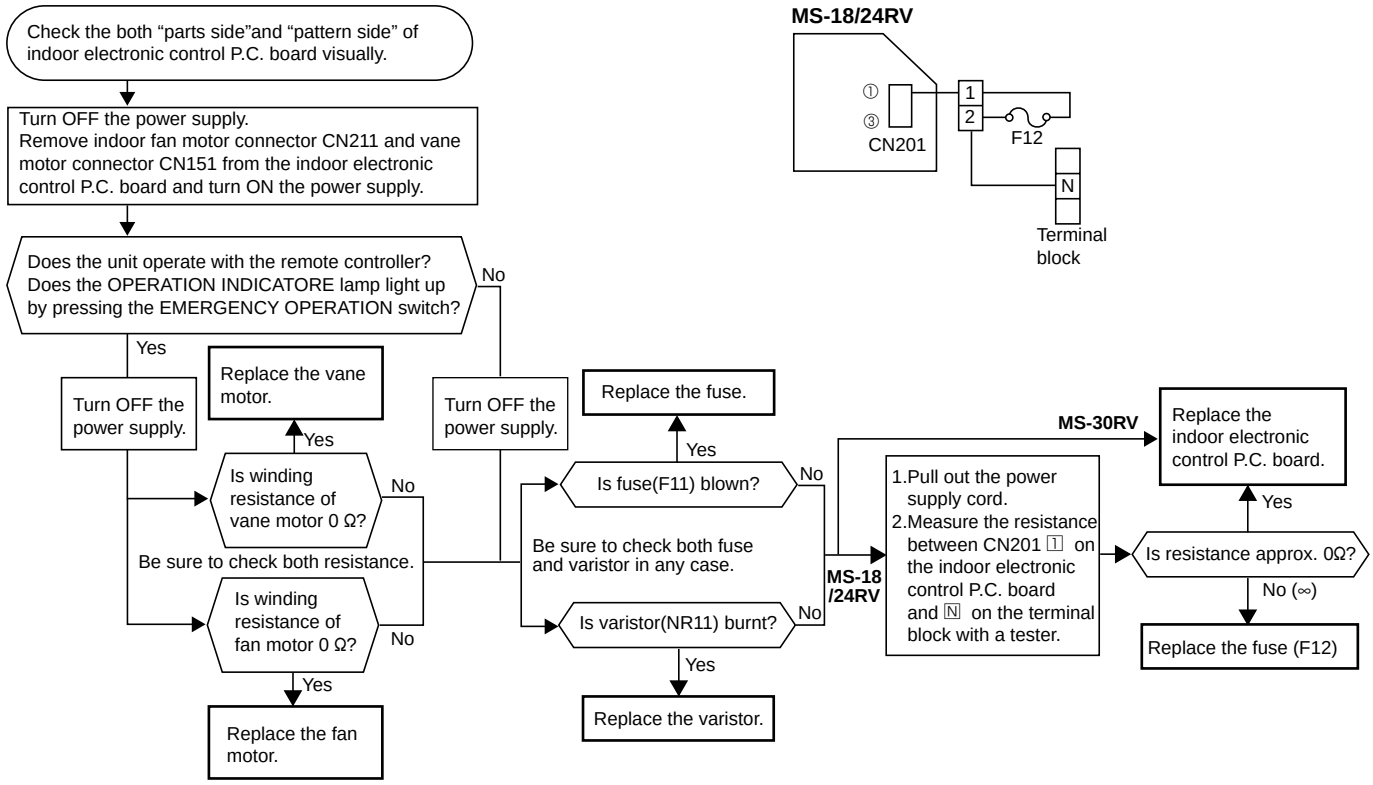
Indoor unit operates by pressing the EMERGENCY OPERATION switch, but doesn't operate with the remote controller.

※Check if the remote controller is exclusive for this air conditioner.



ⓒCheck of indoor electronic control P.C. board

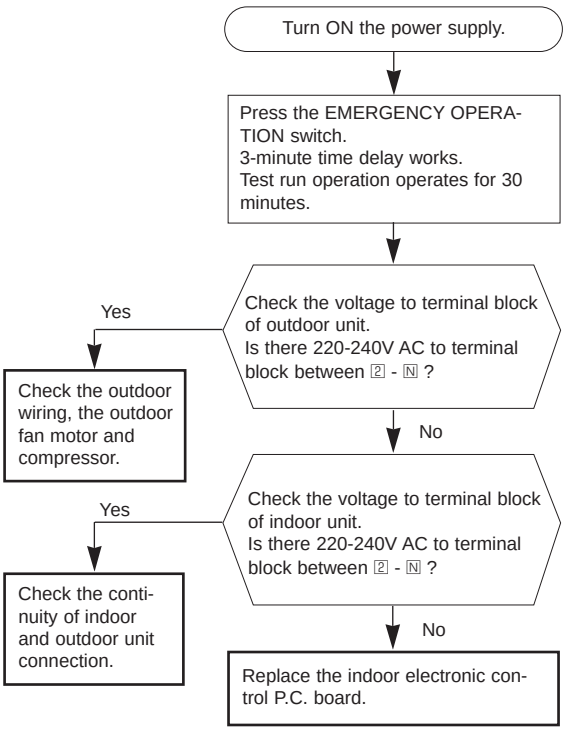
The unit doesn't operate with the remote controller.
Also, the OPERATION INDICATOR lamp doesn't light up by pressing the EMERGENCY OPERATION switch.



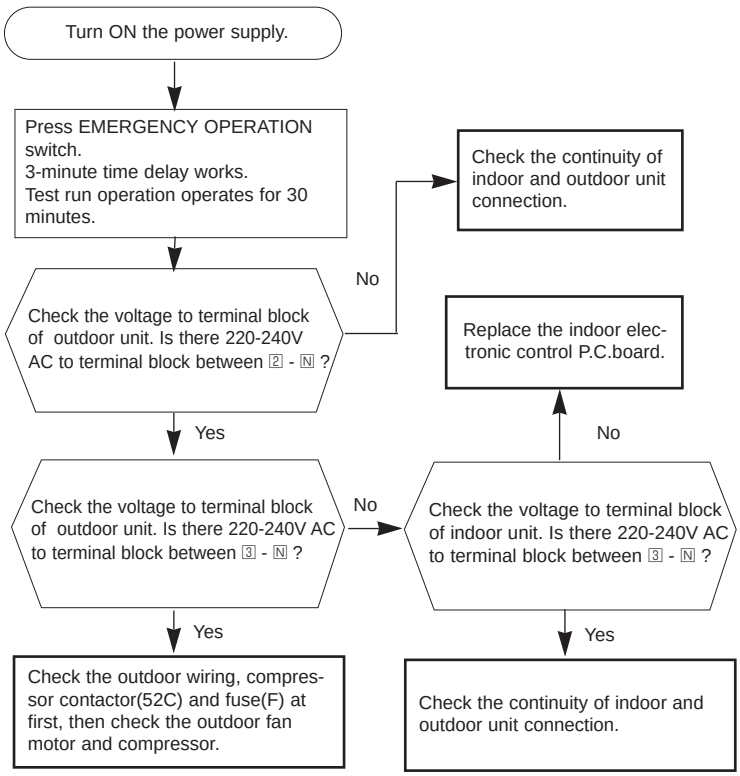
ⓓCheck of outdoor unit

Compressor and / or outdoor fan doesn't operate.

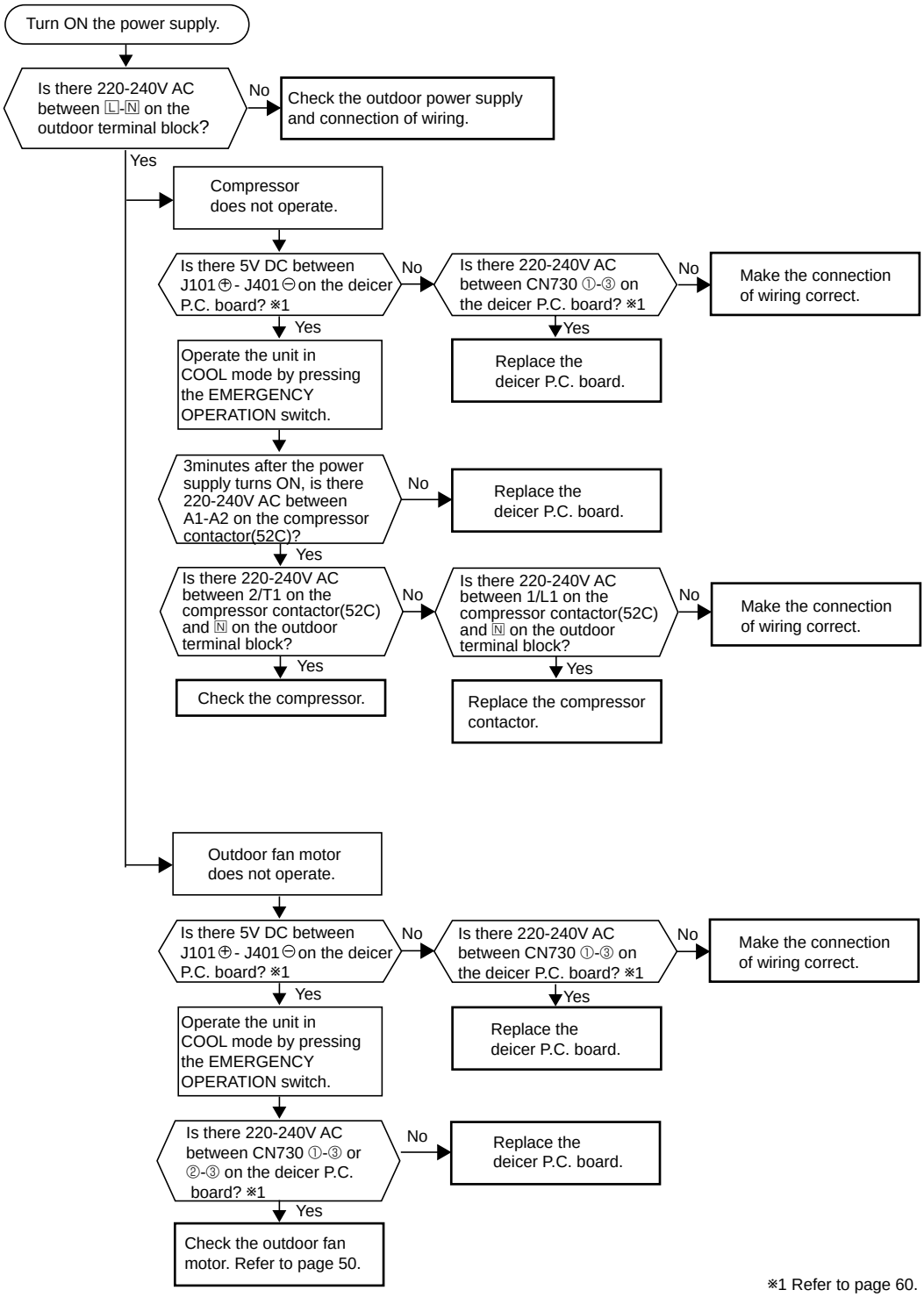
MS-18RV



MS-24RV



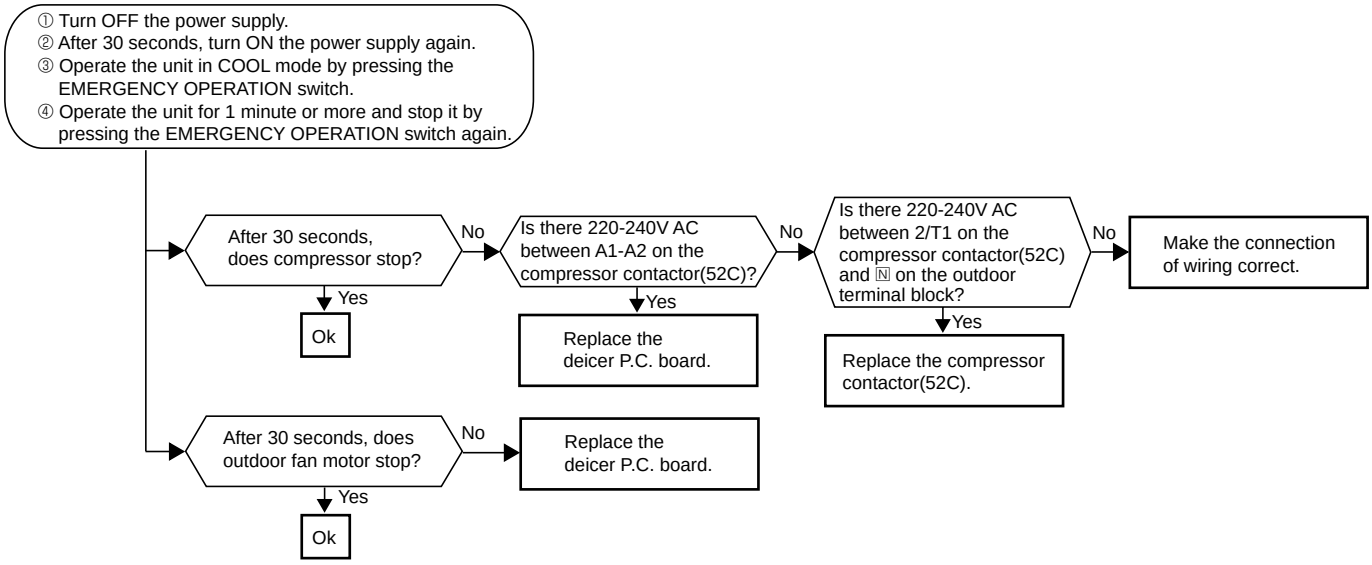
MS-30RV



※1 Refer to page 60.

Ⓔ Check of outdoor unit <MS-30RV only>

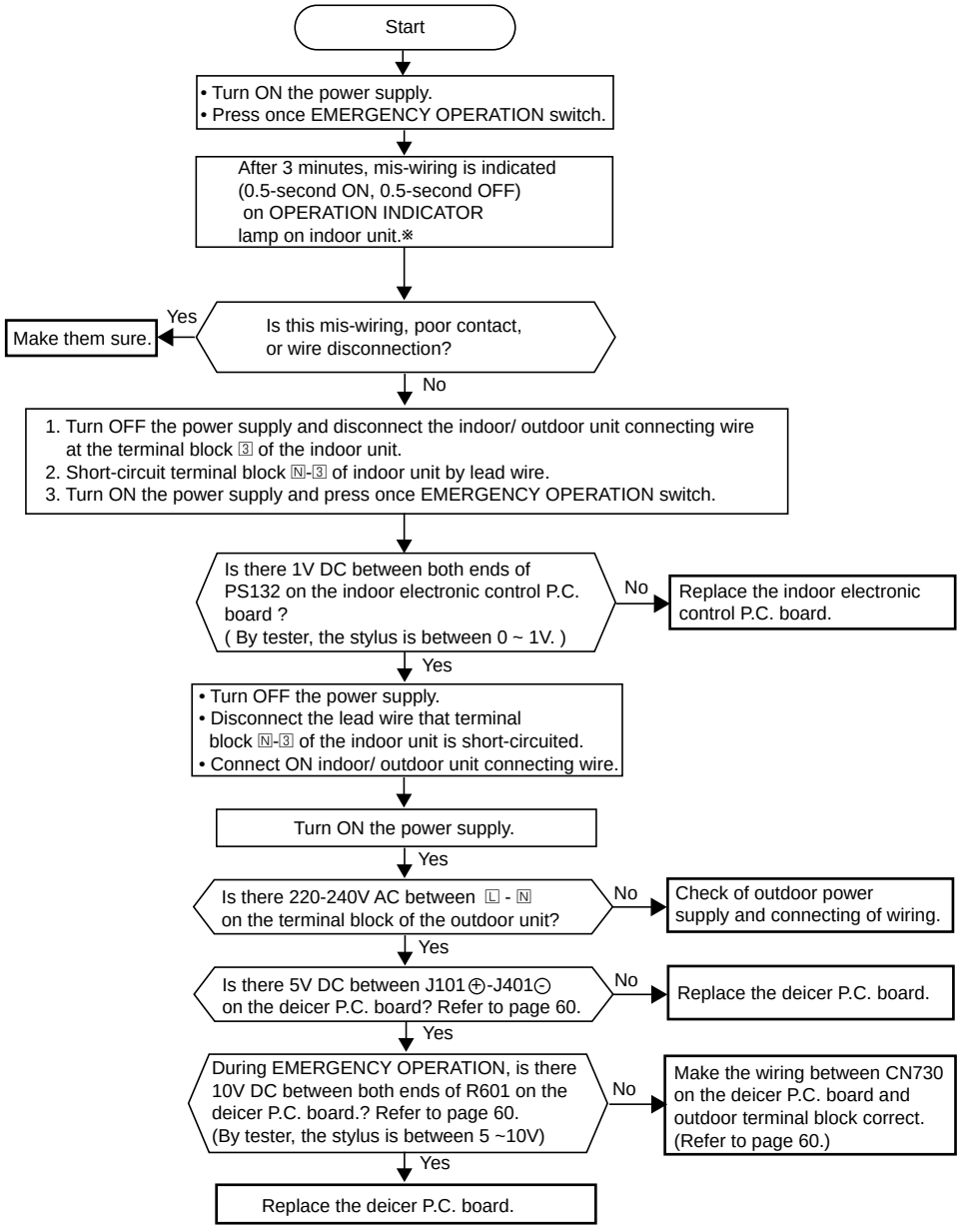
Compressor and / or outdoor fan motor doesn't stop.



Ⓕ How to check mis-wiring <MS-30RV only>

Outdoor unit doesn't operate.

※ Short circuit of JPG and JPS on the indoor electronic control P.C. board enables self -check to be displayed in 3 seconds.



Ⓖ Check of LEV (Expansion valve) <MS-30RV only>

Cooling does not operate.

① During pressing OPERATION SELECT button on remote controller, press RESET button.
② First, release RESET button.
(Confirm all displays of remote controller.)
③ Then release OPERATION SELECT button.

With remote controller set toward the indoor unit, press OPERATE/ STOP(ON/ OFF) button and confirm one beep tone.

LEV operates in full-opening direction.

Do you hear LEV "click, click·····"?
Do you touch LEV and feel it vibrate?
Yes → Ok

No

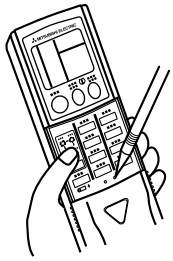
Is LEV coil properly fixed to the body?
No → Properly fix LEV coil to the body.

Yes

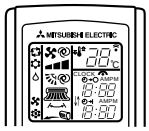
Does the resistance of thermistor have the characteristics?
Yes → Replace the DEICER P.C. board.

No

Replace the LEV coil.



① During pressing OPERATION SELECT button on remote controller, press RESET button.
② First, release RESET button.



(Confirm all displays of remote controller.)
③ Then release OPERATION SELECT button.

Characteristics of LEV coil

LEV (CN724)	Resistance
WHT–RED	30.3 Ω ~ 37.0 Ω
RED–ORN	
YLW–BRN	
BRN–BLU	

NOTE : After check of LEV, do the undermentioned operations.
1. Turn OFF the power supply of the unit and turn ON again.
2. Press the RESET button on the remote controller.

Ⓗ Check of outdoor thermistor <MS-30RV only>

Thermistors in the outdoor unit are abnormal.

※ Disconnect the connectors CN662 from the deicer P.C. board. (Check the characteristics of each thermistor.)

Turn OFF the power supply.

Discharge temperature thermistor(RT62)
Measure resistance between CN 662 1 and 2.

Ambient temperature thermistor(RT63)
Measure resistance between CN 662 3 and 4.

Does the resistance of thermistor have the characteristics on page 60?
Yes → Connect CN662. Turn ON the power supply and press the EMERGENCY OPERATION switch.
No → Replace the thermistor.

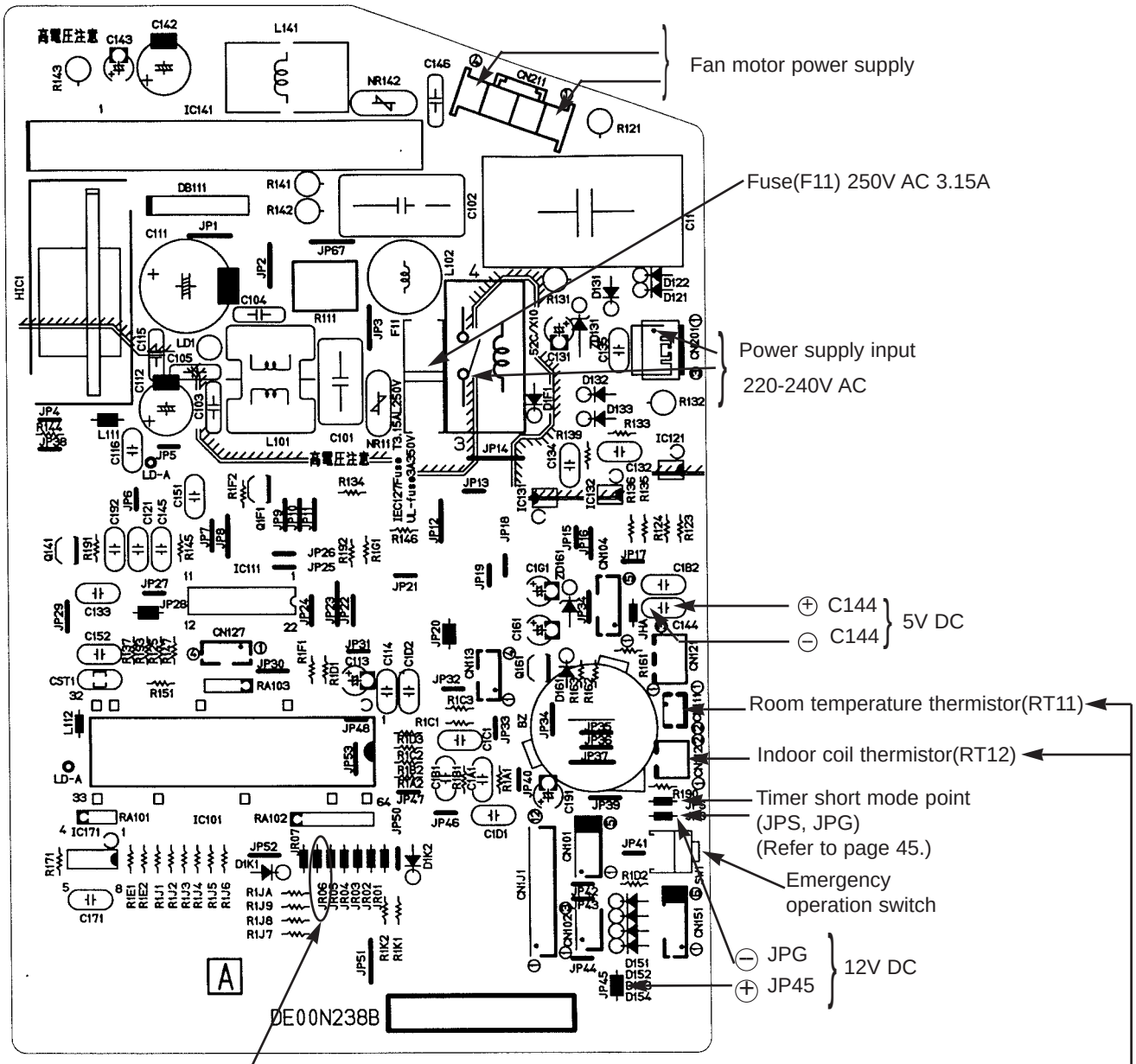
Does the unit operate 10 minutes or more?
No → Replace the deicer P.C. board.
Yes → Ok ※1.

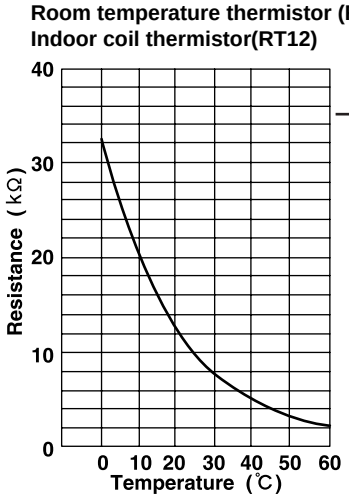
※1. It is thought defective contact of the connector.

TEST POINT DIAGRAM AND VOLTAGE

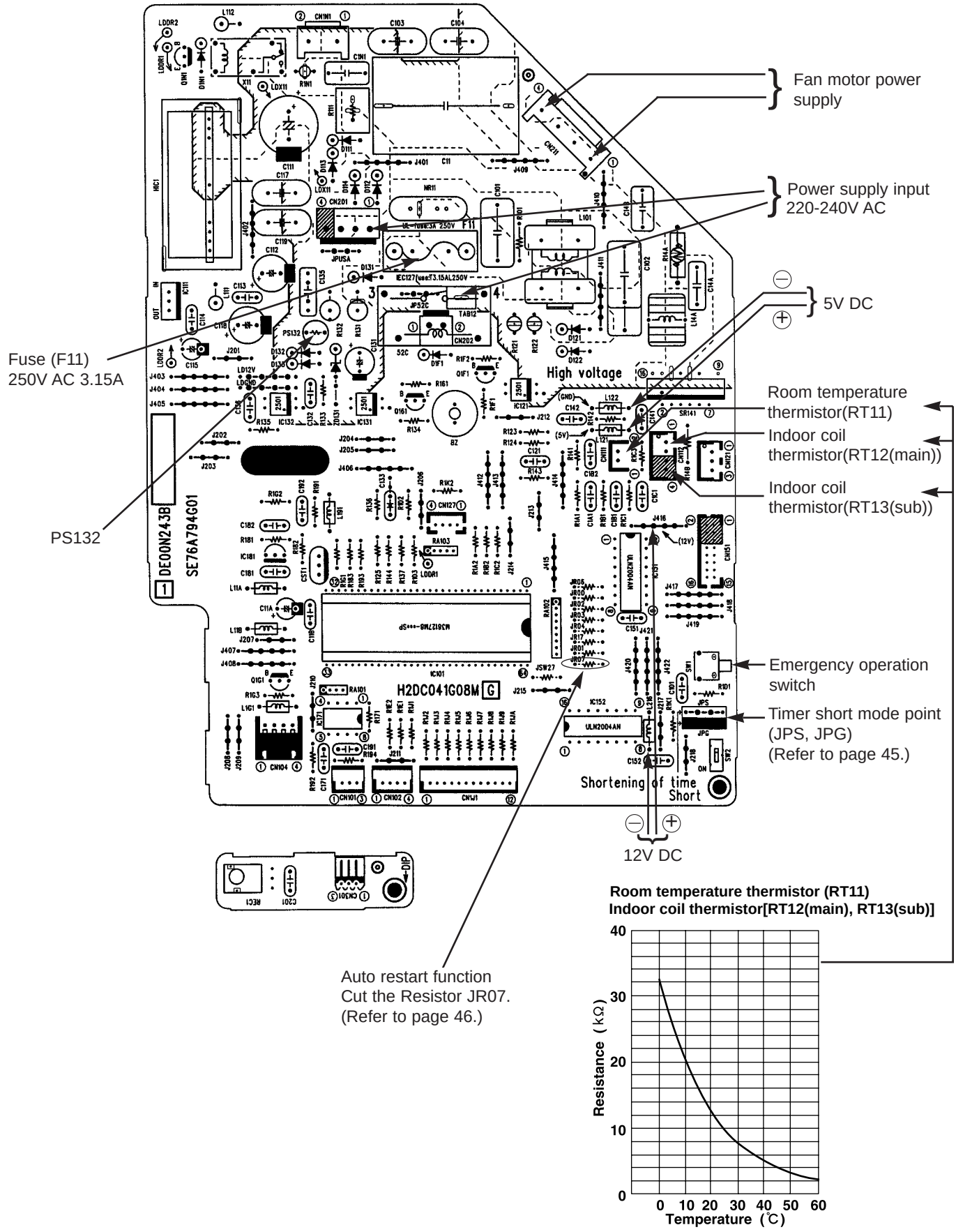
MS-18RV -E1 MS-24RV -E1

Indoor electronic control P.C. board

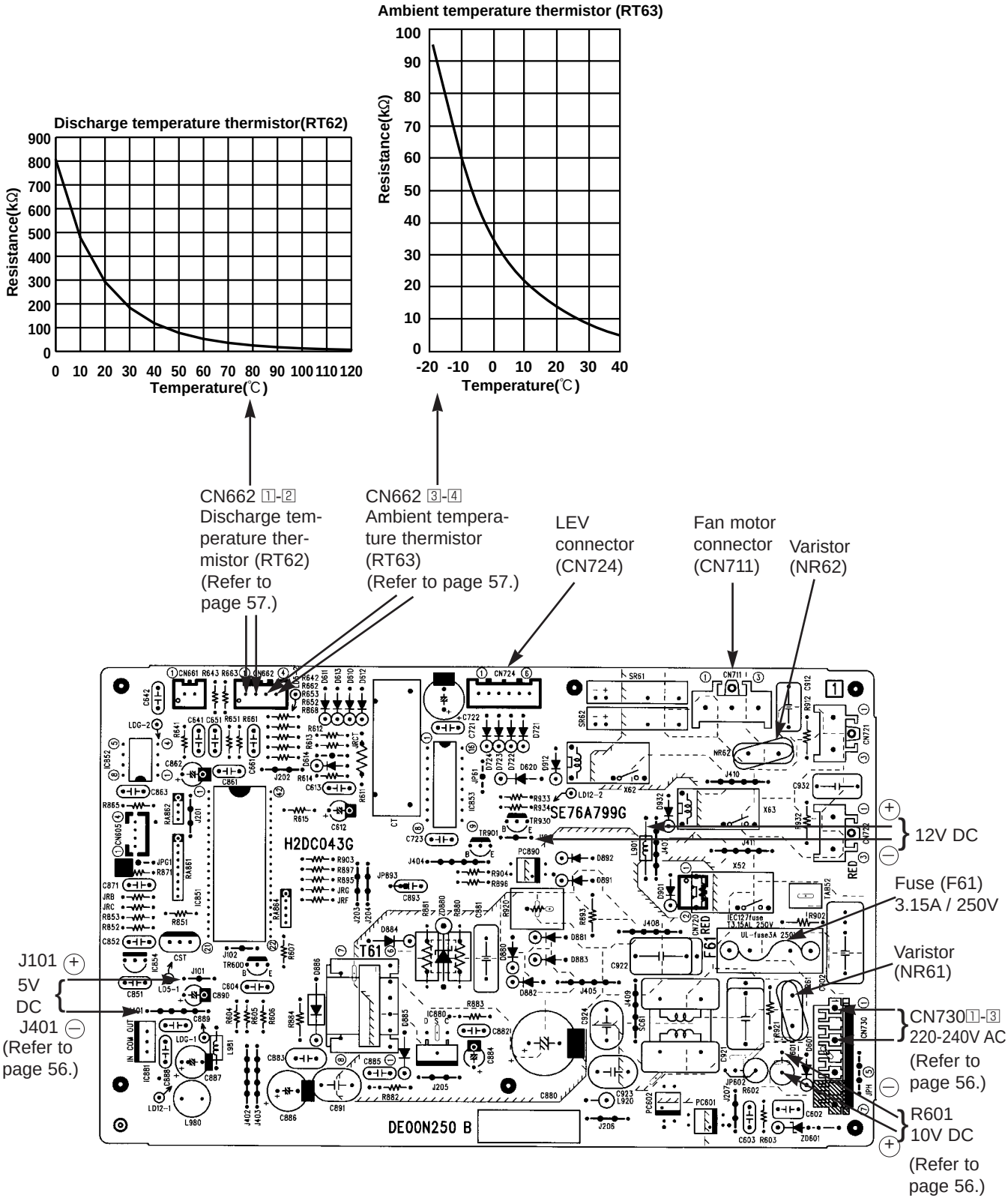




TEST POINT DIAGRAM AND VOLTAGE
MS-30RV -E1
Indoor electronic control P.C. board



MU-30RV -E1
Outdoor deicer P.C. board

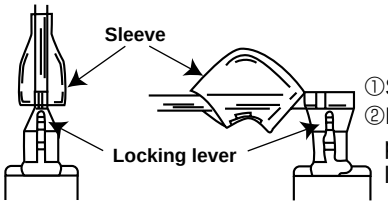


12 DISASSEMBLY INSTRUCTIONS

<"Terminal with lock mechanism" Detaching points>

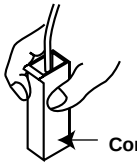
In case of terminal with lock mechanism, detach the terminal as shown below.
There are two types (Refer to (1) and (2)) of the terminal with lock mechanism.
The terminal with no lock mechanism can be removed by pulling it out.
Check the shape of the terminal and work.

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



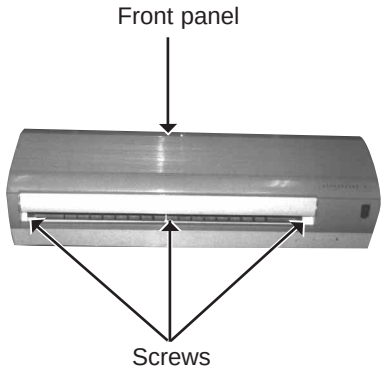
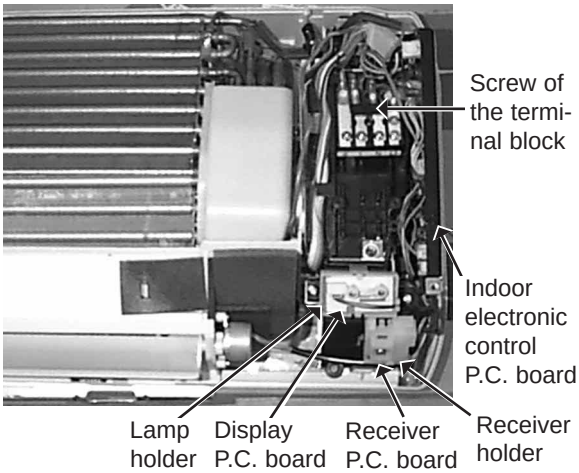
①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

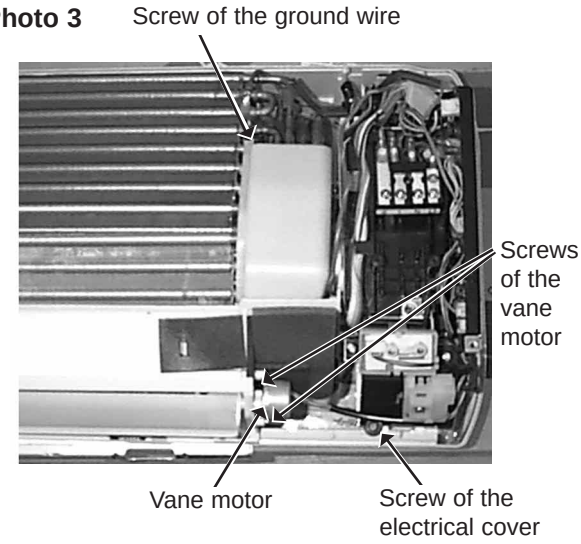
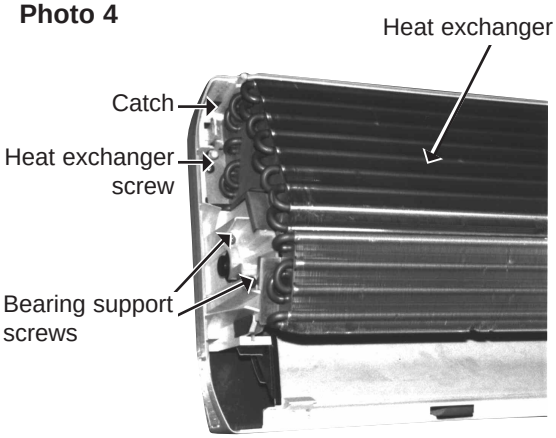
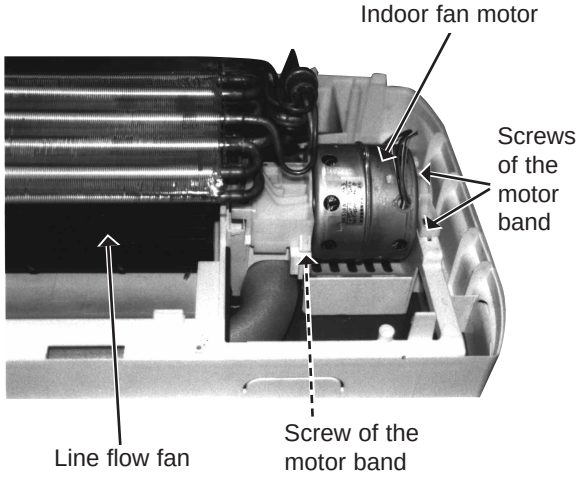
(2) The terminal with this connector is a terminal with lock mechanism.



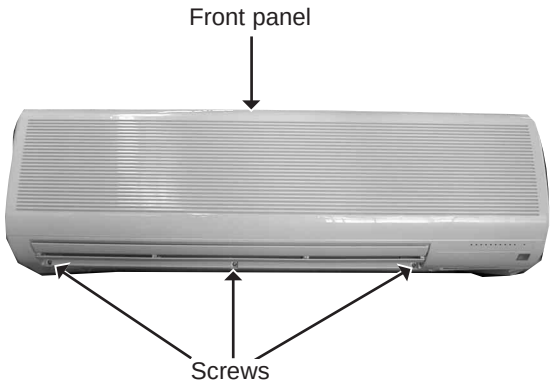
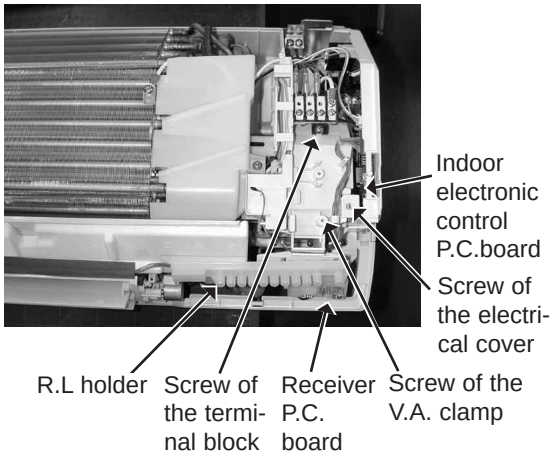
①Hold the sleeve, and pull out the terminal slowly.

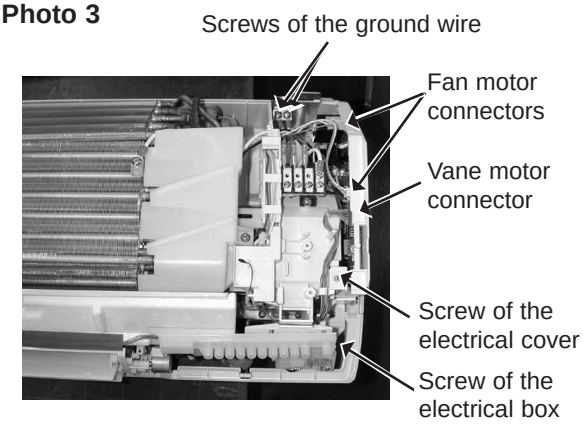
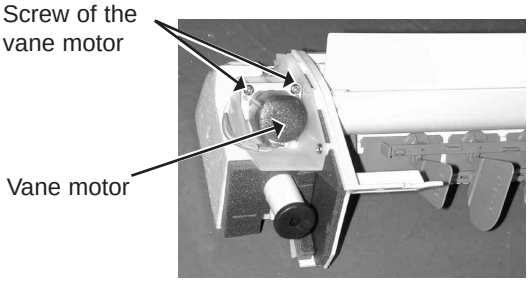
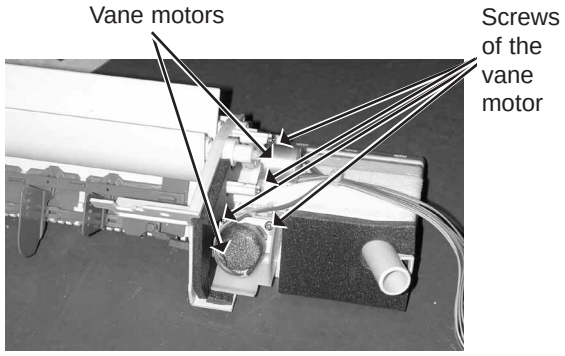
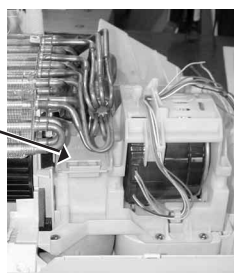
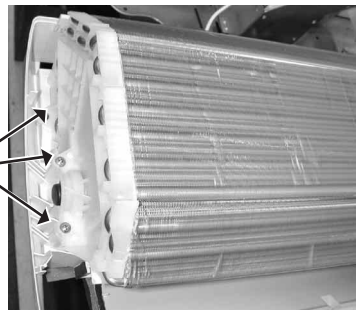
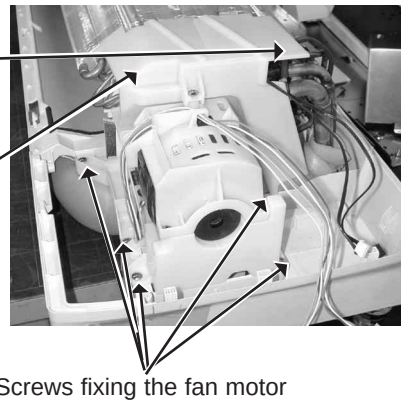
12-1. MS-18RV -E1 MS-24RV -E1 INDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the front panel (1) Remove the screw caps at the down of the front panel. Remove the screws. (2) Pull the panel down to your side slightly and unhook the catches at the top.	**Photo 1** 
2. Removing the electronic control P.C. board, the receiver P.C. board and the display P.C. board (1) Remove the front panel. (Refer to 1) (2) Remove the electrical cover. (3) Remove the screw of the terminal cover. (4) Remove the screw of the terminal block. (5) Unhook the catch of the lamp holder. (6) Remove the receiver holder and the receiver P.C. board. (7) Remove the screw of the ground wire. (8) Disconnect all the connectors and all the lead wires on the electronic control P.C. board. (9) Remove the electronic control P.C. board and display P.C. board.	**Photo 2** 

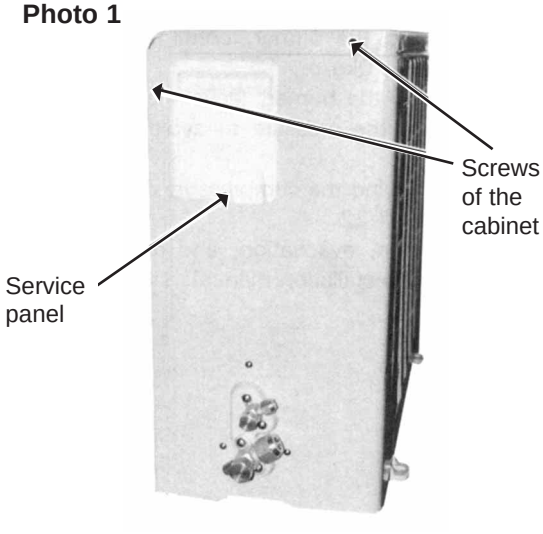
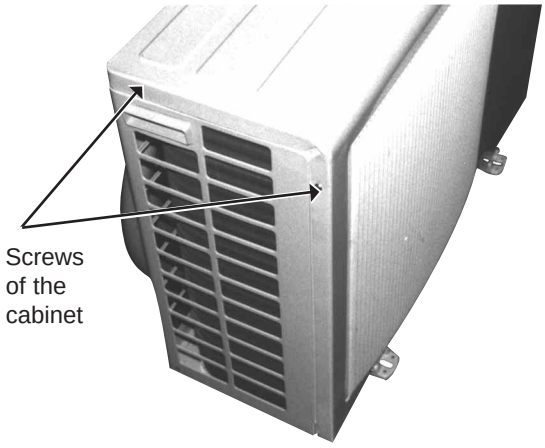
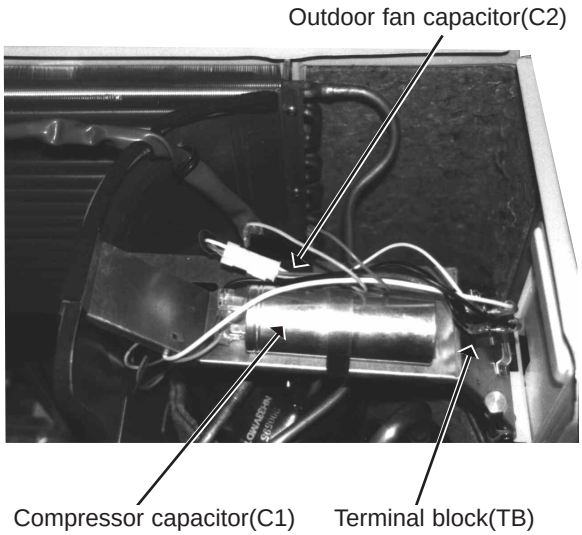
OPERATING PROCEDURE	PHOTOS
3. Removing the electrical box (1) Remove the front panel. (Refer to 1) (2) Remove the electrical cover. (3) Disconnect the connector of the indoor coil thermistor. (4) Disconnect the motor connector (CN211 and CN121) and the vane motor connector (CN151) on the electronic control P.C. board. (5) Remove the screw of the electrical box, remove the electrical box.	**Photo 3** 
4. Removing the vane motor (1) Remove the front panel. (Refer to 1) (2) Remove the electrical box. (Refer to 3) (3) Pull out the drain hose from the nozzle assembly, remove the nozzle assembly. (4) Remove the screws (both upper and lower) of the vane motor, disconnect the connector. (5) Remove the vane motor.	
5. Removing the indoor fan motor and the line flow fan (1) Remove the front panel. (2) Remove the electrical box. (3) Unhook the catches on the both sides of the nozzle assembly. (4) Remove the nozzle assembly. (5) Remove the screws of the bearing support. (6) Remove the screw of the heat exchanger unhook the catch. (7) Lifting the heat exchanger, remove the bearing support. (8) Loose the screw fixing the line flow fan, remove the line flow fan. (9) Remove the screws of the motor band, remove the fan motor.	**Photo 4**  **Photo 5** 

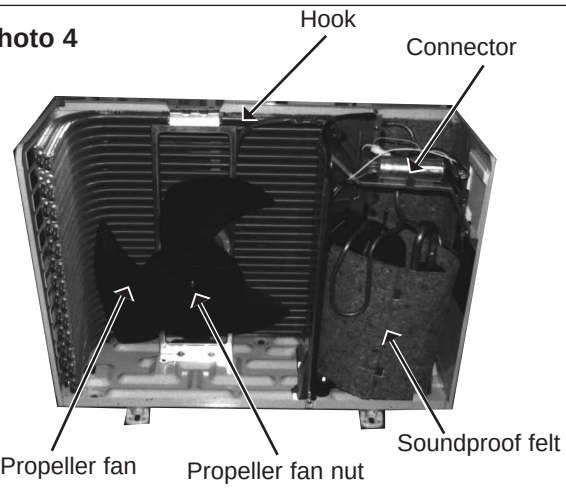
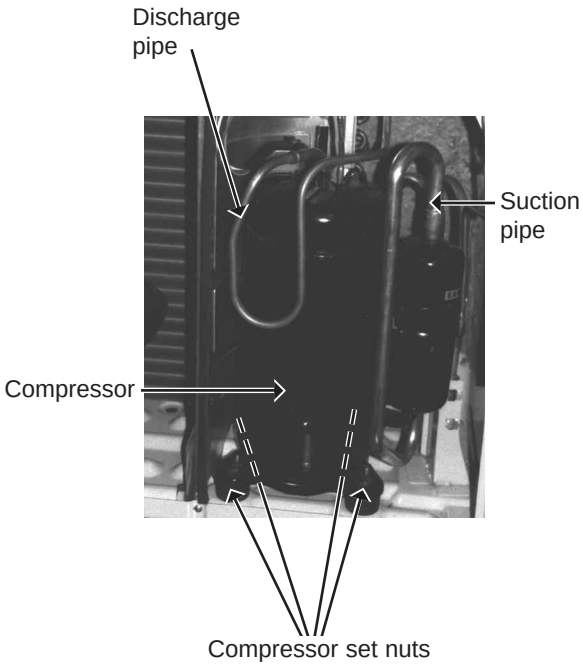
12-2. MS-30RV - E1
INDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the front panel (1) Remove the screws caps of the front panel. Remove the screws. (2) Pull the panel down to your side slightly and unhook the catches at the top.	**Photo 1** 
2. Removing the electronic control P.C. board, the receiver P.C. board and the display P.C. board (1) Remove the front panel. (Refer to 1) (2) Remove the screw of the electrical cover. Remove the electrical cover. (3) Remove the screw of the V.A. clamp. Remove the V.A. clamp. (4) Remove the screw of the terminal block. (5) Remove the screw of the ground wire. (6) Disconnect all the connectors and all the lead wires on the electronic control P.C. board. (7) Remove the R.L holder. (8) Remove the electronic control P.C. board. (9) Open the R.L holder, remove the receiver P.C. board and the display P.C. board.	**Photo 2** 

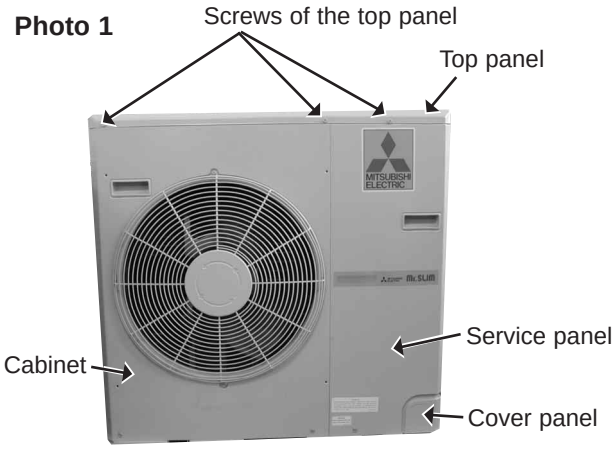
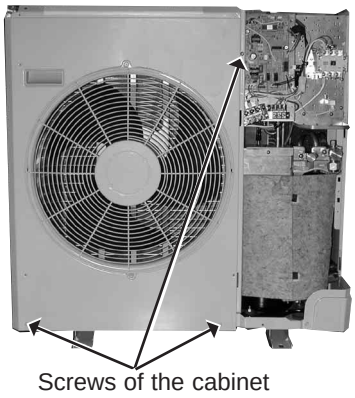
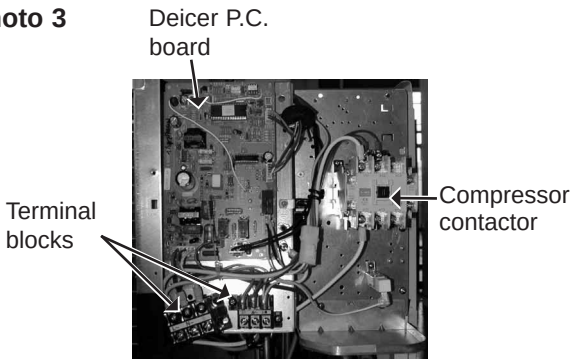
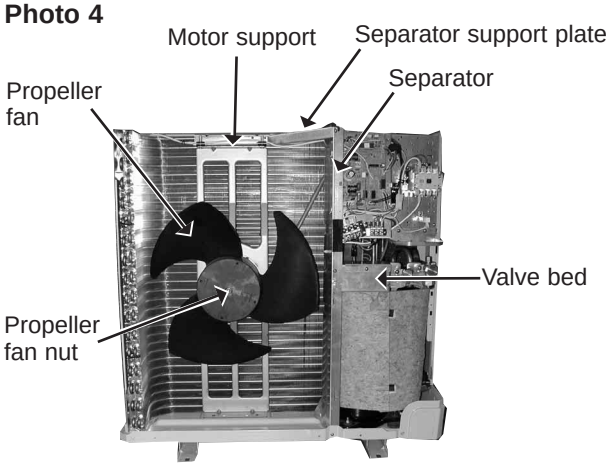
OPERATING PROCEDURE	PHOTOS
3. Removing the electrical box (1) Remove the front panel. (Refer to 1) (2) Remove the electrical cover. (Refer to 2) (3) Disconnect the connector of the indoor coil thermistor. (4) Disconnect the motor connector (CN211 and CN121) and the vane motor connector (CN151) on the electronic control P.C. board. (5) Remove the screw of ground wire. (6) Remove the fan motor lead wire and indoor coil thermistor from the electrical box. (7) Remove the lead wire of vane motor from the bottom of electrical box. (8) Remove the screw fixing the electrical box, remove the electrical box.	**Photo 3** 
4. Removing the vane motor (1) Remove the front panel. (Refer to 1) (2) Remove the electrical cover. (Refer to 2) (3) Remove the lead wire of vane motor.(Refer to 3) (4) Remove the R.L. holder. (5) Pull out the drain hose from the nozzle assembly, remove the nozzle assembly. (6) Remove the screws of the vane motor, disconnect the connector. (7) Remove the vane motor. **Photo 5**  	**Photo 4** 
5. Removing the line flow fan and the indoor fan motor (1) Remove the front panel. (Refer to 1) (2) Remove the electrical box. (Refer to 3) (3) Pull out the drain hose from the nozzle assembly, remove the nozzle assembly. (4) Remove the water cut. (5) Slide the hole cover, remove the hole cover. (6) Remove the hexagon socket set screw from the line flow fan. (7) Remove the screws fixing the fan motor, remove the fan motor. (Be careful not to drop the fan motor because it is heavy.) (8) Remove the screws fixing the left side of the heat exchanger. (9) Lifting the left side of the heat exchanger. (10) Remove the line flow fan. **Photo 8**  	**Photo 6**  **Photo 7** 

12-3. MU-18RV -E1 MU-24RV -E1
OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the cabinet. (2) Hold the bottom of the cabinet on the both side to remove the cabinet.	**Photo 1**  **Photo 2** 
2. Removing the electrical parts (1) Remove the service panel and the cabinet. (2) Remove the following parts. •Compressor capacitor (C1) •Outdoor fan capacitor (C2) •Terminal block (TB)	**Photo 3** 

OPERATING PROCEDURE	PHOTOS
3. Removing the outdoor fan motor (1) Remove the cabinet. (Refer to 1) (2) Disconnect the connector remove the hooked lead wire from the fan motor. (3) Remove the propeller fan nut and remove the propeller fan. (4) Remove screws fixing the fan motor.	**Photo 4** 
4. Removing the compressor (1) Remove the cabinet. (Refer to 1) (2) Remove the soundproof felt. (3) Remove the terminal cover on the compressor (4) Disconnect lead wires from the glass terminal of the compressor. (5) Recover gas from the refrigerant circuit. (6) Disconnect the welded part of the discharge pipe. (7) Disconnect the welded part of the suction pipe. (8) Remove nuts fixing the compressor. (9) Remove the compressor. **NOTE** ● Before using a burner, reclaim gas from the pipes until the pressure gauge shows 0 kg/cm^2 (MPa). ● Use the burner under the condition that gas can be recovered even when the inner pressure rises by heat.	**Photo 5** 

12-4. MU-30RV -E1
OUTDOOR UNIT

OPERATING PROCEDURE	PHOTOS
1. Removing the cabinet (1) Remove the screws of the top panel and the top panel. (2) Remove the screw of the service panel. To remove the service panel, pull it down toward you and unhook the catches on the both sides. (3) Remove the screw of the cover panel. To remove the cover panel. (4) Remove the screws of the cabinet. Open the cabinet to a 45-degree angle. Then lift it and unhook the catches to remove.	**Photo 1**  **Photo 2** 
2. Removing the deicer P.C. board (1) Remove the top panel, the service panel and the cover panel. (2) Disconnect all the connectors and the terminals on the deicer P.C. board. (3) Remove the deicer P.C. board.	**Photo 3** 
3. Removing the propeller fan and the outdoor fan motor (1) Remove the cabinet. (Refer to 1) (2) Remove the propeller fan nut and the propeller fan. **NOTE**:Loose the propeller fan in the rotating direction for removal. When attaching the propeller fan, align the mark on the propeller fan and the motor shaft cut section. Set the propeller fan in position by using the cut on the shaft and the mark on the propeller fan. (3) Remove the screws and the outdoor fan motor and the connectors. Remove the outdoor fan motor.	**Photo 4** 

OPERATING PROCEDURE	PHOTOS

4. Removing the heat exchanger and compressor

(1) Remove the screws of the rear panel. Remove the screws of the valve bed and the valve bed. (The valve bed is fixed by the catches on the right and left sides. Lift it to remove.)
Open the rear panel to the rear to remove.

NOTE :
All panels are fixed by catches, and must be removed by up and down.

(2) Remove the screws of the side panel and the side panel.
(3) Remove the screws of the rear guard and the rear guard.
(4) Remove the screws of the separator support plate and the separator support plate.
(5) Remove the screws of the motor support and the motor support.
(6) Remove the relay panel.
Disconnect the fan motor lead wires.
(7) Remove the soundproof felt.
(8) Remove the screws of the separator and the separator.
(9) Recover gas from the refrigerant circuit.
(10) Remove the screws of the heat exchanger and the heat exchanger.
Detach the welded part of pipe.
(11) Remove the nuts of the compressor and the compressor. Detach the welded part of the suction pipe and the discharge pipe.

Photo 5

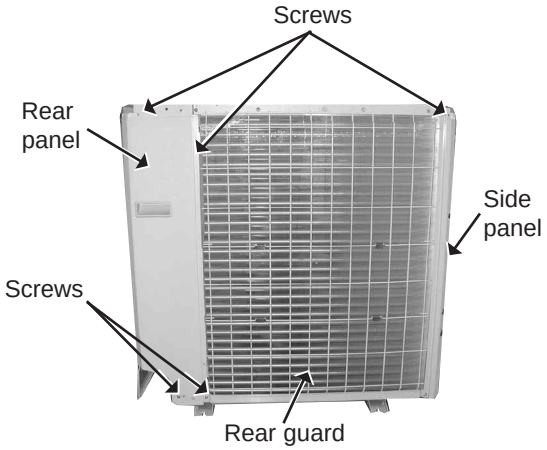


Photo 6

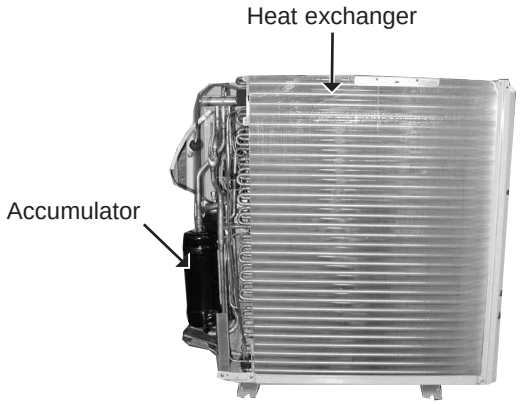
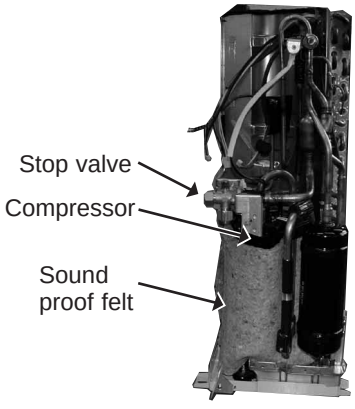


Photo 7

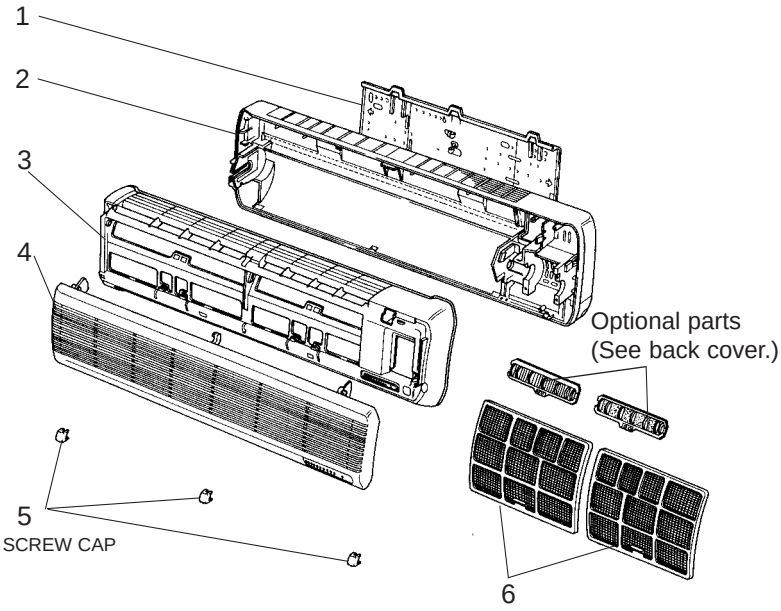


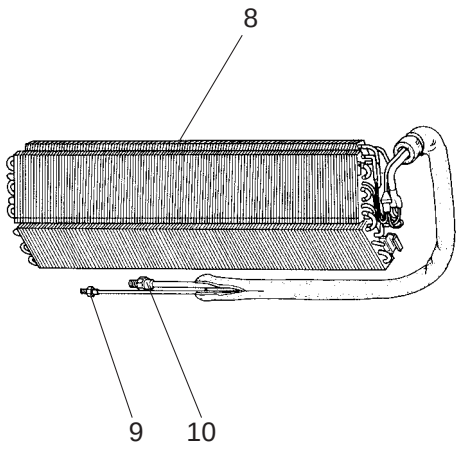
13 PARTS LIST

MS-18RV -E1 (WH)
MS-24RV -E1 (WH)

13-1. INDOOR UNIT STRUCTURAL PARTS

13-2. INDOOR UNIT HEAT EXCHANGER





13-1. INDOOR UNIT STRUCTURAL PARTS

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

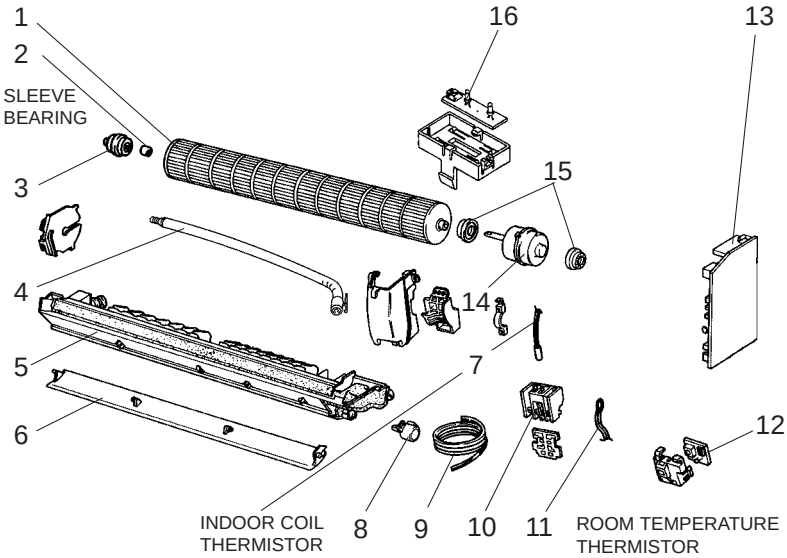
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MS-18RV-E1 (WH)	MS-24RV-E1 (WH)	
1	E02 141 970	INSTALLATION PLATE		1	1	
2	E02 143 234	BOX (WH)		1	1	
3	E02 138 000	FRONT PANEL (WH)		1	1	Including 4,5
4	E02 138 010	GRILLE (WH)		1	1	
5	E02 143 067	SCREW CAP (WH)		3	3	3PCS/SET
6	E02 141 100	AIR FILTER		2	2	
⑦	E02 516 007	LAMP PANEL (WH)		1	1	

13-2. INDOOR UNIT HEAT EXCHANGER

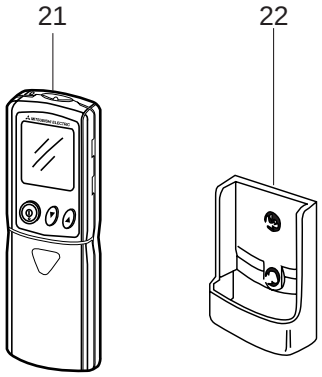
8	E02 141 620	INDOOR HEAT EXCHANGER		1	1	
9	E02 138 667	UNION(LIQUID)		1		ϕ6.35
	E02 176 667	UNION(LIQUID)			1	ϕ9.52
10	E02 138 666	UNION(GAS)		1	1	ϕ15.88

MS-18RV -E1 (WH)
MS-24RV -E1 (WH)

13-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS



13-4. ACCESSORY AND REMOTE CONTROLLER PART



13-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL 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
				MS-18RV- E1 (WH)	MS-24RV- E1 (WH)	
1	E02 141 302	LINE FLOW FAN		1	1	
2	E02 001 504	SLEEVE BEARING		1	1	
3	E02 141 509	BEARING MOUNT		1	1	
4	E02 408 702	DRAIN HOSE		1	1	
5	E02 143 235	NOZZLE (WH)		1	1	
6	E02 143 040	VANE (WH)		1	1	
7	E02 138 307	INDOOR COIL THERMISTOR	RT12	1	1	
8	E02 141 303	VANE MOTOR	MV	1	1	
9	E02 138 395	POWER SUPPLY CORD		1		
	E02 320 395	POWER SUPPLY CORD			1	
10	E02 611 375	TERMINAL BLOCK	TB	1		
	E02 612 375	TERMINAL BLOCK	TB		1	
11	E02 138 308	ROOM TEMPERATURE THERMISTOR	RT11	1	1	
12	E02 141 468	RECEIVER P. C. BOARD		1	1	
13	E02 611 452	ELECTRONIC CONTROL P.C. BOARD		1		AUTO RESTART
	E02 612 452	ELECTRONIC CONTROL P.C. BOARD			1	AUTO RESTART
14	E02 141 300	INDOOR FAN MOTOR	MF	1		RA4V27 -☐☐
	E02 213 300	INDOOR FAN MOTOR	MF		1	RA4V27 -☐☐
15	E02 001 505	FAN MOTOR RUBBER MOUNT		2	2	2PCS/SET
16	E02 138 329	DISPLAY P.C. BOARD		1	1	
⑰	E02 336 385	VARISTOR	NR11	1	1	
⑱	E02 127 382	FUSE	F11	1	1	3.15A
⑲	E02 205 381	THERMAL FUSE	F12	1		93℃
	E02 209 381	THERMAL FUSE	F12		1	93℃
⑳	E02 138 383	SURGE ABSORBER	DSAR	1		
	E02 147 383	SURGE ABSORBER	DSAR		1	

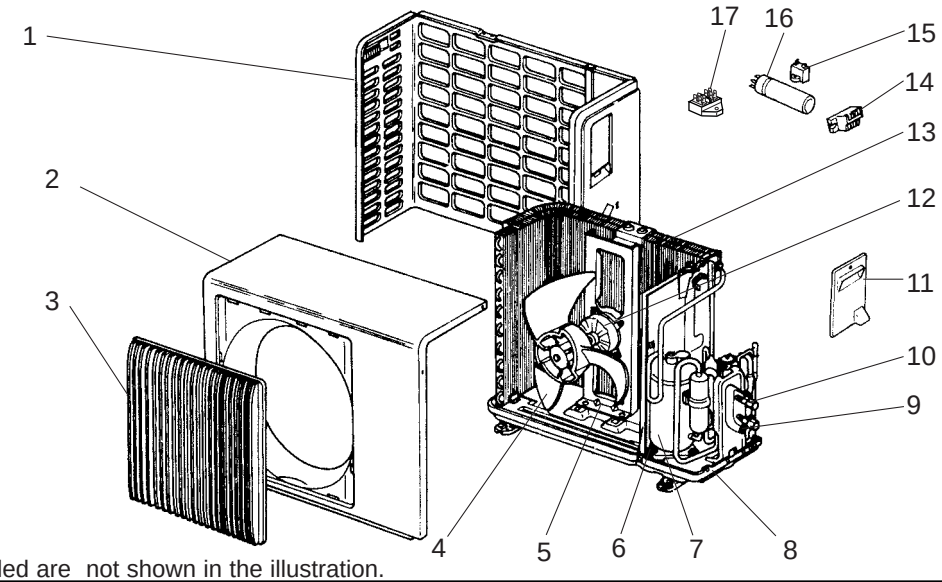
13-4. ACCESSORY AND REMOTE CONTROLLER PART

21	E02 611 426	REMOTE CONTROLLER		1	1	
22	E02 527 083	REMOTE CONTROLLER HOLDER		1	1	

MU-18RV -E1
MU-24RV -E1

13-5. OUTDOOR UNIT

STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

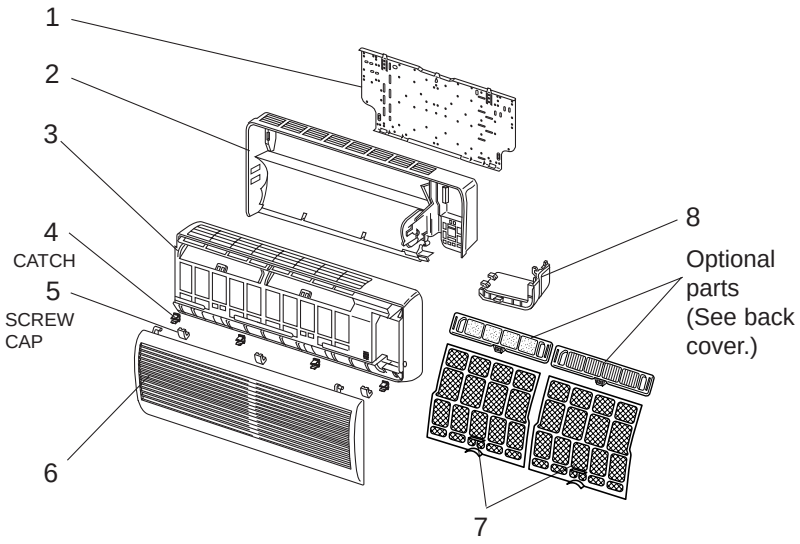


Part numbers that are circled are not shown in the illustration.

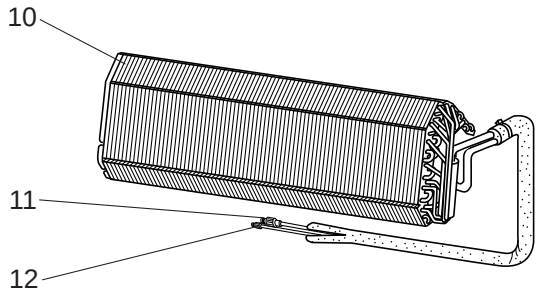
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit		Remarks
				MU-18RV- E1	MU-24RV- E1	
1	E02 140 233	BACK PANEL		1	1	
2	E02 141 232	CABINET		1	1	
3	E02 141 521	GRILLE		1	1	
4	E02 141 501	PROPELLER FAN		1	1	
5	E02 140 515	MOTOR SUPPORT		1		
	E02 139 515	MOTOR SUPPORT			1	
6	E02 138 506	COMPRESSOR RUBBER SET		4	4	4RUBBERS/SET
7	E02 217 900	COMPRESSOR	MC	1		PH-33VPET
	E02 047 900	COMPRESSOR	MC		1	NH-47VMDT
8	E02 217 290	BASE		1		
	E02 176 290	BASE			1	
9	E02 150 661	STOP VALVE(GAS)		1	1	ϕ15.88
10	E02 139 662	STOP VALVE(LIQUID)		1		ϕ 6.35
	E02 176 662	STOP VALVE(LIQUID)			1	ϕ 9.52
11	E02 141 245	SERVICE PANEL		1	1	
12	E02 144 301	OUTDOOR FAN MOTOR	MF	1		RA6V50 -□□
	E02 147 301	OUTDOOR FAN MOTOR	MF		1	RA6V60 -□□
13	E02 217 630	OUTDOOR HEAT EXCHANGER		1		
	E02 147 630	OUTDOOR HEAT EXCHANGER			1	
14	E02 197 374	TERMINAL BLOCK	TB	1		3P
	E02 601 374	TERMINAL BLOCK	TB		1	4P
15	E02 138 351	OUTDOOR FAN CAPACITOR	C2	1	1	3.0μF/440V AC
16	E02 082 353	COMPRESSOR CAPACITOR	C1	1	1	50μF/440V AC
17	E07 056 374	TERMINAL BLOCK	TB2		1	
⑱	E02 138 936	CAPILLARY TUBE		1	1	ϕ3.0×ϕ2.0×700
	E02 176 936	CAPILLARY TUBE			1	ϕ3.0×ϕ1.6×350
⑲	E02 095 382	FUSE	F	1	1	250V/2A
⑳	E02 010 342	COMPRESSOR CONTACTOR	52C		1	
㉑	E02 288 343	FAN MOTOR RELAY	X1		1	
㉒	E02 229 381	THERMOSTAT	26F1		1	
㉓	E02 326 384	CR SURGE ABSORBER	CR		1	

MS-30RV -E1 (WH)

13-6. INDOOR UNIT STRUCTURAL PARTS



13-7. INDOOR UNIT HEAT EXCHANGER



13-6. INDOOR UNIT STRUCTURAL PARTS

Part number that is circled is not shown in the illustration.

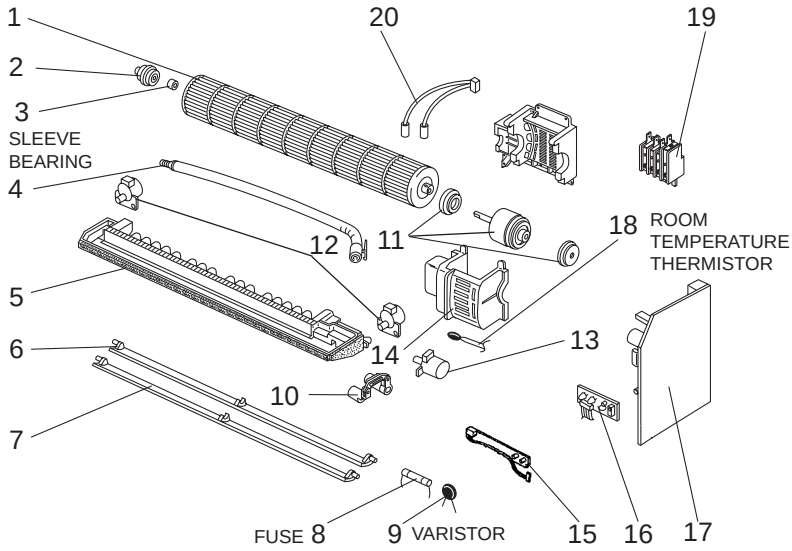
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit	Remarks
				MS-30RV -E1 (WH)	
1	E02 527 970	INSTALLATION PLATE		1	
2	E02 527 234	BOX (WH)		1	
3	E02 527 000	FRONT PANEL ASSEMBLY(WH)		1	Including No.4,5,6
4	E02 408 142	CATCH		4	4PCS/ SET
5	E02 527 067	SCREW CAP (WH)		3	3PCS/ SET
6	E02 527 010	GRILLE (WH)		1	
7	E02 527 100	AIR FILTER		2	
8	E02 527 975	CORNER BOX RIGHT		1	
(9)	E02 528 007	LAMP PANEL		1	

13-7. INDOOR UNIT HEAT EXCHANGER

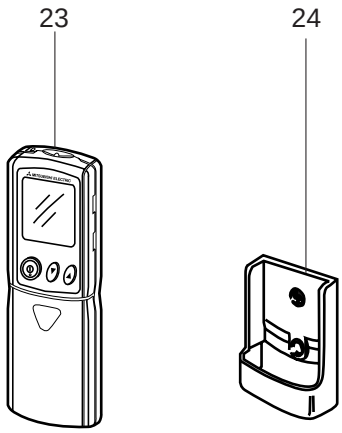
10	E02 527 620	INDOOR HEAT EXCHANGER		1	
11	E02 527 666	UNION (GAS)		1	ϕ15.88
12	E02 527 667	UNION (LIQUID)		1	ϕ9.52

MS-30RV -E1 (WH)

13-8. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS



13-9. ACCESSORY AND REMOTE CONTROLLER PART



13-8. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS

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

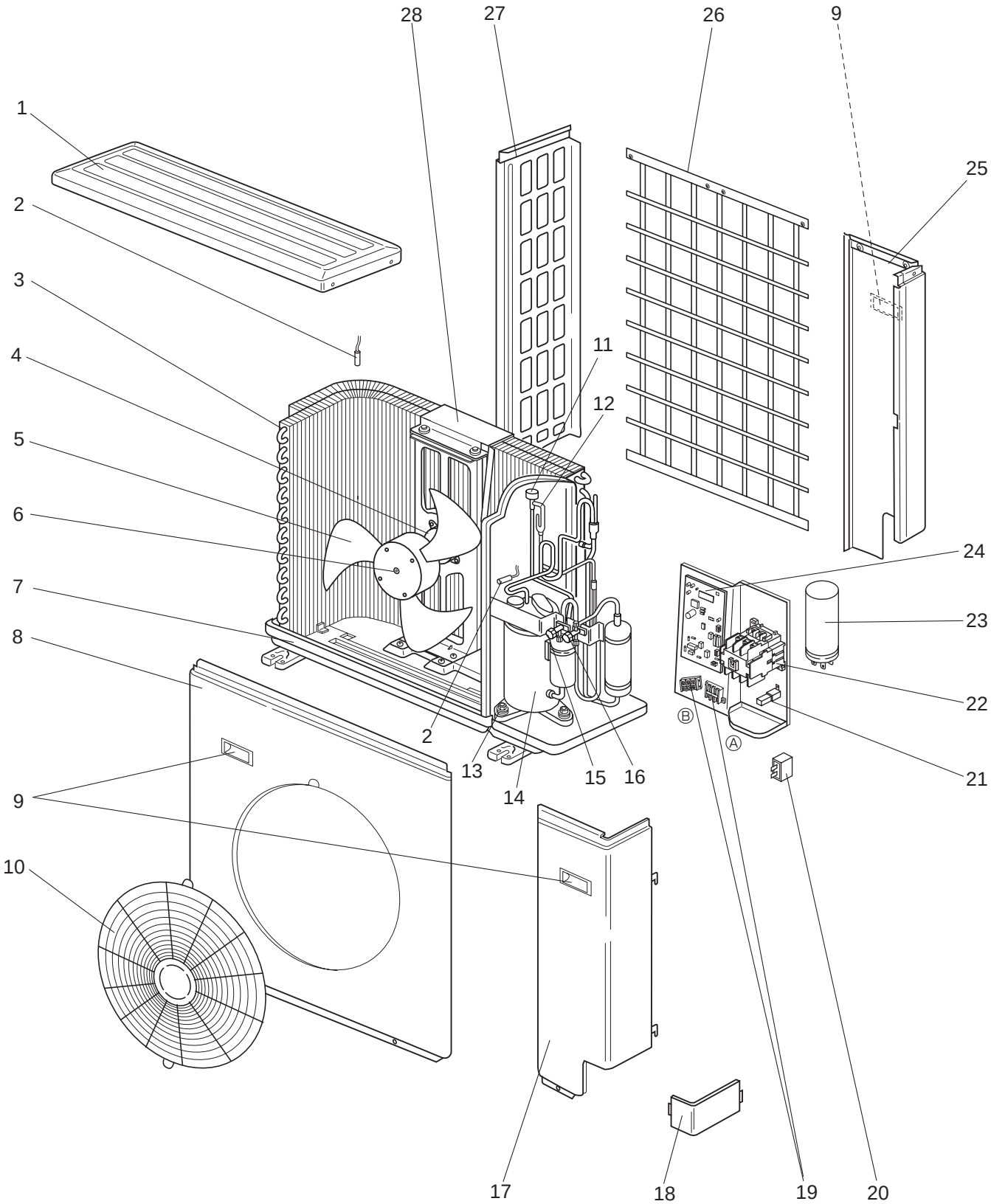
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit MS-30RV -E1 (WH)	Remarks
1	E02 527 302	LINE FLOW FAN		1	
2	E02 408 509	BEARING MOUNT		1	
3	E02 001 504	SLEEVE BEARING		1	
4	E02 408 702	DRAIN HOSE		1	
5	E02 527 235	NOZZLE (WH)		1	
6	E02 527 040	VANE UPPER (WH)		1	
7	E02 527 041	VANE LOWER (WH)		1	
8	E02 127 382	FUSE	F11	1	3.15A
9	E02 336 385	VARISTOR	NR11	1	
10	E02 527 034	VANE CRANK SET		1	
11	E02 527 300	INDOOR FAN MOTOR ASSEMBLY	MF	1	RC4V40 - □□ Including RUBBER MOUNT
12	E02 448 303	VANE MOTOR (VERTICAL)	MV2	2	RIGHT & LEFT
13	E02 408 303	VANE MOTOR (HORIZONTAL)	MV1	1	UP & DOWN
14	E02 527 333	MOTOR BAND		1	
15	E02 528 329	DISPLAY P.C. BOARD		1	
16	E02 527 468	RECEIVER P.C. BOARD		1	
17	E02 639 452	ELECTRONIC CONTROL P.C. BOARD		1	AUTO RESTART Including No.16
18	E02 527 308	ROOM TEMPERATURE THERMISTOR	RT11	1	
19	E02 639 375	TERMINAL BLOCK	TB	1	4P
20	E02 527 307	INDOOR COIL THERMISTOR	RT12, RT13	1	
(21)	E02 528 034	VANE MOTOR SUPPORT SET(RIGHT)		1	
(22)	E02 529 034	VANE MOTOR SUPPORT SET(LEFT)		1	

13-9. ACCESSORY AND REMOTE CONTROLLER PART

23	E02 527 426	REMOTE CONTROLLER		1	
24	E02 527 083	REMOTE CONTROLLER HOLDER		1	

MU-30RV - E1

13-10. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



MU-30RV -E1

13-10. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

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

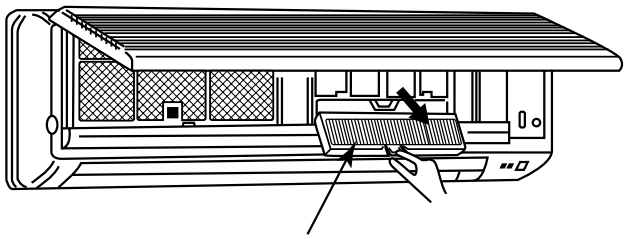
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit	Remarks
				MU-30RV -E1	
1	E02 214 297	TOP PANEL		1	
2	E02 528 309	THERMISTOR	RT62, RT63	1	DISCHARGE, AMBIENT
3	E02 527 630	OUTDOOR HEAT EXCHANGER		1	
4	E02 527 301	OUTDOOR FAN MOTOR	MF	1	RA6V75-□□
5	E07 001 501	PROPELLER FAN		1	
6	E07 070 508	PROPELLER FAN NUT		1	
7	E02 214 290	BASE		1	
8	E02 214 232	CABINET		1	
9	E07 001 009	HANDLE		3	
10	E02 527 521	FAN GUARD		1	
11	E02 528 493	EXPANSION VALVE COIL	LEV	1	
12	E02 527 640	EXPANSION VALVE		1	
13	E02 527 506	COMPRESSOR RUBBER SET		4	4RUBBERS/SET
14	E02 527 900	COMPRESSOR	MC	1	NH-56VNHT
15	E02 527 662	STOP VALVE(LIQUID)		1	ϕ9.52
16	E02 527 661	STOP VALVE(GAS)		1	ϕ15.88
17	E02 214 245	SERVICE PANEL		1	
18	E07 001 006	COVER PANEL		1	
19	E02 639 374	TERMINAL BLOCK	TB1	1	3P (FIGURE Ⓐ)
	E02 528 374	TERMINAL BLOCK	TB2	1	3P (FIGURE Ⓑ)
20	E02 064 351	OUTDOOR FAN CAPACITOR	C2	1	4.0μF/440VAC
21	E02 128 383	SURGE ABSORBER	DSAR	1	
22	E02 010 342	COMPRESSOR CONTACTOR	52C	1	
23	E02 177 353	COMPRESSOR CAPACITOR	C1	1	60μF/420VAC
24	E02 639 451	DEICER P.C. BOARD		1	
25	E02 214 522	REAR PANEL		1	
26	E07 003 523	REAR GUARD		1	
27	E02 527 249	SIDE PANEL		1	
28	E02 527 515	MOTOR SUPPORT		1	
㉙	E02 127 382	FUSE	F61	1	3.15A
㉚	E02 336 385	VARISTOR	NR61	1	
㉛	E02 262 936	CAPILLARY TUBE		1	ϕ4.0Xϕ2.4X200
㉜	E02 527 936	CAPILLARY TUBE		1	ϕ4.0Xϕ2.4X100

14 OPTIONAL PARTS

14-1. AIR CLEANING FILTER

- AIR CLEANING FILTER removes fine dust of 0.01 micron from air by means of static electricity.
- Normal life of AIR CLEANING FILTER is 4 months. However, when it becomes dirty, replace it as soon as possible.
- Clogged AIR CLEANING FILTER may reduce the air conditioner capacity or cause frost on the air outlet.
- DO NOT reuse AIR CLEANING FILTER even if it is washed.
- DO NOT remove or attach AIR CLEANING FILTER during unit operation.

Model	Part No.
MS-18RV - E1 **MS-24RV - E1**	**MAC-1100FT**
MS-30RV- E1	**MAC-1700FT**

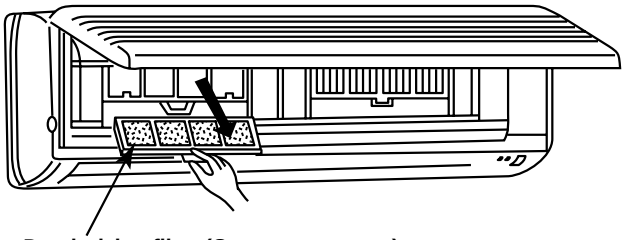


Air cleaning filter (White bellows type)

14-2. DEODORIZING FILTER

- DEODORIZING FILTER removes ammonia and hydrogen sulphide emitted from tobacco, and odor of pets.
- Clean DEODORIZING FILTER every two weeks. If the filter is particularly dirty, clean the filter more often.
- For cleaning, soak the filter in warm water for a while, and then wash and rinse it. Dry the filter in the shade thoroughly.
- When the filter color is still dark even after cleaning, replace the filter with a new one.
  Replace the filter at least once a year.

Model	Part No.
MS-18RV - E1 **MS-24RV - E1**	**MAC-1600DF**
MS-30RV- E1	**MAC-2200DF**



Deodorizing filter (Gray sponge type)

- DEODORIZING FILTER and AIR CLEANING FILTER can be attached on either side.

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