Notice

SANYO

☐ CORRECTION ☐ PRODUCTION CHANGE

☐ SERVICE FLASH ● ADDED INFORMATION

FILE NO.

Please add this notice to the **TECHNICAL & SERVICE MANUAL** listed below.

Category : SPLIT SYSTEM AIR CONDITIONER Date : Jul, 2009

Model : SAP-K77GHAX + SAP-C77GHAX
SAP-K97GHAX + SAP-C97GHAX
SAP-K127GHAX + SAP-C127GHAX

Destination : Russia + CIS + Africa

Serial No. : _____

Issue Number : 1

Indoor Model No.	Product Code No.
SAP-K77GHAX	1 852 351 85
SAP-K97GHAX	1 852 351 86
SAP-K127GHAX	1 852 351 87

Outdoor Model No.	Product Code No.
SAP-C77GHAX	1 852 351 95
SAP-C97GHAX	1 852 351 96
SAP-C127GHAX	1 852 351 97

< Reference No. >

Current	→	New
SM700778		SM700778-01

The reason for change

A : Correction B : Quality reliability C : Standardization

D : Design change E : Addition of parts F : New information

Page No. of the Manual	Contents	Reason for change
56	9-2-2(2) Check "OPERATION" in the indoor unit has been added. (2) Check "OPERATION lamp" in the indoor unit. • Operation lamp on front side of indoor unit is flashing on and off. (*) → YES → • Indoor room thermistor and/or coil thermistor is defective. → YES → • Replace thermistor. NOTE Alarm Signal (*) Operation lamp on the front side of the indoor unit will flash on and off when either of indoor room thermistor, coil thermistor and indoor fan motor is defective.	F

REFERENCE NO. SM700778-01

SANYO Electric Co., Ltd.
Jul. / 2009 R&D center

TECHNICAL & SERVICE MANUAL

SANYO

FILE NO.

SAP-K77GHAX + SAP-C77GHAX
SAP-K97GHAX + SAP-C97GHAX
SAP-K127GHAX + SAP-C127GHAX

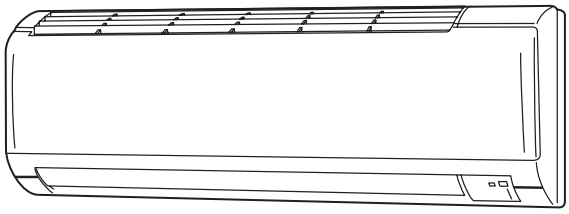
Destination: Russia+CIS+Africa (50Hz)

SPLIT SYSTEM AIR CONDITIONER

Indoor Model No.	Product Code No.
SAP-K77GHAX	1 852 351 85
SAP-K97GHAX	1 852 351 86
SAP-K127GHAX	1 852 351 87

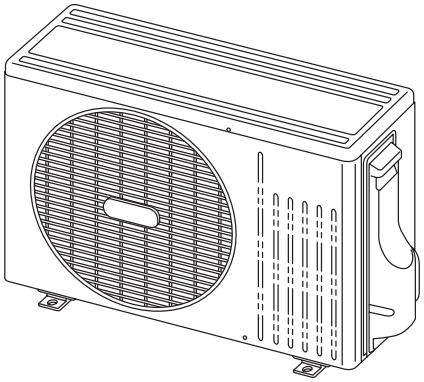
Outdoor Model No.	Product Code No.
SAP-C77GHAX	1 852 351 95
SAP-C97GHAX	1 852 351 96
SAP-C127GHAX	1 852 351 97

Indoor Unit

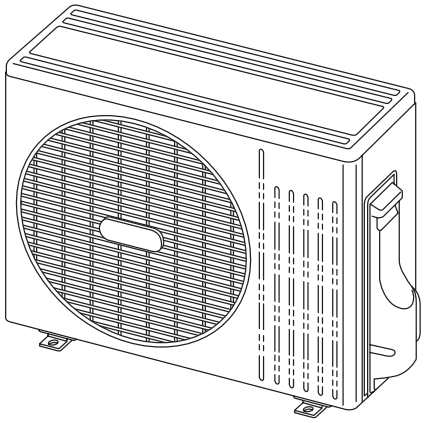


SAP-K77GHAX
SAP-K97GHAX
SAP-K127GHAX

Outdoor Unit



SAP-C77GHAX
SAP-C97GHAX



SAP-C127GHAX

REFERENCE NO. SM700778-01

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.
- The air conditioner should be installed properly by qualified installation technicians inaccordance with the Installation Instructions provided with the unit.
- 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.
- Install a protective leakage breaker depending on the installation location (especially a damp or humid location). If a **leakage breaker** is not installed, electric shock can occur.

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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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.
Heating	Maximum	27 °C D.B.	24 °C D.B. / 18 °C W.B.
	Minimum	16 °C D.B.	−8 °C D.B. / −9 °C W.B.

2. SPECIFICATIONS

2-1. Unit Specifications

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

Power Source			220-240V Single phase 50Hz	
Voltage rating			220 / 230 / 240 V	
Performance			Cooling	Heating
Capacity		kW	2.10 / 2.10 / 2.10	2.20 / 2.20 / 2.20
		BTU/h	7,200 / 7,200 / 7,200	7,500 / 7,500 / 7,500
Air circulation (High)		m^3/h	340	400
Moisture removal (High)		Liters/h	1.1	-
Electrical Rating			Cooling	Heating
Available voltage range		V	198 ~ 264	
Running amperes		A	3.4 / 3.4 / 3.5	3.1 / 3.1 / 3.2
Power input		W	750 / 770 / 790	660 / 680 / 700
Power factor		%	99 / 98 / 94	97 / 95 / 91
E.E.R		W/W	2.80 / 2.73 / 2.66	-
C.O.P		W/W	-	3.33 / 3.24 / 3.14
Compressor Locked Rotor Amperes		A	17.0	17.0
Features				
Controls / Temperature control			Microprocessor / I.C. Thermister	
Control unit			Wireless Remote Control Unit	
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer	
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)	
Airflow direction (Indoor)		Horizontal	Manual	
		Vertical	Auto	
Air filter			Washable, Anti-mold	
Compressor			Single Rotary	
Refrigerant / Amount charged at shipment		g	R22 / 630	
Refrigerant control			Capillary tube	
Operation sound	Indoor : Hi / Me / Lo	dB-A	38 / 33 /30	
	Outdoor : Hi	dB-A	49	
Refrigerant Tubing Connections			Flare Type	
Max.allowable tubing length at shipment		m	5	
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)	
Tube Diameter	Wide tube	mm (in.)	9.52 (3/8)	
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter	
Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	510
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	555
	Width	mm	870	775
	Depth	mm	295	340
Weight	Net	kg	7.5	25.0
	Shipping	kg	9.0	26.0
Shipping volume		m^3	0.06	0.14

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.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

Power Source			220-240V Single phase 50Hz	
Voltage rating			220 / 230 / 240 V	
Performance			Cooling	Heating
Capacity		kW	2.55 / 2.55 / 2.55	2.80 / 2.80 / 2.80
		BTU/h	8,700 / 8,700 / 8,700	9,600 / 9,600 / 9,600
Air circulation (High)		m^3/h	460	460
Moisture removal (High)		Liters/h	1.5	-
Electrical Rating			Cooling	Heating
Available voltage range		V	198 ~ 264	
Running amperes		A	4.4 / 4.4 / 4.5	4.1 / 4.1 / 4.2
Power input		W	930 / 960 / 1,000	900 / 930 / 960
Power factor		%	96 / 95 / 93	99 / 98 / 95
E.E.R		W/W	2.74 / 2.66 / 2.55	-
C.O.P		W/W	-	3.11 / 3.01 / 2.92
Compressor Locked Rotor Amperes		A	16.5	16.5
Features				
Controls / Temperature control			Microprocessor / I.C. Thermister	
Control unit			Wireless Remote Control Unit	
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer	
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)	
Airflow direction (Indoor)		Horizontal	Manual	
		Vertical	Auto	
Air filter			Washable, Anti-mold	
Compressor			Single Rotary	
Refrigerant / Amount charged at shipment		g	R22 / 640	
Refrigerant control			Capillary tube	
Operation sound	Indoor : Hi / Me / Lo	dB-A	39 / 34 / 31	
	Outdoor : Hi	dB-A	50	
Refrigerant Tubing Connections			Flare Type	
Max.allowable tubing length at shipment		m	5	
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)	
Tube Diameter	Wide tube	mm (in.)	9.52 (3/8)	
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter	
Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	510
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	555
	Width	mm	870	775
	Depth	mm	295	340
Weight	Net	kg	7.5	25.5
	Shipping	kg	9.0	26.5
Shipping volume		m^3	0.06	0.14

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.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

Power Source	220-240V Single phase 50Hz

Voltage rating	220 / 230 / 240 V

Performance			Cooling	Heating
Capacity		kW	3.55 / 3.55 / 3.55	3.70 / 3.70 / 3.70
		BTU/h	12,100 / 12,100 / 12,100	12,600 / 12,600 / 12,600
Air circulation (High)		m^3/h	470	460
Moisture removal (High)		Liters/h	2.3	-

Electrical Rating		Cooling	Heating
Available voltage range	V	198 ~ 264	
Running amperes	A	6.2 / 6.2 / 6.3	5.9 / 5.9 / 6.0
Power input	W	1,265 / 1,305 / 1,345	1,235 / 1,275 / 1,315
Power factor	%	93 / 92 / 90	95 / 94 / 91
E.E.R	W/W	2.81 / 2.72 / 2.64	-
C.O.P	W/W	-	3.00 / 2.90 / 2.81
Compressor Locked Rotor Amperes	A	35	35

Features			
Controls / Temperature control			Microprocessor / I.C. Thermister
Control unit			Wireless Remote Control Unit
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)
Airflow direction (Indoor)		Horizontal	Manual
		Vertical	Auto
Air filter			Washable, Anti-mold
Compressor			Single Rotary
Refrigerant / Amount charged at shipment		g	R22 / 820
Refrigerant control			Capillary tube
Operation sound	Indoor : Hi / Me / Lo	dB-A	40 / 35 / 32
	Outdoor : Hi	dB-A	53
Refrigerant Tubing Connections			Flare Type
Max.allowable tubing length at shipment		m	5
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)
Tube Diameter	Wide tube	mm (in.)	12.70 (1/2)
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter

Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	598
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	647
	Width	mm	870	783
	Depth	mm	295	344
Weight	Net	kg	7.5	33.0
	Shipping	kg	9.0	35.0
Shipping volume		m^3	0.06	0.17

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.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

2-2. Major Component Specifications

2-2-1. Indoor Unit

Indoor Unit **SAP-K77GHAX**

Controller PCB			
Part No.			CR-K77GHAX
Controls			Microprocessor
Control circuit fuse			250V 3.15A
Remote Control Unit			RCS-7HS2E-G
Controller PCB			
Part No.			Cross-Flow
Q'ty … Dia. and Length			1 … D100 / L637
Fan Motor			
Type			AC Motor
Model … Q'ty			IBH-884-066B … 1
No. of Poles			4
Rough Measure RPM (Cool/Heat)			1,200 / 1,230
Nominal output		W	12.5
Coil resistance (Ambient temp. 20°C)		Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
Safety devices	Type		Thermal fuse
	Operating temp. Open	°C	130
	Close	°C	-
Run capacitor (on controller PCB)		Micro F	1.5
		VAC	450
Flap Motor			
Type			Stepping Motor
Model			24BYJ48-916
Rating			DC 12V
Coil Resistance (Ambient Temp.25 °C)		Ohm	Each Pair of Terminal : 200+/- 7%
Heat Exchanger Coil			
Coil			Aluminum Plate Fin / Copper Tube
Rows			2
Fin pitch		mm	1.3
Face area		m^2	0.108

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit **SAP-K97GHAX**

Controller PCB			
Part No.			CR-K77GHAX
Controls			Microprocessor
Control circuit fuse			250V 3.15A
Remote Control Unit			RCS-7HS2E-G
Controller PCB			
Part No.			Cross-Flow
Q'ty … Dia. and Length			1 … D100 / L637
Fan Motor			
Type			AC Motor
Model … Q'ty			IBH-884-066B … 1
No. of Poles			4
Rough Measure RPM (Cool/Heat)			1,300 / 1,210
Nominal output		W	12.5
Coil resistance (Ambient temp. 20°C)		Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
Safety devices	Type		Thermal fuse
	Operating temp. Open	°C	130
	Close	°C	-
Run capacitor (on controller PCB)		Micro F	1.5
		VAC	450
Flap Motor			
Type			Stepping Motor
Model			24BYJ48-916
Rating			DC 12V
Coil Resistance (Ambient Temp.25 °C)		Ohm	Each Pair of Terminal : 200+/- 7%
Heat Exchanger Coil			
Coil			Aluminum Plate Fin / Copper Tube
Rows			2
Fin pitch		mm	1.1
Face area		m^2	0.108

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit **SAP-K127GHAX**

Controller PCB			
	Part No.		CR-K127GHAX
	Controls		Microprocessor
	Control circuit fuse		250V 3.15A
Remote Control Unit			RCS-7HS2E-G
Fan			
	Part No.		Cross-Flow
	Q'ty … Dia. and Length		1 … D100 / L637
Fan Motor			
	Type		AC Motor
	Model … Q'ty		IBH-884-066B … 1
	No. of Poles		4
	Rough Measure RPM (Cool/Heat)		1,300 / 1,230
	Nominal output	W	12.5
	Coil resistance (Ambient temp. 20°C)	Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
	Safety devices Type		Thermal fuse
	Operating temp. Open	°C	130
	Close	°C	-
	Run capacitor (on controller PCB)	Micro F	1.5
		VAC	450
Flap Motor			
	Type		Stepping Motor
	Model		24BYJ48-916
	Rating		DC 12V
	Coil Resistance (Ambient Temp.25 °C)	Ohm	Each Pair of Terminal : 200+/- 7%
Heat Exchanger Coil			
	Coil		Aluminum Plate Fin / Copper Tube
	Rows		2
	Fin pitch	mm	1.1
	Face area	m^2	0.162

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-2-2. Outdoor Unit

Outdoor Unit **SAP-C77GHAX**

Controller PCB				
Compressor				
Type				Single Rotary
Compressor model / Nominal output				C-1R65H5S / 650W
Compressor oil ... Amount			CC	SAY-56T … 350
Coil resistance (Ambient temp. 25˚C)			Ohm	C - R : 4.68 C - S : 6.77
Safety devices	Type			External (OLR)
	Overload relay			MRA99094-9201
	Operating temp.	Open	˚C	150 +/-5
		Close	˚C	69 +/-11
	Operating amp.(Ambient temp. 25˚C)			Trip in 6 to 16 sec.at 15A
Run capacitor			Micro F	20.0
			VAC	400
Crankcase Heater				-
Fan				
Type				Propeller
Q'ty … Dia.			mm	1 … D380
Fan Motor				
Type				AC Motor
Fan motor model ... Q'ty				IB-976-501D … 1
No. of poles				6
Rough Measure RPM (Cool/Heat)				820 / 800
Nominal output			W	25
Coil resistance (Ambient temp. 20˚C)			Ohm	BRN - WHT : 213.4± 10% RED(PNK) - WHT : 167.7± 10%
Safety devices	Type			Thermal protector
	Operating temp.	Open	˚C	110
		Close	˚C	-
Run capacitor			Micro F	2.0
			VAC	440
Heat Exchanger Coil				
Coil				Aluminum Plate Fin / Copper Tube
Rows				1
Fin pitch			mm	1.2
Face area			m^2	0.341
External Finish				Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit **SAP-C97GHAX**

Controller PCB			

Compressor			
Type			Single Rotary
Compressor model / Nominal output			C-1R81H5T / 800W
Compressor oil ... Amount		CC	SAY-56T …320
Coil resistance (Ambient temp. 25˚C)		Ohm	C - R : 4.27 C - S : 4.56
Safety devices	Type		External (OLR)
	Overload relay		MRA99248-9201
	Operating temp.	Open ˚C	155±5
		Close ˚C	69±11
	Operating amp.(Ambient temp. 25˚C)		Trip in 6 to 16 sec. at 17.0A
Run capacitor		Micro F	30.0
		VAC	370
Crankcase Heater			-

Fan		
Type		Propeller
Q'ty … Dia.	mm	1 … D380

Fan Motor			
Type			AC Motor
Fan motor model ... Q'ty			IB-976-501D … 1
No. of poles			6
Rough Measure RPM (Cool/Heat)			820 / 820
Nominal output		W	25
Coil resistance (Ambient temp. 20˚C)		Ohm	BRN - WHT : 213.4±10% RED(PNK) - WHT : 167.7±10%
Safety devices	Type		Thermal protector
	Operating temp.	Open ˚C	110
		Close ˚C	-
Run capacitor		Micro F	2.0
		VAC	440

Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		1
Fin pitch	mm	1.2
Face area	m^2	0.341

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit **SAP-C127GHAX**

Controller PCB				

Compressor				
Type				Single Rotary
Compressor model / Nominal output				C-R115H5A / 1,110W
Compressor oil ... Amount			CC	SAY-56T … 520
Coil resistance (Ambient temp. 25°C)			Ohm	C - R : 1.962 C - S : 5.38
Safety devices	Type			External (OLR)
	Overload relay			MRA98619-9200
	Operating temp.	Open	°C	150 +/- 5
		Close	°C	69 +/- 11
	Operating amp.(Ambient temp. 25°C)			Trip in 6 to 16 sec. at 22.5A
Run capacitor			Micro F	25.0
			VAC	400
Crankcase Heater				-

Fan		
Type		Propeller
Q'ty … Dia.	mm	1 … D380

Fan Motor				
Type				AC Motor
Fan motor model ... Q'ty				UE4-Z51D5P R … 1
No. of poles				4
Rough Measure RPM (Cool/Heat)				1,070 / 1,020
Nominal output			W	47.6
Coil resistance (Ambient temp. 20°C)			Ohm	(GRY)BRN - WHT : 152.1 RED - WHT : 138.7
Safety devices	Type			Thermal protector
	Operating temp.	Open	°C	135 ± 5
		Close	°C	86± 15
Run capacitor			Micro F	2.5
			VAC	450

Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		1
Fin pitch	mm	1.2
Face area	m^2	0.373

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-3. Other Component Specifications

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

< Thermistor (Coil sensor) >

Model	PB2M-41E-S16-1
Resistance	15 kohm (at 0 °C) 5.4 kohm (at 25 °C)

Outdoor Unit **SAP-C77GHAX**
SAP-C97GHAX
SAP-C127GHAX

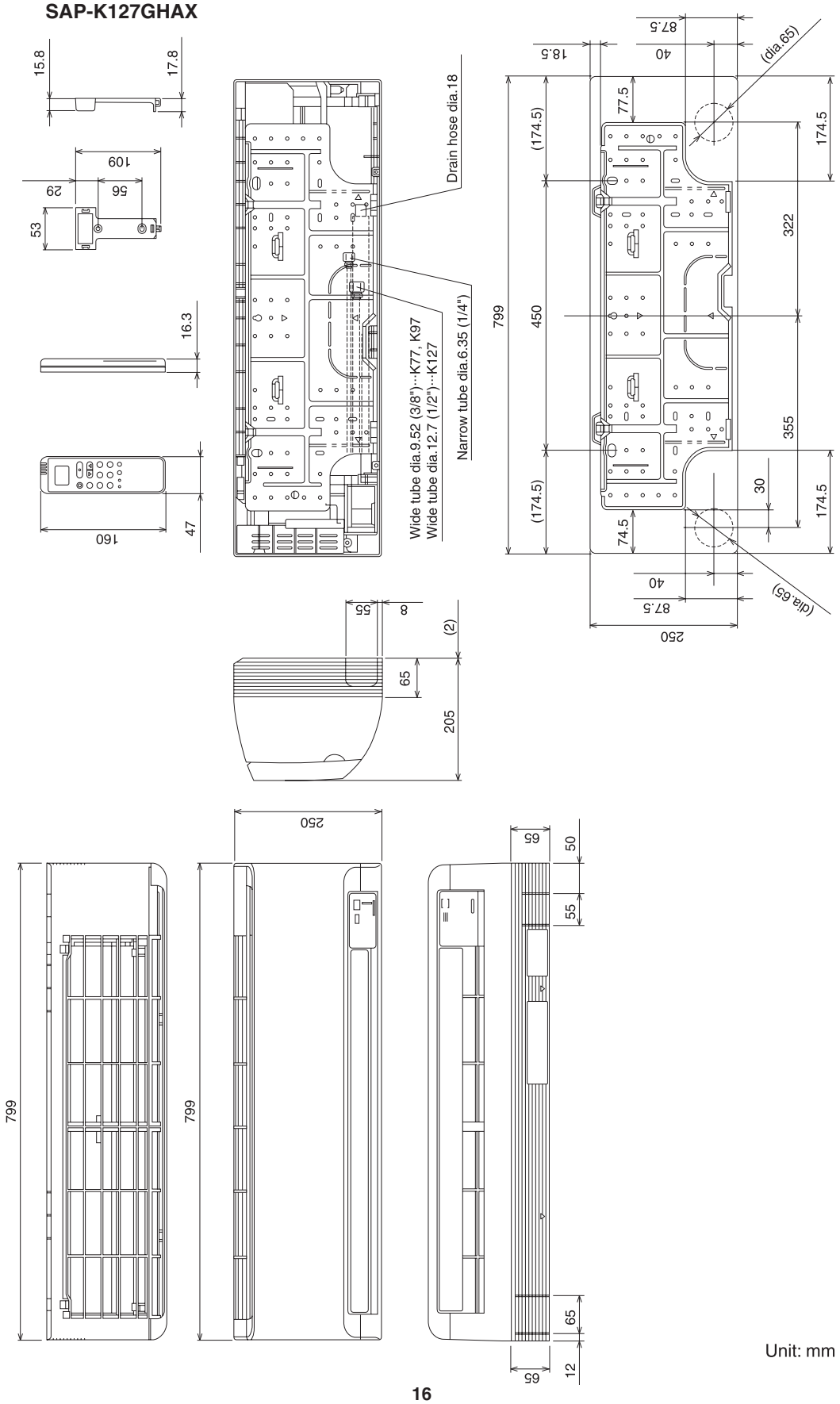
< Power Relay >

Model	EL200/240A1-F (M)
Rating	AC277V 30A

4-way Valve (Solenoid coil)	**STF-0202G**
Rating	AC 220 to 240 V, 50 / 60 Hz
Refrigerant	R22, R407C, R410A

3. DIMENSIONAL DATA

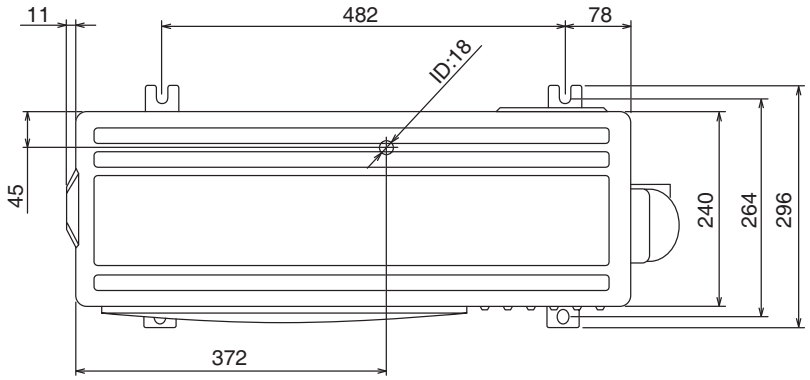
Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

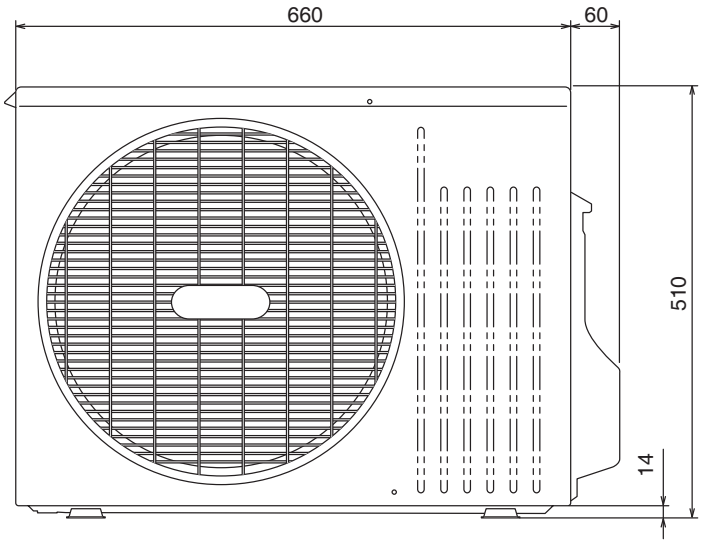


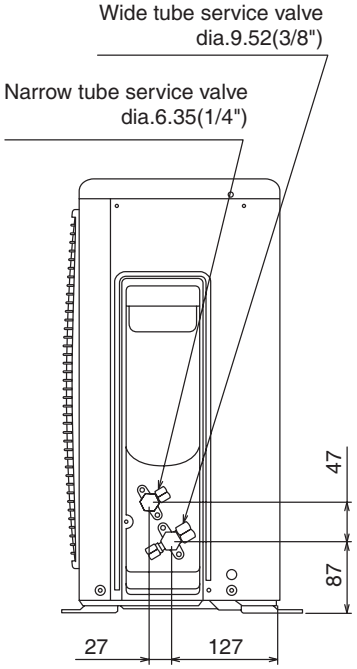
Unit: mm

Outdoor Unit **SAP-C77GHAX**

SAP-C97GHAX

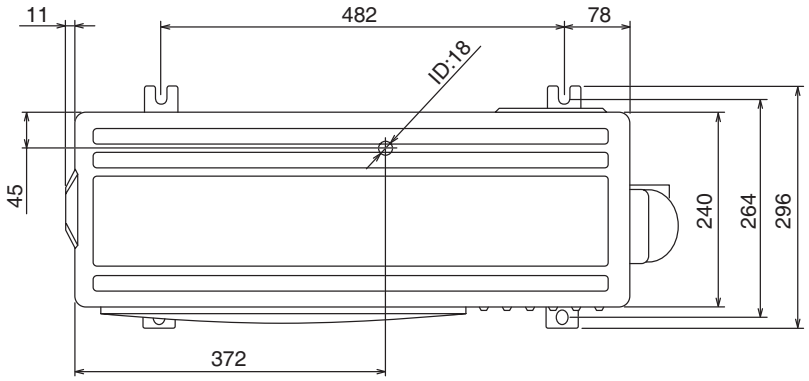


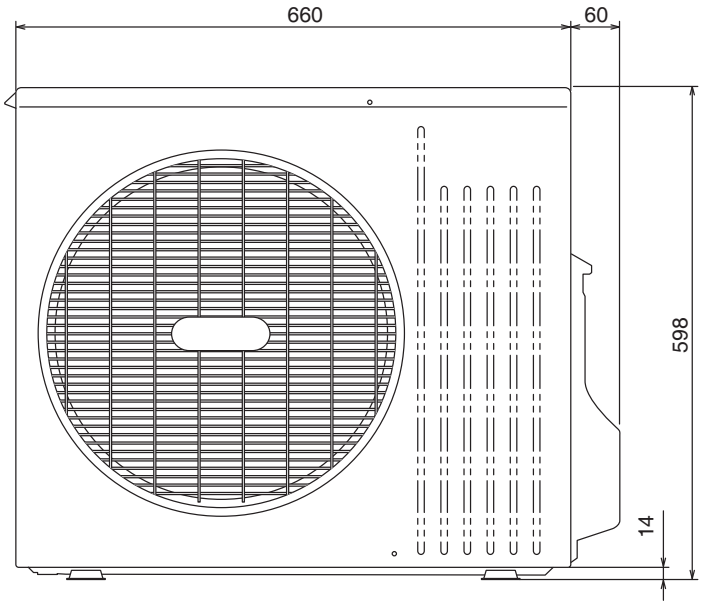


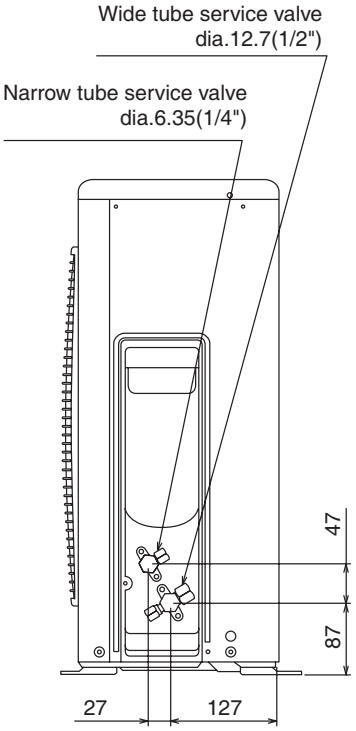


Unit: mm

Outdoor Unit **SAP-C127GHAX**







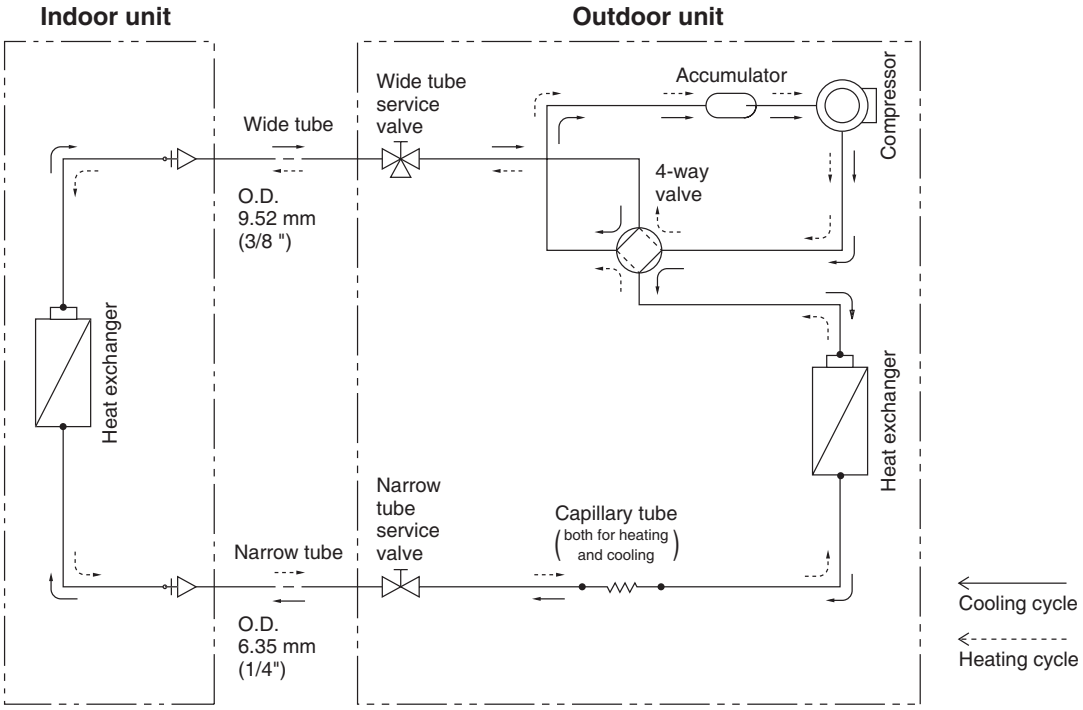
Unit: mm

4. REFRIGERANT FLOW DIAGRAM

4-1. Refrigerant Flow Diagram

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX

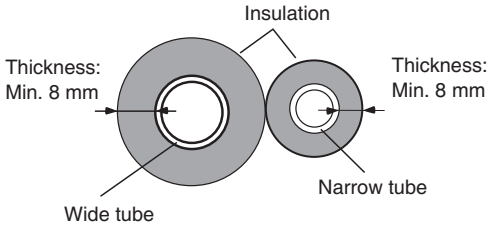
Outdoor Unit **SAP-C77GHAX**
SAP-C97GHAX



Insulation of Refrigerant Tubing

IMPORTANT

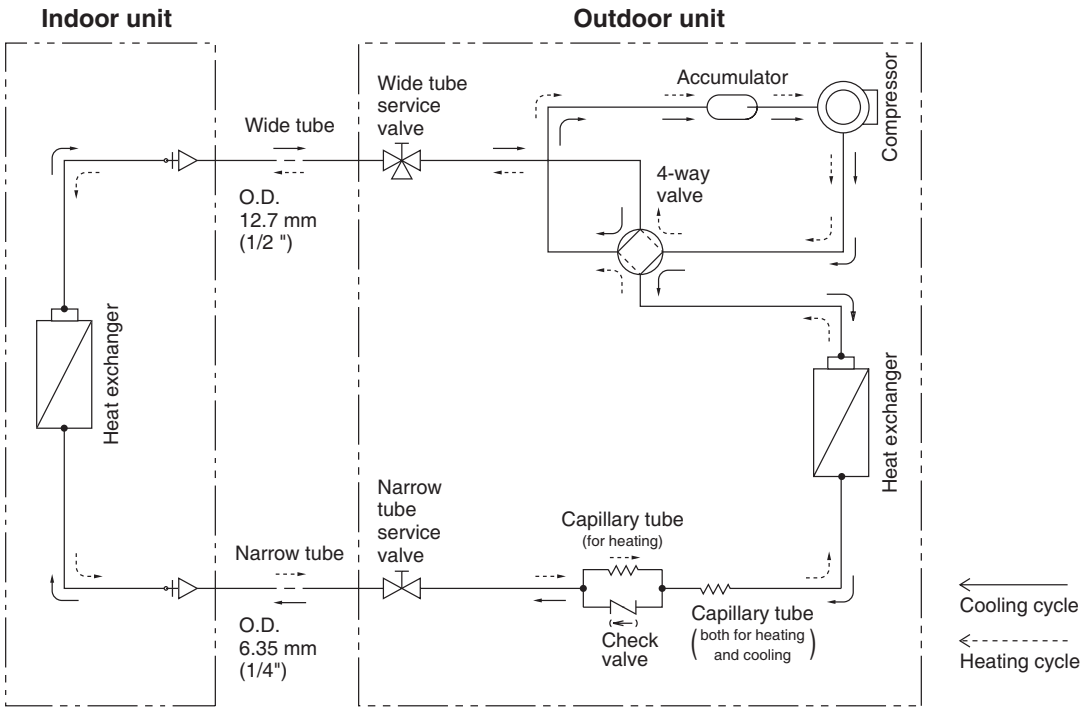
Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated** with a proper insulation material. The thickness of the insulation should be a min. 8 mm.



CAUTION

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

Indoor Unit **SAP-K127GHAX** Outdoor Unit **SAP-C127GHAX**



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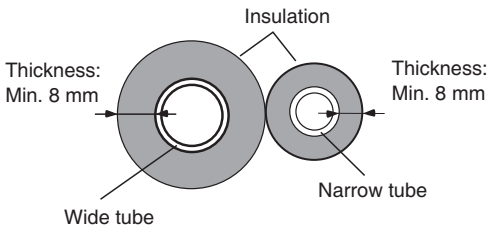


CAUTION

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

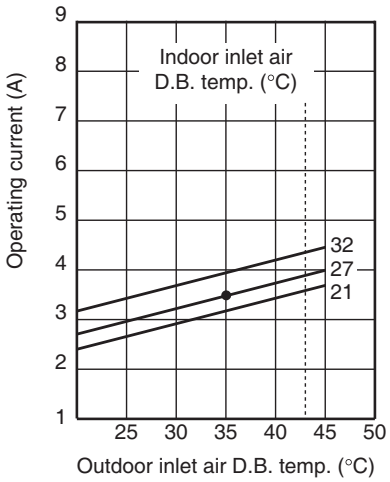
5. PERFORMANCE DATA

5-1. Performance charts

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

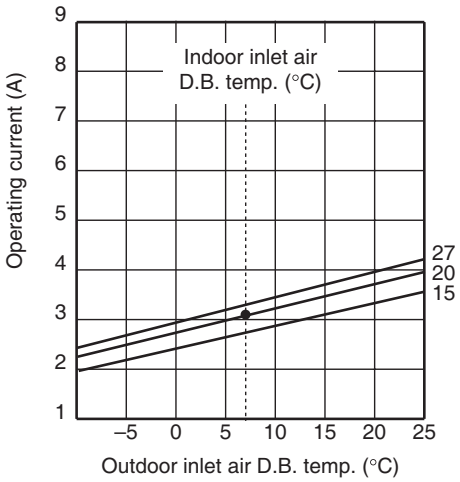
< Cooling Characteristics >

(1) Operating current performance chart

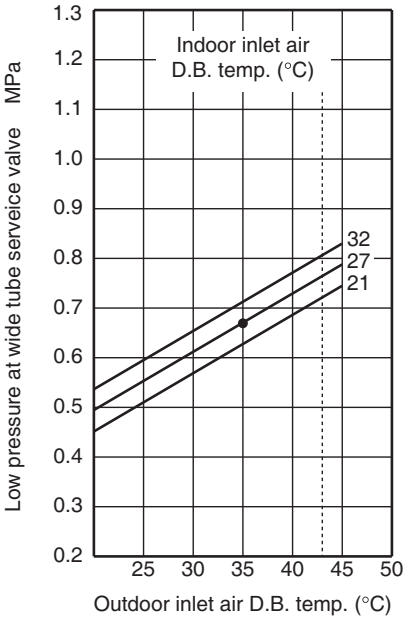


< Heating Characteristics >

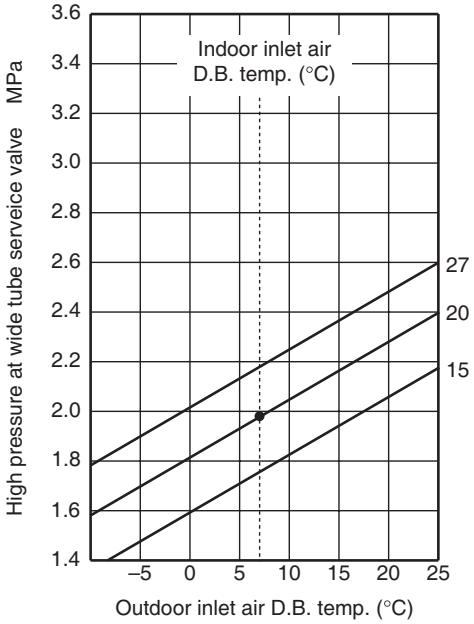
(1) Operating current performance chart



(2) Low pressure performance chart



(2) High pressure performance chart



NOTE

Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high in heating mode. (Refer to "8-7. Overload prevention.")

●:Points of rating condition

Black dots in above charts indicate the following rating conditions.

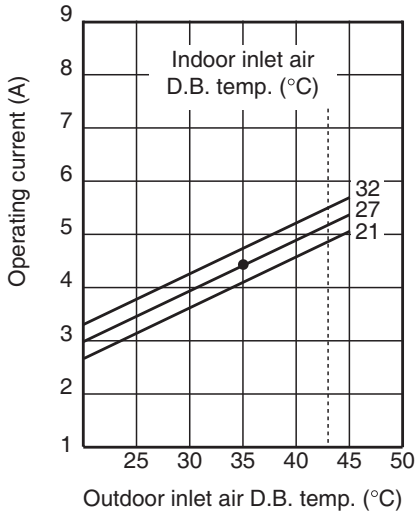
Cooling: Indoor air temperature 27 °C D.B. / 19 °C W.B.
Outdoor air temperature 35 °C D.B. / 24 °C W.B.

Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

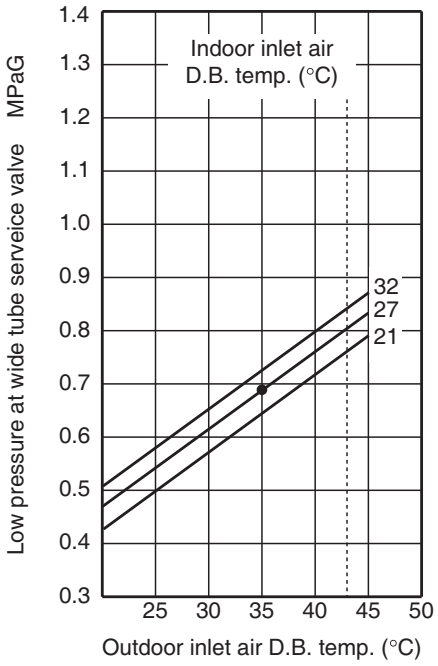
Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

< Cooling Characteristics >

(1) Operating current performance chart

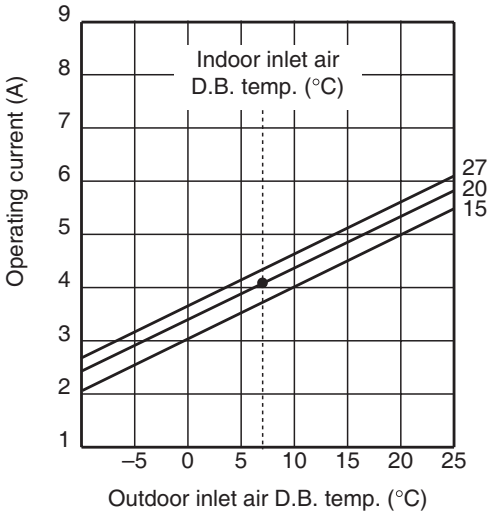


(2) Low pressure performance chart

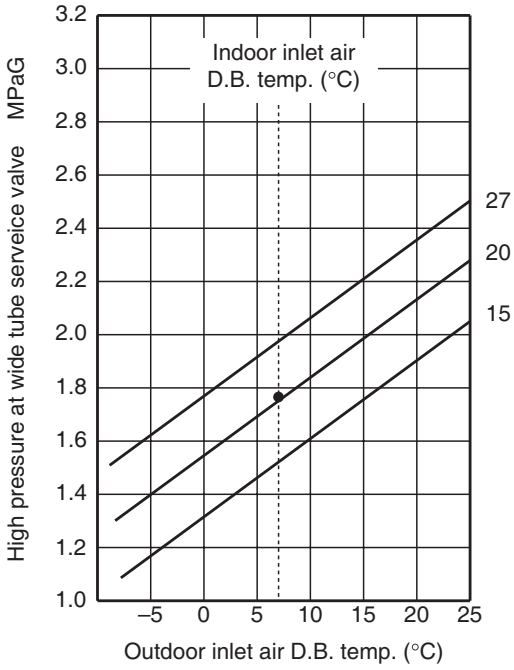


< Heating Characteristics >

(1) Operating current performance chart



(2) High pressure performance chart



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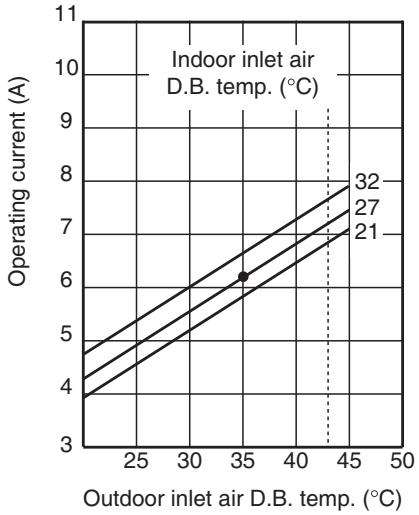
Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

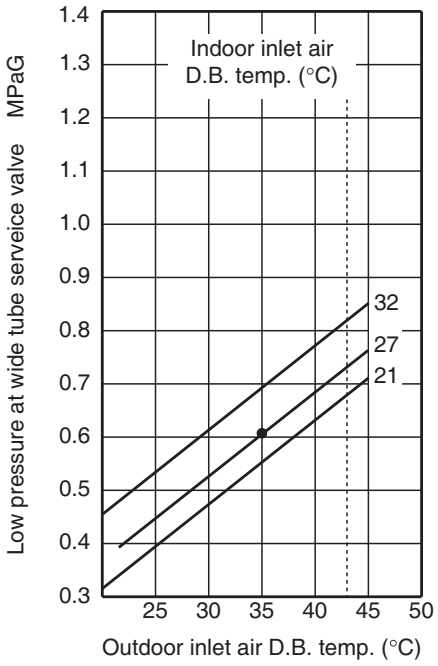
Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

< Cooling Characteristics >

(1) Operating current performance chart

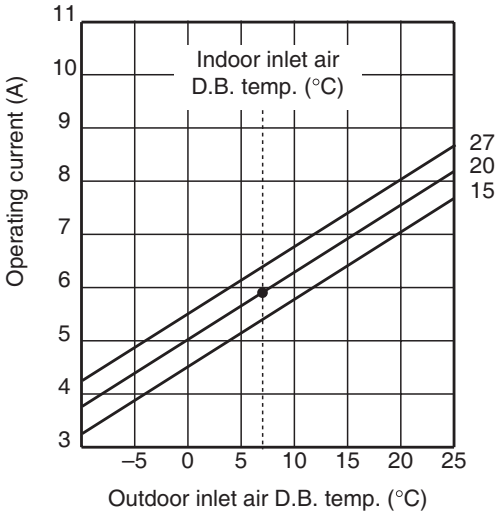


(2) Low pressure performance chart

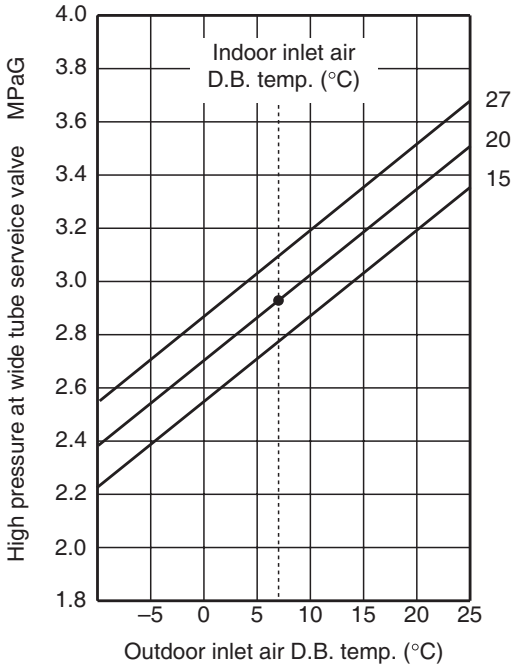


< Heating Characteristics >

(1) Operating current performance chart



(2) High pressure performance chart



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

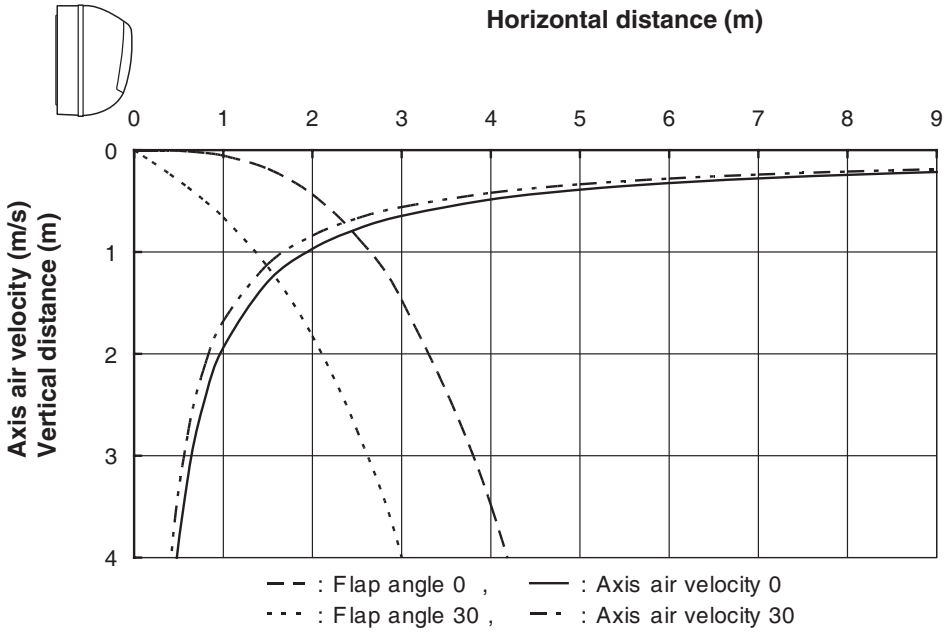
Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

5-2. Air Throw Distance Charts

Indoor Unit **SAP-K77GHAX**

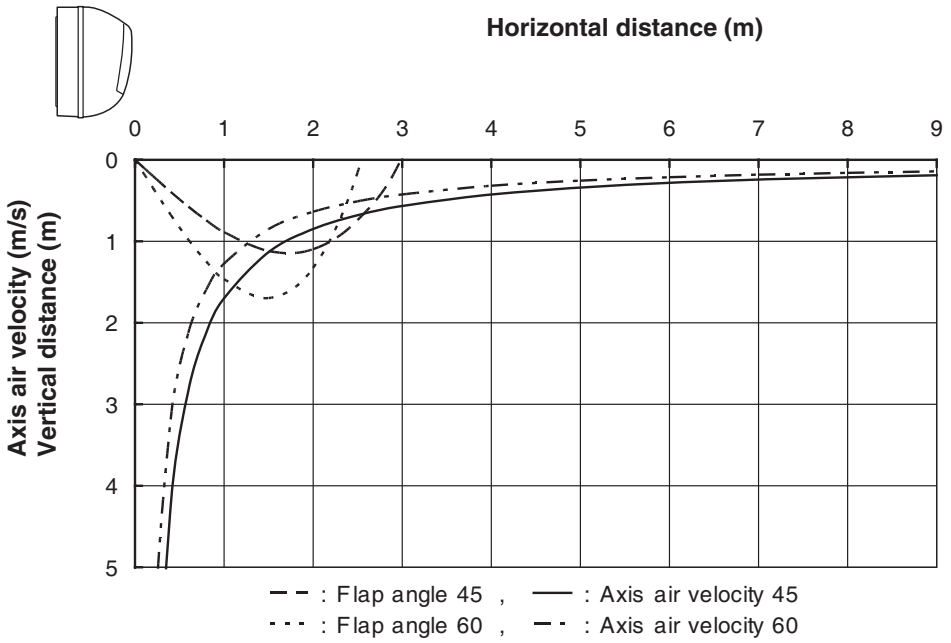
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

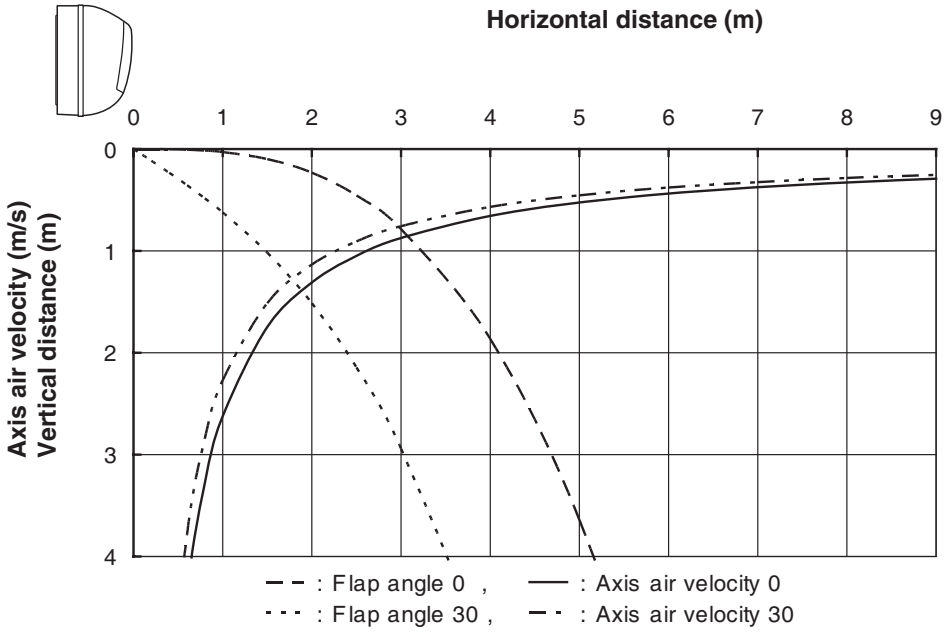
Room air temp. : 20°C
Fan speed : High



Indoor Unit **SAP-K97GHAX**

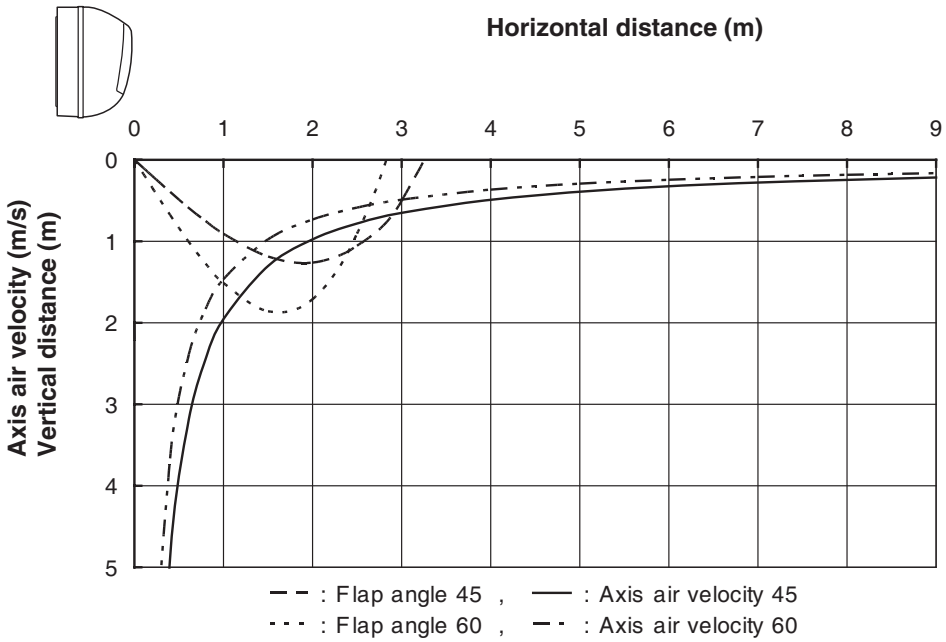
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

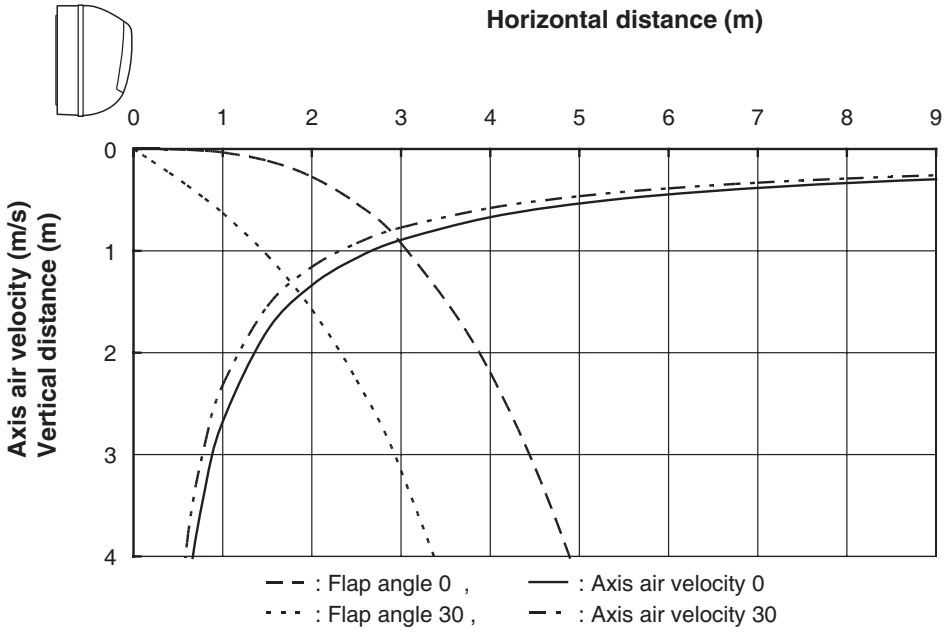
Room air temp. : 20°C
Fan speed : High



Indoor Unit **SAP-K127GHAX**

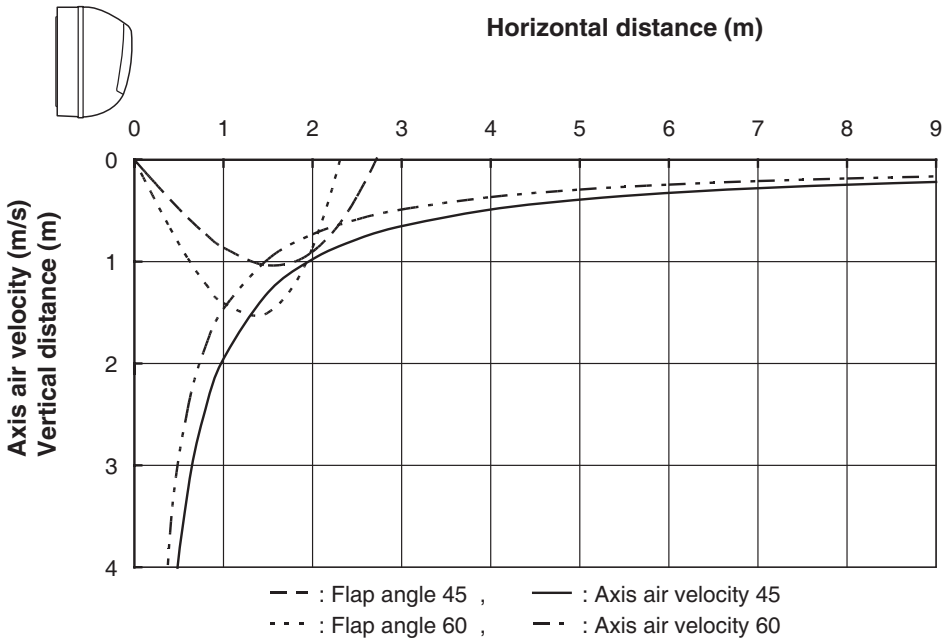
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

Room air temp. : 20°C
Fan speed : High



5-3. Cooling Capacity

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

230 V Single Phase 50 Hz

RATING CAPACITY		2.10 kW						
AIR FLOW RATE		340 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	2.12	2.02	1.93	1.84	1.73	1.59
		CM	0.53	0.58	0.62	0.66	0.67	0.68
	21	SHC	1.43	1.39	1.34	1.29	1.24	1.17
	23	SHC	1.61	1.56	1.51	1.47	1.41	1.35
	25	SHC	1.78	1.73	1.69	1.64	1.58	1.52
	27	SHC	1.95	1.90	1.86	1.81	1.73	1.59
	29	SHC	2.12	2.02	1.93	1.84	1.73	1.59
	31	SHC	2.12	2.02	1.93	1.84	1.73	1.59
17		TC	2.27	2.17	2.07	1.97	1.86	1.71
		CM	0.55	0.59	0.63	0.68	0.69	0.70
	21	SHC	1.26	1.21	1.16	1.12	1.06	1.00
	23	SHC	1.43	1.38	1.34	1.29	1.23	1.17
	25	SHC	1.60	1.56	1.51	1.46	1.41	1.34
	27	SHC	1.78	1.73	1.68	1.63	1.58	1.51
	29	SHC	1.95	1.90	1.85	1.81	1.75	1.69
	31	SHC	2.12	2.07	2.03	1.97	1.86	1.71
19		TC	2.42	2.31	2.21	# 2.10	1.97	1.82
		CM	0.56	0.61	0.65	0.70	0.71	0.73
	21	SHC	1.07	1.02	0.98	0.93	0.88	0.81
	23	SHC	1.24	1.20	1.15	1.10	1.05	0.98
	25	SHC	1.42	1.37	1.32	1.28	1.22	1.16
	27	SHC	1.59	1.54	1.50	1.45	1.40	1.33
	29	SHC	1.76	1.71	1.67	1.62	1.57	1.50
	31	SHC	1.93	1.89	1.84	1.79	1.74	1.68
21		TC	2.56	2.45	2.34	2.23	2.09	1.93
		CM	0.58	0.63	0.67	0.72	0.73	0.75
	23	SHC	1.05	1.01	0.96	0.92	0.86	0.80
	25	SHC	1.23	1.18	1.13	1.09	1.04	0.97
	27	SHC	1.40	1.35	1.31	1.26	1.21	1.14
	29	SHC	1.57	1.53	1.48	1.44	1.38	1.32
	31	SHC	1.75	1.70	1.65	1.61	1.55	1.49
23		TC	2.72	2.60	2.48	2.34	2.19	2.03
		CM	0.59	0.64	0.69	0.74	0.75	0.77
	25	SHC	1.03	0.98	0.94	0.88	0.83	0.78
	27	SHC	1.20	1.16	1.11	1.06	1.00	0.95
	29	SHC	1.37	1.33	1.28	1.23	1.18	1.12
	31	SHC	1.55	1.50	1.45	1.40	1.35	1.29

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

230 V Single Phase 50 Hz

RATING CAPACITY		2.55 kW						
AIR FLOW RATE		460 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	2.57	2.46	2.35	2.23	2.10	1.93
		CM	0.67	0.73	0.78	0.83	0.91	0.99
	21	SHC	1.80	1.74	1.69	1.63	1.57	1.49
	23	SHC	2.03	1.98	1.93	1.87	1.81	1.73
	25	SHC	2.27	2.22	2.16	2.11	2.05	1.93
	27	SHC	2.51	2.46	2.35	2.23	2.10	1.93
	29	SHC	2.57	2.46	2.35	2.23	2.10	1.93
	31	SHC	2.57	2.46	2.35	2.23	2.10	1.93
17		TC	2.76	2.64	2.52	2.40	2.25	2.07
		CM	0.69	0.75	0.80	0.86	0.94	1.01
	21	SHC	1.55	1.50	1.44	1.39	1.33	1.25
	23	SHC	1.79	1.74	1.68	1.63	1.56	1.49
	25	SHC	2.03	1.97	1.92	1.86	1.80	1.72
	27	SHC	2.27	2.21	2.16	2.10	2.04	1.96
	29	SHC	2.50	2.45	2.39	2.34	2.25	2.07
	31	SHC	2.74	2.64	2.52	2.40	2.25	2.07
19		TC	2.93	2.81	2.68	# 2.55	2.40	2.21
		CM	0.71	0.77	0.82	0.88	0.96	1.04
	21	SHC	1.30	1.24	1.19	1.14	1.07	1.00
	23	SHC	1.54	1.48	1.43	1.37	1.31	1.23
	25	SHC	1.77	1.72	1.66	1.61	1.55	1.47
	27	SHC	2.01	1.96	1.90	1.85	1.79	1.71
	29	SHC	2.25	2.19	2.14	2.09	2.02	1.95
	31	SHC	2.49	2.43	2.38	2.32	2.26	2.18
21		TC	3.11	2.97	2.84	2.70	2.54	2.34
		CM	0.73	0.79	0.85	0.91	0.99	1.07
	23	SHC	1.28	1.22	1.17	1.12	1.06	0.98
	25	SHC	1.52	1.46	1.41	1.36	1.29	1.22
	27	SHC	1.75	1.70	1.65	1.59	1.53	1.46
	29	SHC	1.99	1.94	1.88	1.83	1.77	1.69
	31	SHC	2.23	2.17	2.12	2.07	2.01	1.93
23		TC	3.30	3.16	3.01	2.84	2.66	2.47
		CM	0.75	0.81	0.87	0.93	1.02	1.10
	25	SHC	1.24	1.19	1.14	1.08	1.01	0.95
	27	SHC	1.48	1.43	1.38	1.32	1.25	1.19
	29	SHC	1.72	1.67	1.61	1.55	1.49	1.43
	31	SHC	1.96	1.91	1.85	1.79	1.73	1.66

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

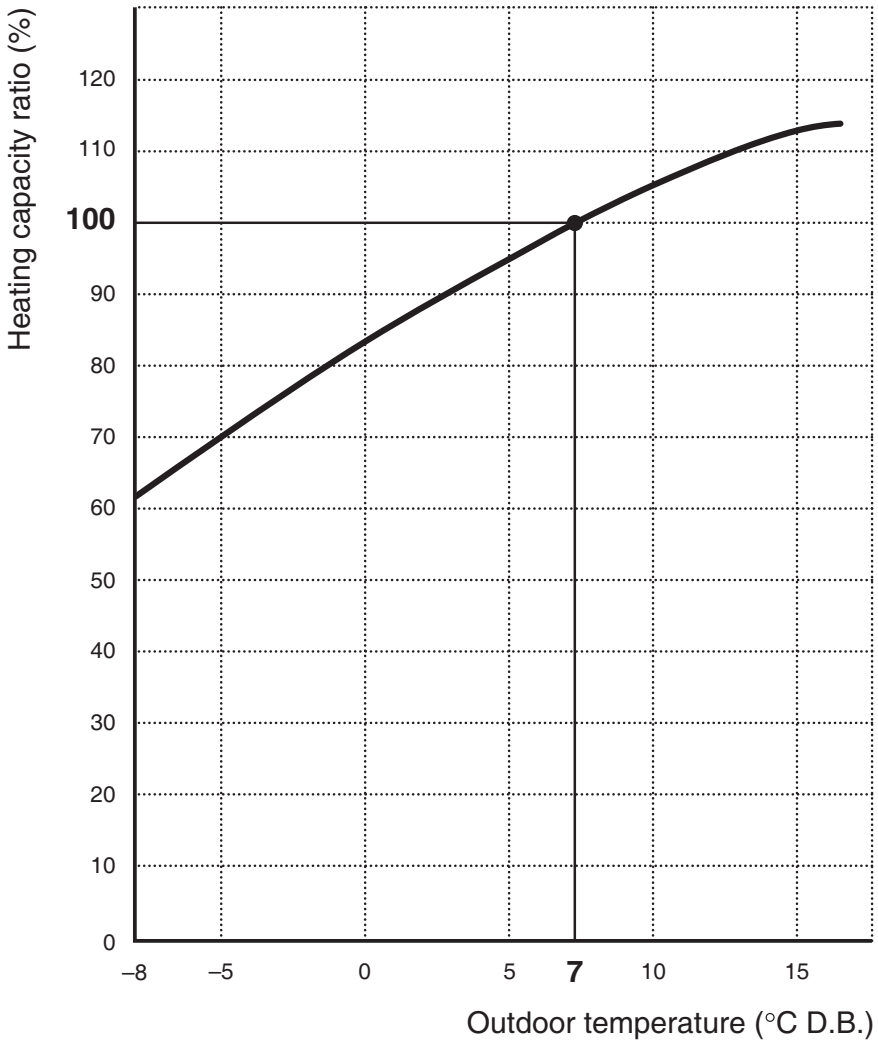
230 V Single Phase 50 Hz

RATING CAPACITY		3.55 kW						
AIR FLOW RATE		470 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	3.58	3.42	3.27	3.11	2.92	2.69
		CM	0.90	0.97	1.04	1.12	1.26	1.41
	21	SHC	2.34	2.25	2.17	2.08	1.98	1.87
	23	SHC	2.58	2.49	2.41	2.33	2.23	2.11
	25	SHC	2.82	2.74	2.65	2.57	2.47	2.35
	27	SHC	3.07	2.98	2.89	2.81	2.71	2.59
	29	SHC	3.31	3.22	3.14	3.05	2.92	2.69
	31	SHC	3.55	3.42	3.27	3.11	2.92	2.69
17		TC	3.84	3.67	3.50	3.34	3.14	2.89
		CM	0.92	1.00	1.07	1.15	1.30	1.44
	21	SHC	2.09	2.01	1.92	1.84	1.74	1.62
	23	SHC	2.34	2.25	2.16	2.08	1.98	1.86
	25	SHC	2.58	2.49	2.40	2.32	2.22	2.10
	27	SHC	2.82	2.73	2.65	2.56	2.46	2.34
	29	SHC	3.06	2.97	2.89	2.80	2.71	2.59
	31	SHC	3.31	3.22	3.13	3.05	2.95	2.83
19		TC	4.08	3.91	3.73	# 3.55	3.34	3.07
		CM	0.95	1.03	1.10	1.18	1.33	1.48
	21	SHC	1.83	1.74	1.66	1.57	1.48	1.36
	23	SHC	2.07	1.99	1.90	1.82	1.72	1.60
	25	SHC	2.32	2.23	2.14	2.06	1.96	1.84
	27	SHC	2.56	2.47	2.38	2.30	2.20	2.08
	29	SHC	2.80	2.71	2.63	2.54	2.44	2.33
	31	SHC	3.04	2.95	2.87	2.78	2.69	2.57
21		TC	4.33	4.14	3.95	3.76	3.54	3.25
		CM	0.98	1.06	1.13	1.22	1.37	1.52
	23	SHC	1.80	1.72	1.63	1.55	1.45	1.34
	25	SHC	2.04	1.96	1.87	1.79	1.70	1.58
	27	SHC	2.29	2.20	2.12	2.03	1.94	1.82
	29	SHC	2.53	2.44	2.36	2.28	2.18	2.06
	31	SHC	2.77	2.68	2.60	2.52	2.42	2.30
23		TC	4.59	4.39	4.19	3.95	3.70	3.44
		CM	1.00	1.09	1.16	1.25	1.40	1.56
	25	SHC	1.76	1.67	1.59	1.49	1.39	1.30
	27	SHC	2.00	1.92	1.83	1.74	1.64	1.54
	29	SHC	2.24	2.16	2.07	1.98	1.88	1.78
	31	SHC	2.48	2.40	2.31	2.22	2.12	2.02

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

5-4. Heating Capacity



NOTE

1) ●… Point of Rating condition
   Black dot in the chart indicate the following rating condition.
   Indoor : 20 °C D.B.
   Outdoor : 7 °C D.B. / 6 °C W.B.

2) Above characteristics indicate instantaneous operation, which does not take into account defrost operation.

3) Fan speed : High

4) Because this air conditioner heats a room by drawing in the heat of the outside air (heat pump system), the heating efficiency will fall off when the outdoor temperature is very low. If sufficient heat cannot be obtained with this air conditioner, use another heating appliance together with it.

6. ELECTRICAL DATA

6-1. Electrical Characteristics

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	3.02	3.4
	Power Input	kW	0.022	0.048	0.700	0.770
Full Load Conditions	Running Amps.	A	0.17	0.21	3.47	3.85
	Power Input	kW	0.022	0.048	0.770	0.840

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.

Heating

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	2.72	3.1
	Power Input	kW	0.022	0.048	0.610	0.680
Full Load Conditions	Running Amps.	A	0.17	0.21	3.47	3.85
	Power Input	kW	0.022	0.048	0.770	0.840

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	4.02	4.4
	Power Input	kW	0.028	0.048	0.884	0.960
Full Load Conditions	Running Amps.	A	0.17	0.21	4.89	5.27
	Power Input	kW	0.028	0.048	1.098	1.174

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.

Heating

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	3.72	4.1
	Power Input	kW	0.028	0.048	0.854	0.930
Full Load Conditions	Running Amps.	A	0.17	0.21	4.89	5.27
	Power Input	kW	0.028	0.048	1.098	1.174

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.19	0.39	5.62	6.2
	Power Input	kW	0.031	0.090	1.184	1.305
Full Load Conditions	Running Amps.	A	0.19	0.39	7.19	7.77
	Power Input	kW	0.031	0.090	1.555	1.676

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.

Heating

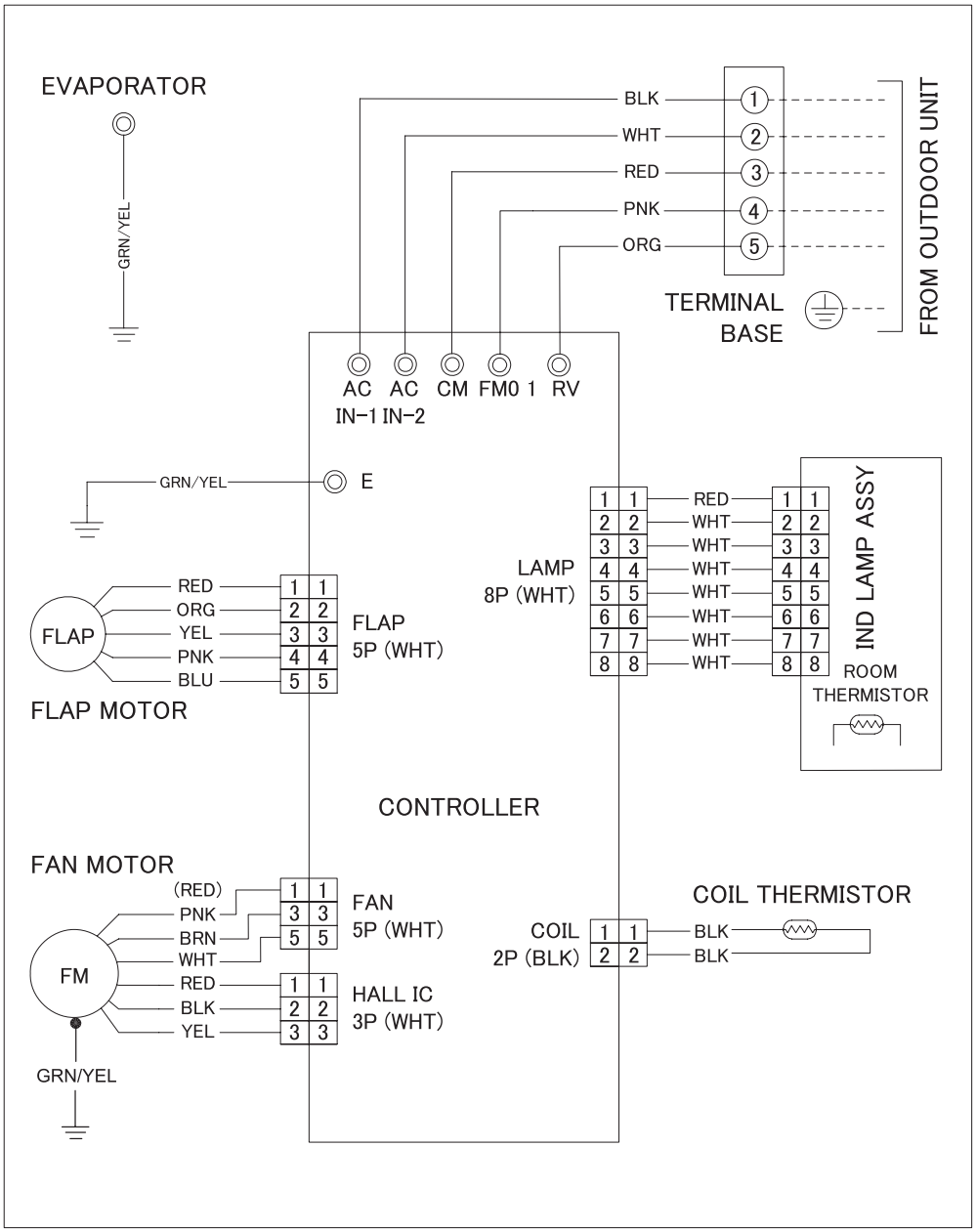
			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.19	0.39	5.32	5.9
	Power Input	kW	0.031	0.090	1.154	1.275
Full Load Conditions	Running Amps.	A	0.19	0.39	7.19	7.77
	Power Input	kW	0.031	0.090	1.555	1.676

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

6-2. Electric Wiring Diagrams

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

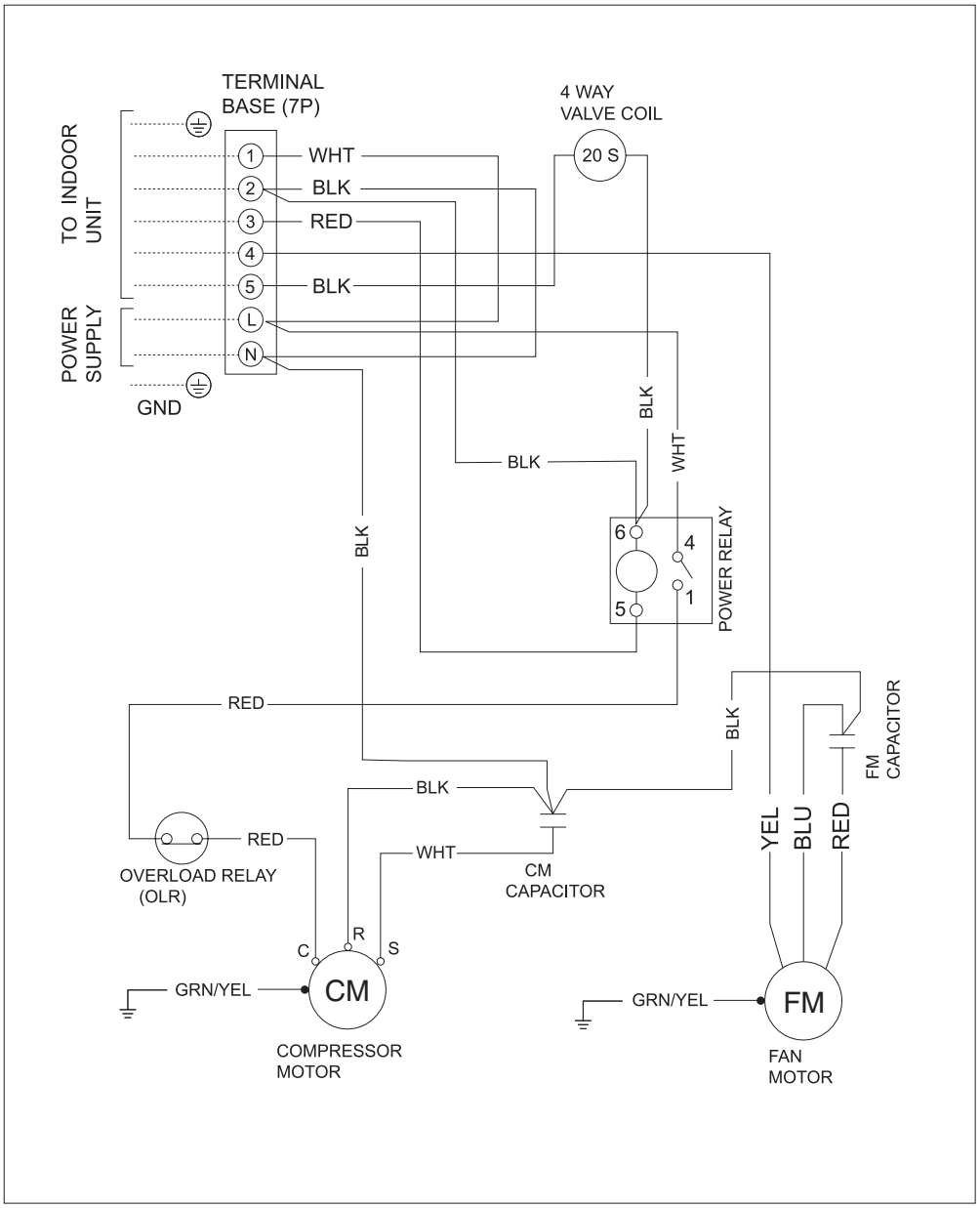
WARNING ***To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.***



8FA2-5250-49700-0

Outdoor Unit **SAP-C77GHAX**

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



8FA-2-5250-32300-0

Outdoor Unit **SAP-C97GHAX**

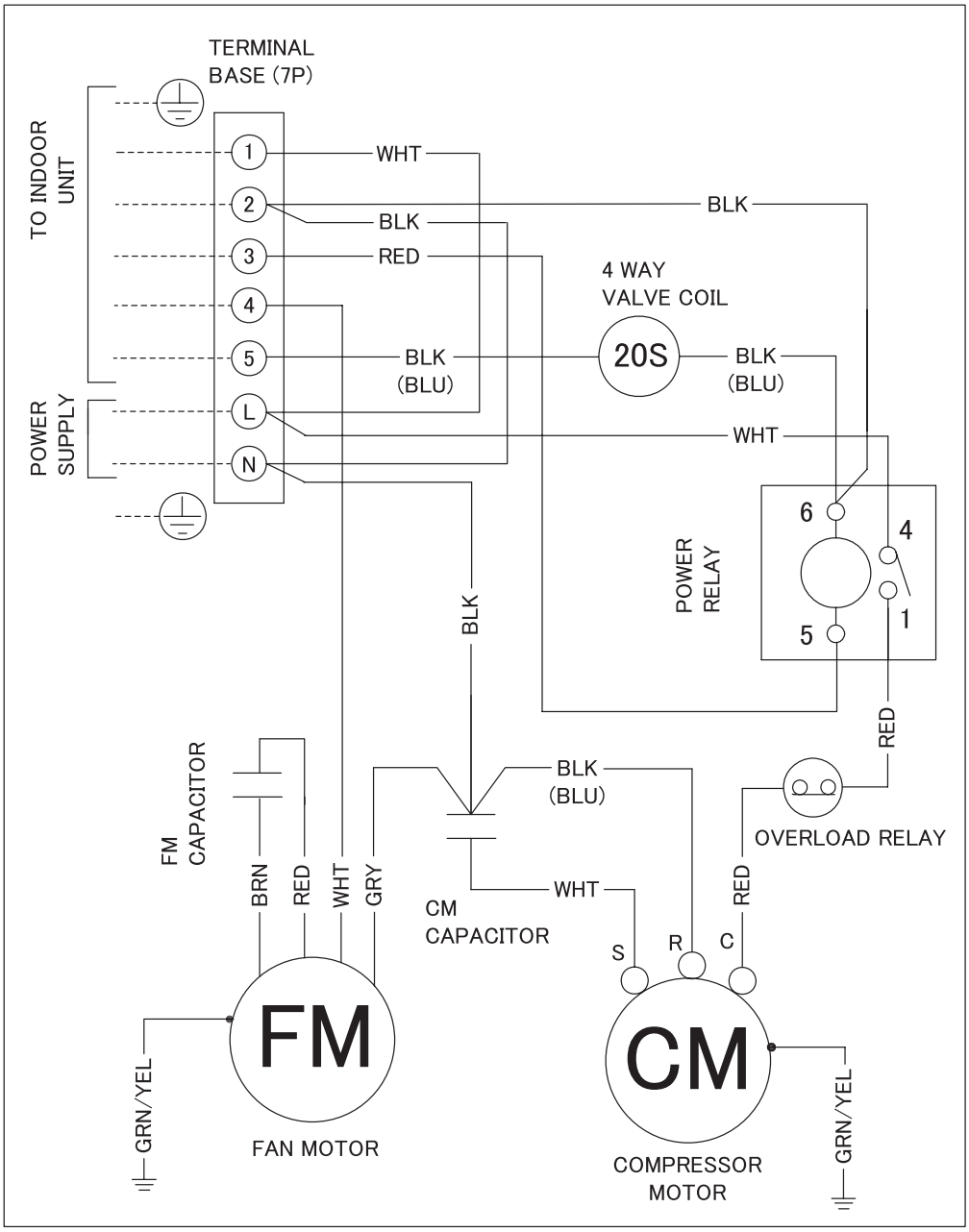
WARNING ***To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.***

TERMINAL BASE(7P)
TO INDOOR UNIT
POWER SUPPLY
GND
1 WHT
2 BLK
3 RED
4
5 BLK (BLU)
L
N
4 WAY VALVE COIL
20S
(BLU) BLK
BLK
WHT
BLK
6
4
1
5
POWER RELAY
RED
BLK
FM CAPACITOR
BLK (BLU)
YEL
BLU
RED
RED
WHT
CM CAPACITOR
OVERLOAD RELAY (OLR)
C
R
S
GRN/YEL
CM
COMPRESSOR MOTOR
GRN/YEL
FM
FAN MOTOR

8FA-2-5250-51400-1

Outdoor Unit **SAP-C127GHAX**

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



8FA2-5250-50300-0

7. INSTALLATION INSTRUCTIONS

7-1. Installation Site Selection

7-1-1. Indoor Unit

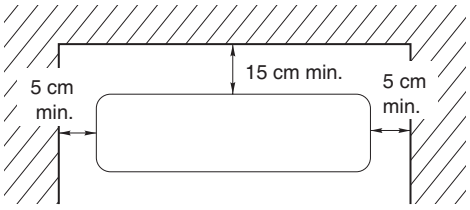
WARNING **To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow.**

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 (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in Table 1 and Fig. 2.



Front View

Fig. 1

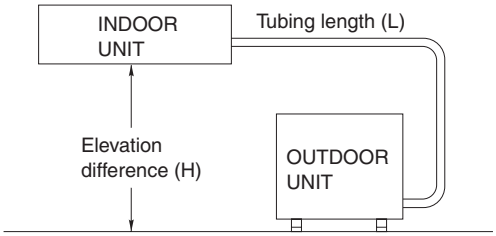


Fig. 2

CAUTION

For stable operation of the air conditioner, do not install wall-mounted type indoor units less than 2.3 m from floor level.

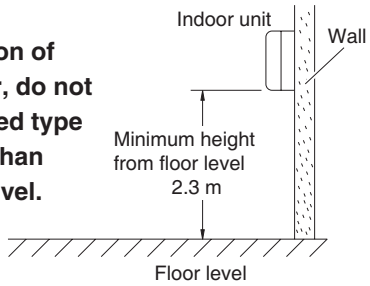


Fig. 3

Table 1

Model	Max. Allowable Tubing Length at Shipment (m)	Limit of Tubing Length (L) (m)	Limit of Elevation Difference (H) (m)	Required Amount of Additional Refrigerant (g/m)*
K77 / 97	5	15	5	15
K127	5	20	5	20

* If total tubing length becomes a) 5 to 15 m (Max.), b) 5 to 20 m (Max.), charge additional refrigerant (R22) by a) 15 g/m, b) 20 g/m. No additional charge of compressor oil is necessary.

7-1-2. Outdoor Unit

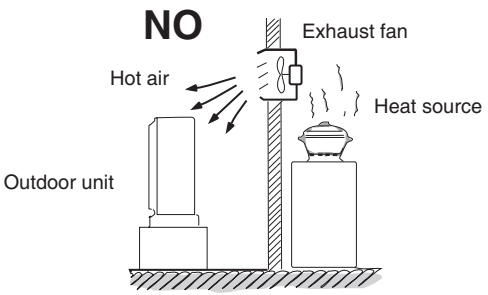


Fig. 4

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. 5a)
- 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. 5b)
- use lug bolts or equal to bolt down unit, reducing vibration and noise.
- Install in a location where no antenna of a television or radio exists within 3 meters.
- Install in a location where at least two sides are unobstructed, so that the flow of air at the intake port or exhaust port is not blocked, and so that sufficient space is ensured for maintenance to be carried out without trouble. In general the top also must be unobstructed. (Figs. 5a and 5b)

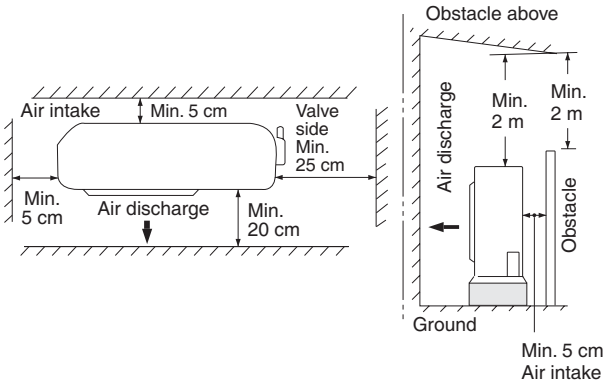


Fig. 5a

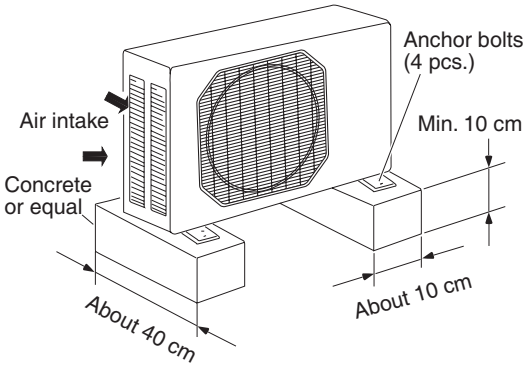


Fig. 5b

7-2. 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.
Supply cord and interconnection cord shall not be lighter than polychloroprene sheathed flexible cord (code designation **60245 IEC 57**).
Table 5 lists recommended wire lengths and diameters for power supply systems.

NOTE Refer to the wiring system diagram (Fig. 22) for the meaning of “A” and “B” in Table 5.

Table 5

Cross-Sectional Area (mm^2) / Model	(A)+(B) (A) Power Supply Wiring Length (m) (B) Power Line Length (m)		Fuse or Circuit Breaker Capacity
	2	3.5	
C77 / 97	38	60	10 A
C127	27	48	

… AWG (American Wire Gauge)

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.**

WARNING

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

WIRING SYSTEM DIAGRAM

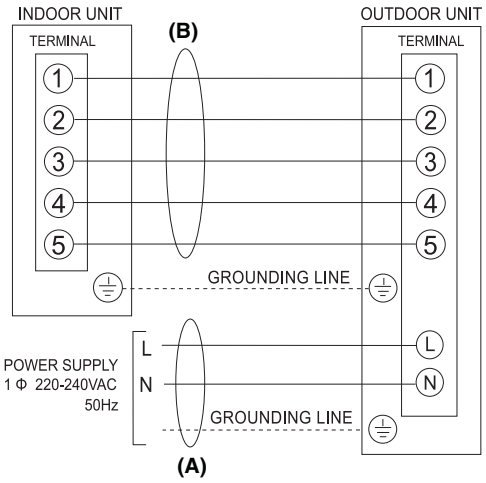


Fig. 22

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.**
- **The appliancce is fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage categroy Ⅲ conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.**
- **If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.**

7-3. 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 there is an obstacle between the remote control unit and the air conditioner (since a check signal is sent from the remote control unit every 5 minutes)

7-3-1. Mounting on a Wall

Before mounting the remote control unit, press the ON/OFF operation 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.

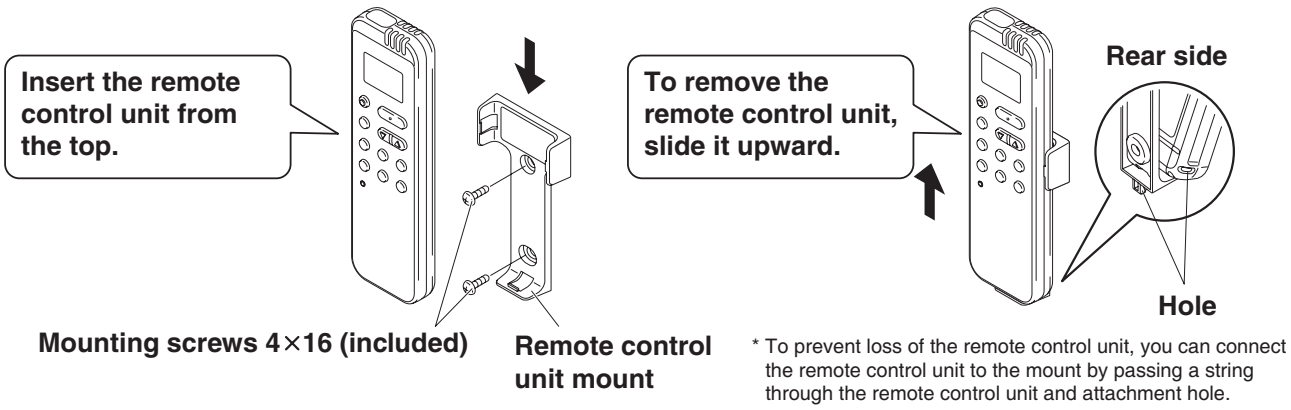


Fig. 7

7-4. How to Test Run the Air Conditioner

After turning on the power of the air conditioner, use the remote controller and follow the steps below to conduct the test run.

(1) Set the remote controller in Test Run mode. (Fig. 8a)

a) Press and hold the ECONOMY button and the 1HR. TIMER button.

b) Then press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first.

c) Then release the ECONOMY and 1HR. TIMER buttons.

d) " ◀ " for ❄ appears and "P1" blinking in the remote controller display area. (Fig. 8b)

(2) Start Cooling mode test run by pressing the ON/OFF operation button of the remote controller. (Fig. 8a)

- This starts the fan producing uncooled forced air with the 1 indicator lamps (OPERATION lamp) on the main unit brighting. (Fig. 8c)
- After 3 minutes, the system shifts into cooling operation, and cool air will start to be felt. Cooling mode test run is unaffected by the room temperature.

(3) Press the ON/OFF operation button of the remote controller again to stop the test run. (Fig. 8a)

(4) Finally press the ACL (Reset) button of the remote controller to release it from Test Run mode to return to normal mode. (Fig. 8a)

- " ◀ " for ❄ and "P1" will disappear from the remote controller display area.

IMPORTANT

After the test run is completed, be sure to press the ACL (Reset) button to return to normal mode. The air conditioner will not operate correctly if this is not done.

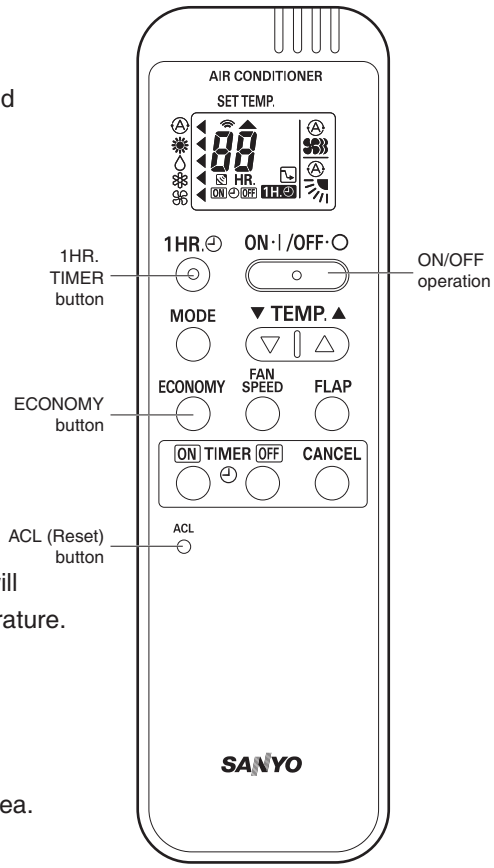


Fig. 8a

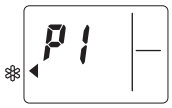


Fig. 8b

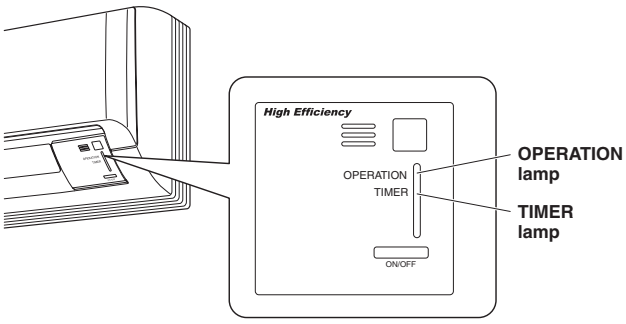


Fig. 8c

7-5. Removing and Installing the Grille

Basically, these models can be installed and wired without removing the grille. If access to any internal part is needed, follow the steps as given below.

How to remove the grille

(1) Open the front panel until it is nearly horizontal, grasp the sections near the front panel arms on both sides, and then remove the panel by pushing the arms towards the outside while pulling the panel towards you. (Fig. 9)
(2) Lift the anti-mold filter up slightly to disengage the protrusions from the hooks on the unit, and then pull downward to remove the filter from the unit. (Fig. 9)
(3) Remove the 4 screws. Grasp the grille on both bottom sides, and pull it towards you slightly. (Fig. 10)
(4) Press the 2 tabs on the top of the grille to disengage them. (Fig. 10)
(5) Pull the grille towards you to remove it. (Fig. 10)

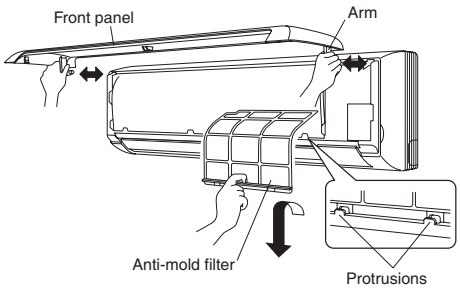


Fig. 9

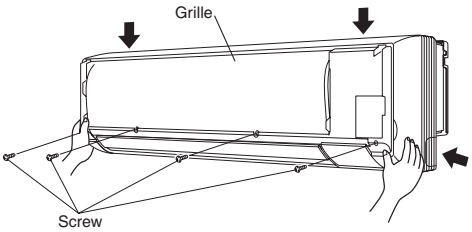


Fig. 10

How to replace the grille

(1) Insert the bottom of the grille into the frame.
(2) While aligning both edges of the grille with the frame, move the grille horizontally and insert the top and bottom into the frame.
(3) Press the grille firmly with your hand to ensure no gap exists between the frame and grille.
(4) Tighten the 4 screws.
(5) Grasp the sections near the front panel arms on both sides, and hold the front panel so that it is nearly horizontal. Push the arm shafts towards the outside so that they come into contact with the top of the indentations on the right and left sides of the air conditioner. Then push firmly until the arm shafts click into place. (Fig. 11)
(6) Insert the top of the anti-mold filter, and then fit the protrusions on the bottom of the filter all the way into the hooks on the unit.
(7) After closing the front panel, press firmly on the parts indicated by the arrows to securely fasten the panel in place. (Fig. 12)

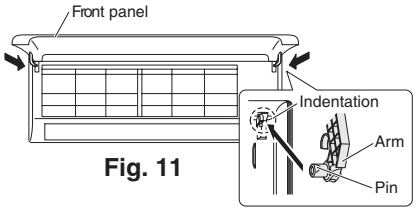


Fig. 11

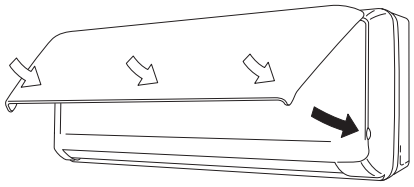


Fig. 12

NOTE

Check that no gap exists between the frame and the grille.

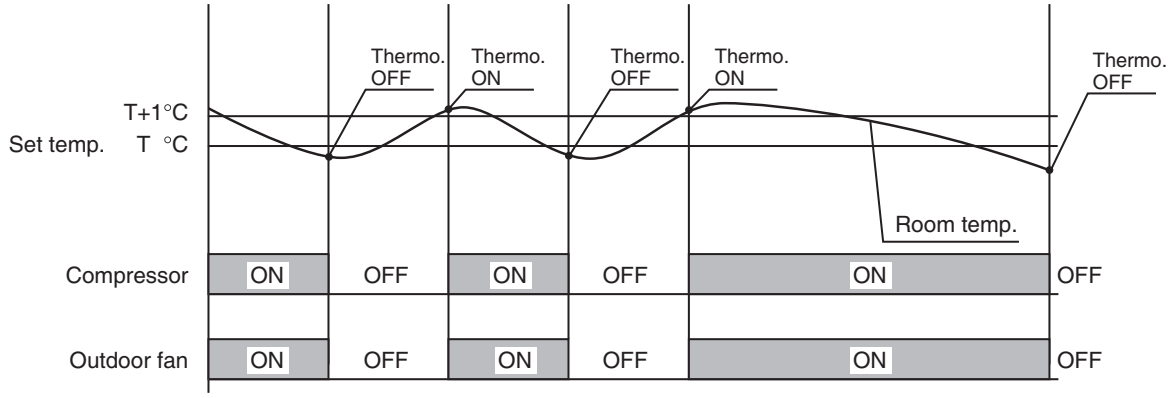
8. FUNCTIONS

8-1. Room Temperature Control

(1) Cooling

- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the indoor unit.

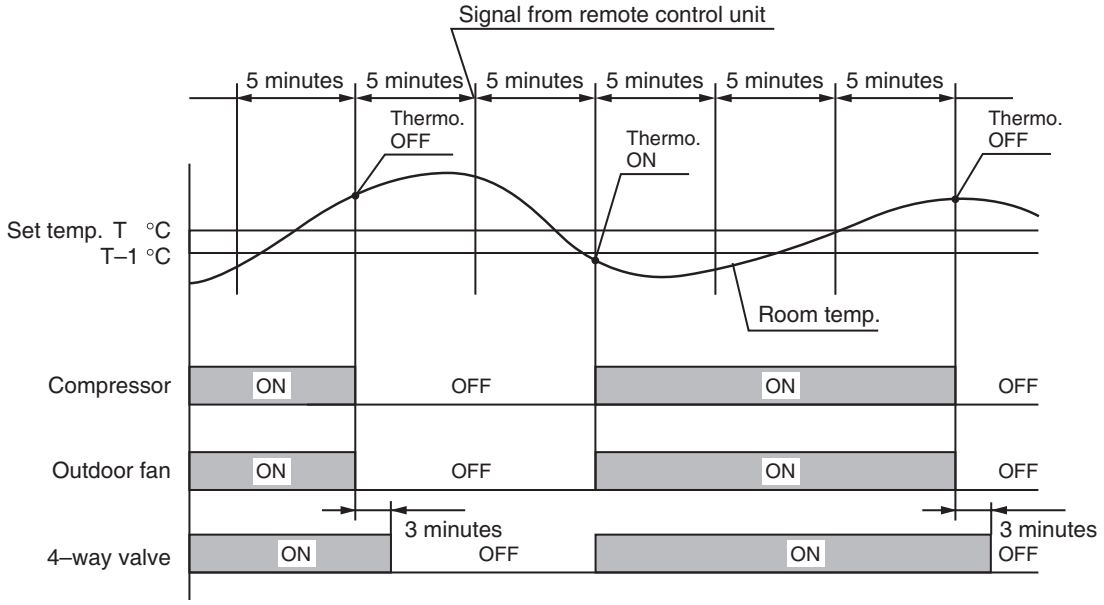
NOTE Some informations except for the room temperature are transmitted every 5 minutes by the remote control unit to the controller in the indoor unit.



- Once the compressor starts, it keeps running for 5 minutes.
- Once the compressor stops, it will not start running again for 3 minutes.
- Thermo. ON : When room temperature rises 1°C above the set temperature T°C, the compressor turns ON.
- Thermo. OFF : When the room temperature falls below the set temperature T°C, the compressor turns OFF.

(2) Heating

- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 5 minutes by the remote control unit to the controller in the indoor unit.

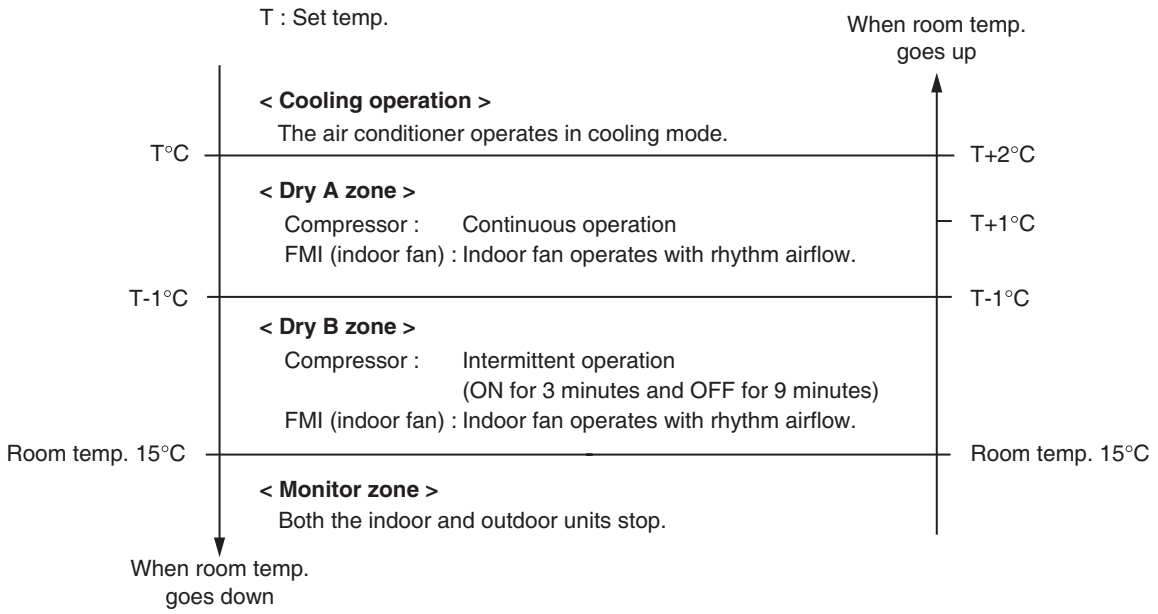


- Once the compressor starts, it keeps running for 5 minutes.
- Once the compressor stops, it will not start running again for 5 minutes.
- Thermo. ON : When room temperature falls 1°C below the set temperature T°C, the compressor turns ON.
- Thermo. OFF : When the room temperature rises above the set temperature T°C, the compressor turns OFF.

NOTE The temperature described in this page and previous page gives you an example with remote control operation. In case of the operation controled by an indoor air temperature sensor, operation temperature differ somewhat.

8-2. Dry Operation (Dehumidification)

- Dry operation uses the ability of the cooling cycle to remove moisture from the air, but by running at low level to dehumidify without greatly reducing the room temperature. The air conditioner repeats the cycle of turning ON and OFF automatically as shown in the chart below according to the room temperature.



NOTE

- Intermittent ventilation occurs by switching the indoor fan speed between L and LL.
- DRY operation does not occur when the room temperature is 15°C or less, which is the monitor zone.
- When the compressor stops, the indoor fan stops as well.

8-3. Automatic Switching between Cooling and Heating

- When AUTO mode is selected, the microprocessor calculates the difference between the set temperature and the room temperature, and automatically switches to COOLING or HEATING mode to maintain the desired temperature.

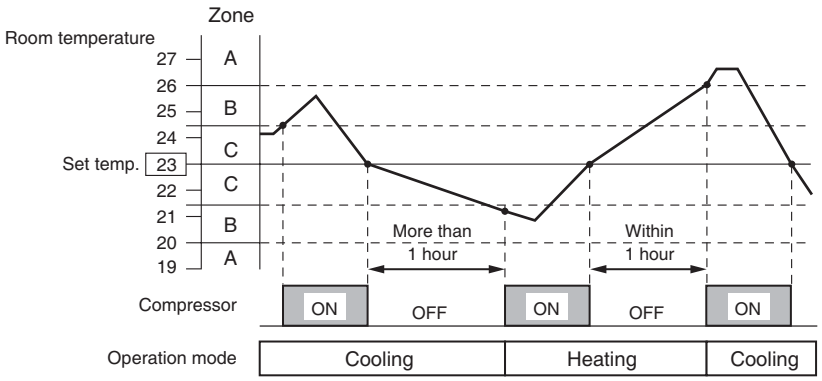
Room temp. ≥ Set temp. ➞COOL

Room temp. < Set temp. ➞HEAT

This means that if the room temperature is higher than or equal to the set temperature, COOLING operation begins. If the room temperature is lower than the set temperature, HEATING operation begins.

Example:

Example of operation in the AUTO mode with the set room temperature at 23 °C.



NOTE If one of the following conditions occurs, the air conditioner changes the operation mode (from cool to heat or vice versa).

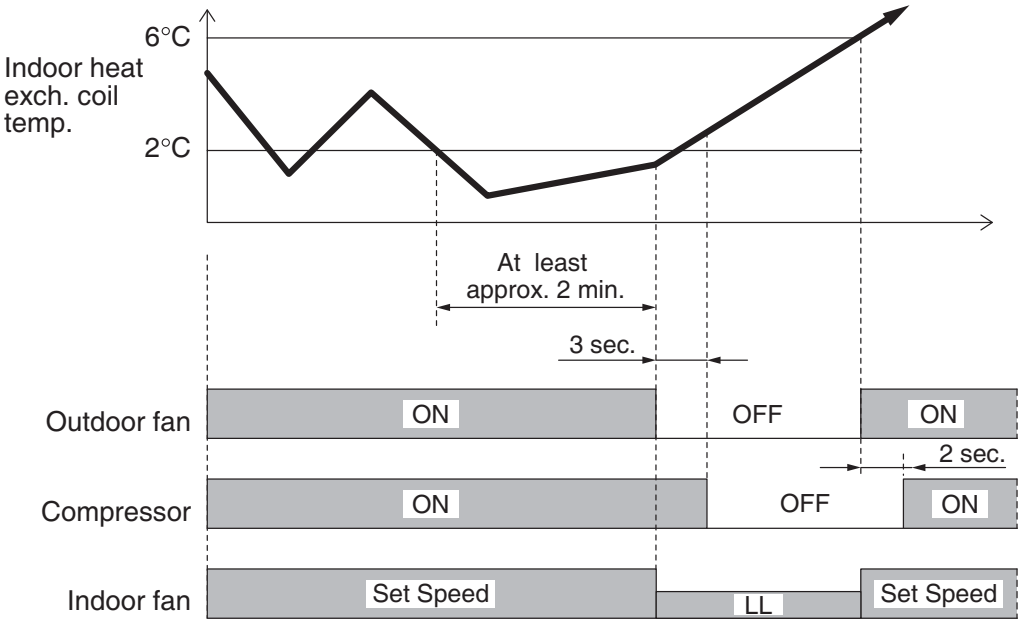
ZONE A: The mode changes if the difference between the room temperature and the set temperature is at least 3 °C.

ZONE B: The mode changes if the difference between the room temperature and the set temperature is at least 1.5 °C. if 1-hour has elapsed after the compressor is stopped.

ZONE C: The mode does not changes if the difference between the room temperature and the set temperature is within 1.5 °C.

8-4. Freeze Prevention (Cooling and Dry)

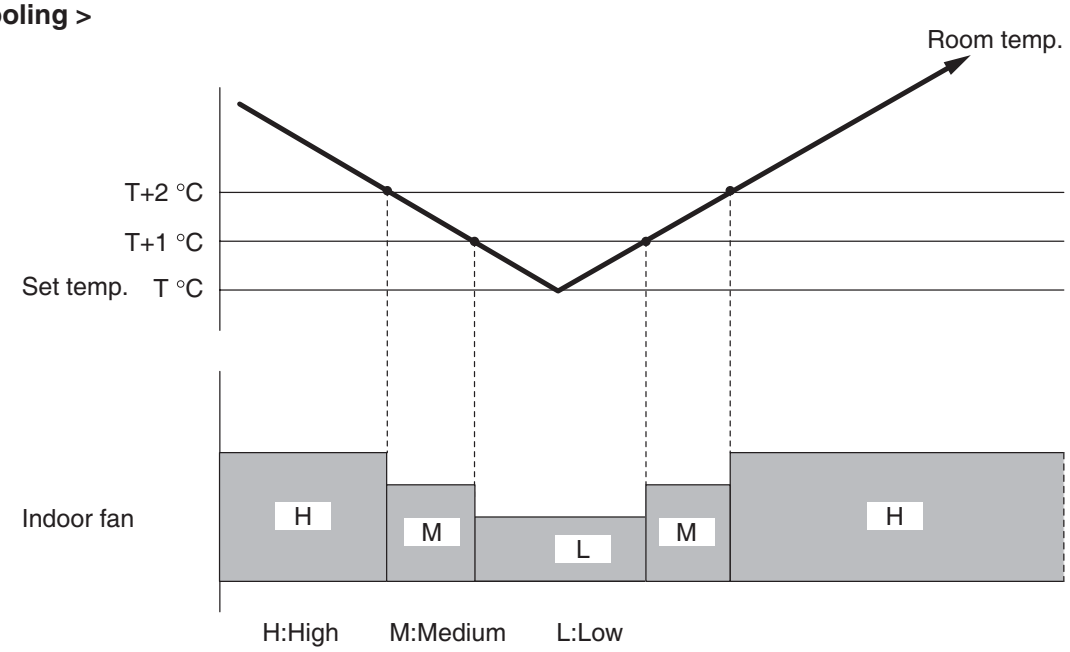
- This function prevents freezing of the indoor heat exchange coil.
- When the temperature of the indoor heat exchange coil falls below 2 °C for 2 minutes, the control circuit stops the outdoor fan and compressor (The compressor stops 3 seconds after the outdoor fan stopped). During this period, Indoor fan operates in LL. The outdoor fan does not start again until the temperature rises above 6°C. (The compressor starts 2 seconds after the outdoor fan started.)



8-5. Automatic Fan Speed (Cooling and Dry)

- This automatically adjust the indoor fan speed by the difference between the room temperature and set temperature.

< Cooling >



8-6. Cold Draft Prevention (Heating)

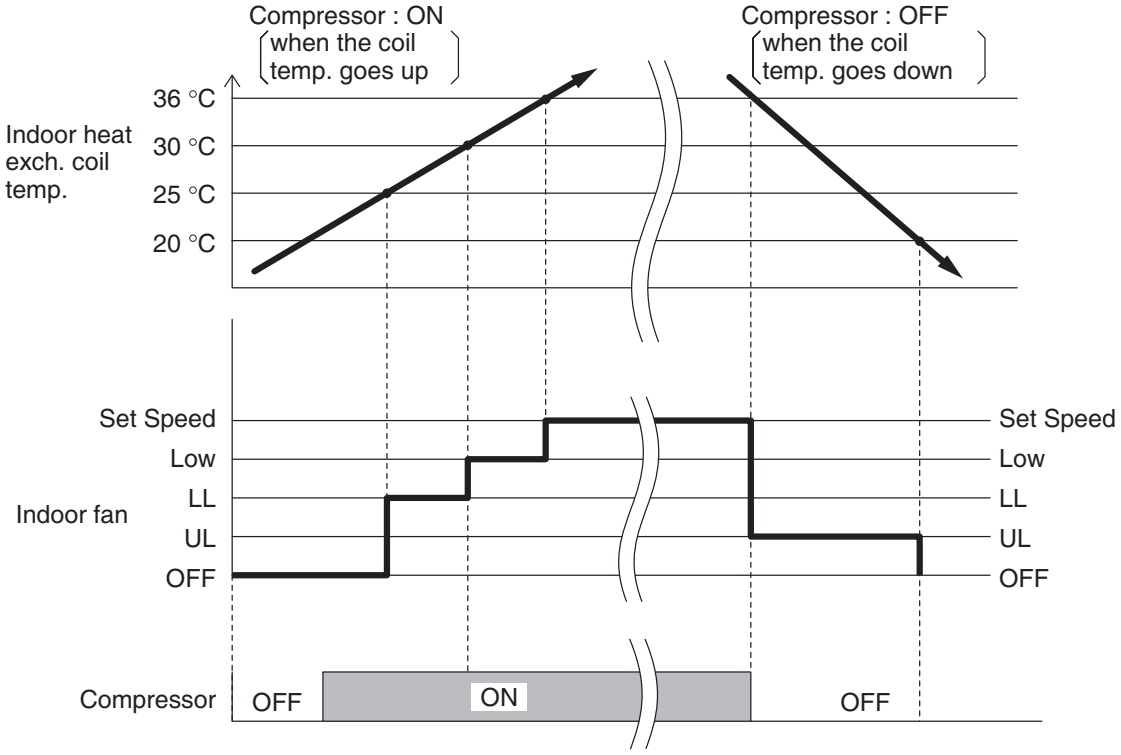
- This function controls indoor fan speed so a strong draft of cold air will not blow out before the indoor heat exchange coil have sufficiently warmed up.
- Indoor fan speed varies according to the indoor heat exchange coil temperature as table shown below.

Condition	Indoor coil temperature (°C)	Indoor fan speed
Compressor is in operation (Indoor coil temp. goes up)	below 25 °C	OFF
	between 25 to 30 °C	LL (Very low)
	between 30 to 36 °C	Low
	over 36 °C	Set speed *1
Compressor is stopped (Indoor coil temp. goes down)	between 20 to 36 °C	UL (Ultra low)
	below 20 °C	OFF *2

NOTE

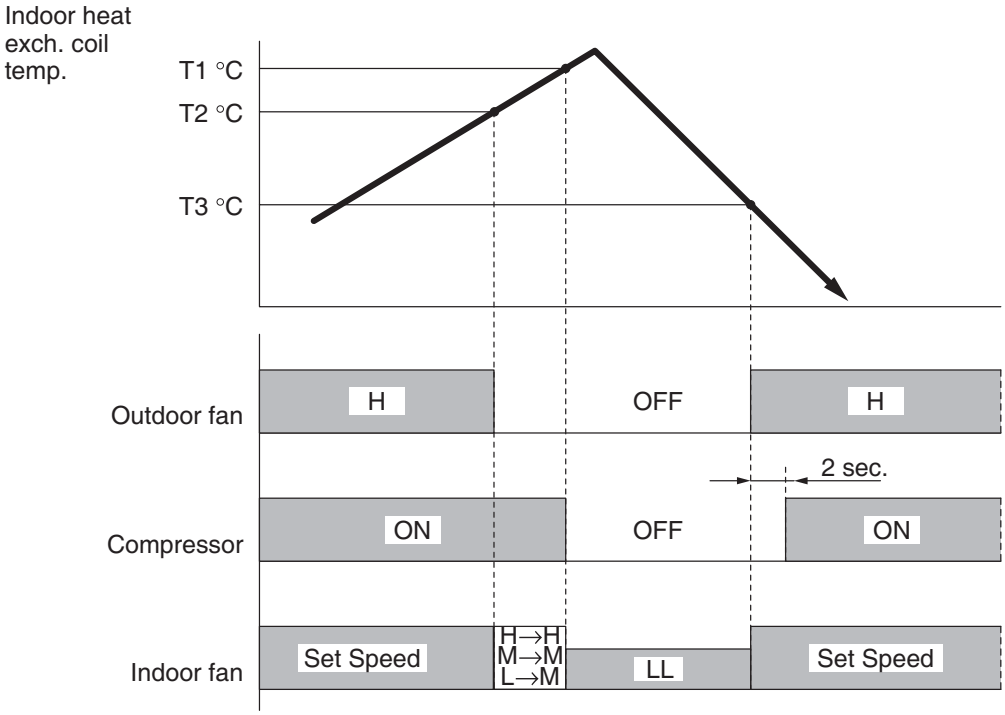
*1 When the coil temperature rises above 36°C, indoor fan operates in set speed.

*2 If 10 minutes has elapsed after the compressor has been stopped, the indoor fan stops its operation regardless of the indoor heat exchange coil temperature.



8-7. Overload Prevention (Heating)

- This function prevents overheating of the indoor heat exchange coil.
- When the temperature of the indoor heat exchange coil rises above T2 °C, the outdoor fan stops, if the indoor fan is L (low speed), then the fan speed changes from L (low speed) to M (medium speed).
- When the temperature of the indoor heat exchange coil rises above T1 °C, the compressor stops, and indoor fan runs in LL (very low speed).



NOTE

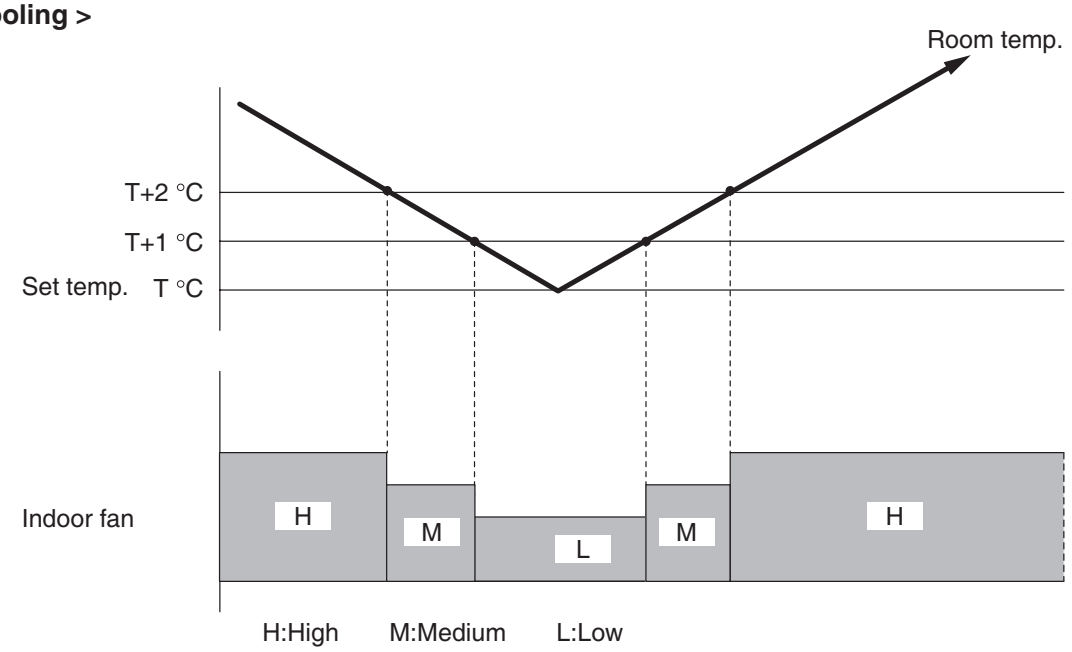
The operation temperature shown as T1, T2 and T3 in the chart differ by models.

	77 / 97 / 127 class
T1	54
T2	50
T3	40

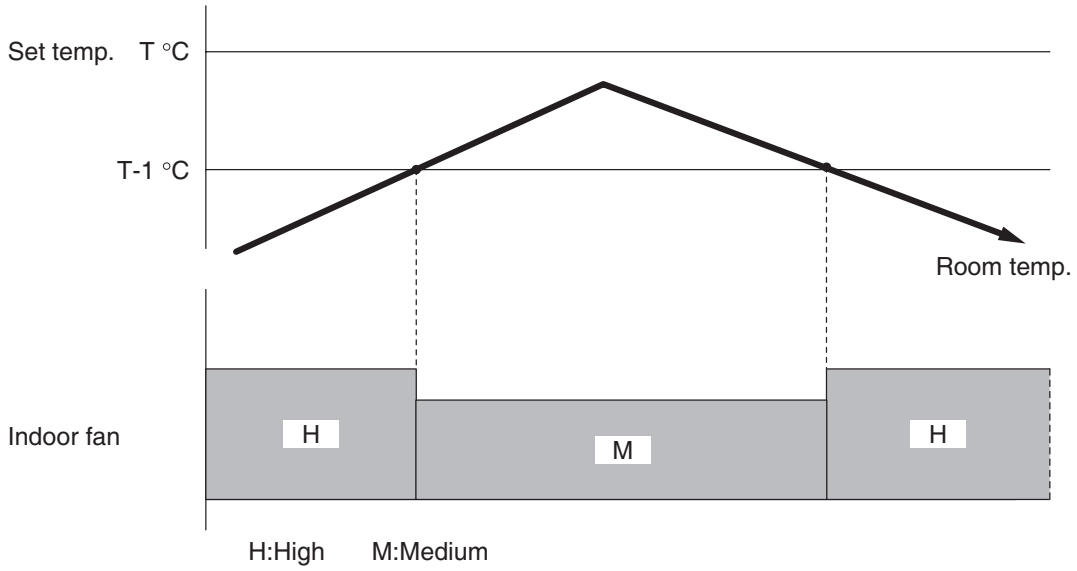
8-8. Automatic Fan Speed (Cooling, Dry and Heating)

- This automatically adjust the indoor fan speed by the difference between the room temperature and set temperature.

< Cooling >



< Heating >

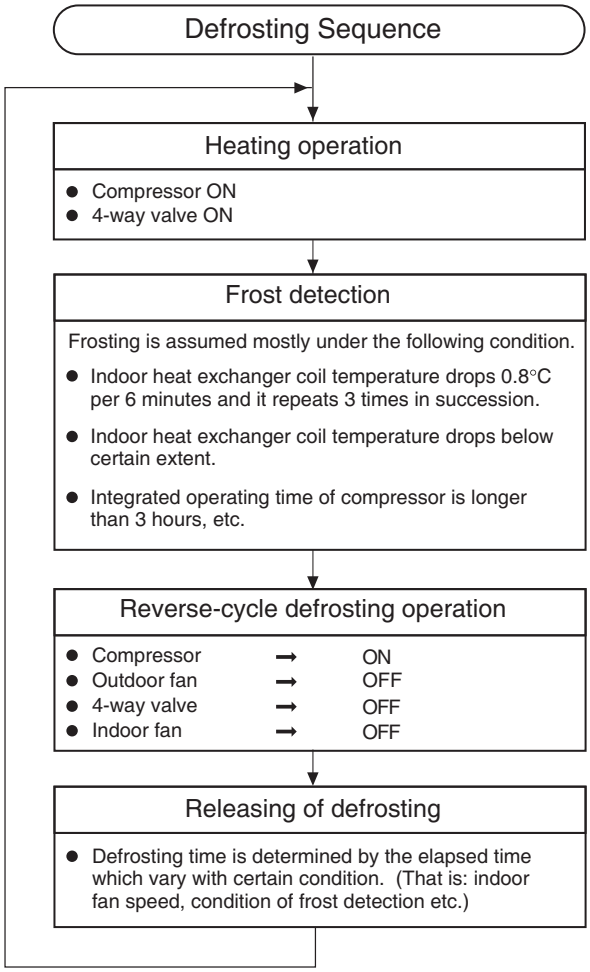


NOTE

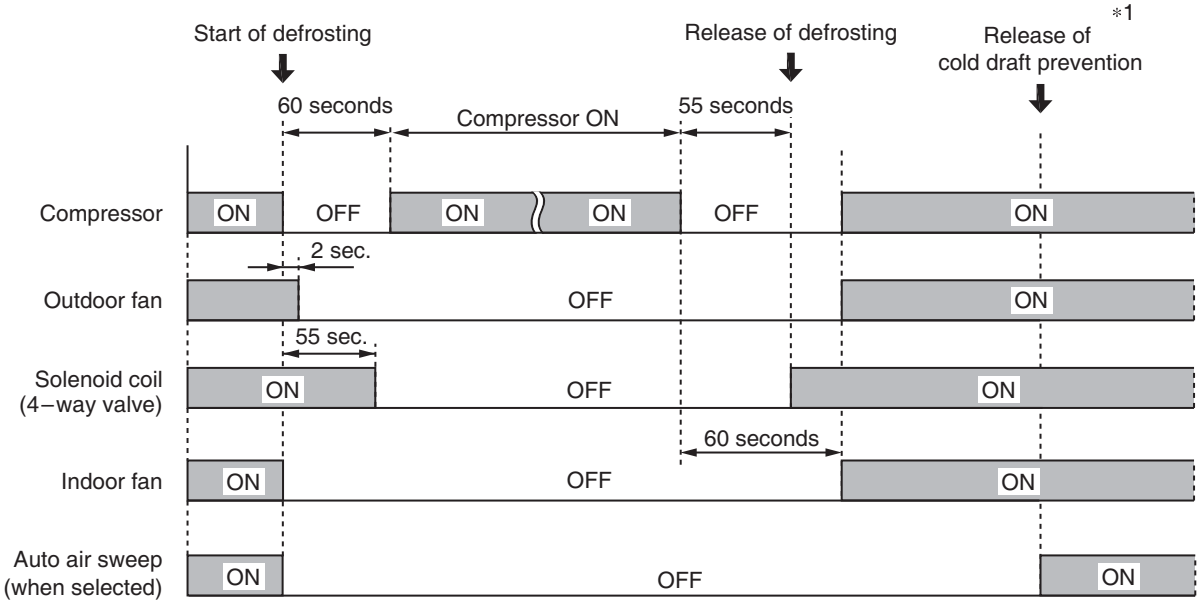
The figure given above shows an example with remote control sensor operation. In case of the operation controled by an indoor air temperature sensor, temperature differ somewhat.

8-9. Defrosting Operation (Heating)

■ Reverse-cycle Defrosting



■ Defrosting Mode Timing Chart



NOTE *1: Refer to "8-5 Cold Draft Prevention"

9. TROUBLESHOOTING

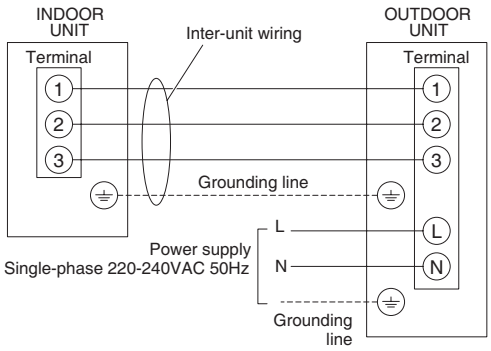
9-1. Check before and after troubleshooting

WARNING

Hazardous voltage can cause ELECTRIC SHOCK or DEATH. Disconnect power or turn off circuit breaker before you start checking or servicing.

9-1-1. Check power supply wiring.

- Check that power supply wires are correctly connected to terminals **L** and **N** on the terminal plate in the outdoor unit.



9-1-2. Check inter-unit wiring.

- Check that inter-unit wiring is correctly connected between indoor unit and outdoor unit.

9-1-3. Check power supply.

- Check that voltage is in specified range (+/–10% of the rating).
- Check that power is being supplied.

9-1-4. Check lead wires and connectors in indoor and outdoor units.

- Check that coating of lead wires is not damaged.
- Check that lead wires and connectors are firmly connected.
- Check that wiring is correct.

9-2. Air conditioner does not operate.

9-2-1. Circuit breaker trips (or fuse blows).

(1) When the circuit breaker is set to ON, it is tripped soon. (Resetting is not possible.)

< Failure Cause >

- There is a possibility of ground fault.
- There is a possibility of insulation fault.

< Identification Method of the Failure Cause >

Identify the failure cause using the following procedure.

WARNING **Turn off the circuit breaker and disconnect the power supply wiring to prevent the electric shock or damage to any measuring instrument.**

< Check outdoor unit >

1. Turn off the circuit breaker and disconnect the power supply wiring. Fig. 1
2. Disconnect the inter-unit wiring from the outdoor unit terminal plate. Fig. 1
3. Measure insulation resistance of outdoor unit.

↓

Does the insulation resistance read 2M ohm or more ?

↓ No

1. Insulation of outdoor unit is defective.
2. And measure insulation resistance of electrical parts in outdoor unit to specify the insulation fault.

< Check indoor unit >

1. Turn off the circuit breaker and disconnect the power supply wiring. Fig. 1
2. Disconnect the inter-unit wiring from the indoor unit terminal plate. Fig. 1
3. Measure insulation resistance of indoor unit.

↓

Does the insulation resistance read 2M ohm or more ?

↓ No

1. Insulation of indoor unit is defective.
2. And measure insulation resistance of electrical parts in indoor unit to specify the insulation fault.

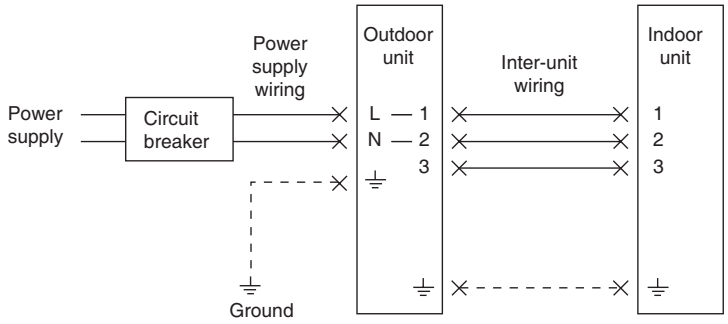
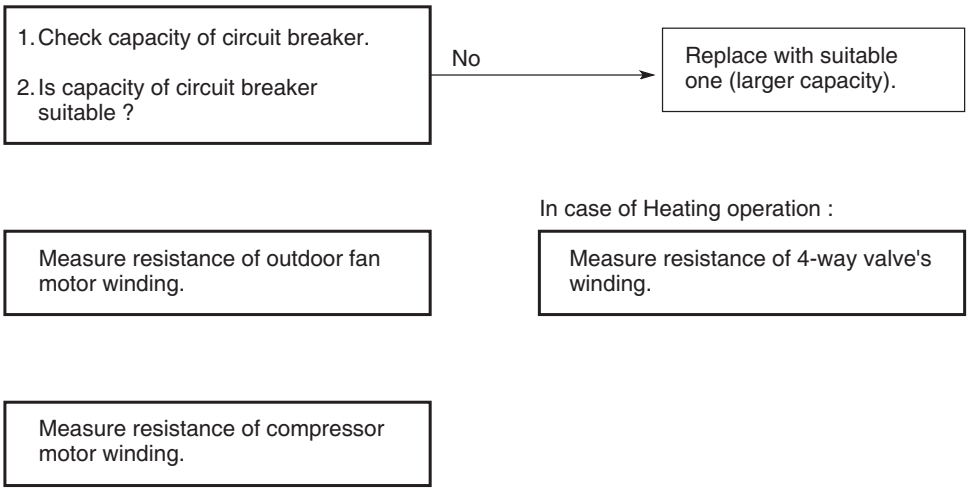


Fig.1

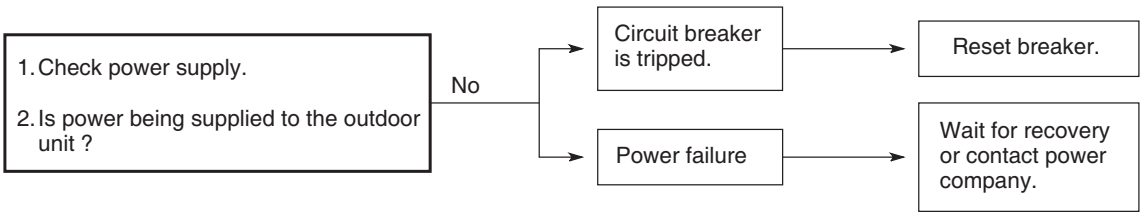
(2) Circuit breaker trips in several minutes after turning the air conditioner on.

● There is a possibility of short circuit.



9-2-2. Neither indoor nor outdoor unit runs.

(1) Power is not supplied.



(2) Check "OPERATION lamp" in the indoor unit.

NOTE **Alarm Signal (*)**

Operation lamp on the front side of the indoor unit will flash on and off when either of indoor room thermistor, coil thermistor and indoor fan motor is defective.

(3) Check remote control unit.

1. Try to run with another remote control unit.
2. Is the operation good ?

↓ Yes

First remote control unit is defective.

In the case that the remote control transmission section is dirty, clean it.

In the case that the remote control reception section in front of indoor unit is dirty, clean it.

(4) Check fuse on the indoor P.C.Board.

1. Check fuse (F) on indoor P.C.Board for continuity.
2. Is fuse blown ?

→ Yes → Replace the fuse.

↓ No

Is operation lamp ON ?

→ Measure resistance of indoor and outdoor fan motor (FM) winding.

↓ No

Indoor P.C.Board is defective.

→ Measure resistance of compressor motor (CM) winding.

(5) Check TIMER on the remote control unit.

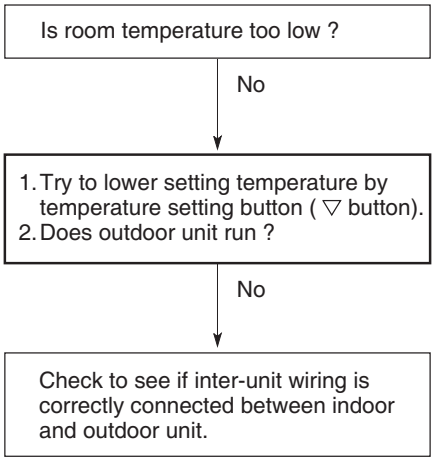
1. Is timer turned ON ?
2. Is ON displayed on remote control ?

→ Yes → Cancel the timer mode.

9-2-3. Only outdoor unit does not run.

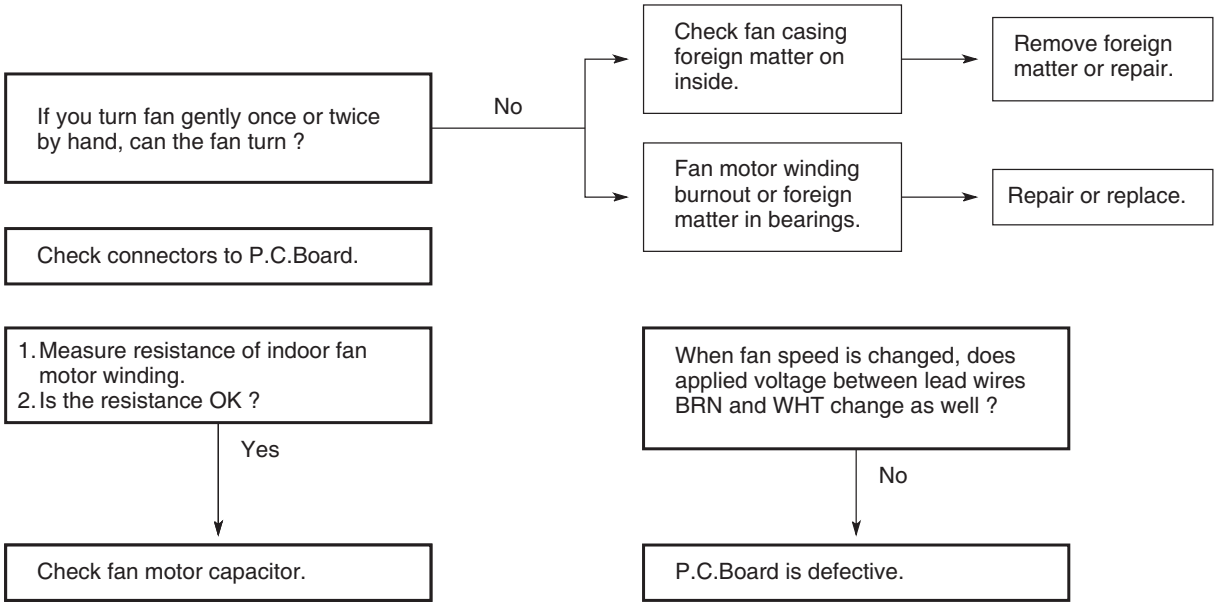
(1) Check setting temperature.

COOL



9-3. Some part of air conditioner does not operate.

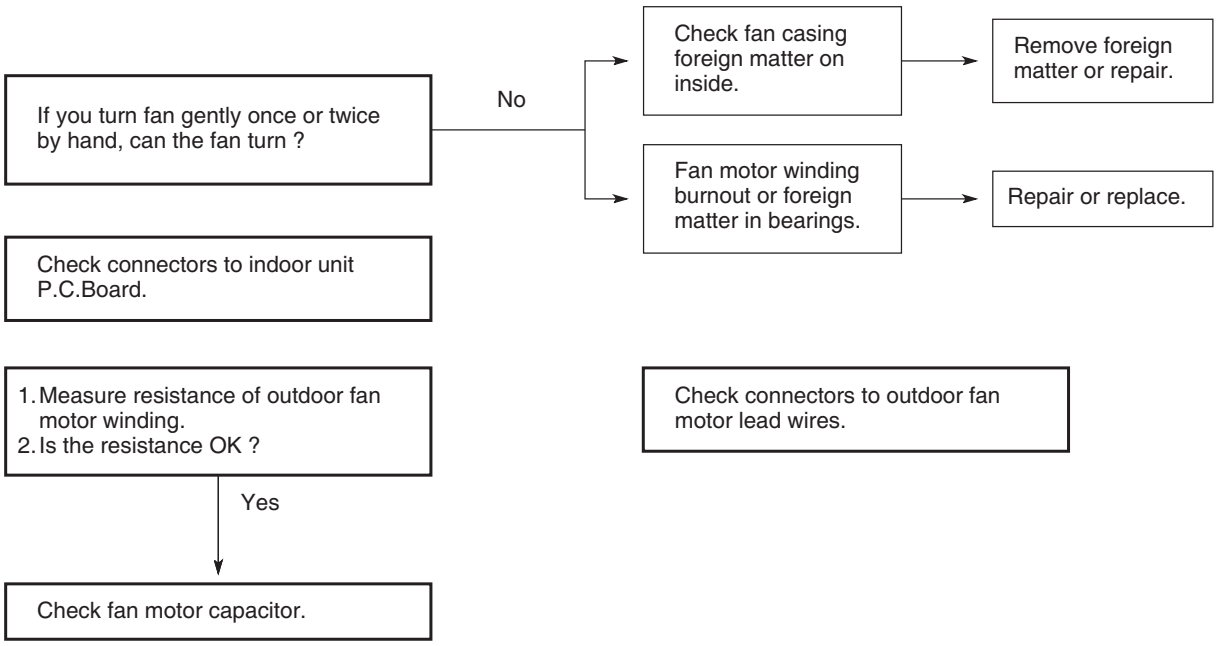
9-3-1. Only indoor fan does not run.



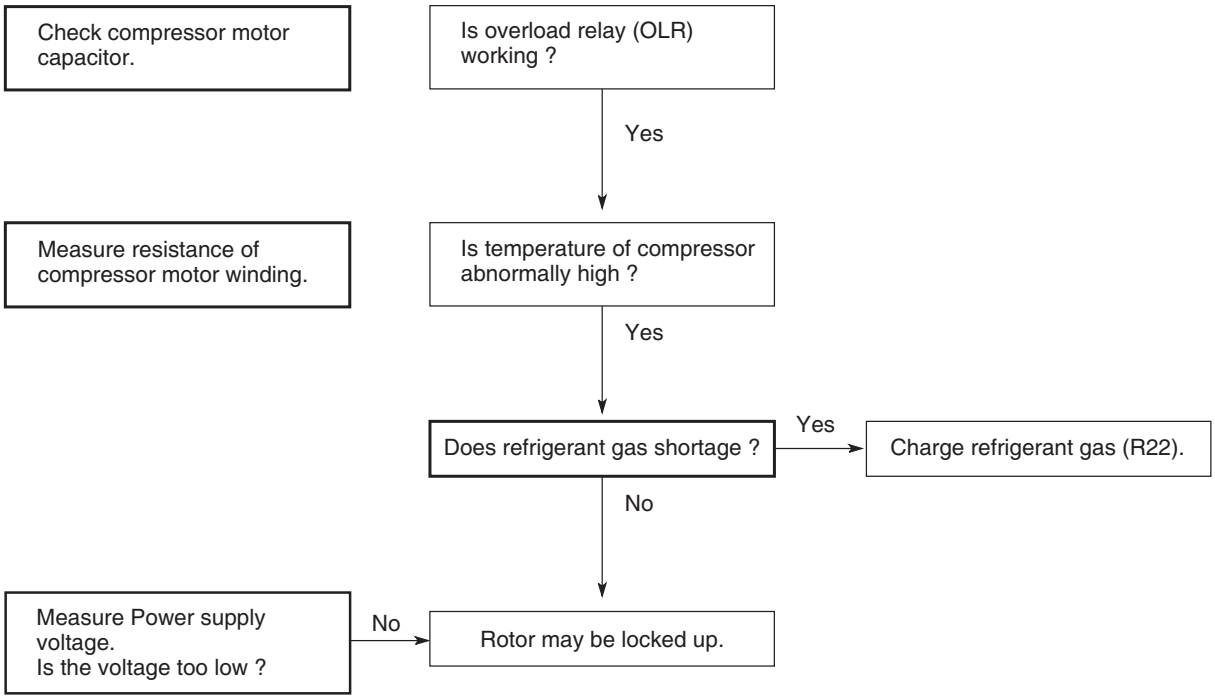
9-3-2. Only flap motor does not run.

Measure resistance of flap motor winding and check the connector.

9-3-3. Only outdoor fan does not run.

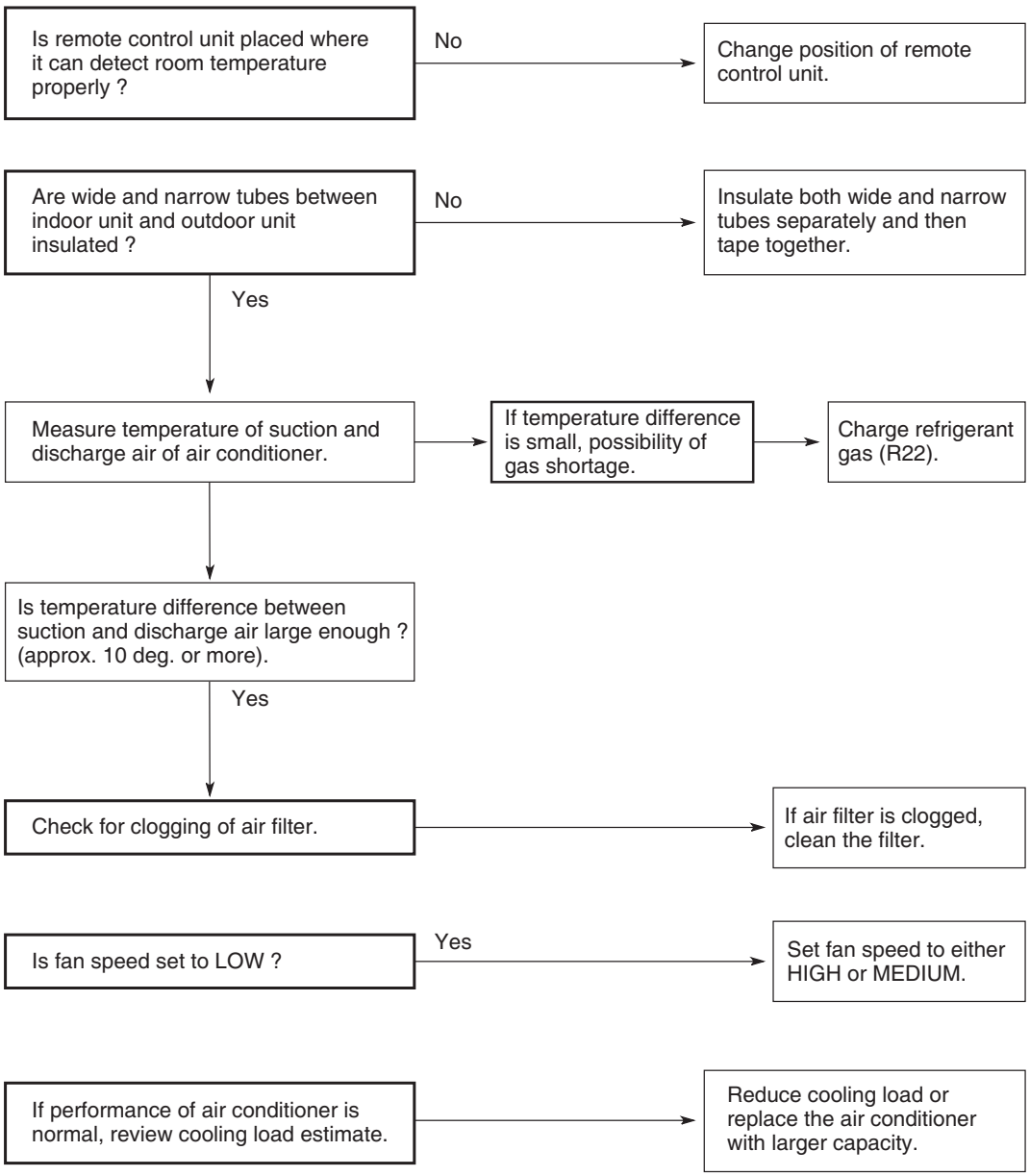


9-3-4. Only compressor does not run.

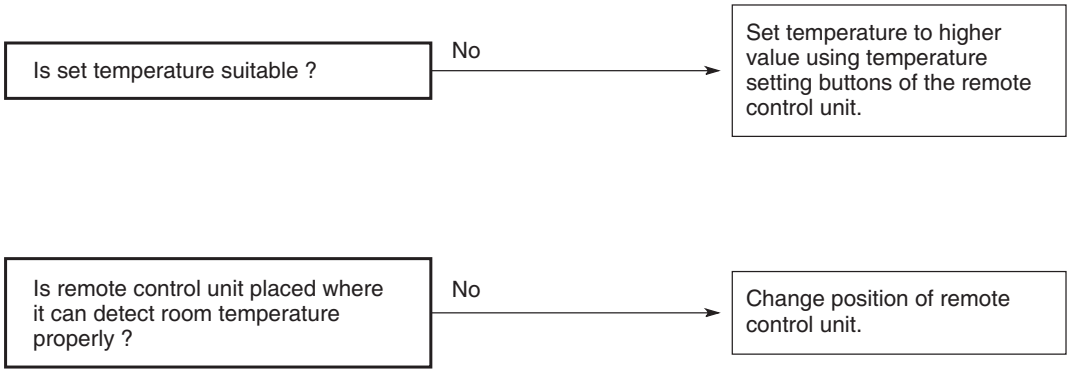


9-4. Air conditioner operates, but abnormalities are observed.

9-4-1. Poor cooling.



9-4-2. Excessive cooling.



10. CHECKING ELECTRICAL COMPONENTS

10-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 2M ohm.

10-1-1. Power Supply Cord

Clamp the grounding wire of power cord with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the two power wires. (Fig. 1)
Then also measure the resistance between the grounding and other power wire. (Fig. 1)

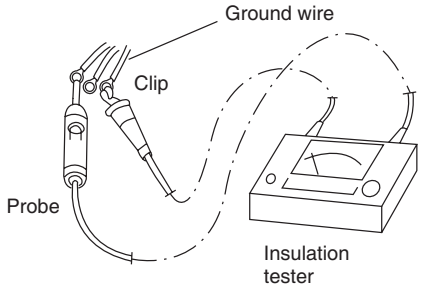


Fig. 1

10-1-2. 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 on the terminal plate. (Fig. 2)
Note that the ground line terminal should be skipped for the check.

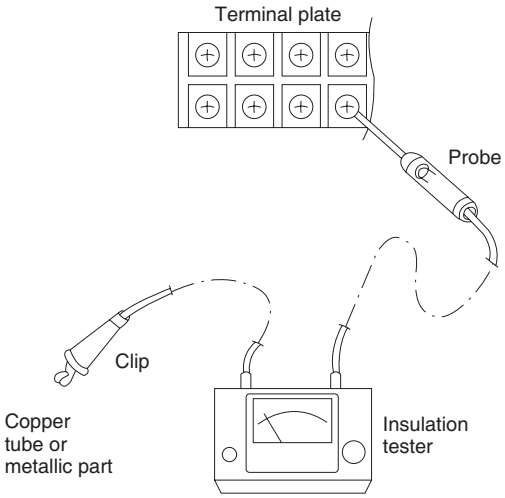


Fig. 2

10-1-3. 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)

10-1-4. 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.

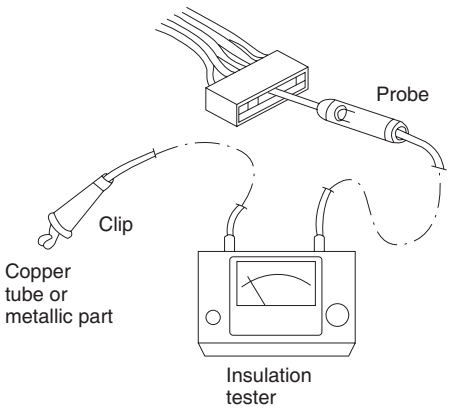


Fig. 3

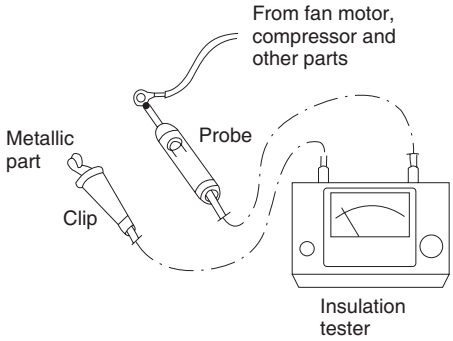


Fig. 4

10-2. Checking Continuity of Fuse on PCB Ass'y

- Remove the PCB Ass'y from the electrical component box. Then pull out the fuse from the PCB Ass'y. (Fig. 5)
- Check for continuity using a multimeter as shown in Fig. 6.

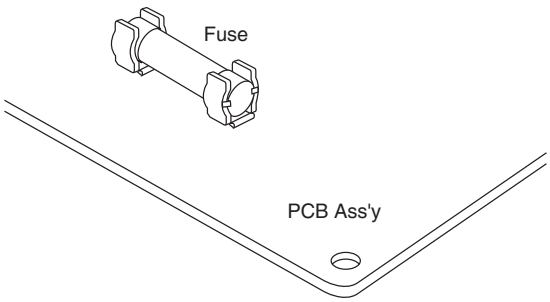


Fig. 5

10-3. 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.

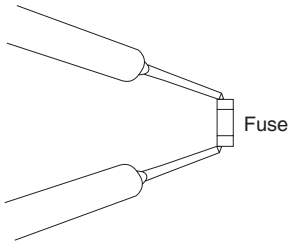


Fig. 6

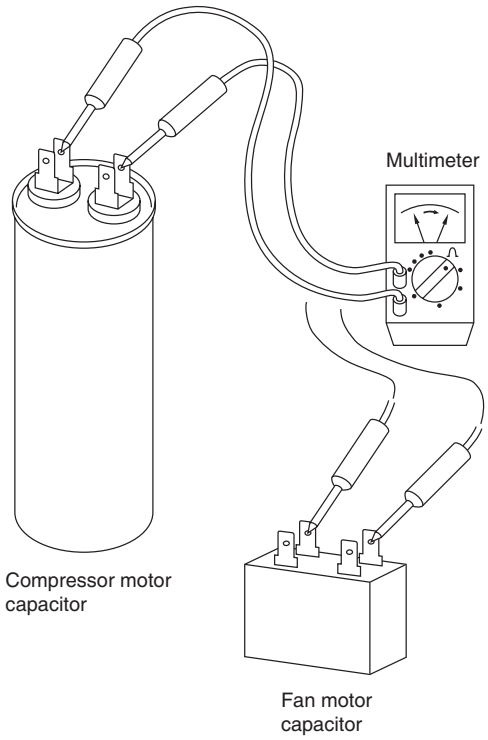


Fig. 7

11. MAINTENANCE

11-1. Address Setting of the Remote Control Unit

The address can be set in order to prevent interference between remote controllers when 2 indoor units are installed near each other. To set a different address, it is necessary to change the address on the second remote controller.

NOTE

Once changed, you cannot restore the original address setting of the air conditioner.

(1) Switch on the power source.

(2) Slide the rear cover of the remote control unit, and cut the jumper wire for address switching using a nipper then draw away the cut wires to prevent short circuit. Slide back the rear cover. When the wire is cut, the address is automatically set to a different address (Fig. 1).

(3) Press and hold the remote controller ECONOMY button and 1HR. TIMER button. Then, press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first, then release the ECONOMY and 1HR. TIMER buttons. "P1" (Test Run) appears, blinking in the remote controller display area.

(4) Each time the 1HR. TIMER button is pressed, the display changes as shown below. Press this button 2 times to change the display to "P7" (Address Setting). (Fig. 2)

P1 Test Run mode
⇩
P3
⇩
P7 Address Setting mode

(5) "P7" has now been selected for address setting.

(6) Press the ON/OFF operation button on the remote controller. (Fig. 2) Check that the "beep" signal-received sound is heard from the second indoor unit (approximately 5 times). The sound you hear is the signal that the remote controller address has been changed.

(7) Finally press the remote controller ACL (Reset) button to cancel the blinking "P7" display. (Fig. 2)

Changing of the second remote controller address is now completed.

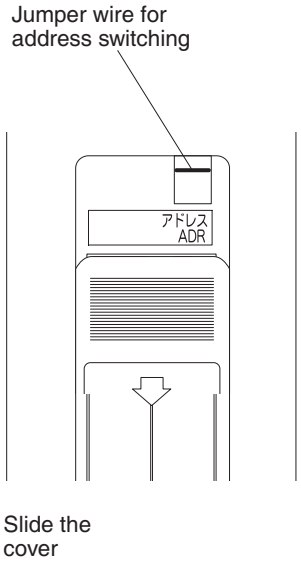


Fig. 1

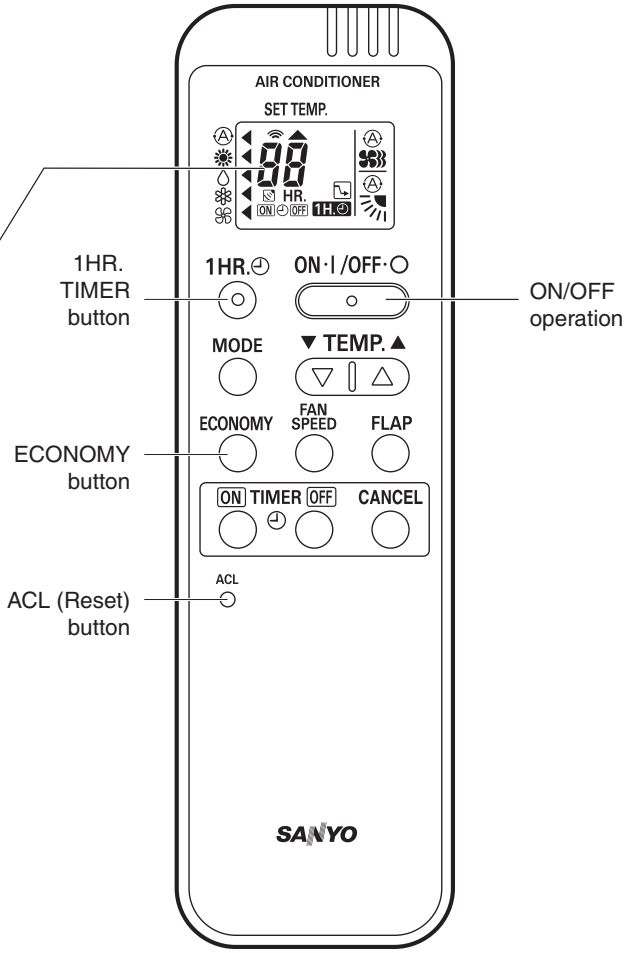


Fig. 2

APPENDIX INSTRUCTION MANUAL

SAP-K77GHAX + SAP-C77GHAX
SAP-K97GHAX + SAP-C97GHAX
SAP-K127GHAX + SAP-C127GHAX

(OI-852-6-4181-106-00-1)

Features

This air conditioner is equipped with cooling, heating, and drying functions. Details on these functions are provided below; refer to these descriptions when using the air conditioner.

- **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.
- **12-Hour ON or OFF Timer**
  This timer can be set to automatically turn the unit on or off at any time within a 12 hour period.
- **1-Hour OFF Timer**
  This timer can be set to automatically turn off the unit at any time after one hour.
- **Economy**
  This function saves energy by controlling operation to provide a quieter operating sound than normal.
- **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.
- **Auto. Flap Control**
  This automatically sets the flap to the optimum position during heating, cooling, and drying operation.
- **Automatic Switching between Cooling and Heating**
  This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.
- **Hot Start Heating System**
  Right from the start, the air is warm and comfortable. This system prevents any cold blasts at the beginning while the heat pump is warming up, or even defrosting.
- **Automatic Restart Function for Power Failure**
  Even when power failure occurs, preset programmed operation can be reactivated once power resumes.
- **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 eliminates unpleasant odors and cleans the air is available.
  Purchase a replacement filter at your local dealer. (model **STK-FWWB**)

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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 _____

DECLARATION OF CONFORMITY
This product is marked « CE » as it satisfies EEC Directive No. 89/336/ EEC, 73/23/EEC, 93/68/EEC and 92/31/EEC.T
This declaration will become void in case of mis-usage and/or from non observance though partial of Manufacturer's installation and/or operating instructions.

Alert Symbols

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

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

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 inaccordance 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.

- **Do not install this air conditioner where there are fumes or flammable gases, or in an extremely humid 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.

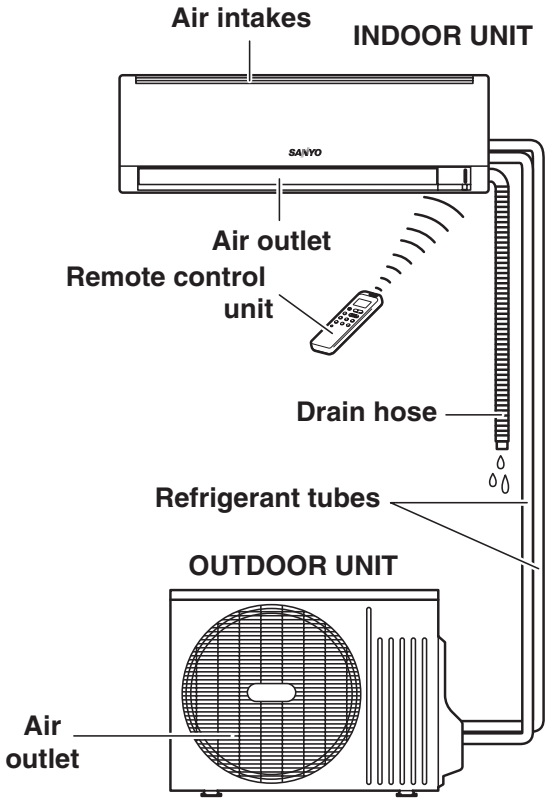
Safety Instructions

- **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.**

- **Never use or store gasoline or other flammable vapor or liquid near 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.**

- **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 or heat the room too much if babies or invalids are present.**
- **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the apliance.**

Names of Parts

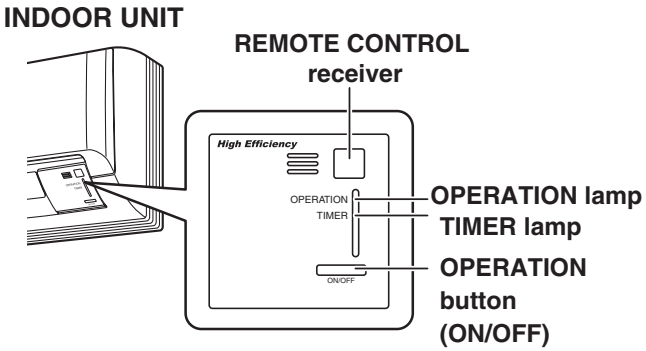


NOTE This illustration is based on the external view of a standard model.Consequently, the shape may differ from that of the air conditioner which you have selected.

This air conditioner consists of an indoor unit 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 Button

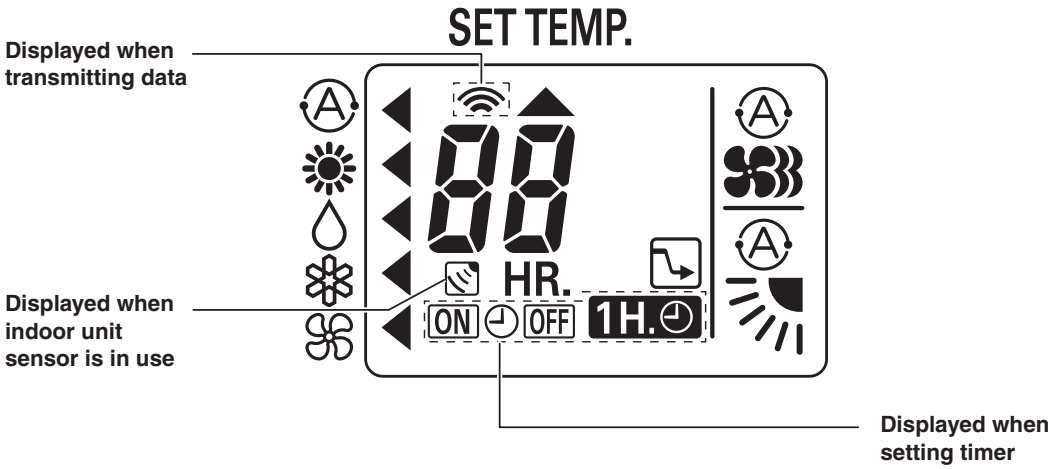


IMPORTANT

Avoid using radio equipment such as mobile phone near (within 1 m) the remote control receiver. Some radio equipment may cause malfunction of the unit.
If the trouble happens, disconnect power and restart the air conditioner after a few minutes.

REMOTE CONTROL receiver	This section picks up infrared signals from the remote control unit (transmitter).
OPERATION button	When the remote control cannot be used, pressing this button enables heating and cooling operation. Each time this button is pressed, the operation mode changes cyclically. **COOLING OPERATION** → **HEATING OPERATION** → **STOP** **lamp**: on → on → off **beeping sound**: once, twice, once The type of operation is indicated by the OPERATION lamp lighting and the beeping sound.
OPERATION lamp	This lamp lights when the system is in the continuous DRY, COOL, HEAT and FAN mode.
TIMER lamp	This lamp lights when the system is being controlled by the timer.

Remote Control Unit (Display)



Symbols

(1) Operation mode

AUTO .....

HEAT .....

MILD DRY .....

COOL .....

FAN .....

(2) Fan speed

Automatic operation .....

HIGH .....

MEDIUM.....

LOW .....

(3) Temperature setting
16 – 30 °C
When set to 28 °C
temperature indication.....

SET TEMP.

(4) Timer

12-hour ON Timer. .....

12-hour OFF Timer. .....

1-hour OFF Timer. .....

(5) ECONOMY .....

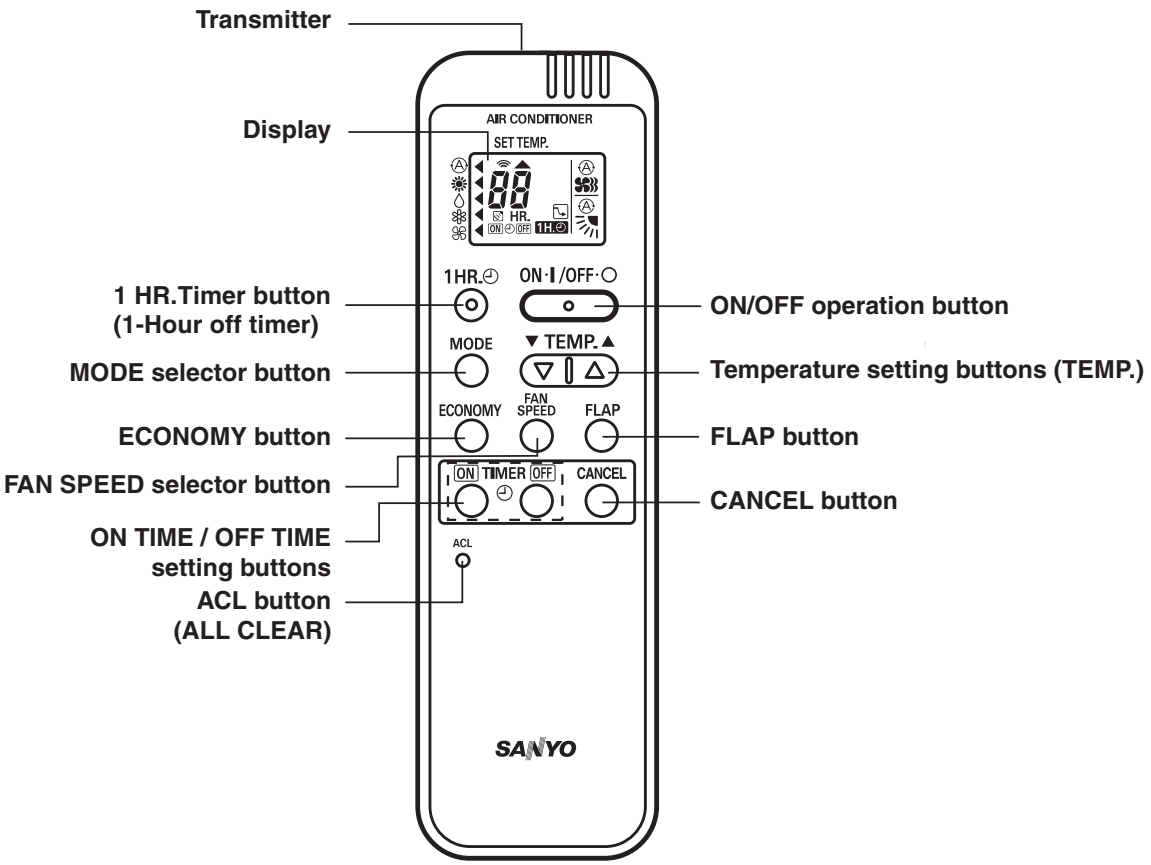
(6) Confirmation
of transmission.....

(7) Auto. flap indication.....

Flap angle indication.....

Sweep indication.....

Remote Control Unit

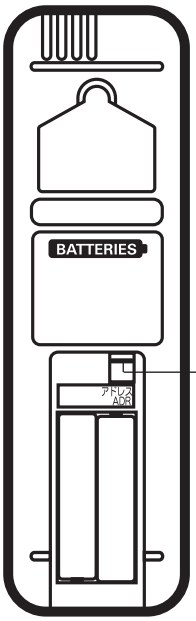


Transmitter	When you press the buttons on the remote control unit, the mark appears in the display to transmit the setting changes to the receiver in the air conditioner.
Display	Information on the operating conditions is displayed while the remote control unit is switched on. If the unit is turned off, FLAP setting and FAN SPEED setting are not displayed.
ON/OFF operation button	This button is for turning the air conditioner on and off.
MODE selector button	Use this button to select AUTO, HEAT, DRY, COOL or FAN mode.
(AUTO)	: When this setting is selected, the air conditioner calculates the difference between the thermostat setting and the room temperature and automatically switches to the “COOL” or “HEAT” mode as appropriate.
(HEAT)	: The air conditioner makes the room warmer.
(DRY)	: The air conditioner reduces the humidity in the room.
(COOL)	: The air conditioner makes the room cooler.
(FAN)	: The air conditioner works only as a circulation fan.
Temperature setting buttons (TEMP.)	Press the button to increase the set temperature. Press the button to reduce the set temperature. The temperature setting changes by 1°C each time one of the TEMP. buttons is pressed.
1 HR. TIMER button (1-HOUR OFF TIMER)	1H. : When you press this button, regardless of whether the unit is operating or stopping, the unit operates for one hour and then shuts down.

Remote Control Unit (continued)

ON TIME/OFF TIME setting buttons	No display: The timer does not operate. ON : The air conditioner starts at the set time. OFF : The air conditioner stops at the set time.
FAN SPEED selector button	: The air conditioner automatically decides the fan speeds. : High fan speed : Medium fan speed : Low fan speed
ECONOMY button	For details, see “5. ECONOMY Mode”. When you press this button in the HEAT, DRY or COOL mode, the mark appears in the display, and the remote control unit will automatically adjust the set temperature to save energy.
FLAP button	Press this button either to select the setting of the airflow direction to the auto. flap in each mode or one of the six possible positions manually or to select the sweep function which moves the flap up and down automatically. : Auto flap setting: If selected in a heating operation, the flap is set to position (3) in the following chart. If selected in a cooling or dry operation, the flap is set at position (7) in the following chart. : The airflow direction can be set manually. (six positions) : The flap moves up and down automatically. **NOTE** When you press the FLAP button, the air flow direction will be changed one by one as follows. (1) → (2) → (3) → (4) → (5) → (6) → (7) → (8) SWEEP
CANCEL button	After using the TIMER ON button or TIMER OFF button to set the timer, press this button to cancel the setting.
ACL button (ALL CLEAR)	Puts the remote control unit into pre-operation status. Always press this button after replacing the batteries.

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 15 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.



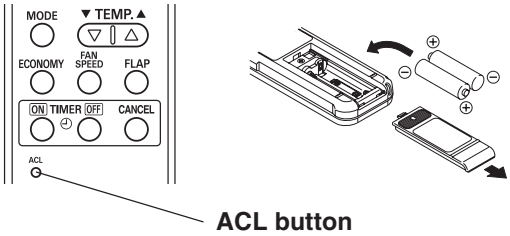
Back side of remote control unit (Cover removed)

Jumper wire for address switching

- The address switch changes to prevent mixing of signals from remote control units when two air conditioners are installed next to each other. For more information, please contact the dealer where you made the purchase.

Using the Remote Control Unit

How to Install Batteries



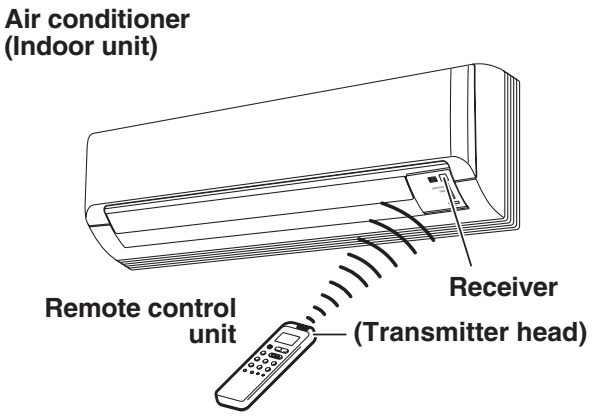
1. Slide the cover in the direction indicated by the arrow and remove it.
2. Install two AAA alkaline batteries. Make sure the batteries point in the direction marked in the battery compartment.
3. Use a thin object such as the tip of a pen to press the ACL button.

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

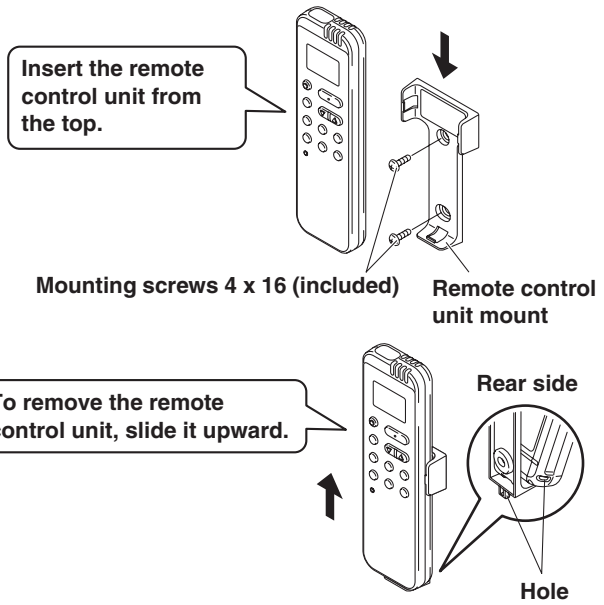
The remote control unit may be operated either from a non-fixed position or from a wall-mounted position. To ensure that the air conditioner operates correctly, DO NOT install the remote control unit in the following places:

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)

Mounting the Remote Control Unit

Before mounting the remote control unit, press the ON/OFF operation 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.



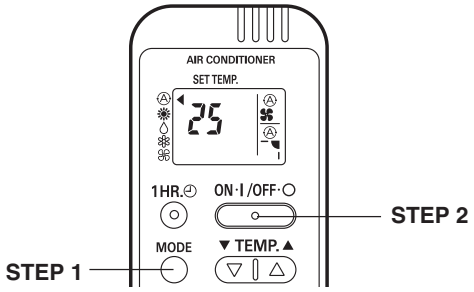
- To prevent loss of the remote control unit, you can connect the remote control unit to the mount by passing a string through the remote control unit and attachment hole.
  To take out the remote control unit, pull it forward.

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



This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.

NOTE Check that the circuit breaker on the power panel is turned on.

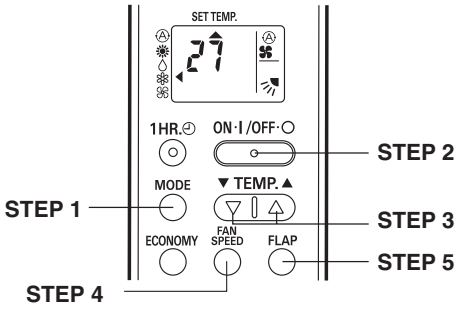
Once Ⓐ mode is selected and the unit is preset by following the steps below, you can have the air conditioner automatically bring the room to the desired temperature simply by pressing the ON/OFF operation button.

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

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

NOTE To change the temperature setting; press the temperature setting buttons and change the setting to the desired temperature.

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 heating operation → ☀◀ For dehumidifying operation → 💧◀ For cooling operation → ❄◀ For fan only operation → ◀
STEP 2	To start the air conditioner, press the ON/OFF operation button.
STEP 3	Press the TEMP. 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.
STEP 5	Press the FLAP button and set the airflow direction as desired. (Refer to “Adjusting the Airflow Direction” on page 13.)

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

NOTE
- Choose the best position in the room for the remote control unit, which transmits the operating instructions. Once you’ve found this best position, always keep the remote control unit there.
- This appliance has a built-in 5-minute time delay circuit to ensure reliable operation. When the operation button is pressed, the compressor will start running within three minutes. In the event of power failure, the unit will stop.

Operation with the Remote Control Unit (continued)

3. Adjusting the Fan Speed

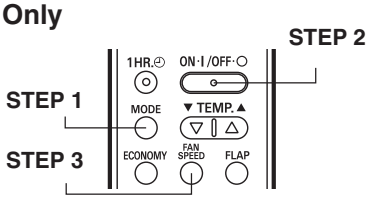
A. Automatic fan speed

Simply set the FAN SPEED selector button to the Ⓐ position. This automatically sets the best fan speed for the room temperature.

B. Manual fan speed

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

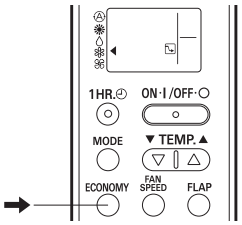
4. Fan Only



If you want to circulate air without any temperature control, follow these steps:

STEP 1	Press the MODE selector button to switch to the fan mode .
STEP 2	Press the ON/OFF operation button.
STEP 3	Press the FAN SPEED selector button to select the fan speed of your choice (, or).

5. ECONOMY Mode



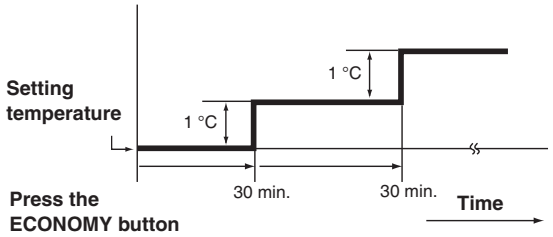
ECONOMY Mode is used for saving energy.

Press the ECONOMY button while operation. The mark appears in the display.

To release the economy function, press the ECONOMY button again.

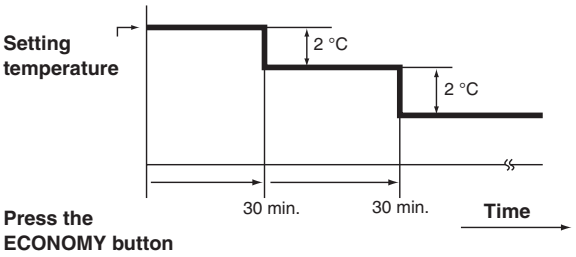
A. In Cooling and DRY Mode: (and)

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



B. In Heating Mode: ( )

When the ECONOMY mode is selected, the air conditioner automatically lowers the temperature setting 2 °C when 30 minutes have passed after the selection was made, and then another 2 °C after another 30 minutes have passed, regardless of the indoor temperature when economy was selected. This enables you to save energy without sacrificing comfort. This function is convenient when gentle heating is needed.



Special Remarks

"DRY" ( ) Operation

How it works?

- Once the room temperature reaches the level that was set, the unit repeats the cycle of turning on and off automatically.
- During DRY operation, the fan speed is automatically set to Low speed for providing a comfortable breeze.
- "DRY" operation is not possible if the indoor temperature is 15 °C or less.

Heating ( ) Operation

Heating performance

- Because this air conditioner heats a room by drawing in the heat of the outside air (heat pump system), the heating efficiency will fall off when the outdoor temperature is very low. If sufficient heat cannot be obtained with this air conditioner, use another heating appliance together with it.

Defrosting

- When the outdoor temperature is low, frost or ice may form on the heat exchanger coil, reducing heating performance. When this happens, a microcomputer defrosting system operates. At the same time, the fan on the indoor unit stops and the OPERATION lamp lights until defrosting is completed. Heating operation restarts after several minutes. (This interval will vary slightly depending upon the outdoor temperature and the way in which frost forms.)

Cold draft prevention

- For several minutes after the start of heating operation,the indoor fan will not start running until the indoor heat exchanger coil has warmed up sufficiently. However, the fan may remain stopped when the room temperature is low. This is because the COLD DRAFT PREVENTION SYSTEM is in operation.

Power failure during operation

- In the event of power failure, the unit will stop. When the power is resumed, the unit will restart automatically within five minutes by the remote control unit.

Clicking Sound

Clicking sound is heard from the air conditioner

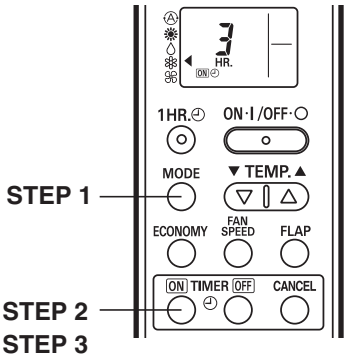
- In heating or cooling operation, any plastic parts may expand or shrink due to a sudden temperature change. In this event, a clicking sound may occur. This is normal, and the sound will soon disappear.

Remote Control Unit

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

Using the 12-Hour ON and OFF Timer

1. TIMER ON mode (Example)



The timer times appear in the display for only 3 seconds.

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

The display depicted above indicates that the air conditioner will begin operating in three hours.

Setting procedure:

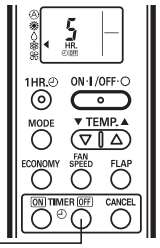
STEP 1	Press the MODE button and set the desired operation mode. (See "Operation with the Remote Control Unit," page 9.)
STEP 2	Press the TIMER ON button.
STEP 3	Press the TIMER ON button (which advances the time displayed) to set the time at which you want operation to begin. The time can be set for one to twelve hours, in one hour steps. → 1 → 2 → 3.....12 →

- 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 again.

Cancellation procedure: Press the CANCEL button.

NOTE If you do not operate the remote control unit for 25 hours or more after the start of ON timer operation, the unit will stop operating automatically as a safety measure in case you forget to turn off the air conditioner.

2. TIMER OFF mode (Example)



STEP 1
STEP 2

The timer times appear in the display for only 3 seconds.

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

The display depicted above indicates that the air conditioner will stop operating in five hours.

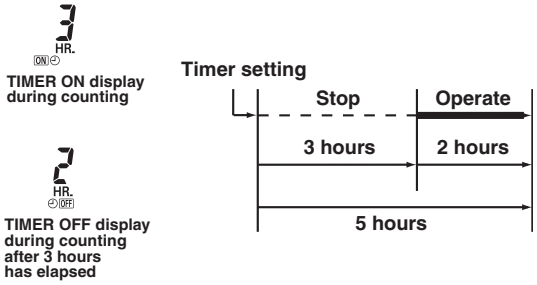
Setting procedure:

STEP 1	Press the TIMER OFF button.
STEP 2	Press the TIMER OFF button (which advances the time displayed) to set the time at which you want operation to stop. The time can be set for one to twelve hours, in one hour steps. → 1 → 2 → 3.....12 →

- 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 again.

Cancellation procedure: Press the CANCEL button.

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.
(Example) The unit will turn on three hours from now, and turn off five hours from now.

Setting procedure:

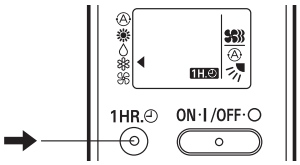
STEP 1	Use the procedure described in the "1. TIMER ON mode" section on the preceding page to set the timer to turn the unit on three hours
STEP 2	Use the procedure described in the "2. TIMER OFF mode" section on the preceding page to set the timer to turn the unit off five hours.

- The display changes immediately to its status previous to timer setting, but the ON◷ or ◷OFF indication remains.
- Press the TIMER ON button or the TIMER OFF button to display the time remaining on the timer in seconds.
- Note that it is not possible to check both the ON and OFF timer settings. The timer setting that will occur first is given preference and displayed.

Cancellation procedure: Press the CANCEL button.

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 1H.◷ 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.
1H.◷ 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

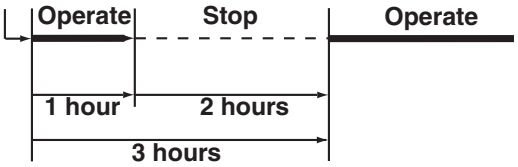
- If, while the 1-Hour Timer function is operating, the 1HR. TIMER button is pressed once to cancel the function and then again, the unit continues to operate for one hour from that point in time and then stops.
- It is not possible to use the OFF Timer and 1-Hour OFF Timer together. Whichever function is set last takes precedence. 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.
- **Do not use the 1-Hour OFF Timer when both TIMER ON and TIMER OFF are set simultaneously. If the 1-Hour OFF Timer has been set, press the TIMER OFF button, then the CANCEL button to operate both the 1-HourOFF Timer and ON Timer simultaneously.**

2. Combining the 1-Hour OFF Timer and 12-Hour ON Timer

By combining the 1-Hour OFF Timer and 12-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.

(Example) Having the unit operate for just one hour from the present time, and then switch on again three hours from the present time.

Timer setting



Setting procedure:

STEP 1	Press the 1 HR. TIMER button.
STEP 2	Press the TIMER ON button. Then press it again to set the unit to turn on three hours later.

NOTE

- **Set the 1-Hour OFF Timer and the 12-Hour ON Timer simultaneously.**
  Unless you set the 1-Hour OFF Timer and the 12-Hour ON Timer at the same time, the 1-Hour OFF Timer may operate for one hour or more.

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.

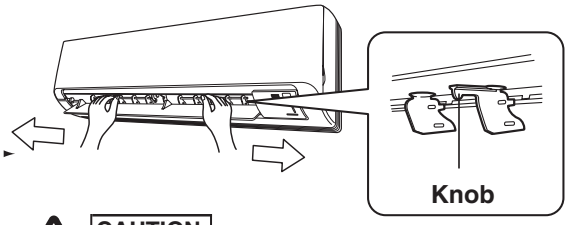
Do

- 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.

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.

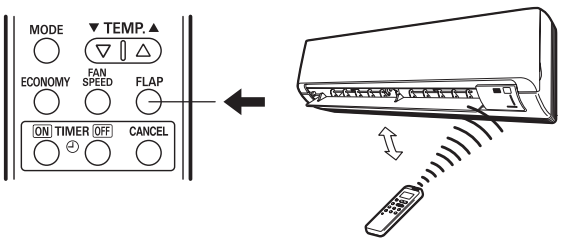


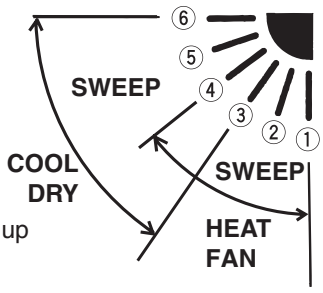
CAUTION

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.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 heating, cooling, or dehumidifying operation.

C. Auto flap function

The flap is set to the recommended position.

NOTE

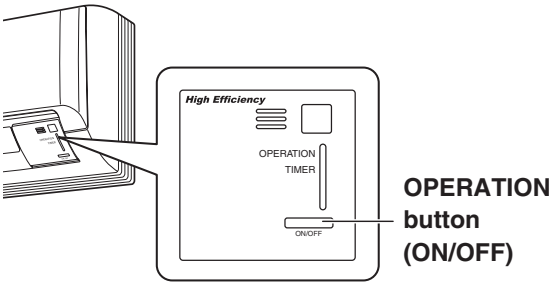
- The flap automatically closes when the unit is off.
- During the heating operation, the fan speed will be very low and the flap will be in the horizontal position (position ⑥) until the air being blown out of the unit begins to warm. Once the air warms up, the flap position and fan speed change to the settings specified with the remote control.

CAUTION

- **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**
- **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



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

When the air conditioner is not running

Each time the ON/OFF button is pressed, the operation mode changes cyclically.

	COOLING OPERATION	HEATING OPERATION	STOP
lamp	on →	on →	off
beeping sound	once	twice	once

The type of operation is indicated by the OPERATION lamp lighting and the beeping sound.

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

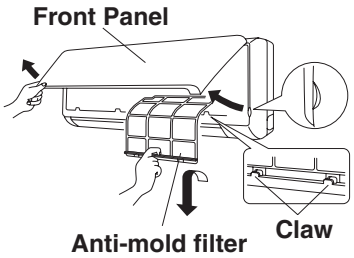
1. **Never use solvents, or harsh chemicals when cleaning the indoor unit. Do not wipe the plastic casing using very hot water.**
2. **Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.**
3. **The internal coil and other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

Anti-Mold Filter

The anti-mold filter behind the Front Panel should be checked and cleaned at least once every two weeks.

How to remove the anti-mold filter

Grasp both ends of the front panel and pull forward and up to open the front panel. Lift the anti-mold filter up slightly to disengage the protrusions from the hooks on the unit, and then pull downward to remove the filter from the unit.



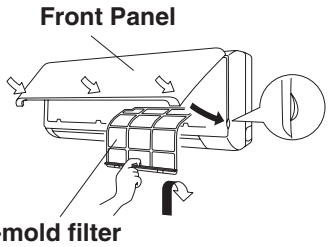
Care and Cleaning (continued)

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

Insert the top of the anti-mold filter, and then fit the protursions on the bottom of the filter all the way into the hooks on the unit.
Press the locations marked by the arrows and close the front panel.



Air Clean Filter

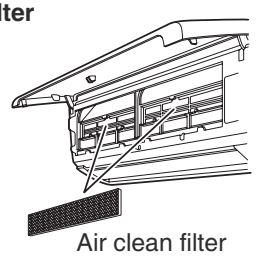
The air clean filter removes dust and dirt from the air, and reduces odors andsmoke from tobacco.

WARNING

This air clean filter cannot remove harmful gases or vapors nor ventilateair 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 clean filter

The air clean filter needs to be installed behind the anti-mold filter.
Open the frontpanel and remove the anti-mold fitlers, then install the air clean filter in the position shown in thefigure.
After that, remount the anti-mold filters and close the front panel.



NOTE

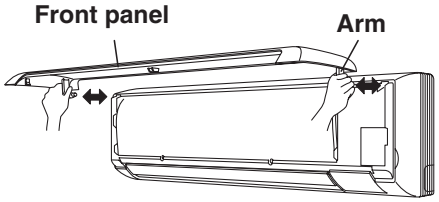
- Do not bend nor give excessive force onto the air the air clean filter.
- If the filter surface is heavily blocked with dirt or damaged, replace it with new one.
  Purchase a replacement filter at your local dealer. (model: **STK-FWWB**)

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.

Removing and remounting the front panel

1. Open the front panel until it is nearly horizontal, grasp the sections near the front panel arms on remove the panel by pushing the arms towards the outside both sides, and then while pulling the panel towards you.



2. Grasp the sections near the front panel arms on both sides, and hold the front panel so that it is nearly horizontal. Push the arm shafts towards the outside so that they come into contact with the top of the indentations on the right and left sides of the air conditioner. Then push firmly until the arm shafts click into place. After closing the front panel, press firmly on the parts indicated by the arrows to securely fasten the panel in place.
   Also refer to the figure that shows “How to replace the anti-mold filter”.

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

Washing the front panel 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.

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 circuit breaker tripped. 3. Line voltage is too low. 4. Batteries in remote control unit have run down.	1. Restore power. 2. Contact service center. 3. Consult your electrician or dealer. 4. Replace batteries.
OPERATION lamp blinks and air conditioner does not operate.	Trouble in system.	Contact service center.
Compressor runs but soon stops.	Obstruction in front of condenser coil.	Remove obstruction.
Poor cooling (or heating) performance.	1. Dirty or clogged air filter. 2. Heat source or many people in room.	1. Clean air filter to improve airflow. 2. Eliminate heat source if possible.
Poor cooling (or heating) performance.	3. Doors and/or windows are open. 4. Obstacle near air intake or air discharge port. 5. Thermostat is set too high for cooling (or too low for heating). 6. (Outdoor temperature is too low for heating.)	3. Shut them to keep the heat (or cold) out. 4. Remove it to ensure good airflow. 5. Set the temperature lower (or higher). 6. (Consult your dealer or try to use another heat appliance.)
Clicking sound is heard from the air conditioner.	In heating or 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.	The use of cellular phones near the air conditioner may cause disturbance to its normal operation.	1. Turn off the power then restart the air conditioner after a while. 2. Consult your dealer.

Operating Range

The air conditioner is operable within the temperature ranges as listed below:

	Temperature	Indoor air temperature	Outdoor air temperature
COOLING	Max.	32 °C DB / 23 °C WB	43 °C DB
	Min.	19 °C DB / 14 °C WB	19 °C DB
HEATING	Max.	27 °C DB	24 °C DB / 18 °C WB
	Min.	16 °C DB	–8 °C DB / –9 °C WB

SANYO Electric Co., Ltd.
Jul. / 2009 R&D center

TECHNICAL & SERVICE MANUAL

SANYO

FILE NO.

SAP-K77GHAX + SAP-C77GHAX
SAP-K97GHAX + SAP-C97GHAX
SAP-K127GHAX + SAP-C127GHAX

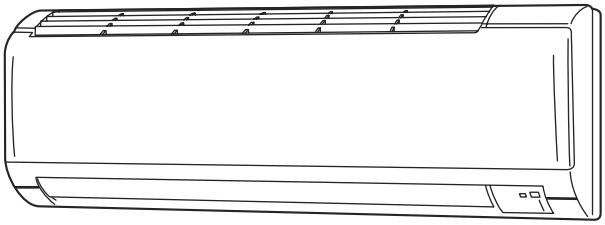
Destination: Russia+CIS+Africa (50Hz)

SPLIT SYSTEM AIR CONDITIONER

Indoor Model No.	Product Code No.
SAP-K77GHAX	1 852 351 85
SAP-K97GHAX	1 852 351 86
SAP-K127GHAX	1 852 351 87

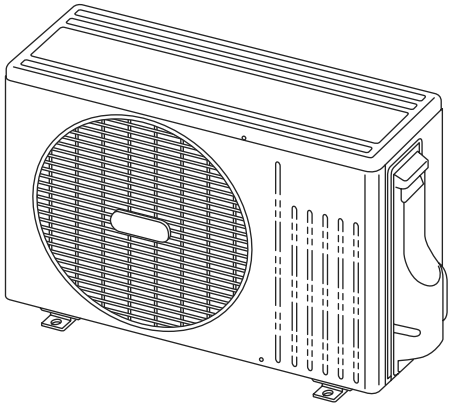
Outdoor Model No.	Product Code No.
SAP-C77GHAX	1 852 351 95
SAP-C97GHAX	1 852 351 96
SAP-C127GHAX	1 852 351 97

Indoor Unit

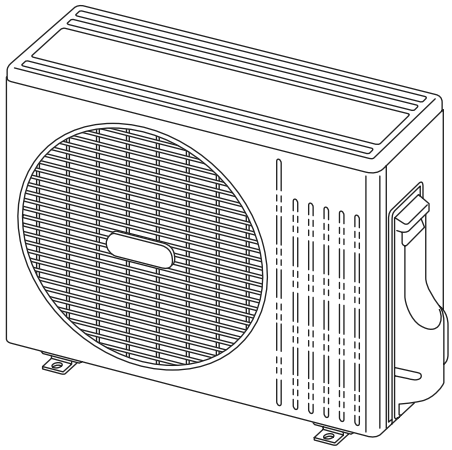


SAP-K77GHAX
SAP-K97GHAX
SAP-K127GHAX

Outdoor Unit



SAP-C77GHAX
SAP-C97GHAX



SAP-C127GHAX

REFERENCE NO. SM700778

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.
- The air conditioner should be installed properly by qualified installation technicians inaccordance with the Installation Instructions provided with the unit.
- 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.
- Install a protective leakage breaker depending on the installation location (especially a damp or humid location). If a **leakage breaker** is not installed, electric shock can occur.

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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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.
Heating	Maximum	27 °C D.B.	24 °C D.B. / 18 °C W.B.
	Minimum	16 °C D.B.	−8 °C D.B. / −9 °C W.B.

2. SPECIFICATIONS

2-1. Unit Specifications

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

Power Source			220-240V Single phase 50Hz	
Voltage rating			220 / 230 / 240 V	
Performance			Cooling	Heating
Capacity		kW	2.10 / 2.10 / 2.10	2.20 / 2.20 / 2.20
		BTU/h	7,200 / 7,200 / 7,200	7,500 / 7,500 / 7,500
Air circulation (High)		m^3/h	340	400
Moisture removal (High)		Liters/h	1.1	-
Electrical Rating			Cooling	Heating
Available voltage range		V	198 ~ 264	
Running amperes		A	3.4 / 3.4 / 3.5	3.1 / 3.1 / 3.2
Power input		W	750 / 770 / 790	660 / 680 / 700
Power factor		%	99 / 98 / 94	97 / 95 / 91
E.E.R		W/W	2.80 / 2.73 / 2.66	-
C.O.P		W/W	-	3.33 / 3.24 / 3.14
Compressor Locked Rotor Amperes		A	17.0	17.0
Features				
Controls / Temperature control			Microprocessor / I.C. Thermister	
Control unit			Wireless Remote Control Unit	
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer	
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)	
Airflow direction (Indoor)		Horizontal	Manual	
		Vertical	Auto	
Air filter			Washable, Anti-mold	
Compressor			Single Rotary	
Refrigerant / Amount charged at shipment		g	R22 / 630	
Refrigerant control			Capillary tube	
Operation sound	Indoor : Hi / Me / Lo	dB-A	38 / 33 /30	
	Outdoor : Hi	dB-A	49	
Refrigerant Tubing Connections			Flare Type	
Max.allowable tubing length at shipment		m	5	
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)	
Tube Diameter	Wide tube	mm (in.)	9.52 (3/8)	
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter	
Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	510
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	555
	Width	mm	870	775
	Depth	mm	295	340
Weight	Net	kg	7.5	25.0
	Shipping	kg	9.0	26.0
Shipping volume		m^3	0.06	0.14

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.
Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

Power Source			220-240V Single phase 50Hz	
Voltage rating			220 / 230 / 240 V	
Performance			Cooling	Heating
Capacity		kW	2.55 / 2.55 / 2.55	2.80 / 2.80 / 2.80
		BTU/h	8,700 / 8,700 / 8,700	9,600 / 9,600 / 9,600
Air circulation (High)		m^3/h	460	460
Moisture removal (High)		Liters/h	1.5	-
Electrical Rating			Cooling	Heating
Available voltage range		V	198 ~ 264	
Running amperes		A	4.4 / 4.4 / 4.5	4.1 / 4.1 / 4.2
Power input		W	930 / 960 / 1,000	900 / 930 / 960
Power factor		%	96 / 95 / 93	99 / 98 / 95
E.E.R		W/W	2.74 / 2.66 / 2.55	-
C.O.P		W/W	-	3.11 / 3.01 / 2.92
Compressor Locked Rotor Amperes		A	16.5	16.5
Features				
Controls / Temperature control			Microprocessor / I.C. Thermister	
Control unit			Wireless Remote Control Unit	
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer	
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)	
Airflow direction (Indoor)		Horizontal	Manual	
		Vertical	Auto	
Air filter			Washable, Anti-mold	
Compressor			Single Rotary	
Refrigerant / Amount charged at shipment		g	R22 / 640	
Refrigerant control			Capillary tube	
Operation sound	Indoor : Hi / Me / Lo	dB-A	39 / 34 / 31	
	Outdoor : Hi	dB-A	50	
Refrigerant Tubing Connections			Flare Type	
Max.allowable tubing length at shipment		m	5	
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)	
Tube Diameter	Wide tube	mm (in.)	9.52 (3/8)	
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter	
Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	510
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	555
	Width	mm	870	775
	Depth	mm	295	340
Weight	Net	kg	7.5	25.5
	Shipping	kg	9.0	26.5
Shipping volume		m^3	0.06	0.14

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.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

Power Source	220-240V Single phase 50Hz

Voltage rating	220 / 230 / 240 V

Performance			Cooling	Heating
Capacity		kW	3.55 / 3.55 / 3.55	3.70 / 3.70 / 3.70
		BTU/h	12,100 / 12,100 / 12,100	12,600 / 12,600 / 12,600
Air circulation (High)		m^3/h	470	460
Moisture removal (High)		Liters/h	2.3	-

Electrical Rating		Cooling	Heating
Available voltage range	V	198 ~ 264	
Running amperes	A	6.2 / 6.2 / 6.3	5.9 / 5.9 / 6.0
Power input	W	1,265 / 1,305 / 1,345	1,235 / 1,275 / 1,315
Power factor	%	93 / 92 / 90	95 / 94 / 91
E.E.R	W/W	2.81 / 2.72 / 2.64	-
C.O.P	W/W	-	3.00 / 2.90 / 2.81
Compressor Locked Rotor Amperes	A	35	35

Features			
Controls / Temperature control			Microprocessor / I.C. Thermister
Control unit			Wireless Remote Control Unit
Timer			12-Hour ON or OFF Timer, 1Hour OFF Timer
Fan speeds		Indoor / Outdoor	Auto and 3 steps / 1 (Hi)
Airflow direction (Indoor)		Horizontal	Manual
		Vertical	Auto
Air filter			Washable, Anti-mold
Compressor			Single Rotary
Refrigerant / Amount charged at shipment		g	R22 / 820
Refrigerant control			Capillary tube
Operation sound	Indoor : Hi / Me / Lo	dB-A	40 / 35 / 32
	Outdoor : Hi	dB-A	53
Refrigerant Tubing Connections			Flare Type
Max.allowable tubing length at shipment		m	5
Refrigerant	Narrow tube	mm (in.)	6.35 (1/4)
Tube Diameter	Wide tube	mm (in.)	12.70 (1/2)
Refrigerant Tube Kit / Accessories			Optional / Air Clean Filter

Dimensions & Weight			Indoor Unit	Outdoor Unit
Unit dimensions	Height	mm	250	598
	Width	mm	799	660
	Depth	mm	205	240
Package dimensions	Height	mm	270	647
	Width	mm	870	783
	Depth	mm	295	344
Weight	Net	kg	7.5	33.0
	Shipping	kg	9.0	35.0
Shipping volume		m^3	0.06	0.17

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.

Heating: Indoor air temperature 20°C D.B.
Outdoor air temperature 7°C D.B. / 6°C W.B.

2-2. Major Component Specifications

2-2-1. Indoor Unit

Indoor Unit **SAP-K77GHAX**

Controller PCB			
Part No.			CR-K77GHAX
Controls			Microprocessor
Control circuit fuse			250V 3.15A
Remote Control Unit			RCS-7HS2E-G
Controller PCB			
Part No.			Cross-Flow
Q'ty ... Dia. and Length			1 ... D100 / L637
Fan Motor			
Type			AC Motor
Model ... Q'ty			IBH-884-066B ... 1
No. of Poles			4
Rough Measure RPM (Cool/Heat)			1,200 / 1,230
Nominal output		W	12.5
Coil resistance (Ambient temp. 20°C)		Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
Safety devices	Type		Thermal fuse
	Operating temp.	Open °C	130
		Close °C	-
Run capacitor (on controller PCB)		Micro F	1.5
		VAC	450
Flap Motor			
Type			Stepping Motor
Model			24BYJ48-916
Rating			DC 12V
Coil Resistance (Ambient Temp.25 °C)		Ohm	Each Pair of Terminal : 200+/- 7%
Heat Exchanger Coil			
Coil			Aluminum Plate Fin / Copper Tube
Rows			2
Fin pitch		mm	1.3
Face area		m^2	0.108

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit **SAP-K97GHAX**

Controller PCB			
Part No.			CR-K77GHAX
Controls			Microprocessor
Control circuit fuse			250V 3.15A

Remote Control Unit	RCS-7HS2E-G

Controller PCB			
Part No.			Cross-Flow
Q'ty ... Dia. and Length			1 ... D100 / L637

Fan Motor			
Type			AC Motor
Model ... Q'ty			IBH-884-066B ... 1
No. of Poles			4
Rough Measure RPM (Cool/Heat)			1,300 / 1,210
Nominal output		W	12.5
Coil resistance (Ambient temp. 20°C)		Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
Safety devices	Type		Thermal fuse
	Operating temp. Open	°C	130
	Close	°C	-
Run capacitor (on controller PCB)		Micro F	1.5
		VAC	450

Flap Motor		
Type		Stepping Motor
Model		24BYJ48-916
Rating		DC 12V
Coil Resistance (Ambient Temp.25 °C)	Ohm	Each Pair of Terminal : 200+/- 7%

Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		2
Fin pitch	mm	1.1
Face area	m^2	0.108

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Indoor Unit **SAP-K127GHAX**

Controller PCB		
Part No.		CR-K127GHAX
Controls		Microprocessor
Control circuit fuse		250V 3.15A
Remote Control Unit		RCS-7HS2E-G
Fan		
Part No.		Cross-Flow
Q'ty ... Dia. and Length		1 ... D100 / L637
Fan Motor		
Type		AC Motor
Model ... Q'ty		IBH-884-066B ... 1
No. of Poles		4
Rough Measure RPM (Cool/Heat)		1,300 / 1,230
Nominal output	W	12.5
Coil resistance (Ambient temp. 20°C)	Ohm	BRN-WHT : 234 PNK(RED)-WHT : 209
Safety devices Type		Thermal fuse
Operating temp. Open	°C	130
Close	°C	-
Run capacitor (on controller PCB)	Micro F	1.5
	VAC	450
Flap Motor		
Type		Stepping Motor
Model		24BYJ48-916
Rating		DC 12V
Coil Resistance (Ambient Temp.25 °C)	Ohm	Each Pair of Terminal : 200+/- 7%
Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		2
Fin pitch	mm	1.1
Face area	m^2	0.162

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-2-2. Outdoor Unit

Outdoor Unit **SAP-C77GHAX**

Controller PCB			
Compressor			
Type			Single Rotary
Compressor model / Nominal output			C-1R65H5S / 650W
Compressor oil ... Amount		CC	SAY-56T ... 350
Coil resistance (Ambient temp. 25˚C)		Ohm	C - R : 4.68 C - S : 6.77
Safety devices	Type		External (OLR)
	Overload relay		MRA99094-9201
	Operating temp.	Open ˚C	150 +/-5
		Close ˚C	69 +/-11
	Operating amp.(Ambient temp. 25˚C)		Trip in 6 to 16 sec.at 15A
Run capacitor		Micro F	20.0
		VAC	400
Crankcase Heater			-
Fan			
Type			Propeller
Q'ty ... Dia.		mm	1 ... D380
Fan Motor			
Type			AC Motor
Fan motor model ... Q'ty			IB-976-501D ... 1
No. of poles			6
Rough Measure RPM (Cool/Heat)			820 / 800
Nominal output		W	25
Coil resistance (Ambient temp. 20˚C)		Ohm	BRN - WHT : 213.4±10% RED(PNK) - WHT : 167.7±10%
Safety devices	Type		Thermal protector
	Operating temp.	Open ˚C	110
		Close ˚C	-
Run capacitor		Micro F	2.0
		VAC	440
Heat Exchanger Coil			
Coil			Aluminum Plate Fin / Copper Tube
Rows			1
Fin pitch		mm	1.2
Face area		m^2	0.341
External Finish			Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit **SAP-C97GHAX**

Controller PCB	

Compressor			
Type			Single Rotary
Compressor model / Nominal output			C-1R81H5T / 800W
Compressor oil ... Amount		CC	SAY-56T ...320
Coil resistance (Ambient temp. 25°C)		Ohm	C - R : 4.27 C - S : 4.56
Safety devices	Type		External (OLR)
	Overload relay		MRA99248-9201
	Operating temp.	Open °C	155±5
		Close °C	69±11
	Operating amp.(Ambient temp. 25°C)		Trip in 6 to 16 sec. at 17.0A
Run capacitor		Micro F	30.0
		VAC	370
Crankcase Heater			-

Fan		
Type		Propeller
Q'ty ... Dia.	mm	1 ... D380

Fan Motor			
Type			AC Motor
Fan motor model ... Q'ty			IB-976-501D ... 1
No. of poles			6
Rough Measure RPM (Cool/Heat)			820 / 820
Nominal output		W	25
Coil resistance (Ambient temp. 20°C)		Ohm	BRN - WHT : 213.4±10% RED(PNK) - WHT : 167.7±10%
Safety devices	Type		Thermal protector
	Operating temp.	Open °C	110
		Close °C	-
Run capacitor		Micro F	2.0
		VAC	440

Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		1
Fin pitch	mm	1.2
Face area	m^2	0.341

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

Outdoor Unit **SAP-C127GHAX**

Controller PCB	

Compressor			
Type			Single Rotary
Compressor model / Nominal output			C-R115H5A / 1,110W
Compressor oil ... Amount		CC	SAY-56T ... 520
Coil resistance (Ambient temp. 25˚C)		Ohm	C - R : 1.962 C - S : 5.38
Safety devices	Type		External (OLR)
	Overload relay		MRA98619-9200
	Operating temp.	Open ˚C	150 +/- 5
		Close ˚C	69 +/- 11
	Operating amp.(Ambient temp. 25˚C)		Trip in 6 to 16 sec. at 22.5A
Run capacitor		Micro F	25.0
		VAC	400
Crankcase Heater			-

Fan		
Type		Propeller
Q'ty ... Dia.	mm	1 ... D380

Fan Motor			
Type			AC Motor
Fan motor model ... Q'ty			UE4-Z51D5P R ... 1
No. of poles			4
Rough Measure RPM (Cool/Heat)			1,070 / 1,020
Nominal output		W	47.6
Coil resistance (Ambient temp. 20˚C)		Ohm	(GRY)BRN - WHT : 152.1 RED - WHT : 138.7
Safety devices	Type		Thermal protector
	Operating temp.	Open ˚C	135 ± 5
		Close ˚C	86± 15
Run capacitor		Micro F	2.5
		VAC	450

Heat Exchanger Coil		
Coil		Aluminum Plate Fin / Copper Tube
Rows		1
Fin pitch	mm	1.2
Face area	m^2	0.373

External Finish	Acrylic baked-on enamel finish

DATA SUBJECT TO CHANGE WITHOUT NOTICE.

2-3. Other Component Specifications

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

< Thermistor (Coil sensor) >

Model	PB2M-41E-S16-1
Resistance	15 kohm (at 0 °C) 5.4 kohm (at 25 °C)

Outdoor Unit **SAP-C77GHAX**
SAP-C97GHAX
SAP-C127GHAX

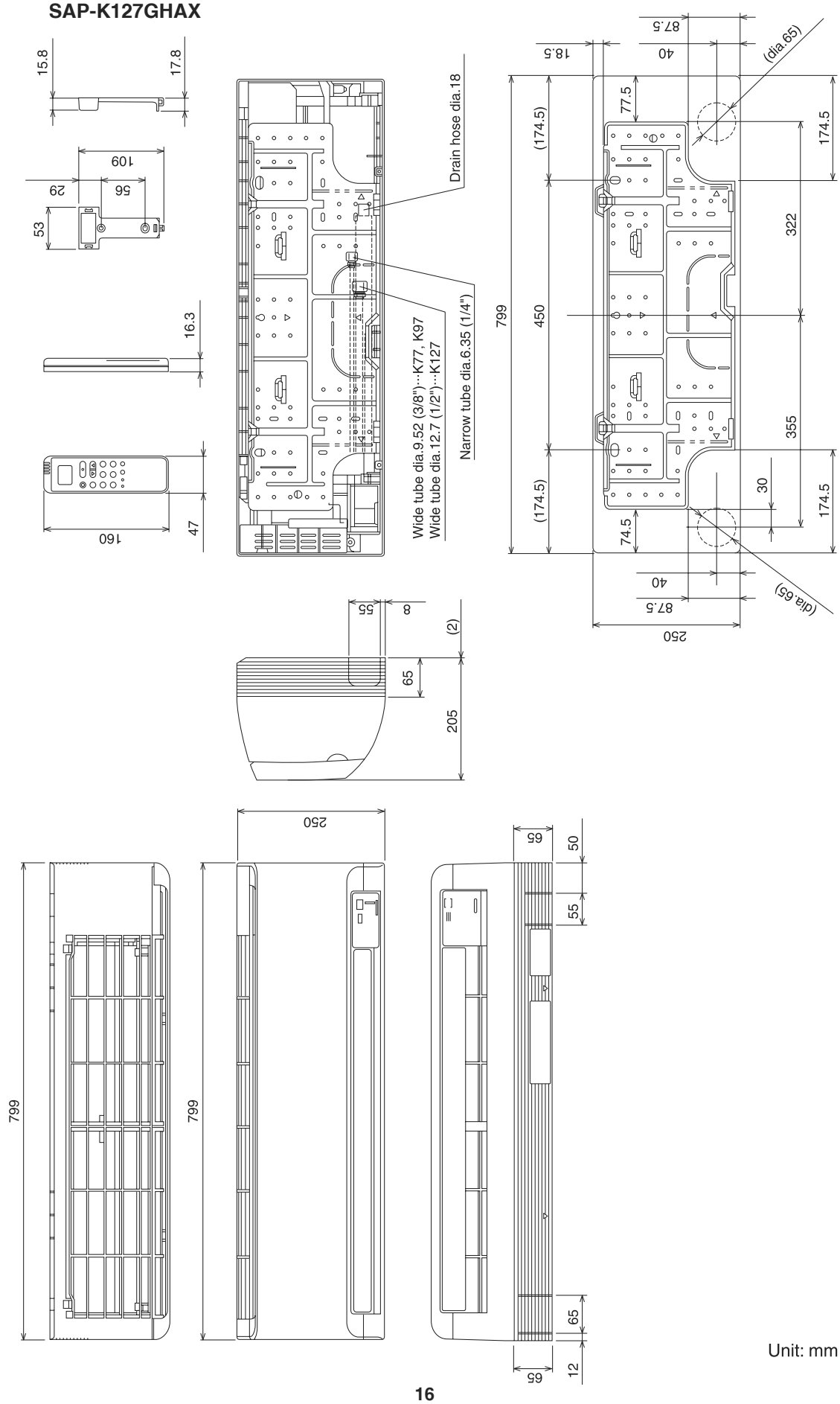
< Power Relay >

Model	EL200/240A1-F (M)
Rating	AC277V 30A

4-way Valve (Solenoid coil)	**STF-0202G**
Rating	AC 220 to 240 V, 50 / 60 Hz
Refrigerant	R22, R407C, R410A

3. DIMENSIONAL DATA

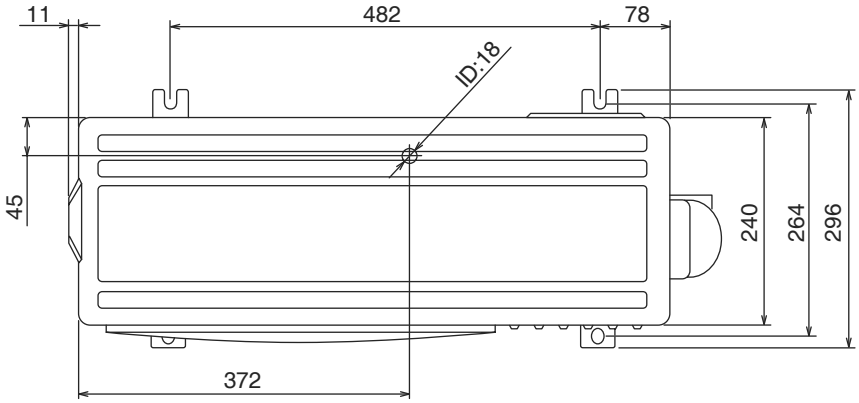
Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

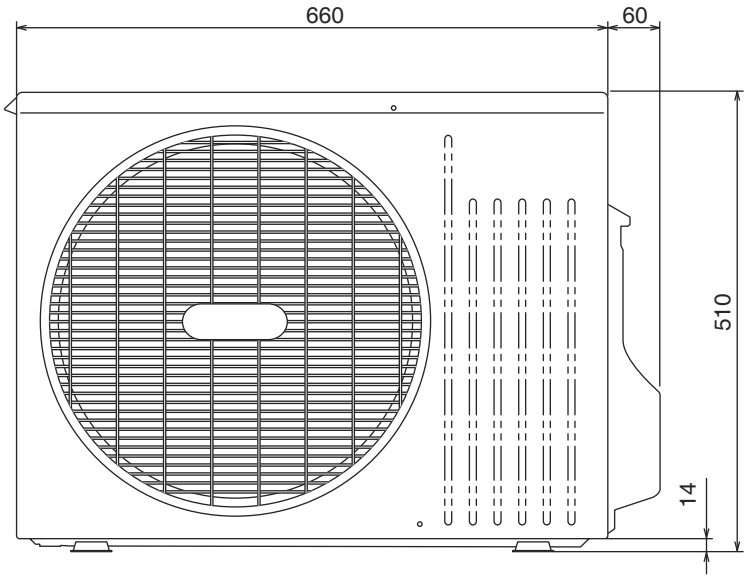


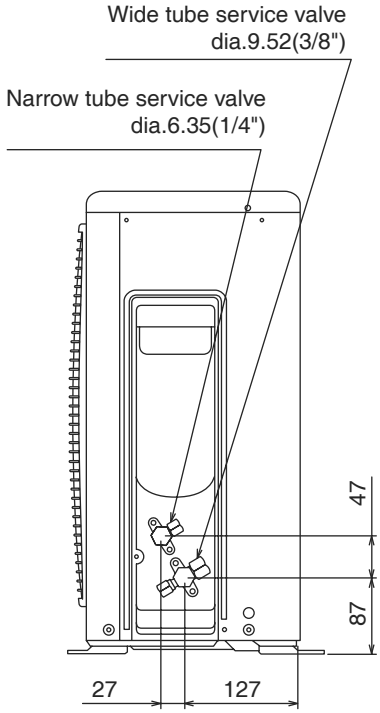
Unit: mm

Outdoor Unit **SAP-C77GHAX**

SAP-C97GHAX

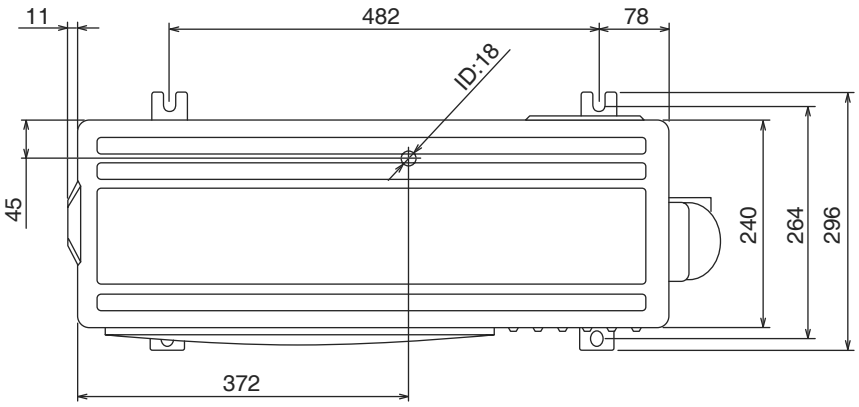


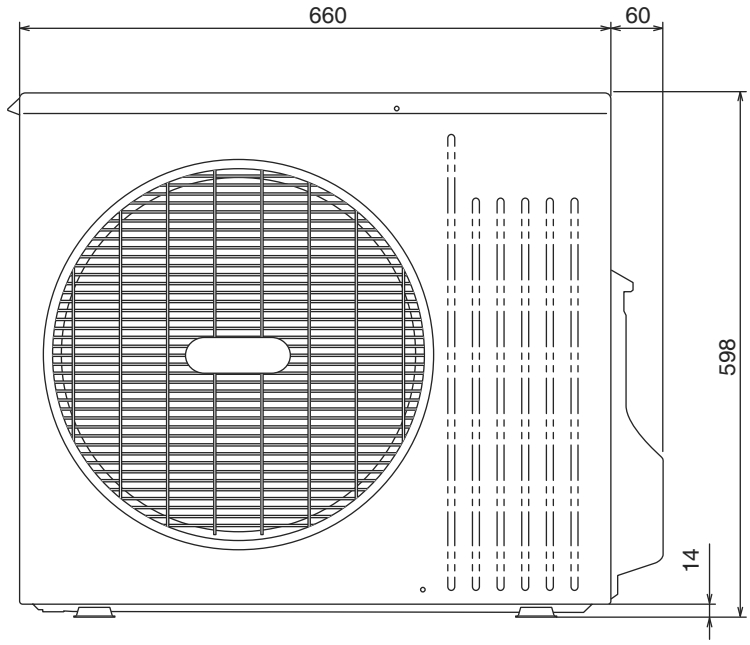


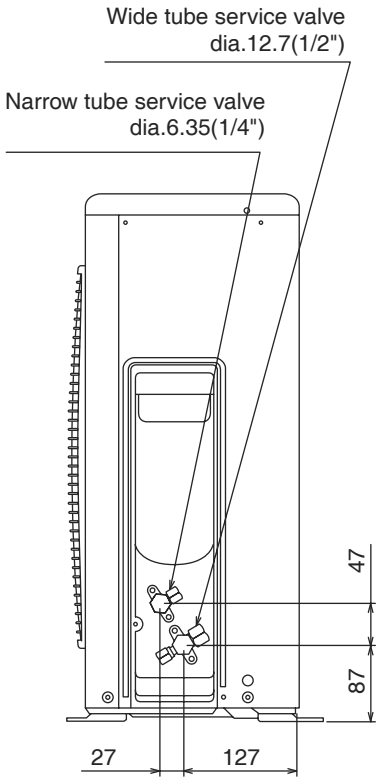


Unit: mm

Outdoor Unit **SAP-C127GHAX**







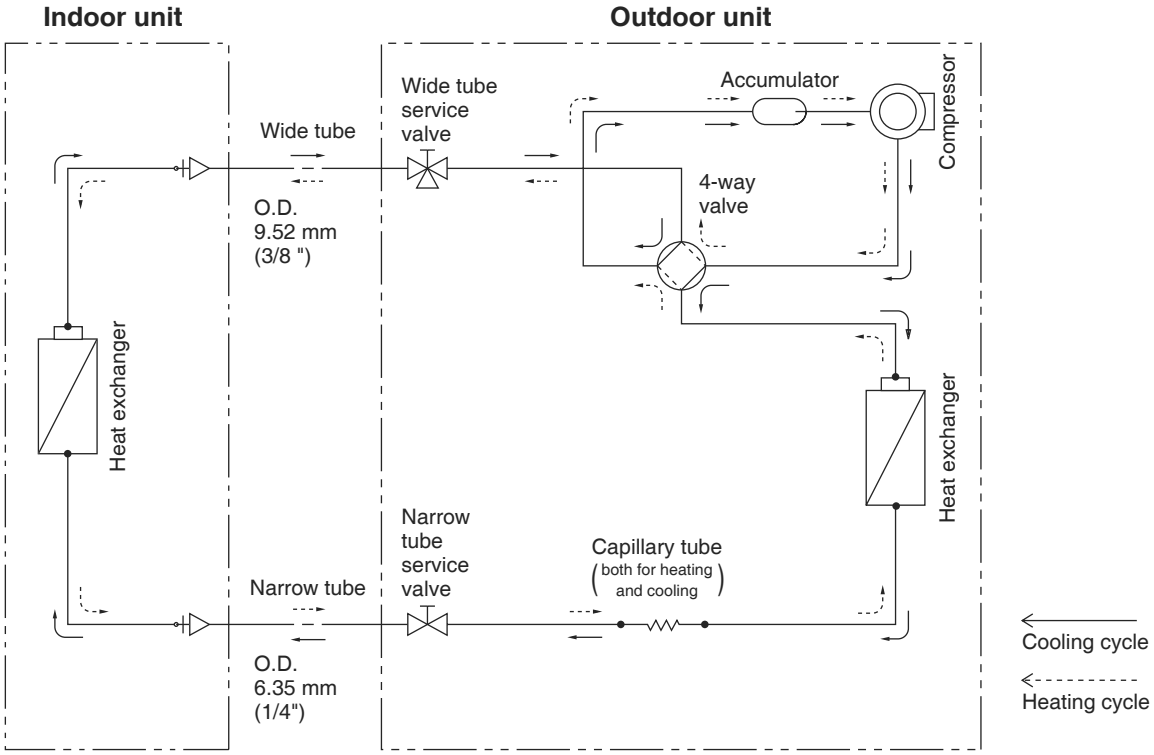
Unit: mm

4. REFRIGERANT FLOW DIAGRAM

4-1. Refrigerant Flow Diagram

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX

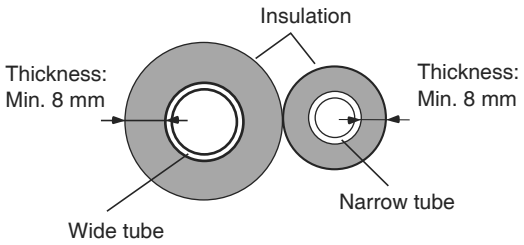
Outdoor Unit **SAP-C77GHAX**
SAP-C97GHAX



Insulation of Refrigerant Tubing

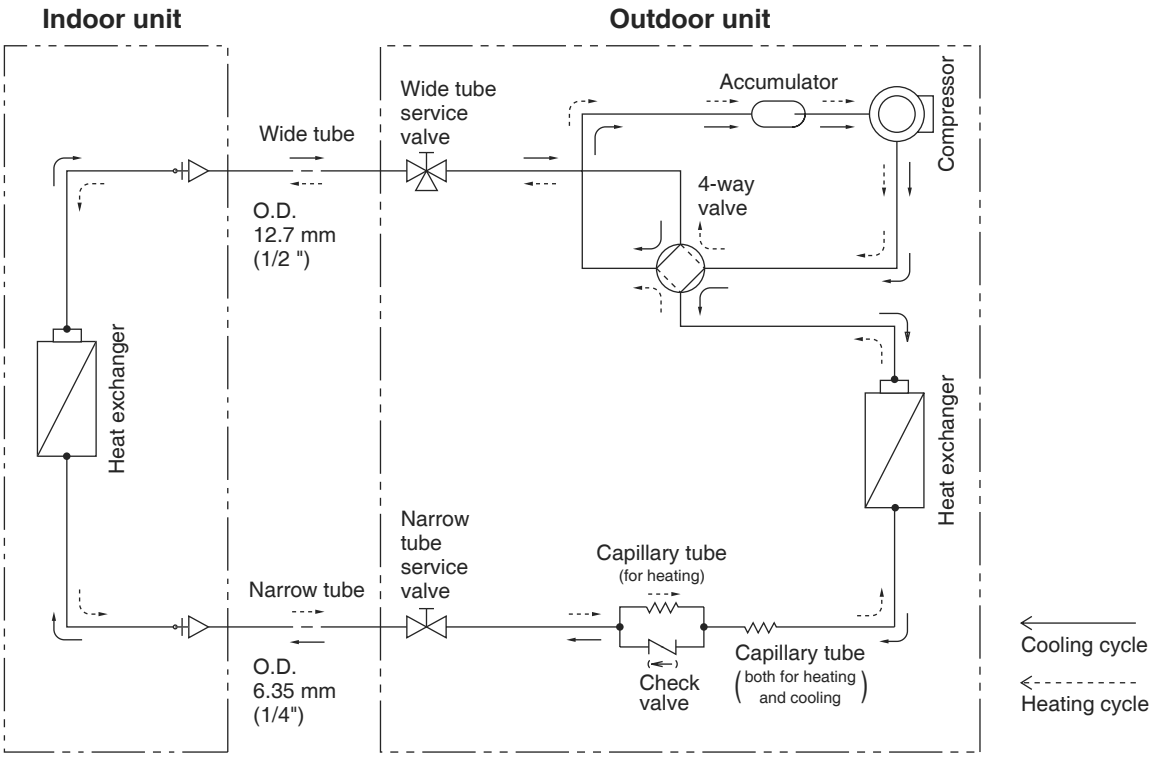
IMPORTANT

Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated** with a proper insulation material. The thickness of the insulation should be a min. 8 mm.



After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

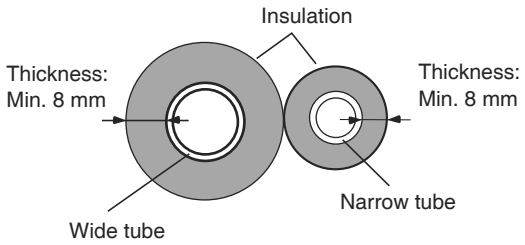
Indoor Unit **SAP-K127GHAX** Outdoor Unit **SAP-C127GHAX**



Insulation of Refrigerant Tubing

IMPORTANT

Because capillary tubing is used in the outdoor unit, both the wide and narrow tubes of this air conditioner become cold. To prevent heat loss and wet floors due to dripping of condensation, **both tubes must be well insulated** with a proper insulation material. The thickness of the insulation should be a min. 8 mm.



CAUTION

After a tube has been insulated, never try to bend it into a narrow curve because it can cause the tube to break or crack.

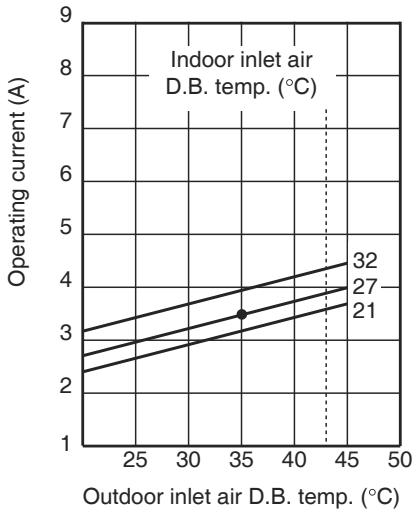
5. PERFORMANCE DATA

5-1. Performance charts

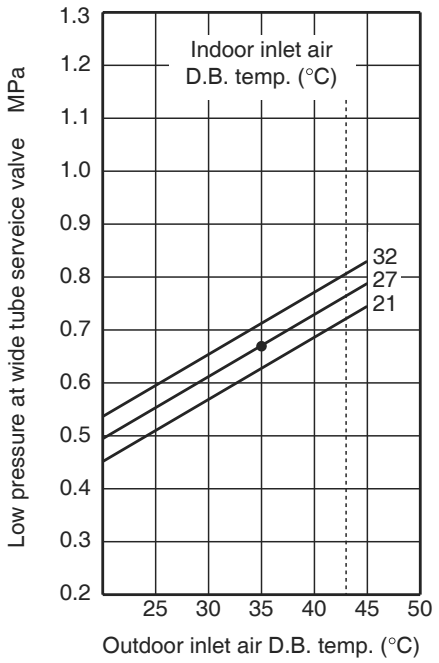
Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

< Cooling Characteristics >

(1) Operating current performance chart

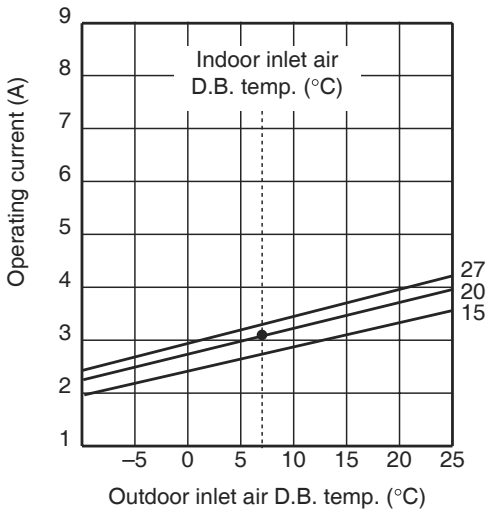


(2) Low pressure performance chart

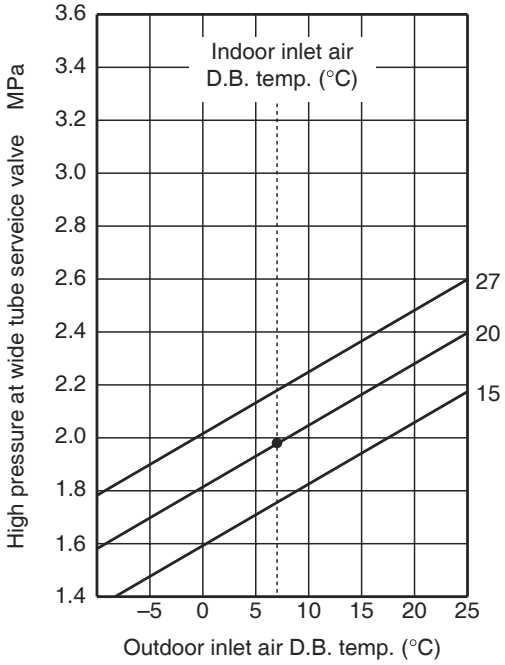


< Heating Characteristics >

(1) Operating current performance chart



(2) High pressure performance chart



NOTE

Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high in heating mode. (Refer to "8-7. Overload prevention.")

●:Points of rating condition

Black dots in above charts indicate the following rating conditions.

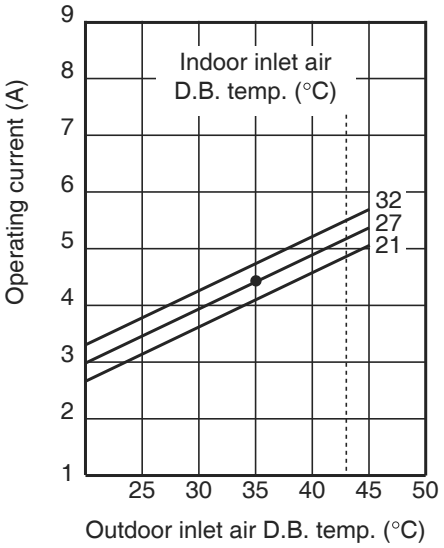
Cooling: Indoor air temperature 27 °C D.B. / 19 °C W.B.
Outdoor air temperature 35 °C D.B. / 24 °C W.B.

Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

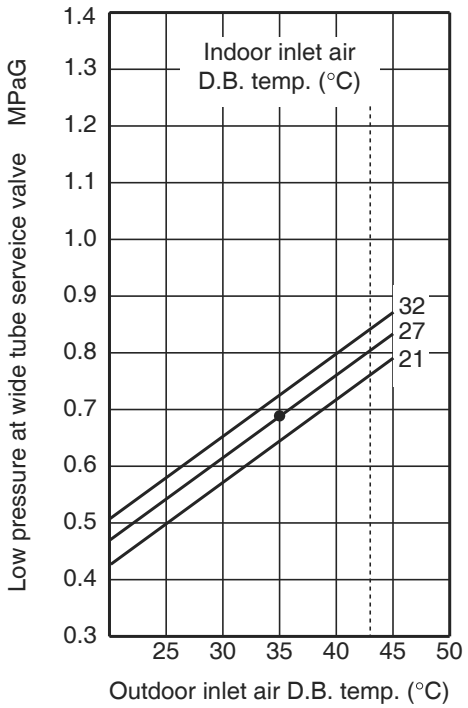
Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

< Cooling Characteristics >

(1) Operating current performance chart

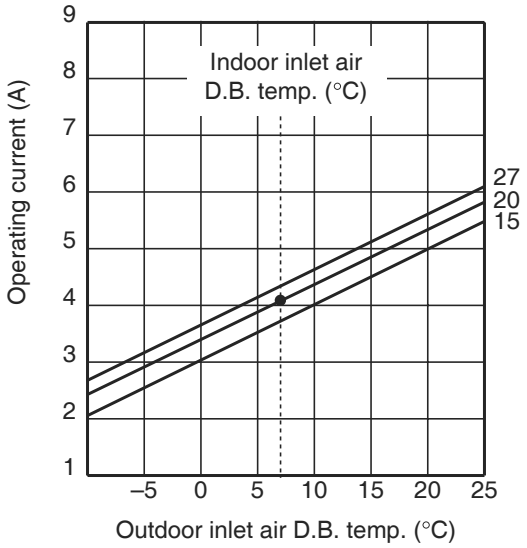


(2) Low pressure performance chart

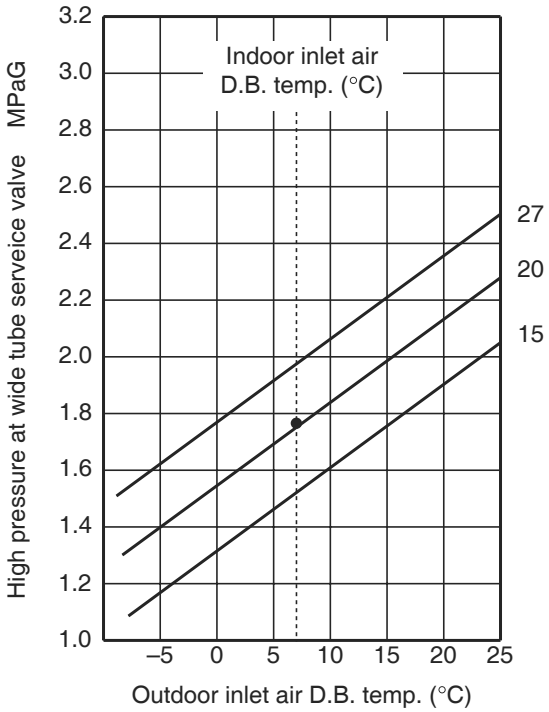


< Heating Characteristics >

(1) Operating current performance chart



(2) High pressure performance chart



NOTE

Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high in heating mode. (Refer to "8-7. Overload prevention.")

●:Points of rating condition

Black dots in above charts indicate the following rating conditions.

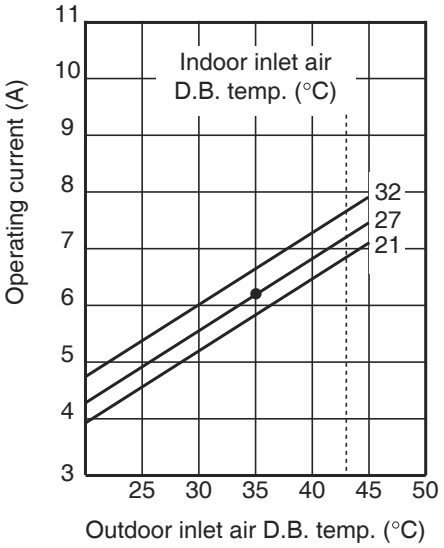
Cooling: Indoor air temperature 27 °C D.B. / 19 °C W.B.
Outdoor air temperature 35 °C D.B. / 24 °C W.B.

Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

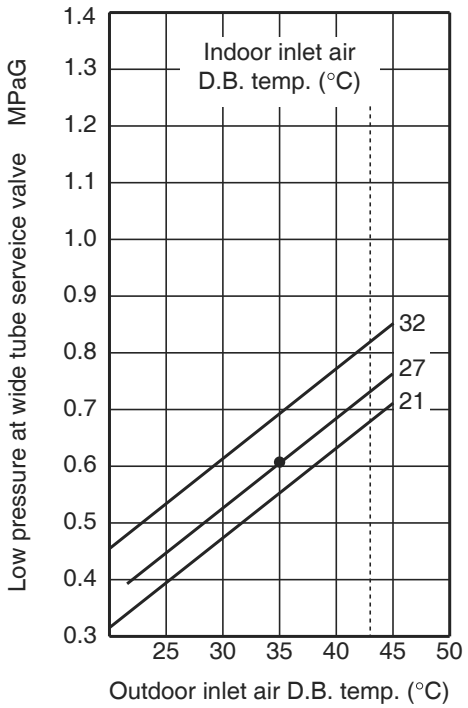
Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

< Cooling Characteristics >

(1) Operating current performance chart

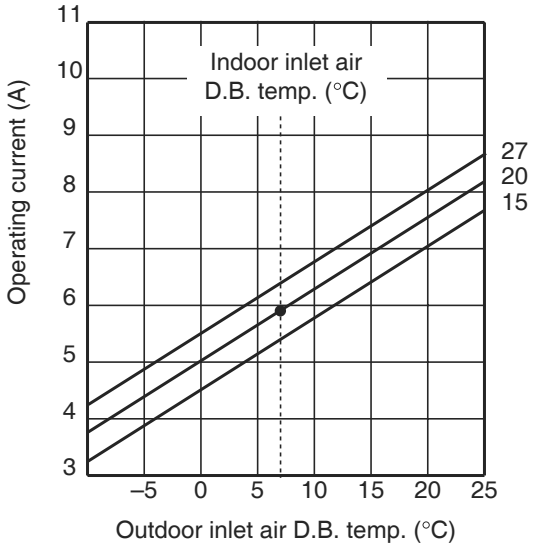


(2) Low pressure performance chart

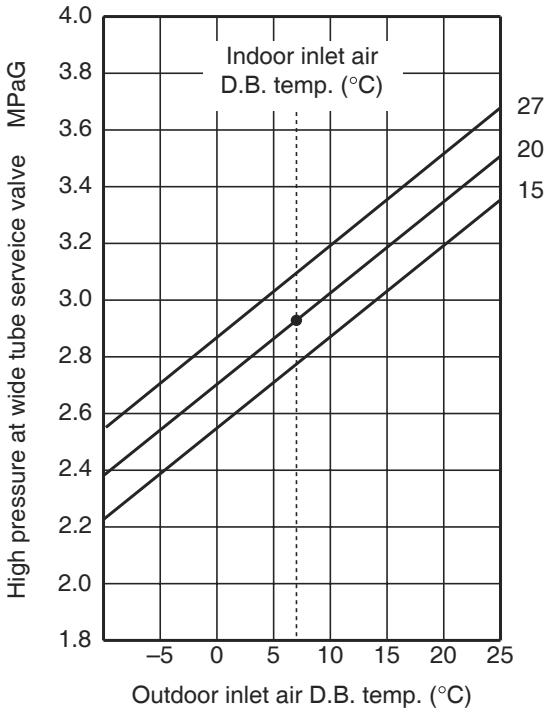


< Heating Characteristics >

(1) Operating current performance chart



(2) High pressure performance chart



NOTE

Overload prevention operates to protect the air conditioner when outdoor ambient temperature reaches extremely high in heating mode. (Refer to "8-7. Overload prevention.")

●: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.

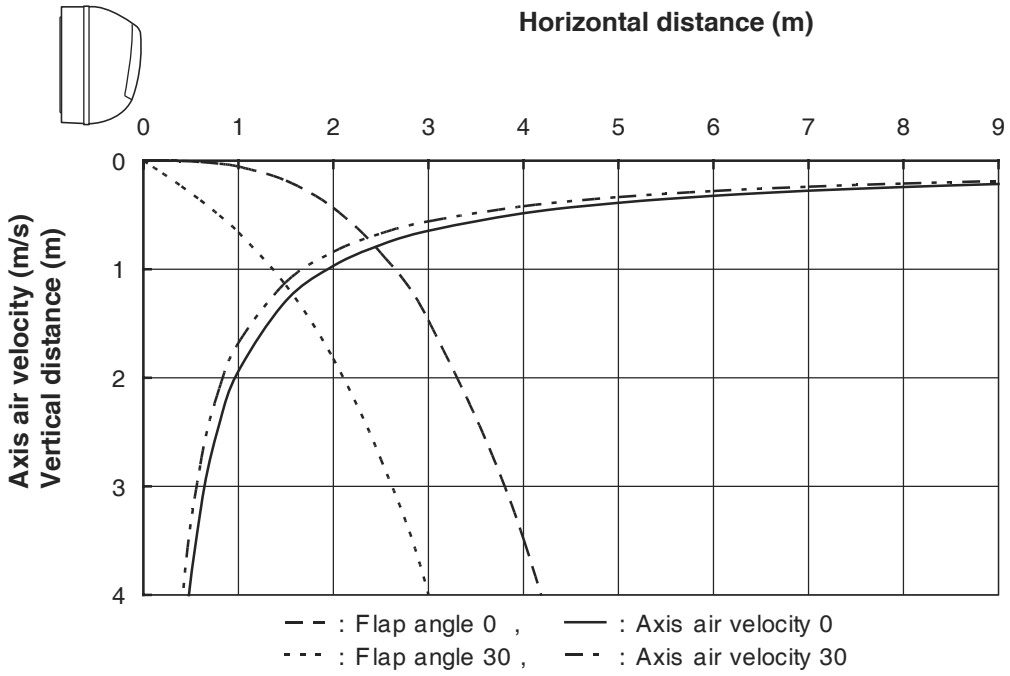
Heating: Indoor air temperature 20 °C D.B.
Outdoor air temperature 7 °C D.B. / 6 °C W.B.

5-2. Air Throw Distance Charts

Indoor Unit **SAP-K77GHAX**

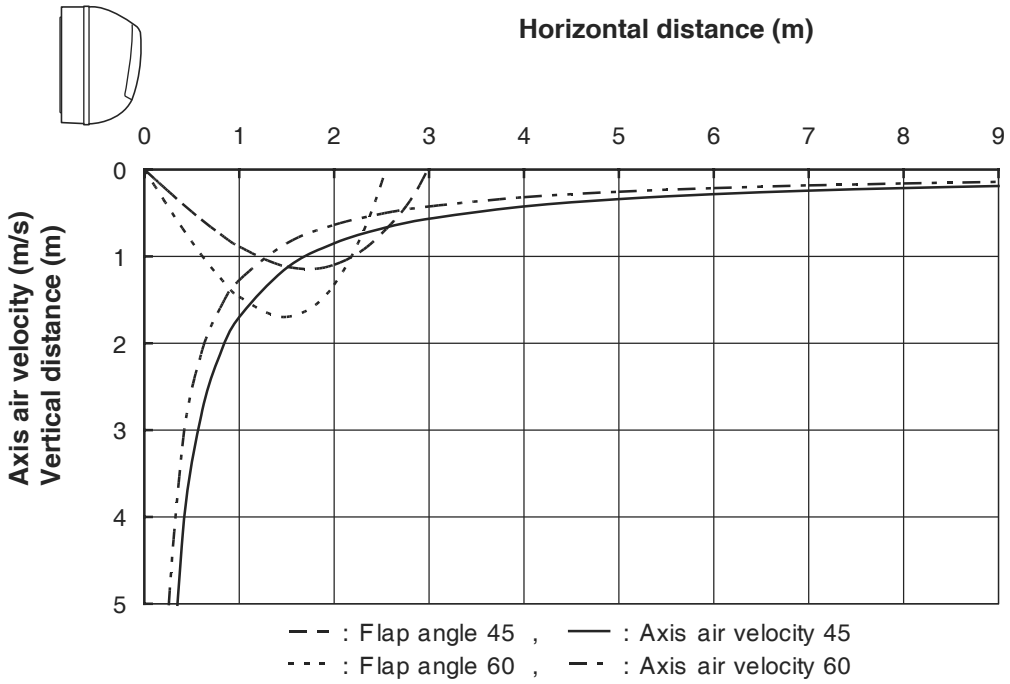
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

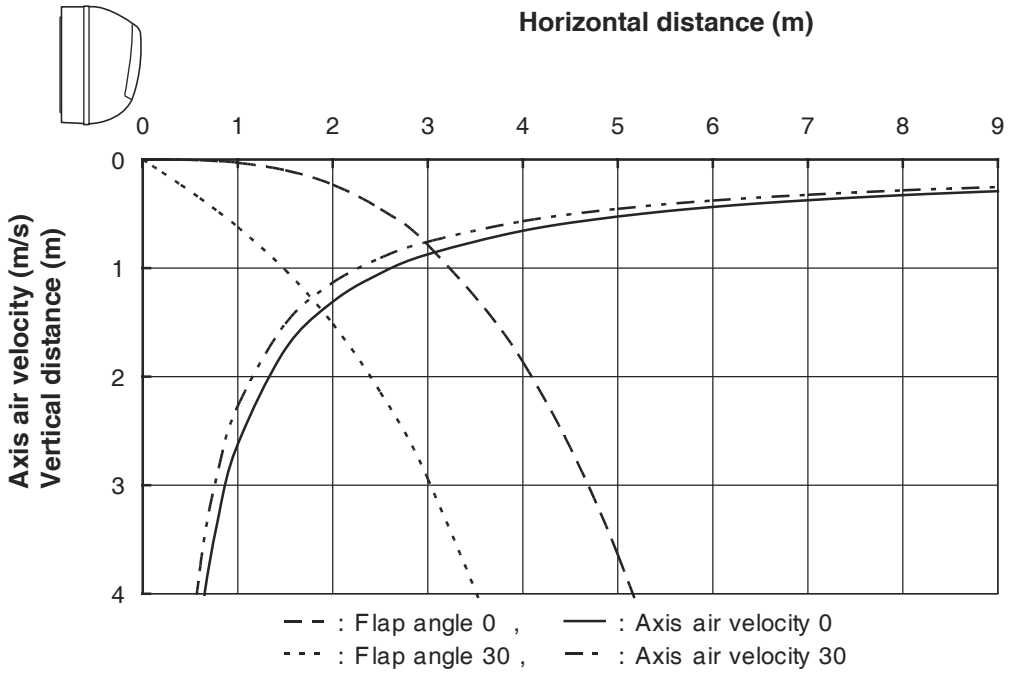
Room air temp. : 20°C
Fan speed : High



Indoor Unit **SAP-K97GHAX**

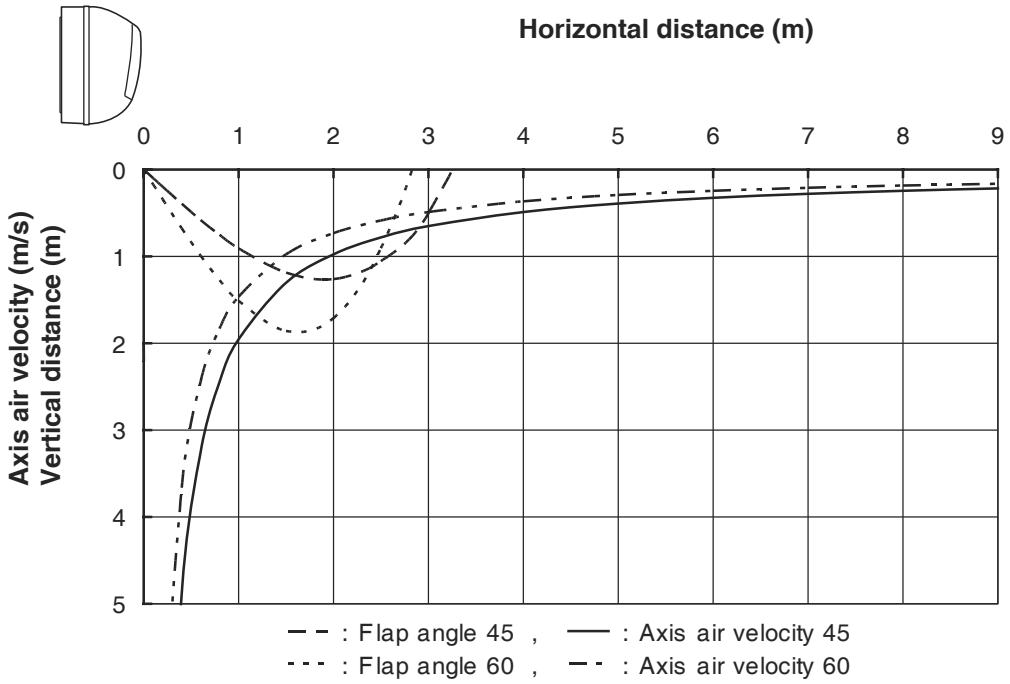
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

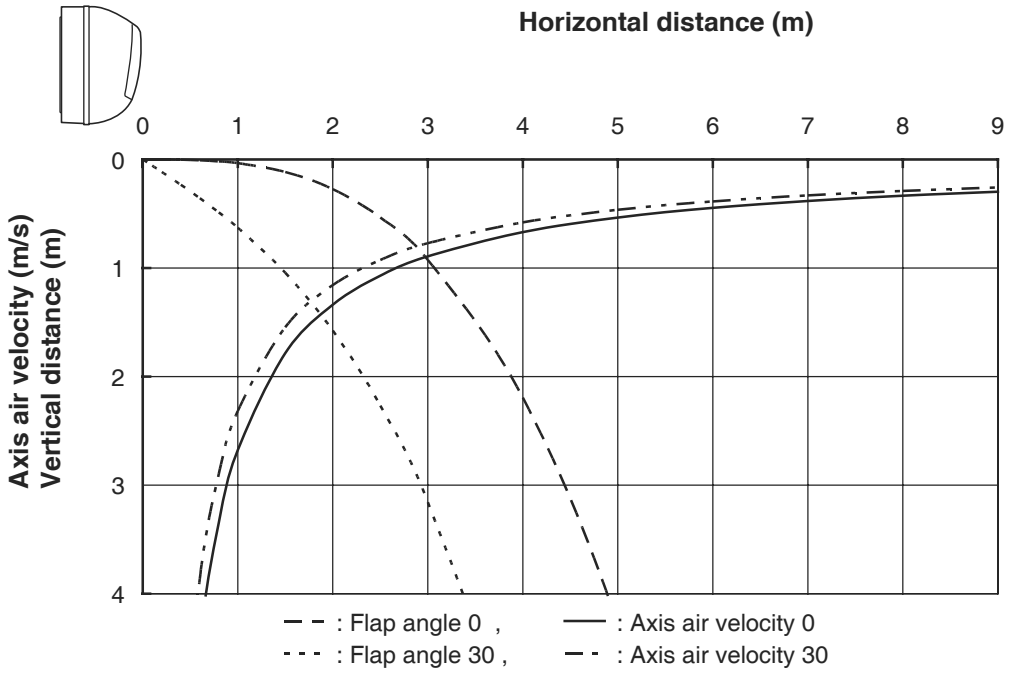
Room air temp. : 20°C
Fan speed : High



Indoor Unit **SAP-K127GHAX**

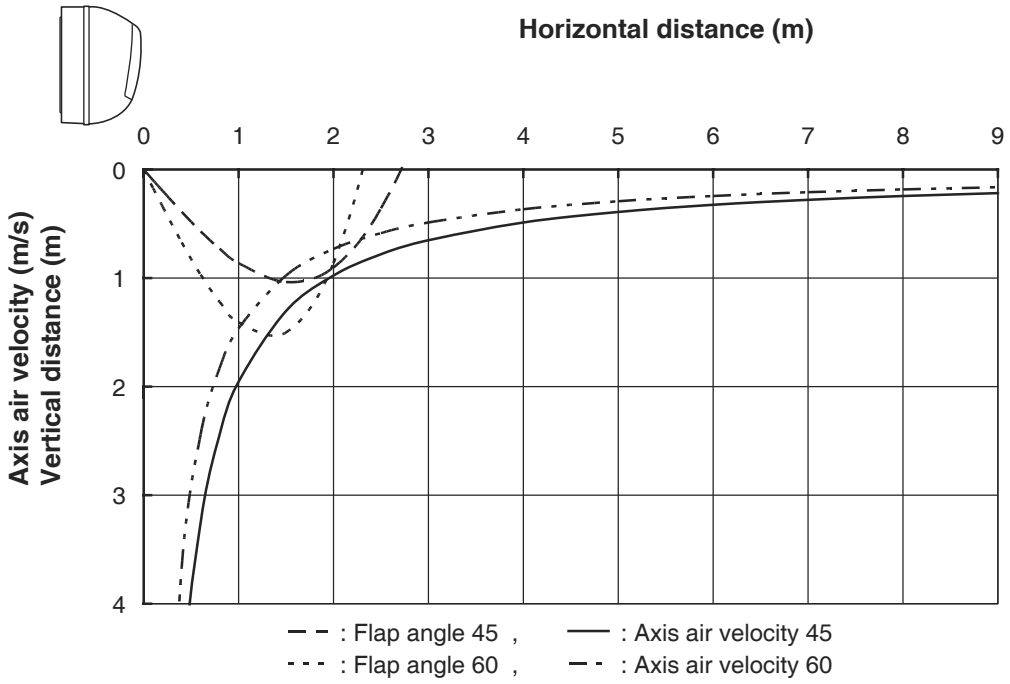
Cooling

Room air temp. : 27°C
Fan speed : High



Heating

Room air temp. : 20°C
Fan speed : High



5-3. Cooling Capacity

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

230 V Single Phase 50 Hz

RATING CAPACITY		2.10 kW						
AIR FLOW RATE		340 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	2.12	2.02	1.93	1.84	1.73	1.59
		CM	0.53	0.58	0.62	0.66	0.67	0.68
	21	SHC	1.43	1.39	1.34	1.29	1.24	1.17
	23	SHC	1.61	1.56	1.51	1.47	1.41	1.35
	25	SHC	1.78	1.73	1.69	1.64	1.58	1.52
	27	SHC	1.95	1.90	1.86	1.81	1.73	1.59
	29	SHC	2.12	2.02	1.93	1.84	1.73	1.59
	31	SHC	2.12	2.02	1.93	1.84	1.73	1.59
17		TC	2.27	2.17	2.07	1.97	1.86	1.71
		CM	0.55	0.59	0.63	0.68	0.69	0.70
	21	SHC	1.26	1.21	1.16	1.12	1.06	1.00
	23	SHC	1.43	1.38	1.34	1.29	1.23	1.17
	25	SHC	1.60	1.56	1.51	1.46	1.41	1.34
	27	SHC	1.78	1.73	1.68	1.63	1.58	1.51
	29	SHC	1.95	1.90	1.85	1.81	1.75	1.69
	31	SHC	2.12	2.07	2.03	1.97	1.86	1.71
19		TC	2.42	2.31	2.21	# 2.10	1.97	1.82
		CM	0.56	0.61	0.65	0.70	0.71	0.73
	21	SHC	1.07	1.02	0.98	0.93	0.88	0.81
	23	SHC	1.24	1.20	1.15	1.10	1.05	0.98
	25	SHC	1.42	1.37	1.32	1.28	1.22	1.16
	27	SHC	1.59	1.54	1.50	1.45	1.40	1.33
	29	SHC	1.76	1.71	1.67	1.62	1.57	1.50
	31	SHC	1.93	1.89	1.84	1.79	1.74	1.68
21		TC	2.56	2.45	2.34	2.23	2.09	1.93
		CM	0.58	0.63	0.67	0.72	0.73	0.75
	23	SHC	1.05	1.01	0.96	0.92	0.86	0.80
	25	SHC	1.23	1.18	1.13	1.09	1.04	0.97
	27	SHC	1.40	1.35	1.31	1.26	1.21	1.14
	29	SHC	1.57	1.53	1.48	1.44	1.38	1.32
	31	SHC	1.75	1.70	1.65	1.61	1.55	1.49
23		TC	2.72	2.60	2.48	2.34	2.19	2.03
		CM	0.59	0.64	0.69	0.74	0.75	0.77
	25	SHC	1.03	0.98	0.94	0.88	0.83	0.78
	27	SHC	1.20	1.16	1.11	1.06	1.00	0.95
	29	SHC	1.37	1.33	1.28	1.23	1.18	1.12
	31	SHC	1.55	1.50	1.45	1.40	1.35	1.29

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

230 V Single Phase 50 Hz

RATING CAPACITY		2.55 kW						
AIR FLOW RATE		460 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	2.57	2.46	2.35	2.23	2.10	1.93
		CM	0.67	0.73	0.78	0.83	0.91	0.99
	21	SHC	1.80	1.74	1.69	1.63	1.57	1.49
	23	SHC	2.03	1.98	1.93	1.87	1.81	1.73
	25	SHC	2.27	2.22	2.16	2.11	2.05	1.93
	27	SHC	2.51	2.46	2.35	2.23	2.10	1.93
	29	SHC	2.57	2.46	2.35	2.23	2.10	1.93
	31	SHC	2.57	2.46	2.35	2.23	2.10	1.93
17		TC	2.76	2.64	2.52	2.40	2.25	2.07
		CM	0.69	0.75	0.80	0.86	0.94	1.01
	21	SHC	1.55	1.50	1.44	1.39	1.33	1.25
	23	SHC	1.79	1.74	1.68	1.63	1.56	1.49
	25	SHC	2.03	1.97	1.92	1.86	1.80	1.72
	27	SHC	2.27	2.21	2.16	2.10	2.04	1.96
	29	SHC	2.50	2.45	2.39	2.34	2.25	2.07
	31	SHC	2.74	2.64	2.52	2.40	2.25	2.07
19		TC	2.93	2.81	2.68	# 2.55	2.40	2.21
		CM	0.71	0.77	0.82	0.88	0.96	1.04
	21	SHC	1.30	1.24	1.19	1.14	1.07	1.00
	23	SHC	1.54	1.48	1.43	1.37	1.31	1.23
	25	SHC	1.77	1.72	1.66	1.61	1.55	1.47
	27	SHC	2.01	1.96	1.90	1.85	1.79	1.71
	29	SHC	2.25	2.19	2.14	2.09	2.02	1.95
	31	SHC	2.49	2.43	2.38	2.32	2.26	2.18
21		TC	3.11	2.97	2.84	2.70	2.54	2.34
		CM	0.73	0.79	0.85	0.91	0.99	1.07
	23	SHC	1.28	1.22	1.17	1.12	1.06	0.98
	25	SHC	1.52	1.46	1.41	1.36	1.29	1.22
	27	SHC	1.75	1.70	1.65	1.59	1.53	1.46
	29	SHC	1.99	1.94	1.88	1.83	1.77	1.69
	31	SHC	2.23	2.17	2.12	2.07	2.01	1.93
23		TC	3.30	3.16	3.01	2.84	2.66	2.47
		CM	0.75	0.81	0.87	0.93	1.02	1.10
	25	SHC	1.24	1.19	1.14	1.08	1.01	0.95
	27	SHC	1.48	1.43	1.38	1.32	1.25	1.19
	29	SHC	1.72	1.67	1.61	1.55	1.49	1.43
	31	SHC	1.96	1.91	1.85	1.79	1.73	1.66

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

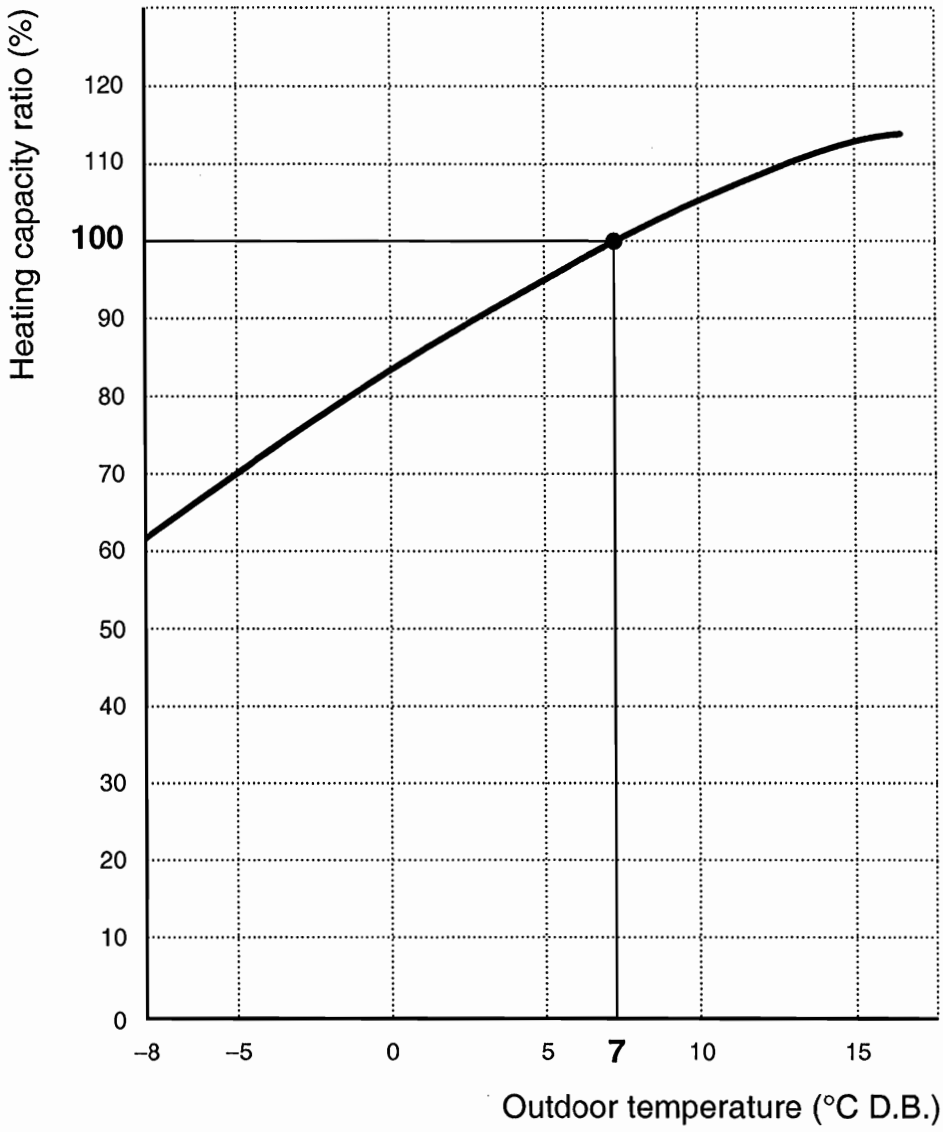
230 V Single Phase 50 Hz

RATING CAPACITY		3.55 kW						
AIR FLOW RATE		470 m^3/h						
EVAPORATOR		CONDENSER						
ENT. TEMP. °C		OUTDOOR AMBIENT TEMP. °C						
W.B.	D.B.		20	25	30	35	40	43
15		TC	3.58	3.42	3.27	3.11	2.92	2.69
		CM	0.90	0.97	1.04	1.12	1.26	1.41
	21	SHC	2.34	2.25	2.17	2.08	1.98	1.87
	23	SHC	2.58	2.49	2.41	2.33	2.23	2.11
	25	SHC	2.82	2.74	2.65	2.57	2.47	2.35
	27	SHC	3.07	2.98	2.89	2.81	2.71	2.59
	29	SHC	3.31	3.22	3.14	3.05	2.92	2.69
	31	SHC	3.55	3.42	3.27	3.11	2.92	2.69
17		TC	3.84	3.67	3.50	3.34	3.14	2.89
		CM	0.92	1.00	1.07	1.15	1.30	1.44
	21	SHC	2.09	2.01	1.92	1.84	1.74	1.62
	23	SHC	2.34	2.25	2.16	2.08	1.98	1.86
	25	SHC	2.58	2.49	2.40	2.32	2.22	2.10
	27	SHC	2.82	2.73	2.65	2.56	2.46	2.34
	29	SHC	3.06	2.97	2.89	2.80	2.71	2.59
	31	SHC	3.31	3.22	3.13	3.05	2.95	2.83
19		TC	4.08	3.91	3.73	# 3.55	3.34	3.07
		CM	0.95	1.03	1.10	1.18	1.33	1.48
	21	SHC	1.83	1.74	1.66	1.57	1.48	1.36
	23	SHC	2.07	1.99	1.90	1.82	1.72	1.60
	25	SHC	2.32	2.23	2.14	2.06	1.96	1.84
	27	SHC	2.56	2.47	2.38	2.30	2.20	2.08
	29	SHC	2.80	2.71	2.63	2.54	2.44	2.33
	31	SHC	3.04	2.95	2.87	2.78	2.69	2.57
21		TC	4.33	4.14	3.95	3.76	3.54	3.25
		CM	0.98	1.06	1.13	1.22	1.37	1.52
	23	SHC	1.80	1.72	1.63	1.55	1.45	1.34
	25	SHC	2.04	1.96	1.87	1.79	1.70	1.58
	27	SHC	2.29	2.20	2.12	2.03	1.94	1.82
	29	SHC	2.53	2.44	2.36	2.28	2.18	2.06
	31	SHC	2.77	2.68	2.60	2.52	2.42	2.30
23		TC	4.59	4.39	4.19	3.95	3.70	3.44
		CM	1.00	1.09	1.16	1.25	1.40	1.56
	25	SHC	1.76	1.67	1.59	1.49	1.39	1.30
	27	SHC	2.00	1.92	1.83	1.74	1.64	1.54
	29	SHC	2.24	2.16	2.07	1.98	1.88	1.78
	31	SHC	2.48	2.40	2.31	2.22	2.12	2.02

TC : Total Cooling Capacity (kW)
SHC : Sensible Heat Capacity (kW)
CM : Compressor Input (kW)

Rating conditions (#Mark) are
Outdoor Ambient Temp. 35 ℃ D.B.
Indoor Unit Entering Air Temp. 27 ℃ D.B. / 19 ℃ W.B.

5-4. Heating Capacity



NOTE

1) ●... Point of Rating condition
   Black dot in the chart indicate the following rating condition.
   Indoor : 20 °C D.B.
   Outdoor : 7 °C D.B. / 6 °C W.B.

2) Above characteristics indicate instantaneous operation, which does not take into account defrost operation.

3) Fan speed : High

4) Because this air conditioner heats a room by drawing in the heat of the outside air (heat pump system), the heating efficiency will fall off when the outdoor temperature is very low. If sufficient heat cannot be obtained with this air conditioner, use another heating appliance together with it.

6. ELECTRICAL DATA

6-1. Electrical Characteristics

Indoor Unit **SAP-K77GHAX**
Outdoor Unit **SAP-C77GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	3.02	3.4
	Power Input	kW	0.022	0.048	0.700	0.770
Full Load Conditions	Running Amps.	A	0.17	0.21	3.47	3.85
	Power Input	kW	0.022	0.048	0.770	0.840

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.

Heating

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	2.72	3.1
	Power Input	kW	0.022	0.048	0.610	0.680
Full Load Conditions	Running Amps.	A	0.17	0.21	3.47	3.85
	Power Input	kW	0.022	0.048	0.770	0.840

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

Indoor Unit **SAP-K97GHAX**
Outdoor Unit **SAP-C97GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	4.02	4.4
	Power Input	kW	0.028	0.048	0.884	0.960
Full Load Conditions	Running Amps.	A	0.17	0.21	4.89	5.27
	Power Input	kW	0.028	0.048	1.098	1.174

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.

Heating

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.17	0.21	3.72	4.1
	Power Input	kW	0.028	0.048	0.854	0.930
Full Load Conditions	Running Amps.	A	0.17	0.21	4.89	5.27
	Power Input	kW	0.028	0.048	1.098	1.174

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

Indoor Unit **SAP-K127GHAX**
Outdoor Unit **SAP-C127GHAX**

Cooling

			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.19	0.39	5.62	6.2
	Power Input	kW	0.031	0.090	1.184	1.305
Full Load Conditions	Running Amps.	A	0.19	0.39	7.19	7.77
	Power Input	kW	0.031	0.090	1.555	1.676

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.

Heating

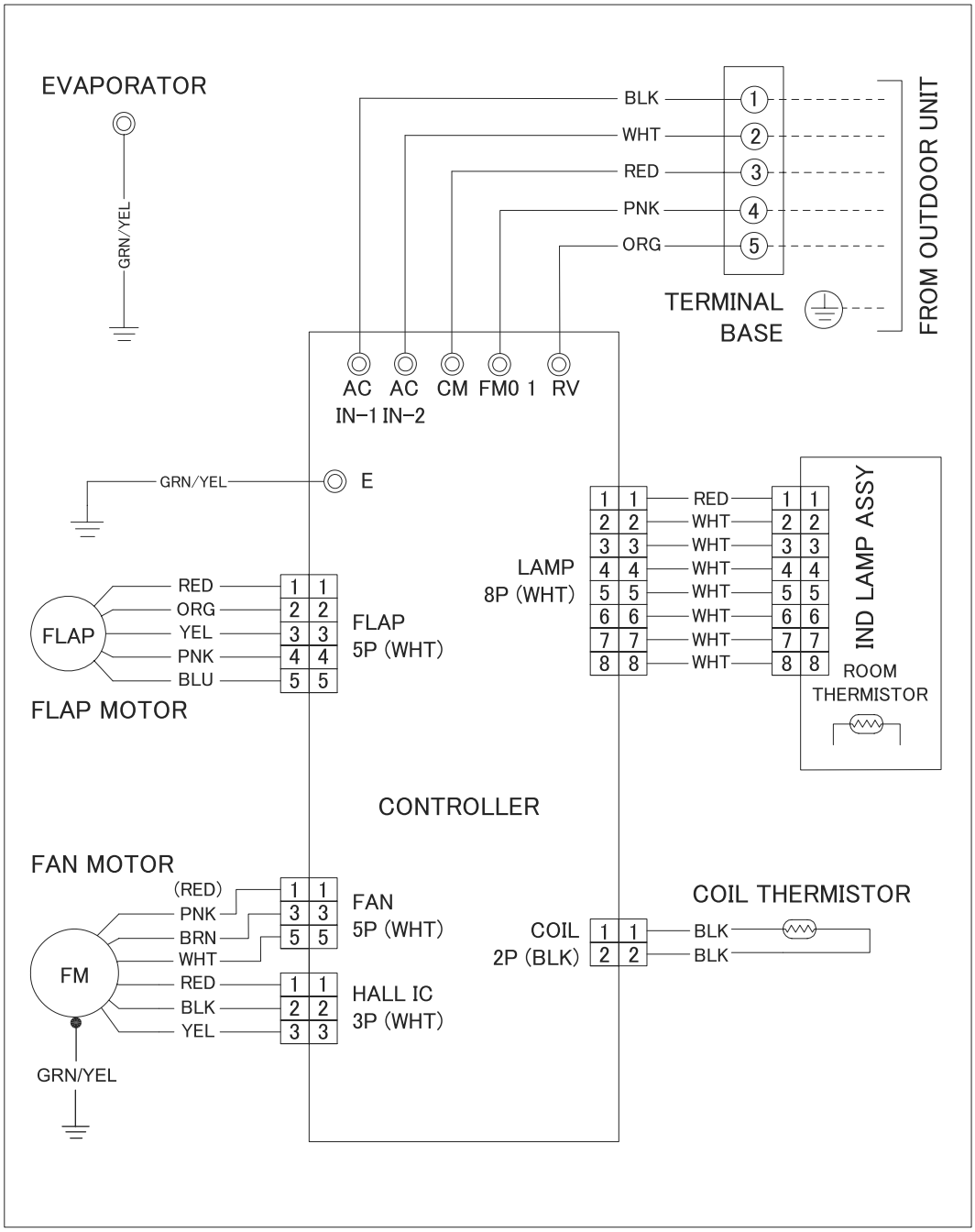
			Indoor Unit	Outdoor Unit		Complete Unit
			Fan Motor	Fan Motor	Compressor	
Performance at			220/230/240V Single phase 50Hz			
Rating Conditions	Running Amps.	A	0.19	0.39	5.32	5.9
	Power Input	kW	0.031	0.090	1.154	1.275
Full Load Conditions	Running Amps.	A	0.19	0.39	7.19	7.77
	Power Input	kW	0.031	0.090	1.555	1.676

Rating conditions: Indoor air temperature: 20 °C D.B.
Outdoor air temperature: 7 °C D.B. / 6 °C W.B.
Full Load conditions: Indoor air temperature: 27 °C D.B.
Outdoor air temperature: 24 °C D.B. / 18 °C W.B.

6-2. Electric Wiring Diagrams

Indoor Unit **SAP-K77GHAX**
SAP-K97GHAX
SAP-K127GHAX

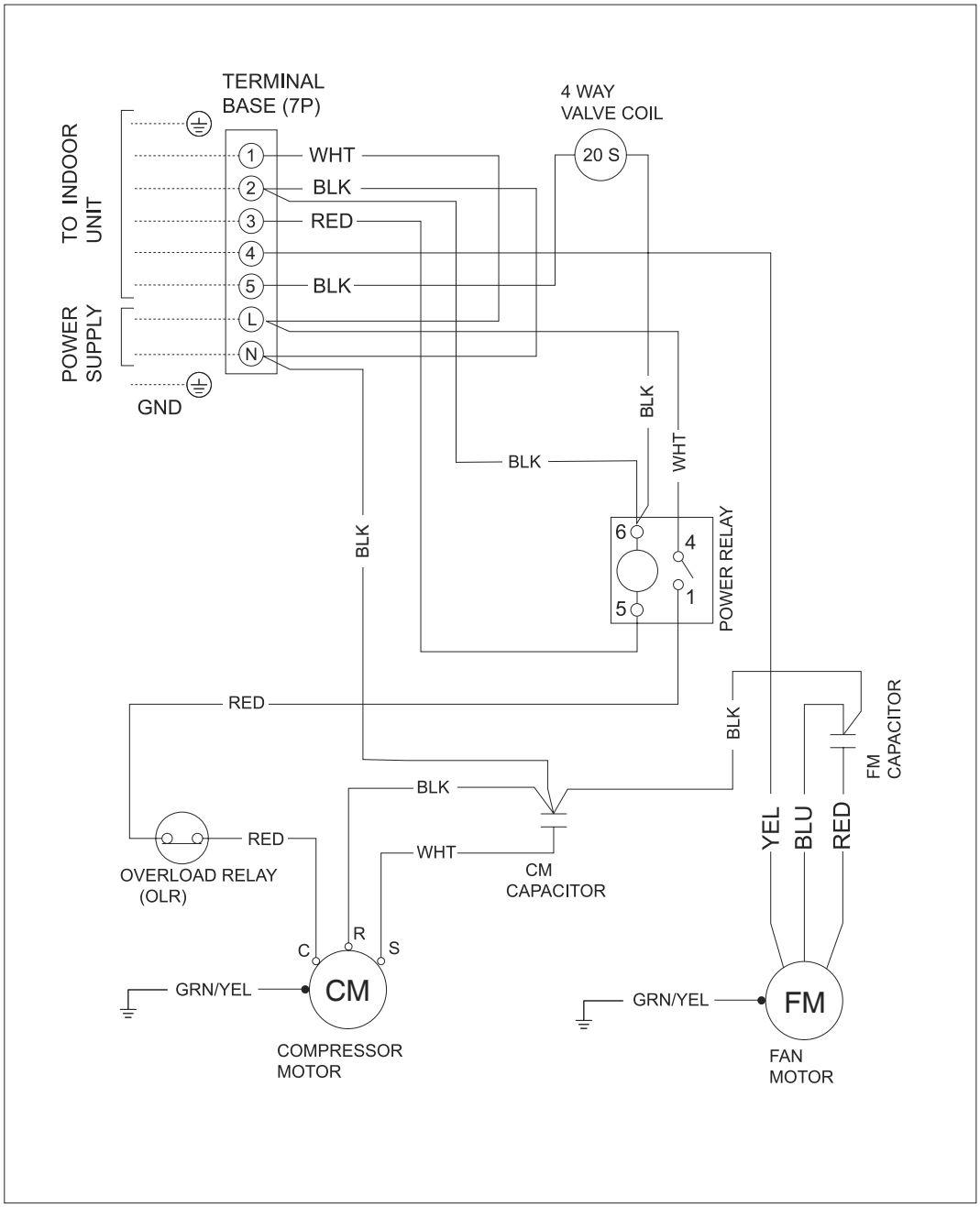
WARNING ***To avoid electrical shock hazard, be sure to disconnect power before checking, servicing and/or cleaning any electrical parts.***



8FA2-5250-49700-0

Outdoor Unit **SAP-C77GHAX**

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



8FA-2-5250-32300-0

Outdoor Unit **SAP-C97GHAX**

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

TERMINAL BASE(7P)
TO INDOOR UNIT
POWER SUPPLY
GND
1 WHT
2 BLK
3 RED
4
5 BLK (BLU)
L
N
4 WAY VALVE COIL
20S
(BLU) BLK
WHT
BLK
BLK
POWER RELAY
6
4
1
5
RED
BLK
FM CAPACITOR
BLK (BLU)
YEL
BLU
RED
RED
WHT
CM CAPACITOR
OVERLOAD RELAY (OLR)
C
R
S
GRN/YEL
CM
COMPRESSOR MOTOR
GRN/YEL
FM
FAN MOTOR

8FA-2-5250-51400-1

Outdoor Unit **SAP-C127GHAX**

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

TERMINAL BASE (7P)
TO INDOOR UNIT
POWER SUPPLY
1 2 3 4 5 L N
WHT
BLK
RED
BLK (BLU)
4 WAY VALVE COIL
20S
BLK (BLU)
WHT
POWER RELAY
6 4 5 1
BLK
RED
FM CAPACITOR
BRN RED WHT GRY
BLK (BLU)
CM CAPACITOR
WHT
OVERLOAD RELAY
RED
S R C
FM
FAN MOTOR
GRN/YEL
CM
COMPRESSOR MOTOR
GRN/YEL

8FA2-5250-50300-0

7. INSTALLATION INSTRUCTIONS

7-1. Installation Site Selection

7-1-1. Indoor Unit

WARNING

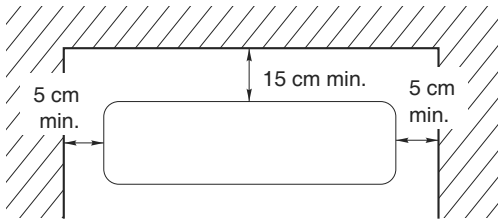
To prevent abnormal heat generation and the possibility of fire, do not place obstacles, enclosures and grilles in front of or surrounding the air conditioner in a way that may block air flow.

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 (H) above or below the outdoor unit and within a total tubing length (L) from the outdoor unit as detailed in Table 1 and Fig. 2.



Front View

Fig. 1

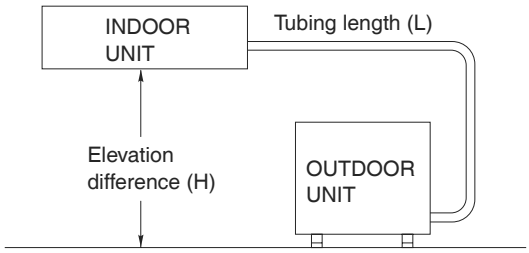


Fig. 2

CAUTION

For stable operation of the air conditioner, do not install wall-mounted type indoor units less than 2.3 m from floor level.

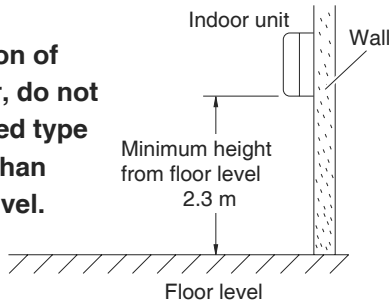


Fig. 3

Table 1

Model	Max. Allowable Tubing Length at Shipment (m)	Limit of Tubing Length (L) (m)	Limit of Elevation Difference (H) (m)	Required Amount of Additional Refrigerant (g/m)*
K77 / 97	5	15	5	15
K127	5	20	5	20

* If total tubing length becomes a) 5 to 15 m (Max.), b) 5 to 20 m (Max.), charge additional refrigerant (R22) by a) 15 g/m, b) 20 g/m.
No additional charge of compressor oil is necessary.

7-1-2. Outdoor Unit

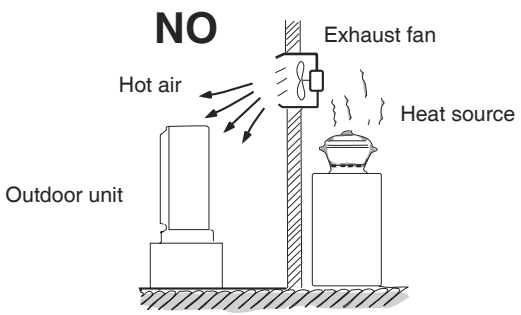


Fig. 4

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. 5a)
- 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. 5b)
- use lug bolts or equal to bolt down unit, reducing vibration and noise.
- Install in a location where no antenna of a television or radio exists within 3 meters.
- Install in a location where at least two sides are unobstructed, so that the flow of air at the intake port or exhaust port is not blocked, and so that sufficient space is ensured for maintenance to be carried out without trouble. In general the top also must be unobstructed. (Figs. 5a and 5b)

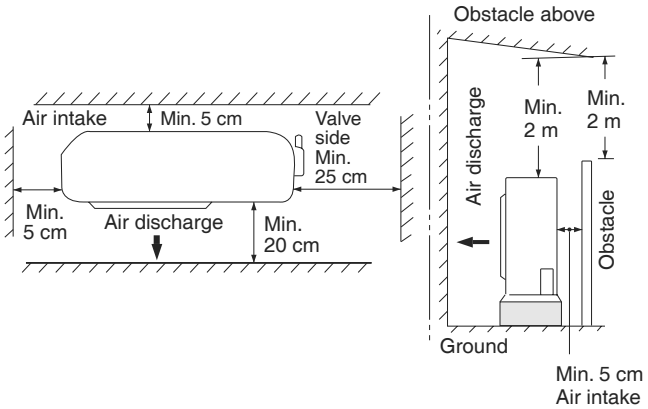


Fig. 5a

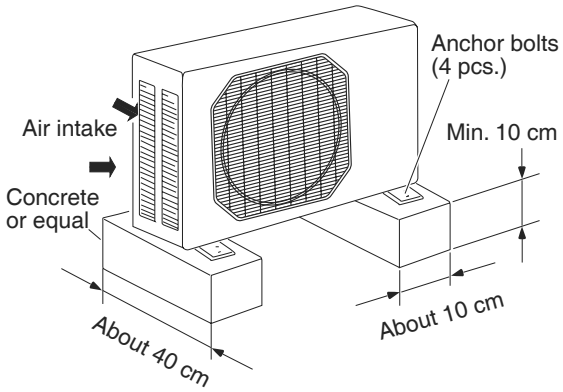


Fig. 5b

7-2. 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.
Supply cord and interconnection cord shall not be lighter than polychloroprene sheathed flexible cord (code designation **60245 IEC 57**).
Table 5 lists recommended wire lengths and diameters for power supply systems.

NOTE Refer to the wiring system diagram (Fig. 22) for the meaning of "A" and "B" in Table 5.

Table 5

Cross-Sectional Area (mm^2) / Model	(A)+(B) (A) Power Supply Wiring Length (m) (B) Power Line Length (m)		Fuse or Circuit Breaker Capacity
	2	3.5	
C77 / 97	38	60	10 A
C127	27	48	

... AWG (American Wire Gauge)

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.**

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

WIRING SYSTEM DIAGRAM

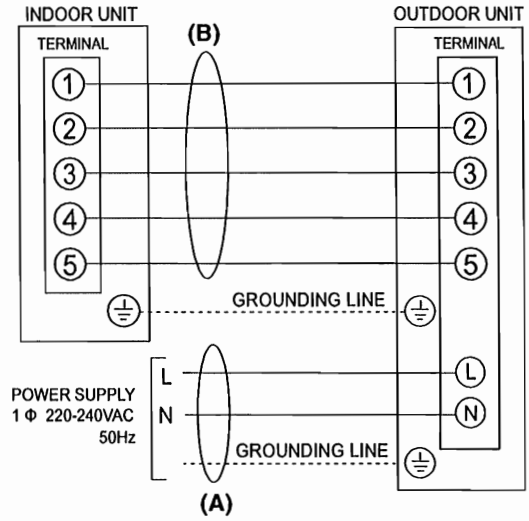


Fig. 22

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.**
- **The appliancce is fitted with means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage categroy III conditions, and these means must be incorporated in the fixed wiring in accordance with the wiring rules.**
- **If the supply cord is damaged, it must be replaced by the manufacturer or our service agent or similarly qualified person in order to avoid a hazard.**

7-3. 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 there is an obstacle between the remote control unit and the air conditioner (since a check signal is sent from the remote control unit every 5 minutes)

7-3-1. Mounting on a Wall

Before mounting the remote control unit, press the ON/OFF operation 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.

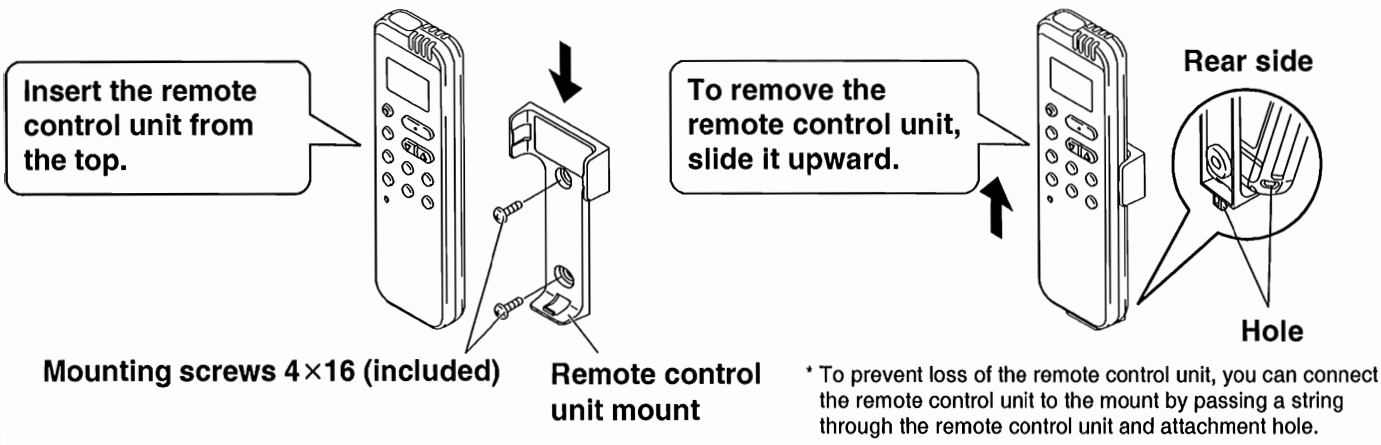


Fig. 7

7-4. How to Test Run the Air Conditioner

After turning on the power of the air conditioner, use the remote controller and follow the steps below to conduct the test run.

(1) Set the remote controller in Test Run mode. (Fig. 8a)

a) Press and hold the ECONOMY button and the 1HR. TIMER button.

b) Then press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first.

c) Then release the ECONOMY and 1HR. TIMER buttons.

d) " ◀ " for ❄ appears and "P1" blinking in the remote controller display area. (Fig. 8b)

(2) Start Cooling mode test run by pressing the ON/OFF operation button of the remote controller. (Fig. 8a)

- This starts the fan producing uncooled forced air with the 1 indicator lamps (OPERATION lamp) on the main unit brighting. (Fig. 8c)
- After 3 minutes, the system shifts into cooling operation, and cool air will start to be felt. Cooling mode test run is unaffected by the room temperature.

(3) Press the ON/OFF operation button of the remote controller again to stop the test run. (Fig. 8a)

(4) Finally press the ACL (Reset) button of the remote controller to release it from Test Run mode to return to normal mode. (Fig. 8a)

- " ◀ " for ❄ and "P1" will disappear from the remote controller display area.

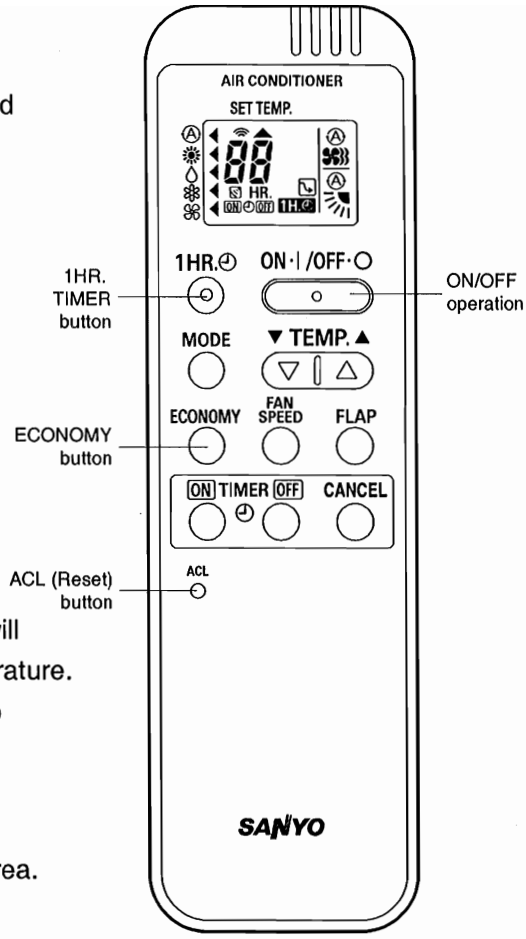


Fig. 8a

IMPORTANT

After the test run is completed, be sure to press the ACL (Reset) button to return to normal mode. The air conditioner will not operate correctly if this is not done.

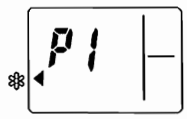


Fig. 8b

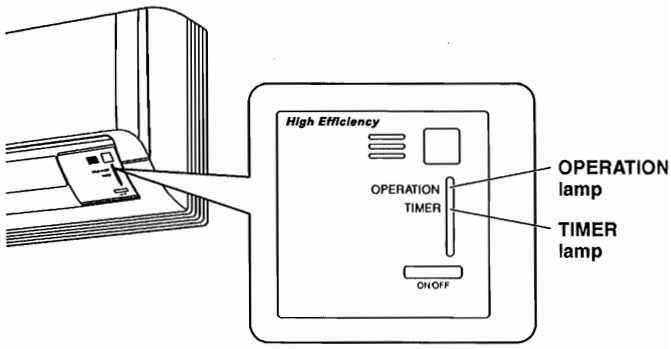


Fig. 8c

7-5. Removing and Installing the Grille

Basically, these models can be installed and wired without removing the grille. If access to any internal part is needed, follow the steps as given below.

How to remove the grille

(1) Open the front panel until it is nearly horizontal, grasp the sections near the front panel arms on both sides, and then remove the panel by pushing the arms towards the outside while pulling the panel towards you. (Fig. 9)
(2) Lift the anti-mold filter up slightly to disengage the protrusions from the hooks on the unit, and then pull downward to remove the filter from the unit. (Fig. 9)
(3) Remove the 4 screws. Grasp the grille on both bottom sides, and pull it towards you slightly. (Fig. 10)
(4) Press the 2 tabs on the top of the grille to disengage them. (Fig. 10)
(5) Pull the grille towards you to remove it. (Fig. 10)

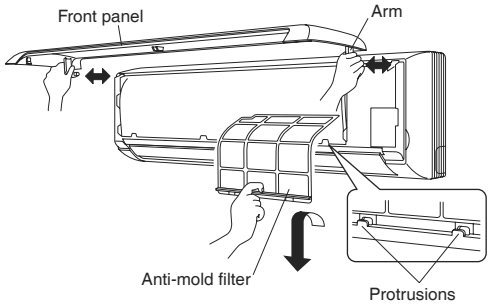


Fig. 9

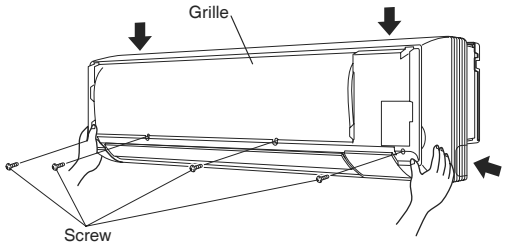


Fig. 10

How to replace the grille

(1) Insert the bottom of the grille into the frame.
(2) While aligning both edges of the grille with the frame, move the grille horizontally and insert the top and bottom into the frame.
(3) Press the grille firmly with your hand to ensure no gap exists between the frame and grille.
(4) Tighten the 4 screws.
(5) Grasp the sections near the front panel arms on both sides, and hold the front panel so that it is nearly horizontal. Push the arm shafts towards the outside so that they come into contact with the top of the indentations on the right and left sides of the air conditioner. Then push firmly until the arm shafts click into place. (Fig. 11)
(6) Insert the top of the anti-mold filter, and then fit the protrusions on the bottom of the filter all the way into the hooks on the unit.
(7) After closing the front panel, press firmly on the parts indicated by the arrows to securely fasten the panel in place. (Fig. 12)

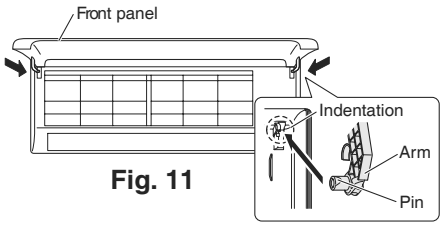


Fig. 11

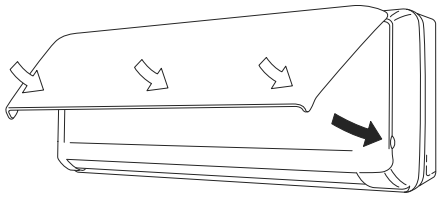


Fig. 12

NOTE

Check that no gap exists between the frame and the grille.

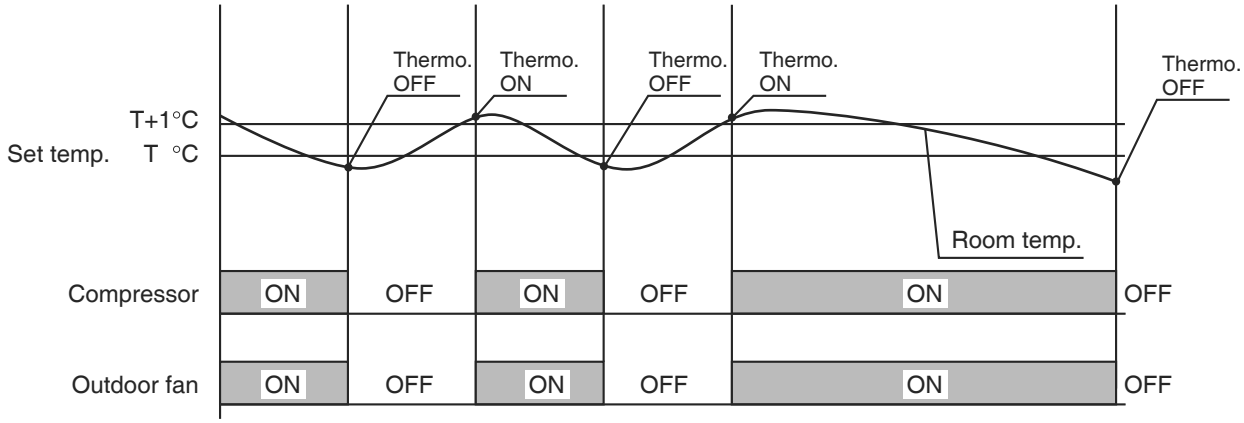
8. FUNCTIONS

8-1. Room Temperature Control

(1) Cooling

- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the indoor unit.

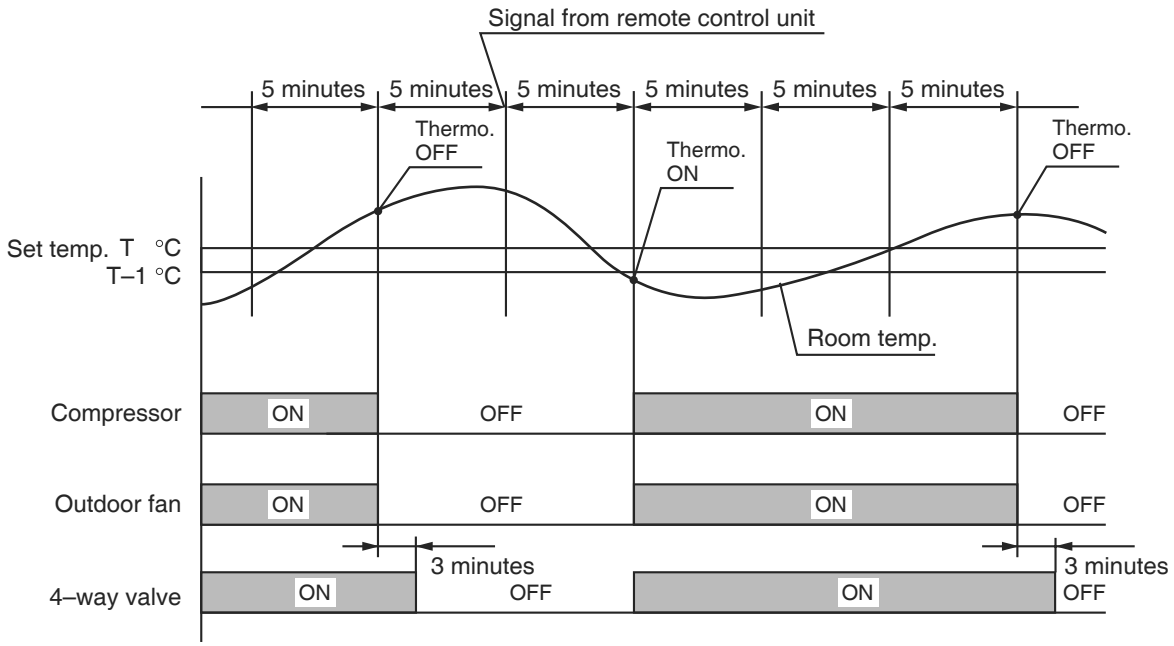
NOTE Some informations except for the room temperature are transmitted every 5 minutes by the remote control unit to the controller in the indoor unit.



- Once the compressor starts, it keeps running for 5 minutes.
- Once the compressor stops, it will not start running again for 3 minutes.
- Thermo. ON : When room temperature rises 1°C above the set temperature T°C, the compressor turns ON.
- Thermo. OFF : When the room temperature falls below the set temperature T°C, the compressor turns OFF.

(2) Heating

- Room temperature control is obtained by cycling the compressor ON and OFF under control of the room temperature sensor in the remote control unit.
- The room temperature (and other information) is transmitted every 5 minutes by the remote control unit to the controller in the indoor unit.

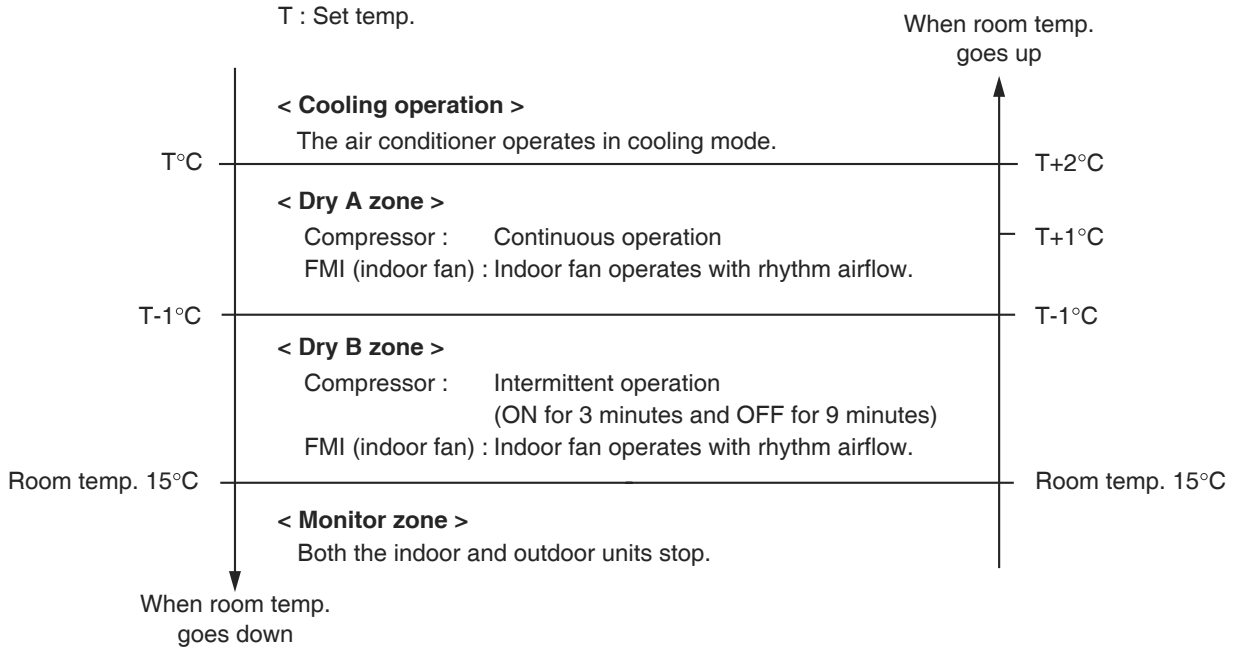


- Once the compressor starts, it keeps running for 5 minutes.
- Once the compressor stops, it will not start running again for 5 minutes.
- Thermo. ON : When room temperature falls 1°C below the set temperature T°C, the compressor turns ON.
- Thermo. OFF : When the room temperature rises above the set temperature T°C, the compressor turns OFF.

NOTE The temperature described in this page and previous page gives you an example with remote control operation. In case of the operation controled by an indoor air temperature sensor, operation temperature differ somewhat.

8-2. Dry Operation (Dehumidification)

- Dry operation uses the ability of the cooling cycle to remove moisture from the air, but by running at low level to dehumidify without greatly reducing the room temperature. The air conditioner repeats the cycle of turning ON and OFF automatically as shown in the chart below according to the room temperature.



NOTE

- Intermittent ventilation occurs by switching the indoor fan speed between L and LL.
- DRY operation does not occur when the room temperature is 15°C or less, which is the monitor zone.
- When the compressor stops, the indoor fan stops as well.

8-3. Automatic Switching between Cooling and Heating

- When AUTO mode is selected, the microprocessor calculates the difference between the set temperature and the room temperature, and automatically switches to COOLING or HEATING mode to maintain the desired temperature.

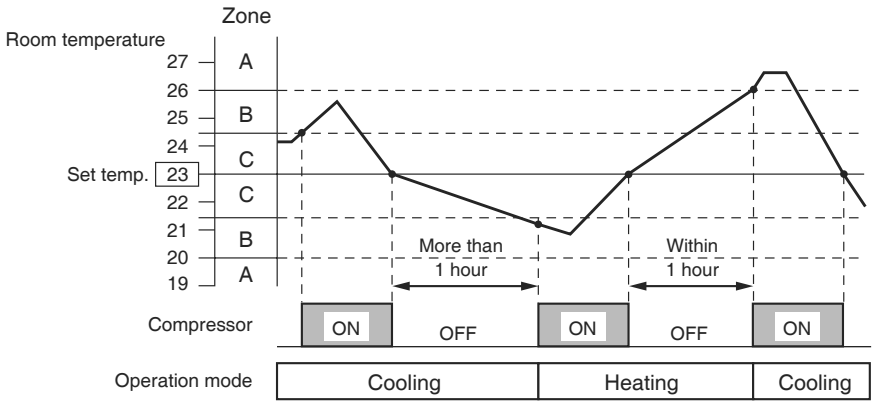
Room temp. ≥ Set temp. ➞COOL

Room temp. < Set temp. ➞HEAT

This means that if the room temperature is higher than or equal to the set temperature, COOLING operation begins. If the room temperature is lower than the set temperature, HEATING operation begins.

Example:

Example of operation in the AUTO mode with the set room temperature at 23 °C.



NOTE If one of the following conditions occurs, the air conditioner changes the operation mode (from cool to heat or vice versa).

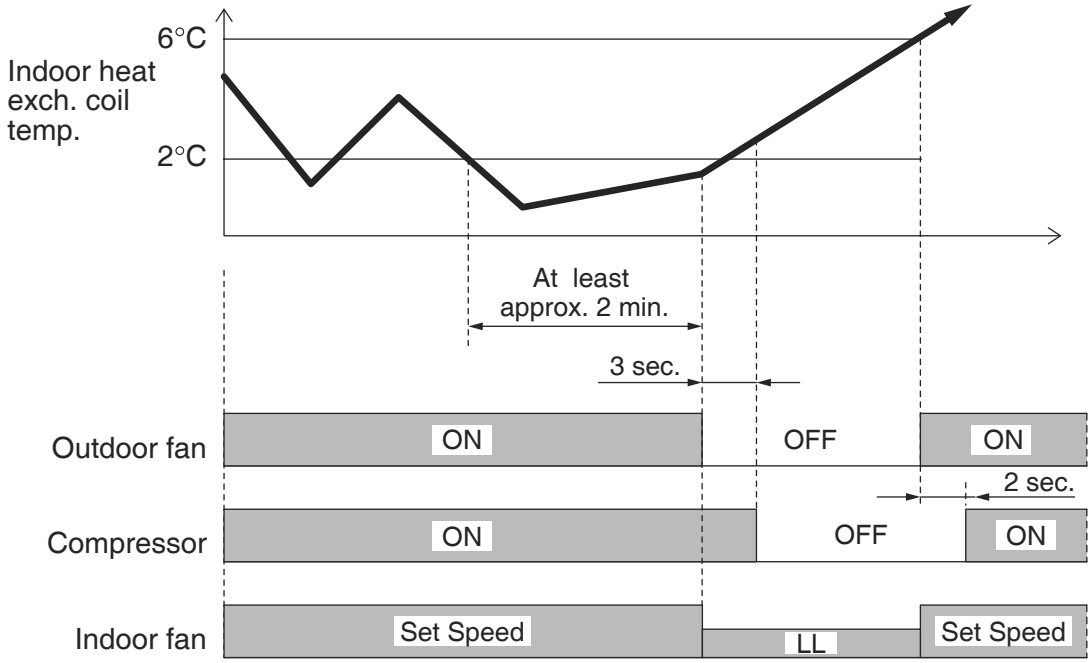
ZONE A: The mode changes if the difference between the room temperature and the set temperature is at least 3 °C.

ZONE B: The mode changes if the difference between the room temperature and the set temperature is at least 1.5 °C. if 1-hour has elapsed after the compressor is stopped.

ZONE C: The mode does not changes if the difference between the room temperature and the set temperature is within 1.5 °C.

8-4. Freeze Prevention (Cooling and Dry)

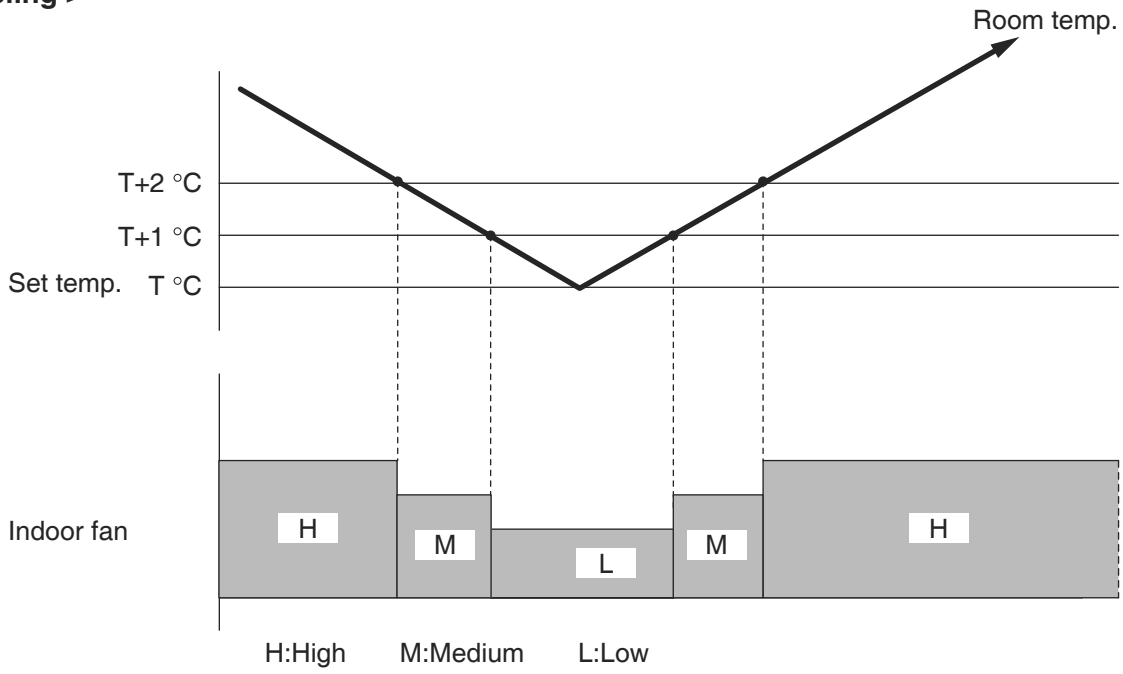
- This function prevents freezing of the indoor heat exchange coil.
- When the temperature of the indoor heat exchange coil falls below 2 °C for 2 minutes, the control circuit stops the outdoor fan and compressor (The compressor stops 3 seconds after the outdoor fan stopped). During this period, Indoor fan operates in LL. The outdoor fan does not start again until the temperature rises above 6°C. (The compressor starts 2 seconds after the outdoor fan started.)



8-5. Automatic Fan Speed (Cooling and Dry)

- This automatically adjust the indoor fan speed by the difference between the room temperature and set temperature.

< Cooling >



8-6. Cold Draft Prevention (Heating)

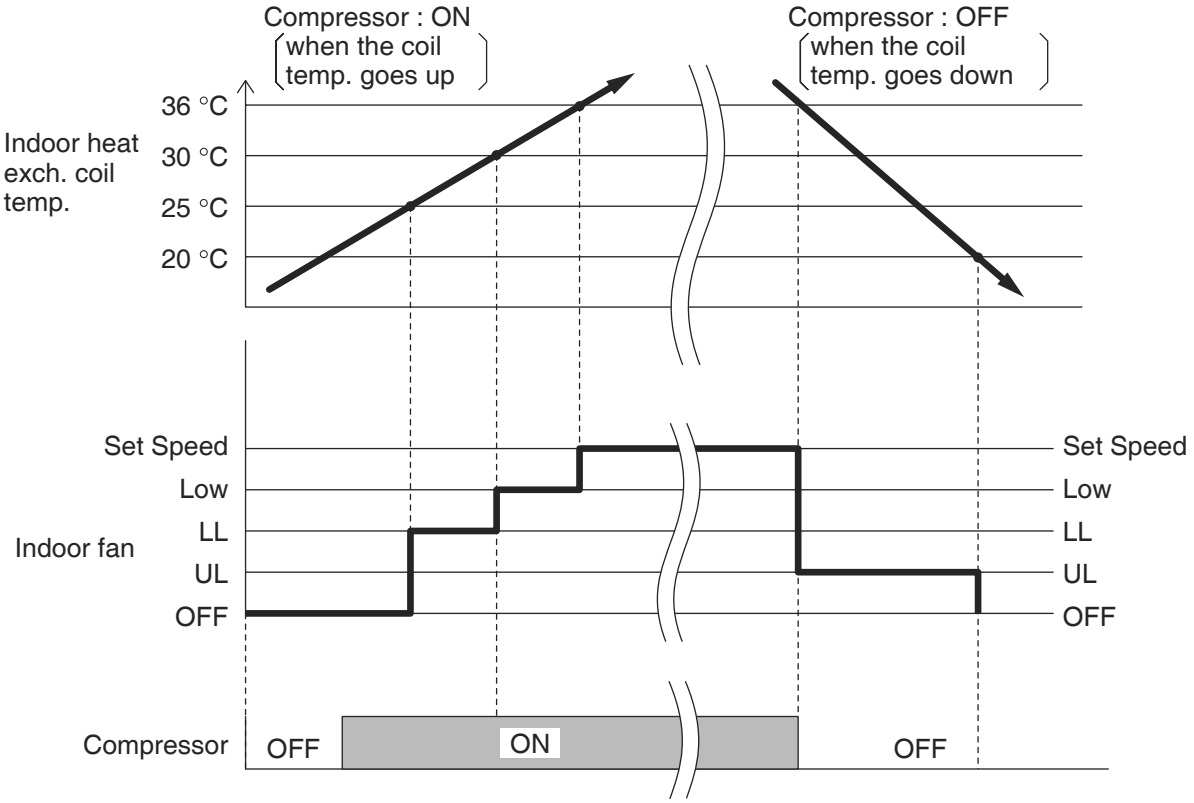
- This function controls indoor fan speed so a strong draft of cold air will not blow out before the indoor heat exchange coil have sufficiently warmed up.
- Indoor fan speed varies according to the indoor heat exchange coil temperature as table shown below.

Condition	Indoor coil temperature (°C)	Indoor fan speed
Compressor is in operation (Indoor coil temp. goes up)	below 25 °C	OFF
	between 25 to 30 °C	LL (Very low)
	between 30 to 36 °C	Low
	over 36 °C	Set speed *1
Compressor is stopped (Indoor coil temp. goes down)	between 20 to 36 °C	UL (Ultra low)
	below 20 °C	OFF *2

NOTE

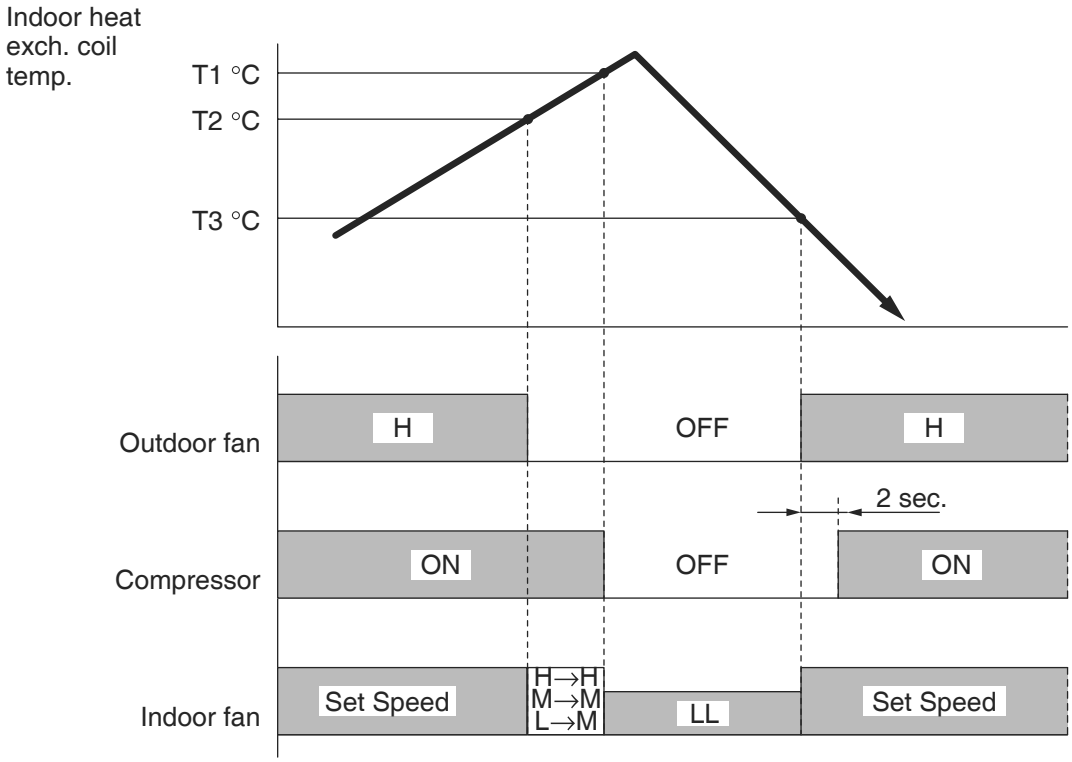
*1 When the coil temperature rises above 36°C, indoor fan operates in set speed.

*2 If 10 minutes has elapsed after the compressor has been stopped, the indoor fan stops its operation regardless of the indoor heat exchange coil temperature.



8-7. Overload Prevention (Heating)

- This function prevents overheating of the indoor heat exchange coil.
- When the temperature of the indoor heat exchange coil rises above T2 °C, the outdoor fan stops, if the indoor fan is L (low speed), then the fan speed changes from L (low speed) to M (medium speed).
- When the temperature of the indoor heat exchange coil rises above T1 °C, the compressor stops, and indoor fan runs in LL (very low speed).



NOTE

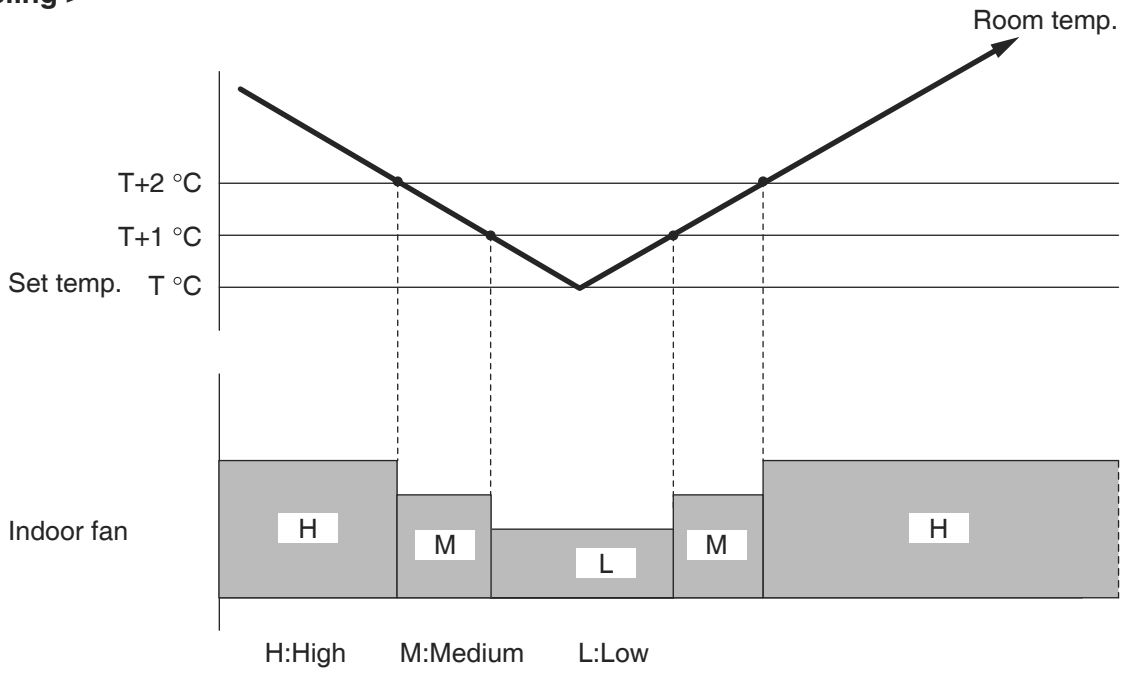
The operation temperature shown as T1, T2 and T3 in the chart differ by models.

	77 / 97 / 127 class
T1	54
T2	50
T3	40

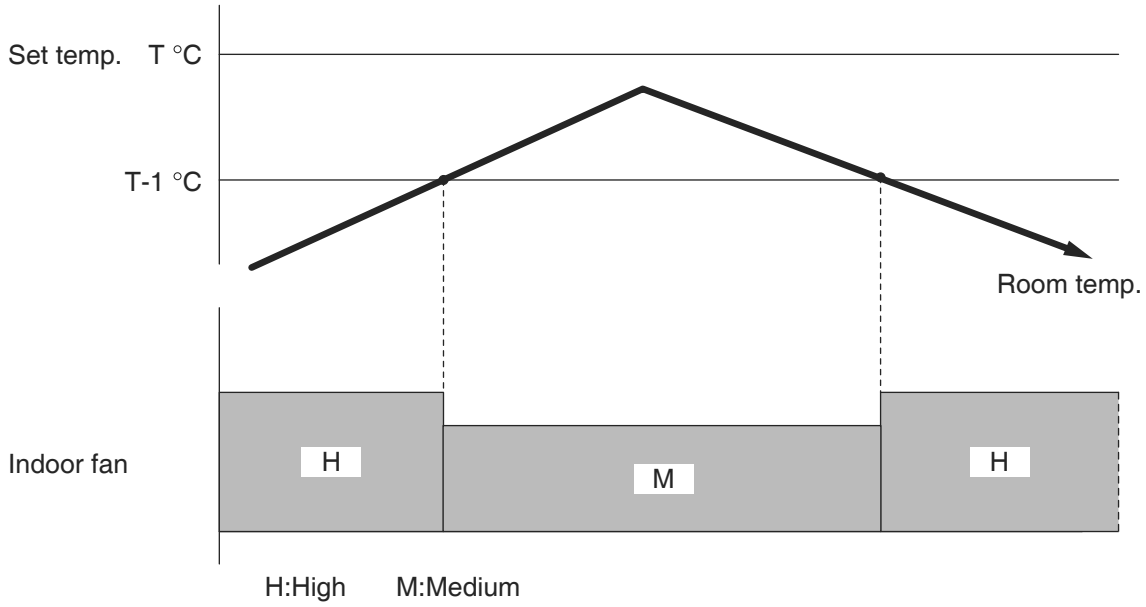
8-8. Automatic Fan Speed (Cooling, Dry and Heating)

- This automatically adjust the indoor fan speed by the difference between the room temperature and set temperature.

< Cooling >



< Heating >

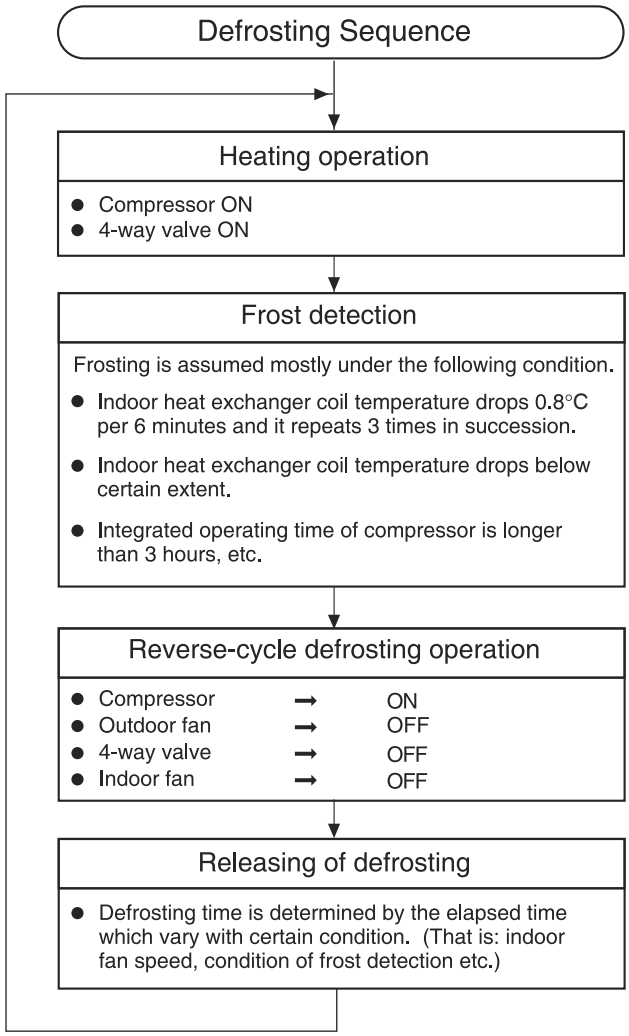


NOTE

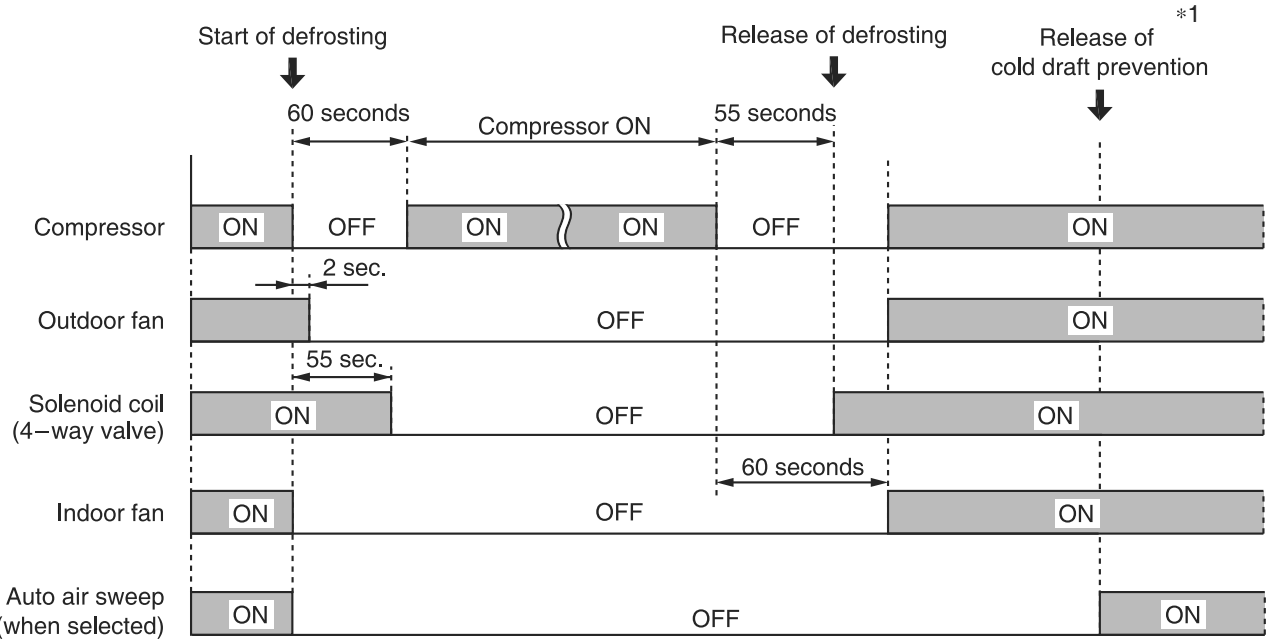
The figure given above shows an example with remote control sensor operation. In case of the operation controled by an indoor air temperature sensor, temperature differ somewhat.

8-9. Defrosting Operation (Heating)

■ Reverse-cycle Defrosting



■ Defrosting Mode Timing Chart



NOTE *1: Refer to "8-5 Cold Draft Prevention"

9. TROUBLESHOOTING

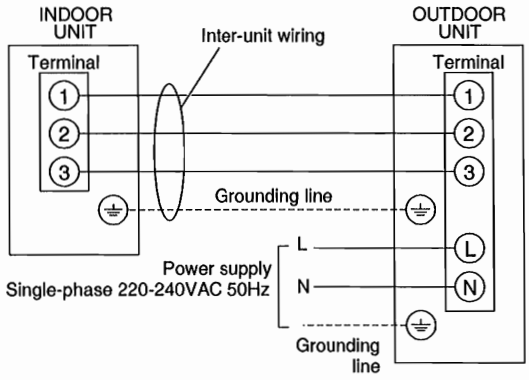
9-1. Check before and after troubleshooting

WARNING

Hazardous voltage can cause ELECTRIC SHOCK or DEATH. Disconnect power or turn off circuit breaker before you start checking or servicing.

9-1-1. Check power supply wiring.

- Check that power supply wires are correctly connected to terminals **L** and **N** on the terminal plate in the outdoor unit.



9-1-2. Check inter-unit wiring.

- Check that inter-unit wiring is correctly connected between indoor unit and outdoor unit.

9-1-3. Check power supply.

- Check that voltage is in specified range (+/–10% of the rating).
- Check that power is being supplied.

9-1-4. Check lead wires and connectors in indoor and outdoor units.

- Check that coating of lead wires is not damaged.
- Check that lead wires and connectors are firmly connected.
- Check that wiring is correct.

9-2. Air conditioner does not operate.

9-2-1. Circuit breaker trips (or fuse blows).

(1) When the circuit breaker is set to ON, it is tripped soon. (Resetting is not possible.)

< Failure Cause >

- There is a possibility of ground fault.
- There is a possibility of insulation fault.

< Identification Method of the Failure Cause >

Identify the failure cause using the following procedure.

WARNING **Turn off the circuit breaker and disconnect the power supply wiring to prevent the electric shock or damage to any measuring instrument.**

< Check outdoor unit >

1. Turn off the circuit breaker and disconnect the power supply wiring. Fig. 1
2. Disconnect the inter-unit wiring from the outdoor unit terminal plate. Fig. 1
3. Measure insulation resistance of outdoor unit.

↓

Does the insulation resistance read 2M ohm or more ?

↓ No

1. Insulation of outdoor unit is defective.
2. And measure insulation resistance of electrical parts in outdoor unit to specify the insulation fault.

< Check indoor unit >

1. Turn off the circuit breaker and disconnect the power supply wiring. Fig. 1
2. Disconnect the inter-unit wiring from the indoor unit terminal plate. Fig. 1
3. Measure insulation resistance of indoor unit.

↓

Does the insulation resistance read 2M ohm or more ?

↓ No

1. Insulation of indoor unit is defective.
2. And measure insulation resistance of electrical parts in indoor unit to specify the insulation fault.

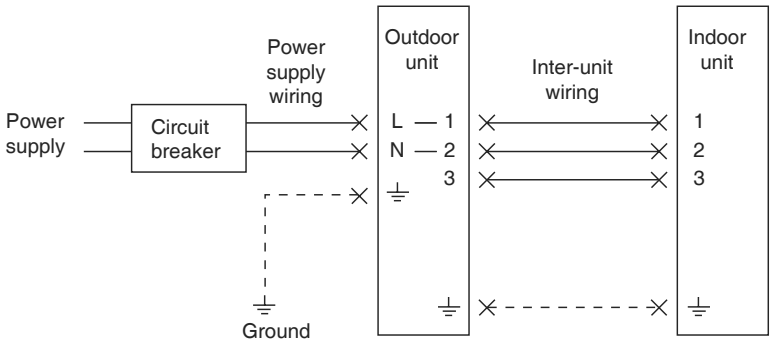
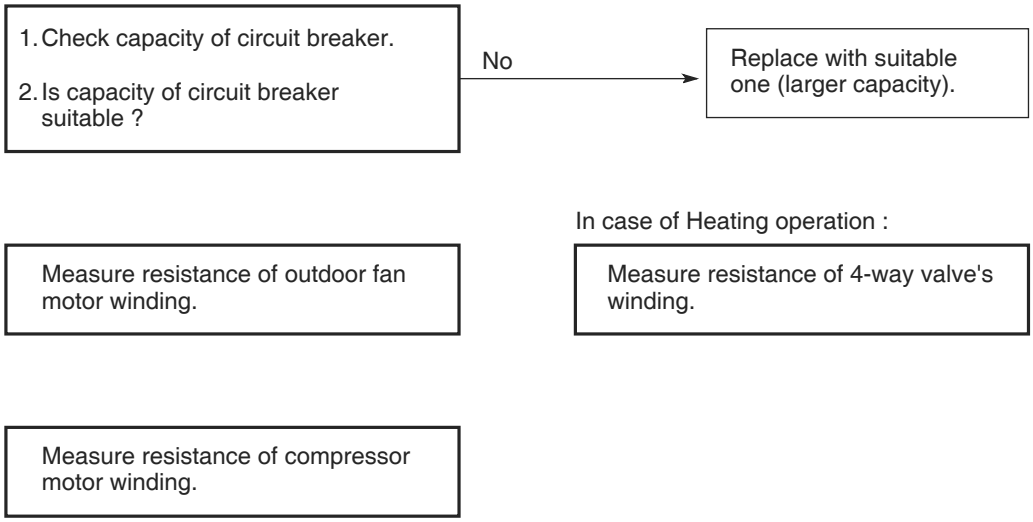


Fig.1

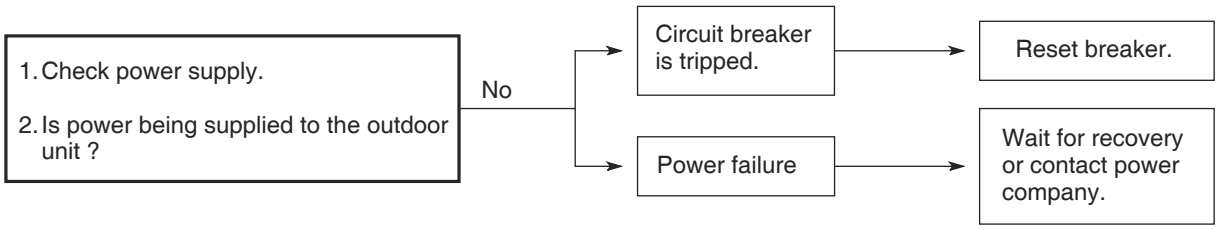
(2) Circuit breaker trips in several minutes after turning the air conditioner on.

● There is a possibility of short circuit.



9-2-2. Neither indoor nor outdoor unit runs.

(1) Power is not supplied.



(2) Check remote control unit.

1. Try to run with another remote control unit.
2. Is the operation good ?

↓ Yes

First remote control unit is defective.

In the case that the remote control transmission section is dirty, clean it.

In the case that the remote control reception section in front of indoor unit is dirty, clean it.

(3) Check fuse on the indoor P.C.Board.

1. Check fuse (F) on indoor P.C.Board for continuity.
2. Is fuse blown ?

→ Yes → Replace the fuse.

↓ No

Is operation lamp ON ?

→ Measure resistance of indoor and outdoor fan motor (FM) winding.

↓ No

Indoor P.C.Board is defective.

→ Measure resistance of compressor motor (CM) winding.

(4) Check TIMER on the remote control unit.

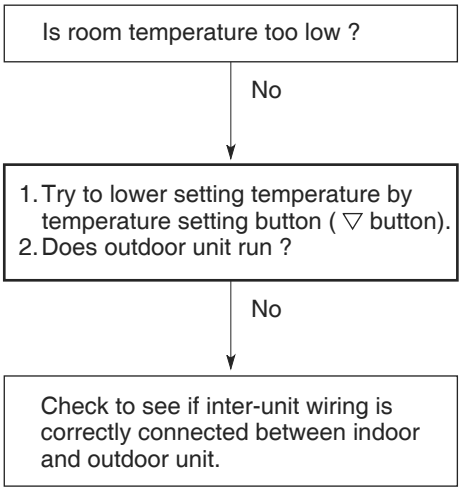
1. Is timer turned ON ?
2. Is ON displayed on remote control ?

→ Yes → Cancel the timer mode.

9-2-3. Only outdoor unit does not run.

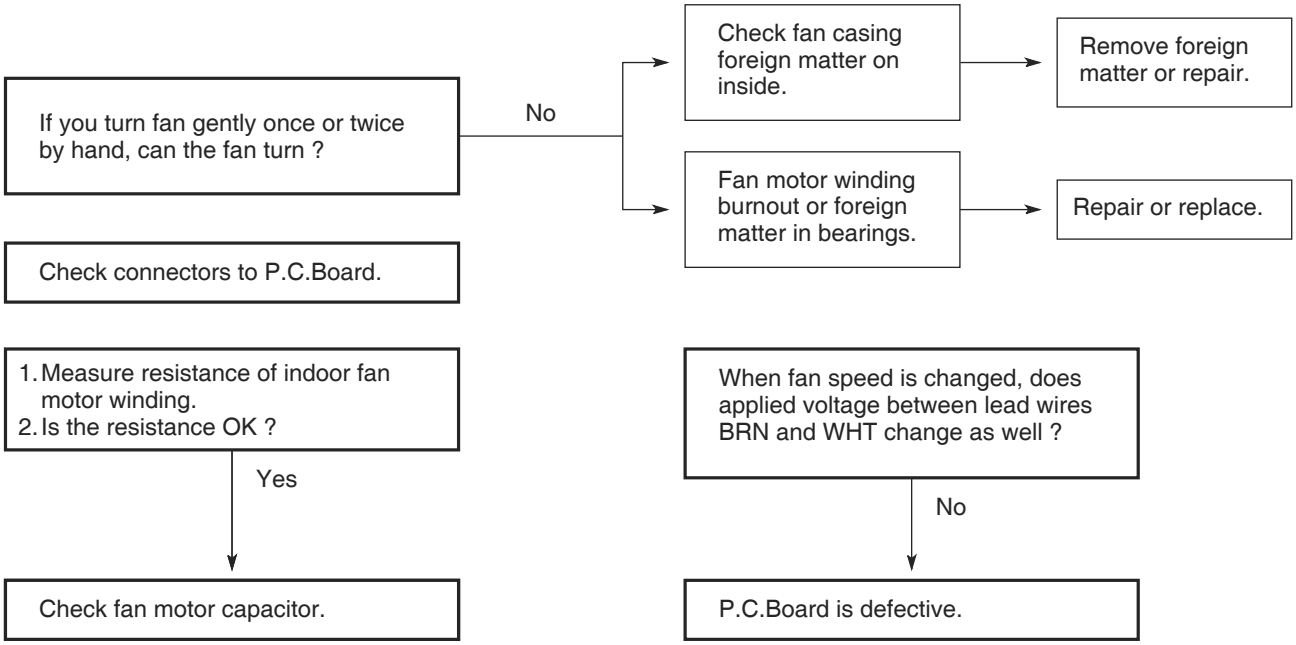
(1) Check setting temperature.

COOL



9-3. Some part of air conditioner does not operate.

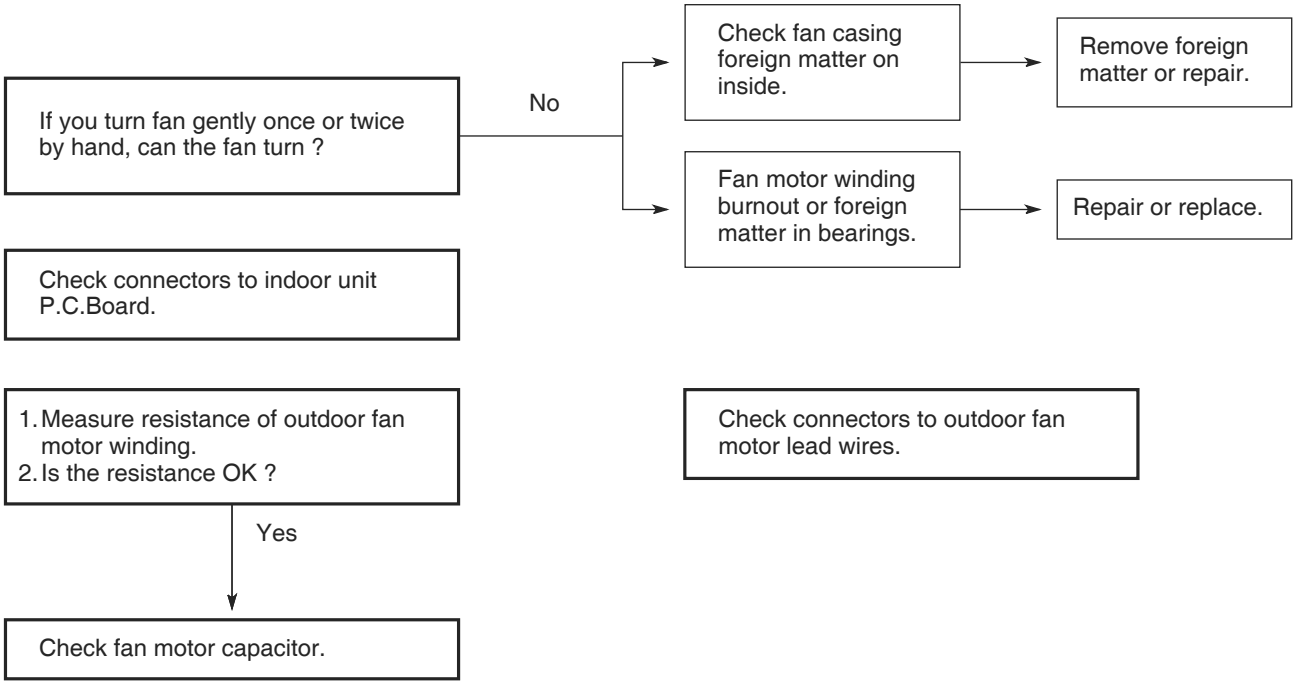
9-3-1. Only indoor fan does not run.



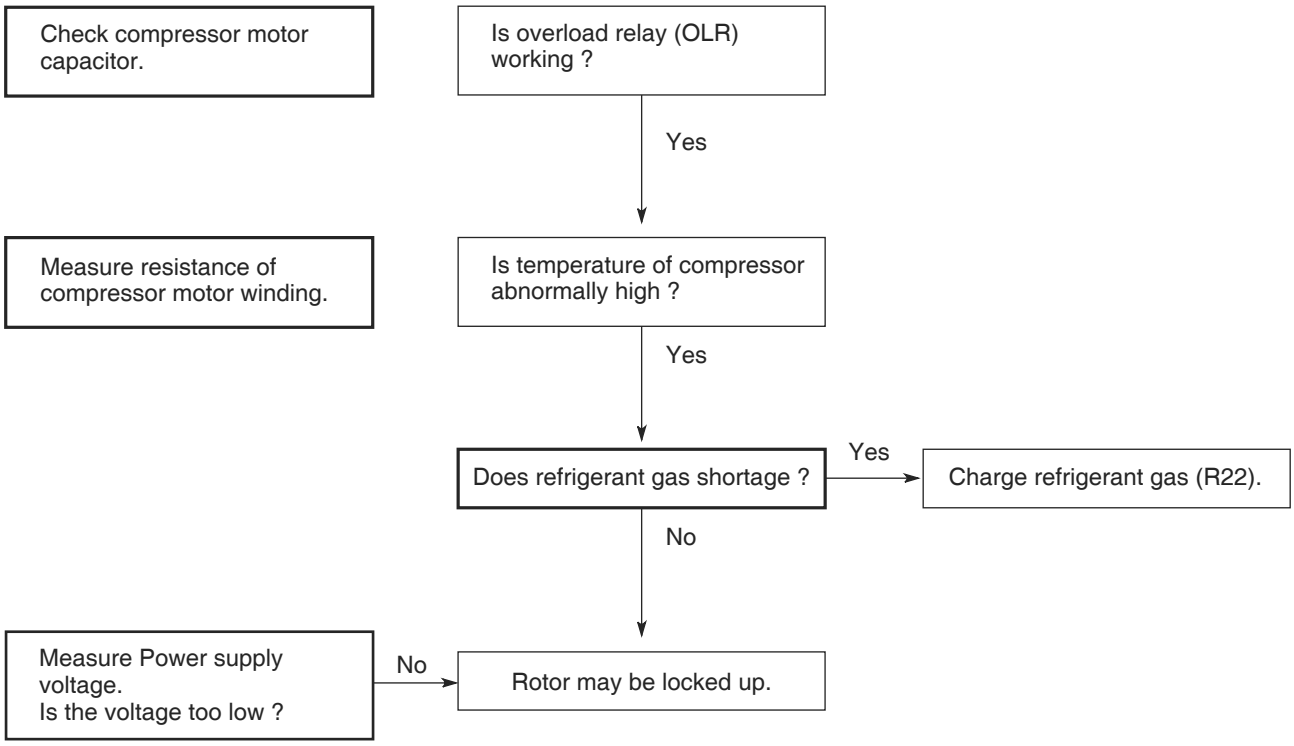
9-3-2. Only flap motor does not run.

Measure resistance of flap motor winding and check the connector.

9-3-3. Only outdoor fan does not run.

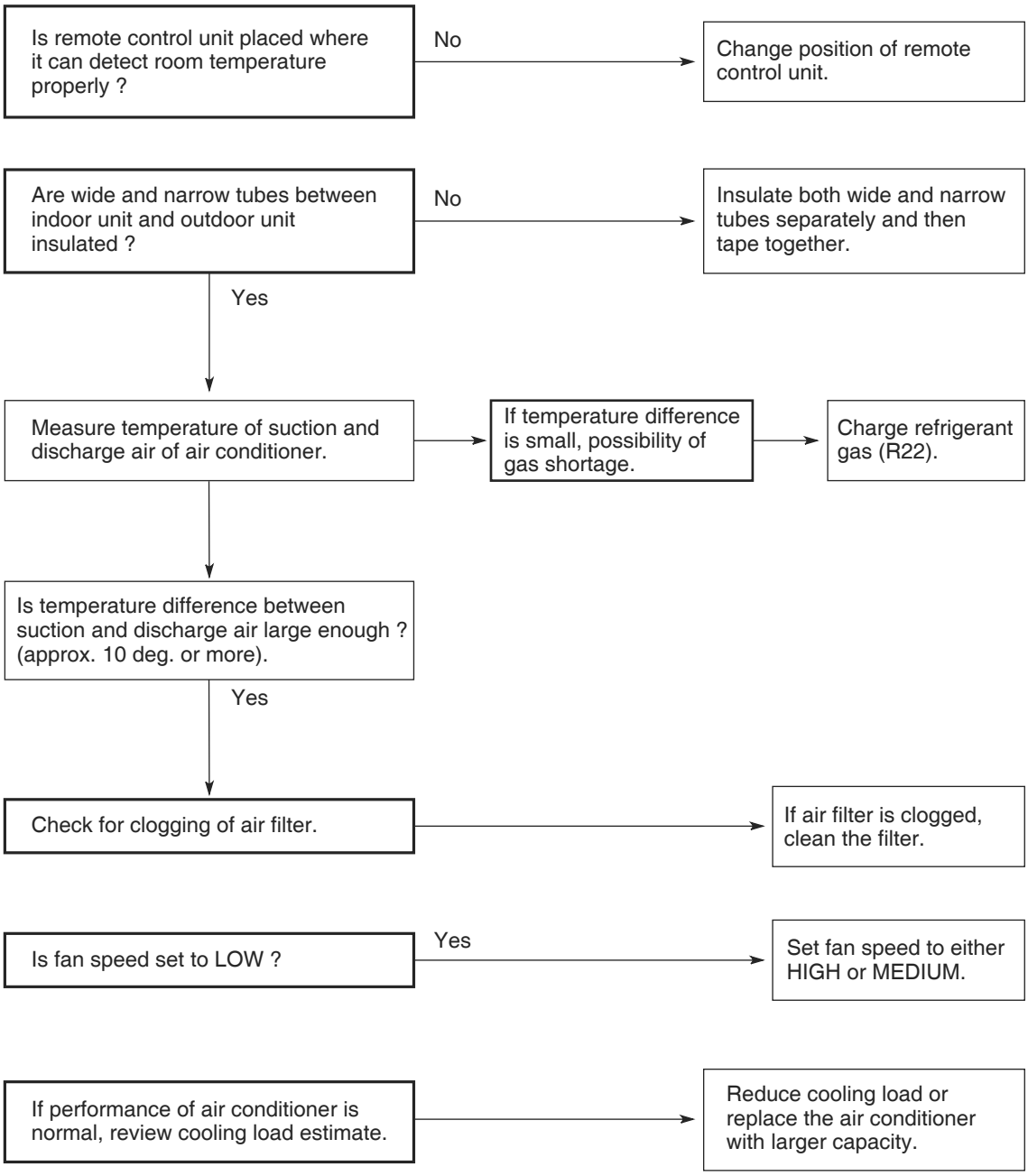


9-3-4. Only compressor does not run.

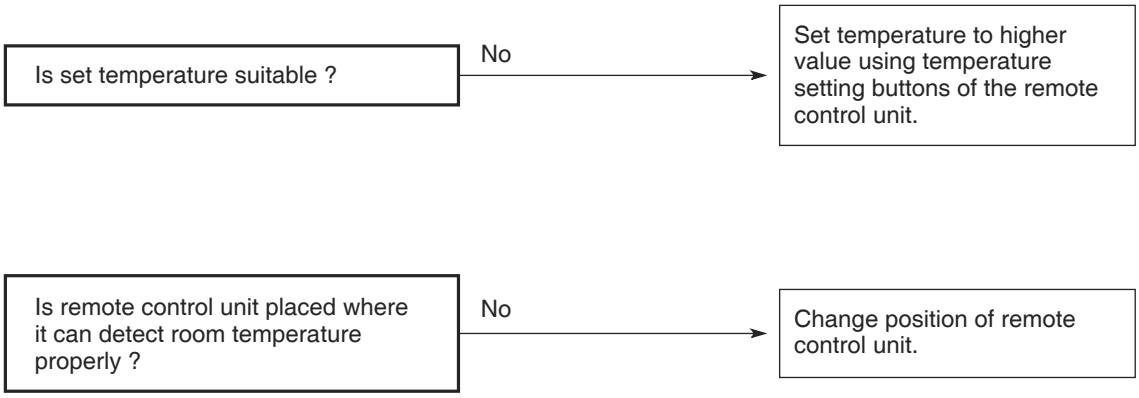


9-4. Air conditioner operates, but abnormalities are observed.

9-4-1. Poor cooling.



9-4-2. Excessive cooling.



10. CHECKING ELECTRICAL COMPONENTS

10-1. Measurement of Insulation Resistance

- The insulation is in good condition if the resistance exceeds 2M ohm.

10-1-1. Power Supply Cord

Clamp the grounding wire of power cord with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on either of the two power wires. (Fig. 1)
Then also measure the resistance between the grounding and other power wire. (Fig. 1)

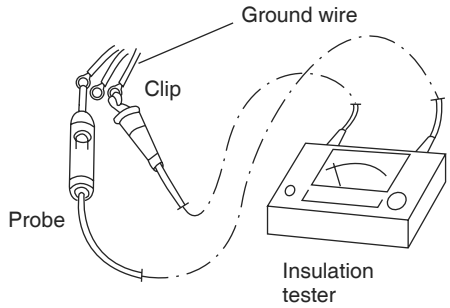


Fig. 1

10-1-2. 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 on the terminal plate. (Fig. 2)
Note that the ground line terminal should be skipped for the check.

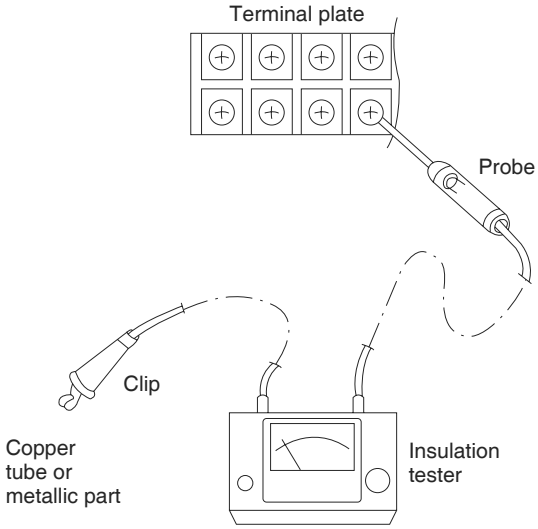


Fig. 2

10-1-3. 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)

10-1-4. 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.

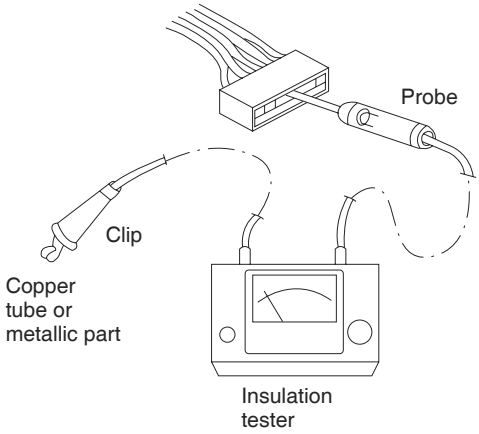


Fig. 3

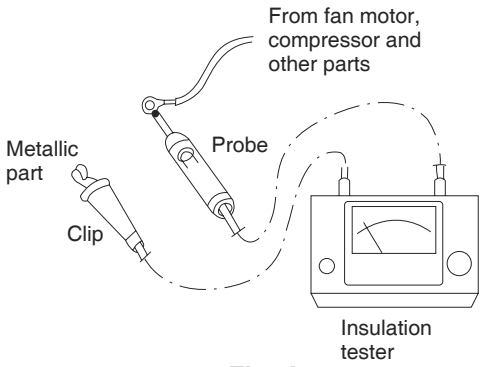


Fig. 4

10-2. Checking Continuity of Fuse on PCB Ass'y

- Remove the PCB Ass'y from the electrical component box. Then pull out the fuse from the PCB Ass'y. (Fig. 5)
- Check for continuity using a multimeter as shown in Fig. 6.

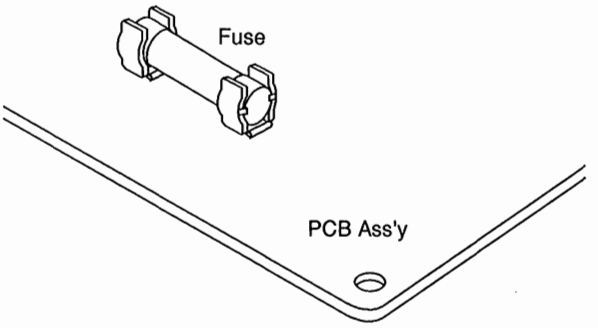


Fig. 5

10-3. 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.

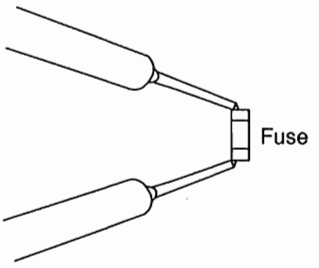


Fig. 6

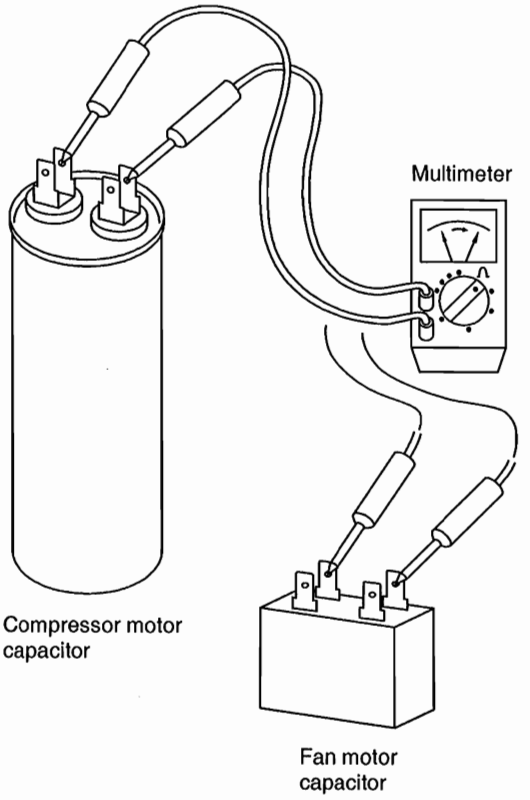


Fig. 7

11. MAINTENANCE

11-1. Address Setting of the Remote Control Unit

The address can be set in order to prevent interference between remote controllers when 2 indoor units are installed near each other. To set a different address, it is necessary to change the address on the second remote controller.

NOTE

Once changed, you cannot restore the original address setting of the air conditioner.

(1) Switch on the power source.

(2) Slide the rear cover of the remote control unit, and cut the jumper wire for address switching using a nipper then draw away the cut wires to prevent short circuit. Slide back the rear cover. When the wire is cut, the address is automatically set to a different address (Fig. 1).

(3) Press and hold the remote controller ECONOMY button and 1HR. TIMER button. Then, press and hold the ACL (Reset) button with a pointed object such as the tip of a pen. After 5 seconds, release the ACL button first, then release the ECONOMY and 1HR. TIMER buttons. "P1" (Test Run) appears, blinking in the remote controller display area.

(4) Each time the 1HR. TIMER button is pressed, the display changes as shown below. Press this button 2 times to change the display to "P7" (Address Setting). (Fig. 2)

P1 Test Run mode
⇩
P3
⇩
P7 Address Setting mode

(5) "P7" has now been selected for address setting.

(6) Press the ON/OFF operation button on the remote controller. (Fig. 2) Check that the "beep" signal-received sound is heard from the second indoor unit (approximately 5 times). The sound you hear is the signal that the remote controller address has been changed.

(7) Finally press the remote controller ACL (Reset) button to cancel the blinking "P7" display. (Fig. 2)

Changing of the second remote controller address is now completed.

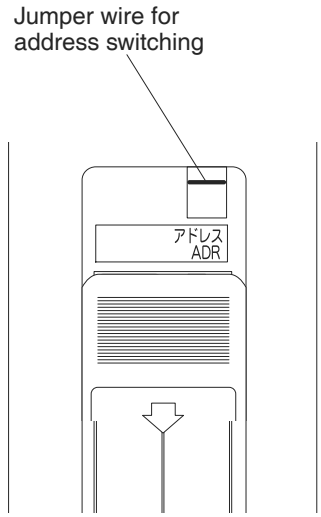


Fig. 1

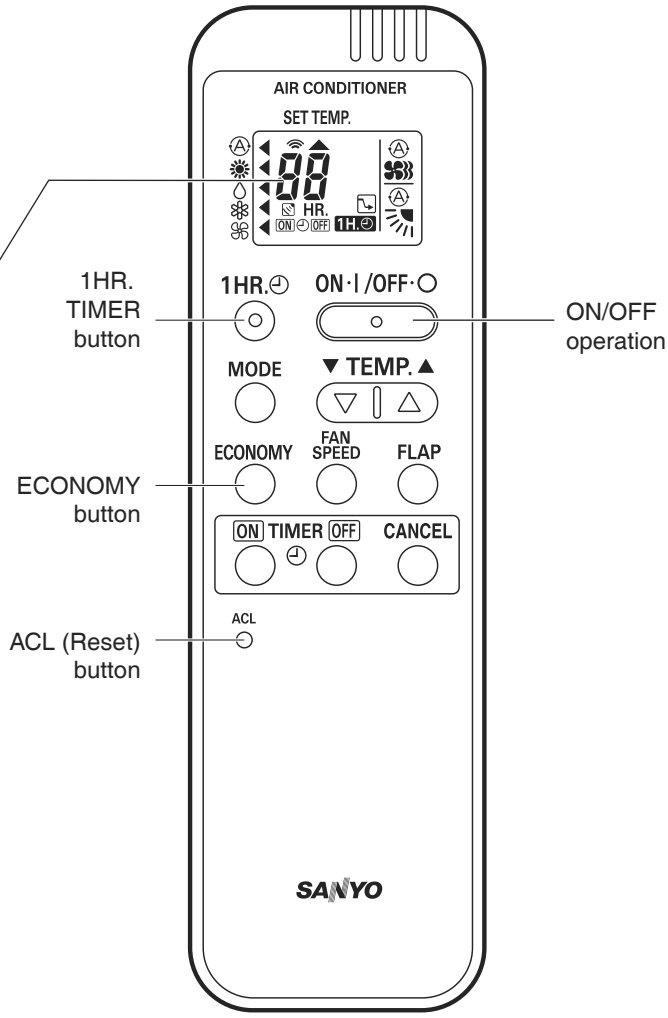


Fig. 2

APPENDIX INSTRUCTION MANUAL

SAP-K77GHAX + SAP-C77GHAX
SAP-K97GHAX + SAP-C97GHAX
SAP-K127GHAX + SAP-C127GHAX

(OI-852-6-4181-106-00-1)

Features

This air conditioner is equipped with cooling, heating, and drying functions. Details on these functions are provided below; refer to these descriptions when using the air conditioner.

- **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.
- **12-Hour ON or OFF Timer**
  This timer can be set to automatically turn the unit on or off at any time within a 12 hour period.
- **1-Hour OFF Timer**
  This timer can be set to automatically turn off the unit at any time after one hour.
- **Economy**
  This function saves energy by controlling operation to provide a quieter operating sound than normal.
- **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.
- **Auto. Flap Control**
  This automatically sets the flap to the optimum position during heating, cooling, and drying operation.
- **Automatic Switching between Cooling and Heating**
  This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.
- **Hot Start Heating System**
  Right from the start, the air is warm and comfortable. This system prevents any cold blasts at the beginning while the heat pump is warming up, or even defrosting.
- **Automatic Restart Function for Power Failure**
  Even when power failure occurs, preset programmed operation can be reactivated once power resumes.
- **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 eliminates unpleasant odors and cleans the air is available.
  Purchase a replacement filter at your local dealer. (model **STK-FWWB**)

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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 _____

DECLARATION OF CONFORMITY

This product is marked « CE » as it satisfies EEC Directive No. 89/336/ EEC, 73/23/EEC, 93/68/EEC and 92/31/EEC.T

This declaration will become void in case of mis-usage and/or from non observance though partial of Manufacturer's installation and/or operating instructions.

Alert Symbols

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

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

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 inaccordance 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.

- **Do not install this air conditioner where there are fumes or flammable gases, or in an extremely humid 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.

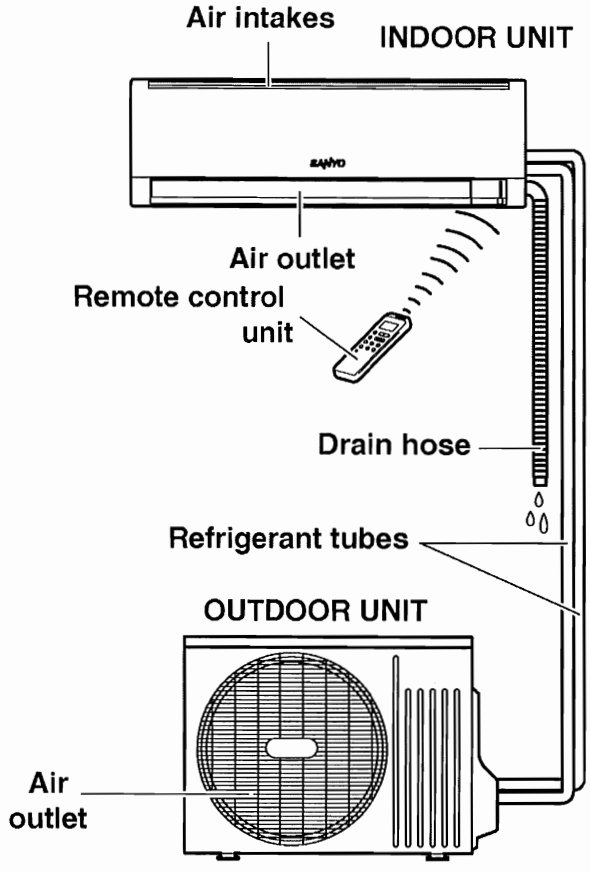
Safety Instructions

- **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.**

- **Never use or store gasoline or other flammable vapor or liquid near 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.**

- **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 or heat the room too much if babies or invalids are present.**
- **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the apliance.**

Names of Parts

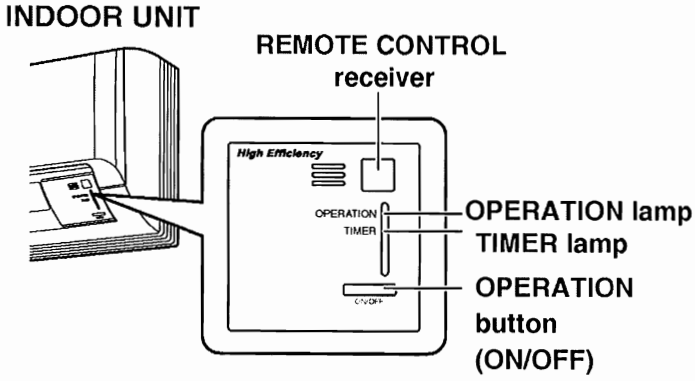


NOTE This illustration is based on the external view of a standard model.Consequently, the shape may differ from that of the air conditioner which you have selected.

This air conditioner consists of an indoor unit 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 Button

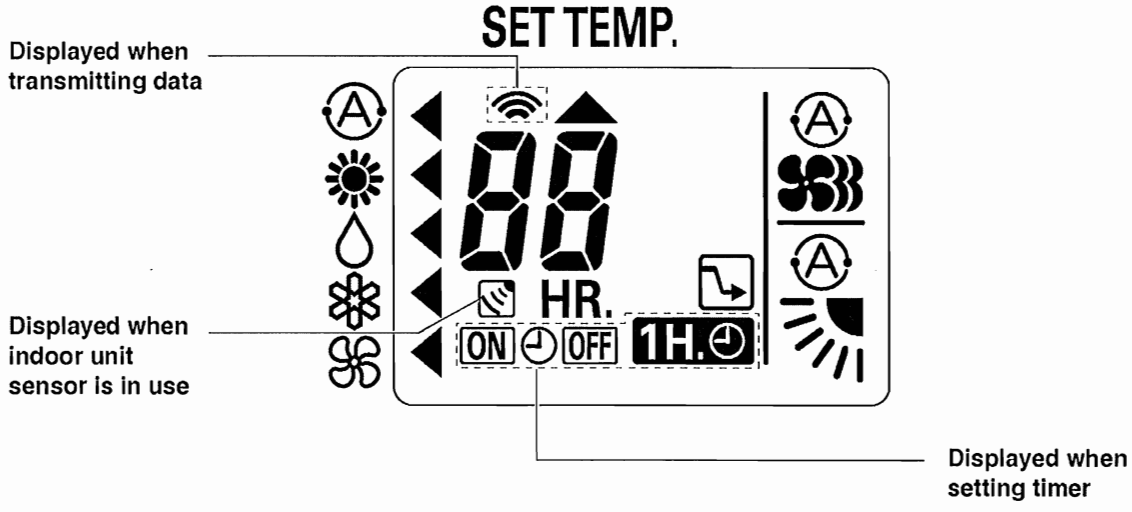


IMPORTANT

Avoid using radio equipment such as mobile phone near (within 1 m) the remote control receiver. Some radio equipment may cause malfunction of the unit.
If the trouble happens, disconnect power and restart the air conditioner after a few minutes.

REMOTE CONTROL receiver	This section picks up infrared signals from the remote control unit (transmitter).
OPERATION button	When the remote control cannot be used, pressing this button enables heating and cooling operation. Each time this button is pressed, the operation mode changes cyclically. COOLING OPERATION → HEATING OPERATION → STOP lamp: on → on → off beeping sound: once, twice, once The type of operation is indicated by the OPERATION lamp lighting and the beeping sound.
OPERATION lamp	This lamp lights when the system is in the continuous DRY, COOL, HEAT and FAN mode.
TIMER lamp	This lamp lights when the system is being controlled by the timer.

Remote Control Unit (Display)



Symbols

(1) Operation mode

AUTO .....

HEAT .....

MILD DRY .....

COOL .....

FAN .....

(2) Fan speed

Automatic operation .....

HIGH .....

MEDIUM.....

LOW .....

(3) Temperature setting
16 – 30 °C
When set to 28 °C
temperature indication.....

SET TEMP.

(4) Timer

12-hour ON Timer. .....

12-hour OFF Timer. .....

1-hour OFF Timer. .....

(5) ECONOMY .....

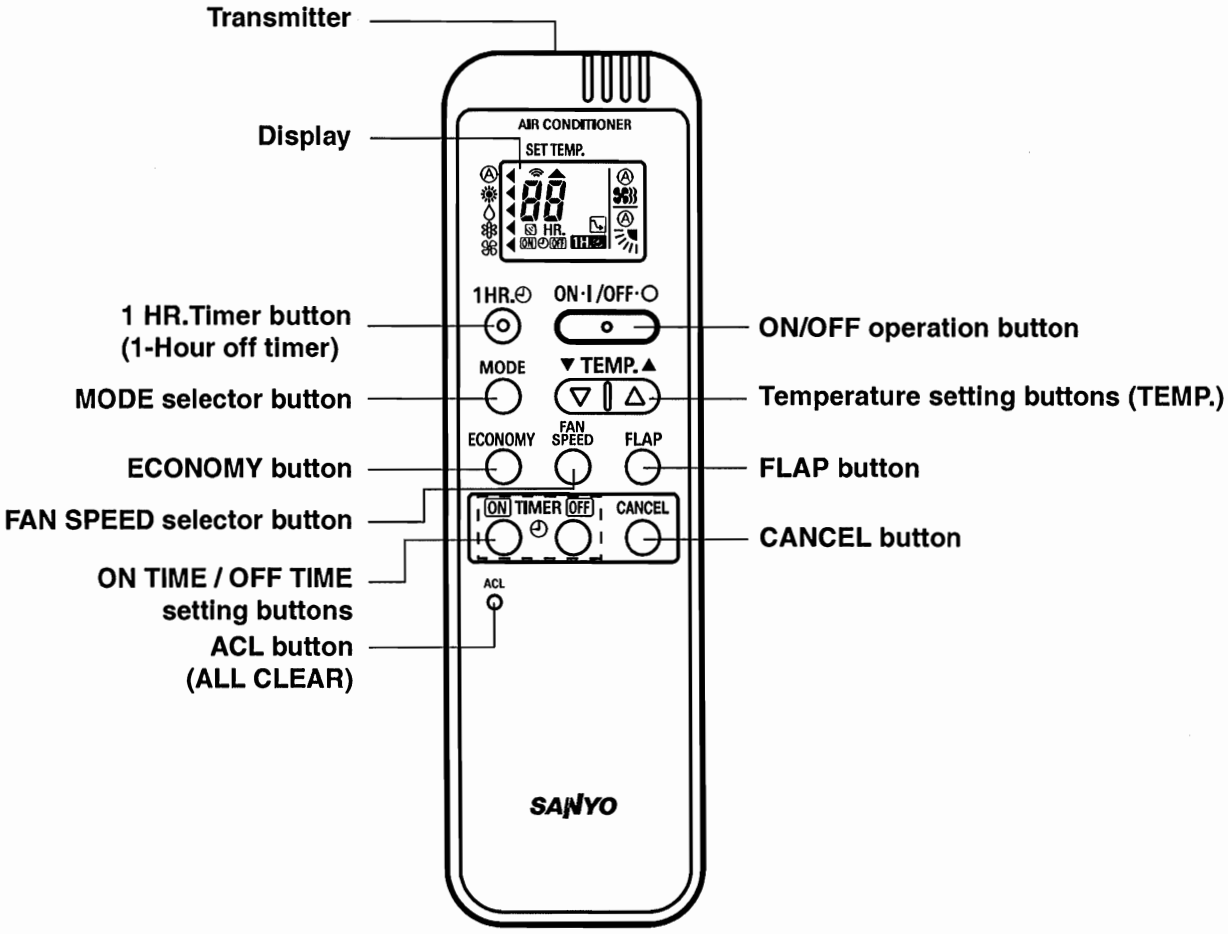
(6) Confirmation
of transmission.....

(7) Auto. flap indication.....

Flap angle indication.....

Sweep indication.....

Remote Control Unit

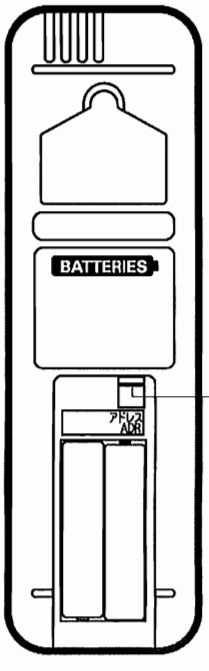


Transmitter	When you press the buttons on the remote control unit, the ⩇ mark appears in the display to transmit the setting changes to the receiver in the air conditioner.
Display	Information on the operating conditions is displayed while the remote control unit is switched on. If the unit is turned off, FLAP setting and FAN SPEED setting are not displayed.
ON/OFF operation button	This button is for turning the air conditioner on and off.
MODE selector button	Use this button to select AUTO, HEAT, DRY, COOL or FAN mode.
(AUTO)	Ⓐ : When this setting is selected, the air conditioner calculates the difference between the thermostat setting and the room temperature and automatically switches to the "COOL" or "HEAT" mode as appropriate.
(HEAT)	☀ : The air conditioner makes the room warmer.
(DRY)	💧 : The air conditioner reduces the humidity in the room.
(COOL)	❄ : The air conditioner makes the room cooler.
(FAN)	: The air conditioner works only as a circulation fan.
Temperature setting buttons (TEMP.)	Press the ▲ button to increase the set temperature. Press the ▼ button to reduce the set temperature. The temperature setting changes by 1°C each time one of the TEMP. buttons is pressed.
1 HR. TIMER button (1-HOUR OFF TIMER)	1H. : When you press this button, regardless of whether the unit is operating or stopping, the unit operates for one hour and then shuts down.

Remote Control Unit (continued)

ON TIME/OFF TIME setting buttons	No display: The timer does not operate. ON : The air conditioner starts at the set time. OFF : The air conditioner stops at the set time.
FAN SPEED selector button	Ⓐ : The air conditioner automatically decides the fan speeds. : High fan speed : Medium fan speed : Low fan speed
ECONOMY button	For details, see "5. ECONOMY Mode". When you press this button in the HEAT, DRY or COOL mode, the mark appears in the display, and the remote control unit will automatically adjust the set temperature to save energy.
FLAP button	Press this button either to select the setting of the airflow direction to the auto. flap in each mode or one of the six possible positions manually or to select the sweep function which moves the flap up and down automatically. Ⓐ: Auto flap setting: If selected in a heating operation, the flap is set to position (3) in the following chart. If selected in a cooling or dry operation, the flap is set at position (7) in the following chart. : The airflow direction can be set manually. (six positions) : The flap moves up and down automatically.
NOTE	When you press the FLAP button, the air flow direction will be changed one by one as follows. (1) Ⓐ → (2) → (3) → (4) → (5) → (6) → (7) → (8) SWEEP
CANCEL button	After using the TIMER ON button or TIMER OFF button to set the timer, press this button to cancel the setting.
ACL button (ALL CLEAR)	Puts the remote control unit into pre-operation status. Always press this button after replacing the batteries.

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 15 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.



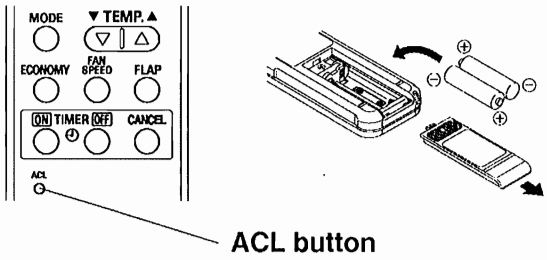
Back side of remote control unit (Cover removed)

Jumper wire for address switching

- The address switch changes to prevent mixing of signals from remote control units when two air conditioners are installed next to each other. For more information, please contact the dealer where you made the purchase.

Using the Remote Control Unit

How to Install Batteries

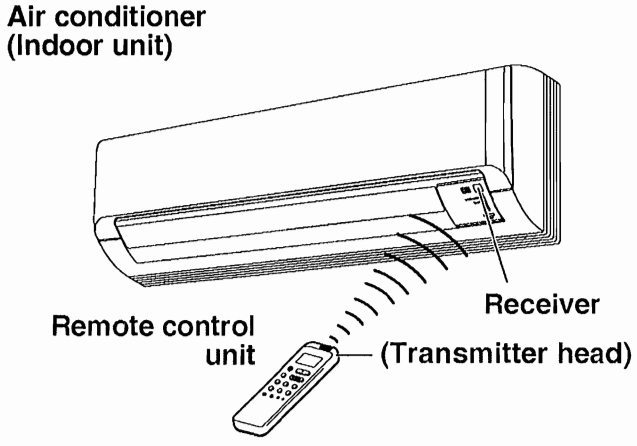


1. Slide the cover in the direction indicated by the arrow and remove it.
2. Install two AAA alkaline batteries. Make sure the batteries point in the direction marked in the battery compartment.
3. Use a thin object such as the tip of a pen to press the ACL button.

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.



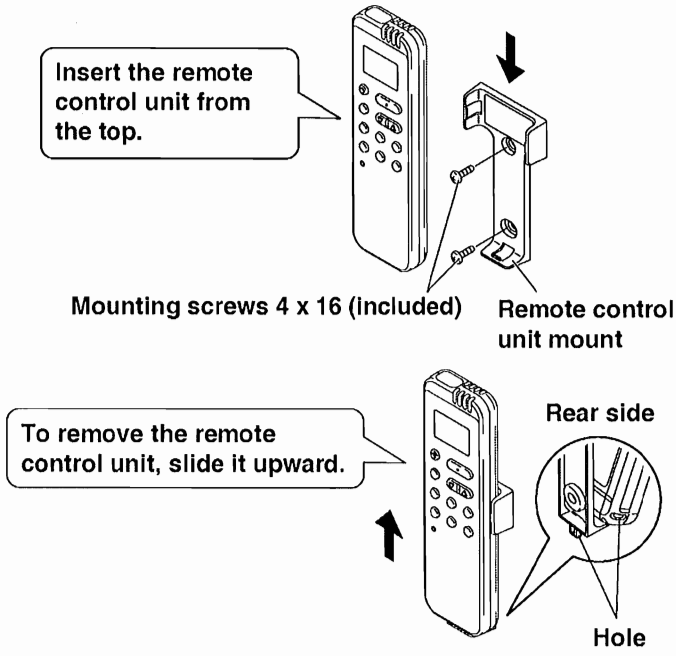
Remote Control Unit Installation Position

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)

Mounting the Remote Control Unit

Before mounting the remote control unit, press the ON/OFF operation 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.



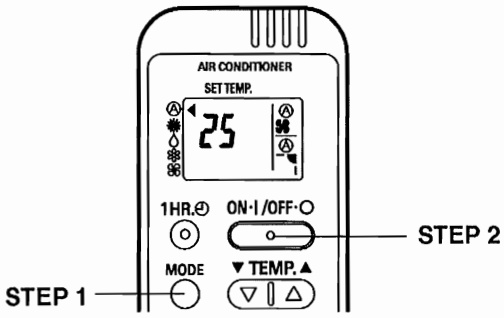
- To prevent loss of the remote control unit, you can connect the remote control unit to the mount by passing a string through the remote control unit and attachment hole. **To take out the remote control unit, pull it forward.**

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



This unit automatically switches between cooling operation and heating operation according to the difference between the room temperature and the temperature setting.

NOTE Check that the circuit breaker on the power panel is turned on.

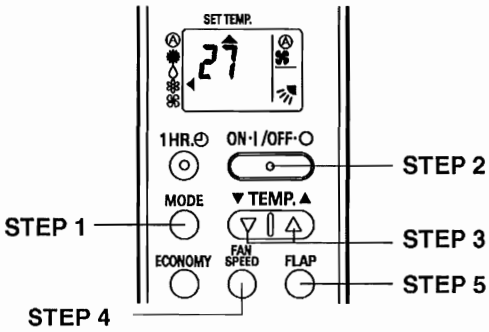
Once Ⓐ mode is selected and the unit is preset by following the steps below, you can have the air conditioner automatically bring the room to the desired temperature simply by pressing the ON/OFF operation button.

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

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

NOTE To change the temperature setting; press the temperature setting buttons and change the setting to the desired temperature.

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 heating operation → For dehumidifying operation → For cooling operation → For fan only operation →
STEP 2	To start the air conditioner, press the ON/OFF operation button.
STEP 3	Press the TEMP. 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.
STEP 5	Press the FLAP button and set the airflow direction as desired. (Refer to "Adjusting the Airflow Direction" on page 13.)

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

NOTE
- Choose the best position in the room for the remote control unit, which transmits the operating instructions. Once you've found this best position, always keep the remote control unit there.
- This appliance has a built-in 5-minute time delay circuit to ensure reliable operation. When the operation button is pressed, the compressor will start running within three minutes. In the event of power failure, the unit will stop.

Operation with the Remote Control Unit (continued)

3. Adjusting the Fan Speed

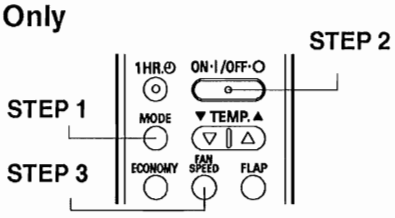
A. Automatic fan speed

Simply set the FAN SPEED selector button to the Ⓐ position. This automatically sets the best fan speed for the room temperature.

B. Manual fan speed

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

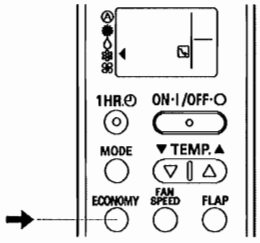
4. Fan Only



If you want to circulate air without any temperature control, follow these steps:

STEP 1	Press the MODE selector button to switch to the fan mode .
STEP 2	Press the ON/OFF operation button.
STEP 3	Press the FAN SPEED selector button to select the fan speed of your choice (, or).

5. ECONOMY Mode



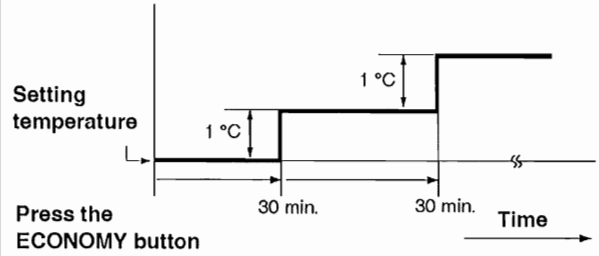
ECONOMY Mode is used for saving energy.

Press the ECONOMY button while operation. The mark appears in the display.

To release the economy function, press the ECONOMY button again.

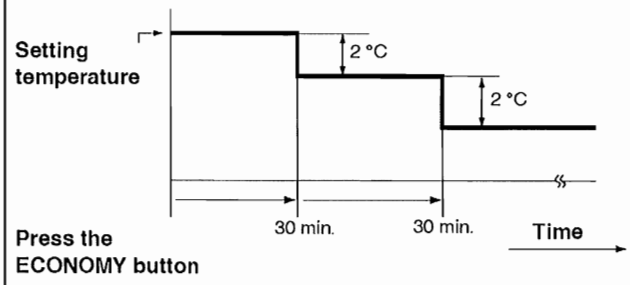
A. In Cooling and DRY Mode: (and)

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



B. In Heating Mode: ( )

When the ECONOMY mode is selected, the air conditioner automatically lowers the temperature setting 2 °C when 30 minutes have passed after the selection was made, and then another 2 °C after another 30 minutes have passed, regardless of the indoor temperature when economy was selected. This enables you to save energy without sacrificing comfort. This function is convenient when gentle heating is needed.



Special Remarks

"DRY" (💧) Operation

How it works?

- Once the room temperature reaches the level that was set, the unit repeats the cycle of turning on and off automatically.
- During DRY operation, the fan speed is automatically set to Low speed for providing a comfortable breeze.
- "DRY" operation is not possible if the indoor temperature is 15 °C or less.

Heating (☀) Operation

Heating performance

- Because this air conditioner heats a room by drawing in the heat of the outside air (heat pump system), the heating efficiency will fall off when the outdoor temperature is very low. If sufficient heat cannot be obtained with this air conditioner, use another heating appliance together with it.

Defrosting

- When the outdoor temperature is low, frost or ice may form on the heat exchanger coil, reducing heating performance. When this happens, a microcomputer defrosting system operates. At the same time, the fan on the indoor unit stops and the OPERATION lamp lights until defrosting is completed. Heating operation restarts after several minutes. (This interval will vary slightly depending upon the outdoor temperature and the way in which frost forms.)

Cold draft prevention

- For several minutes after the start of heating operation,the indoor fan will not start running until the indoor heat exchanger coil has warmed up sufficiently. However, the fan may remain stopped when the room temperature is low. This is because the COLD DRAFT PREVENTION SYSTEM is in operation.

Power failure during operation

- In the event of power failure, the unit will stop. When the power is resumed, the unit will restart automatically within five minutes by the remote control unit.

Clicking Sound

Clicking sound is heard from the air conditioner

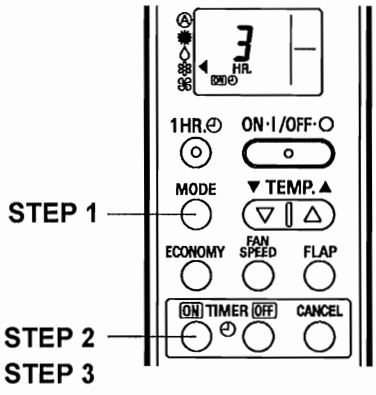
- In heating or cooling operation, any plastic parts may expand or shrink due to a sudden temperature change. In this event, a clicking sound may occur. This is normal, and the sound will soon disappear.

Remote Control Unit

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

Using the 12-Hour ON and OFF Timer

1. TIMER ON mode (Example)



The timer times appear in the display for only 3 seconds.

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

The display depicted above indicates that the air conditioner will begin operating in three hours.

Setting procedure:

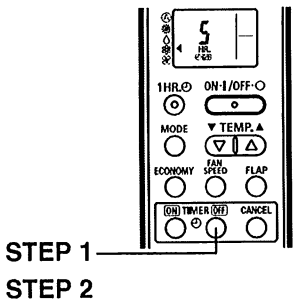
STEP 1	Press the MODE button and set the desired operation mode. (See "Operation with the Remote Control Unit," page 9.)
STEP 2	Press the TIMER ON button.
STEP 3	Press the TIMER ON button (which advances the time displayed) to set the time at which you want operation to begin. The time can be set for one to twelve hours, in one hour steps. → 1 → 2 → 3.....12 →

- 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 again.

Cancellation procedure: Press the CANCEL button.

NOTE If you do not operate the remote control unit for 25 hours or more after the start of ON timer operation, the unit will stop operating automatically as a safety measure in case you forget to turn off the air conditioner.

2. TIMER OFF mode (Example)



The timer times appear in the display for only 3 seconds.

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

The display depicted above indicates that the air conditioner will stop operating in five hours.

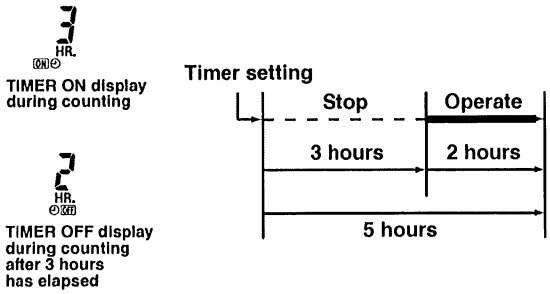
Setting procedure:

STEP 1	Press the TIMER OFF button.
STEP 2	Press the TIMER OFF button (which advances the time displayed) to set the time at which you want operation to stop. The time can be set for one to twelve hours, in one hour steps. → 1 → 2 → 3.....12 →

- 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 again.

Cancellation procedure: Press the CANCEL button.

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.

(Example) The unit will turn on three hours from now, and turn off five hours from now.

Setting procedure:

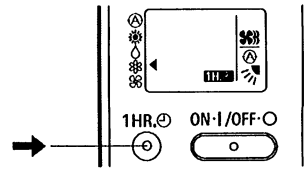
STEP 1	Use the procedure described in the "1. TIMER ON mode" section on the preceding page to set the timer to turn the unit on three hours
STEP 2	Use the procedure described in the "2. TIMER OFF mode" section on the preceding page to set the timer to turn the unit off five hours.

- The display changes immediately to its status previous to timer setting, but the ON◷ or ◷OFF indication remains.
- Press the TIMER ON button or the TIMER OFF button to display the time remaining on the timer in seconds.
- Note that it is not possible to check both the ON and OFF timer settings. The timer setting that will occur first is given preference and displayed.

Cancellation procedure: Press the CANCEL button.

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 1H.◷ 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.

1H.◷ 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

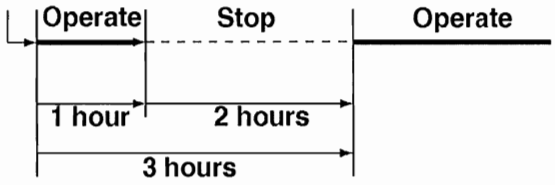
- If, while the 1-Hour Timer function is operating, the 1HR. TIMER button is pressed once to cancel the function and then again, the unit continues to operate for one hour from that point in time and then stops.
- It is not possible to use the OFF Timer and 1-Hour OFF Timer together. Whichever function is set last takes precedence. 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.
- **Do not use the 1-Hour OFF Timer when both TIMER ON and TIMER OFF are set simultaneously. If the 1-Hour OFF Timer has been set, press the TIMER OFF button, then the CANCEL button to operate both the 1-HourOFF Timer and ON Timer simultaneously.**

2. Combining the 1-Hour OFF Timer and 12-Hour ON Timer

By combining the 1-Hour OFF Timer and 12-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.

(Example) Having the unit operate for just one hour from the present time, and then switch on again three hours from the present time.

Timer setting



Setting procedure:

STEP 1	Press the 1 HR. TIMER button.
STEP 2	Press the TIMER ON button. Then press it again to set the unit to turn on three hours later.

NOTE

- **Set the 1-Hour OFF Timer and the 12-Hour ON Timer simultaneously.**
  Unless you set the 1-Hour OFF Timer and the 12-Hour ON Timer at the same time, the 1-Hour OFF Timer may operate for one hour or more.

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.

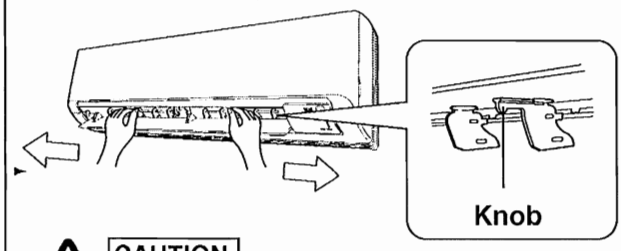
Do

- 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.

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.

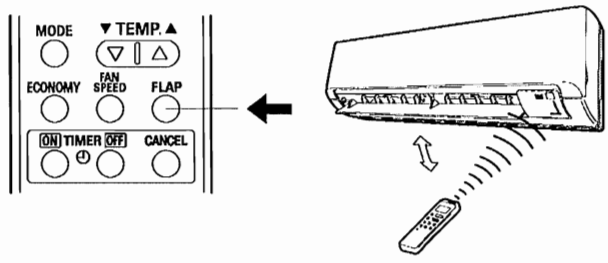


CAUTION

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.may begin to form around the air vent and drip down.

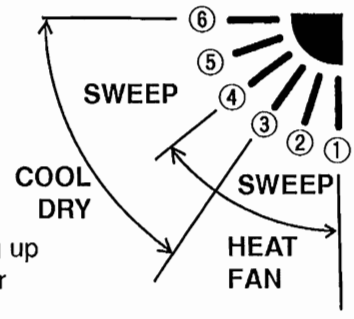
2. Vertical

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 heating, cooling, or dehumidifying operation.

C. Auto flap function

The flap is set to the recommended position.

NOTE

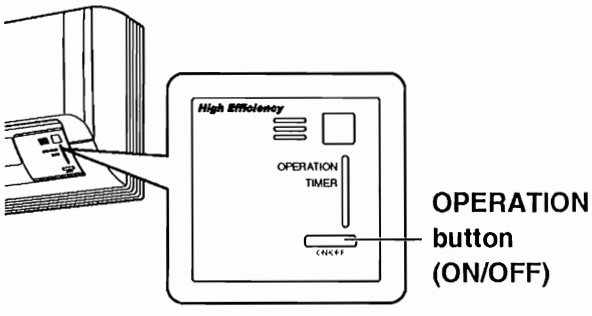
- The flap automatically closes when the unit is off.
- During the heating operation, the fan speed will be very low and the flap will be in the horizontal position (position ⑥) until the air being blown out of the unit begins to warm. Once the air warms up, the flap position and fan speed change to the settings specified with the remote control.

CAUTION

- **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**
- **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



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

When the air conditioner is not running

Each time the ON/OFF button is pressed, the operation mode changes cyclically.

	COOLING OPERATION	HEATING OPERATION	STOP
lamp	on →	on →	off
beeping sound	once	twice	once

The type of operation is indicated by the OPERATION lamp lighting and the beeping sound.

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

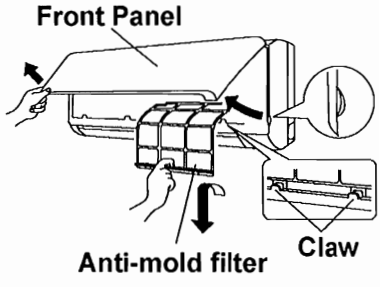
1. **Never use solvents, or harsh chemicals when cleaning the indoor unit. Do not wipe the plastic casing using very hot water.**
2. **Some metal edges and the fins are sharp and may cause injury if handled improperly; be especially careful when you clean these parts.**
3. **The internal coil and other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

Anti-Mold Filter

The anti-mold filter behind the Front Panel should be checked and cleaned at least once every two weeks.

How to remove the anti-mold filter

Grasp both ends of the front panel and pull forward and up to open the front panel. Lift the anti-mold filter up slightly to disengage the protrusions from the hooks on the unit, and then pull downward to remove the filter from the unit.



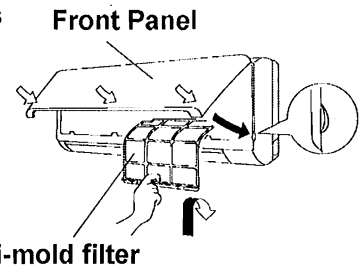
Care and Cleaning (continued)

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

Insert the top of the anti-mold filter, and then fit the protursions on the bottom of the filter all the way into the hooks on the unit.
Press the locations marked by the arrows and close the front panel.



Air Clean Filter

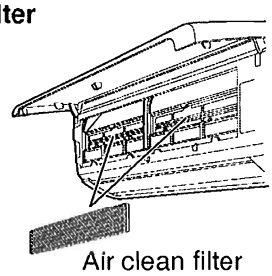
The air clean filter removes dust and dirt from the air, and reduces odors andsmoke from tobacco.

WARNING

This air clean filter cannot remove harmful gases or vapors nor ventilateair 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 clean filter

The air clean filter needs to be installed behind the anti-mold filter.
Open the frontpanel and remove the anti-mold fitlers, then install the air clean filter in the position shown in thefigure.
After that, remount the anti-mold filters and close the front panel.


Air clean filter

NOTE

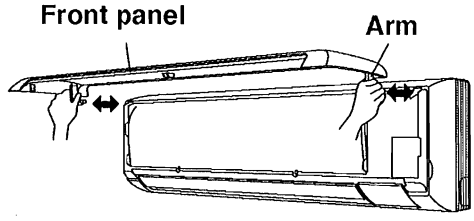
- Do not bend nor give excessive force onto the air the air clean filter.
- If the filter surface is heavily blocked with dirt or damaged, replace it with new one.
  Purchase a replacement filter at your local dealer. (model: **STK-FWWB**)

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.

Removing and remounting the front panel

1. Open the front panel until it is nearly horizontal, grasp the sections near the front panel arms on` remove the panel by pushing the arms towards the outside both sides, and then while pulling the panel towards you.



2. Grasp the sections near the front panel arms on both sides, and hold the front panel so that it is nearly horizontal. Push the arm shafts towards the outside so that they come into contact with the top of the indentations on the right and left sides of the air conditioner. Then push firmly until the arm shafts click into place. After closing the front panel, press firmly on the parts indicated by the arrows to securely fasten the panel in place.
   Also refer to the figure that shows "How to replace the anti-mold filter".

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

Washing the front panel 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.

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 circuit breaker tripped. 3. Line voltage is too low. 4. Batteries in remote control unit have run down.	1. Restore power. 2. Contact service center. 3. Consult your electrician or dealer. 4. Replace batteries.
OPERATION lamp blinks and air conditioner does not operate.	Trouble in system.	Contact service center.
Compressor runs but soon stops.	Obstruction in front of condenser coil.	Remove obstruction.
Poor cooling (or heating) performance.	1. Dirty or clogged air filter. 2. Heat source or many people in room.	1. Clean air filter to improve airflow. 2. Eliminate heat source if possible.
Poor cooling (or heating) performance.	3. Doors and/or windows are open. 4. Obstacle near air intake or air discharge port. 5. Thermostat is set too high for cooling (or too low for heating). 6. (Outdoor temperature is too low for heating.)	3. Shut them to keep the heat (or cold) out. 4. Remove it to ensure good airflow. 5. Set the temperature lower (or higher). 6. (Consult your dealer or try to use another heat appliance.)
Clicking sound is heard from the air conditioner.	In heating or 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.	The use of cellular phones near the air conditioner may cause disturbance to its normal operation.	1. Turn off the power then restart the air conditioner after a while. 2. Consult your dealer.

Operating Range

The air conditioner is operable within the temperature ranges as listed below:

	Temperature	Indoor air temperature	Outdoor air temperature
COOLING	Max.	32 °C DB / 23 °C WB	43 °C DB
	Min.	19 °C DB / 14 °C WB	19 °C DB
HEATING	Max.	27 °C DB	24 °C DB / 18 °C WB
	Min.	16 °C DB	–8 °C DB / –9 °C WB

SANYO Electric co., Ltd.
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