

TECHNICAL & SERVICE MANUAL



SAP-KMV91G × 3 + SAP-CMV2441G
SAP-KMV181G

or

SAP-KMV91G × 4 + SAP-CMV2441G

FILE NO.

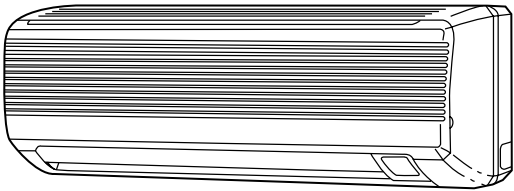
Destination: General (50Hz)

INVERTER MULTI-SPLIT SYSTEM AIR CONDITIONER

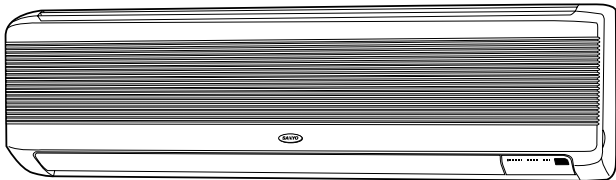
Indoor Model No.	Product Code No.
SAP-KMV91G-S	1 852 066 82
SAP-KMV181G-S	1 852 066 83

Outdoor Model No.	Product Code No.
SAP-CMV2441G	1 852 066 84

Indoor Unit



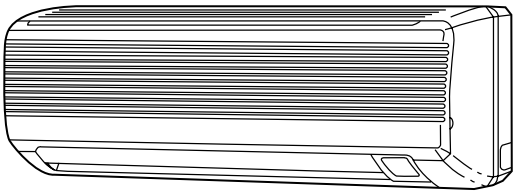
SAP-KMV91G × 3



SAP-KMV181G



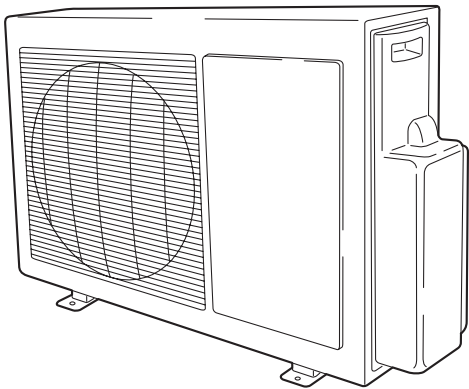
or



SAP-KMV91G × 4



Outdoor Unit



SAP-CMV2441G

REFERENCE NO. SM700420



IMPORTANT!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.



WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING When Wiring



ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Ceiling or Wall

Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.

...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

Others



CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm upon completing installation that no refrigerant gas is leaking. If escaped gas comes in contact with a stove, gas water heater, electric room heater or other heat source, it can produce dangerously toxic gas.

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■ UNIT COMBINATION

Combine indoor and outdoor units only as listed below.

Outdoor Unit	Indoor Unit	Symbol of Indoor Unit	Refer to
SAP-CMV2441G	SAP-KMV91G	A to C	Fig. 1
	SAP-KMV181G	D	

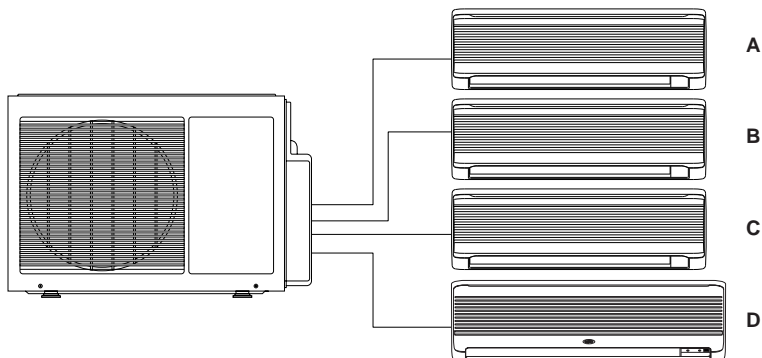


Fig. 1

Outdoor Unit	Indoor Unit	Symbol of Indoor Unit	Refer to
SAP-CMV2441G	SAP-KMV91G	A to D	Fig. 2

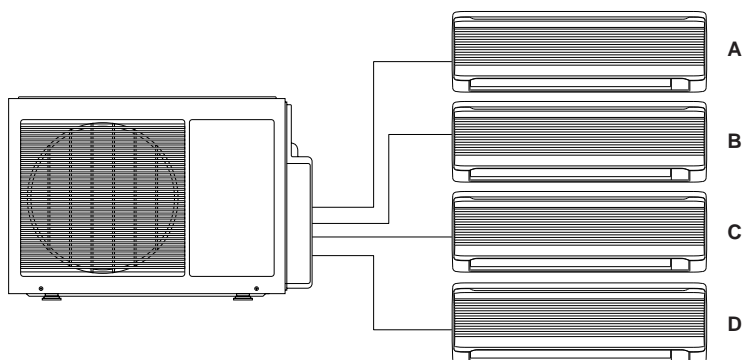


Fig. 2

1. OPERATING RANGE

	Temperature	Indoor Air Intake Temp.	Outdoor Air Intake Temp.
Cooling	Maximum	32°C D.B. / 23°C W.B.	43°C D.B.
	Minimum	19°C D.B. / 14°C W.B.	19°C D.B.

2. SPECIFICATIONS

2-1. Specifications in Combination with Indoor Units

2-1-1. At 220V

91: SAP-KMV91G 181: SAP-KMV181G

NOTE Refer to “8-4. Setting for Electric Current Suppressor” for switching between FREE/11/8.5A.

■ Free

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	360	1020	1300	2.2	5.8	7.0
181	—	—	—	5.20	1.00	5.20	5.60	420	2070	2490	2.4	10.5	12.4
91 × 2	2.55	2.55	—	—	1.20	5.10	5.40	400	2020	2340	2.3	10.3	11.7
91 + 181	2.10	—	—	4.40	1.40	6.50	6.90	450	2570	3190	2.5	12.8	15.7
91 × 3	2.15	2.15	2.15	—	1.50	6.45	6.90	430	2420	3180	2.4	12.2	15.8
91 × 2 + 181	1.70	1.70	—	3.50	2.30	6.90	7.50	610	2370	3270	3.5	11.9	16.2
91 × 4	1.75	1.75	1.75	1.75	2.20	7.00	7.60	600	2450	3300	3.4	12.3	16.2
91 × 3 + 181	1.45	1.45	1.45	2.85	3.30	7.20	8.00	870	2310	3390	5.1	11.6	16.8

■ 11A

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	360	1020	1300	2.2	5.8	7.0
181	—	—	—	5.20	1.00	5.20	5.30	420	2070	2200	2.4	10.5	11.0
91 × 2	2.55	2.55	—	—	1.20	5.10	5.20	400	2020	2150	2.3	10.3	11.0
91+181	1.90	—	—	4.00	1.40	5.90	5.90	450	2210	2210	2.5	11.0	11.0
91 × 3	1.95	1.95	1.95	—	1.50	5.85	5.85	430	2200	2200	2.4	11.0	11.0
91 × 2 + 181	1.60	1.60	—	3.30	2.30	6.50	6.50	610	2220	2220	3.5	11.0	11.0
91 × 4	1.60	1.60	1.60	1.60	2.20	6.40	6.40	600	2220	2220	3.4	11.0	11.0
91 × 3 + 181	1.30	1.30	1.30	2.60	3.30	6.50	6.50	870	2170	2170	5.1	11.0	11.0

■ 8.5A

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	360	1020	1300	2.2	5.8	7.0
181	—	—	—	4.40	1.00	4.40	4.40	420	1640	1640	2.4	8.5	8.5
91 × 2	2.10	2.10	—	—	1.20	4.20	4.20	400	1650	1650	2.3	8.5	8.5
91+181	1.65	—	—	3.35	1.40	5.00	5.00	450	1670	1670	2.5	8.5	8.5
91 × 3	1.65	1.65	1.65	—	1.50	4.95	4.95	430	1660	1660	2.4	8.5	8.5
91 × 2 + 181	1.40	1.40	—	2.75	2.30	5.55	5.55	610	1670	1670	3.5	8.5	8.5
91 × 4	1.35	1.35	1.35	1.35	2.20	5.40	5.40	600	1670	1670	3.4	8.5	8.5
91 × 3 + 181	1.10	1.10	1.10	2.20	3.30	5.50	5.50	870	1630	1630	5.1	8.5	8.5

2-1-2. At 230V

91: SAP-KMV91G 181: SAP-CMV2441G

NOTE Refer to “8-4. Setting for Electric Current Suppressor” for switching between FREE/11/8.5A.

■ Free

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	380	1070	1360	2.2	5.9	7.1
181	—	—	—	5.20	1.00	5.20	5.60	430	2120	2550	2.4	10.3	12.2
91 × 2	2.55	2.55	—	—	1.20	5.10	5.40	410	2080	2410	2.3	10.2	11.6
91 + 181	2.10	—	—	4.40	1.40	6.50	6.90	450	2570	3190	2.4	12.4	15.2
91 × 3	2.15	2.15	2.15	—	1.50	6.45	6.90	430	2430	3190	2.3	11.7	15.2
91 × 2 + 181	1.70	1.70	—	3.50	2.30	6.90	7.50	620	2400	3310	3.4	11.6	15.8
91 × 4	1.75	1.75	1.75	1.75	2.20	7.00	7.60	600	2450	3300	3.3	11.9	15.7
91 × 3 + 181	1.45	1.45	1.45	2.85	3.30	7.20	8.00	890	2360	3460	5.0	11.4	16.5

■ 11A

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	380	1070	1360	2.2	5.9	7.1
181	—	—	—	5.20	1.00	5.20	5.30	430	2120	2250	2.4	10.3	11.0
91 × 2	2.55	2.55	—	—	1.20	5.10	5.20	410	2080	2200	2.3	10.2	11.0
91 + 181	1.90	—	—	4.00	1.40	5.90	5.90	450	2210	2210	2.4	11.0	11.0
91 × 3	1.95	1.95	1.95	—	1.50	5.85	5.85	430	2210	2210	2.3	11.0	11.0
91 × 2 + 181	1.60	1.60	—	3.30	2.30	6.50	6.50	620	2250	2250	3.4	11.0	11.0
91 × 4	1.60	1.60	1.60	1.60	2.20	6.40	6.40	600	2220	2220	3.3	11.0	11.0
91 × 3 + 181	1.30	1.30	1.30	2.60	3.30	6.50	6.50	890	2210	2210	5.0	11.0	11.0

■ 8.5A

Combination of indoor unit	Indoor capacity (kW)				Total cooling capacity (kW)			Total power input (W)			Total current (A)		
					Min	ST	Max	Min	ST	Max	Min	ST	Max
91	2.60	—	—	—	0.80	2.60	2.90	380	1070	1360	2.2	5.9	7.1
181	—	—	—	4.40	1.00	4.40	4.40	430	1680	1680	2.4	8.5	8.5
91 × 2	2.10	2.10	—	—	1.20	4.20	4.20	410	1700	1700	2.3	8.5	8.5
91 + 181	1.65	—	—	3.35	1.40	5.00	5.00	450	1670	1670	2.4	8.5	8.5
91 × 3	1.65	1.65	1.65	—	1.50	4.95	4.95	430	1670	1670	2.3	8.5	8.5
91 × 2 + 181	1.40	1.40	—	2.75	2.30	5.55	5.55	620	1690	1690	3.4	8.5	8.5
91 × 4	1.35	1.35	1.35	1.35	2.20	5.40	5.40	600	1670	1670	3.3	8.5	8.5
91 × 3 + 181	1.10	1.10	1.10	2.20	3.30	5.50	5.50	890	1660	1660	5.0	8.5	8.5

2-2. Unit Specifications

NOTE

The following are the specifications with the electric current suppressor set to "FREE." (Please refer to 8-4 for details)

Indoor unit **SAP-KMV91G**
Outdoor unit **SAP-CMV2441G**

No. of Indoor Units				1-unit type	
Power Source				220 – 230V ~ 50Hz	
Performance				Cooling	
	Capacity		kW	2.6 (0.8 – 2.9)	
				BTU/h	8,900 (2,700 – 9,900)
	Air circulation (High)		m ³ /h	430	
Moisture removal (High)		Liters/h	1.3		
Electrical Rating	Voltage rating		V	230	
	Available voltage range		V	198 – 253	
	Running amperes		A	5.9 (2.2 – 7.1)	
	Power input		W	1,070 (380 – 1,360)	
	Power factor		%	79	
	C.O.P.		W/W	2.4	
	Compressor locked rotor amperes		A	23	
Features	Controls / Temperature control			Microprocessor / I.C. thermostat	
	Control unit			Wireless remote control unit	
	Timer			ON/OFF 24-hours & Daily program, 1-hour OFF	
	Fan speeds		Indoor / Outdoor	3 and Auto / Auto (Variable)	
	Airflow direction (Indoor)	Horizontal		Manual	
		Vertical		Auto	
	Air filter			Washable, Anti-mold	
	Compressor			Rotary (Hermetic)	
	Refrigerant / Amount charged at shipment		g	R22 / 2,500	
	Refrigerant control			Electrical expansion valve	
	Operation sound	Indoor – Hi / Me / Lo	dB-A	39 / 35 / 31	
		Outdoor – Hi	dB-A	47	
	Refrigerant tubing connections			Flare type	
	Max. allowable tubing length at shipment		m	20	
	Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)	
		Wide tube	mm (in.)	12.7 (1/2)	
Refrigerant tube kit / Accessories			Optional / Hanging wall bracket		
Dimensions & Weight				Indoor unit	Outdoor unit
	Unit dimensions	Height	mm	250	625
		Width	mm	790	880
		Depth	mm	174	295
	Package dimensions	Height	mm	242	699
		Width	mm	850	1,126
		Depth	mm	312	401
	Weight	Net	kg	7.0	63.0
		Shipping	kg	10.0	68.0
	Shipping volume		m ³	0.063	0.316

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV181G**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units				1-unit type	
Power Source				220 – 230V ~ 50Hz	
Performance	Capacity	kW		Cooling	
		BTU/h		5.2 (1.0 – 5.6)	
	Air circulation (High)	m ³ /h		17,700 (3,400 – 19,100)	
	Moisture removal (High)	Liters/h		780	
Electrical Rating			V	2.7	
	Voltage rating		V	230	
	Available voltage range		A	198 – 253	
	Running amperes		W	10.3 (2.4 – 12.2)	
	Power input		%	2,120 (430 – 2,550)	
	Power factor		W/W	90	
	C.O.P.		A	2.5	
Features	Compressor locked rotor amperes			23	
	Controls / Temperature control			Microprocessor / I.C. thermostat	
	Control unit			Wireless remote control unit	
	Timer			ON/OFF 24-hours & Daily program, 1-hour OFF	
	Fan speeds		Indoor / Outdoor	3 and Auto / Auto (Variable)	
	Airflow direction (Indoor)	Horizontal		Manual	
		Vertical		Auto	
	Air filter			Washable, Anti-mold + Air clean filter	
	Compressor			Rotary (Hermetic)	
	Refrigerant / Amount charged at shipment		g	R22 / 2,500	
	Refrigerant control			Electrical expansion valve	
	Operation sound	Indoor – Hi / Me / Lo	dB-A	41 / 39 / 36	
		Outdoor – Hi	dB-A	47	
	Refrigerant tubing connections			Flare type	
	Max. allowable tubing length at shipment		m	20	
	Refrigerant tube diameter	Narrow tube	mm (in.)	6.35 (1/4)	
		Wide tube	mm (in.)	9.52 (3/8)	
	Refrigerant tube kit / Accessories			Optional / Hanging wall bracket	
Dimensions & Weight				Indoor unit	Outdoor unit
	Unit dimensions	Height	mm	285	625
		Width	mm	995	880
		Depth	mm	196	295
	Package dimensions	Height	mm	363	699
		Width	mm	1,070	1,126
		Depth	mm	276	401
	Weight	Net	kg	12.0	63.0
		Shipping	kg	15.0	68.0
	Shipping volume		m ³	0.108	0.316

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G × 2**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			2-unit type
Power Source			220 – 230V ~ 50Hz
Performance	Capacity	kW	Cooling 5.1 (1.2 – 5.4)
		BTU/h	17,400 (4,090 – 18,400)
	Air circulation (High)		m ³ /h 860
	Moisture removal (High)		Liters/h 2.6
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 10.2 (2.3 – 11.6)
	Power input		W 2,080 (410 – 2,410)
	Power factor		% 89
	C.O.P.		W/W 2.5
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G + KMV181G**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			2-unit type
Power Source			220 – 230V ~ 50Hz
Performance	Capacity	kW	Cooling 6.5 (1.4 – 6.9)
		BTU/h	22,200 (4,800 – 23,500)
	Air circulation (High)		m ³ /h 1,210
	Moisture removal (High)		Liters/h 4.0
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 12.4 (2.4 – 15.2)
	Power input		W 2,570 (450 – 3,190)
	Power factor		% 90
	C.O.P.		W/W 2.5
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G × 3**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			3-unit type
Power Source			220 – 230V ~ 50Hz
Performance	Capacity	kW	Cooling 6.45 (1.5 – 6.9)
		BTU/h	22,000 (5,100 – 23,500)
	Air circulation (High)		m ³ /h 1,290
	Moisture removal (High)		Liters/h 3.9
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 11.7 (2.3 – 15.2)
	Power input		W 2,430 (430 – 3,190)
	Power factor		% 90
	C.O.P.		W/W 2.7
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G × 2 + KMV181G**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			3-unit type
Power Source			220 – 230V ~ 50Hz
Performance	Capacity	kW	Cooling 6.9 (2.3 – 7.5)
		BTU/h	23,500 (7,800 – 25,600)
	Air circulation (High)		m ³ /h 1,640
	Moisture removal (High)		Liters/h 5.3
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 11.6 (3.4 – 15.8)
	Power input		W 2,400 (620 – 3,310)
	Power factor		% 90
	C.O.P.		W/W 2.9
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G × 4**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			4-unit type
Power Source			220 – 230V ~ 50Hz
Performance			Cooling
	Capacity	kW	7.0 (2.2 – 7.6)
		BTU/h	23,900 (7,500 – 25,900)
	Air circulation (High)		m ³ /h 1,720
	Moisture removal (High)		Liters/h 5.2
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 11.9 (3.3 – 15.7)
	Power input		W 2,450 (600 – 3,300)
	Power factor		% 90
	C.O.P.		W/W 2.9
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

Indoor unit **SAP-KMV91G × 3 + KMV181G**
 Outdoor unit **SAP-CMV2441G**

No. of Indoor Units			4-unit type
Power Source			220 – 230V ~ 50Hz
Performance			Cooling
	Capacity	kW	7.2 (3.3 – 8.0)
		BTU/h	24,600 (11,300 – 27,300)
	Air circulation (High)		m ³ /h 2,070
	Moisture removal (High)		Liters/h 6.6
Electrical Rating	Voltage rating		V 230
	Available voltage range		V 198 – 253
	Running amperes		A 11.4 (5.0 – 16.5)
	Power input		W 2,360 (890 – 3,460)
	Power factor		% 90
	C.O.P.		W/W 3.1
	Compressor locked rotor amperes		A —

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Remarks: Rating conditions are:

Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.

Outdoor air temperature 35°C D.B. / 24°C W.B.

2-3. Major Component Specifications

Indoor unit **SAP-KMV91G**

Controller PCB	Part No.	POW-KMV91G	
	Controls	Microprocessor	
	Control circuit fuse	250V – 3.15A	
Remote Control Unit		RCS-1MPS4E	
Fan & Fan Motor	Type	Cross-flow	
	Q'ty ... Dia. and Length	mm	1 ... ø95 / L617
	Fan motor model ... Q'ty	UF4-21B5PA-S ... 1	
	No. of poles ... rpm (230V, High)	4 ... 1,350	
	Nominal output	W	20
	Coil resistance (Ambient temp. 20°C)	Ω	BRN – WHT: 402 PNK – WHT: 506
	Run capacitor	μF	—
		VAC	—

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor unit **SAP-KMV181G**

Controller PCB	Part No.	POW-KMV181G	
	Controls	Microprocessor	
	Control circuit fuse	250V – 3.15A	
Remote Control Unit		RCS-1MPS4E	
Fan & Fan Motor	Type	Cross-flow	
	Q'ty ... Dia. and Length	mm	1 ... ø88 / L617
	Fan motor model ... Q'ty	UF2-31A5P-S ... 1	
	No. of poles ... rpm (230V, High)	2 ... 1,440	
	Nominal output	W	30
	Coil resistance (Ambient temp. 20°C)	Ω	BRN – WHT: 130 WHT – PNK: 170
	Run capacitor	μF	2.0
		VAC	440

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor unit **SAP-CMV2441G**

Controller PCB	Part No.	POW-CMV2441G (B)	
	Control circuit fuse	250V – 3A	
Compressor	Type	Rotary (hermetic)	
	Compressor model ... Q'ty	C-7RV113H0W ... 1 / 80831080	
	Nominal output	W	700
	Compressor oil ... Amount	cc	SUNISO 4GSD-T ... 600
	Coil resistance (Ambient temp. 25°C)	Ω	C – R: 0.684 C – S: 0.686
	Run capacitor ... Q'ty	μF	—
		VAC	—
Fan & Fan Motor	Type	Propeller	
	Q'ty ... Dia.	mm	1 ... ø400
	Fan motor model ... Q'ty	KFG6S-41B5P ... 1	
	No. of poles ... rpm (230V, High)	6 ... 720	
	Nominal output	W	40
	Coil resistance	Ω	WHT – BRN: 150 WHT – YEL: 89 YEL – PNK: 166
		μF	2.0
		VAC	440

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-4. Other Component Specifications

Indoor unit **SAP-KMV91G and SAP-KMV181G**

Thermistor (Coil sensor)	DTN-TKS150Y
Resistance kΩ	25°C 58.3

Thermistor (Room sensor)	DTN-TKS150Y
Resistance kΩ	25°C 5.0±3%

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor unit **SAP-CMV2441G**

Thermistor (Air sensor)	PBC-41E-S14
Resistance kΩ	0°C 15

Thermistor (Compressor sensor)	PTC-51H-S1
Resistance kΩ	50°C 20

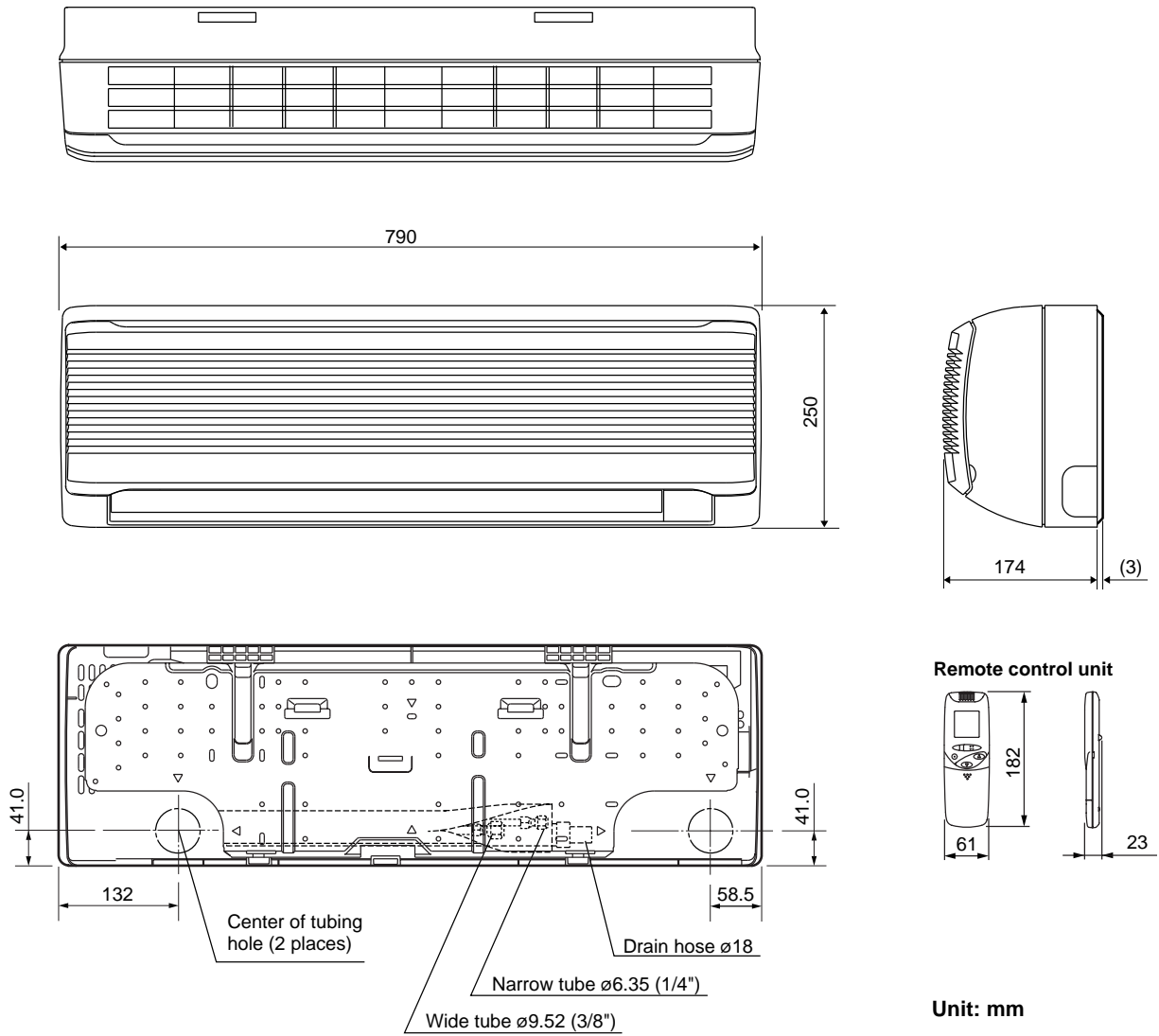
Thermistor (Electric exp. valve sensor)	PBC-41E-S25
Resistance kΩ	0°C 15

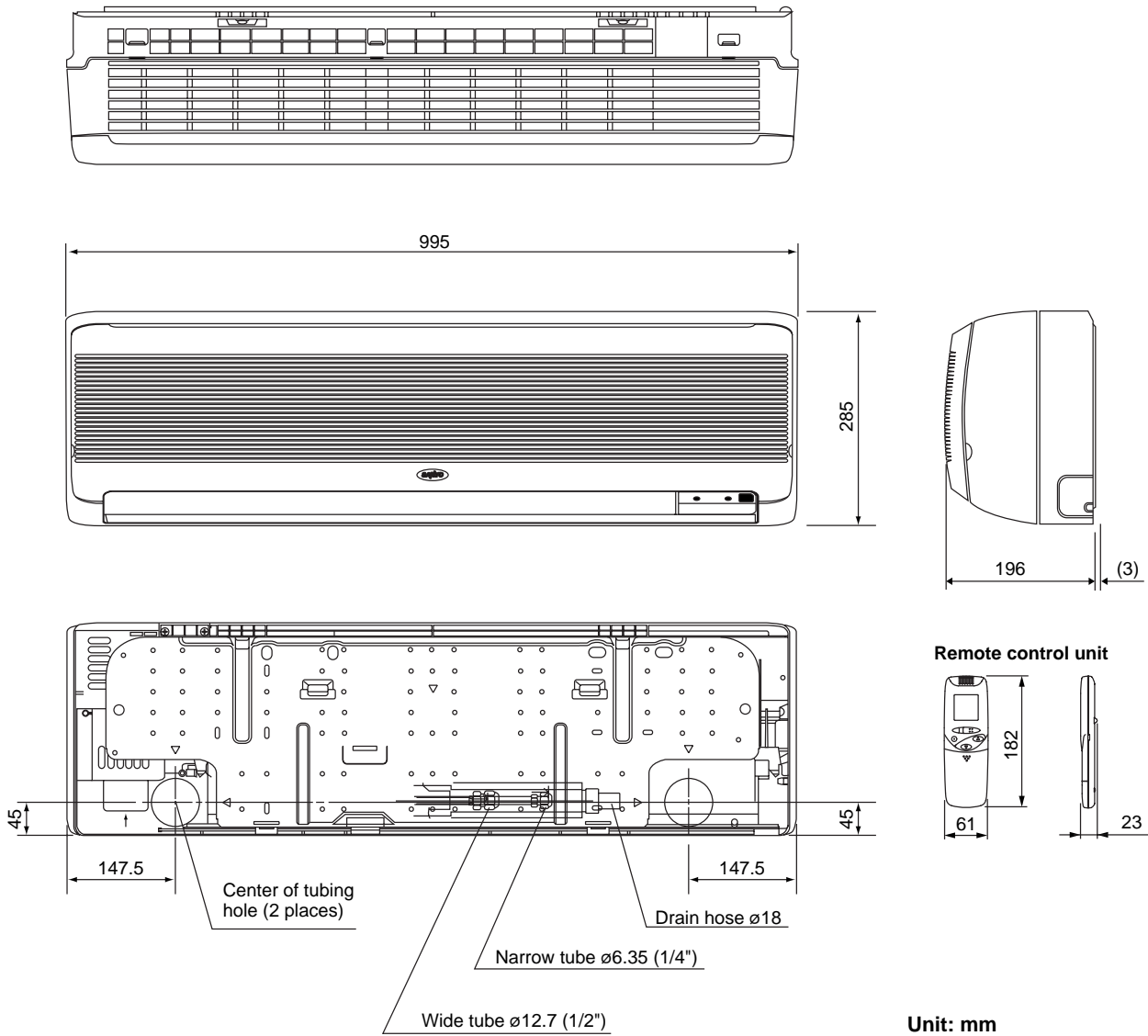
PTC Thermistor (TH)	912X24E400XR-A
Resistance Ω (at 25°C)	40

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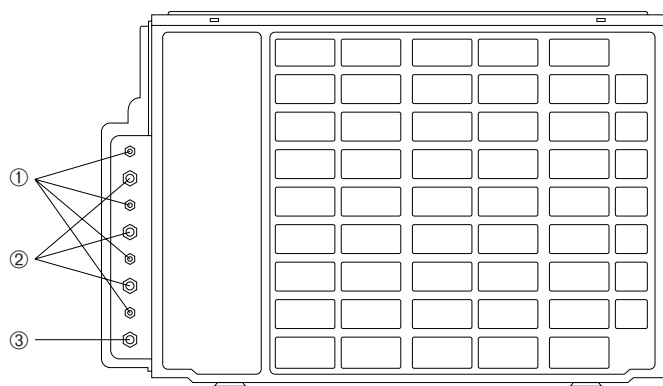
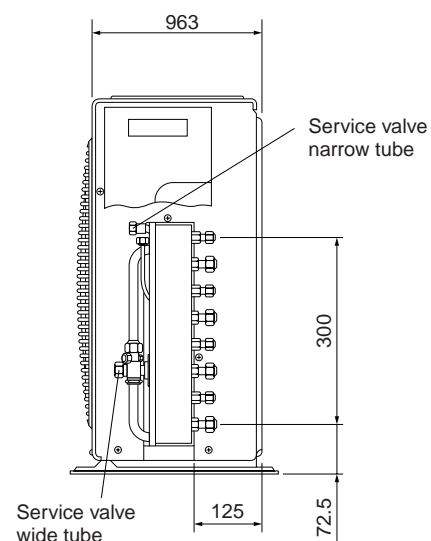
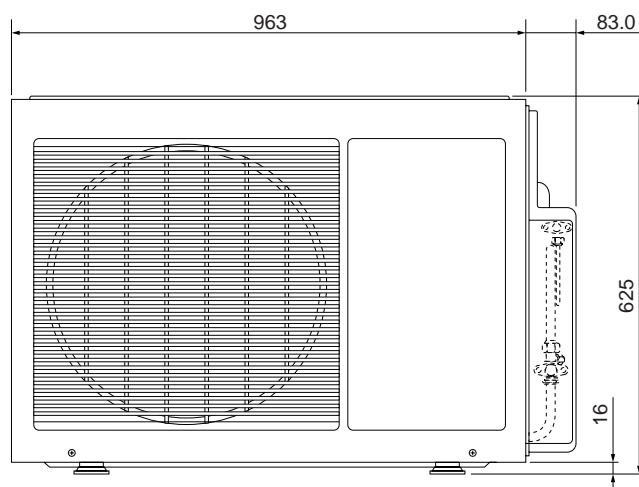
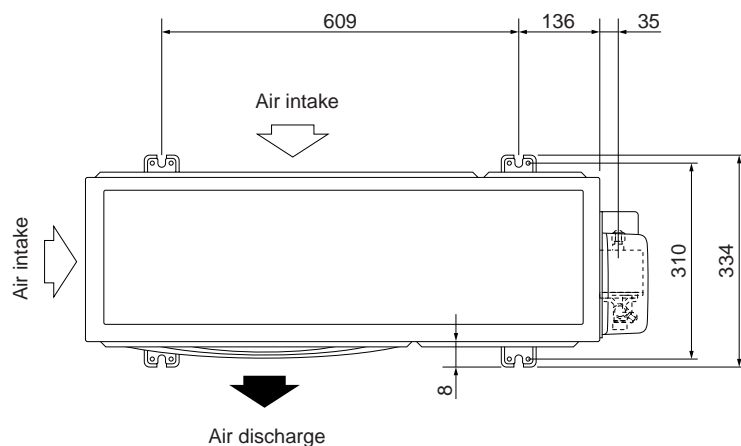
3. DIMENSIONAL DATA

Indoor unit **SAP-KMV91G**

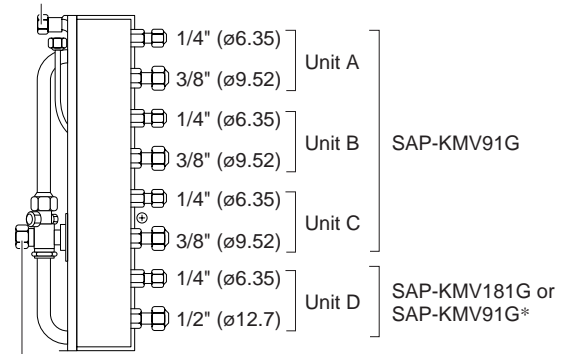




Outdoor unit **SAP-CMV2241G**



Service valve narrow tube



Service valve wide tube

* A tube joint (ø12.7 to 9.52) is needed when SAP-KMV91G is installed. Please consult your dealer or installer.

- ① Narrow tube service valve
4-ø6.35 (1/4")
- ② Wide tube service valve
3-ø9.52 (3/8")
- ③ Wide tube service valve
1-ø12.7 (1/2")

Unit: mm

4. FREQUENCY CHARTS

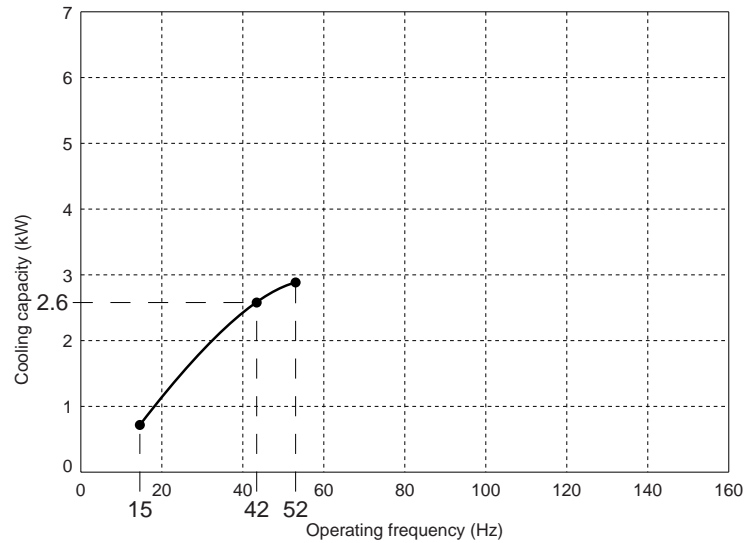
4-1. Cooling Capacity

Indoor unit **SAP-KMV91G and SAP-KMV181G**

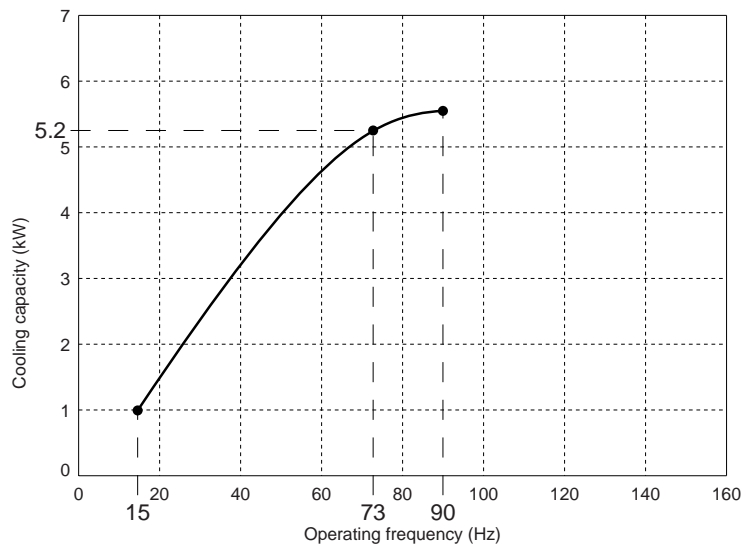
Outdoor unit **SAP-CMV2441G**

■ Single-unit operation

SAP-KMV91G



SAP-KMV181G

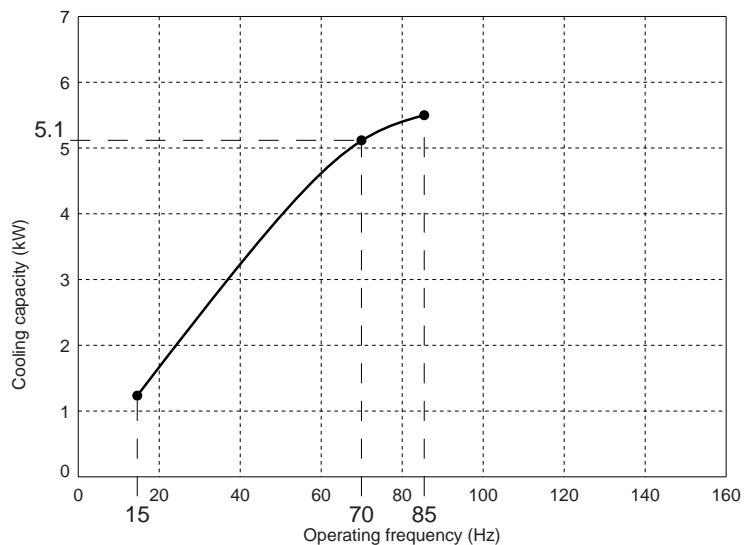


NOTE

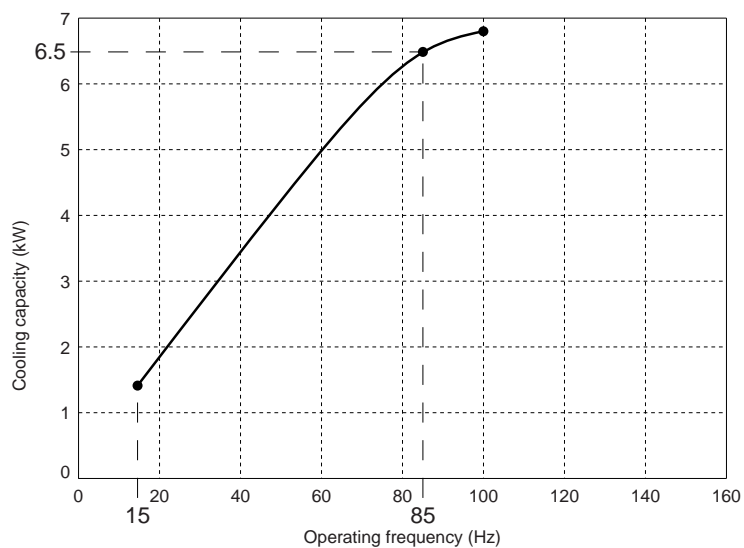
- 1) Rating conditions in cooling and heating mode are:
Cooling Indoor: 27°C D.B. / 19°C W.B.
Outdoor: 35°C D.B. / 24°C W.B.
- 2) Fan speed: High

■ Two-unit operation

SAP-KMV91G × 2



SAP-KMV91G + SAP-KMV181G

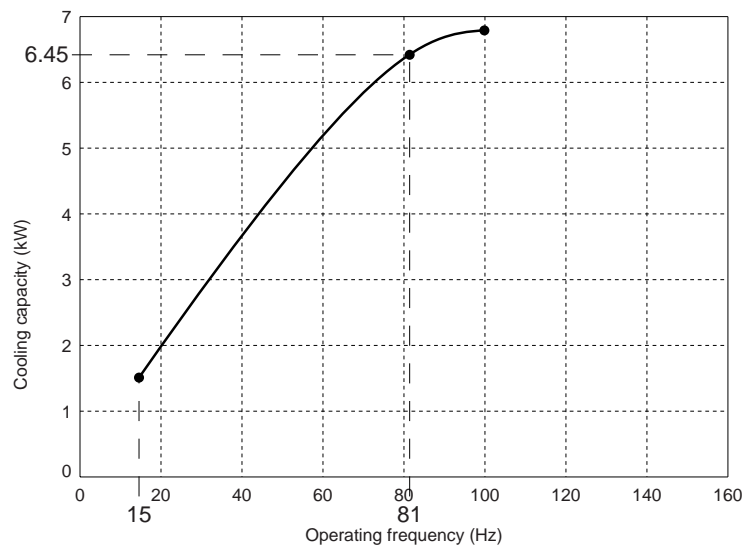


NOTE

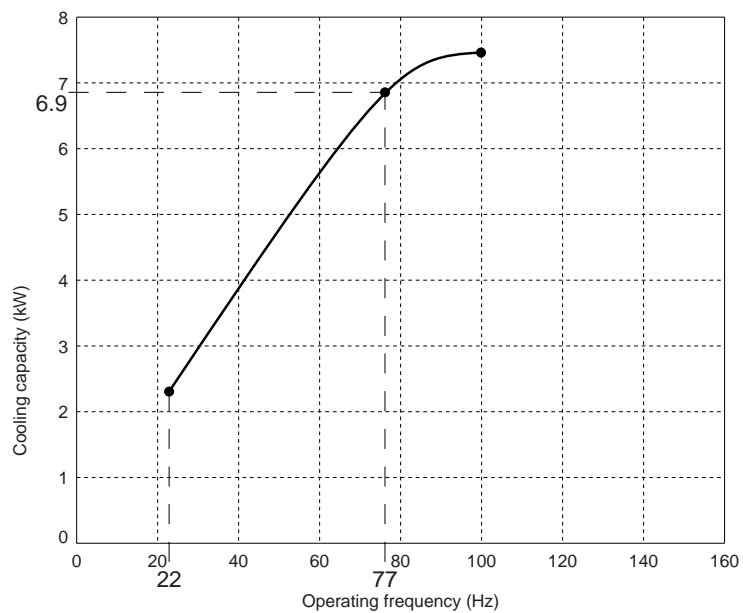
- 1) Rating conditions in cooling and heating mode are:
Cooling Indoor: 27°C D.B. / 19°C W.B.
Outdoor: 35°C D.B. / 24°C W.B.
- 2) Fan speed: High

■ Three-unit operation

SAP-KMV91G × 3



SAP-KMV91G × 2 + SAP-KMV181G

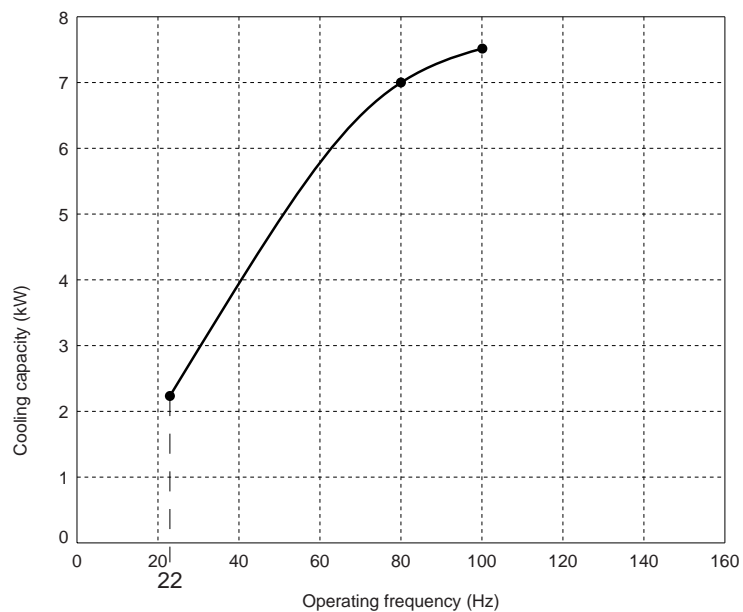


NOTE

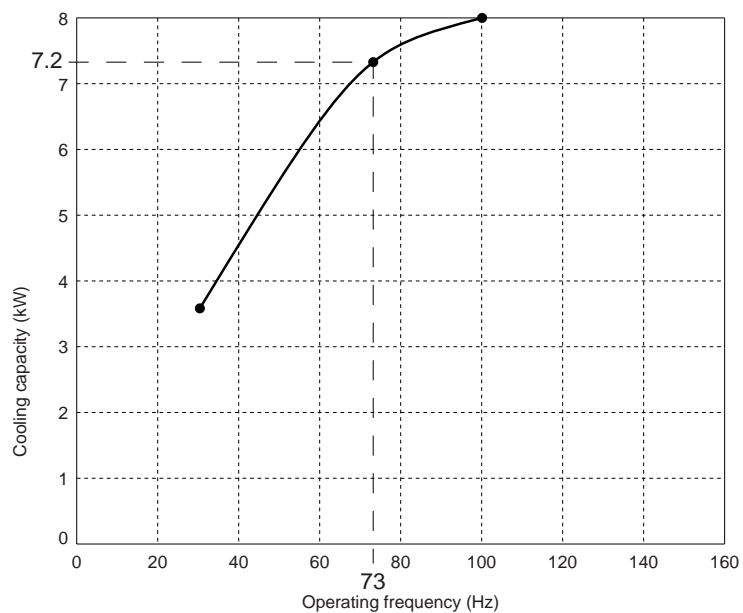
- 1) Rating conditions in cooling and heating mode are:
Cooling Indoor: 27°C D.B. / 19°C W.B.
Outdoor: 35°C D.B. / 24°C W.B.
- 2) Fan speed: High

■ Four-unit operation

SAP-KMV91G × 4



SAP-KMV91G × 3 + SAP-KMV181G



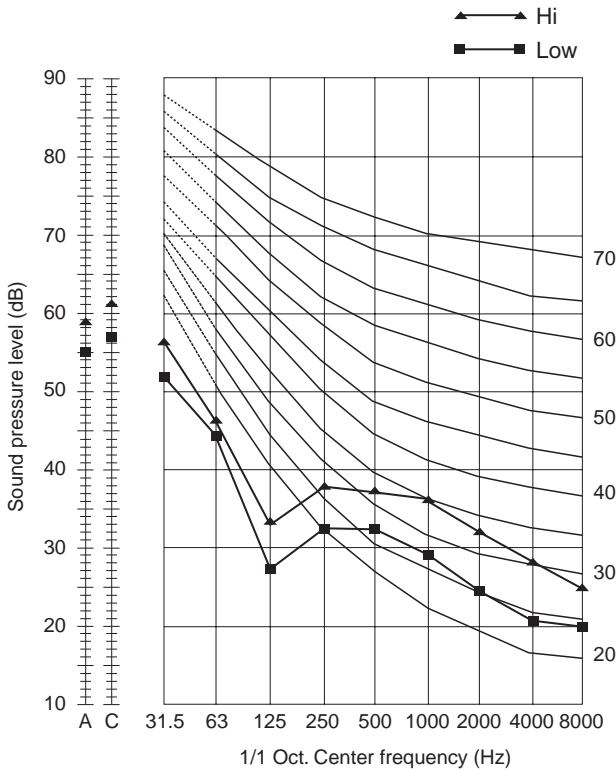
NOTE

- Rating conditions in cooling and heating mode are:
Cooling Indoor: 27°C D.B. / 19°C W.B.
Outdoor: 35°C D.B. / 24°C W.B.
- Fan speed: High

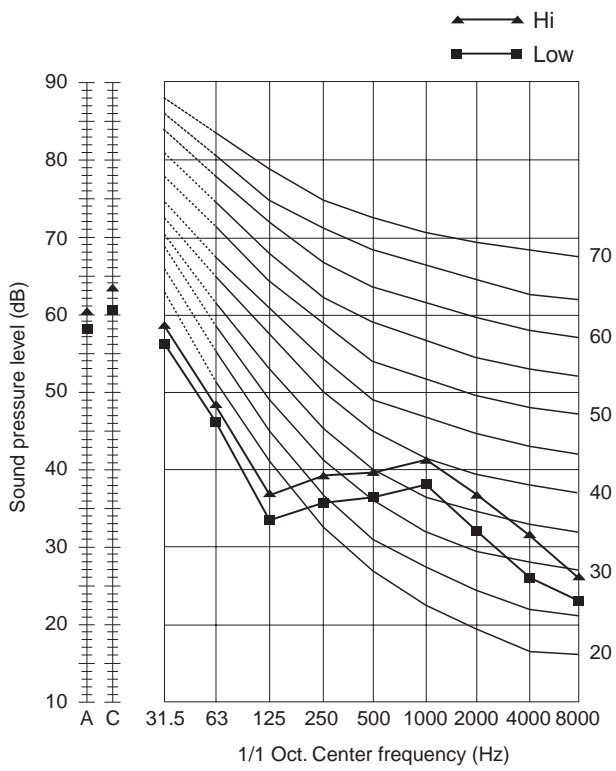
4-2. Frequency Characteristics

- 230V, 50Hz
- Cooling mode

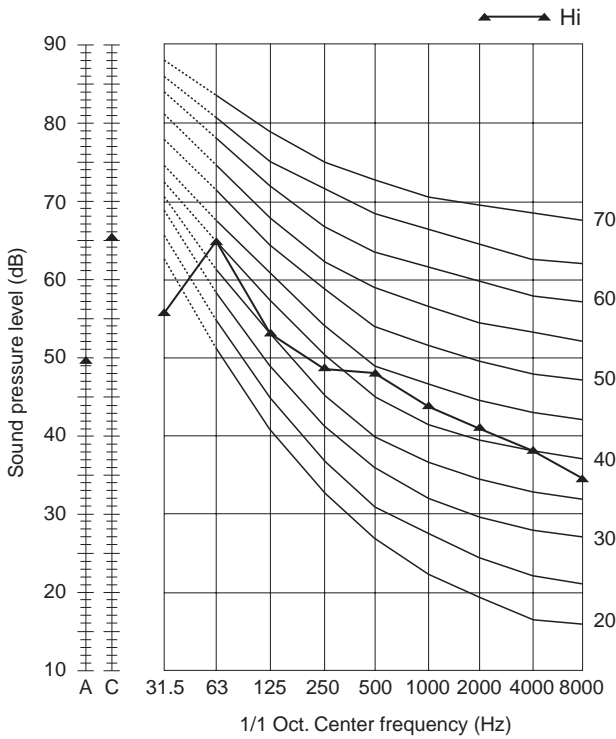
SAP-KMV91G



SAP-KMV181G



SAP-CMV2441G

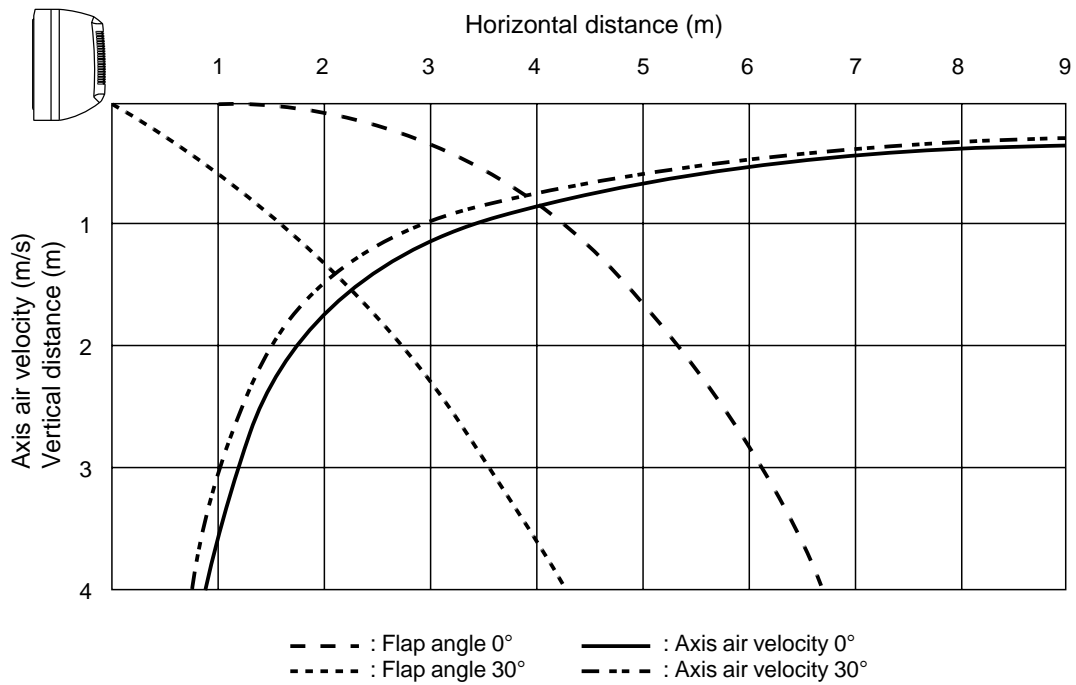


5. AIR THROW DISTANCE CHARTS

Indoor unit **SAP-KMV91G**

Room air temp.: 27°C

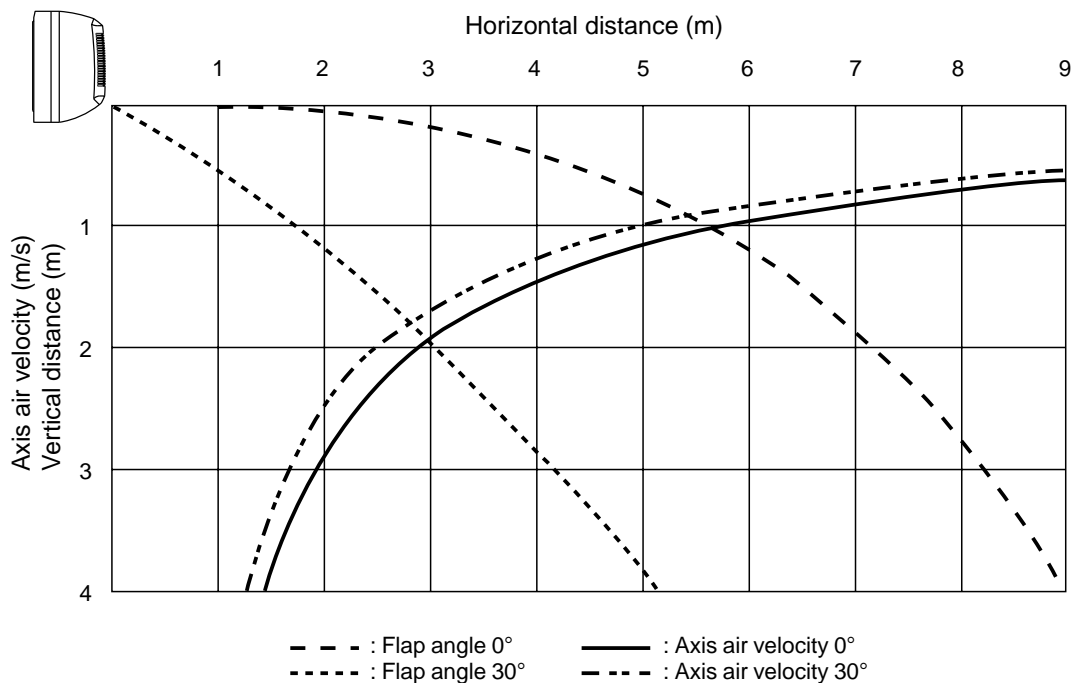
Fan speed: High



Indoor unit **SAP-KMV181G**

Room air temp.: 27°C

Fan speed: High



7. ELECTRICAL DATA

7-1. Electrical Characteristics

NOTE

- The values in the table below indicate the sum of indoor and outdoor units during normal running condition.
- Set electric current suppressor to either "FREE/11/8.5A".
- 230V Single-phase 50Hz
- Rating conditions: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B.
- Full load conditions: Indoor air temperature 32°C D.B. / 23°C W.B.
Outdoor air temperature 43°C D.B.

Under "FREE" setting

Indoor unit **SAP-KMV91G**

Outdoor unit **SAP-CMV2441G**

Number of indoor units			1 unit
			KMV91G
Rating conditions	Running amp.	A	5.9
	Power input	kW	1,070
Full load conditions	Running amp.	A	7.1
	Power input	kW	1,300

Indoor unit **SAP-KMV181G**

Outdoor unit **SAP-CMV2441G**

Number of indoor units			1 unit
			KMV181G
Rating conditions	Running amp.	A	10.3
	Power input	kW	2,120
Full load conditions	Running amp.	A	12.5
	Power input	kW	2,580

Indoor unit **SAP-KMV91G × 2**

Outdoor unit **SAP-CMV2441G**

Number of indoor units			2 units
			KMV91G × 2
Rating conditions	Running amp.	A	10.2
	Power input	kW	2,080
Full load conditions	Running amp.	A	12.3
	Power input	kW	2,530

Indoor unit **SAP-KMV91G + KMV181G**

Outdoor unit **SAP-CMV2441G**

Number of indoor units			2 units
			KMV91G + KMV181G
Rating conditions	Running amp.	A	12.4
	Power input	kW	2,570
Full load conditions	Running amp.	A	15.0
	Power input	kW	3,120

Indoor unit **SAP-KMV91G × 3**
 Outdoor unit **SAP-CMV2441G**

Number of indoor units			3 units
			KMV91G × 3
Rating conditions	Running amp.	A	11.7
	Power input	kW	2,430
Full load conditions	Running amp.	A	14.2
	Power input	kW	2,950

Indoor unit **SAP-KMV91G × 2 + KMV181G**
 Outdoor unit **SAP-CMV2441G**

Number of indoor units			3 units
			KMV91G × 2 + KMV181G
Rating conditions	Running amp.	A	11.6
	Power input	kW	2,400
Full load conditions	Running amp.	A	14.0
	Power input	kW	2,920

Indoor unit **SAP-KMV91G × 4**
 Outdoor unit **SAP-CMV2441G**

Number of indoor units			4 units
			KMV91G × 4
Rating conditions	Running amp.	A	11.9
	Power input	kW	2,450
Full load conditions	Running amp.	A	14.4
	Power input	kW	2,980

Indoor unit **SAP-KMV91G × 3 + KMV181G**
 Outdoor unit **SAP-CMV2441G**

Number of indoor units			4 units
			KMV91G × 3 + KMV181G
Rating conditions	Running amp.	A	11.4
	Power input	kW	2,360
Full load conditions	Running amp.	A	13.8
	Power input	kW	2,870

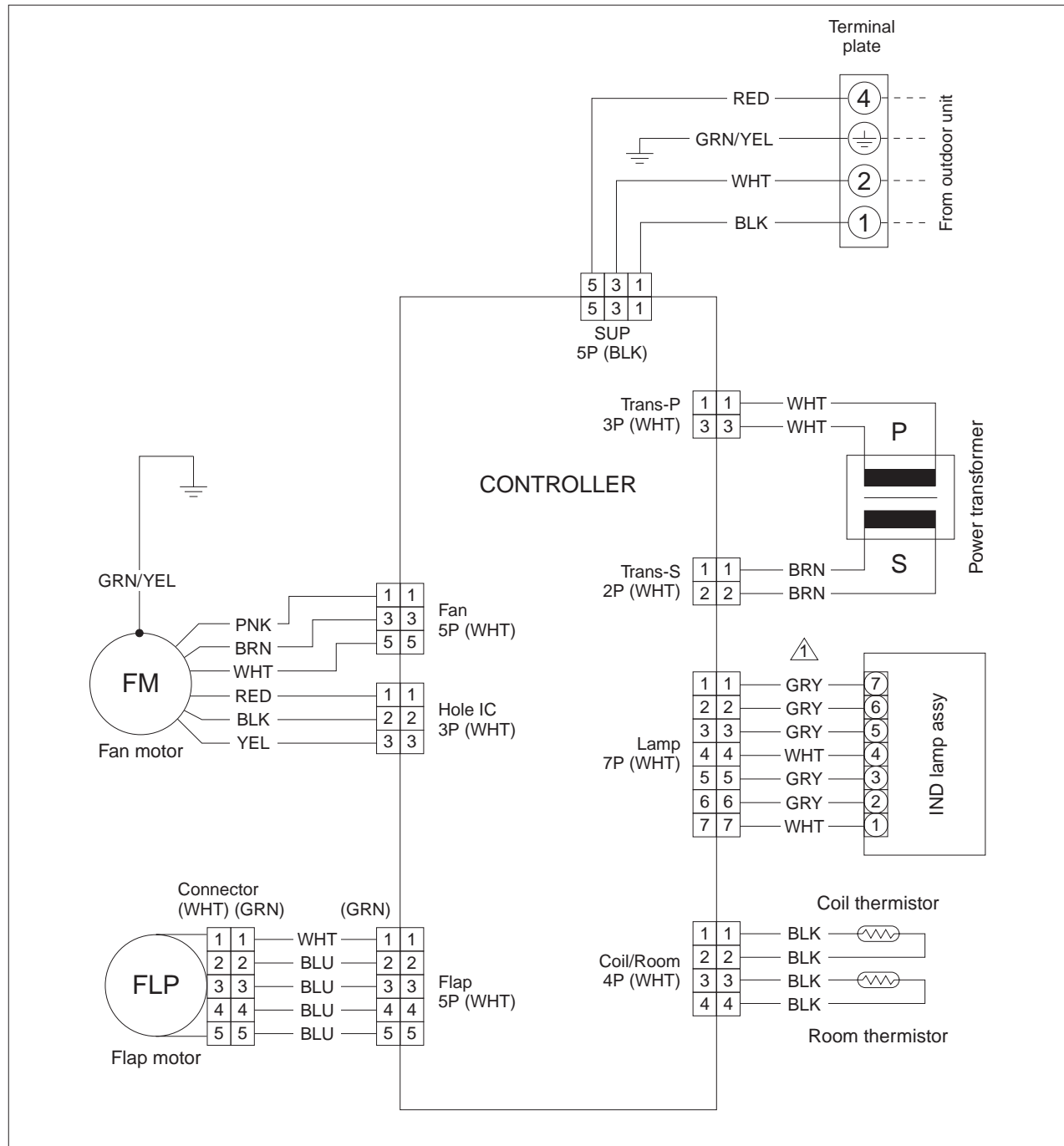
7-2. Electric Wiring Diagrams

Indoor unit **SAP-KMV91G**



WARNING

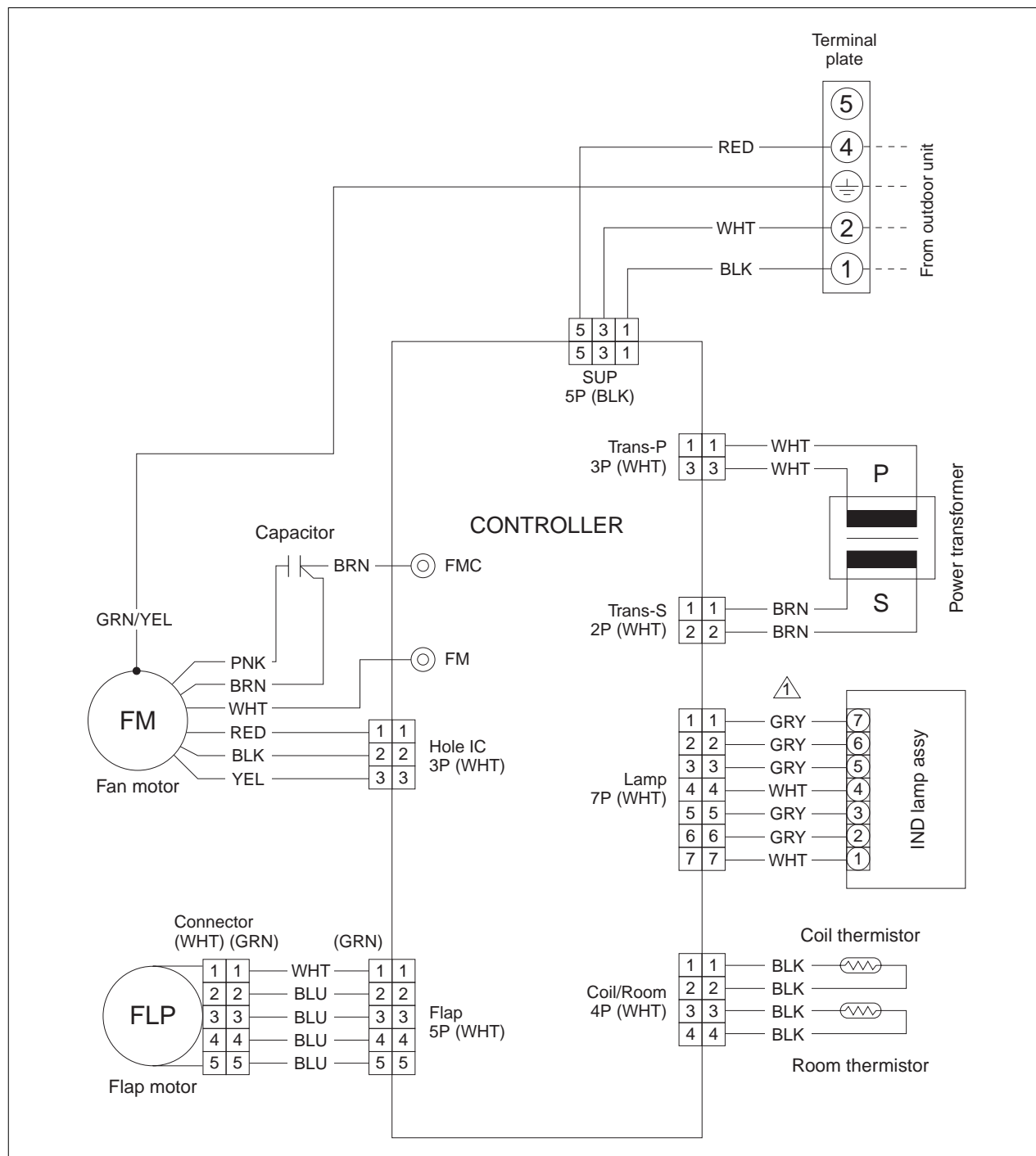
To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



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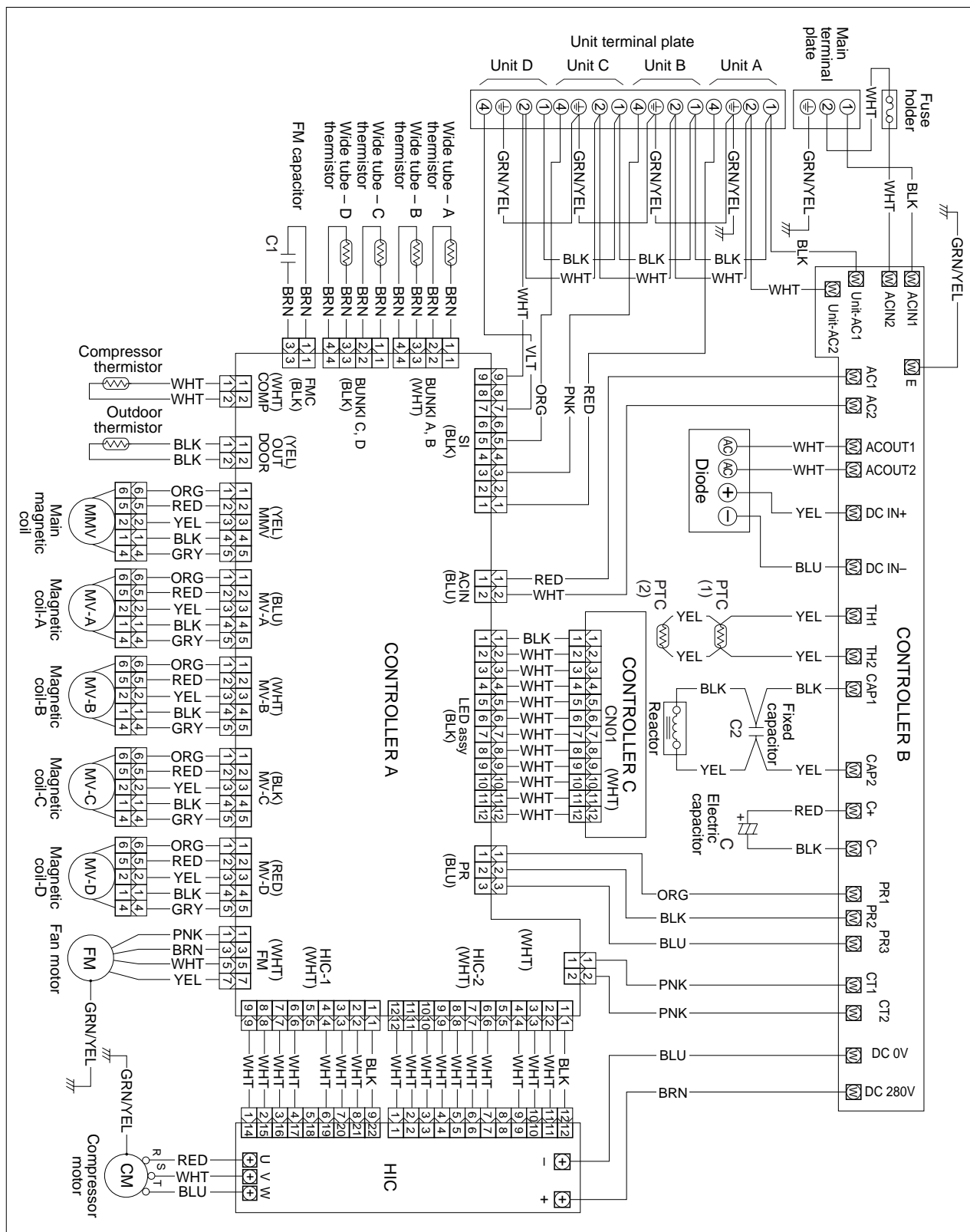
**WARNING**

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



8512-5253-544xx-1

To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.



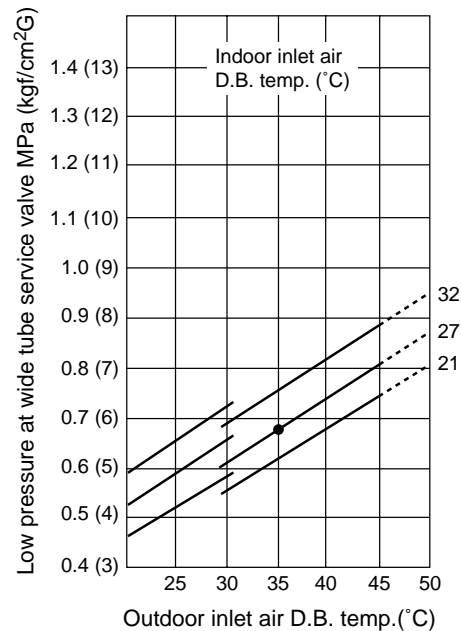
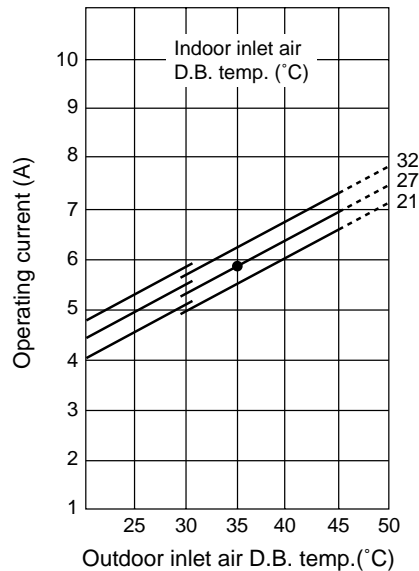
24

7-3. Performance Charts

230V, 50Hz

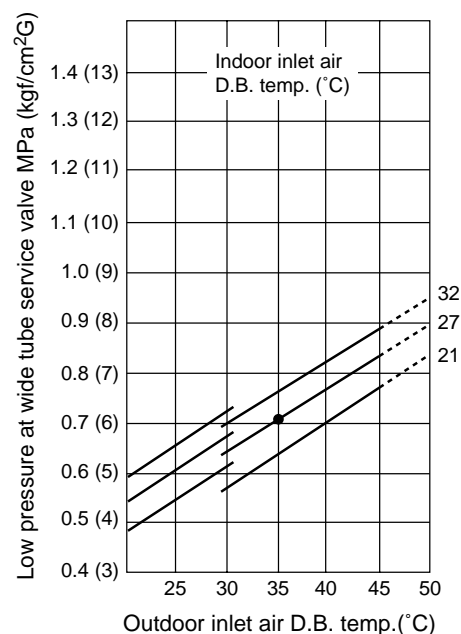
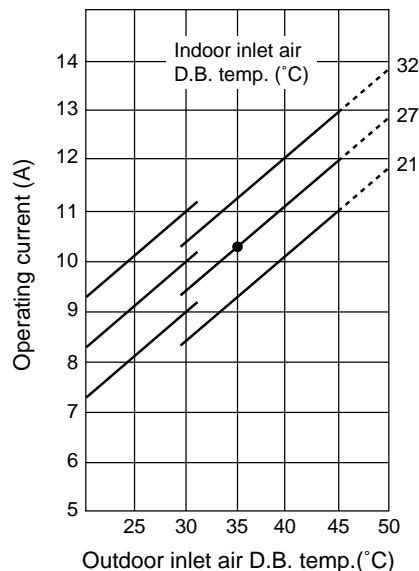
Indoor unit **SAP-KMV91G**
Outdoor unit **SAP-CMV2441G**

■ Cooling Characteristics



Indoor unit **SAP-KMV181G**
Outdoor unit **SAP-CMV2441G**

■ Cooling Characteristics



NOTE

- ... Points of rating condition
 - Black dots in above charts indicate the following rating conditions.
- Cooling: Indoor air temperature 27°C D.B. / 19°C W.B.
Outdoor air temperature 35°C D.B. / 24°C W.B.

8. INSTALLATION INSTRUCTIONS

8-1. Installation Site Selection

Indoor Unit



WARNING

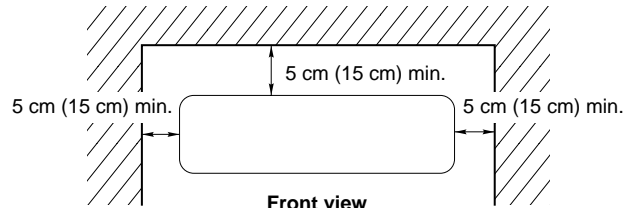
To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow.

AVOID:

- direct sunlight.
- nearby heat sources that may affect performance of the unit.
- areas where leakage of flammable gas may be expected.
- places where large amounts of oil mist exist.

DO:

- select an appropriate position from which every corner of the room can be uniformly cooled. (High on a wall is best.)
- select a location that will hold the weight of the unit.
- select a location where tubing and drain hose have the shortest run to the outside.
- allow room for operation and maintenance as well as unrestricted air flow around the unit. (Fig. 1)
- install the unit within the maximum elevation difference (H1, H2, H3, H4) above or below the outdoor unit and within a total tubing length (L1+L2+L3+L4) from the outdoor unit as detailed in Table 1 and Fig. 2.



Measurements in parentheses are for SAP-KMV181G.

Fig. 1

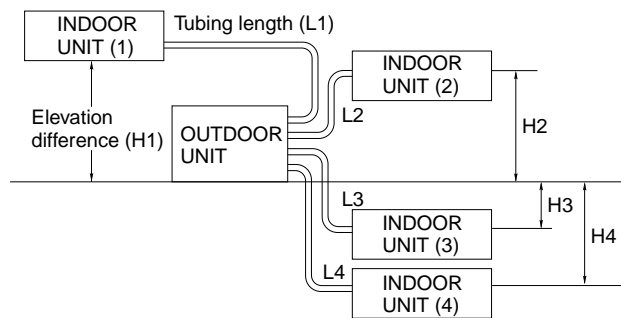


Fig. 2



CAUTION

For stable operation of the air conditioner, do not install wall-mounted type indoor units under 1.5 m from floor level.

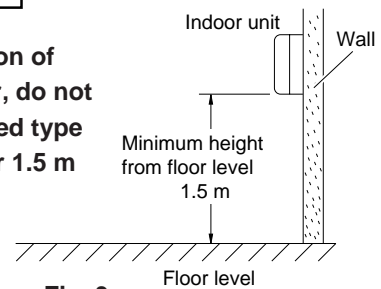


Fig. 3

Table 1

Number of Indoor Units	Limit of Tubing Length (L1, L2, L3, L4) (m)	Limit of Elevation Difference (H1, H2, H3, H4) (m)
1	20	10
2 to 4	40*	10

* The total tubing length must be less than 40 meters. Also, additional charging is not necessary when tubing length for each unit is less than 20 meters and total tubing length is less than 40 meters. No additional compressor oil is necessary.

Outdoor Unit

AVOID:

- heat sources, exhaust fans, etc. (Fig. 4)
- damp, humid or uneven locations.

DO:

- choose a place as cool as possible.
- choose a place that is well ventilated.
- allow enough room around the unit for air intake/exhaust and possible maintenance. (Fig. 5)
- provide a solid base (level concrete pad, concrete block, 10×40 cm beams or equal), a minimum of 10 cm above ground level to reduce humidity and protect the unit against possible water damage and decreased service life. (Fig. 5)
- Install cushion rubber under unit's feet to reduce vibration and noise. (Fig. 6)
- use lug bolts or equal to bolt down unit, reducing vibration and noise.

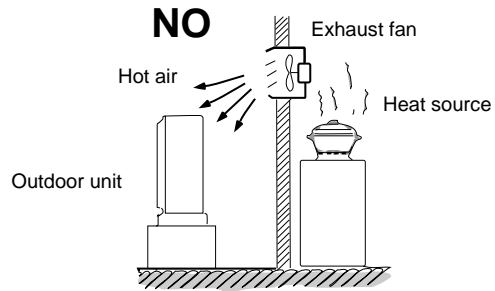


Fig. 4

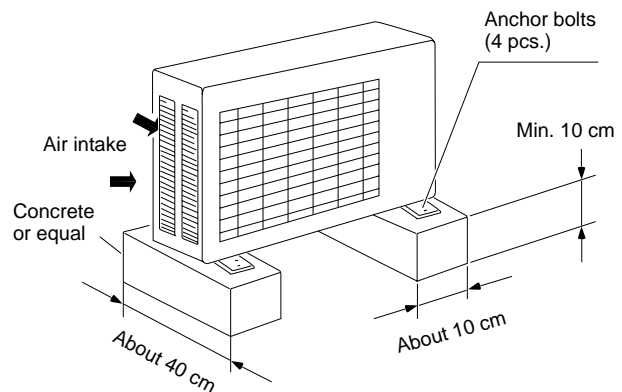
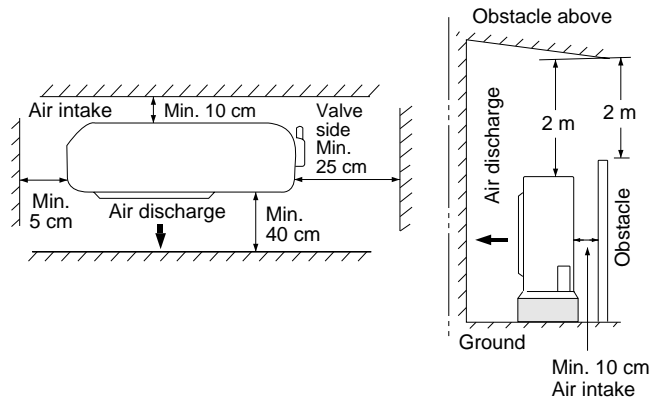


Fig. 5

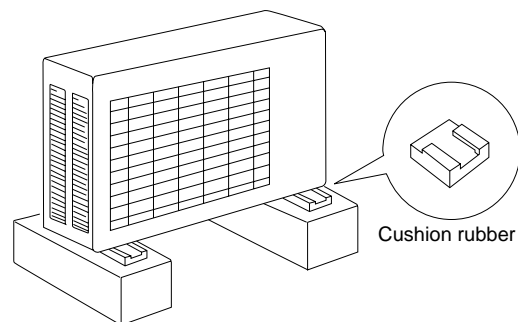


Fig. 6

8-2. Remote Control Unit Installation Position

The remote control unit can be operated from either a non-fixed position or a wall-mounted position.

To ensure that the air conditioner operates correctly, do not install the remote control unit in the following places:

- In direct sunlight
- Behind a curtain or other place where it is covered
- More than 8 m away from the air conditioner
- In the path of the air conditioner's airstream
- Where it may become extremely hot or cold
- Where it may be subject to electrical or magnetic interference
- Where the temperature changes rapidly (near heater, etc.)
- Where strong vibration or shock occurs
- Where there are obstacles which may block or interfere with the infrared signal, such as glass
- Near telephone, computer or radio
- Outside the detectable range, such as on top of refrigerator

Mounting on a Wall

a) Remote Control Unit

When attaching to wall

- (1) Confirm the indoor unit beeps when the ON/OFF button is pressed at the wall location where the remote control unit is to be attached, then attach the holder to the wall. (Fig. 7)
- (2) When taking out the remote control unit, pull it from the holder. (Fig. 7)

When using the remote control unit

- Point the transmission portion of the remote control unit at the receiver area of the indoor unit when operating the remote control unit, and during operation of the air conditioner.
- Do not place objects which may block the transmitted signals between the receiver and the remote control unit.

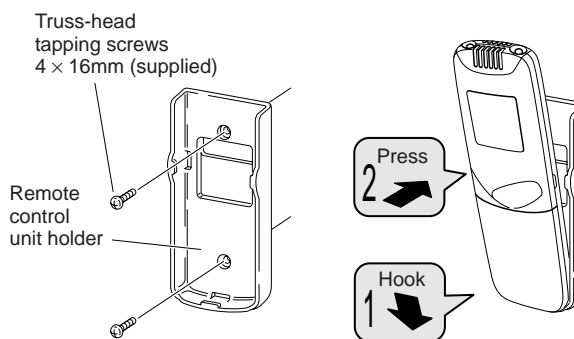


Fig. 7

8-3. Recommended Wire Length and Diameter

Regulations on wiring diameter differ from locality to locality. For field wiring requirements, please refer to your local electrical codes. Carefully observe these regulations when carrying out the installation.

Table 2 lists recommended wire lengths and diameters for power supply systems.

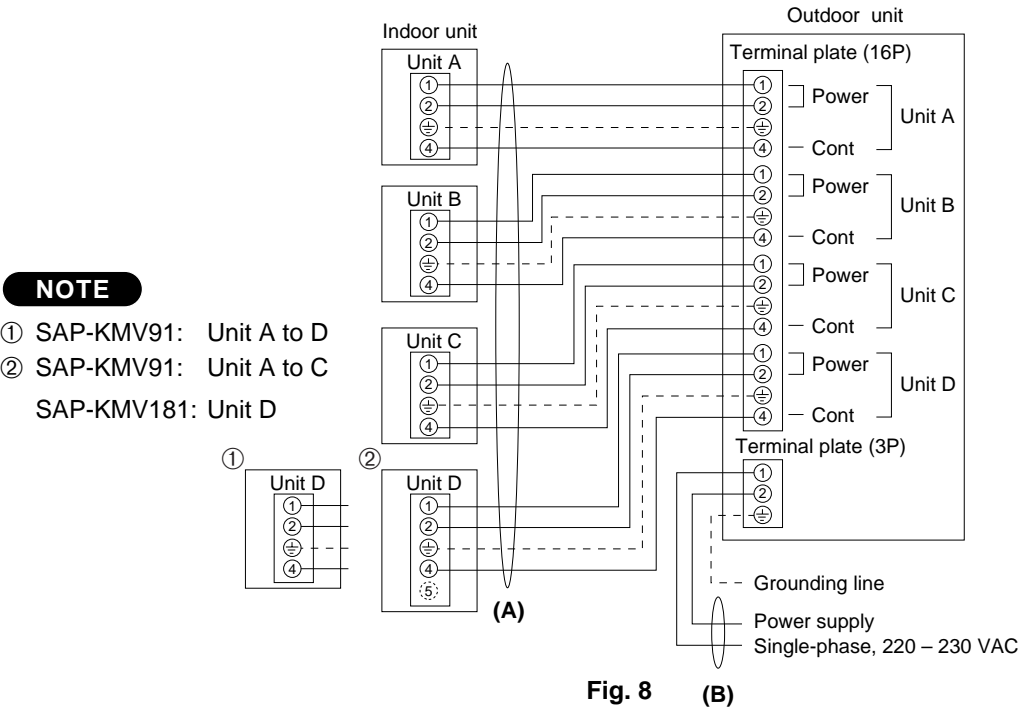
NOTE

Refer to the wiring system diagram (Fig. 8) for the meaning of “A” and “B” in Table 2.

Table 2

Model	Cross-Sectional Area (mm²)	Control Line Length (A)		Power Line Length (B)		Fuse or Circuit Capacity
		1.0	2.5	4.0		
CMV2441G		20 m	16 m	27 m		20 A

WIRING SYSTEM DIAGRAM



WARNING

- Be sure to comply with local codes on running the wire from the indoor unit to the outdoor unit (size of wire and wiring method, etc.).
- Each wire must be firmly connected.
- No wire should be allowed to touch refrigerant tubing, the compressor, or any moving part.
- Be sure to connect power wires correctly matching up numbers on terminals of the outdoor unit and respective indoor units A – D.



WARNING

To avoid the risk of electric shock, each air conditioner unit must be grounded.



CAUTION

Be sure to connect the power supply line to the outdoor unit as shown in the wiring diagram. The indoor unit draws its power from the outdoor unit.

8-4. Setting for Electric Current Suppressor

To match the existing circuit breaker in home installations, the unit has a switch to alter electric current by frequency control to either of three levels (FREE/11/8.5A).

A switch is located on the terminal plate of the outdoor unit. Installers should set the switch for the necessary current referring to Fig. 9 and Table 3)

The factory setting is 11A.

Table 3

Electric current setting (A)	8.5	11	Free
Switch position	Left	Center	Right

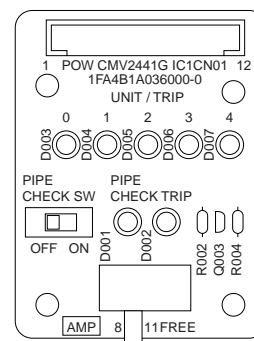


Fig. 9

8-5. Tubing Check Function

After tubing and wiring connections are completed, following air purging with a vacuum pump, be sure to confirm once more that all tubing has been carried out correctly. This can be done with the Tubing Checker function on the terminal plate of the outdoor unit (Fig. 9). It also confirms the correct operation of all expansion valves.

To perform Tubing Check function:

- (1) Turn the main power ON. (Before turning the power ON, confirm that the Tubing Check Switch is OFF.)
- (2) Turn the Tubing Check Switch on (Green lamp illuminates / "PIPE CHECK" in Fig. 9)
At this stage, the indoor fan is operating at low speed, and you will see 3 lamps illuminated on the display of the indoor unit. (Outdoor fan is operating at low speed, and compressor is operating at low speed.)
- (3) After 90 seconds, the compressor (only) stops operating, and after a 3-minute delay, it starts to operate again at low speed. Tubing Check commences at this time.
- (4) Indoor units A to D are checked, which takes a maximum of 2 minutes for each unit. If an error exists, lamps 0 to 4 glow red to identify the error. Possible errors include an electronic expansion valve not opening or the tubing connection or wiring between the indoor and outdoor units is wrong.
- (5) When no problems are found during the check, all lamps 0 to 4 turn to red.
- (6) Be sure to turn the Tubing Check Switch off after the checking is completed.

NOTE

- **The wide tube is not checked by this Tubing Check Function.**
- If more than one error is detected, each error is displayed at 4-second intervals.
- This function works only when the outdoor temperature is between 10°C and 43°C. However, this function does not work when the electric current suppressor is set to 8.5A and the outdoor temperature exceeds 35°C. Therefore, it is necessary to physically examine the connections unit by unit.
- If the Tubing Check Lamp flashes, it is not possible to continue with the check operation due to one or more of the following reasons: trip, alarm, and no indoor unit connected. To perform the Tubing Check again, turn the main power ON, and then turn the Tubing Check Switch OFF. You must then wait at least 20 minutes before turning the main power ON again. Then, turn the Tubing Check Switch ON. Therefore, it is necessary to physically examine the connections unit by unit.
- If an electronic expansion valve fails to open, check the valve. Replace it if necessary.

Table of Tubing Error Indication

Tubing check lamp indication	Lamps					Description
	0	1	2	3	4	
○	○	×	×	×	×	Electronic expansion valve of unit A not open
○	×	○	×	×	×	Electronic expansion valve of unit B not open
○	×	×	○	×	×	Electronic expansion valve of unit C not open
○	×	×	×	○	×	Electronic expansion valve of unit D not open
○	○	○	×	×	×	Wrong tubing between units A and B
○	○	×	○	×	×	Wrong tubing between units A and C
○	○	×	×	○	×	Wrong tubing between units A and D
○	×	○	○	×	×	Wrong tubing between units B and C
○	×	○	×	○	×	Wrong tubing between units B and D
○	×	×	○	○	×	Wrong tubing between units C and D
○	○	○	○	○	○	No errors in valves and tubing
☆	△	△	△	△	△	Not possible to continue with the checking

○ Illuminated.

△ Off.

☆ Flashing on 1 second, off 1 second.

△ Display when check is discontinued.

9. MAINTENANCE

9-1. Changing Address of Remote Control Unit in Indoor Unit



WARNING

Before starting any service or maintenance work, be sure to wait more than 10 minutes after turning the power switch off.

If the operation is disturbed by radio interference (RFI) of the remote control signals, change the address of the remote control unit by cutting the jumper wire on PCB A of the indoor unit, and use the optional remote control unit with address switch provided for servicing.

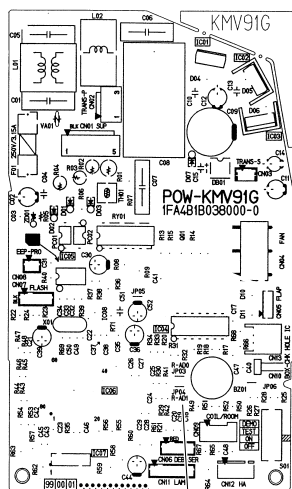
NOTE

Special remote control unit provided for servicing have a switch for changing the address setting.

To Change Address on PCB

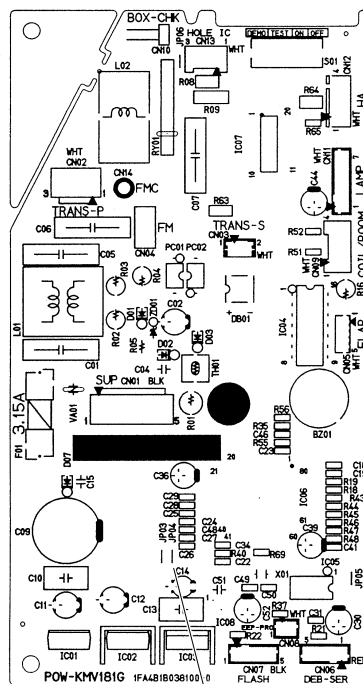
- (1) Cut jumper wire (JP04) on the indoor unit PCB A.
- (2) Switch the address switch on the special remote control unit provided for servicing to "B" position.
- (3) After inserting the batteries, press reset button.

Control PCB (POW-KMV91G)
on Indoor Unit (SAP-KMV91G)



JP04

Control PCB (POW-KMV181G)
on Indoor Unit (SAP-KMV181G)

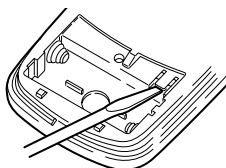


JP04

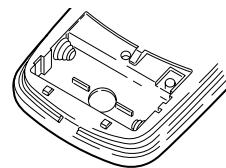
To Change Address on Remote Control

Optional remote control unit provided for servicing (RCS-IMPS4E)

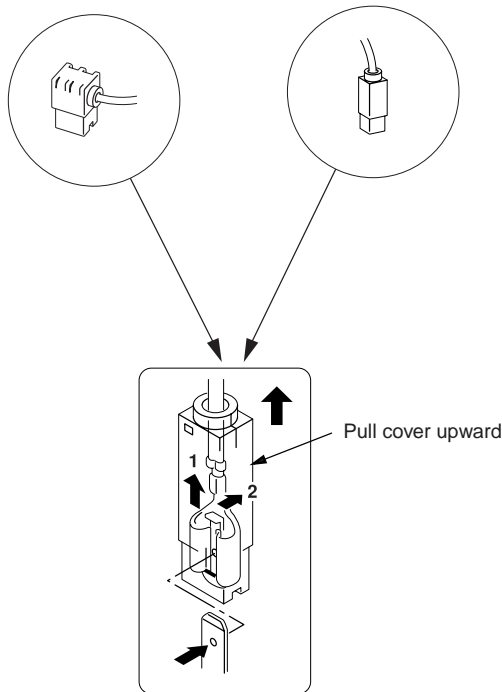
- (1) Remove tab for changing the address of the remote control unit.



- (2) When it is removed, the address is set to B.



9-2. Disconnecting and Connecting Positive Connector for Outdoor Unit



One of the two types of connectors illustrated at left is used. The basic structure is the same for each.

How to Disconnect

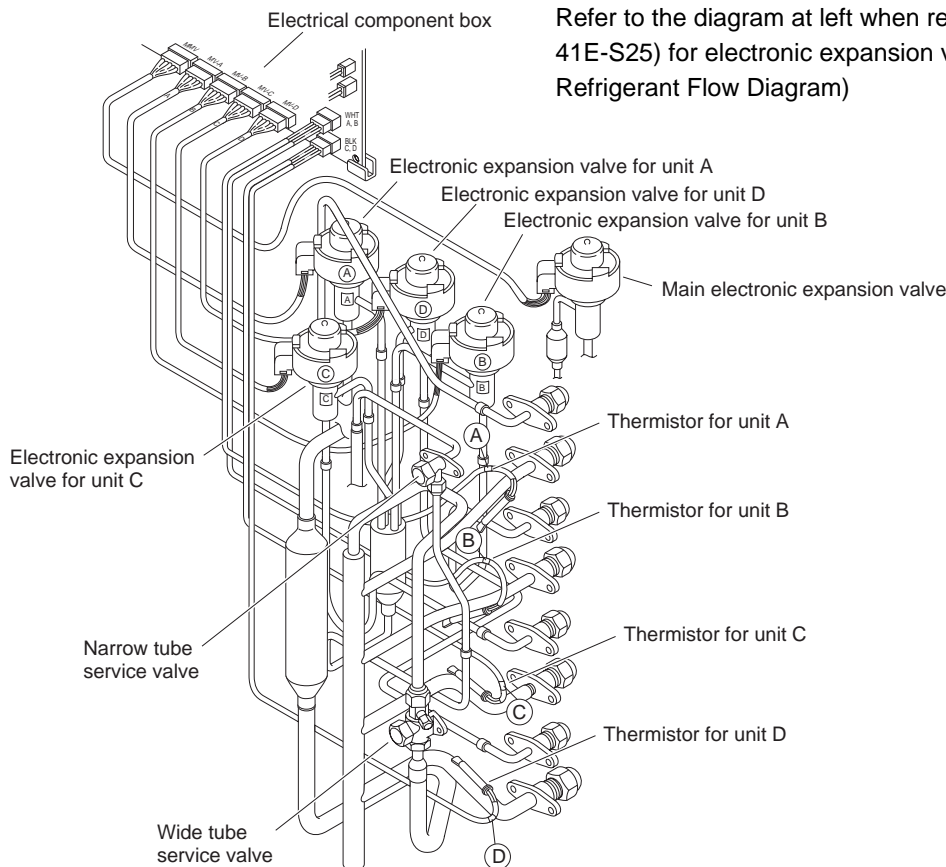
Hold the resin connector cover, and pull the connector off. You cannot disconnect the connector by pulling the wire since it is locked inside. Always hold the cover to disconnect. (See illustration at left.) For the connector without the resin cover, push the lock in the direction of "2" while pulling it off.

How to Connect

Hold the resin cover of the connector and push it in. Confirm the click sound for the inside lock to ensure a solid connection.

When the cover is pulled upward, the lock is released in the sequence of 1 and 2.

9-3. Replacing Thermistors (on outdoor unit) for Electronic Expansion Valves



Refer to the diagram at left when replacing thermistors (PBC-41E-S25) for electronic expansion valves. (Refer to Section 6. Refrigerant Flow Diagram)

10. FUNCTIONS

10-1. Functions for Operation

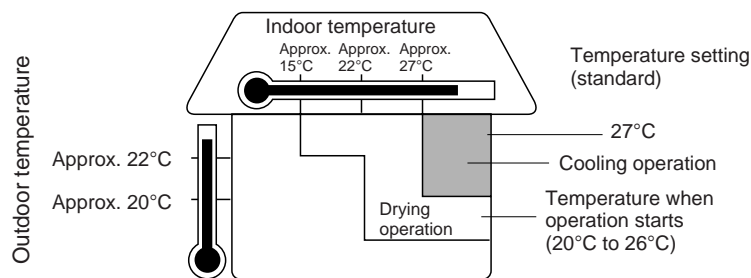
10-1-1. Operation Selector

- (1) OFF : (Self-Diagnosis)
 - Used when the remote control unit is not available
 - Used for servicing and maintenance
- (2) ON:
 - Normal operation.....Operate using remote control unit
 - Emergency operationUsed when the remote control unit is not available. When ON position is selected, the air conditioner starts operating with cooling mode.
- (3) TEST:
 - Used to confirm operational characteristics
 - Used for pump-down
(The unit operates at nominal frequency. In this case, a lamp on the unit will flash and it will not accept signals from the remote control unit.)
- (4) DEMO:
 - Used for demonstration at shopfronts; not for normal use
 - Used for service

10-1-2. Automatic Operation

Selection of Operation Mode

In Automatic Operation, indoor and outdoor temperature sensors operate and either Dry or Cooling Operation is selected automatically. Refer to the Instruction Manual (p.13).



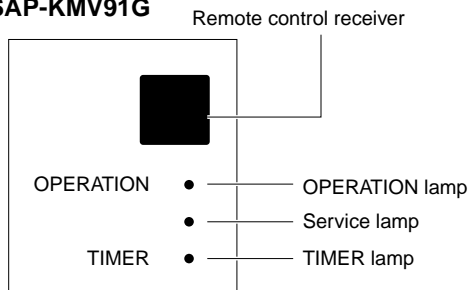
10-1-3. Display on the Main Unit <SAP-KMV91G and SAP-KMV181G>

Operation Lamp.....green/red Timergreen

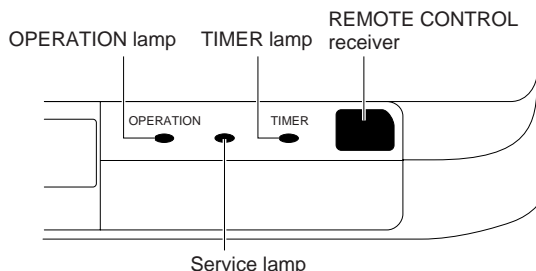
Service Lampgreen

The service lamp illuminates only when the self-diagnosis function is used for servicing.

SAP-KMV91G



SAP-KMV181G



10-1-4. ON Timer

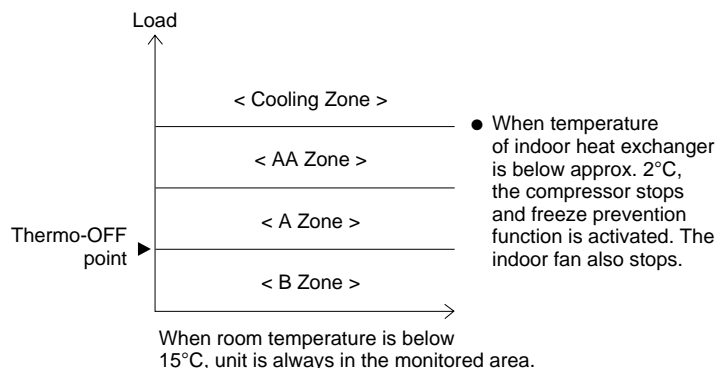
- The air conditioner starts operation at the preset time.
- ON timer can be set / canceled while the air conditioner is not operating. When the timer is set, the timer lamp on the main unit illuminates.

10-1-5. Frequency Control

During Automatic Operation, temperature and fan speed are adjusted according to the room conditions to keep the room comfortable.

< Dry Operation >

- Dry operation is as described in the diagram at right.
- If the room temperature drops below 15°C, the unit operates under monitored status.
- Within the monitored area, the air conditioner does not operate but the operation lamp remains on.



Dry AA

The compressor operates with 1/f fan operation. Also, the indoor fan operates under 1/f-fluctuation mode while the compressor is running.

Dry A

The compressor operates with 1/f fan operation with lower operation frequency than Dry AA. The indoor fan operates under 1/f-fluctuation mode while the compressor is running.

Dry B

The compressor repeats a cycle of ON for 3 minutes and OFF for 6 minutes.

The indoor fan operates under 1/f-fluctuation mode while the compressor is running.

NOTE

If the compressor is turned OFF and the room temperature falls below approximately 20°C, the indoor fan also will be turned OFF.

— What is 1/f fluctuation mode? —

The 1/f-fluctuation has been widely found in various phenomena covering electrical, natural and also human organic functions.

10-1-6. Timer Back-Up

- If the indoor unit does not receive a time-up signal from the remote control unit at the preset ON / OFF time, time-up is carried out by the back-up timer of the indoor unit within 15 minutes.

10-1-7. OFF Timer

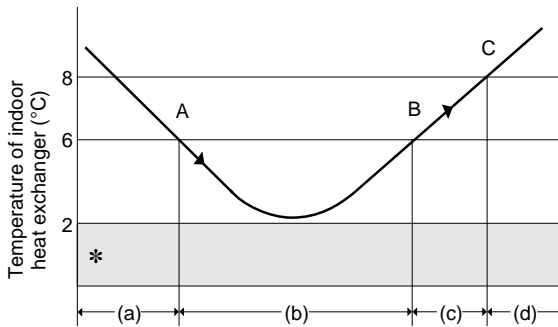
- The air conditioner stops operation at the preset time.
- OFF timer can be set / canceled while the air conditioner is operating. When the timer is set, the timer lamp on the main unit illuminates.

10-2. Protective Functions

10-2-1. Freeze Prevention

If the temperature of the indoor heat exchanger drops to the following level while the air conditioner is operating in Cooling or Dry mode, it will detect a freeze condition and stop operation as long as necessary.

1. When the temperature of the indoor heat exchanger is less than 6°C, the air conditioner enters Freeze Prevention mode.
2. Release of freeze prevention mode occurs when the temperature of the indoor heat exchanger is over 8°C.



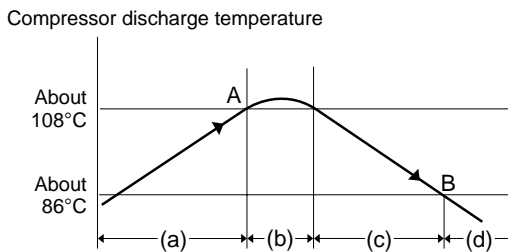
- (a) Area — the air conditioner follows auto performance control.
- (b) When the temperature falls below point A, the operating frequency is reduced at a specified rate.
- (c) Area — further frequency rise is not allowed.
- (d) When the temperature rises above point C, freeze prevention is released and the air conditioner operates as in (a).

NOTE

If the temperature falls below 2°C (for more than 2 minutes) the compressor will stop operating. Once the freeze condition is detected, the air conditioner will work less than the maximum frequency until it is turned off.

10-2-3. Compressor Discharge Temperature Control

This function controls the operating frequency to prevent the compressor discharge temperature from rising more than the specified temperature.



- (a) Area — the air conditioner follows auto performance control.
- (b) When the temperature rises above point A, the operating frequency is reduced at a specified rate.
- (c) Area — further frequency rise is not allowed.
- (d) When the temperature falls below point B, prevention of a rise in frequency is released and the air conditioner operates as in (a).

NOTE

The compressor will stop if the temperature of the compressor discharge exceeds 120°C due to shortage of gas or other reason.

10-2-4. CT (Peak Current Cut-Off Control)

- This function prevents the circuit breaker or fuse from operating to open the circuit. This function works when electrical current has increased due to an increase in the cooling load, or to a decrease in the power supply voltage. In these cases, operation frequency is reduced or operation is interrupted automatically to control the electrical current for operation.
- When the cause of the increase in electrical current is rectified, the system will resume operation in the original mode.

Operation at 230V

(A)

			Cooling • Dry
Peak current cut-off trips			22
Hz down	Normal	Free	18.2
		11A	11.0
		8.5A	8.5

11. TROUBLESHOOTING

■ Note before beginning inspection/repair



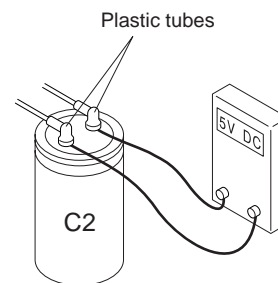
WARNING

Before performing any service on this air conditioning system, do the following:

1. Turn off the mains power.
2. Wait at least 10 minutes before opening the outdoor unit. The outdoor unit controller (inverter) contains a large electrolytic capacitor, so a potentially dangerous charge (at a voltage of 325 VDC) remains even after the mains is turned off.

AND

3. Use a DC voltage meter to confirm voltage between the terminals of the electrolytic capacitor (refer to "C2: fixed capacitor," in 7-2 Electric Wiring Diagram).



- After checking the self-diagnostic monitor, disconnect main power before beginning inspection and repair.
- After the inspection/repair, erase the contents of the self-diagnostic monitor by setting the operation selector on the indoor unit to DEMO and then main power back in the power supply.

11-1. Operating State

	Customer Description	Explanation
Dry operation	Indoor fan sometimes stops.	<ul style="list-style-type: none"> ● Based on the room temperature, the indoor fan and outdoor unit repeat the processes of Operation and Stop. ● When room temperature is below the set temperature, the indoor fan either slows down to low speed or stops.
	Air flap is still running at start-up and at operation stop.	<ul style="list-style-type: none"> ● Flap motor positions the air flap by operating for 10 to 20 seconds after start-up and operation stop.
Others	It does not operate immediately after being switched on.	<ul style="list-style-type: none"> ● When plugged in and operation button is pressed immediately, the outdoor unit will not operate for about 3 minutes. ● When restarted immediately after being stopped, the outdoor unit will not operate for about 3 minutes. <p>Both are for preventing malfunctions.</p>
	It makes a strange sound.	<ul style="list-style-type: none"> ● You may hear sound similar to water flowing just after operation is started, during operation, or after the system is stopped. This is the sound of refrigerant gas flowing and is not a problem. ● When operation is started or after it is stopped, you may hear some small sounds. These are caused by switches or expansion / contraction of parts (heat exchanger / plastic parts) inside the air conditioner due to changes in temperature.
	It smells during operation.	<ul style="list-style-type: none"> ● Smells permeating walls, carpets, furniture, or clothes may become noticeable. ● If the recommended duration of use of the air clean filter (3 months) has elapsed, it may smell. Replace the filter as soon as possible. (Replacement is sold separately.)
	Speed of indoor fan does not change.	<ul style="list-style-type: none"> ● This occurs during cool draft prevention or when the room temperature has already reached the set temperature. ● The room temperature already has reached the set temperature. (Dry operation) ● If MODE selector button is pressed during the operation, it will operate with the very low fan speed (LL) for about 3 minutes and after that, it will change to the set fan speed.
	Air conditioner does not operate.	<ul style="list-style-type: none"> ● Protective circuit may have engaged due to lightning. Disconnect the main power for at least 1 minute. Then reconnect the power plug and try operating the air conditioner. If the air conditioner operates, it is not malfunctioning.

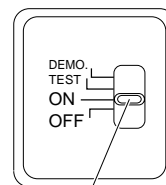
11-2. Troubleshooting Using the Self-Diagnostic Monitor

11-2-1. Method of Self-Diagnosis

If the service lamp of the indoor unit flashes every half-second, carry out detailed troubleshooting using the following method.

NOTE

- If the service lamp flashes every half-second as soon as the power is plugged in, there is either a faulty external ROM (for OTP data) on the board of the indoor unit, an insertion fault, or the ROM is not installed.
- Even when power is not being supplied, the malfunction mode will remain in memory, so carry out the diagnosis as follows:



Operation selector
Normally set it to ON position.
OFF, TEST and DEMO positions
are used for inspections, etc.

Procedure

- (1) Restore power.
- (2) Set the operation selector of the indoor unit to OFF (Self-Diagnosis).
- (3) If an abnormality is sensed or an automatic protective action is taken, the self-diagnostic lamps No. 1, 2 and 3 respectively alternately blink (on) for 5 seconds and off for 2 seconds (the buzzer sounds when they go off).

NOTE

When there is no abnormality detected, there will be no indication on the self-diagnostic lamp (service lamp), nor will the buzzer sound.

- (4) The buzzer sounds three times to inform that the diagnosis has been completed.
- (5) After the repair, always set the operation selector to DEMO and restore power to delete the contents of the diagnosis. After that, set the operation selector to OFF to check that the contents were deleted.

11-2-2. Details of Diagnosis

Display Lamp			●...Illuminated	○...Flashing	×...Off
Operation	Service*	Timer	Details of Diagnosis	Details of Abnormality	
○	×	×	Room temp. sensor abnormality	① Sensor open- and short-circuit ② Connector contact fault	
×	×	○	Indoor heat exchanger temp. sensor abnormality	① Sensor open- and short-circuit ② Connector contact fault	
×	○	×	Compressor temp. sensor and SH (SVC) sensor abnormality	① Sensor open- and short-circuit ② Connector contact fault	
○	○	×	Outdoor heat exchanger temp. sensor abnormality (Narrow tube A/B temperature sensor)	① Sensor open- and short-circuit ② Connector contact fault	
×	○	○	Outdoor temp. sensor abnormality (Wide tube A/B temperature sensor)	① Sensor open- and short-circuit ② Connector contact fault	
○	○	○	CT (current detection sensor) abnormality	① Sensor open- and short-circuit ② Connector contact fault ③ HIC fault (no output from U, V and W phases)	
●	×	×	Defective serial communication No power output to the outdoor unit, or no current flow on the outdoor board	① Incorrect wiring of F cable, incorrect insertion, or the contact between metal parts and electric leads. ② Abnormality on 200 VAC / 280 VDC line ③ Defective insulation ④ Blown terminal block temperature fuse ⑤ Defective power relay ⑥ Defective boards (indoor or outdoor)	
×	×	●	Protector for HIC/Power Transistor activated (current and temperature)	① Defective HIC ② Faulty contact / crimp of signal lead connector ③ Locked and worn AC compressor ④ Defective outdoor A board, or mistake on model change ⑤ Outdoor fan motor fails to rotate, or outdoor heat exchanger blocked	

*This lamp lights only when conducting service inspections.

(continued)

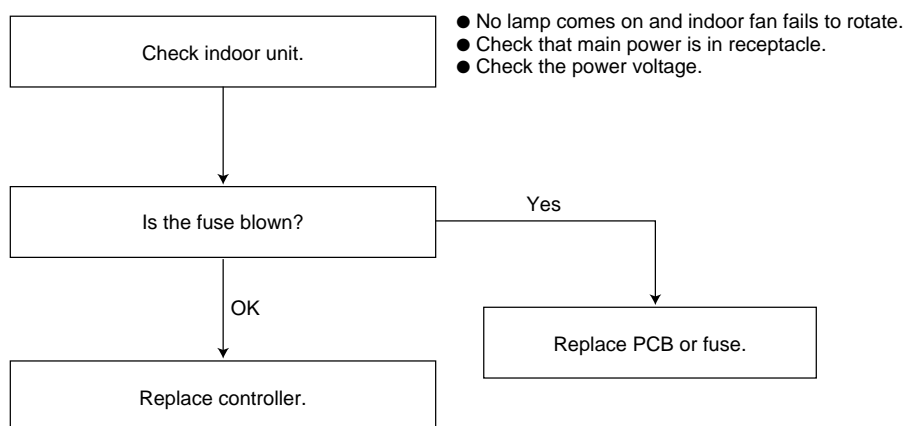
Display Lamp			●...Illuminated	○...Flashing	×...Off
Operation	Service*	Timer	Details of Diagnosis	Details of Abnormality	
●	○	●	Abnormality on DC compressor rotation	① Defective DC compressor position locating circuit	
●	×	●	Defective external ROM for the outdoor unit	① Forgot to attach OTP data ② Incorrect insertion ③ Defective OTP data ④ Defective contact of IC socket	
×	●	×	Current peak cut (15A, 20A)	① Instantaneous power failure/voltage reduction ② Defective HIC ③ Worn compressor	
●	●	×	Defective current control	① Compressor operation stop, Abnormality on voltage application ② Abnormality on AC input voltage	
×	●	●	Compressor discharge gas overheating protection	① Gas shortage during heating/cooling operation. (More than 50% gas shortage) ② Blocked electronic expansion valve or capillary tube ③ Defective compressor temp. sensor ④ Outdoor fan motor fails to rotate during cooling operation	
●	●	●	Indoor fan motor rotation abnormality	① Defective fan motor position locating sensor, disconnection of fan motor winding ② Disconnected connector ③ Defective fan motor drive circuit	
○	●	○	Abnormality on outdoor DC fan motor rotation	① Disconnected outdoor DC fan motor ② Locked ③ Defective PCB	

*This lamp lights only when conducting service inspections.

NOTE

- Operation lamp flashes upon errors being detected by sensor, while it flashes to indicate protective actions after error mode occurs more than twice during operation.
- Microcomputer ceases to operate and operation lamp goes out if the fuse on the indoor unit PCB blows.

11-2-3. Self-Diagnosis Function Fails to Work



11-3. Fault Assessment of Indoor/Outdoor Unit

11-3-1. Fault Assessment of Indoor Unit

No.	Operation	Checkpoints (conditions of the unit)
1	Set operation selector of indoor unit to DEMO and start operation using remote control unit.	<ul style="list-style-type: none">● Rated voltage of 220 VAC exists for inter-unit wiring between 1 and 2.● Connect 2 and 4 with a 5kΩ resistor. Measurement of the voltage between these must show 12V to 15V, with fluctuation occurring once every 4 seconds. Or insert LED jig and LED should flicker once in 4 seconds.

- If no abnormality is detected, carry out fault assessment of the outdoor unit.

11-3-2. Fault Assessment of Outdoor Unit

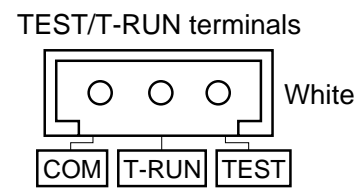
No.	Operation	Checkpoints (operation of the unit)
1	Apply rated voltage of 220 VAC between 1 and 2 of terminal block on outdoor unit.	<ul style="list-style-type: none">● RED LED (red) on control board should turn on.
2	Short-circuit the COM and T-RUN terminal in outdoor unit.	<ul style="list-style-type: none">● Compressor and fan motor should all be ON.

- If no abnormality is detected, carry out fault assessment of the indoor unit (if not previously done).

How to use the TEST/T-RUN terminals

T-RUN: Test run (compressor, fan motor are all ON)

TEST: Time-scales are reduced to 1/60 (operations occur 60 times faster than normal), and electric-powered expansion valve is fully opened.



11-4. Checkpoints for Each Component and Check Procedure

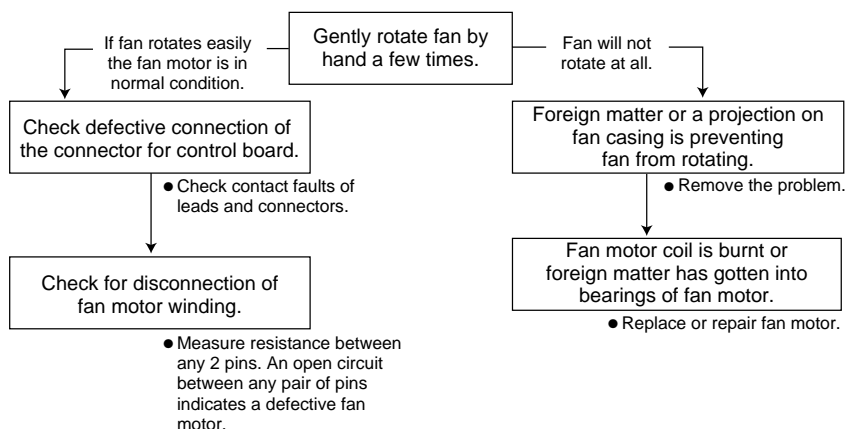
11-4-1. Indoor Controller (control section)

- Check for any problems such as disconnections or contact faults in the display board connector.
- Also check for disconnections or contact faults at all other terminals.

11-4-2. Indoor Fan Motor

< SAP-KMV91G and SAP-KMV181G >

- Check for disconnections or contact faults at the connector for the indoor fan.



11-4-3. Sensors

- Remove the sensors from the board to check for disconnections or short-circuits.
- A faulty sensor can be judged by using the self-diagnosis function or by referring to thermistor characteristics.

11-4-4. Inter-unit Wiring

- Check that all wiring is connected properly to the terminal plate, and each wire is connected to the corresponding position.
- Check whether the wiring may be inadvertently connected to each other somewhere in the middle.

11-4-5. Switchboard

- Check for continuity at the ON, OFF TEST, and DEMO switches with a tester.

11-4-6. Indoor / Outdoor Control Board

- Check for disconnections or connection faults.

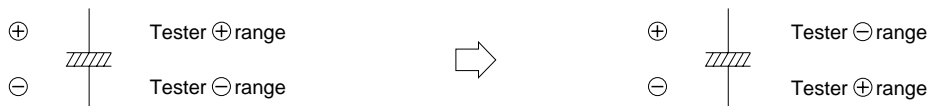


CAUTION

Do not insert or remove the connector for the outdoor control board while the power is on. (This will damage the controller.)

11-4-7. Electrolytic Capacitor

- Remove terminal from electrolytic capacitor and discharge electricity sufficiently before checking with testers. Set the multimeter to resistance range. The capacitor is good if the pointer bounces momentarily.
- Check if there is swelling or distortion in the casing.



11-4-8. Fuse

- Check for continuity by observation or with a tester.

11-4-9. Compressor

- Check for bad connections, short circuit or insulation failure of the compressor windings.

11-4-10. HIC

It should be checked in the following sequence:

Procedure

- (1) Disconnect +, -, U, V and W terminals.
- (2) Using an analog tester (set to $\times 100$ range), measure the resistance between terminals in the following table.

Tester bar \oplus	HIC Terminal								
	+			-			U	V	W
Tester bar \ominus	U	V	W	U	V	W	+		-
Resistance	around 500 – 1,000 Ω			∞			∞		around 500 – 1,000 Ω

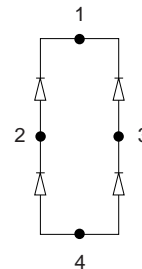
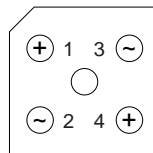
NOTE

- Use $\times 100$ range of circuit tester to confirm approximate values between 500 and 1,000 ohms. The HIC can be judged normal if U, V and W all show the same resistance.

11-4-11. Diode Module

- Check each diode of the diode module separately.

Polarity of tester		Resistance
\oplus	\ominus	
1	2	10 Ω – 100 Ω
	3	10 Ω – 100 Ω
2	1	∞
	4	10 Ω – 100 Ω
3	1	∞
	4	10 Ω – 100 Ω
4	2	∞
	3	∞



11-4-12. Outdoor Fan Motor

Gently rotate the fan by hand.

● If the fan rotates easily:

- a. Check for problems with motor-run capacitor, which is located on the Control PCB in Outdoor Unit.
- b. Check for bad connections to the fan motor winding.
- c. Measure the voltage across the outdoor fan motor terminals in the AC range with a tester. If the tester indicates voltage is present, the fan motor is in normal condition.

● If the fan will not rotate at all:

- a. Check if an obstruction is touching the fan, or if the fan itself is making contact with the outer frame.
- b. If the above yields no problem, the bearings in the fan motor may have overheated and become damaged. Replace the fan motor as a whole.

11-4-13. Electronic Expansion Valve

- Check if clicking sound of the electronic expansion valve continues for about 17 seconds after the air conditioner is switched on.



CAUTION

When replacing parts in refrigerant circuit and when welding is carried out, do so after performing nitrogen conversion. (Never perform nitrogen blowing.)

11-4-14. Breaker

- Confirm that the circuit breaker or fuse is of the specified rating.
- Check that the circuit breaker is exclusively intended for air conditioners.
- Check for insulation failure or short-circuits between components within the air conditioner.
- Deterioration of functions of the leakage breaker (used for approximately 10 years) ➡ replace the breaker.

11-4-15. Refrigerant pressure <Cooling>

- Check the tubing for correct connection and test run the unit in Cooling mode. Then, measure the temperature of the intake and exhaust air, and compare the values with the temperature chart.
- If the temperature of the exhaust air exceeds the value in the temperature chart: Check for refrigerant shortage or blockage.

Assessment of refrigerant shortage

A shortage may exist if:

- a. Pressure in the low-pressure section is more than 0.5kg/cm²G (0.15 MPa) below the value given in the performance chart.
- b. Indoor heat exchanger has relatively little condensation on it and is generally in dry condition.

Distinguishing between refrigerant shortage and refrigerant blockage

- a. Charge the air conditioner with an additional 100 grams of refrigerant, and then do it again. Check each time if the low-pressure section and suction temperature change. If little or no change can be observed, the problem is likely to be refrigerant blockage, not shortage.

11-5. Problems with Noise and Radio Interference

Since an inverter-type air conditioner works at high frequency under pulse control, it can be affected by external noise and may also generate interference to nearby radio equipment. For this reason, this air conditioner is fitted with an electrical noise filter, so no trouble should arise in normal use. However, problems with noise or radio interference may still occasionally occur depending on where the air conditioner is installed. Take careful note of the following points.

11-5-1. Problems with Electrical Noise

- External noise, such as high-frequency signals, become superimposed on the signal wiring. This may affect the signal pulse, resulting in a malfunction of the air conditioner.

Places subject to noise problems	Symptoms	Remedy
<ol style="list-style-type: none">1. Areas near broadcasting stations where strong radio waves are generated.2. Areas near a ham radio operator.3. Areas where high-frequency sewing machines or arc-welding equipment are used.	<p>In such a case, the following symptoms may occur:</p> <ol style="list-style-type: none">1. The air conditioner stops during operation2. Indicator lamps flash	<p>Ensure that the signal wiring is not affected by electrical noise.</p> <p>Isolate the noise or separate the signal wiring from the noise source.</p> <ol style="list-style-type: none">1. Adopt shielded wiring.2. Separate the air conditioner from the noise source.

11-5-2. Radio Interference

- The air conditioner contains a microcomputer and a compressor which perform switching operations at high speed. This generates electrical noise. If this noise escapes from the unit or gets into the wiring, interference to nearby radio equipment such as a television or radio may occur.

Possible noise conditions	Symptoms	Remedy
<ol style="list-style-type: none">1. A television or radio is near the air conditioner or its wiring.2. The antenna cable for a television or radio is near the air conditioner or its wiring.3. The signal received from a television or radio station is weak.	<ol style="list-style-type: none">1. Television screen is disrupted by noise or the image is distorted.2. Radio programs are affected by crackling noises.	<ol style="list-style-type: none">1. Use another power outlet.2. Keep radio equipment and antenna cables 1 meter or more from the air conditioner and its wiring.3. Replace the antenna with a high-sensitivity antenna.4. Replace the antenna cable with coaxial cable.5. Install a noise filter (for radio equipment).6. Install a booster.

12. CHECKING ELECTRICAL COMPONENTS

12-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds $2M\Omega$.

12-1-1. Power Supply Wires

Clamp the grounding terminal of the power plug with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the power wires. (Fig. 1)

Then measure the resistance between the ground wire and other power wire. (Fig. 1)

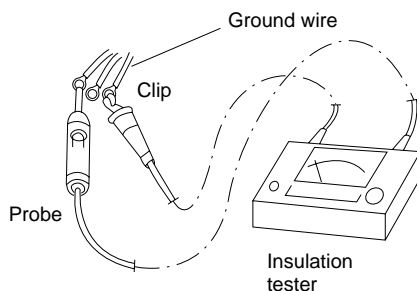


Fig. 1

12-1-2. Indoor Unit

Clamp an aluminum plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw except where the ground line is connected on the terminal plate. (Fig. 2)

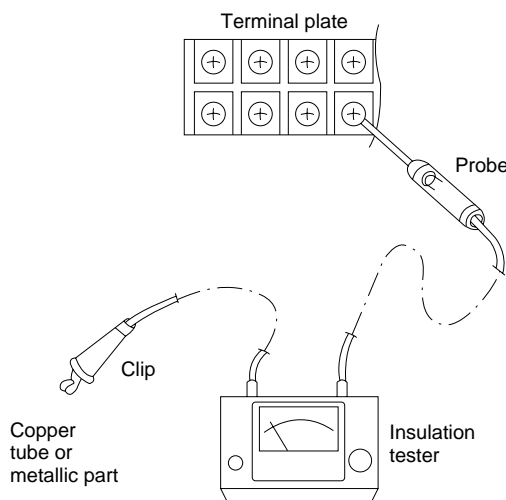


Fig. 2

12-1-3. Outdoor Unit

Clamp a metallic part of the unit with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on each terminal screw where power supply lines are connected on the terminal plate. (Fig. 2)

12-1-4. Measurement of Insulation Resistance for Electrical Parts

Disconnect the lead wires of the desired electric part from terminal plate, capacitor, etc. Similarly disconnect the connector. Then measure the insulation resistance. (Figs. 3 and 4)

NOTE

Refer to Electric Wiring Diagram.

If the probe cannot enter the poles because the hole is too narrow then use a probe with a thinner pin.

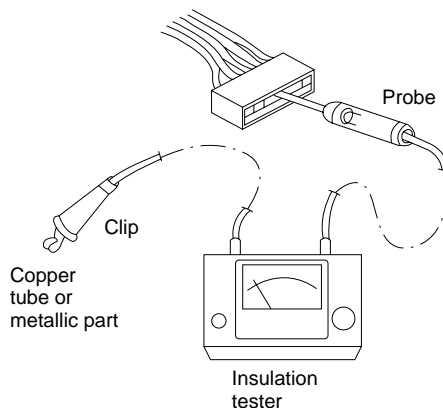


Fig. 3

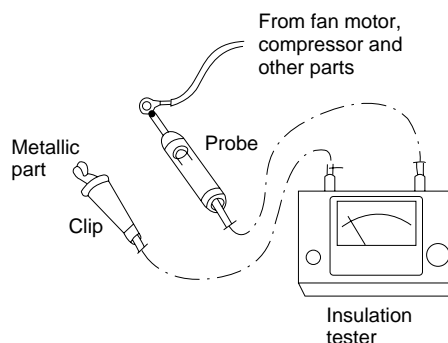


Fig. 4

12-2. Checking Continuity of Fuse on PCB Ass'y

Check for continuity using a multimeter as shown in Fig. 6.

NOTE

Method Used to Replace Fuse on PCB Ass'y (when fuse shape looks like the fuse in either Fig. 5a or 5b)

— Indoor PCB Ass'y —

- (1) Remove the PCB Ass'y from the electrical component box.
- (2) Then pull out the fuse from the PCB Ass'y. (Fig. 5a)

— Outdoor PCB Ass'y —

- (1) Remove the PCB Ass'y from the electrical component box.
- (2) Pull out the fuse at the metal clasp using pliers while heating the soldered leads on the back side of the PCB Ass'y with a soldering iron (30W or 60W). (Fig. 5b)
- (3) Remove the fuse ends one by one. For replacement insert a fuse of the same rating and solder it. (Allow time to radiate heat during soldering so that the fuse does not melt.)

12-3. Checking Motor Capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in Fig. 7. Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.

The capacitor is "good" if the pointer bounces to a great extent and then gradually returns to its original position.

The range of deflection and deflection time differ according to the capacity of the capacitor.



WARNING

When checking the fixed capacitor (C2) of the outdoor unit, be sure to leave the main power OFF for more than 10 minutes before performing the check.

Reason:

The outdoor unit controller (Inverter) contains a large electrolytic capacitor, so a potentially dangerous charge (at a voltage of 325 VDC remains even after the main is turned off. (Refer to page 37.)

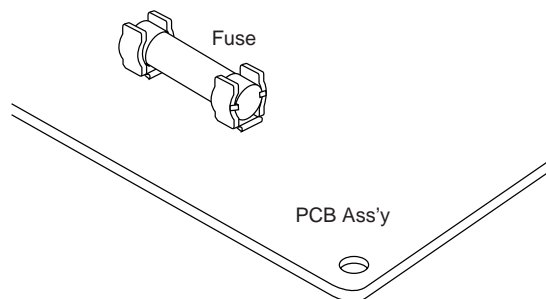


Fig. 5a

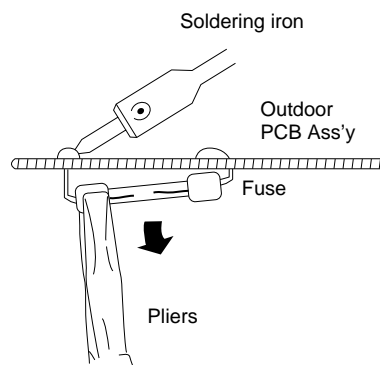


Fig. 5b

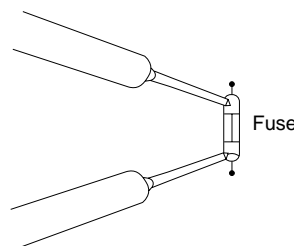


Fig. 6

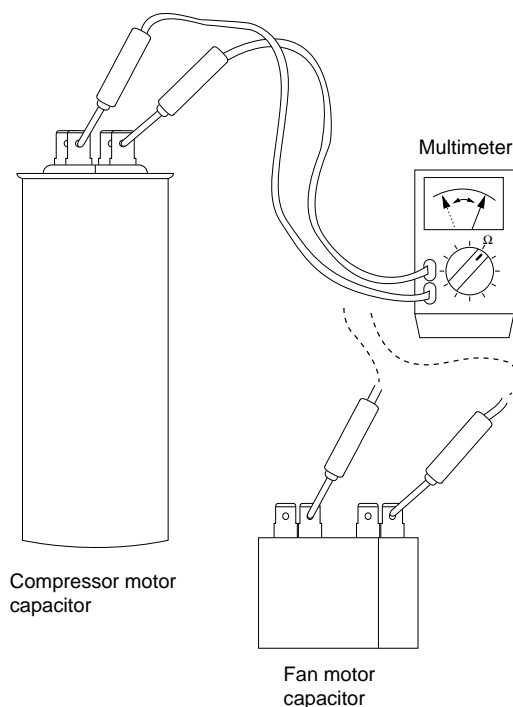


Fig. 7

APPENDIX INSTRUCTION MANUAL

**SAP-KMV91G × 3 + SAP-KMV181G
SAP-CMV2441G**

or

**SAP-KMV91G × 4
SAP-CMV2441G**

(8526-4180-30600-2)

Features

This air conditioner is an inverter type unit that automatically adjusts capacity as appropriate. Details on these functions are provided below; refer to these descriptions when using the air conditioner.

- **Comfort Control in Four Rooms Simultaneously**
You can control the temperature in four rooms simultaneously. And you have fingertip control over both rooms with a convenient remote control unit.
- **Compact Size**
This model is smaller than its predecessors and yet offers the same capabilities.
- **Microprocessor Controlled Operation**
The interior compartment of the remote control unit contains several features to facilitate automatic operation, easy logically displayed for easy use.
- **Simple One-touch Wireless Remote Control**
The remote control unit has several features to facilitate automatic operation.
- **24-Hour ON or OFF Timer**
This timer can be set to automatically turn the unit on or off at any time within a 24 hour period.
- **1-Hour OFF Timer**
This timer can be set to automatically turn off the unit at any time after one hour.
- **Night Setback**
Pressing this button changes the setting of the room temperature thermostat, allowing you to set the temperature at whatever level that you find comfortable.
- **Automatic and 3-step Fan Speed**
Auto/High/Medium/Low
- **Air Sweep Control**
This function moves a flap up and down in the air outlet, directing air in a sweeping motion around the room and providing comfort in every corner.
- **Anti-Mold Filter**
This unit is equipped with an anti-mold filter that inhibits the growth of mold and bacteria.
- **Air Clean Filter**
An air filter that uses activated charcoal to eliminate unpleasant odors and clean the air is available.

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Product Information

If you have problems or questions concerning your Air Conditioner, you will need the following information. Model and serial numbers are on the nameplate on the bottom of the cabinet.

Model No. _____ Serial No. _____

Date of purchase _____

Dealer's address _____

Phone number _____

Alert Symbols

The following symbols used in this manual, alert you to potentially dangerous conditions to users, service personnel or the appliance:



WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

Installation Location

- We recommend that this air conditioner be installed properly by qualified installation technicians in accordance with the Installation Instructions provided with the unit.
- Before installation, check that the voltage of the electric supply in your home or office is the same as the voltage shown on the nameplate.



WARNING

- Do not install this air conditioner where there are fumes or flammable gases, or in an extremely humid space such as a greenhouse.
- Do not install the air conditioner where excessively high heat-generating objects are placed.

Avoid:

To protect the air conditioner from heavy corrosion, avoid installing the outdoor unit where salty sea water can splash directly onto it or in sulphurous air near a spa.

Electrical Requirements

1. All wiring must conform to the local electrical codes. Consult your dealer or a qualified electrician for details.
2. Each unit must be properly grounded with a ground (or earth) wire or through the supply wiring.
3. Wiring must be done by a qualified electrician.

Safety Instructions

- Read this Instruction Manual carefully before using this air conditioner. If you still have any difficulties or problems, consult your dealer for help.
- This air conditioner is designed to give you comfortable room conditions. Use this only for its intended purpose as described in this Instruction Manual.



WARNING

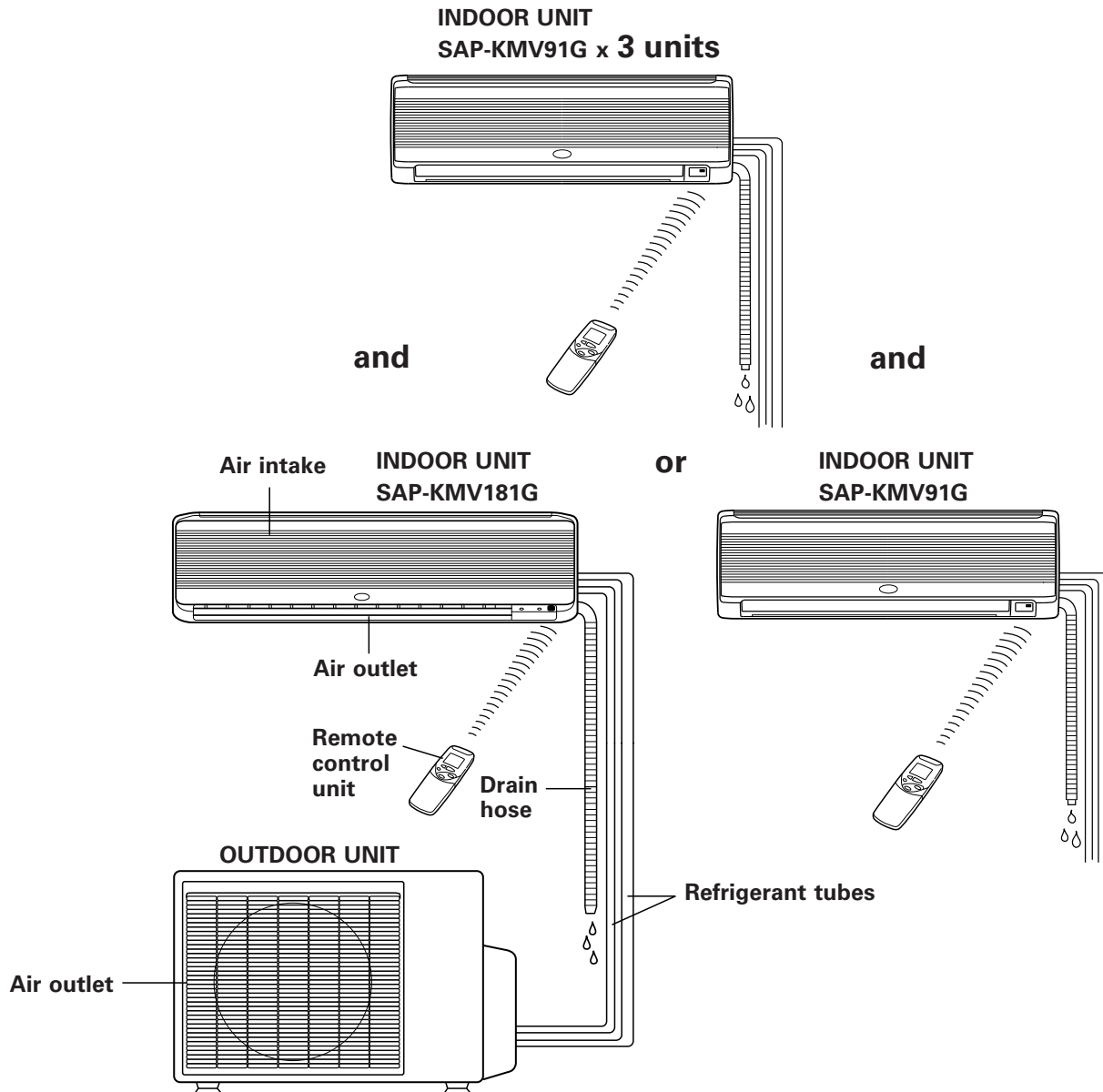
- Never use or store gasoline or other flammable vapor or liquid near the air conditioner — it is very dangerous.
- This air conditioner has no ventilator for intaking fresh air from outdoors. You must open doors or windows frequently when you use gas or oil heating appliances in the same room, which consume a lot of oxygen from the air. Otherwise there is a risk of suffocation in an extreme case.



CAUTION

- Do not turn the air conditioner on and off from the power mains switch. Use the ON/OFF operation button.
- Do not stick anything into the air outlet of the outdoor unit. This is dangerous because the fan is rotating at high speed.
- Do not let children play with the air conditioner.
- Do not cool the room too much if babies or invalids are present.

Names of Parts



NOTE

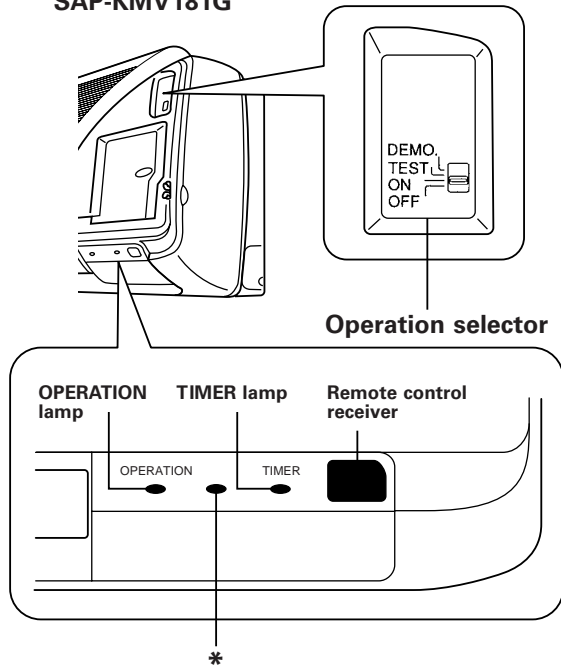
This illustration is based on the external view of a standard model. Consequently, the shape may differ from that of the air conditioner which you have selected.

This air conditioner consists of four indoor units and an outdoor unit. You can control the air conditioner with the remote control unit.

Air intake	Air from the room is drawn into this section and passes through air filters which remove dust.
Air outlet	Conditioned air is blown out of the air conditioner through the air outlet.
Remote control unit	The wireless remote control unit controls power ON/OFF, operation mode selection, temperature, fan speed, timer setting, and air sweeping.
Refrigerant tubes	The indoor and outdoor units are connected by copper tubes through which refrigerant gas flows.
Drain hose	Moisture in the room condenses and drains off through this hose.
Outdoor (Condensing) unit	The outdoor unit contains the compressor, fan motor, heat exchanger coil, and other electrical components.

Unit Display and Operation Selector

INDOOR UNIT
SAP-KMV181G

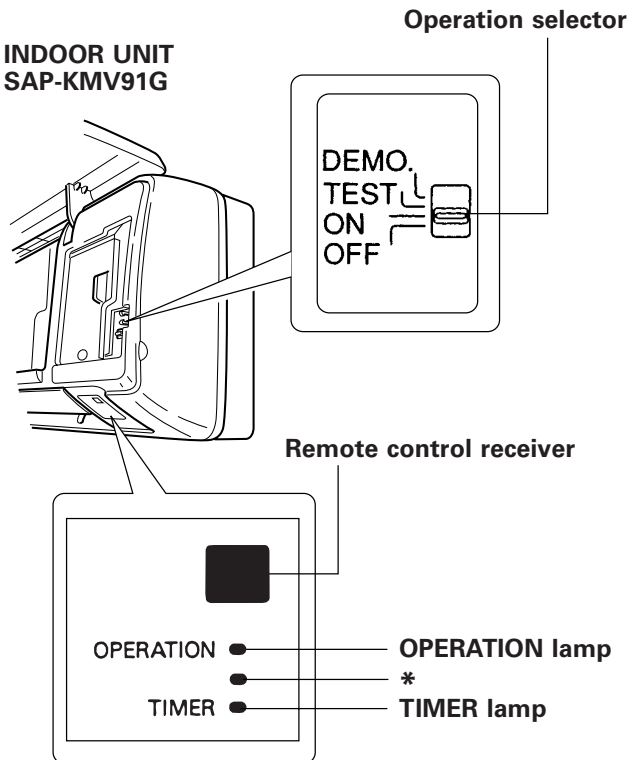


IMPORTANT

Avoid using radio equipment such as mobile phone near (within 1 m of) the indoor unit. Some radio equipment may cause the unit to malfunction.



If the trouble occurs, disconnect power and restart the air conditioner after a few minutes.

INDOOR UNIT
SAP-KMV91G

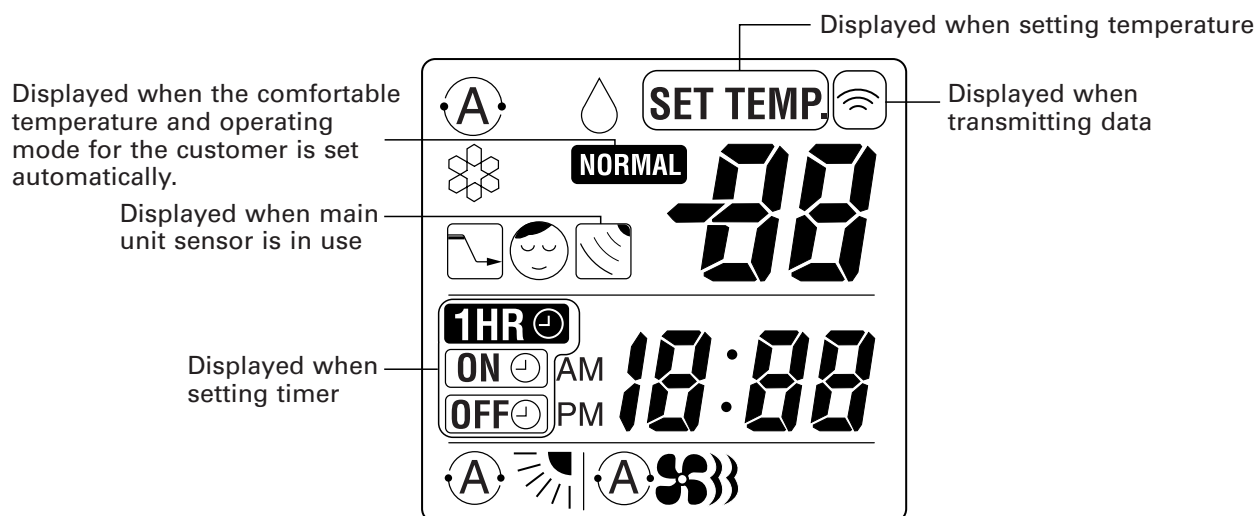


NOTE

* This lamp lights only when conducting service inspections.

Remote control receiver	This section picks up infrared signals from the remote control unit (transmitter).
Operation selector ON position	This position is for operating the air conditioner with the wireless remote control unit. Set the selector to this position for normal operation.
OFF position	Switch the selector to the OFF position if you are not going to use the air conditioner for a few days or longer.
 WARNING	The OFF position does not disconnect the power. Use the main power switch to turn off power completely.
TEST and DEMO. position	This position is used only when servicing the air conditioner.
 CAUTION	Do not set at the TEST and DEMO. position for normal operation.
OPERATION lamp	This lamp lights when the system is in the continuous DRY or COOL mode.
TIMER lamp	This lamp lights when the system is being controlled by the timer.

Remote Control Unit (Display)



Symbols

(1) Operation mode

AUTO.....



COOL.....



MILD DRY.....



(2) Fan speed

Automatic operation.....



HIGH.....



MEDIUM.....



LOW.....



(3) Set temperature

16 – 30 °C

When set to 28 °C.....

Current temperature indication.....



(4) Timer

24-hour ON Timer.....



24-hour OFF Timer.....



1-hour OFF Timer.....



(5) NIGHT SETBACK.....



(6) SAVE.....



(7) Confirmation of transmission.....



(8) Flap

AUTO.....



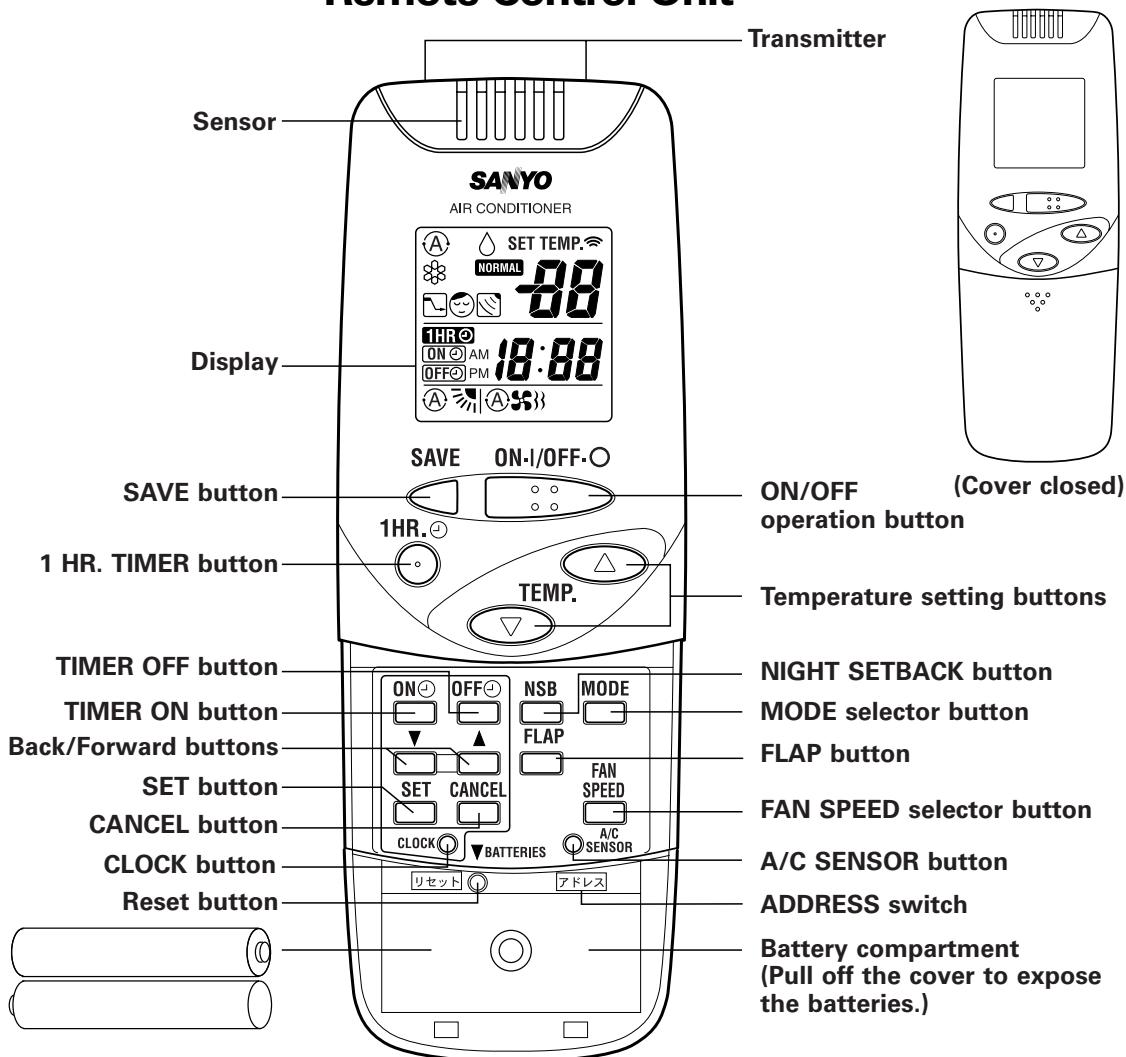
Angle indication.....



Sweep indication.....









Remote Control Unit

















NOTE

The illustration above pictures the remote control unit after the cover has been lowered and removed.

Transmitter	When you press the buttons on the remote control unit, the  mark appears in the display to transmit the setting changes to the receiver in the air conditioner.
Sensor	A temperature sensor inside the remote control unit senses the room temperature.
Display	Information on the operating conditions is displayed while the remote control unit is switched on. If the unit is turned off, only the mode that was set previously is still displayed.
NIGHT SETBACK button	For details, see "Night Setback Mode". When you press this button in the AUTO, DRY or COOL mode, the  mark appears in the display, and the remote control unit will automatically adjust the set temperature to save energy.
Temperature setting buttons	Press the  button to increase the set temperature. Press the  button to reduce the set temperature.
ON/OFF operation button	This button is for turning the air conditioner on and off.
TIMER ON button	 : The air conditioner starts at the set time.
TIMER OFF button	 : The air conditioner stops at the set time.

Remote Control Unit (continued)

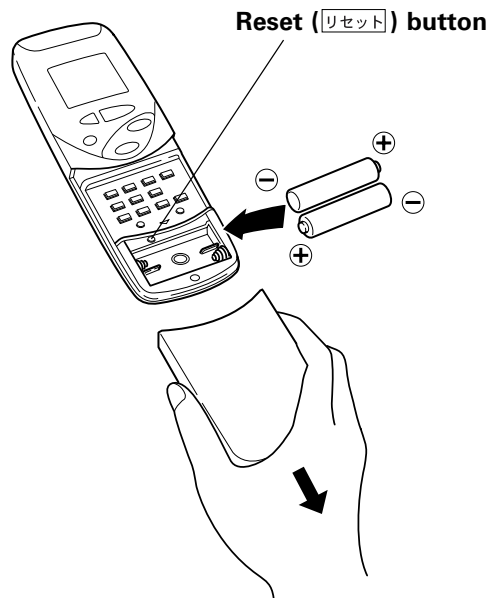
SET button	After using the TIMER ON button or TIMER OFF button to set the timer, use the Back/Forward buttons to enter the time, and then press the SET button.
CANCEL button	Press this button to cancel the current timer setting.
SAVE button	This button fixes the temperature setting to allow energy-conserving operation friendly to the environment.
CLOCK button	Press this button to set the current time.
MODE selector button (AUTO) (DRY) (COOL)	Use this button to select the AUTO, DRY or COOL mode.  : The air conditioner automatically selects the type of operation (DRY, COOL) suitable for the particular room environment.  : The air conditioner reduces the humidity in the room.  : The air conditioner makes the room cooler.
FLAP button NOTE	To change the airflow direction up or down, hold down the FLAP button during operation. The unit makes a beeping sound and then starts to move.  : The airflow direction is set automatically.  : The airflow direction can be set manually. (six positions)  : The flap moves up and down automatically. To switch to the sweep function () when in the manual () mode, hold down the FLAP button.
FAN SPEED selector button	 : The air conditioner automatically decides the fan speeds.  : High fan speed  : Medium fan speed  : Low fan speed
1 HR. TIMER button (1-HOUR OFF TIMER)	 : When you press this button, regardless of whether the unit is operating or stopping, the unit operates for one hour and then shuts down.
Reset (リセット) button (ALL CLEAR)	Puts the remote control unit into pre-operation status. Always press this button after replacing the batteries.
A/C SENSOR button NOTE	When you press this button (use a small-tipped object such as a ballpoint pen), the  mark will appear at the display. And the room temperature is detected by the sensor which is built into the indoor unit and the air conditioner is controlled accordingly. If the remote control is located near a heat source, such as a space heater or in direct sunlight, press the A/C SENSOR button to switch to the sensor on the indoor unit.
ADDRESS switch	<ul style="list-style-type: none"> The address switch changes to prevent mixing of signals from remote control units when two Sanyo air conditioners are installed next to each other. Normally, the address switch is set to A. When switching the address, the remote control must be changed, and the jumper cables on the indoor unit board must be switched. For more information, please contact the dealer where you made the purchase. Normally, the tabs on the remote control unit should not bent.

NOTE

The remote control unit sends the temperature signal to the air conditioner regularly at five minute intervals. If the signal from the remote control unit stops for more than seventeen minutes due to the loss of the remote control unit or other trouble, the air conditioner will switch to the temperature sensor which is built into the indoor unit and control the room temperature. In these cases, the temperature around the remote control unit may differ from the temperature detected at the air conditioner's position.

Using the Remote Control Unit

How to Install Batteries



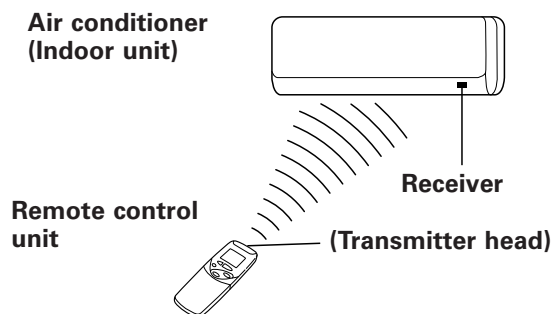
1. Slide the cover in the direction indicated by the arrow and remove it.
2. Install two AAA alkaline batteries. Make sure the batteries point in the direction marked in the battery compartment.
3. Use a thin object such as the tip of a pen to press the **リセット** button.

NOTE

- The batteries last about six months, depending on how much you use the remote control unit. Replace the batteries when the remote control unit's display fails to light, or when the remote control cannot be used to change the air conditioner's settings.
- Use two fresh leak-proof type-AAA alkaline batteries.
- In replacing batteries, follow the instructions as mentioned in the sub-section "How to Install Batteries".
- If you do not use the remote control unit more than 1 month, take out the batteries.

How to Use the Remote Control Unit

When using the remote control unit, always point the unit's transmitter head directly at the air conditioner's receiver.



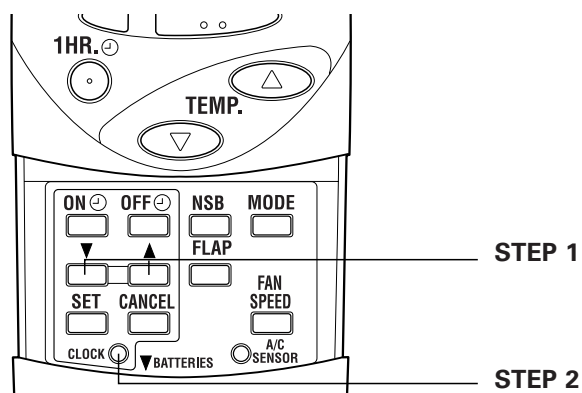
Remote Control Unit Installation Position

The remote control unit may be operated either from a non-fixed position or from a wall-mounted position. To ensure that the air conditioner operates correctly, DO NOT install the remote control unit in the following places:

DO NOT

- In direct sunlight
- Behind a curtain or other places where it is covered
- More than 8 m away from the air conditioner
- In the path of the air conditioner's airstream
- Where it may become extremely hot or cold
- Where it may be subject to electrical or magnetic noise
- Where there is an obstacle between the remote control unit and air conditioner (since a check signal is sent from the remote control unit every 5 minutes)

Before Operation

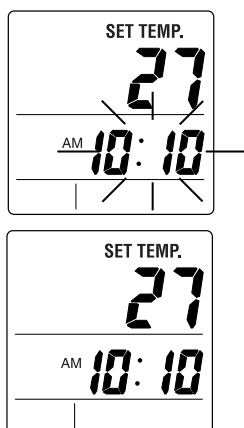


Setting the Current Time

Example: Setting to 10:10 AM

Press リセット so that 0:00 PM flashes.

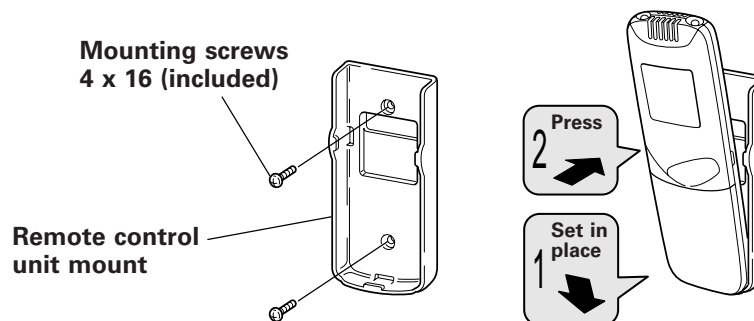
(To correct the current time during air conditioner operation, press the CLOCK button. The clock display flashes.)



1. Use the ▼ and ▲ buttons to set the time to 10:10 AM.
The time can be set in 1-minute units. Holding down the button changes the time in 10-minute units.
2. Press the CLOCK button.
This sets the current time.

Mounting the Remote Control Unit

Before mounting the remote control unit, press the ON-/OFF button at the mounting location to make sure that the air conditioner operates from that location. The indoor unit should make a beeping sound to indicate that it has received the signal.



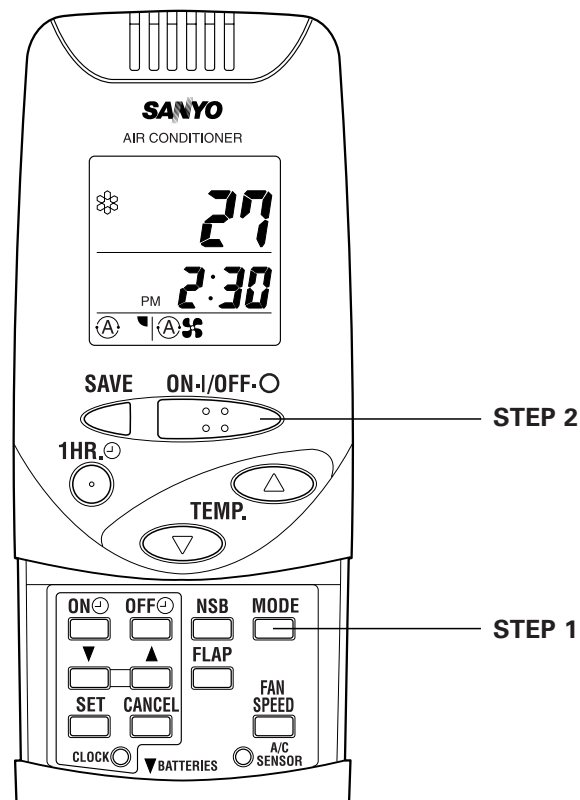
To take out the remote control unit, pull it forward.

When Holding the Remote Control Unit

- When using the remote control unit and during air conditioner operation, the transmitter on the remote control unit should be pointed toward the receiver on the indoor unit.
- Make sure that there are no objects between the remote control unit and receiver which could block the signal.

Operation with the Remote Control Unit

1. Automatic Operation



NOTE

Check that the circuit breaker on the power panel is turned on and that the operation selector of the indoor unit is in the ON position.

Once the Ⓐ mode is selected and the unit is preset by following the steps below, you can have the air conditioner automatically bring the room to the desired temperature simply by pressing the ON/OFF operation button.

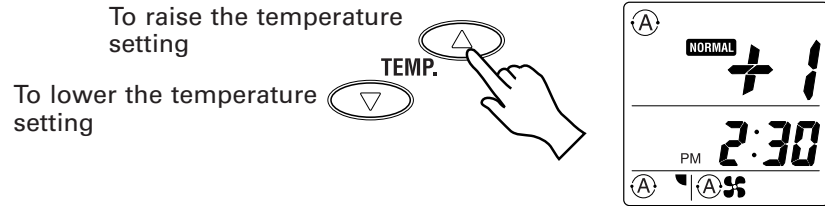
STEP 1	Press the MODE selector button to select Ⓐ .
STEP 2	Press the ON/OFF operation button.

To stop the air conditioner, press the ON/OFF operation button again.

Operation with the Remote Control Unit (continued)

- To change the temperature setting, press the temperature setting buttons and change the setting to the desired temperature.

Press TEMP. to change the temperature setting.

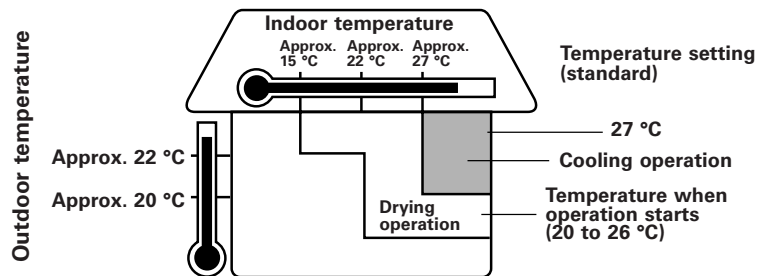


NOTE

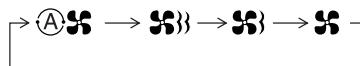
- The temperature setting changes by one degree each time one of the TEMP. setting buttons is pressed. The temperature setting may be changed within a range of $\pm 4^{\circ}\text{C}$ of the standard temperature. (The temperature display changes back to the room temperature display three seconds after the temperature has been changed. However, the air conditioner remembers the new temperature setting even when it is turned off.)
- The type of operation and the temperature setting will differ depending on the ambient temperature when operation starts, as follows:

Operation type	Temperature setting (Standard)	Operation lamp
Cooling	27 °C	Green
Dry	Temperature when operation starts (20 to 26 °C)	Orange

- The temperature sensor of the indoor/outdoor unit automatically selects cooling or drying operation. (If you stop the air conditioner and then restart it within four hours, the air conditioner operates in the same mode as before.)



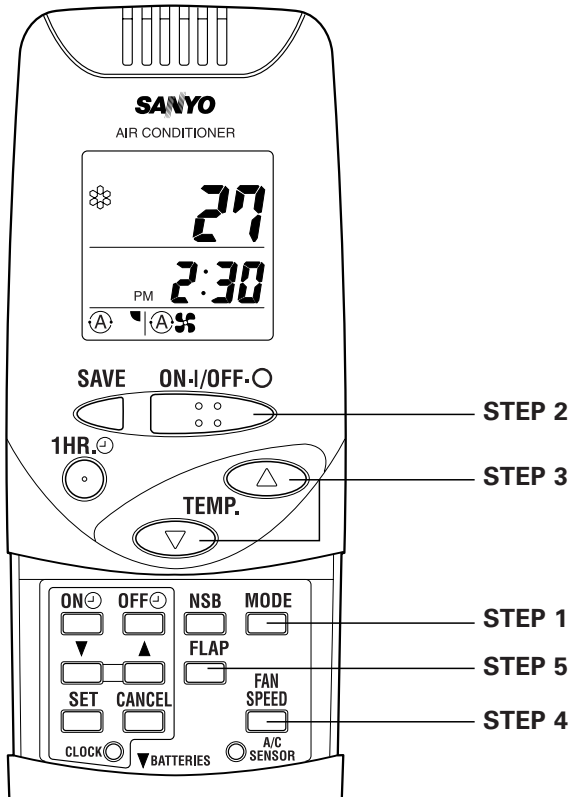
- The operation mode (cooling, dry) does not change automatically during operation.
- Although the fan speed is set automatically, you can change the fan speed by pressing the FAN SPEED selector button.



To stop the air conditioner, press the ON/OFF operation button again.

Operation with the Remote Control Unit (continued)




2. Manual Operation



NOTE

Check that the circuit breaker on the power panel is turned on and that the operation selector of the indoor unit is in the ON position.

If the automatic operation settings of the unit do not meet your needs, press the setting buttons as described below and change the settings as desired.

STEP 1	Press the MODE selector button and select the desired mode. For drying operation →  For cooling operation → 
STEP 2	To start the air conditioner, press the ON/OFF operation button.
STEP 3	Press the temperature setting buttons to change the temperature setting to the desired temperature. Adjustable temperature range: 30 °C max. 16 °C min.
STEP 4	Set the FAN SPEED selector button to the setting you want.
NOTE	If the fan speed is set to  (Automatic), the fan speed switches automatically, according to the difference between the actual room temperature and the temperature setting.
STEP 5	Press the FLAP button and set the airflow direction as desired. (Refer to "Adjusting the Airflow Direction" on page 22.)

To stop the air conditioner, press the ON/OFF operation button again.

Operation with the Remote Control Unit (continued)

NOTE

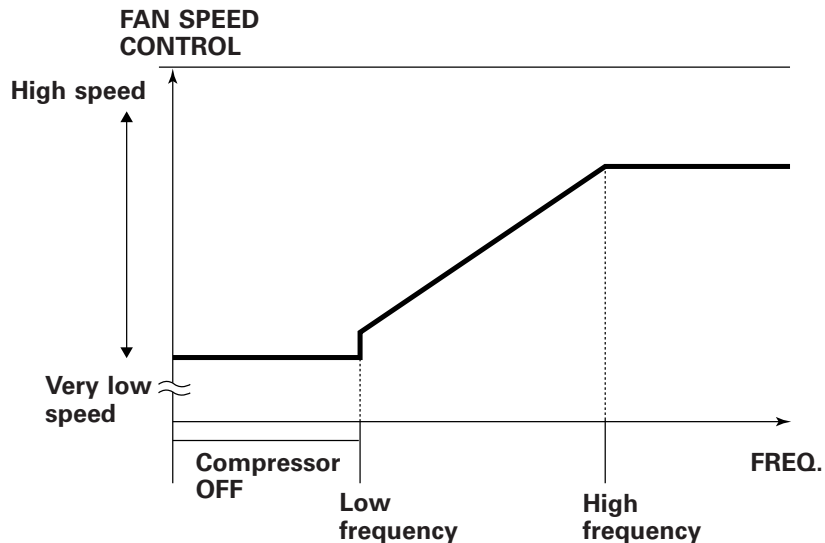
- Choose the best position in the room for the remote control unit, which also acts as the sensor for room comfort and transmits the operating instructions. Once you've found this best position, always keep the remote control unit there.
- This appliance has a built-in 3-minute time delay circuit to ensure reliable operation. When the operation button is pressed, the compressor will start running within three minutes.

3. Adjusting the Fan Speed




A. Automatic

Simply set the FAN SPEED selector button to the  position.

The fan speed is automatically controlled based on the difference between the actual indoor temperature and temperature setting. In other words, the frequency changes together with the fan speed based on this difference in temperature.

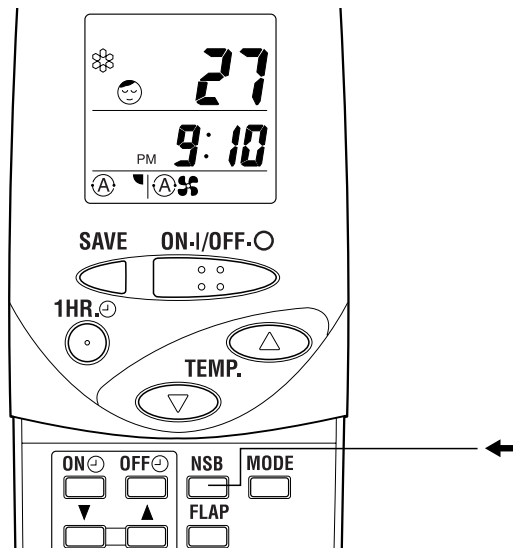


B. Manual

If you want to adjust fan speed manually during operation, just set the FAN SPEED selector button as desired. [ ,  , or ]

Operation with the Remote Control Unit (continued)

4. Night Setback Mode



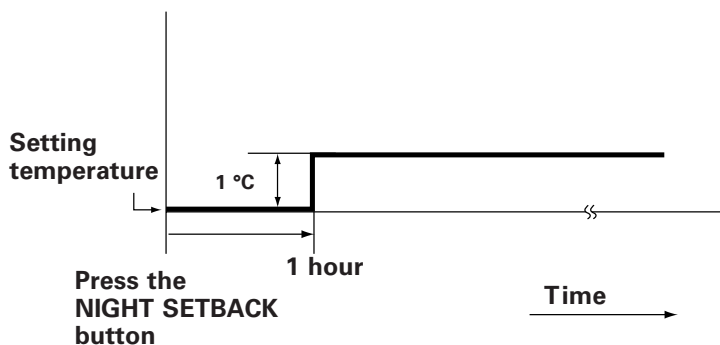
Night Setback Mode is used for saving energy.

Press the NIGHT SETBACK button while operation.
The ☺ mark appears in the display.

To release the night setback function, press the NIGHT SETBACK button again.

In Cooling and DRY Mode:
(☺, ⚙ and ☹)

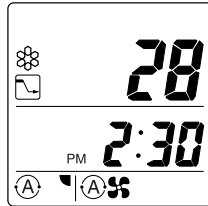
When the night setback mode is selected, the air conditioner automatically raises the temperature setting 1 °C when 1 hour has passed after the selection was made, and then another 1 °C after another 30 minutes have passed, regardless of the indoor temperature when night setback was selected. This enables you to save energy without sacrificing comfort. This function is convenient when gentle cooling is needed.



Operation with the Remote Control Unit (continued)

5. Save Mode

This mode fixes the temperature setting and lowers the operating temperature for energy-conserving operation. Use this mode when leaving the room for a short time. With Save mode, the air conditioner can start up quickly when returning to normal operation for providing more comfort compared to stopping operation temporarily and then restarting. This mode provides more economical operation at reduced capacity compared to continuing normal operation.



Press **SAVE** during operation or while stopped.

To cancel, press **SAVE** again.

- Save mode uses the following operation settings.

	Temperature setting	Airflow direction
Cooling operation	28 °C	Swing

- The temperature setting is not displayed on the remote control unit. The airflow direction and fan speed settings only can be changed. (These settings are stored.)
- During dry operation, the room temperature at dry save operation is used as the temperature setting (from 20 °C to 28 °C). Also, the airflow direction is the flap position before the Save setting was made.
- The settings for the mode selected automatically are used during automatic operation.
- Save mode can be used with all operation modes, including 1-hour timer and Night Setback mode. When used with other modes, Save mode is given precedence. (However, Night Setback mode is given precedence when used with Save mode if the settings are the same.)
- During operation in Save mode, no changes can be made in the temperature.
- During cooling operation, irregular flap swing and fan speeds are used to maintain a comfortable environment.

NOTE

Special Remarks

"DRY" () Operation

How it works?

- If the room temperature is higher than the setting temperature, the air conditioner operates in the same way as during cooling operation. When the room temperature approaches the setting temperature, the air conditioner switches to DRY operation and the indoor fans operate irregularly. In addition, the outdoor unit continues operation at lowered capacity, and repeats the cycle of operation and shutdown if the room temperature drops further. If the outdoor unit stops when the room temperature is less than 20 °C, the indoor fan also stops. If the room temperature is less than 15 °C, both the indoor fan and outdoor unit stop.

Clicking Sound

Clicking sound is heard from the air conditioner

- In cooling operation, any plastic parts may expand or shrink due to a sudden temperature change. In this event, a clicking sound may occur. This is normal, and the sound will soon disappear.

Remote control unit

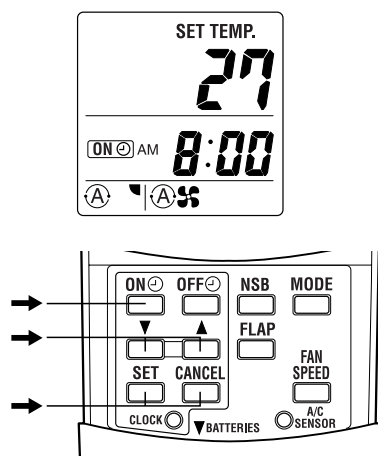
- The remote control unit sends the setting condition to the air conditioner regularly at five minute intervals.

Using the 24-Hour ON and OFF Timer

NOTE

Before using the timer, be sure to set the current time on the remote control unit.

1. TIMER ON mode (Example)



After the length of time set for **TIMER ON** elapses, the unit begins operating.

The display depicted at left indicates that the air conditioner will begin operating in AM 8:00.

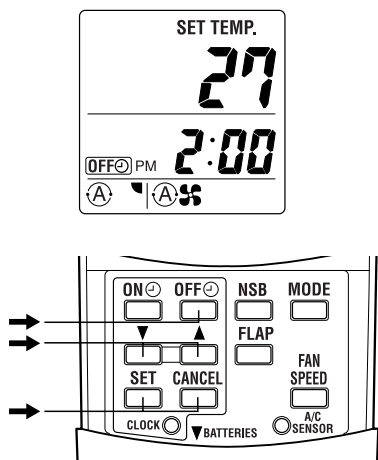
Setting procedure:

STEP 1	Press the MODE button and set the desired operation mode.
STEP 2	Press the TIMER ON button. (ON flashes.)
STEP 3	Use the ▼ or ▲ buttons to set to the time that you want operation to start. The time is set in 10-minute units. Hold down the button to fast-forward the time.
STEP 4	Press the SET button. The display returns to the current time once the timer is set.

- The display changes immediately to its status previous to timer setting, but the **ON** indication remains.
- To check the status of the timer while it is counting down, press the **TIMER ON** button. The display returns to the current time after 30 seconds.

Cancellation procedure: Press the **CANCEL** button.

2. TIMER OFF mode (Example)



After the length of time set for **TIMER OFF** elapses, the unit stops operating.

The display depicted at left indicates that the air conditioner will stop operating in PM 2:00.

Setting procedure:

STEP 1	Press the TIMER OFF button. (OFF flashes.)
STEP 2	Use the ▼ or ▲ buttons to set to the time that you want operation to stop. The time is set in 10-minute units. Hold down the button to fast-forward the time.
STEP 3	Press the SET button. The display returns to the current time once the timer is set.

- The display changes immediately to its status previous to timer setting, but the **OFF** indication remains.
- To check the status of the timer while it is counting down, press the **TIMER OFF** button. The display returns to the current time after 30 seconds.

Cancellation procedure: Press the **CANCEL** button.

Using the 24-Hour ON and OFF Timer (continued)

3. ON/OFF Program Timer

A combination of the TIMER ON and TIMER OFF modes, this function allows you to specify the time that the unit turns on and the time when it turns off.

Setting procedure:

STEP 1	Use the procedure described in the "1. TIMER ON mode" section on the preceding page to set the timer to turn the unit.
STEP 2	Use the procedure described in the "2. TIMER OFF mode" section on the preceding page to set the timer to turn the unit.

- The display changes immediately to its status previous to timer setting, but the **ON** or **OFF** indication remains.
- The timer function is cancelled after air conditioner operation. To use timer operation the next time, set the timer again.

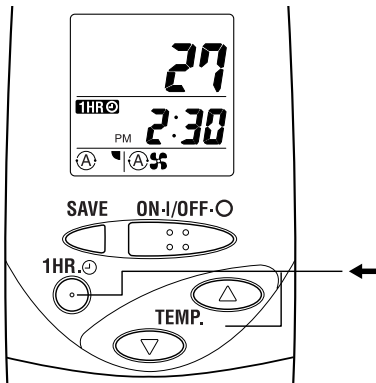
Cancellation procedure: To cancel both the TIMER ON and TIMER OFF settings, press the CANCEL button. To cancel either the TIMER ON or TIMER OFF setting only, press the TIMER ON or TIMER OFF button, and then press the CANCEL button.

NOTE

- **Set the ON and OFF Timers simultaneously.**
Unless you set the 24-Hour ON and OFF Timers at the same time, they may not operate at the specified time.

Using the 1-Hour OFF Timer

1. 1-Hour OFF Timer



This function causes the unit to operate for one hour and then stop, regardless of whether the unit is on or off when this button is pressed. The **1HR** indicator in the display indicates that this function is operating.

Setting procedure:

Regardless of whether the unit is operating or stopped, press the 1 HR. TIMER button.

The unit makes a beeping sound when the 1 HR. TIMER button is pressed.

1HR appears in the display.

Cancellation procedure:

Press the ON/OFF operation button to turn the unit off, wait for the unit to stop operating, and then press the ON/OFF operation button again. The 1-Hour Timer function is now cancelled and the unit operates normally.

NOTE

- If, while the 1-Hour Timer function is operating, the 1HR. TIMER button is pressed once to cancel the function and then again, the unit continues to operate for one hour from that point in time and then stops.
- If the 1 HR. TIMER button is pressed while the TIMER OFF function operates, the OFF Timer is cancelled and the unit will stop operating one hour later.

2. Combining the 1-Hour OFF Timer and 24-Hour ON Timer

By combining the 1-Hour OFF Timer and 24-Hour ON Timer, it is possible to have the unit operate for just one hour from the present time, and then have it switch on again later at a time specified by you.

Setting procedure:

STEP 1	Press the 1 HR. TIMER button.
STEP 2	Press the TIMER ON button. Use the ▼ and ▲ buttons to set the time that you want operation to start.

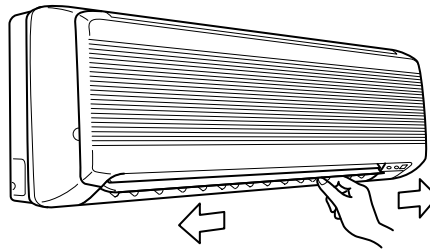
NOTE

- **Set the 1-hour OFF Timer and the 24-hour ON Timer simultaneously.**
Unless you set the 1-hour OFF Timer and the 24-hour ON Timer at the same time, the 1-hour OFF Timer may operate for one hour or more.

Adjusting the Airflow Direction

1. Horizontal

The horizontal airflow can be adjusted by moving the vertical vanes with your hands to the left or right.

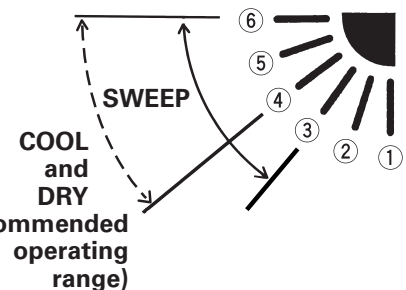
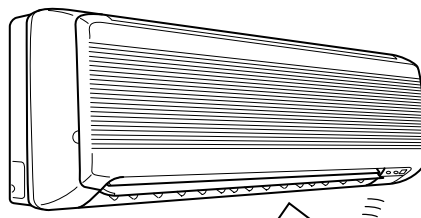
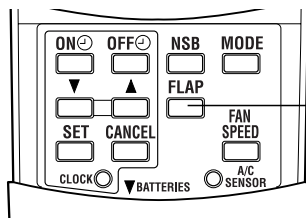


CAUTION

When the humidity is high, the vertical vanes should be in the front position during the cooling or dehumidifying operation. If the vertical vanes are positioned all of the way to the right or left, condensation may begin to form around the air vent and drip down.

2. Vertical

The vertical airflow can be adjusted by moving the flap with the remote control unit. Do not move the flap with your hands. Confirm that the remote control unit has been turned on. Use the FLAP button to set either the sweep function or one of the six airflow direction settings.



A. Sweep function



The flap starts moving up and down to deliver air over the sweep range.

B. Setting the Airflow Manually



Referring to the above illustration, use the FLAP button to set the airflow direction within the range used during the cooling or dehumidifying operation.

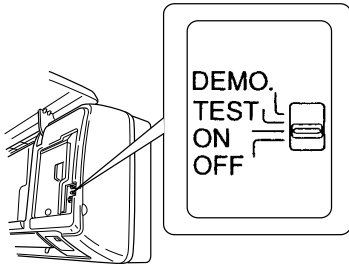
NOTE



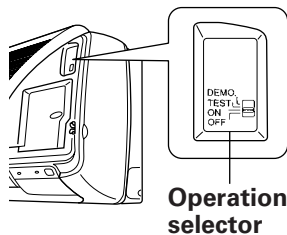
CAUTION

- The flap automatically closes when the unit is off.
- Use the FLAP button on the remote control to adjust the position of the flap. If you move the flap by hand, the flap position according to the remote control and the actual flap position may no longer match. If this should happen, shut off the unit, wait for the flap to close, and then turn on the unit again; the flap position will now be normal again.
- Do not have the flap pointed down during cooling operation. Condensation may begin to form around the air vent and drip down.

Operation without the Remote Control Unit



**INDOOR UNIT
SAP-KMV181G**



If you have lost the remote control unit or it has trouble, follow the steps below.

1. When the air conditioner is not running

If you want to turn on the air conditioner, switch the operation selector to the OFF position, and then to the ON position.

NOTE

The set temperature and fan speed are automatically set at the last selection before stopping.

2. When the air conditioner is running

If you want to turn off the air conditioner, switch the operation selector to the OFF position.

Care and Cleaning



WARNING

1. For safety, be sure to turn the air conditioner off and also to disconnect the power before cleaning.
2. Do not pour water on the indoor unit to clean it. This will damage the internal components and cause an electric shock hazard.

**Casing and Grille
(Indoor Unit)**

Clean the casing and grille of the indoor unit with a vacuum cleaner brush, or wipe them with a clean, soft cloth.

If these parts are stained, use a clean cloth moistened with a mild liquid detergent. When cleaning the grille, be careful not to force the vanes out of place.



CAUTION

1. Never use solvents, or harsh chemicals when cleaning the indoor unit. Do not wipe the plastic casing using very hot water.
2. Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.
3. The internal coil and other components of the outdoor unit must be cleaned every year. Consult your dealer or service center.

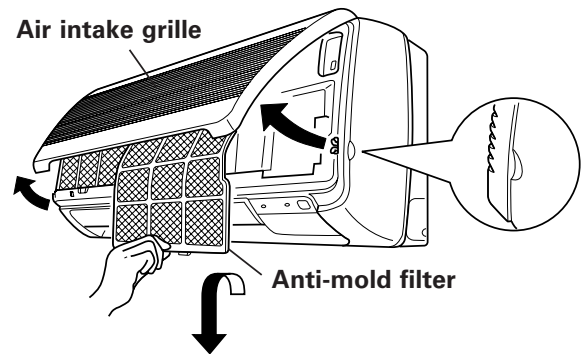
Care and Cleaning (continued)

Anti-Mold Filter

The anti-mold filter behind the air intake grille should be checked and cleaned at least once every two weeks.

How to remove the anti-mold filter

1. Grasp both ends of the air intake grille and pull it out and up.
2. Push the anti-mold filter up slightly, and then pull it down.

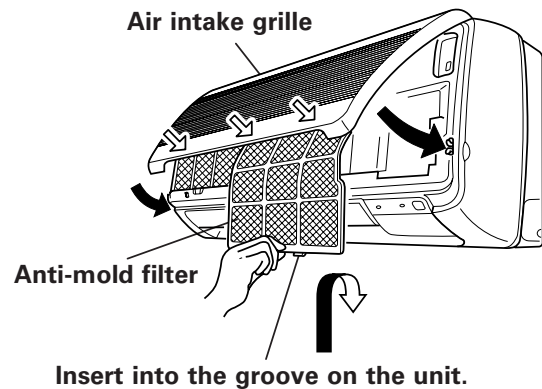


Cleaning

Use a vacuum cleaner to remove light dust. If there is sticky dust on the filter, wash the filter in lukewarm, soapy water, rinse it in clean water, and dry it.

How to replace the anti-mold filter

1. With the "FRONT" mark facing you, slide the anti-mold filter up into the unit and then lower the handle into the groove on the unit.
2. After installing the anti-mold filter, press the locations marked by the arrows (↓) and close the air intake grille.



Care and Cleaning (continued)

Air cleaning filter

The air cleaning filter removes dust and dirt from the air, and reduces odors and smoke from tobacco.

NOTE

SAP-KMV91G

The air cleaning filter is included with the unit when shipped from the factory. When purchasing a replacement filter, remove the dirty air cleaning filter from the filter frame, and then mount the new filter. Do not throw away the filter frame.

Ask for the **STK-F4B** model when purchasing.

SAP-KMV181G

The air cleaning filter is included with the unit when shipped from the factory.

When purchasing a replacement filter, ask for the **STK-F4B** model.



WARNING

The air cleaning filter cannot remove harmful gases or vapors nor ventilate air in the room. You must open doors or windows frequently when you use gas or oil heating appliances. Otherwise there is a risk of suffocation in extreme cases.

How to install the air cleaning filter

The air cleaning filter needs to be installed behind the anti-mold filter.

1. Remove the anti-mold filter.
2. **SAP-KMV181G**

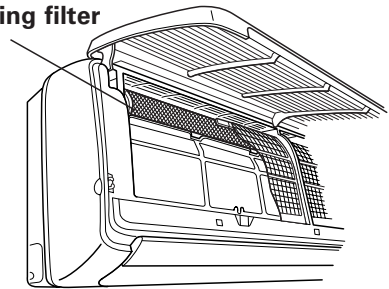
Set the air clean filter at the mounting position with the black side facing the rear.

SAP-KMV91G

Mount the air cleaning filter in the filter frame in the position shown in the diagram with the (STK-F4B) **FRONT** marking facing towards the front.

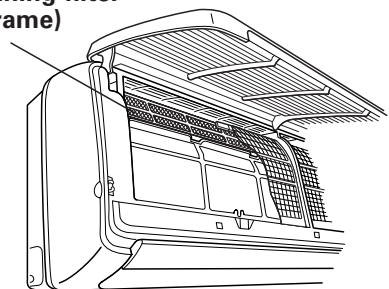
3. Reinstall the anti-mold filter, and close the air intake grill.

Air cleaning filter



SAP-KMV181G

Air cleaning filter (with frame)



SAP-KMV91G

NOTE

- **In general, the filter should be replaced once every three months.**
- Dirty air clean filters cannot be washed and reused. Purchase a replacement filter at your local dealer.

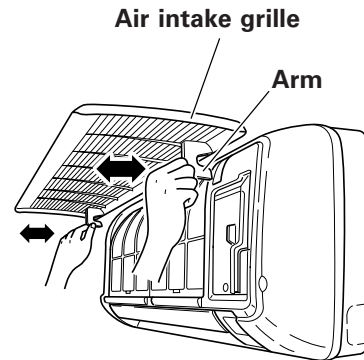
Cleaning the main unit and remote control unit

- Wipe clean using a soft, dry cloth.
- To remove stubborn dirt, moisten a cloth in warm water no hotter than 40 °C, wring thoroughly, and then wipe.
- The air intake grille can be removed in order to wash it with water.

Care and Cleaning (continued)

Removing and remounting the air intake grille

- With the air intake grille open all the way, grip both arms with your hands and pull toward you to remove. To remount, hold the air intake grille roughly horizontal and push it in until the arm shafts fit into the indentations in the main unit, then fit the grille into place.



CAUTION

When using a footstool or the like, be careful not to let it tip over.

Washing the grille with water

- Clean the grille gently using a soft sponge, or the like. Then wipe away any remaining moisture.
- Neutral detergent may be used to remove stubborn dirt. Then rinse thoroughly with water and wipe away any remaining moisture.

Tips for Energy Saving

Do not

- **Block the air intake and outlet of the unit. If they are obstructed, the unit will not work well, and may be damaged.**
- Let direct sunlight into the room. Use sunshades, blinds or curtains. If the walls and ceiling of the room are warmed by the sun, it will take longer to cool the room.

Do

- Always try to keep the air filter clean. (Refer to "Care and Cleaning".) A clogged filter will impair the performance of the unit.
- To prevent conditioned air from escaping, keep windows, doors and any other openings closed.

Troubleshooting

If your air conditioner does not work properly, first check the following points before requesting service. If it still does not work properly, contact your dealer or service center.

Trouble	Possible Cause	Remedy
Air conditioner does not run at all.	1. Power failure. 2. Leakage breaker tripped. 3. Line voltage is too low. 4. Operation button is OFF. 5. Batteries in remote control unit have run down.	1. Restore power. 2. Contact service center. 3. Consult your electrician or dealer. 4. Press the button again. 5. Replace batteries.
OPERATION lamp flashes and air conditioner does not operate.	Trouble in wiring system.	Contact service center.
Compressor runs but soon stops.	Obstruction in front of condenser coil.	Remove obstruction.
Poor cooling performance.	1. Dirty or clogged air filter. 2. Heat source or many people in room. 3. Doors and/or windows are open. 4. Obstacle near air intake or air discharge port. 5. Thermostat is set too high for cooling.	1. Clean air filter to improve airflow. 2. Eliminate heat source if possible. 3. Shut them to keep the heat out. 4. Remove it to ensure good airflow. 5. Set the temperature lower.
Clicking sound is heard from the air conditioner.	In cooling operation, any plastic parts may expand or shrink due to a sudden temperature change. In this event, a clicking sound may occur.	This is normal, and the sound will soon disappear.
OPERATION lamp lights but outdoor unit will not run.	1. The use of portable telephones near the air conditioner may cause disturbance to its normal operation.	1. Turn off the power then restart the air conditioner after 1 minute. 2. Consult your dealer.



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