MITSUBISHI ELECTRIC

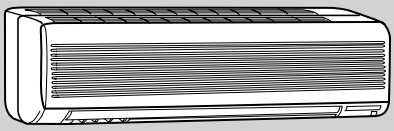
SPLIT-TYPE, AIR CONDITIONER

No. OB255

SERVICE MANUAL

Wireless type
Model

MS-30SV -A1(WH) · MU-30SV -A1



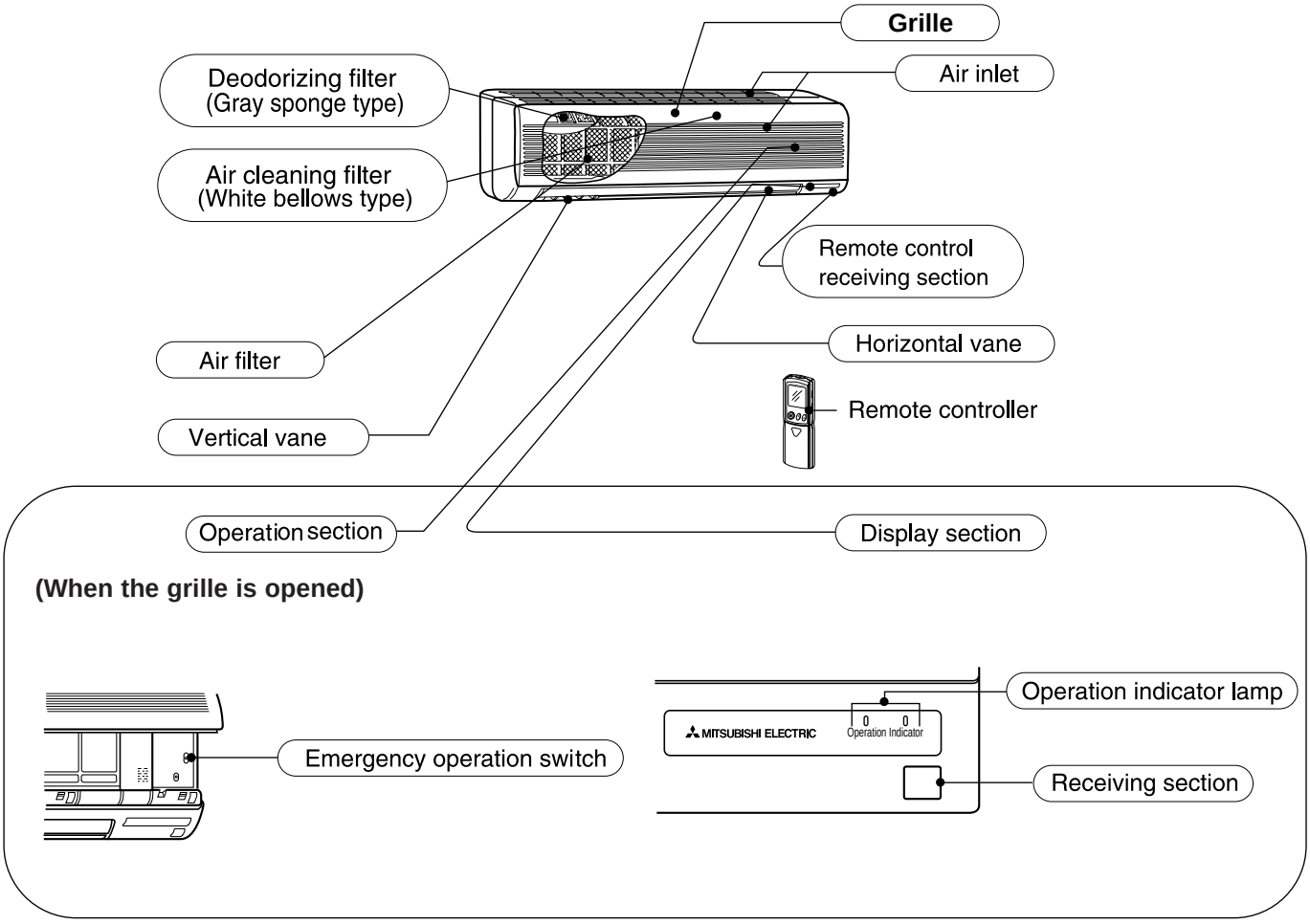
MS-30SV -A1

CONTENTS

1 PART NAMES AND FUNCTIONS

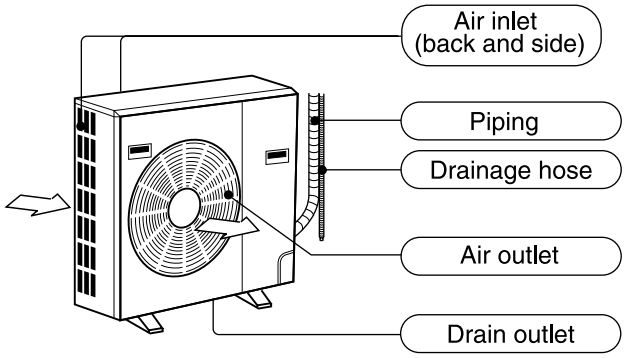
INDOOR UNIT

MS-30SV -A1



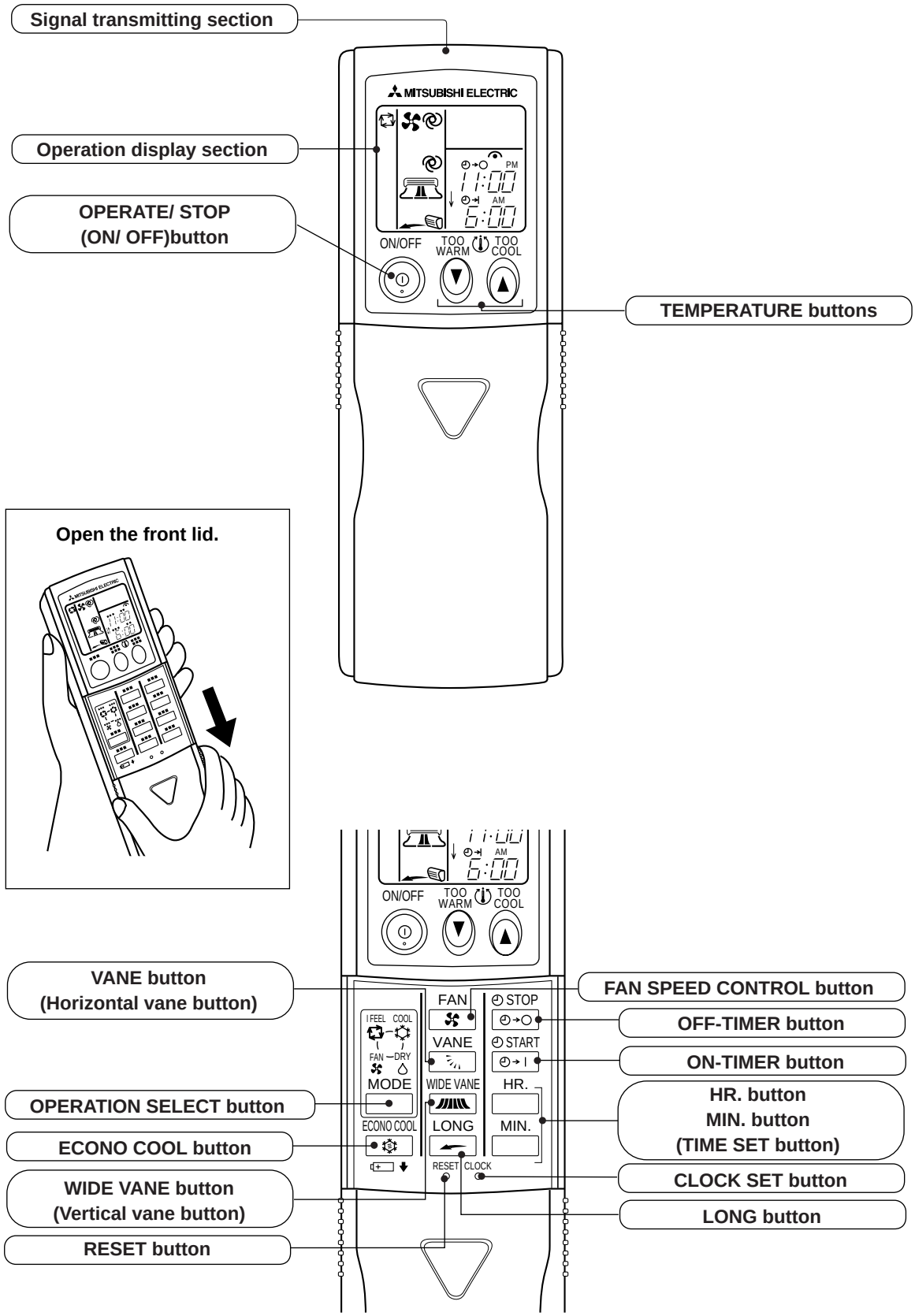
OUTDOOR UNIT

MU-30SV -A1



REMOTE CONTROLLER

MS-30SV -A1



2 SPECIFICATION

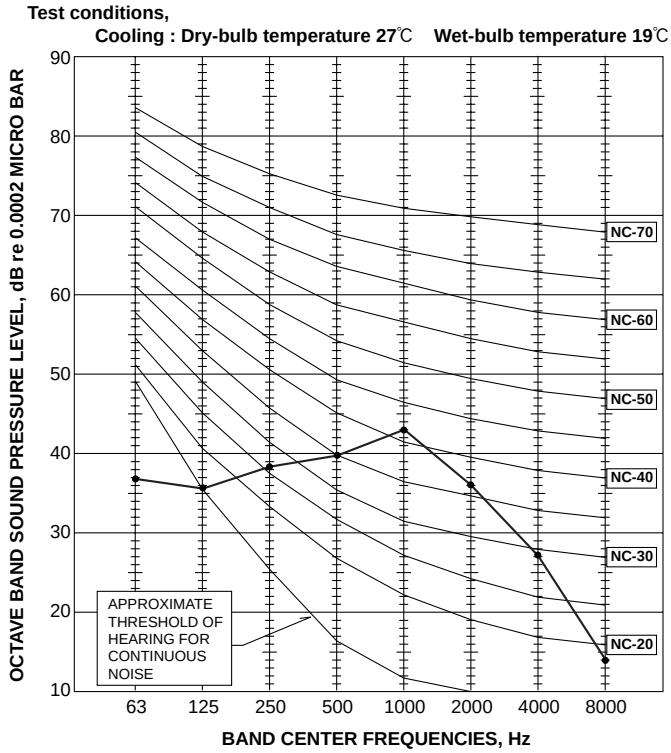
Indoor model			**MS-30SV -** A1
Function			Cooling
Power supply			Single phase 240V, 50Hz
Capacity	Capacity	kW	8.4
	Air flow(Hi)	m³ /h	972
	Dehumidification	L/h	4.5
Electrical data	Power outlet	A	25
	Running current	A	15.9
	Power input	W	3,560
	Auxiliary heater	A(kW)	—
	Power factor	%	93
	Starting current	A	55 (with soft starter)
	Fan motor current	A	0.35
Coefficient of performance(C.O.P)			2.36
Fan motor	Model		RC4V40-AA
	Winding resistance(at20℃)	Ω	WHT-BLK 138.2 BLK-RED 159.0
	Dimensions W×H×D	mm	1100×325×227
	Weight	kg	16
Special remarks	Air direction		5
	Sound level (Hi)	dB	45
	Fan speed (Hi)	rpm	1,220
	Fan speed regulator		3
	Thermistor RT11(at25℃)	kΩ	10
	Thermistor RT12(at25℃)	kΩ	10
	Thermistor RT13(at25℃)	kΩ	10
	Outdoor model		**MU-30SV -** A1
Capacity	Air flow	m³ /h	3000
Electrical data	Compressor motor current	A	14.97
	Fan motor current	A	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(Hi)	dB	55
	Fan speed(Hi)	rpm	820
	Fan speed regulator		2
	Refrigerant filling capacity(R-22)	kg	2.40
	Refrigerating oil (Model)	L	1.2 (MS32N1)
	Thermistor RT62(at25℃)	kΩ	231.44
	Thermistor RT63(at0℃)	kΩ	33.18

NOTE:Test conditions are based on AS/NZS 3823.1.1. 1998.
Cooling : Indoor Dry-bulb temperature 27°C / Wet-bulb temperature 19°C
Outdoor Dry-bulb temperature 35°C / Wet-bulb temperature 24°C

3 NOISE CRITERIA CURVES

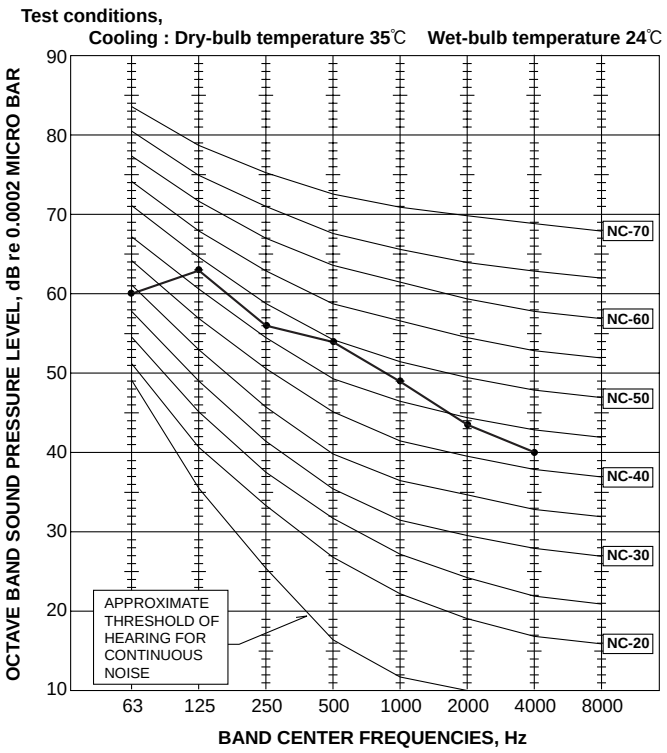
MS-30SV-A1

NOTCH	FUNCTION	SPL(dB(A))	LINE
Hi	COOLING	45	●——●



MU-30SV-A1

NOTCH	FUNCTION	SPL(dB(A))	LINE
Hi	COOLING	55	●——●

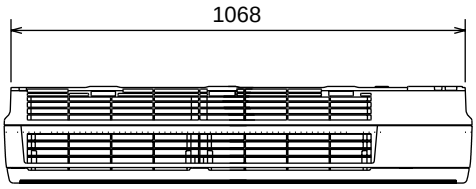


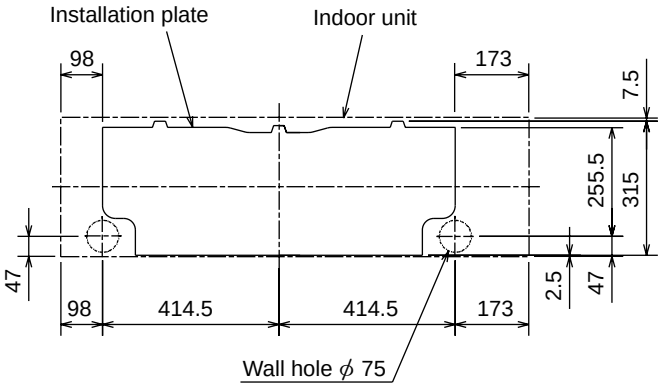
4 OUTLINES AND DIMENSIONS

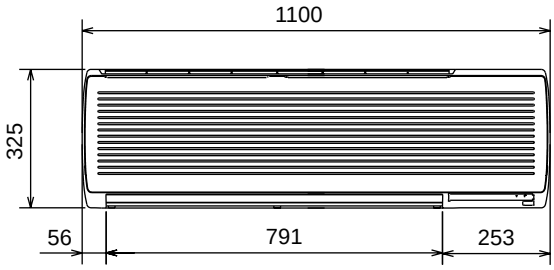
Unit: mm

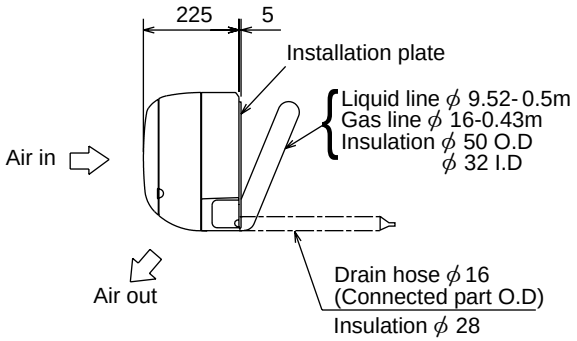
MS-30SV- A1

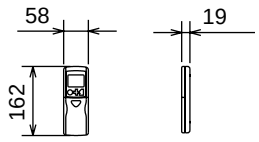
INDOOR UNIT









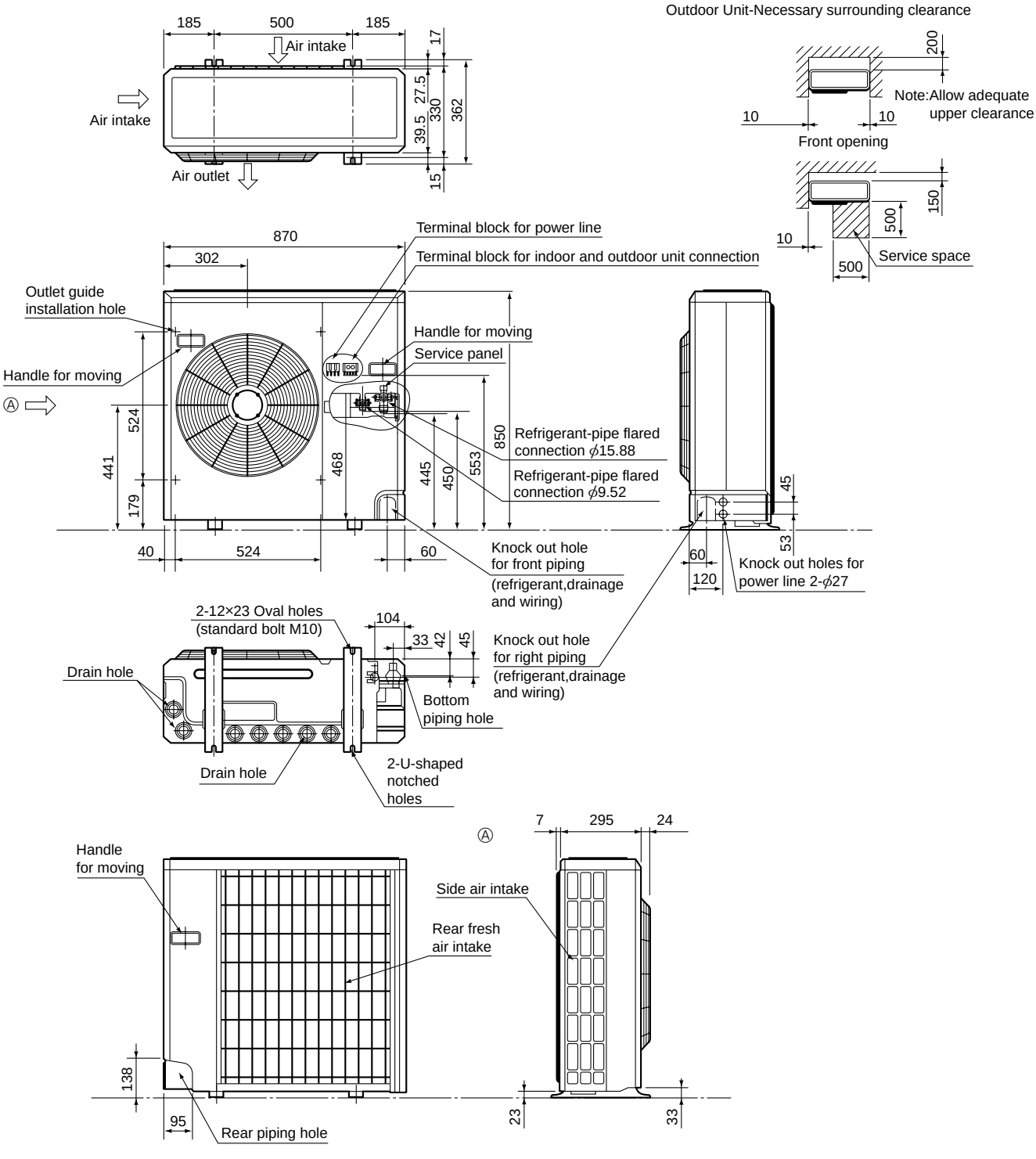


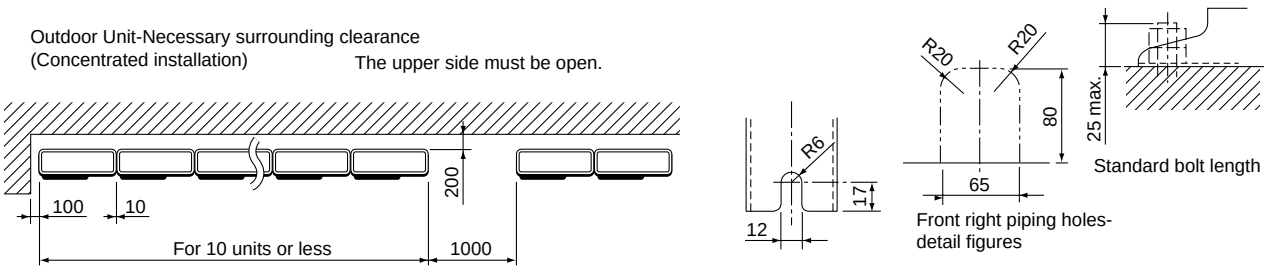
Wireless remote controller

MU-30SV-A1

Unit: mm

OUTDOOR UNIT

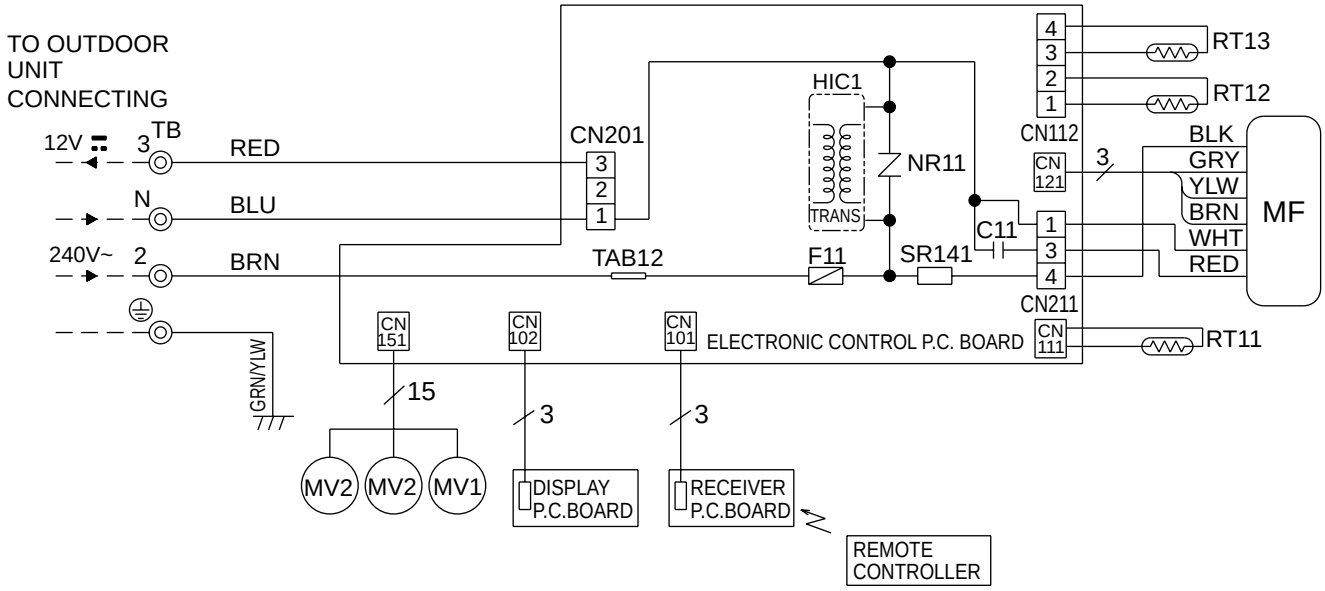




5 WIRING DIAGRAM

MS-30SV- A1 MODEL WIRING DIAGRAM

INDOOR UNIT

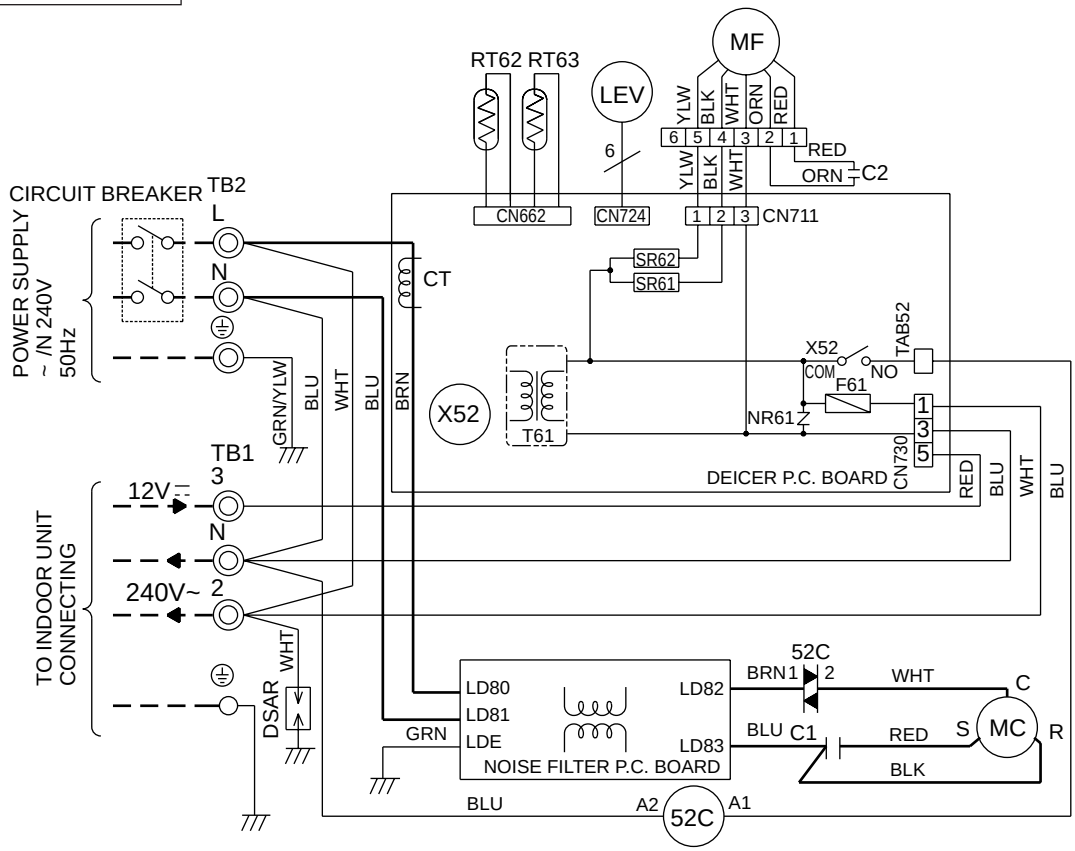


SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C11	INDOOR FAN CAPACITOR	MV2	VANE MOTOR(VERTICAL)	SR141	SOLID STATE RELAY
F11	FUSE(3.15A)	NR11	VARISTOR	TB	TERMINAL BLOCK
HIC1	DC/DC CONVERTER	RT11	ROOM TEMPERATURE THERMISTOR		
MF	INDOOR FAN MOTOR(INNER PROTECTOR)	RT12	INDOOR COIL THERMISTOR (MAIN)		
MV1	VANE MOTOR(HORIZONTAL)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

MU-30SV- A1 MODEL WIRING DIAGRAM

OUTDOOR UNIT



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

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, 2).
3. Symbols below indicate.
◎: Terminal block, □□□□ : Connector

6 REFRIGERANT SYSTEM DIAGRAM

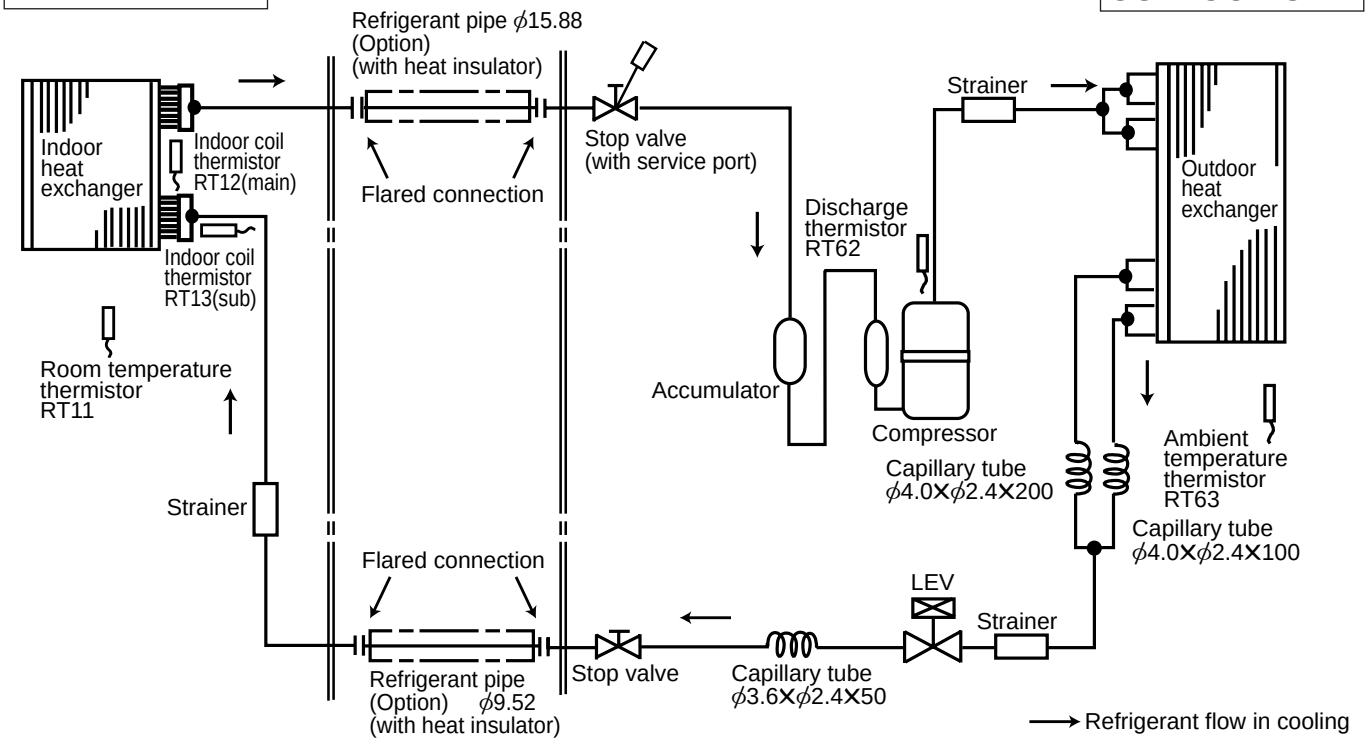
Unit:mm

MS-30SV - A1

INDOOR UNIT

MU-30SV - A1

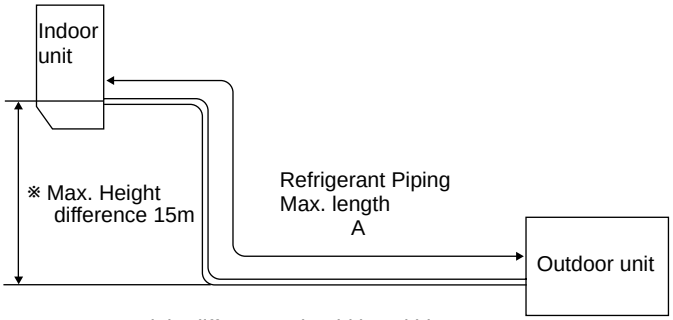
OUTDOOR UNIT



MAX. REFRIGERANT PIPING LENGTH

Model	Refrigerant piping Max.length : A	Piping size O.D : mm		Length of connecting pipe : m	
		Gas	Liquid	Indoor unit	Outdoor unit
MS-30SV- A1	30	15.88	9.52	Gas 0.43 Liquid 0.5	Gas 0 Liquid 0

MAX. HEIGHT DIFFERENCE



※ Height difference should be within 15m regardless of which unit, indoor or outdoor position is high.

ADDITIONAL REFRIGERANT CHARGE (R-22:g)

Model	Outdoor unit precharged	Refrigerant piping length (one way)					
		7m	10m	15m	20m	25m	30m
MS-30SV- A1	2,400	0	45	120	195	270	345

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

7 PERFORMANCE CURVES

MS-30SV - A1

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

Rated voltage : ±10% (216 ~ 264V),50Hz

(2) AIR FLOW

Air flow should be set at MAX.

(3) MAIN READINGS

(1) Indoor intake air wet-bulb temperature : °C [WB]
(2) Indoor outlet air wet-bulb temperature : °C [WB]
(3) Outdoor intake air dry-bulb temperature : °C [DB]
(4) Total input: W

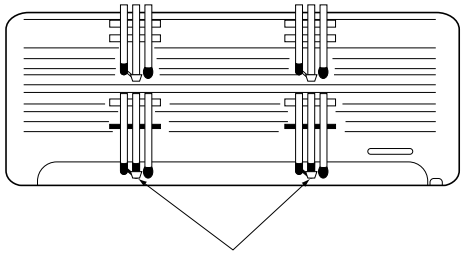
} Cooling

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 wet and dry-bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
3. Check that the air filter is cleaned.
4. Open windows and doors of room.
5. Press the EMERGENCY OPERATION switch once 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.

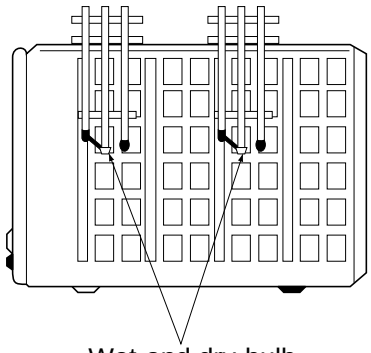
INDOOR UNIT



Wet-and dry-bulb thermometers

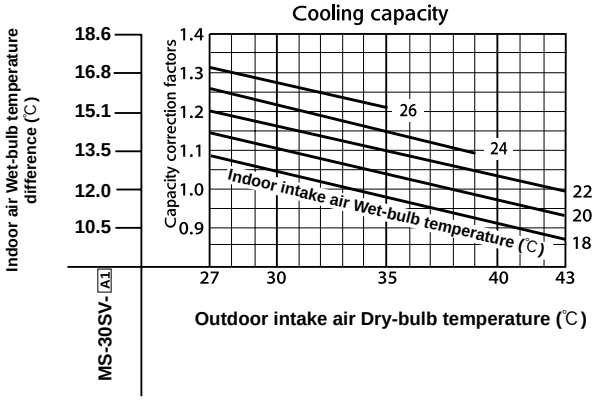
FRONT VIEW

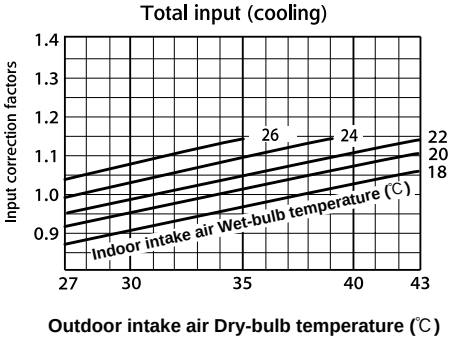
OUTDOOR UNIT



Wet-and dry-bulb thermometers

BACK VIEW



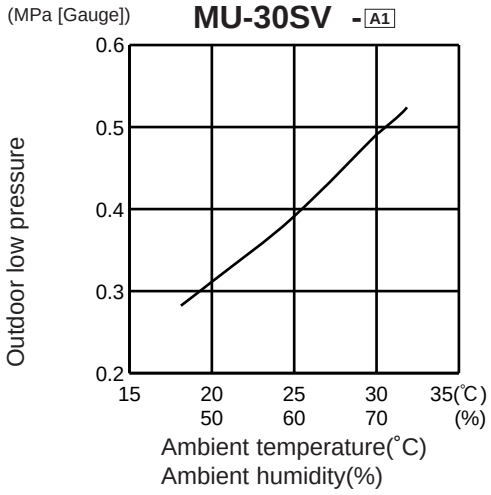


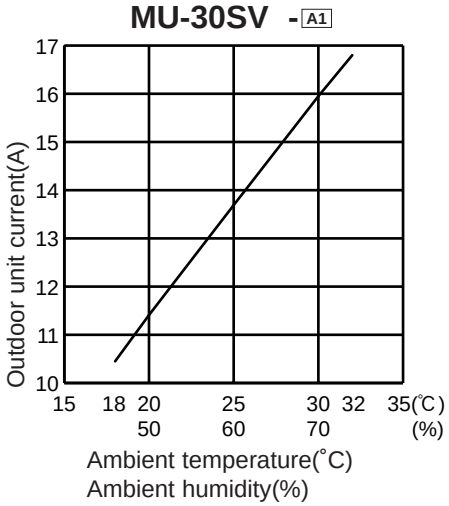
OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT
COOL operation

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.





PERFORMANCE DATA COOL operation

MS-30SV -A1 : MU-30SV -A1

CAPACITY : 8.4(KW) SHF : 0.63 INPUT : 3560(W)

		OUTDOOR DB(℃)															
INDOOR	INDOOR	21				25				27				30			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	9.87	4.44	0.45	2848	9.45	4.25	0.45	2990	9.07	4.08	0.45	3133	8.74	3.93	0.45	3275
21	20	10.29	3.40	0.33	2990	9.87	3.26	0.33	3168	9.58	3.16	0.33	3240	9.24	3.05	0.33	3382
22	18	9.87	4.84	0.49	2848	9.45	4.63	0.49	2990	9.07	4.45	0.49	3133	8.74	4.28	0.49	3275
22	20	10.29	3.81	0.37	2990	9.87	3.65	0.37	3168	9.58	3.54	0.37	3240	9.24	3.42	0.37	3382
22	22	10.71	2.68	0.25	3097	10.33	2.58	0.25	3293	10.08	2.52	0.25	3382	9.66	2.42	0.25	3524
23	18	9.87	5.23	0.53	2848	9.45	5.01	0.53	2990	9.07	4.81	0.53	3133	8.74	4.63	0.53	3275
23	20	10.29	4.22	0.41	2990	9.87	4.05	0.41	3168	9.58	3.93	0.41	3240	9.24	3.79	0.41	3382
23	22	10.71	3.11	0.29	3097	10.33	3.00	0.29	3293	10.08	2.92	0.29	3382	9.66	2.80	0.29	3524
24	18	9.87	5.63	0.57	2848	9.45	5.39	0.57	2990	9.07	5.17	0.57	3133	8.74	4.98	0.57	3275
24	20	10.29	4.63	0.45	2990	9.87	4.44	0.45	3168	9.58	4.31	0.45	3240	9.24	4.16	0.45	3382
24	22	10.71	3.53	0.33	3097	10.33	3.41	0.33	3293	10.08	3.33	0.33	3382	9.66	3.19	0.33	3524
24	24	11.26	2.36	0.21	3240	10.84	2.28	0.21	3418	10.58	2.22	0.21	3524	10.25	2.15	0.21	3702
25	18	9.87	6.02	0.61	2848	9.45	5.76	0.61	2990	9.07	5.53	0.61	3133	8.74	5.33	0.61	3275
25	20	10.29	5.04	0.49	2990	9.87	4.84	0.49	3168	9.58	4.69	0.49	3240	9.24	4.53	0.49	3382
25	22	10.71	3.96	0.37	3097	10.33	3.82	0.37	3293	10.08	3.73	0.37	3382	9.66	3.57	0.37	3524
25	24	11.26	2.81	0.25	3240	10.84	2.71	0.25	3418	10.58	2.65	0.25	3524	10.25	2.56	0.25	3702
26	18	9.87	6.42	0.65	2848	9.45	6.14	0.65	2990	9.07	5.90	0.65	3133	8.74	5.68	0.65	3275
26	20	10.29	5.45	0.53	2990	9.87	5.23	0.53	3168	9.58	5.08	0.53	3240	9.24	4.90	0.53	3382
26	22	10.71	4.39	0.41	3097	10.33	4.24	0.41	3293	10.08	4.13	0.41	3382	9.66	3.96	0.41	3524
26	24	11.26	3.26	0.29	3240	10.84	3.14	0.29	3418	10.58	3.07	0.29	3524	10.25	2.97	0.29	3702
26	26	11.59	1.97	0.17	3418	11.26	1.91	0.17	3596	11.09	1.88	0.17	3702	10.75	1.83	0.17	3809
27	18	9.87	6.81	0.69	2848	9.45	6.52	0.69	2990	9.07	6.26	0.69	3133	8.74	6.03	0.69	3275
27	20	10.29	5.87	0.57	2990	9.87	5.63	0.57	3168	9.58	5.46	0.57	3240	9.24	5.27	0.57	3382
27	22	10.71	4.82	0.45	3097	10.33	4.65	0.45	3293	10.08	4.54	0.45	3382	9.66	4.35	0.45	3524
27	24	11.26	3.71	0.33	3240	10.84	3.58	0.33	3418	10.58	3.49	0.33	3524	10.25	3.38	0.33	3702
27	26	11.59	2.43	0.21	3418	11.26	2.36	0.21	3596	11.09	2.33	0.21	3702	10.75	2.26	0.21	3809
28	18	9.87	7.21	0.73	2848	9.45	6.90	0.73	2990	9.07	6.62	0.73	3133	8.74	6.38	0.73	3275
28	20	10.29	6.28	0.61	2990	9.87	6.02	0.61	3168	9.58	5.84	0.61	3240	9.24	5.64	0.61	3382
28	22	10.71	5.25	0.49	3097	10.33	5.06	0.49	3293	10.08	4.94	0.49	3382	9.66	4.73	0.49	3524
28	24	11.26	4.16	0.37	3240	10.84	4.01	0.37	3418	10.58	3.92	0.37	3524	10.25	3.79	0.37	3702
28	26	11.59	2.90	0.25	3418	11.26	2.81	0.25	3596	11.09	2.77	0.25	3702	10.75	2.69	0.25	3809
29	18	9.87	7.60	0.77	2848	9.45	7.28	0.77	2990	9.07	6.99	0.77	3133	8.74	6.73	0.77	3275
29	20	10.29	6.69	0.65	2990	9.87	6.42	0.65	3168	9.58	6.22	0.65	3240	9.24	6.01	0.65	3382
29	22	10.71	5.68	0.53	3097	10.33	5.48	0.53	3293	10.08	5.34	0.53	3382	9.66	5.12	0.53	3524
29	24	11.26	4.61	0.41	3240	10.84	4.44	0.41	3418	10.58	4.34	0.41	3524	10.25	4.20	0.41	3702
29	26	11.59	3.36	0.29	3418	11.26	3.26	0.29	3596	11.09	3.22	0.29	3702	10.75	3.12	0.29	3809
30	18	9.87	7.99	0.81	2848	9.45	7.65	0.81	2990	9.07	7.35	0.81	3133	8.74	7.08	0.81	3275
30	20	10.29	7.10	0.69	2990	9.87	6.81	0.69	3168	9.58	6.61	0.69	3240	9.24	6.38	0.69	3382
30	22	10.71	6.10	0.57	3097	10.33	5.89	0.57	3293	10.08	5.75	0.57	3382	9.66	5.51	0.57	3524
30	24	11.26	5.07	0.45	3240	10.84	4.88	0.45	3418	10.58	4.76	0.45	3524	10.25	4.61	0.45	3702
30	26	11.59	3.83	0.33	3418	11.26	3.71	0.33	3596	11.09	3.66	0.33	3702	10.75	3.55	0.33	3809
31	18	9.87	8.39	0.85	2848	9.45	8.03	0.85	2990	9.07	7.71	0.85	3133	8.74	7.43	0.85	3275
31	20	10.29	7.51	0.73	2990	9.87	7.21	0.73	3168	9.58	6.99	0.73	3240	9.24	6.75	0.73	3382
31	22	10.71	6.53	0.61	3097	10.33	6.30	0.61	3293	10.08	6.15	0.61	3382	9.66	5.89	0.61	3524
31	24	11.26	5.52	0.49	3240	10.84	5.31	0.49	3418	10.58	5.19	0.49	3524	10.25	5.02	0.49	3702
31	26	11.59	4.29	0.37	3418	11.26	4.16	0.37	3596	11.09	4.10	0.37	3702	10.75	3.98	0.37	3809
32	18	9.87	8.78	0.89	2848	9.45	8.41	0.89	2990	9.07	8.07	0.89	3133	8.74	7.78	0.89	3275
32	20	10.29	7.92	0.77	2990	9.87	7.60	0.77	3168	9.58	7.37	0.77	3240	9.24	7.11	0.77	3382
32	22	10.71	6.96	0.65	3097	10.33	6.72	0.65	3293	10.08	6.55	0.65	3382	9.66	6.28	0.65	3524
32	24	11.26	5.97	0.53	3240	10.84	5.74	0.53	3418	10.58	5.61	0.53	3524	10.25	5.43	0.53	3702
32	26	11.59	4.75	0.41	3418	11.26	4.61	0.41	3596	11.09	4.55	0.41	3702	10.75	4.41	0.41	3809

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-30SV -A1 : MU-30SV -A1

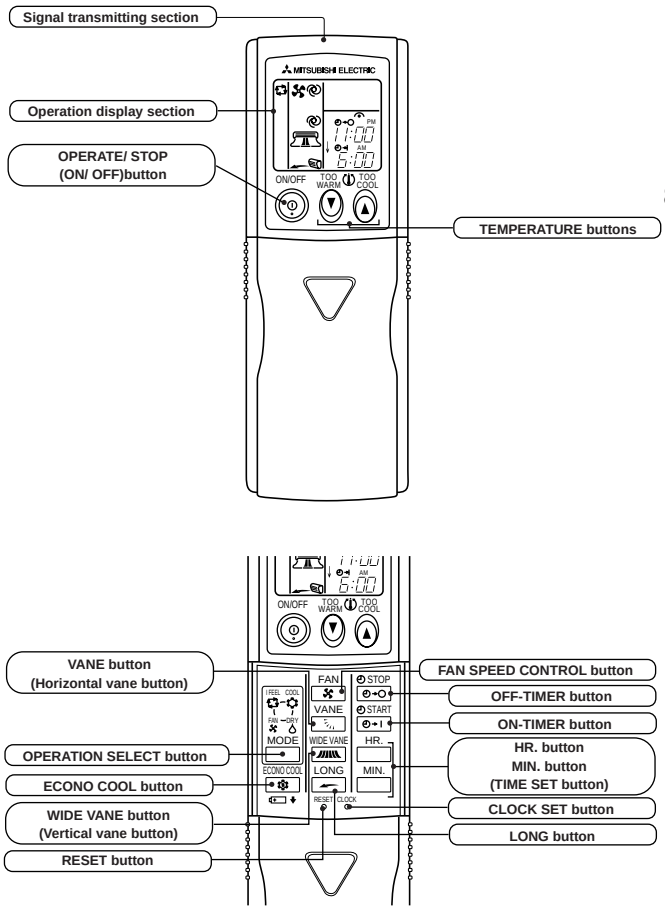
CAPACITY : 8.4(KW) SHF : 0.63 INPUT : 3560(W)

		OUTDOOR DB(℃)															
INDOOR	INDOOR	35				40				43				46			
DB(℃)	WB(℃)	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT	Q	SHC	SHF	INPUT
21	18	8.23	3.70	0.45	3489	7.56	3.40	0.45	3702	7.27	3.27	0.45	3774	6.97	3.14	0.45	3845
21	20	8.65	2.86	0.33	3631	8.06	2.66	0.33	3809	7.77	2.56	0.33	3916	7.48	2.47	0.33	4023
22	18	8.23	4.03	0.49	3489	7.56	3.70	0.49	3702	7.27	3.56	0.49	3774	6.97	3.42	0.49	3845
22	20	8.65	3.20	0.37	3631	8.06	2.98	0.37	3809	7.77	2.87	0.37	3916	7.48	2.77	0.37	4023
22	22	9.16	2.29	0.25	3774	8.57	2.14	0.25	3987	8.27	2.07	0.25	4058	7.98	2.00	0.25	4130
23	18	8.23	4.36	0.53	3489	7.56	4.01	0.53	3702	7.27	3.85	0.53	3774	6.97	3.70	0.53	3845
23	20	8.65	3.55	0.41	3631	8.06	3.31	0.41	3809	7.77	3.19	0.41	3916	7.48	3.07	0.41	4023
23	22	9.16	2.66	0.29	3774	8.57	2.48	0.29	3987	8.27	2.40	0.29	4058	7.98	2.31	0.29	4130
24	18	8.23	4.69	0.57	3489	7.56	4.31	0.57	3702	7.27	4.14	0.57	3774	6.97	3.97	0.57	3845
24	20	8.65	3.89	0.45	3631	8.06	3.63	0.45	3809	7.77	3.50	0.45	3916	7.48	3.36	0.45	4023
24	22	9.16	3.02	0.33	3774	8.57	2.83	0.33	3987	8.27	2.73	0.33	4058	7.98	2.63	0.33	4130
24	24	9.66	2.03	0.21	3916	9.07	1.91	0.21	4094	8.82	1.85	0.21	4183	8.57	1.80	0.21	4272
25	18	8.23	5.02	0.61	3489	7.56	4.61	0.61	3702	7.27	4.43	0.61	3774	6.97	4.25	0.61	3845
25	20	8.65	4.24	0.49	3631	8.06	3.95	0.49	3809	7.77	3.81	0.49	3916	7.48	3.66	0.49	4023
25	22	9.16	3.39	0.37	3774	8.57	3.17	0.37	3987	8.27	3.06	0.37	4058	7.98	2.95	0.37	4130
25	24	9.66	2.42	0.25	3916	9.07	2.27	0.25	4094	8.82	2.21	0.25	4183	8.57	2.14	0.25	4272
26	18	8.23	5.35	0.65	3489	7.56	4.91	0.65	3702	7.27	4.72	0.65	3774	6.97	4.53	0.65	3845
26	20	8.65	4.59	0.53	3631	8.06	4.27	0.53	3809	7.77	4.12	0.53	3916	7.48	3.96	0.53	4023
26	22	9.16	3.75	0.41	3774	8.57	3.51	0.41	3987	8.27	3.39	0.41	4058	7.98	3.27	0.41	4130
26	24	9.66	2.80	0.29	3916	9.07	2.63	0.29	4094	8.82	2.56	0.29	4183	8.57	2.48	0.29	4272
26	26	10.16	1.73	0.17	4058	9.58	1.63	0.17	4236	9.28	1.58	0.17	4325	8.99	1.53	0.17	4414
27	18	8.23	5.68	0.69	3489	7.56	5.22	0.69	3702	7.27	5.01	0.69	3774	6.97	4.81	0.69	3845
27	20	8.65	4.93	0.57	3631	8.06	4.60	0.57	3809	7.77	4.43	0.57	3916	7.48	4.26	0.57	4023
27	22	9.16	4.12	0.45	3774	8.57	3.86	0.45	3987	8.27	3.72	0.45	4058	7.98	3.59	0.45	4130
27	24	9.66	3.19	0.33	3916	9.07	2.99	0.33	4094	8.82	2.91	0.33	4183	8.57	2.83	0.33	4272
27	26	10.16	2.13	0.21	4058	9.58	2.01	0.21	4236	9.28	1.95	0.21	4325	8.99	1.89	0.21	4414
28	18	8.23	6.01	0.73	3489	7.56	5.52	0.73	3702	7.27	5.30	0.73	3774	6.97	5.09	0.73	3845
28	20	8.65	5.28	0.61	3631	8.06	4.92	0.61	3809	7.77	4.74	0.61	3916	7.48	4.56	0.61	4023
28	22	9.16	4.49	0.49	3774	8.57	4.20	0.49	3987	8.27	4.05	0.49	4058	7.98	3.91	0.49	4130
28	24	9.66	3.57	0.37	3916	9.07	3.36	0.37	4094	8.82	3.26	0.37	4183	8.57	3.17	0.37	4272
28	26	10.16	2.54	0.25	4058	9.58	2.39	0.25	4236	9.28	2.32	0.25	4325	8.99	2.25	0.25	4414
29	18	8.23	6.34	0.77	3489	7.56	5.82	0.77	3702	7.27	5.59	0.77	3774	6.97	5.37	0.77	3845
29	20	8.65	5.62	0.65	3631	8.06	5.24	0.65	3809	7.77	5.05	0.65	3916	7.48	4.86	0.65	4023
29	22	9.16	4.85	0.53	3774	8.57	4.54	0.53	3987	8.27	4.39	0.53	4058	7.98	4.23	0.53	4130
29	24	9.66	3.96	0.41	3916	9.07	3.72	0.41	4094	8.82	3.62	0.41	4183	8.57	3.51	0.41	4272
29	26	10.16	2.95	0.29	4058	9.58	2.78	0.29	4236	9.28	2.69	0.29	4325	8.99	2.61	0.29	4414
30	18	8.23	6.67	0.81	3489	7.56	6.12	0.81	3702	7.27	5.89	0.81	3774	6.97	5.65	0.81	3845
30	20	8.65	5.97	0.69	3631	8.06	5.56	0.69	3809	7.77	5.36	0.69	3916	7.48	5.16	0.69	4023
30	22	9.16	5.22	0.57	3774	8.57	4.88	0.57	3987	8.27	4.72	0.57	4058	7.98	4.55	0.57	4130
30	24	9.66	4.35	0.45	3916	9.07	4.08	0.45	4094	8.82	3.97	0.45	4183	8.57	3.86	0.45	4272
30	26	10.16	3.35	0.33	4058	9.58	3.16	0.33	4236	9.28	3.06	0.33	4325	8.99	2.97	0.33	4414
31	18	8.23	7.00	0.85	3489	7.56	6.43	0.85	3702	7.27	6.18	0.85	3774	6.97	5.93	0.85	3845
31	20	8.65	6.32	0.73	3631	8.06	5.89	0.73	3809	7.77	5.67	0.73	3916	7.48	5.46	0.73	4023
31	22	9.16	5.59	0.61	3774	8.57	5.23	0.61	3987	8.27	5.05	0.61	4058	7.98	4.87	0.61	4130
31	24	9.66	4.73	0.49	3916	9.07	4.45	0.49	4094	8.82	4.32	0.49	4183	8.57	4.20	0.49	4272
31	26	10.16	3.76	0.37	4058	9.58	3.54	0.37	4236	9.28	3.43	0.37	4325	8.99	3.33	0.37	4414
32	18	8.23	7.33	0.89	3489	7.56	6.73	0.89	3702	7.27	6.47	0.89	3774	6.97	6.21	0.89	3845
32	20	8.65	6.66	0.77	3631	8.06	6.21	0.77	3809	7.77	5.98	0.77	3916	7.48	5.76	0.77	4023
32	22	9.16	5.95	0.65	3774	8.57	5.57	0.65	3987	8.27	5.38	0.65	4058	7.98	5.19	0.65	4130
32	24	9.66	5.12	0.53	3916	9.07	4.81	0.53	4094	8.82	4.67	0.53	4183	8.57	4.54	0.53	4272
32	26	10.16	4.17	0.41	4058	9.58	3.93	0.41	4236	9.28	3.81	0.41	4325	8.99	3.69	0.41	4414

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

8 MICROPROCESSOR CONTROL

WIRELESS REMOTE CONTROLLER



INDOOR UNIT DISPLAY SECTION

Operation Indicator lamp

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

Operation Indicator

lighting

not lighting

Indication	Operation state	Difference between target 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

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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.

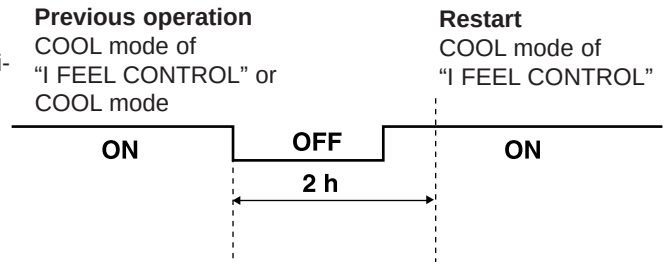
8-1. "I FEEL CONTROL" OPERATION

(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"

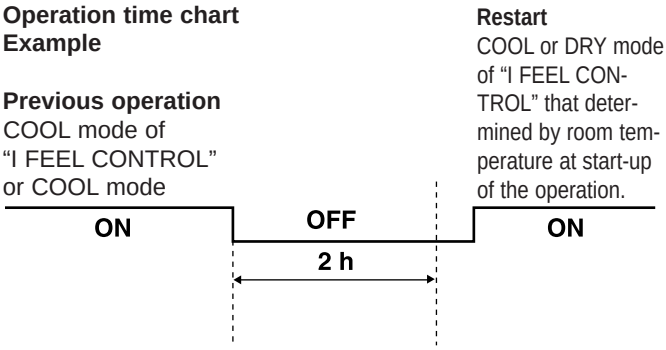
- Once the mode is fixed, the mode does not change by room temperature afterwards.
- Under the ON-TIMER ( ) operation, mode is determined according to the room temperature at the set time the operation starts.
- When the system is stopped on the remote controller and restarted within 2 hours in "I FEEL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

Operation time 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 time chart
Example



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

Model	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 than 13℃, 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 emit 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.

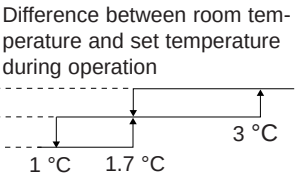
TOO COOL ▲ ··· To raise the set temperature 1~2 °C

TOO WARM ▼ ··· To lower the set temperature 1~2 °C

— COOL mode of "I FEEL CONTROL" —

1. Indoor fan speed control
Indoor fan operates continuously at the set speed by FAN SPEED CONTROL button regardless of the thermostat's OFF-ON.
In AUTO the fan speed is as follows.

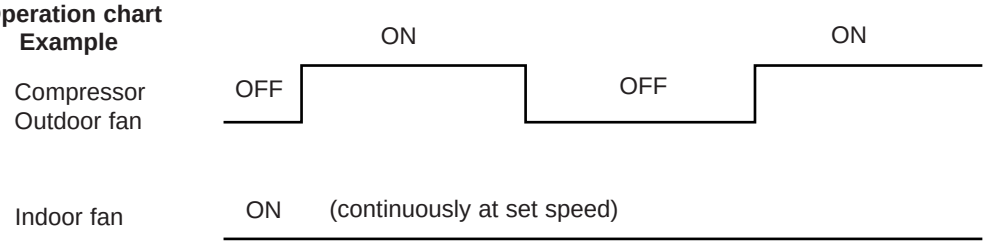
Initial temperature difference	Fan Speed
Room temperature minus set temperature : 1.7 °C or more	Hi
Room temperature minus set temperature : Between 1 and 1.7 °C	Me
Room temperature minus set temperature : less than 1 °C	Lo



2. Coil frost prevention
① Temperature control
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 Lo or Me.
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 Hi 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 control

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

NOTE : When indoor fan Lo operation and the outside temperature is 29℃ or less, the outdoor fan operates in Lo.
Outdoor fan Lo 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 other mode / Change of the indoor FAN speed)

4. Discharge temperature protection

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.
3 minutes after the compressor is turned OFF and if the temperature of discharge temperature thermistor RT62 becomes 100℃ or less, the compressor is turned ON.

—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 Lo.

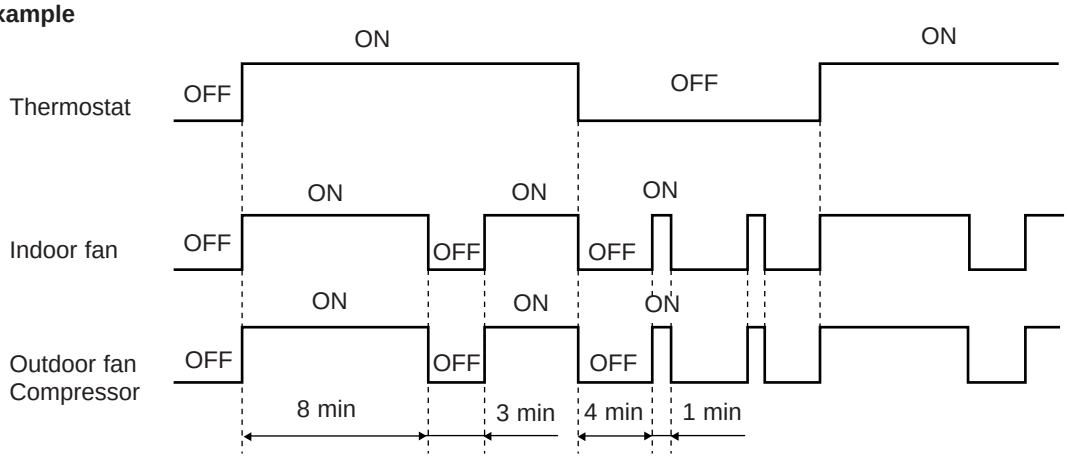
2. The operation of the compressor and indoor / outdoor fan

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 5 minutes, because protection (Coil frost prevention) has the priority.

4. Outdoor fan control

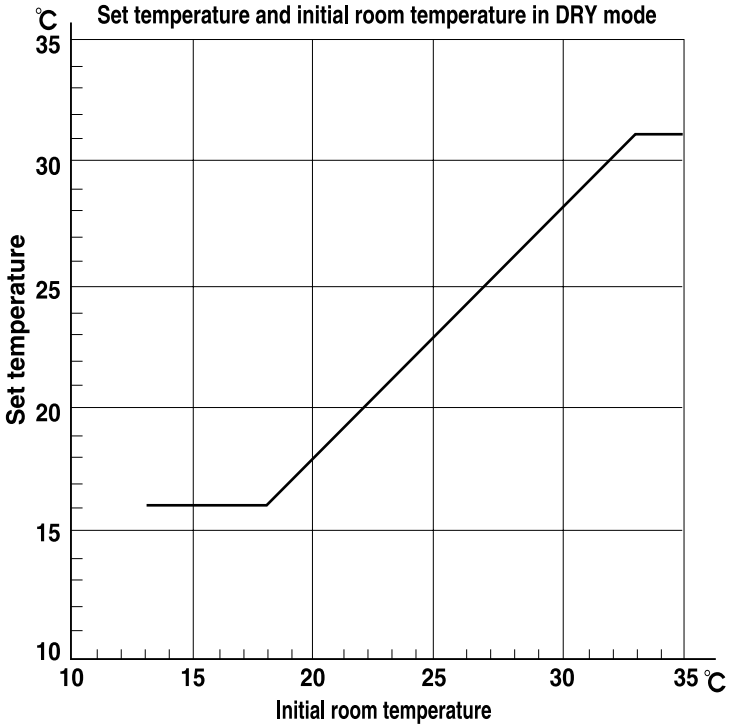
Outdoor fan control is as same as during COOL mode of “I FEEL CONTROL”.

8-2. 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 decided 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”.

8-3. 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.

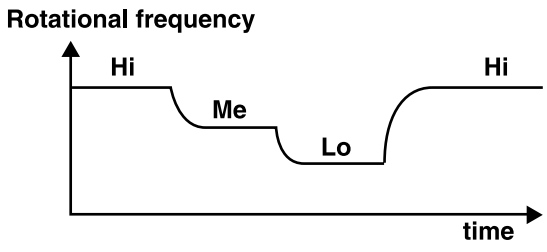


8-4. FAN (✣) OPERATION

(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 Lo.
Only indoor fan operates.
Outdoor unit does not operate.

8-5. 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 (Hi, Me, Lo), the microprocessor controls SR141 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. (See page 28.)

8-6. AUTO VANE OPERATION

1. Horizontal vane

(1) Vane motor drive

This model is 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 indoor microprocessor.

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

(3) Positioning

The horizontal 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.

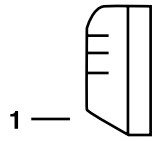
(d) When the test run starts.

(e) When the power supply turns ON.

(4) VANE AUTO ( ) mode

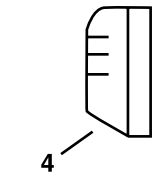
In VANE AUTO mode, the microprocessor automatically determines the horizontal vane angle and operation to make the optimum room-temperature distribution.

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 button, 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 button is pressed or LONG button is pressed or change to other operation mode.

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

SWING operation

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.

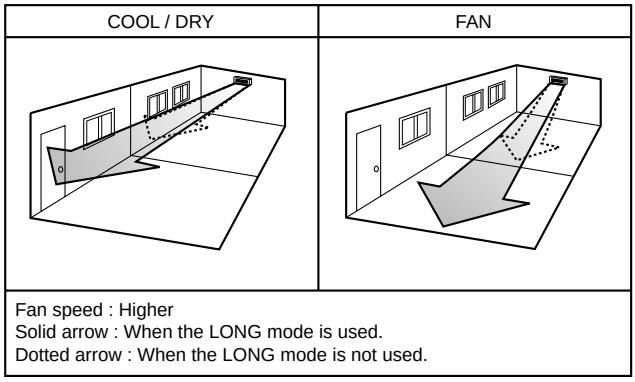
	Temperature of Tp(※ 1)	Downward blow time (s)	Upward(level) blow time (s)
A	15°C or less	2	23
B	15°C to 17°C	5	20
C	17°C to 18°C	8	17
D	18°C to 20°C	11	14
E	20°C to 21°C	14	11
F	21°C to 22°C	17	8
G	22°C to 24°C	20	5
H	more than 24°C	23	2

※ 1 Tp : Minimum value of indoor coil thermistor (main) RT12 and indoor coil thermistor (sub) RT13

(9) LONG MODE ( )

By pressing the LONG button fan speed becomes higher 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.).

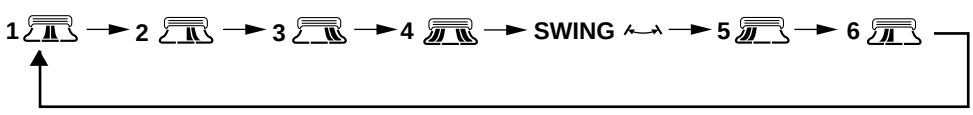


2. Vertical vane

(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.



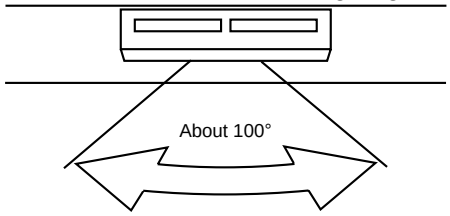
(3) Positioning
The vane is once pressed to the vane stopper to confirm the standard position and then set to the desired angle.
Confirming of standard position is performed in case of follows.
(a) When the OPERATE/STOP(ON/OFF) button is pressed (POWER ON/OFF).
(b) When the operation mode is changed.
(c) When the power supply turns ON.

(4) SWING MODE ( )
By selecting SWING mode with the WIDE VANE button, the horizontal vane swings vertically. 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. The remote controller displays " ".

NOTE : The position of vane angle 3, angle 4 and angle 5 are different in COOL operation and FAN operation.

Horizontal AIR FLOW blowing range



8-7. 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 TIME MONITOR, so set the current time correctly with CLOCK SET button.
(3) Press ON/OFF TIMER button 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.

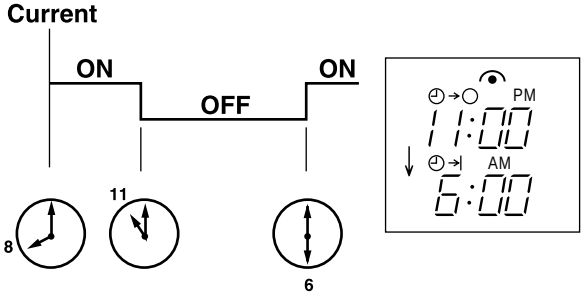
2. Cancel

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.

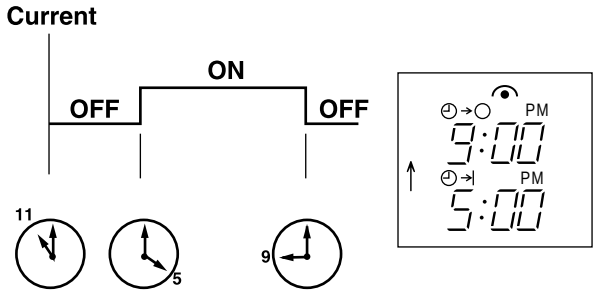
PROGRAM TIMER

- 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.

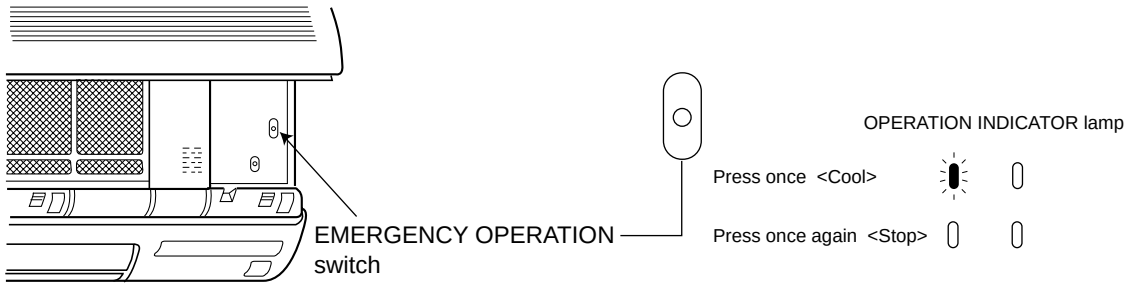


NOTE : TIMER setting will be cancelled by power failure or breaker functioning.

8-8. EMERGENCY-TEST OPERATION

When the remote controller is missing, has failed or the batteries run down, use the EMERGENCY OPERATION switch on the front of the indoor unit. 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 Hi notch 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 Me notch.
This operation continues until the EMERGENCY OPERATION switch is pressed once again or the unit receives any signal from the remote controller. In case of latter normal operation will start.
The coil frost prevention works even in this operation.
In the test run or emergency operation, the horizontal vane operates in VANE AUTO mode.

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



8-9. LEV control

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

Basic specification	Controlled range	Minimum : 54 pulse, Maximum : 500 pulse
	Drive speed	30 ~ 90 pulse / second
	Opening set	The opening is always set in opening direction. (When closing LEV, open the LEV to adjust to set opening after closing the LEV much once.)
General operation	Stop of indoor unit	Opening in stop : 150 pulse → LEV is set that opening becomes 500 pulse after 3 minutes passed.
	Remote controller ON	LEV positioning (LEV opening is closed completely 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 with the opening at starting. (Opening at starting is set according to each operation modes and outer temperature conditions.)
	From approximate 2 minutes later to approximate 13 minutes later (for 11 minutes) since compressor has started.	Opening is set with 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.)
	Thermostat OFF	Opening in stop : 150 pulse → LEV is set that opening of starting after about 3 minutes passed.
	Thermostat ON	Same as the starting of compressor operation
	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

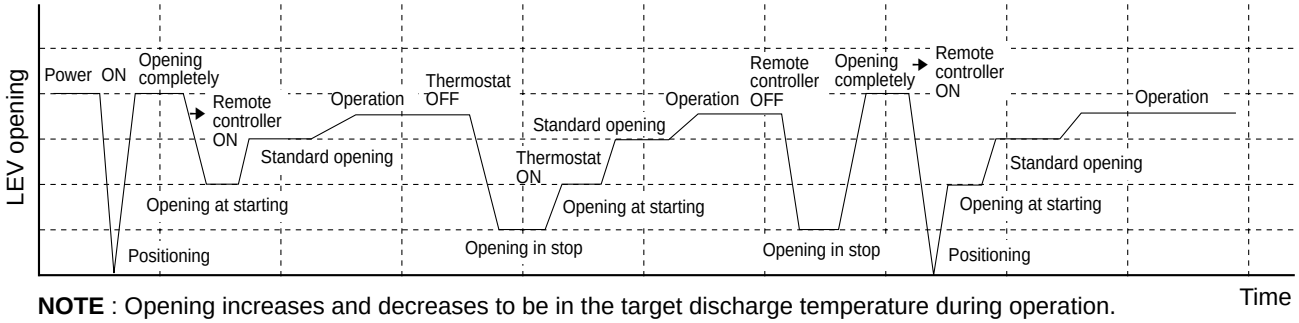
The target discharge temperature (Tb) is set according to the operation mode or the unit status as follows.

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.)

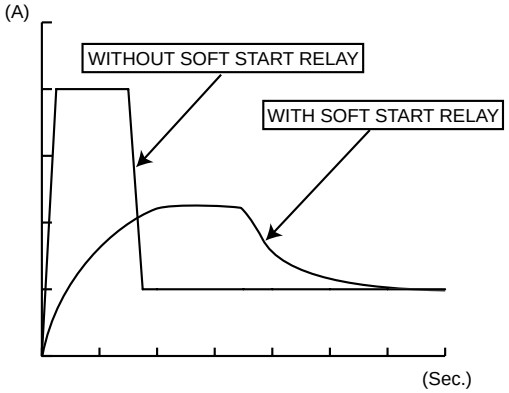
(2) LEV time chart



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

8-10. Function of soft start relay

Soft start relay will chop some starting current.
Starting current is reduced as shown in the following figures.



9 SERVICE FUNCTIONS

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9-1. 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 37.)
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.)

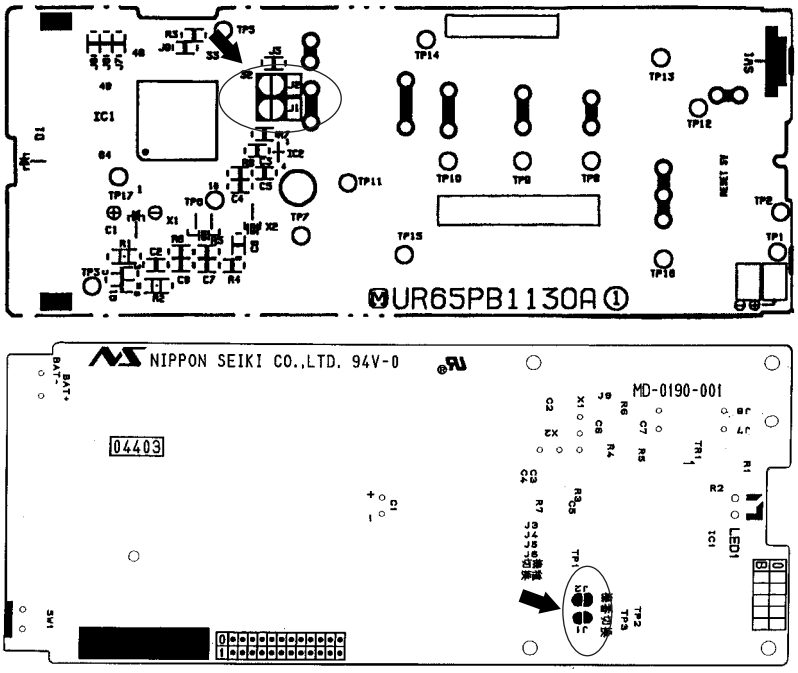
9-2. P.C. BOARD MODIFICATION FOR INDIVIDUAL OPERATION

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.

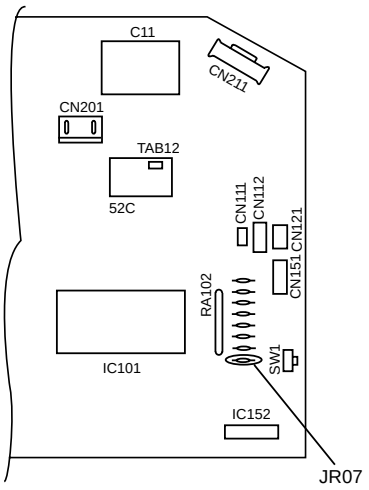
Table 1

	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.

9-3. AUTO RESTART FUNCTION

When the indoor unit is controlled with the remote controller, the operation mode, the 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”

① Turn off the main power for the unit.

② Pull out the indoor electronic control P.C. board and the display P.C.board.
(Refer to page 40.)

③ Cut the RESISTOR JR07 on the indoor electronic control P.C.board.
(Refer to page 37.)

Operation

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

② After 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 works as the power button of the remote controller is off.
- To prevent breaker off due to the rush of starting current, systematize other home appliance 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.

10 TROUBLESHOOTING

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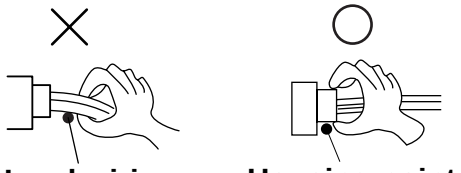
10-1. Cautions on troubleshooting

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 main unit, and then after confirming the horizontal vane is closed, turn off the breaker and / or disconnect the power plug.
2) Be sure to unplug the power supply cord 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.



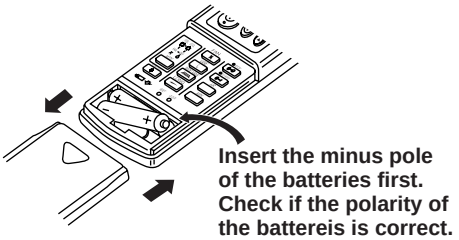
3. Troubleshooting procedure

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 check 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 27 and the check table on page 28.

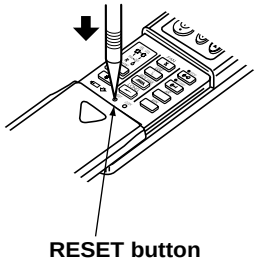
4. How to replace batteries

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.

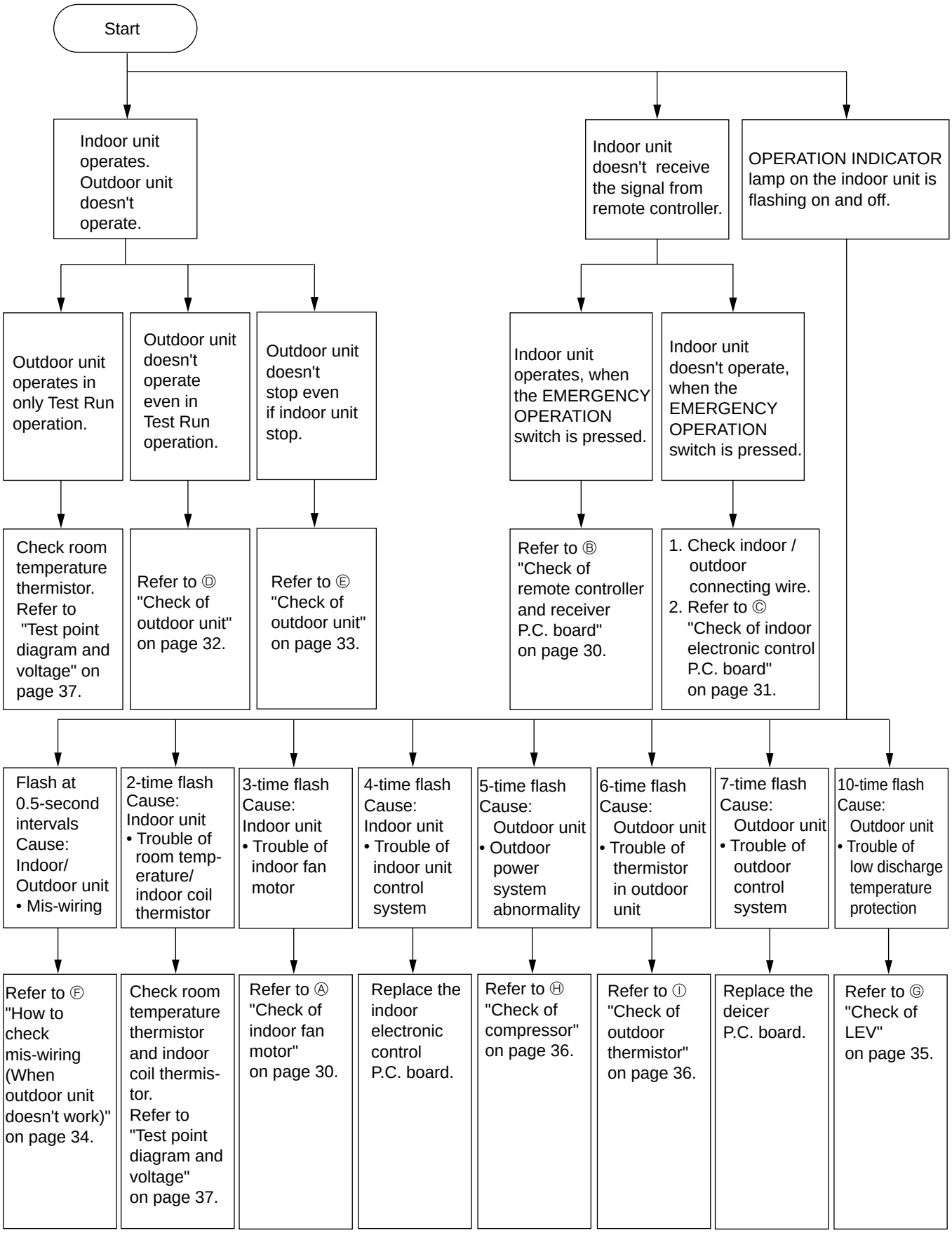


② Press the RESET button with tip end of ball point pen or the like, and then use the remote controller.



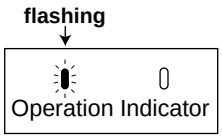
NOTE : If the RESET button is not pressed, the remote controller may not operate correctly.

10-2. Instruction of troubleshooting



※1<The case of the trouble of the serial signal>
When turn off the power and then turn on the power again, the indication shows “The trouble of mis-wiring.”

1. Troubleshooting check table



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

NOTE: 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	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 34.
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 indoor coil thermistor, auxiliary indoor coil thermistor, and room temperature thermistor on page 37.
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 emit during 12-second indoor fan operation.	• Refer to Ⓐ "Check of indoor fan motor" on page 30.
4	Indoor control system	4-time flash 2.5-second OFF	Outdoor unit does not operate.	When nonvolatile memory data cannot be read properly on indoor electronic control P.C. board.	• Replace the indoor electronic control P.C. board.
5	Outdoor power system	5-time flash 2.5-second OFF	Outdoor unit does not operate.	When compressor has stopped due to over current protection or start-up failure protection 3 times in a row within 5 seconds after start-up.	• Refer to Ⓗ "Check of compressor" on page 36.
6	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.	• Shortage of refrigerant • Replace the deicer P.C. board. Refer to Ⓘ "Check of outdoor thermistor" on page 36.
7	Outdoor control system	7-time flash 2.5-second OFF	Outdoor unit does not operate.	When nonvolatile memory data cannot be read properly on deicer P.C. board, outdoor unit stops and restarts 3 minutes later.	• Replace the deicer P.C. board.
8	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 35. • 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.

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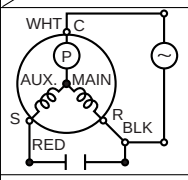
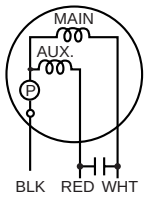
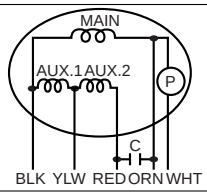
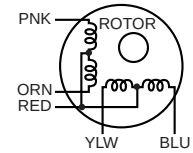
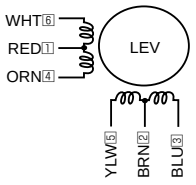
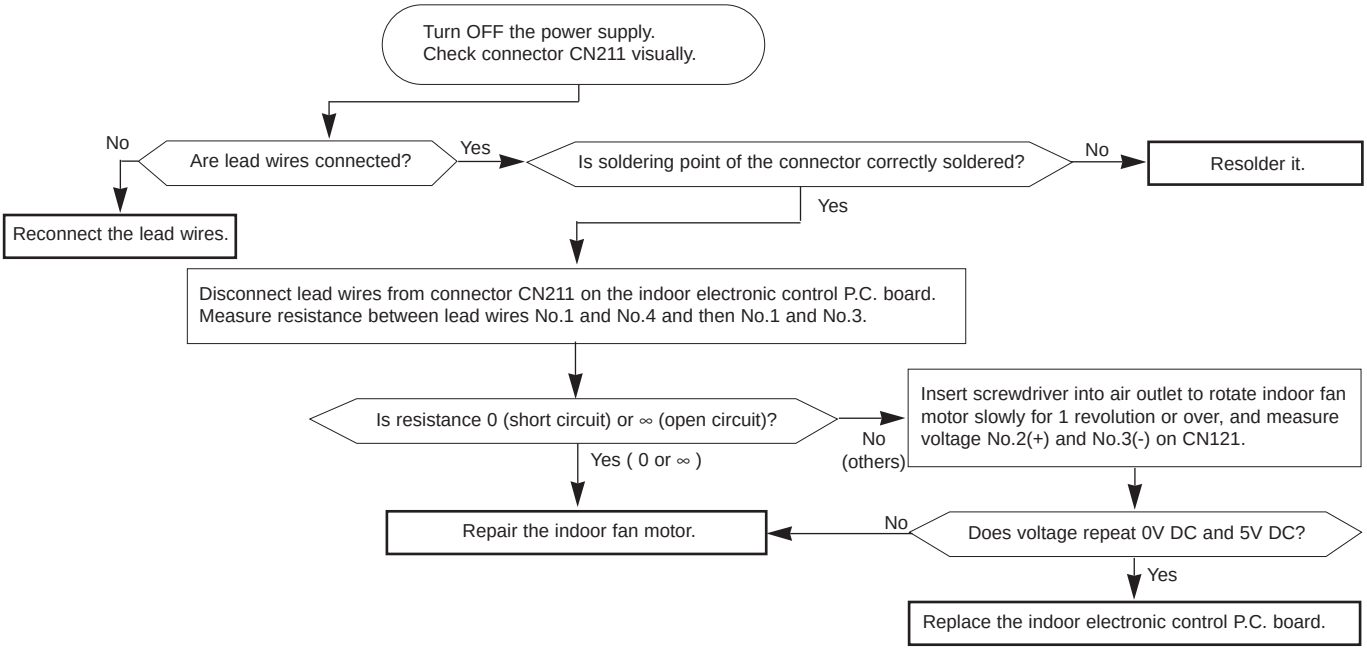
2. Trouble criterion of main parts

<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)</td><td>Measure the resistance with a tester.
Before measurement, hold the thermistor with your hands to warm it up.
(Part temperature 20˚C ~ 40˚C)<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>100 kΩ ~ 300 kΩ</td><td>Open or short circuit</td></tr></table></td><td></td></tr>
<tr><td>Ambient temperature thermistor(RT63)</td><td>Measure the resistance with a tester.
(Coil wiring 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.
(Coil wiring temperature –10˚C ~ 40˚C)<table><tr><th></th><th>Normal</th><th>Abnormal</th></tr><tr><td>C – R</td><td>0.58 Ω ~ 0.71 Ω</td><td rowspan="2">Open or short circuit</td></tr><tr><td>C – S</td><td>1.39 Ω ~ 1.70 Ω</td></tr></table></td><td> 
</td></tr>
<tr><td>Indoor fan motor(MF)</td><td>Motor part
Measure the resistance between the terminals with a tester.
(Coil wiring temperature 10˚C ~ 30˚C)<table><tr><th></th><th>Normal</th><th>Abnormal</th></tr><tr><td>WHT – BLK</td><td>133 Ω ~ 144 Ω</td><td rowspan="2">Open or short circuit</td></tr><tr><td>BLK – RED</td><td>153 Ω ~ 165 Ω</td></tr></table>Sensor part
Measure the voltage power ON.<table><tr><th></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><td> 
</td></tr>
<tr><td>Outdoor fan moter(MF)</td><td>Measure the resistance between the terminals with a tester.
(Pert temperature –10˚C ~ 40˚C)<table><tr><th></th><th>Normal</th><th>Abnormal</th></tr><tr><td>WHT – BLK</td><td>55.4 Ω ~ 67.7 Ω</td><td rowspan="3">Open or short circuit</td></tr><tr><td>BLK – YLW</td><td>49.3 Ω ~ 60.3 Ω</td></tr><tr><td>YLW – RED</td><td>22.9 Ω ~ 28.0 Ω</td></tr></table></td><td> 
</td></tr>
<tr><td>Horizontal vane motor(MV1)
Vertical vane motor(MV2)</td><td>Measure the resistance between the RED terminals and other ones.
(Winding temperature10°C ~ 30°C)<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>Approx. 300Ω in each phase</td><td>Open or short circuit</td></tr></table></td><td> 
</td></tr>
<tr><td>LEV(Expansion valve)</td><td>Measure the resistance with a tester.
(Part temperature : –10˚C ~ 40˚C)<table><tr><th></th><th>Normal</th><th>Abnormal</th></tr><tr><td>WHT – RED</td><td rowspan="4">30.3 Ω ~ 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

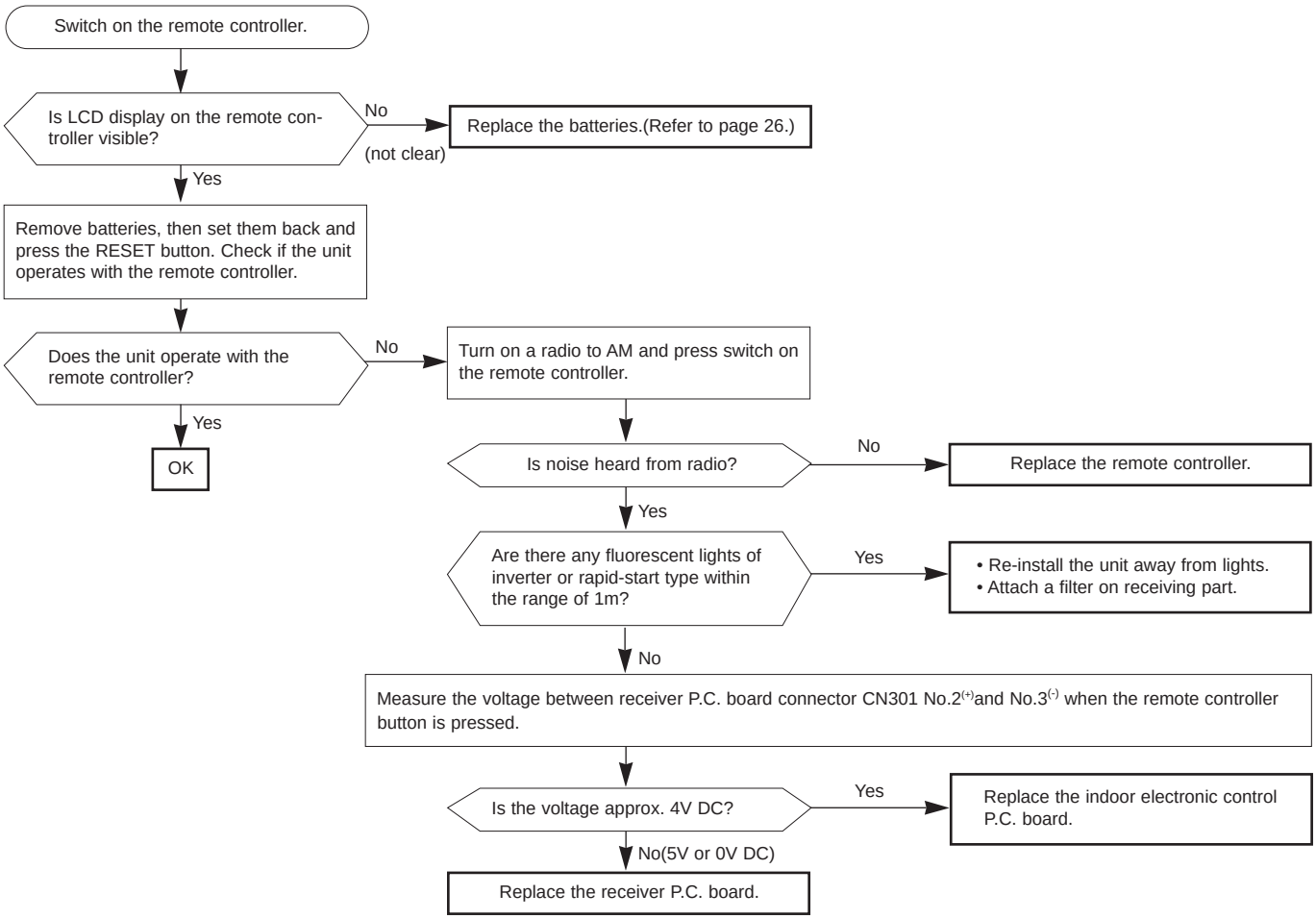
Indoor fan does not operate.



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

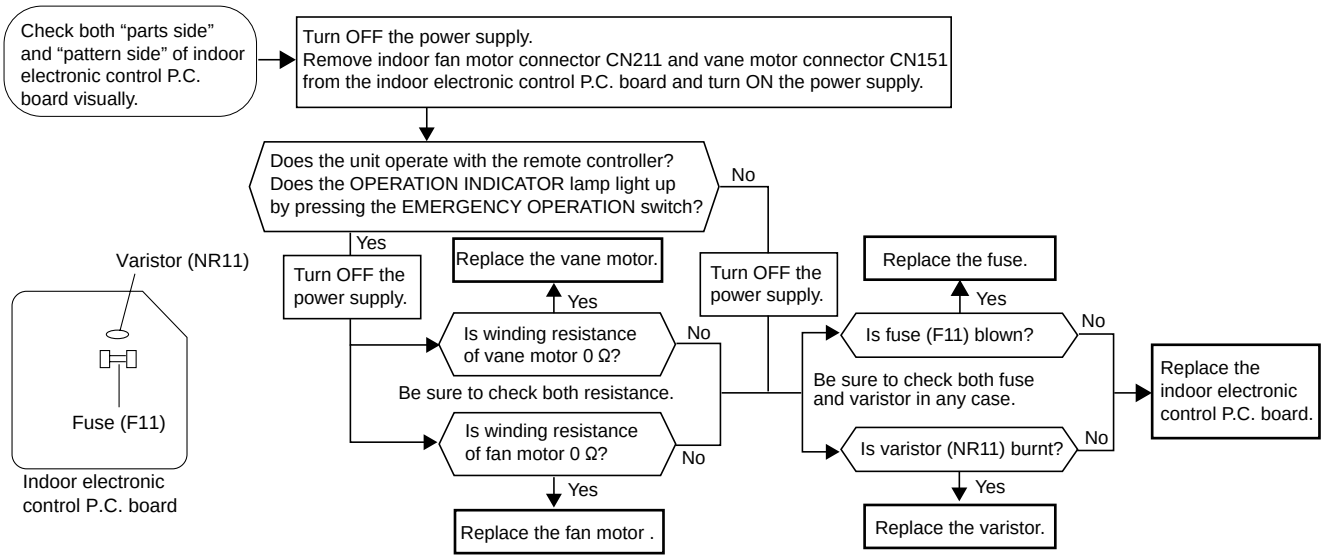
Indoor unit operates by pressing the EMERGENCY OPERATION switch, but does not operate with the remote controller.

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



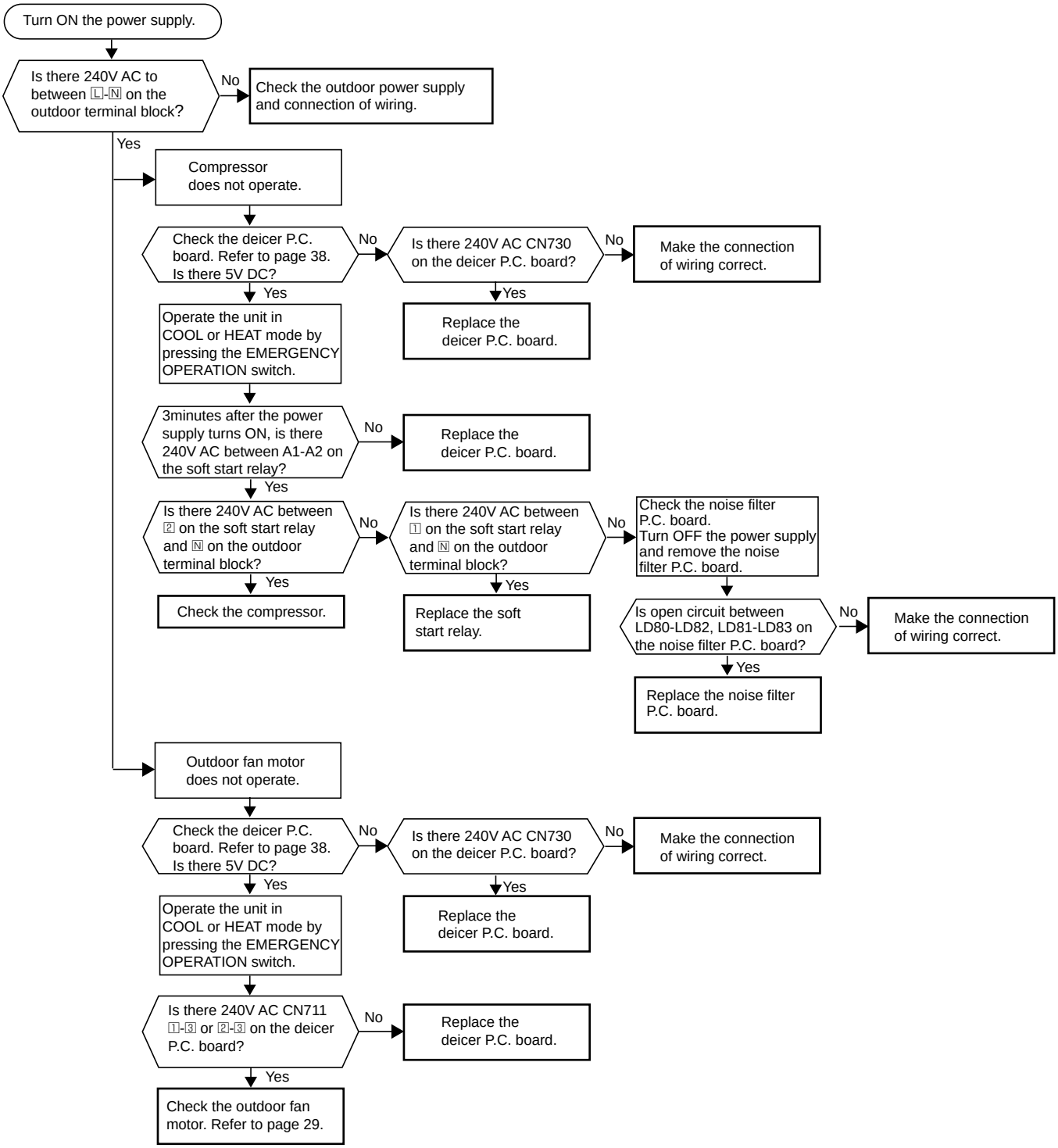
ⓒCheck of indoor electronic control P.C. board

Unit does not operate with the remote controller.
OPERATION INDICATOR lamp does not light up either, with the EMERGENCY OPERATION switch ON.



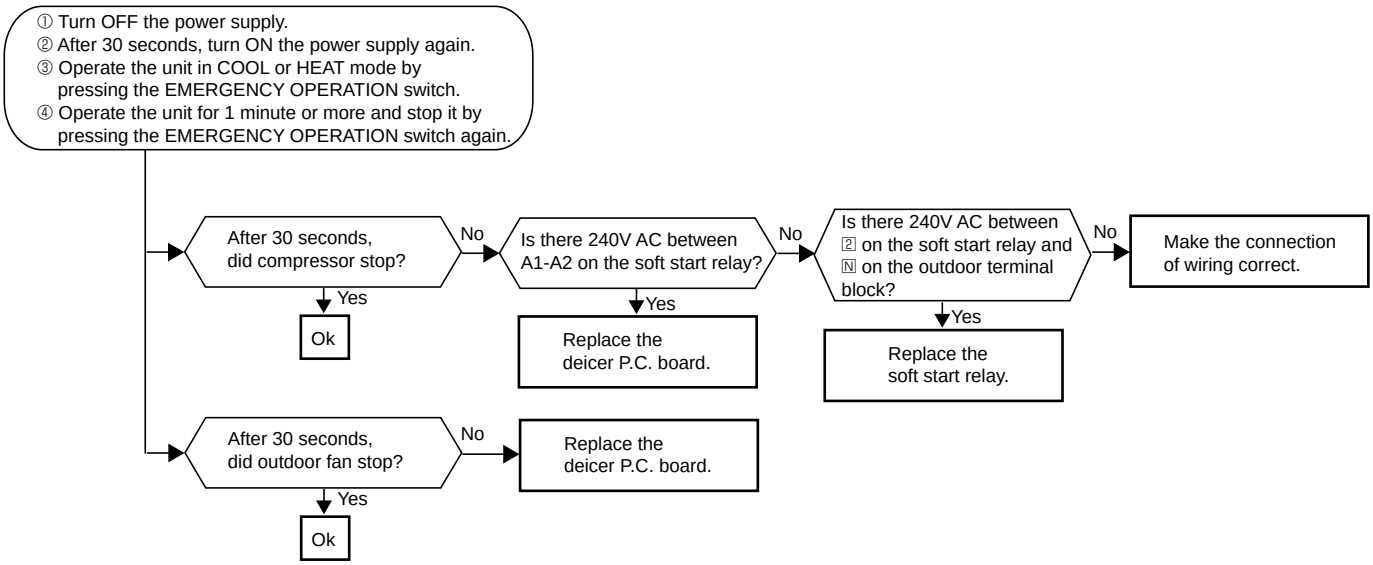
Ⓓ Check of outdoor unit

Compressor and / or outdoor fan does not operate.



ⒺCheck of outdoor unit

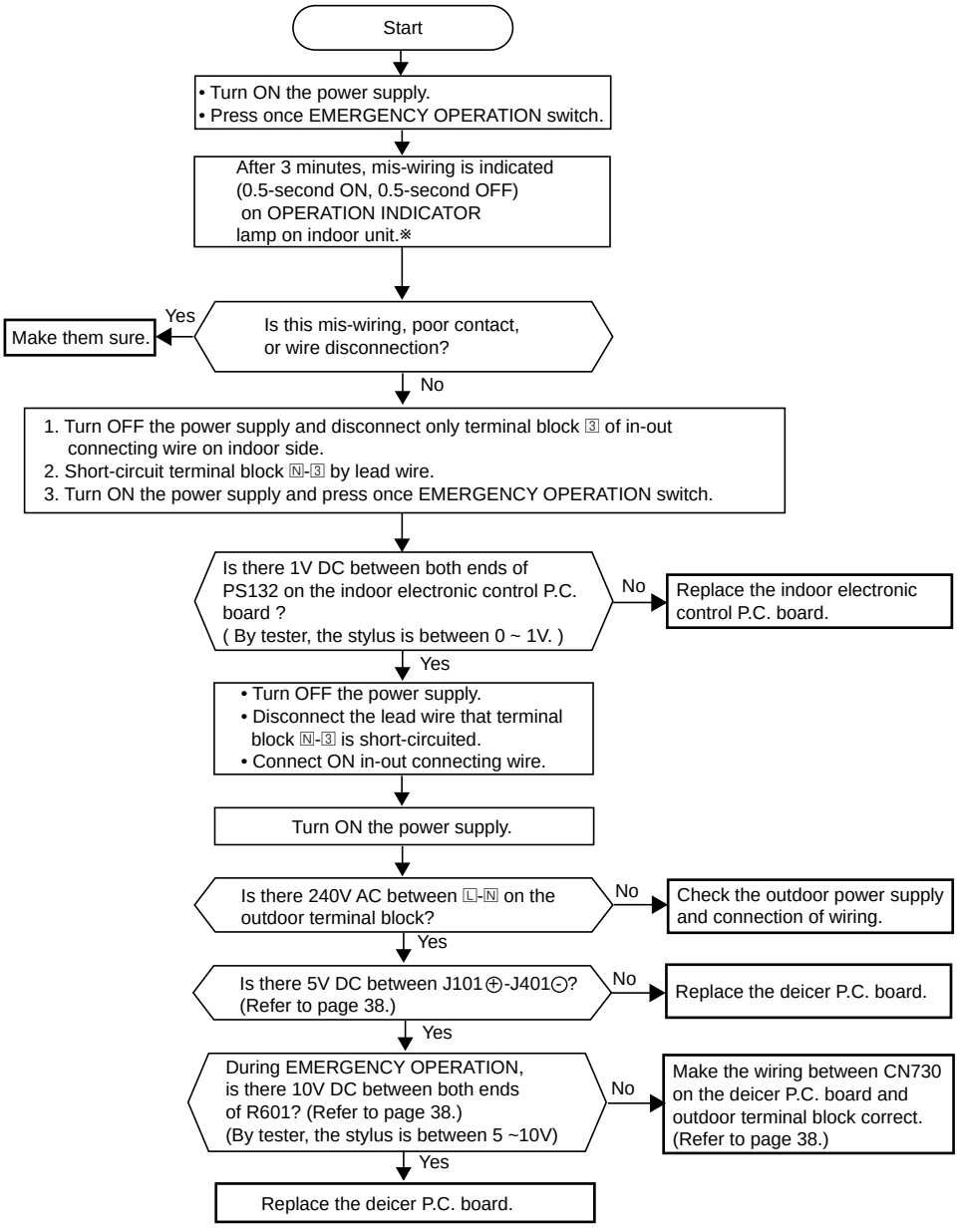
Compressor and / or outdoor fan does not stop.



Ⓕ How to check mis-wiring

Outdoor unit does not work.

※ 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)

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

Is LEV coil resistance as per characteristics below?

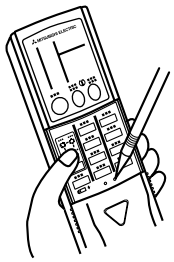
Yes → Replace the DEICER P.C. board.

No

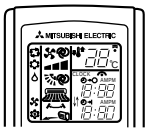
Replace the LEV coil.

Characteristics of LEV coil

LEV (CN 724)	Resistance
WHT–RED	30.3 Ω ~ 37.0 Ω
RED–ORN	
YLW–BRN	
BRN–BLU	



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

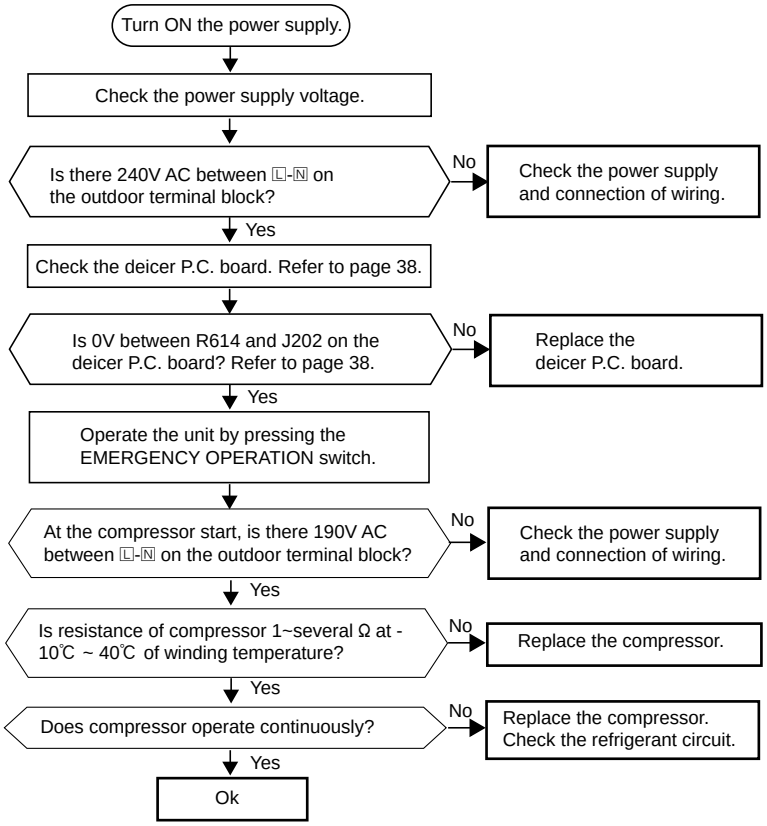


(Confirm all displays of remote controller.)
③ Then release OPERATION SELECT button.

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

Ⓗ Check of compressor

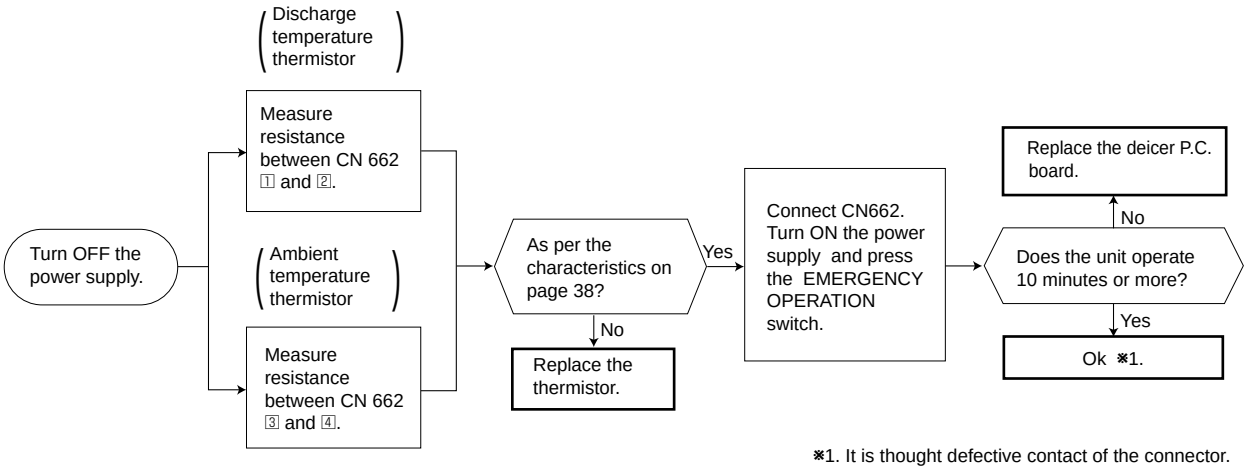
Compressor does not operate.



Ⓘ Check of outdoor thermistor

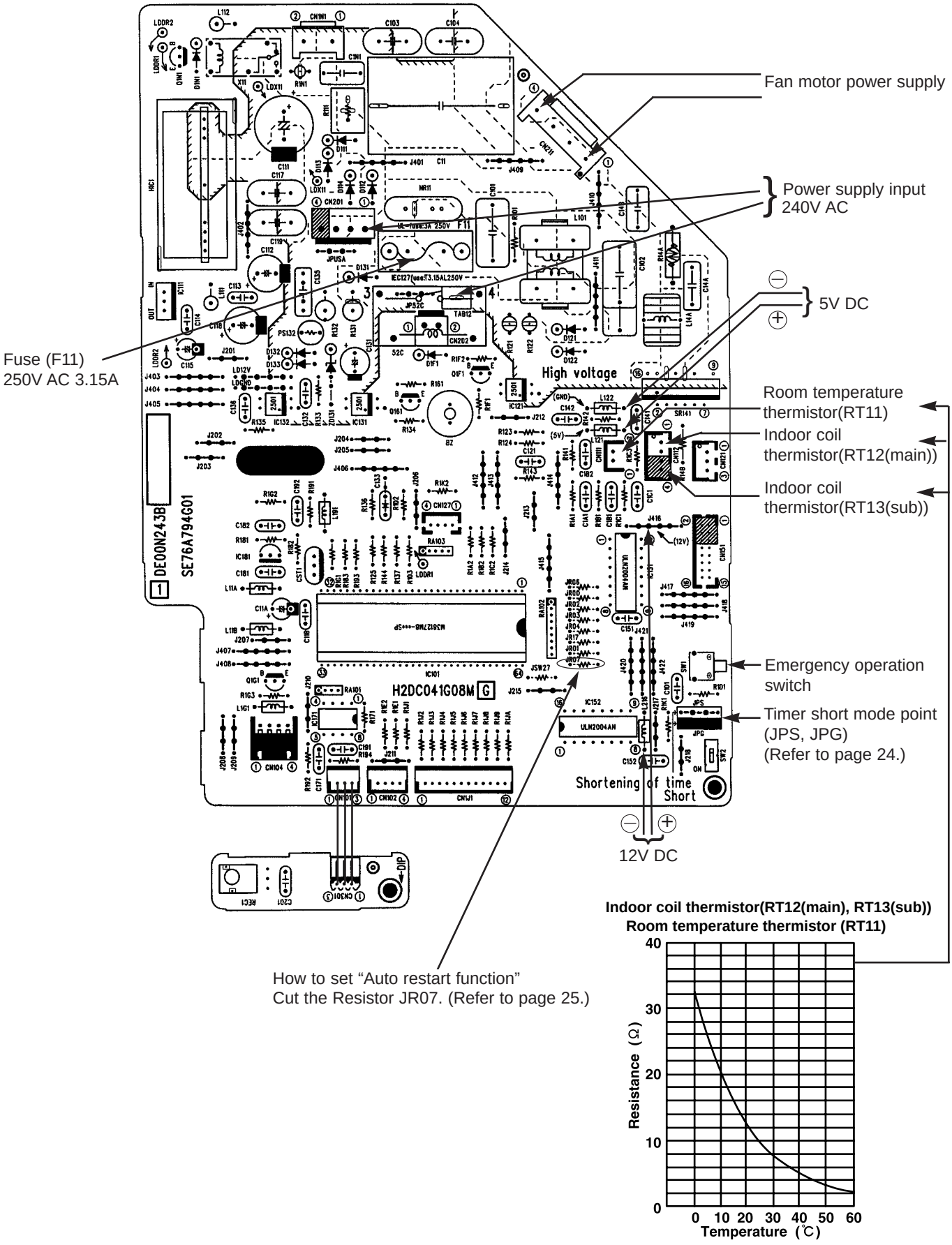
Thermistors in the outdoor unit are abnormal.

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

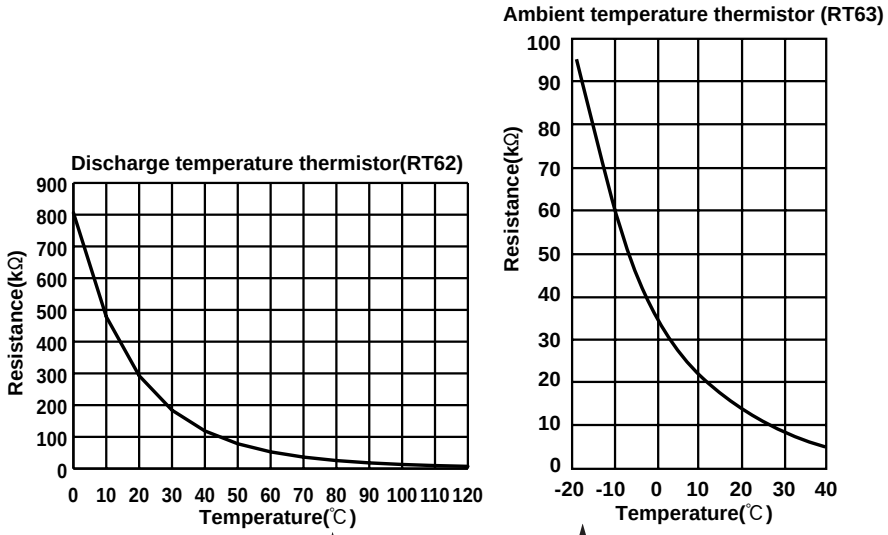


※1. It is thought defective contact of the connector.

TEST POINT DIAGRAM AND VOLTAGE
MS-30SV - A1
Indoor electronic control P.C. board



MU-30SV -A1
Outdoor deicer P.C. board



CN662 1-2
Discharge temperature thermistor (RT62)
(Refer to page 36.)

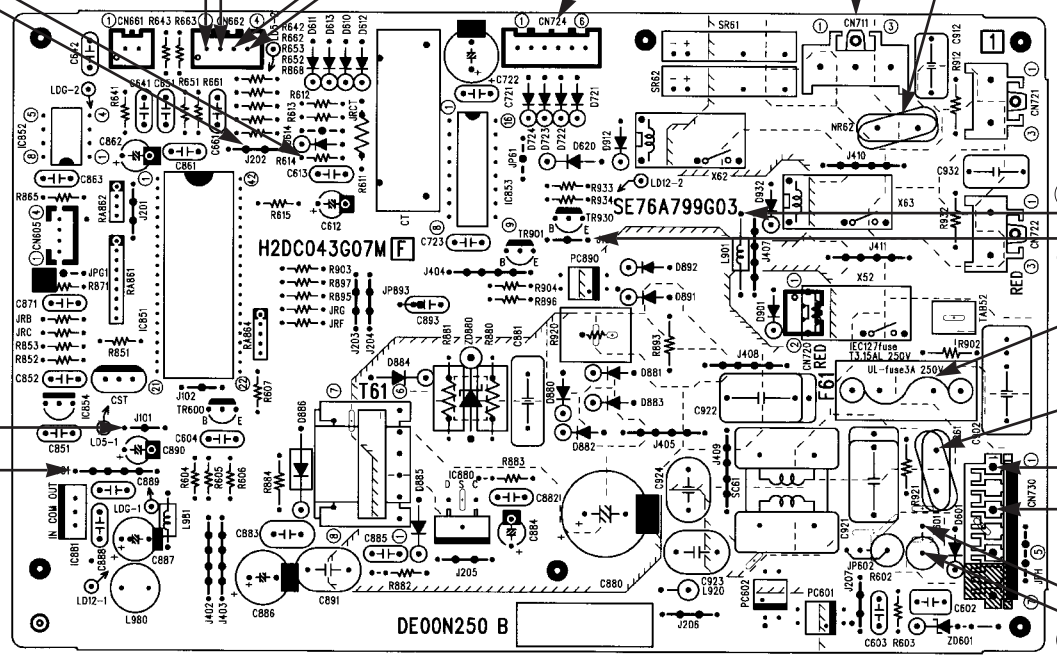
CN662 3-4
Ambient temperature thermistor (RT63)
(Refer to page 36.)

LEV connector (CN724)

Fan motor connector (CN711)

Varistor (NR62)

R614 (+)
0V DC
J202 (−)
(Refer to page 36.)



12V DC

Fuse 3.15A / 250V

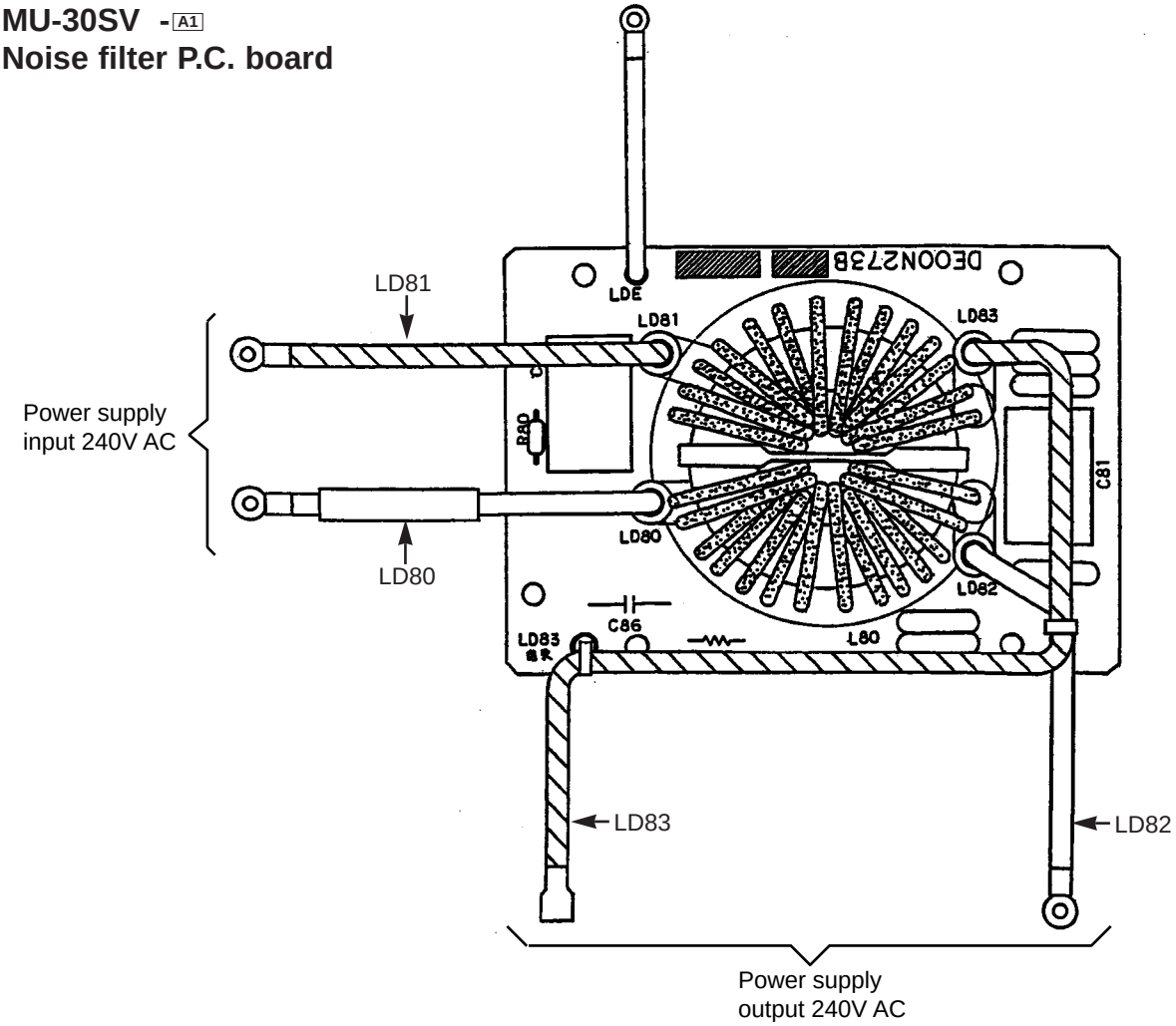
Varistor (NR61)

J101 (+)
5V DC
J401 (−)
(Refer to page 34.)

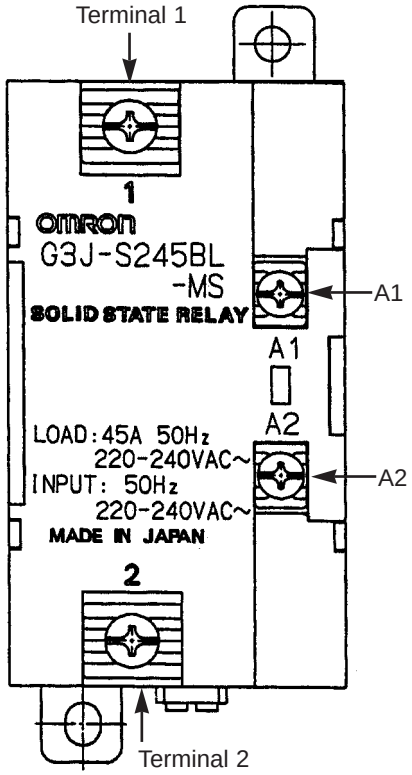
CN730 1-3
240V AC
(Refer to page 34.)

R601
10V DC
(Refer to page 34.)

MU-30SV -A1
Noise filter P.C. board



MU-30SV -A1
Soft start relay

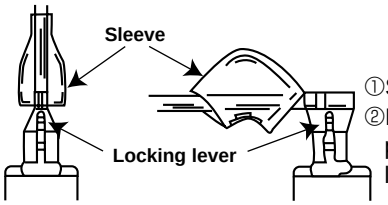


11 DISASSEMBLY INSTRUCTIONS

<"Terminal with lock mechanism" Detaching points>

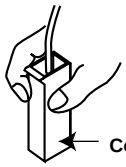
In case of terminal with lock mechanism, detach the terminal as shown below.
There are two types (Refer to (1) and (2)) of the terminal with lock mechanism.
The terminal with no lock mechanism can be removed by pulling it out.
Check the shape of the terminal and work.

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



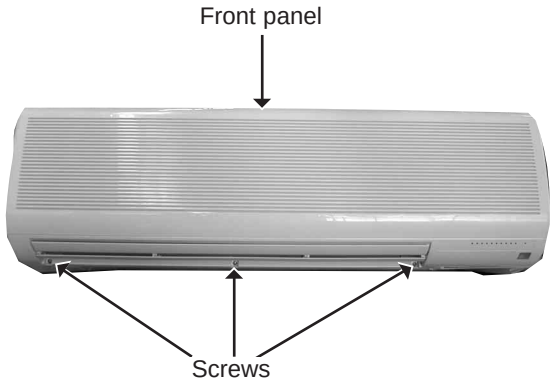
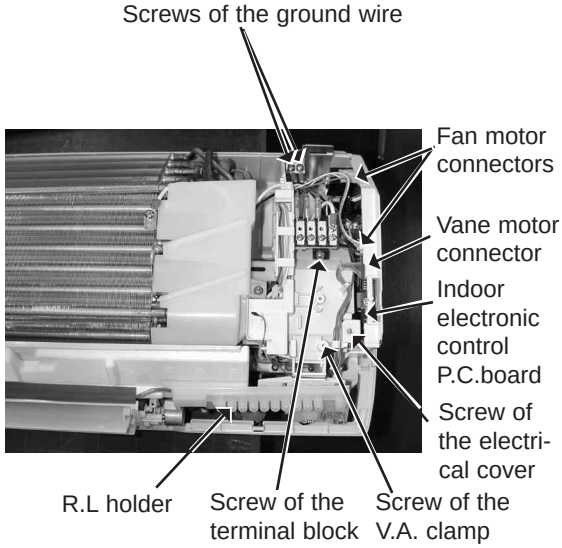
①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

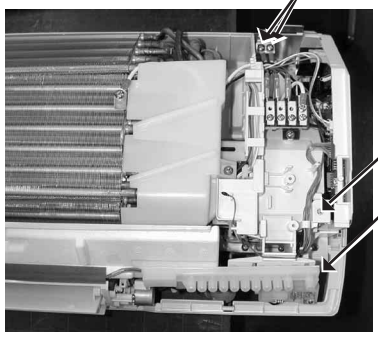
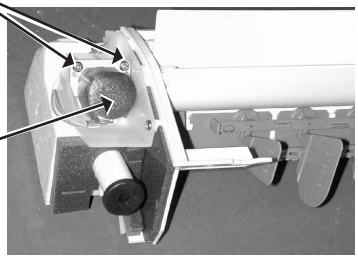
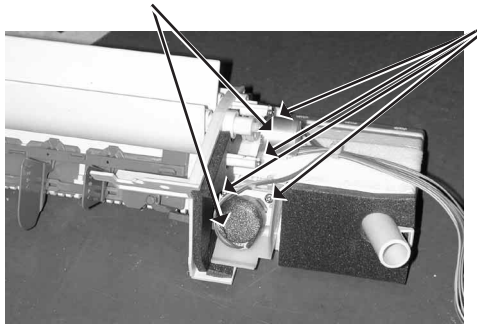
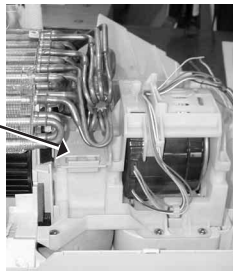
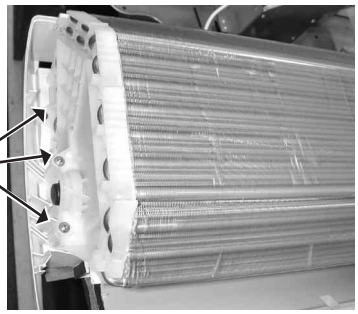
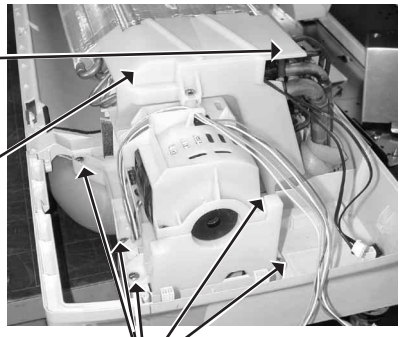
(2) The terminal with this connector is a terminal with lock mechanism



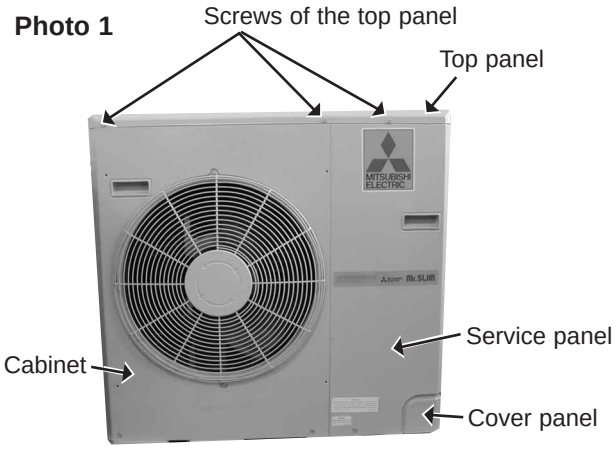
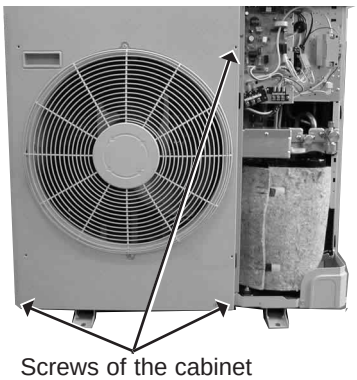
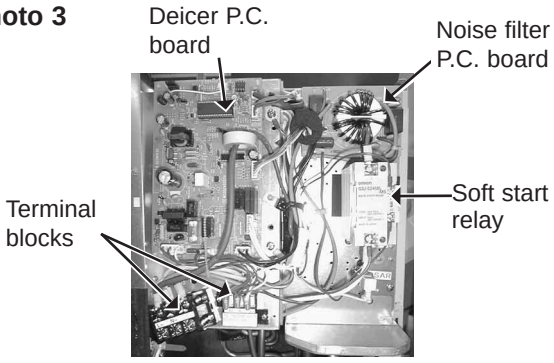
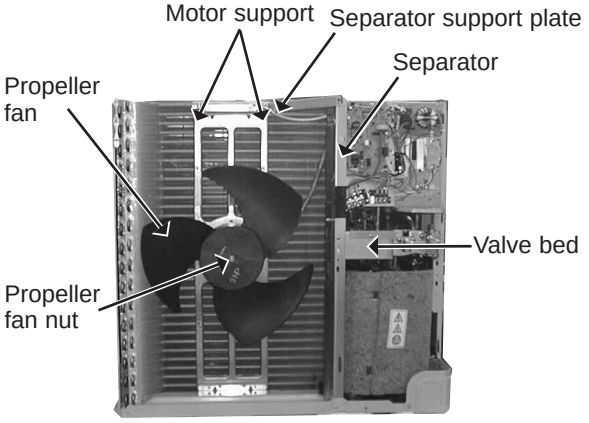
①Hold the sleeve, and pull out the terminal slowly.

11-1. MS-30SV - A1 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 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 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** Screws of the ground wire  Screw of the electrical cover Screw of the electrical box
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** Screw of the vane motor  Vane motor	**Photo 4** Vane motors Screws of the vane motor 
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** Hole cover 	**Photo 6**  Screws fixing the left side of the heat exchanger **Photo 7** Indoor coil thermistor  Water cut Screws fixing the fan motor

11-2. MU-30SV -A1
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

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.

PHOTOS

Photo 5

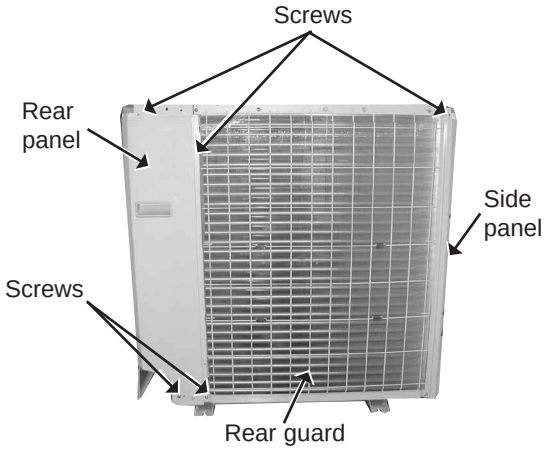


Photo 6

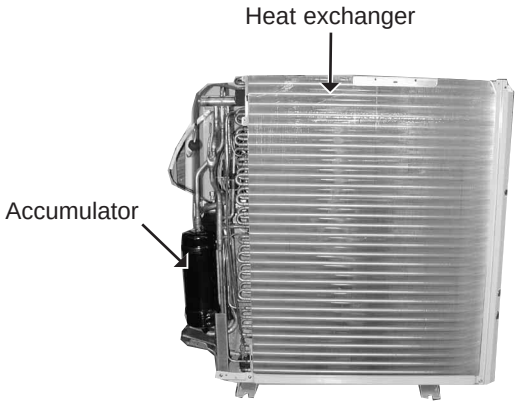
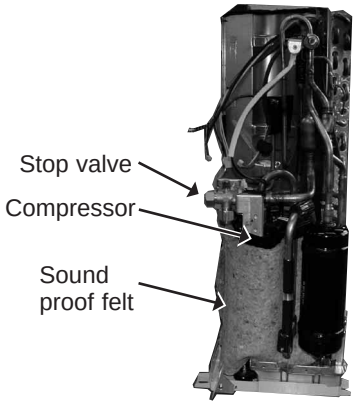


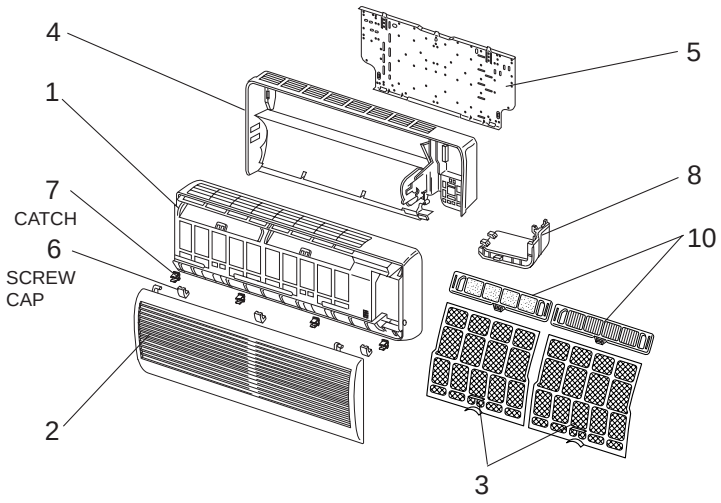
Photo 7



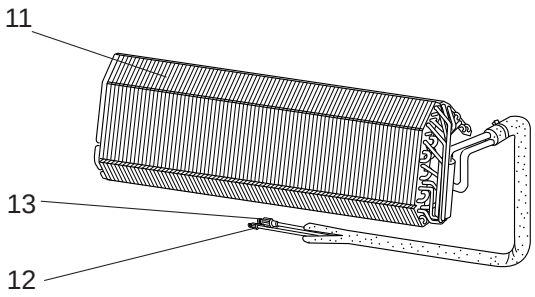
12 PARTS LIST

MS-30SV - A1 (WH)

12-1. INDOOR UNIT STRUCTURAL PARTS



12-2. INDOOR UNIT HEAT EXCHANGER



12-1. INDOOR UNIT STRUCTURAL PARTS

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

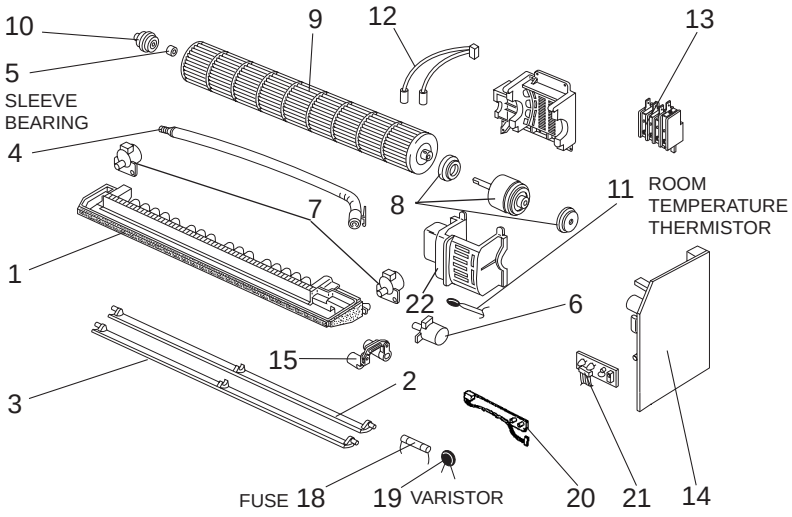
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit	Remarks
				MS-30SV- A1 (WH)	
1	E02 527 000	FRONT PANEL ASSEMBLY(WH)		1	Including No.2,6,7
2	E02 527 010	GRILLE (WH)		1	
3	E02 527 100	AIR FILTER		2	
4	E02 527 234	BOX (WH)		1	
5	E02 527 970	INSTALLATION PLATE		1	
6	E02 527 067	SCREW CAP (WH)		3	3PCS/ SET
7	E02 408 142	CATCH		4	4PCS/ SET
8	E02 527 975	CORNER BOX RIGHT (WH)		1	
⑨	E02 528 007	LAMP PANEL		1	
10	E02 527 101	FILTER		1	AIR CLEANING, DEODORIZING

12-2. INDOOR UNIT HEAT EXCHANGER

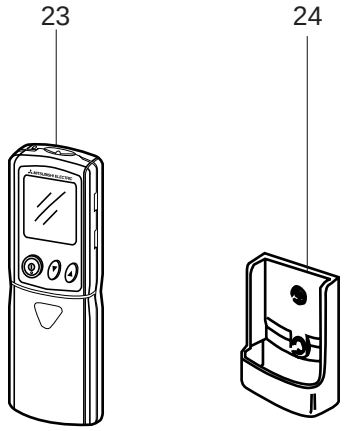
11	E02 527 620	INDOOR HEAT EXCHANGER		1	
12	E02 527 667	UNION (LIQUID)		1	ϕ9.52
13	E02 527 666	UNION (GAS)		1	ϕ15.88

MS-30SV - A1 (WH)

12-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS



12-4. ACCESSORY AND REMOTE CONTROLLER PART



12-3. INDOOR UNIT FUNCTIONAL PARTS AND ELECTRICAL PARTS

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

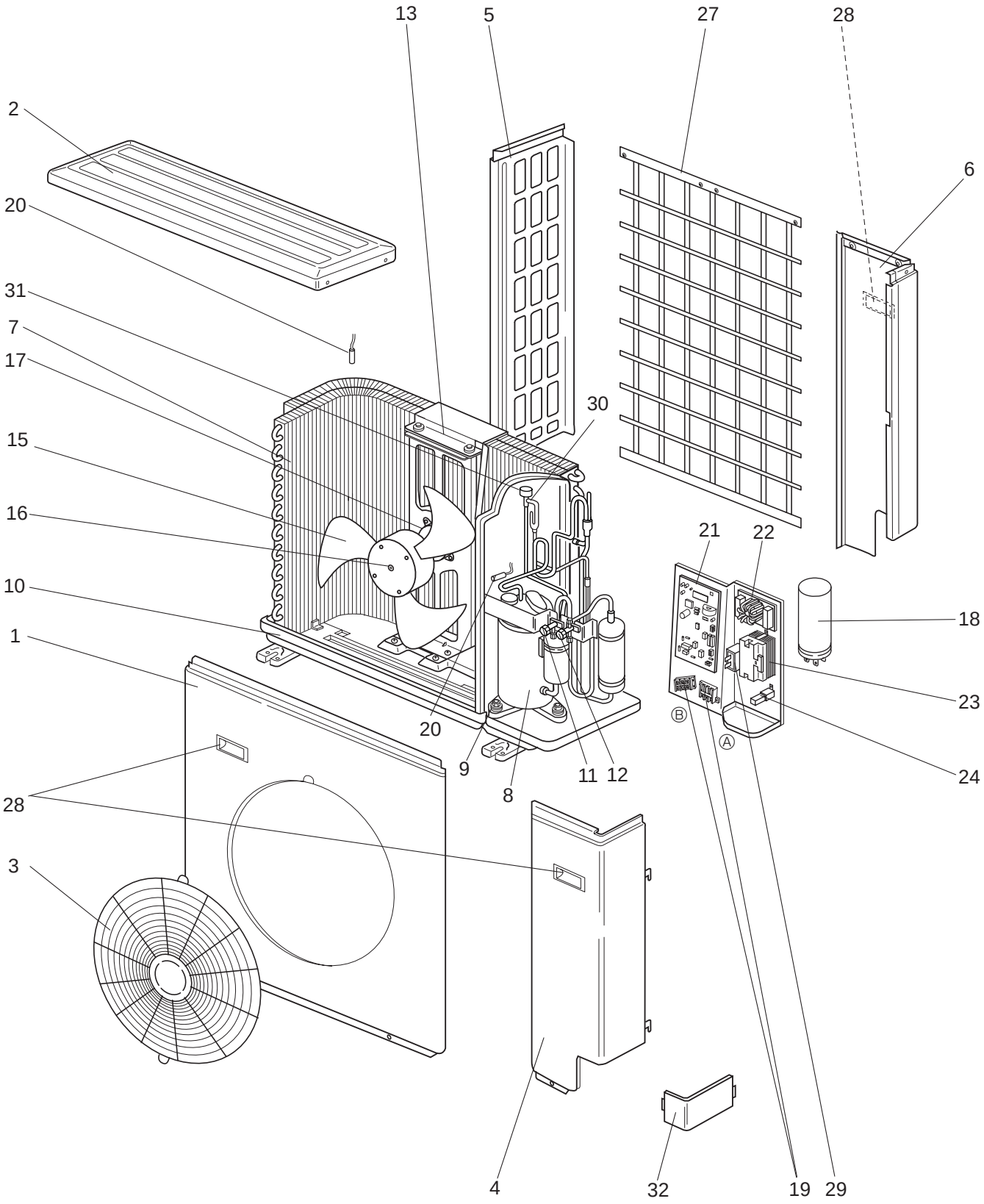
NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit MS-30SV- A1 (WH)	Remarks
1	E02 527 235	NOZZLE (WH)		1	
2	E02 527 040	VANE UPPER (WH)		1	
3	E02 527 041	VANE LOWER (WH)		1	
4	E02 408 702	DRAIN HOSE		1	
5	E02 001 504	SLEEVE BEARING		1	
6	E02 408 303	VANE MOTOR (HORIZONTAL)	MV1	1	UP & DOWN
7	E02 448 303	VANE MOTOR (VERTICAL)	MV2	2	RIGHT & LEFT
8	E02 527 300	INDOOR FAN MOTOR ASSEMBLY	MF	1	RC4V40 - □□ Including RUBBER MOUNT
9	E02 527 302	LINE FLOW FAN		1	
10	E02 408 509	BEARING MOUNT		1	
11	E02 527 308	ROOM TEMPERATURE THERMISTOR	RT11	1	
12	E02 527 307	INDOOR COIL THERMISTOR	RT12, RT13	1	
13	E02 527 375	TERMINAL BLOCK	TB	1	4P
14	E02 528 452	ELECTRONIC CONTROL P.C. BOARD		1	AUTO RESTART Including No.21
15	E02 527 034	VANE CLANK SET		1	
(16)	E02 528 034	VANE MOTOR SUPPORT SET(RIGHT)		1	
(17)	E02 529 034	VANE MOTOR SUPPORT SET(LEFT)		1	
18	E02 127 382	FUSE	F11	1	3.15A
19	E02 336 385	VARISTOR	NR11	1	
20	E02 528 329	DISPLAY P.C. BOARD		1	
21	E02 527 468	RECEIVER ASSEMBLY		1	
22	E02 527 333	MOTOR VAND		1	

12-4. ACCESSORY AND REMOTE CONTROLLER PART

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

MU-30SV - A1

12-5. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



MU-30SV -A1

12-5. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

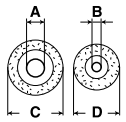
Part numbers that are circled are not shown in the illustration.

NO.	Part No.	Part Name	Symbol in Wiring Diagram	Q'ty/unit	Remarks
				MU-30SV- A1	
1	E02 214 232	CABINET		1	
2	E02 214 297	TOP PANEL		1	
3	E02 527 521	FAN GUARD		1	
4	E02 214 245	SERVICE PANEL		1	
5	E02 527 249	SIDE PANEL		1	
6	E02 214 522	REAR PANEL		1	
7	E02 527 630	OUTDOOR HEAT EXCHANGER		1	
8	E02 527 900	COMPRESSOR	MC	1	NH-56VNHT
9	E02 527 506	COMPRESSOR RUBBER SET		4	4RUBBERS/SET
10	E02 214 290	BASE		1	
11	E02 527 662	STOP VALVE(LIQUID)		1	ϕ9.52
12	E02 527 661	STOP VALVE(GAS)		1	ϕ15.88
13	E02 527 515	MOTOR SUPPORT		1	
⑭	E02 527 936	CAPILLARY TUBE		1	ϕ4.0Xϕ2.4X100
	E02 262 936	CAPILLARY TUBE		1	ϕ4.0Xϕ2.4X200
15	E07 001 501	PROPELLER FAN		1	
16	E07 070 508	PROPELLER FAN NUT		1	
17	E02 527 301	OUTDOOR FAN MOTOR	MF	1	RA6V75-□□
18	E02 177 353	COMPRESSOR CAPACITOR	C1	1	60μF/420VAC
19	E02 527 374	TERMINAL BLOCK	TB1	1	3P (FIGURE Ⓐ)
	E02 528 374	TERMINAL BLOCK	TB2	1	3P (FIGURE Ⓑ)
20	E02 528 309	THERMISTOR	RT62, 63	1	DISCHARGE, AMBIENT
21	E02 528 451	DEICER P.C. BOARD		1	
22	E02 528 444	NOISE FILTER P.C. BOARD		1	
23	E02 528 340	SOFT START RELAY	52C	1	
24	E02 128 383	SURGE ABSORBER	DSAR	1	
㉕	E02 127 382	FUSE	F61	1	3.15A
㉖	E02 336 385	VARISTOR	NR61	1	
27	E07 003 523	REAR GUARD		1	
28	E07 001 009	HANDLE		3	
29	E02 064 351	OUTDOOR FAN CAPACITOR	C2	1	4.0μF/440VAC
30	E02 527 640	EXPANSION VALVE		1	
31	E02 528 493	EXPANSION VALVE COIL	LEV	1	
32	E07 001 006	COVER PANEL		1	

13 OPTIONAL PARTS

13-1. REFRIGERANT PIPES

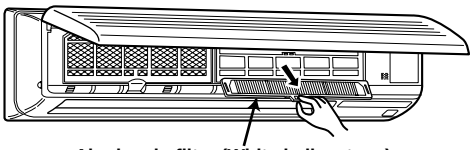
The air conditioner has flared connections its indoor and outdoor sides.
Please use the optional extension pipe as follows.

Model	Part No.	Pipe length	Pipe size O.D mm (in.)					Additional refrigerant charge R-22(g)
			Cross-section	A-Gas	B-Liquid	Insulation		
						C	D	
MS-30SV- A1	MAC-860PIE	3m		15.88 (5/8)	9.52(3/8)	31	27	0
	MAC-861PIE	5m						
	MAC-862PIE	7m						
	MAC-863PIE	10m						45
	MAC-864PIE	15m						120

13-2. 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-30SV - A1	MAC-1700FT

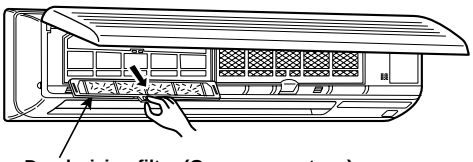


Air cleanig filter (White bellow type)

13-3. 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-30SV - A1	MAC-2200DF



Deodorizing filter (Gray sponge type)

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

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