2. WALL MOUNTED TYPE ROOM AIR-CONDITIONER

(Split system, Air to air heat pump type)

2.1 SRK20HD-S SRK20HC-S1
SRK28HD-S SRK28HC-S1
SRK40HD-S SRK40HC-S1 142

2.2 SRK50HE-S
SRK56HE-S 180

2.3 SRK63HE-S
SRK71HE-S 215

CONTENTS

2.1.1 GENERAL INFORMATION 143
(1) Specific features 143
(2) How to read the model name 143
2.1.2 SELECTION DATA 144
(1) Specifications 144
(2) Range of usage & limitations 150
(3) Exterior dimensions 150
(4) Piping system 152
(5) Selection chart 153
2.1.3 ELECTRICAL DATA 154
(1) Electrical wiring 154
2.1.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 155
(1) Operation control function by remote control switch 155
(2) Unit ON/OFF button 156
(3) Power blackout auto restart function 156
(4) Flap control 157
(5) Comfortable timer setting 157
(6) Outline of heating operation 158
(7) Outline of cooling operation 161
(8) Outline of dehumidifying operation 162
(9) Automatic operation 163
(10) Outline of fan operation 163
(11) Protective control function 164
2.1.5 APPLICATION DATA 166
(1) Selection of location for installation 167
(2) Installation of indoor unit 168
(3) Installation of outdoor unit 170
(4) Refrigerant piping 170
(5) Test run 172
(6) Precautions for wireless remote controller installation and operation 173
2.1.6 MAINTENANCE DATA 174
(1) Trouble shooting 174
(2) Servicing 179
2.1.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A 179

2.1.1 GENERAL INFORMATION

(1) Specific features

The “Mitsubishi Daiya” room air-conditioner: SRK series are of split and wall mounted type and the unit consists of indoor unit and outdoor unit with refrigerant precharged in factory. The indoor unit is composed of room air cooling or heating equipment with operation control switch and the outdoor unit is composed of condensing unit with compressor.

(a) Remote control flap

The flap can be automatically controlled by operating wireless remote controller.

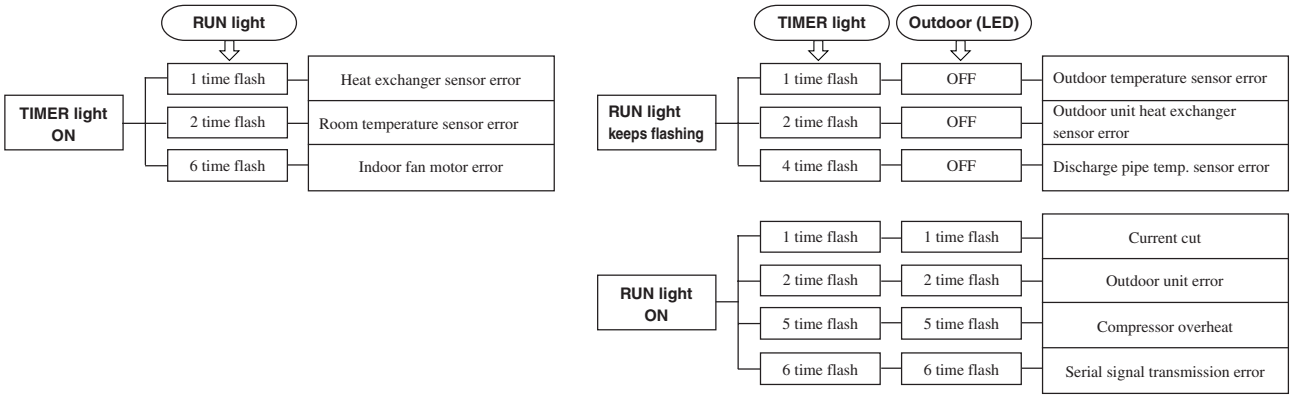
- Air scroll: Flap operation is automatically control.
- Swing: This will swing the flap up and down.
- Memory flap: Once the flap position is set, the unit memorizes the position and continues to operate at the same position from the next time.

(b) Automatic Operation

When the remote control switch is set on “auto (△)”, it will either automatically decide operation mode such as cooling, heating and thermal dry, or operate in the operation mode before it has been turned to automatic control.

(c) Self diagnosis function

- We are constantly trying to do better service to our customers by installing such judges that show abnormality of operation as follows.



(2) How to read the model name

Example : SR K 40 H D - S

- S — R410A models
- D — Series No.
- H — Heat pump type
- 40 — Product capacity
- K — Wall mounted type
- SR — Split type room air-conditioner

2.1.2 SELECTION DATA

(1) Specifications

Model SRK20HD-S (Indoor unit)
SRC20HD-S (Outdoor unit) **(220/230/240V)**

Item				Model	SRK20HD-S	SRC20HD-S
Cooling capacity(1)				W	2050	
Heating capacity(1)				W	2200	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	0.63	
	Running current (Cooling)			A	3.1/3.0/2.9	
	Heating input			kW	0.6	
	Running current (Heating)			A	3.0/2.9/2.8	
	Inrush current			A	18.9	
	COP				Cooling: 3.21 Heating: 3.61	
	Noise level	Cooling	sound level	dB	Hi 34, Me 28, Lo 26	46
			Power level		52	60
		Heating	sound level		Hi 34, Me 31, Lo 27	46
			Power level		52	60
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 249	540 × 720 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	32
Refrigerant equipment Compressor type & Q'ty					–	RM-B5077MNE4 (Rotary type) × 1
Motor				kW	–	0.65
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electronic expansion valve	
Refrigerant(3)				kg	R410A 0.9 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.35 (MA68)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	12
Air flow (at High)			(Cooling)	CMM	7.5	26
			(Heating)		7.5	26
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection, Frost protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ9.52 (3/8″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x1, Photocatalytic washable deodorizing filter x1)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

Model SRK28HD-S (Indoor unit)
SRC28HD-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK28HD-S	SRC28HD-S
Cooling capacity(1)				W	2550	
Heating capacity(1)				W	2800	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	0.79	
	Running current (Cooling)			A	3.9/3.7/3.5	
	Heating input			kW	0.77	
	Running current (Heating)			A	3.7/3.5/3.3	
	Inrush current			A	17.2	
	COP				Cooling: 3.21 Heating: 3.61	
	Noise level	Cooling	sound level	dB	Hi 39, Me 33, Lo 30	46
			Power level		55	60
		Heating	sound level		Hi 40, Me 33, Lo 29	46
			Power level		56	60
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 249	540 × 720 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	32
Refrigerant equipment Compressor type & Q'ty					–	5PS102DAB [Rotary type] × 1
Motor				kW	–	0.7
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electronic expansion valve	
Refrigerant(3)				kg	R410A 0.9 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.35 (RB68A)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	15
Air flow (at High)			(Cooling)	CMM	8.0	30
			(Heating)		8.5	30
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection, Frost protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ9.52 (3/8″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x1, Photocatalytic washable deodorizing filter x1)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

Model SRK40HD-S (Indoor unit)
SRC40HD-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK40HD-S	SRC40HD-S
Cooling capacity(1)				W	3600	
Heating capacity(1)				W	4000	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	1.12	
	Running current (Cooling)			A	5.3/5.1/4.9	
	Heating input			kW	1.16	
	Running current (Heating)			A	5.5/5.3/5.1	
	Inrush current			A	25.2	
	COP				Cooling: 3.21 Heating: 3.42	
	Noise level	Cooling	sound level	dB	Hi 40, Me 38, Lo 34	49
			Power level		56	63
		Heating	sound level		Hi 41, Me 38, Lo 34	50
			Power level		57	64
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 249	640 × 850 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	41
Refrigerant equipment Compressor type & Q'ty					–	5KS150DBB [Rotary type] × 1
Motor				kW	–	1.1
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electronic expansion valve	
Refrigerant(3)				kg	R410A 1.17 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.43 (RB68A)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	35
Air flow (at High)			(Cooling)	CMM	9.0	38
			(Heating)		9.5	38
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection, Frost protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x1, Photocatalytic washable deodorizing filter x1)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

Model SRK20HC-S1 (Indoor unit)
SRC20HC-S1 (Outdoor unit) **(220/230/240V)**

Item				Model	SRK20HC-S1	SRC20HC-S1
Cooling capacity(1)				W	2050	
Heating capacity(1)				W	2200	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	0.63	
	Running current (Cooling)			A	3.1/3.0/2.9	
	Heating input			kW	0.6	
	Running current (Heating)			A	3.0/2.9/2.8	
	Inrush current			A	18.9	
	COP				Cooling: 3.21 Heating: 3.61	
	Noise level	Cooling	sound level	dB	38	48
			Power level		52	60
		Heating	sound level		38	48
			Power level		52	60
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 247	540 × 720 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	32
Refrigerant equipment Compressor type & Q'ty					–	RM-B5077MNE4 (Rotary type) × 1
Motor				kW	–	0.65
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(3)				kg	R410A 0.9 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.35 (MA68)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	12
Air flow (at High)			(Cooling)	CMM	7.5	26
			(Heating)		7.5	26
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ9.52 (3/8″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x2)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

Model SRK28HC-S1 (Indoor unit)
SRC28HC-S1 (Outdoor unit)

(220/230/240V)

Item				Model	SRK28HC-S1	SRC28HC-S1
Cooling capacity(1)				W	2550	
Heating capacity(1)				W	2800	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	0.79	
	Running current (Cooling)			A	3.9/3.7/3.5	
	Heating input			kW	0.77	
	Running current (Heating)			A	3.7/3.5/3.3	
	Inrush current			A	17.2	
	COP				Cooling: 3.21 Heating: 3.61	
	Noise level	Cooling	sound level	dB	41	48
			Power level		55	60
		Heating	sound level		42	48
			Power level		56	60
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 247	540 × 720 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	32
Refrigerant equipment Compressor type & Q'ty					–	5PS102DBA [Rotary type] × 1
Motor				kW	–	0.7
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(3)				kg	R410A 0.9 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.35 (RB68A)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	15
Air flow (at High)			(Cooling)	CMM	8.0	30
			(Heating)		8.5	30
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ9.52 (3/8″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x2)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

Model SRK40HC-S1 (Indoor unit)
SRC40HC-S1 (Outdoor unit)

(220/230/240V)

Item				Model	SRK40HC-S1	SRC40HC-S1
Cooling capacity(1)				W	3600	
Heating capacity(1)				W	4000	
Power source					1 Phase, 220–240V, 50Hz	
Operation data(1)	Cooling input			kW	1.12	
	Running current (Cooling)			A	5.3/5.1/4.9	
	Heating input			kW	1.16	
	Running current (Heating)			A	5.5/5.3/5.1	
	Inrush current			A	25.2	
	COP (Cooling)				Cooling: 3.21 Heating: 3.42	
	Noise level	Cooling	sound level	dB	42	51
			Power level		56	63
		Heating	sound level		43	52
			Power level		57	64
Exterior dimensions Height × Width × Depth				mm	250 × 815 × 247	640 × 850 × 290
Color					Cool white	Stucco white
Net weight				kg	9.0	41
Refrigerant equipment Compressor type & Q'ty					–	5KS150DBB [Rotary type] × 1
Motor				kW	–	1.1
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(3)				kg	R410A 1.17 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.43 (RB68A)	
Deice control					MC control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	14	35
Air flow (at High)			(Cooling)	CMM	9.0	38
			(Heating)		9.5	38
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					MC. Thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, overcurrent protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.4 m Gas line : 0.33 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2.5 m (3 cores with Earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter x2)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)

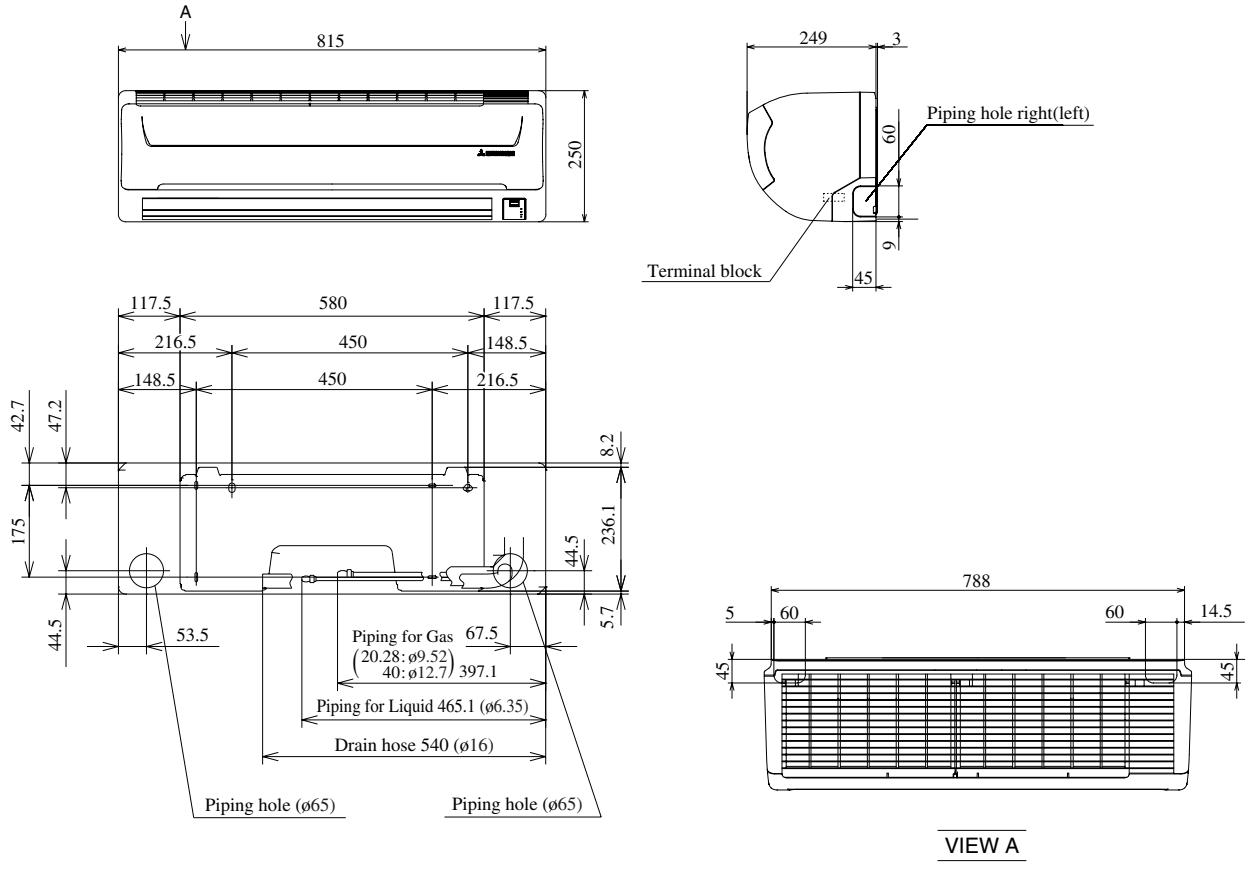
(2) Range of usage & limitations

Item \ Models	All models
Indoor return air temperature (Upper, lower limits)	Refer to the selection chart
Outdoor air temperature (Upper, lower limits)	
Refrigerant line (one way) length	Max. 15m
Vertical height difference between outdoor unit and indoor unit	Max. 10m (Outdoor unit is higher) Max. 10m (Outdoor unit is lower)
Power source voltage	Rating ± 10%
Voltage at starting	Min. 85% of rating
Frequency of ON-OFF cycle	Max. 10 times/h
ON and OFF interval	Max. 3 minutes

(3) Exterior dimensions

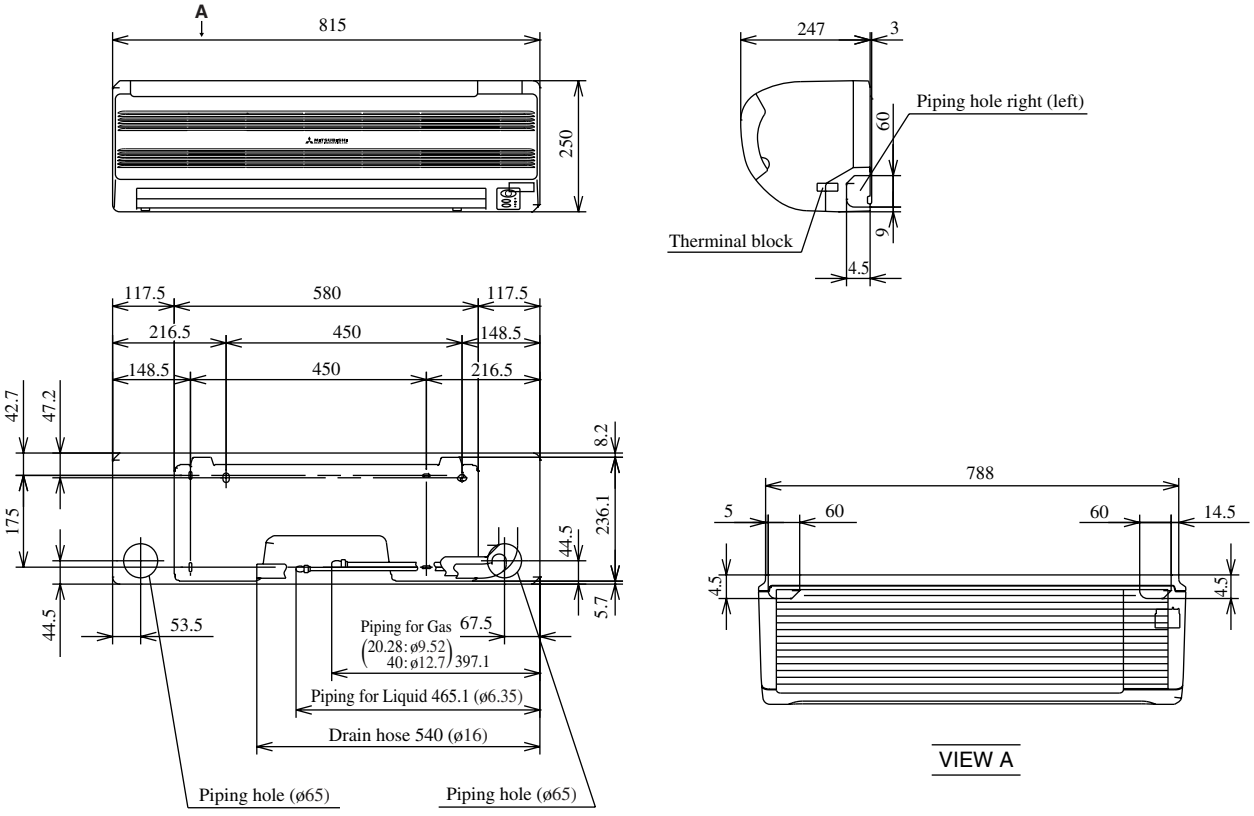
(a) Indoor unit
Models SRK20HD-S, 28HD-S, 40HD-S

Unit: mm



Models SRK20HC-S1, 28HC-S1, 40HC-S1

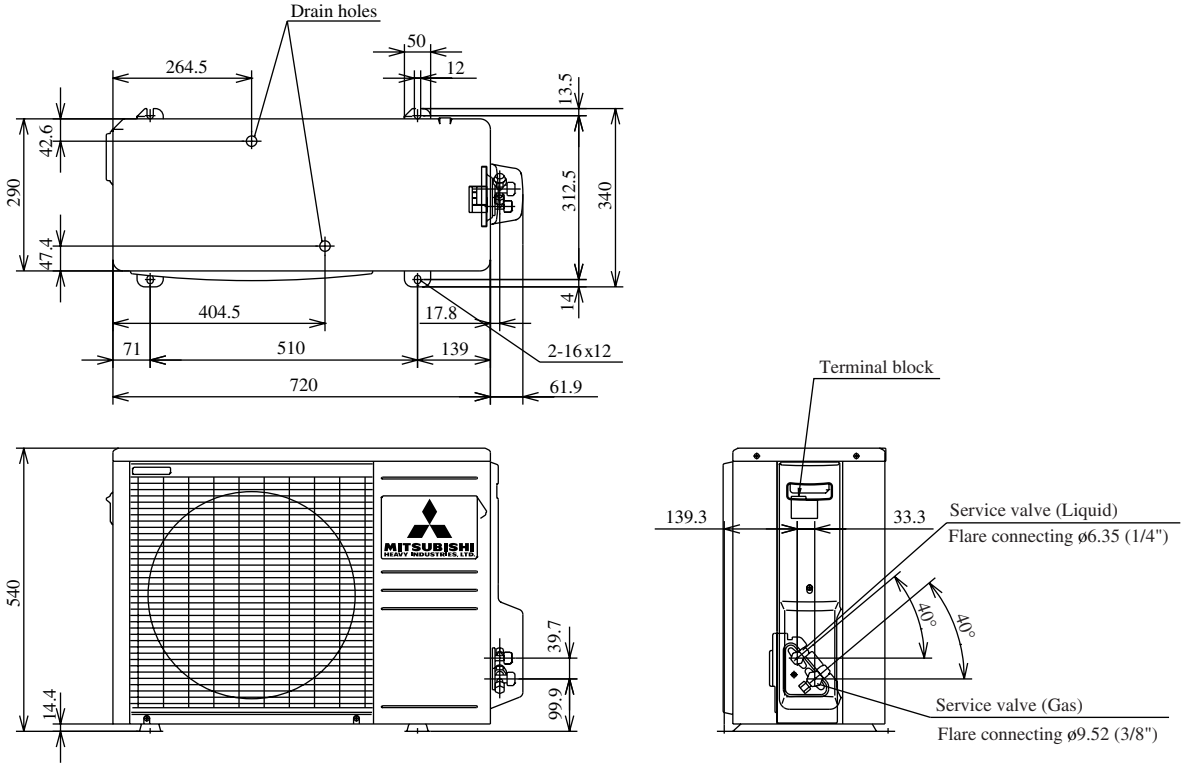
Unit: mm



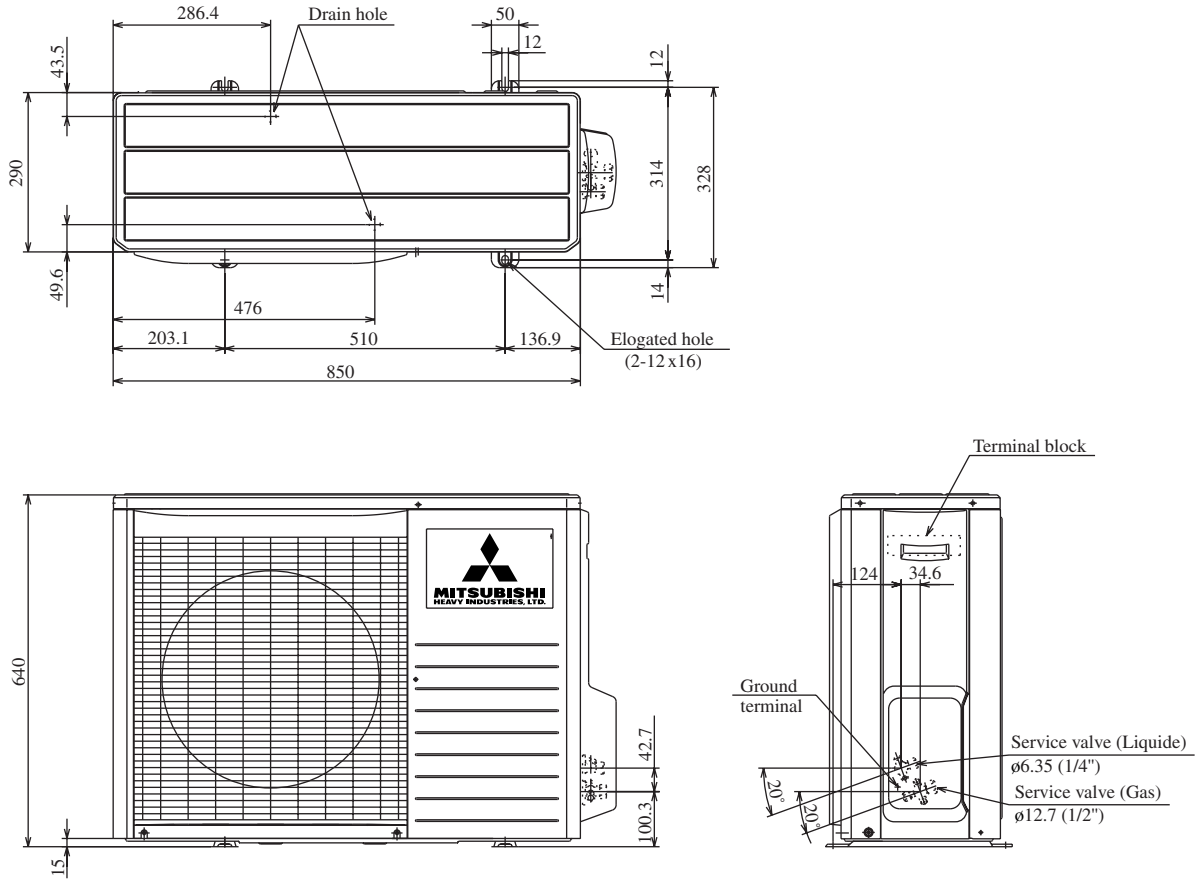
(b) Outdoor unit

Models SRC20HD-S, 28HD-S, 20HC-S1, 28HC-S1

Unit: mm

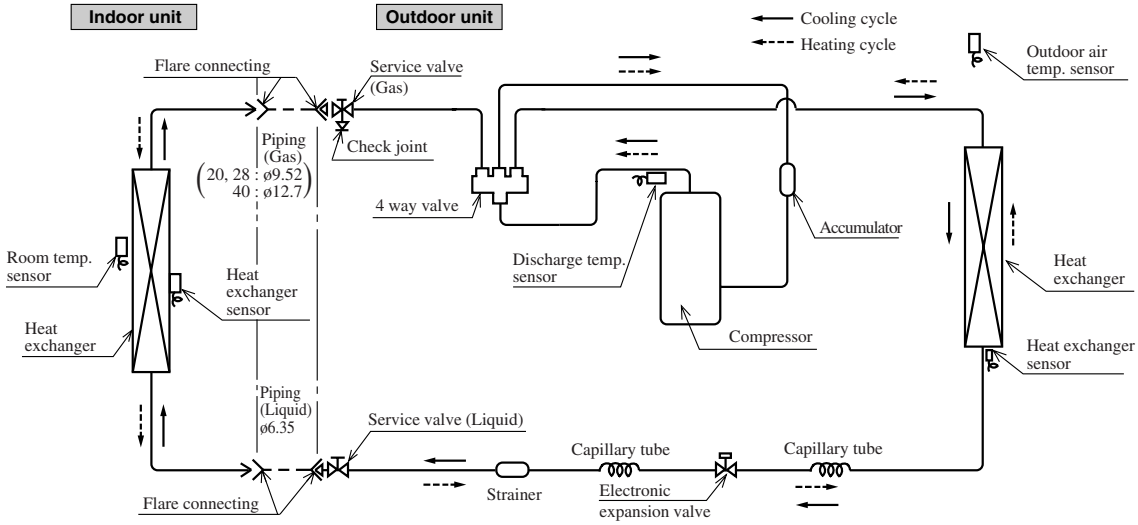


Models SRC40HD-S, 40HC-S1



(4) Piping system

Models SRK20HD-S, 28HD-S, 40HD-S, 20HC-S1, 28HC-S1, 40HC-S1

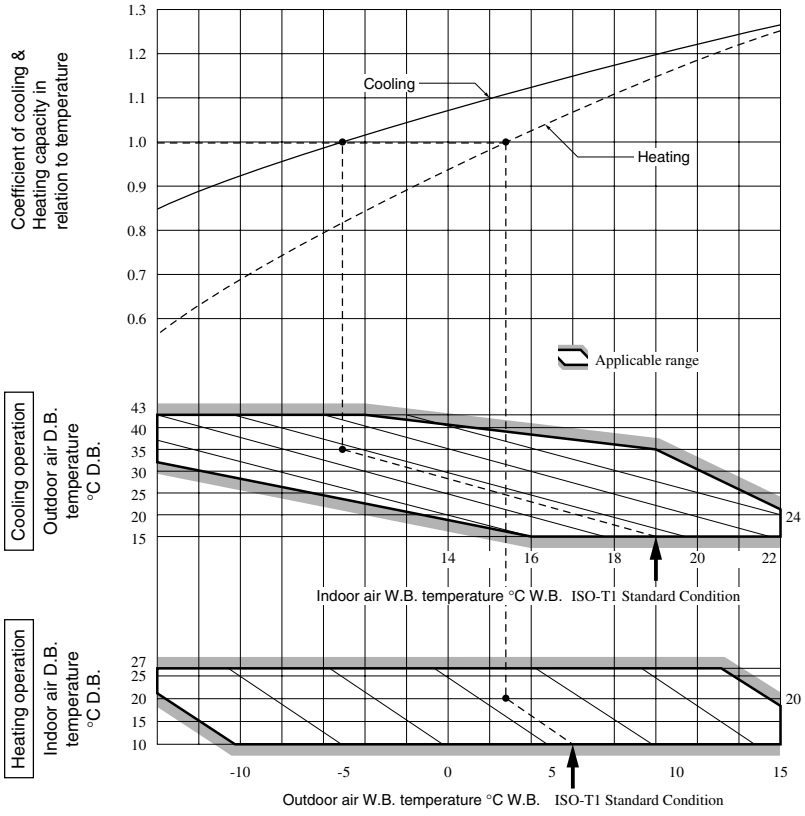


(5) Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(a) Coefficient of cooling and heating capacity in relation to temperatures



(b) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15
Cooling	1.0	0.99	0.975
Heating	1.0	1.0	1.0

(c) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (1), (2) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in ˚CWB	-10	-9	-7	-5	-3	-1	1	3	5
Adjustment coefficient	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

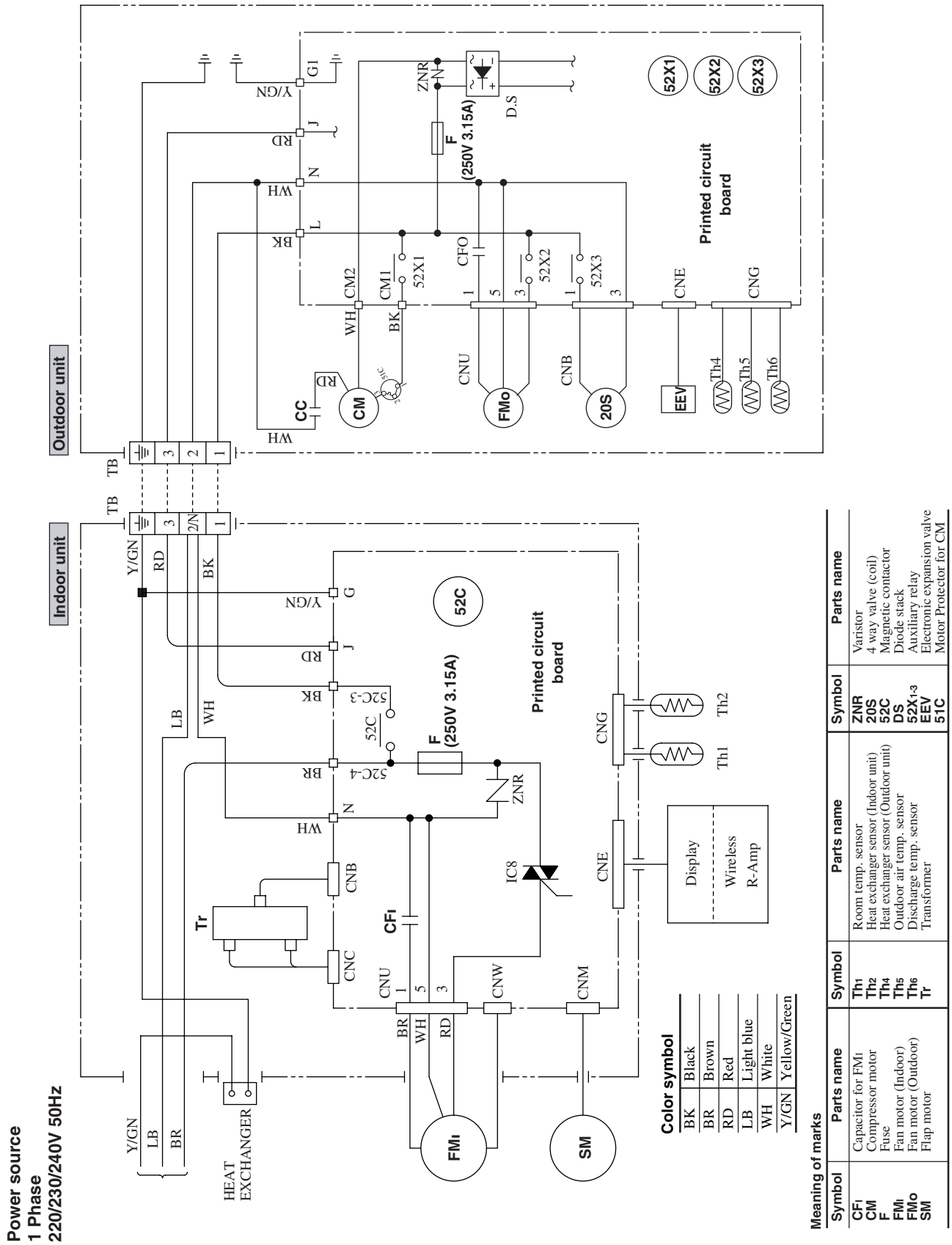
How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK40HD-S with the piping length of 15m, indoor wet-bulb temperature at 19.0˚C and outdoor dry-bulb temperature 35˚C is Net cooling capacity = $\underset{\text{SRK40HD-S}}{3600} \times \underset{\text{Length 15m}}{0.975} \times \underset{\text{Factor by air temperatures}}{1.0} = 3510$ w

2.1.3 ELECTRICAL DATA

(1) Electrical wiring

Models SRK20HD-S, 28HD-S, 40HD-S, 20HC-S1, 28HC-S1, 40HC-S1



Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CFi	Capacitor for FMi	Th1	Room temp. sensor	ZNR	Varistor
CM	Compressor motor	Th2	Heat exchanger sensor (Indoor unit)	20S	4 way valve (coil)
F	Fuse	Th4	Heat exchanger sensor (Outdoor unit)	52C	Magnetic contactor
FMi	Fan motor (Indoor)	Th5	Outdoor air temp. sensor	DS	Diode stack
FMo	Fan motor (Outdoor)	Th6	Discharge temp. sensor	52X1-3	Auxiliary relay
SM	Flap motor	Tr	Transformer	EEV	Electronic expansion valve
				51C	Motor Protector for CM

2.1.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Operation control function by remote control switch

Remote controller

Models All models

◆ Operation section

FAN SPEED button

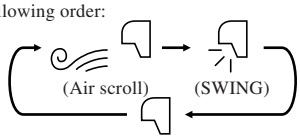
Each time the button is pushed, the ■ indicator is switched over in turn.

HI POWER button

This button changes the HI POWER mode.

AIR FLOW button

This button changes the flap mode. When pressed, this button changes the mode in the following order:



ON TIMER button

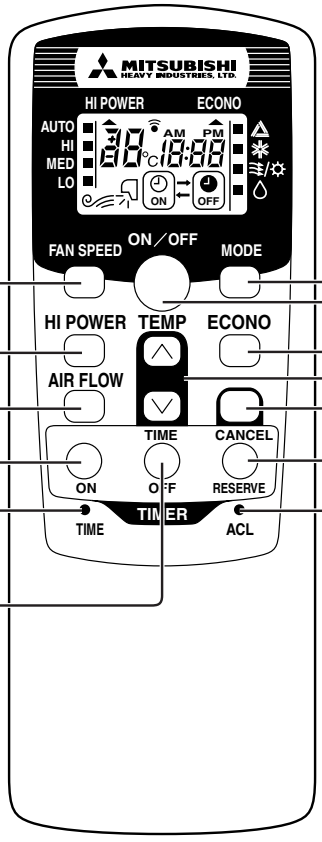
This button selects ON TIMER operation.

Clock switch

This switch for setting the clock.

OFF TIMER button

This button selects OFF TIMER operation.



- The above illustration shows all controls, but in practice only the relevant parts are shown.

OPERATION MODE select button

Each time the button is pushed, the ■ indicator is switched over in turn.

ON/OFF button

Press for starting operation, press again for stopping.

ECONOMY button

This button changes the ECONOMY mode.

TEMPERATURE button

This button sets the room temperature.
(This button changes the present time and TIMER time.)

CANCEL button

This button cancels the ON timer and OFF timer.

RESERVE button

This button sets the present time and TIMER time.

RESET switch

Switch for resetting microcomputer.

◆ Indication section

HI POWER MODE indicator

Indicates during Hi power mode operation.

TEMPERATURE Indicator

Indicates set temperature.
(Does not indicate temperature when operation mode is on AUTO)

FAN SPEED Indicator

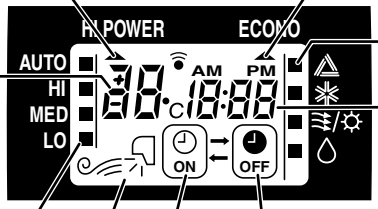
Indicates set air flow rate with ■ lamp.

AIR FLOW Indicator

Shows selected flap mode.

ON TIMER Indicator

Indicates during ON TIMER operation.



ECONOMY MODE indicator

Indicates during economy mode operation.

OPERATION MODE Indicator

Indicates selected operation with ■ lamp.
Heat pump type:
[△ (Auto) • ❋ (Cool) • ≋/☼ (Heat) • ◊ (Dry)]
Cooling only type:
[△ (Auto) • ❋ (Cool) • ≋/☼ (Fan) • ◊ (Dry)]

Clock Indicator

Indicates present time or timer setting time.

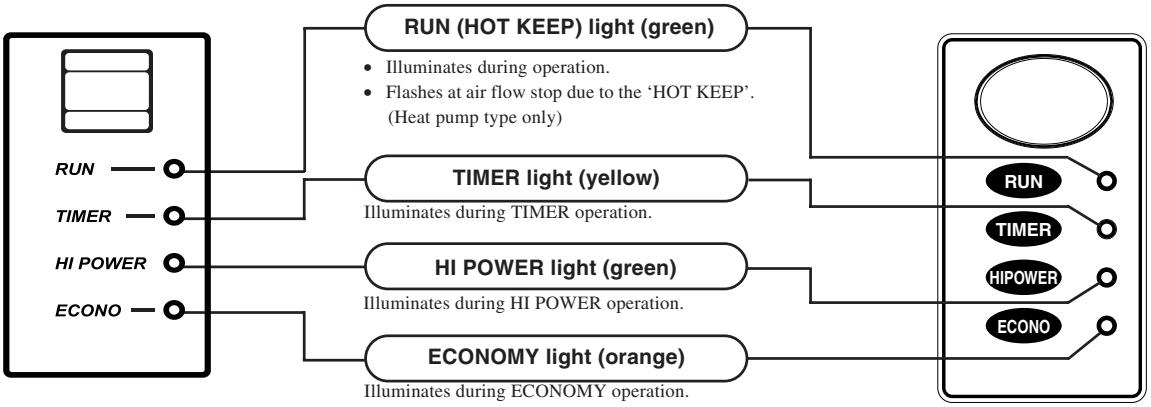
OFF TIMER Indicator

Indicates during OFF TIMER operation.

Unit indication section

Models SRK20HD-S, 28HD-S, 40HD-S
SRK20CD-S, 28CD-S, 40CD-S

Models SRK20HC-S1, 28HC-S1, 40HC-S1
SRK20CC-S, 28CC-S, 40CC-S



(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

(a) Operation

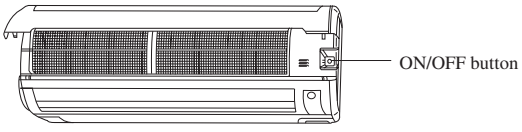
Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

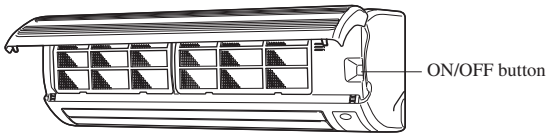
The unit will go into the automatic mode in which it automatically determines, from room temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / Operation mode	Room temperature setting	Fan speed	Flap	Timer switch
Cooling	About 25ºC	Auto	Auto	Continuous
Thermal dry	About 25ºC			
Heating	About 26ºC			

Models SRK20HD-S, 28HD-S, 40HD-S
SRK20CD-S, 28CD-S, 40CD-S



Models SRK20HC-S1, 28HC-S1, 40HC-S1
SRK20CC-S, 28CC-S, 40CC-S



(3) Power blackout auto restart function

(a) Power blackout auto restart function is a function that records the operational status of the air-conditioner immediately prior to it being switched off by a power cut, and then automatically resumes operations at that point after the power has been restored.

(b) The following settings will be cancelled:

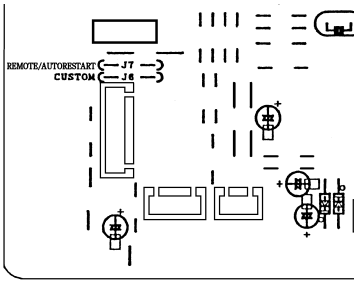
(i) Timer settings

(ii) High-power operations

Notes (1) The power blackout auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.

(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.

(3) If the jumper wire (J7) "REMOTE/AUTORESTART" is cut, auto restart is disabled. (See the diagram at right)



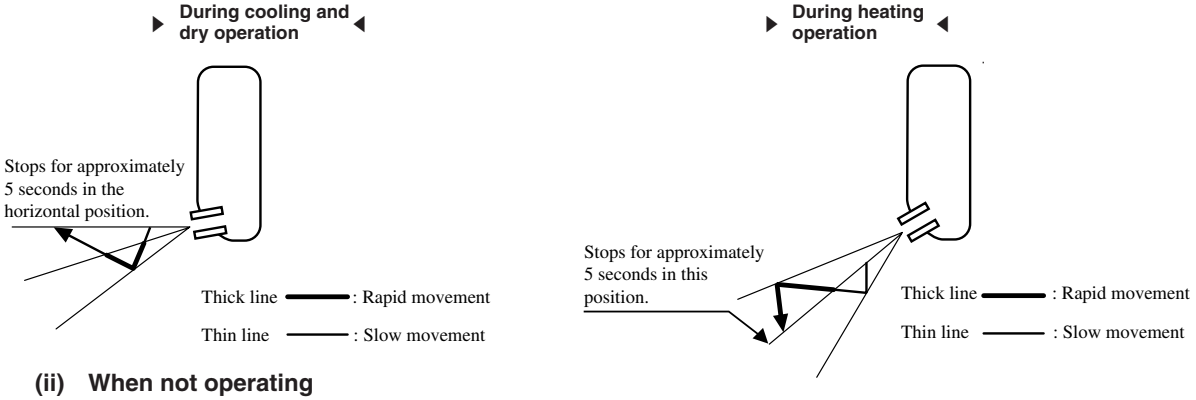
(4) Flap control

Control the flap by AIRFLOW button on the wireless remote controller.

(a) Air scroll

The flap will be automatically set to the angle of air flow best to operation.

(i) Starting time of operation



(ii) When not operating

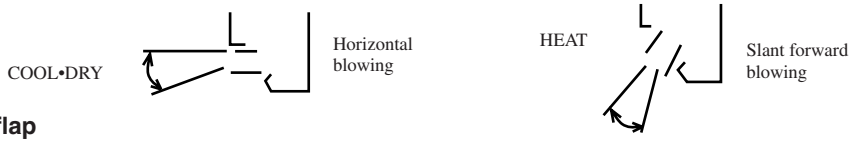
The flap returns to the position of air flow directly below, when operation has stopped.

(b) Memory flap

While the flap is operating if the AIRFLOW button is pushed once, it stops swinging at an angle.

As this angle is memorized in the microcomputer, the flap will be automatically set to the angle when next operation is started.

- Recommendable stopping angle of the flap



(c) Swing flap

Flap moves in upward and downward directions continuously.

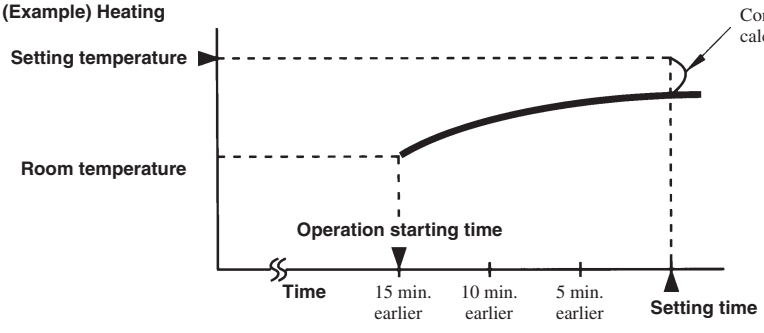
(5) Comfortable timer setting

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the room temperature at the setting time (temperature of room temperature sensor) and the setting temperature. (Max. 60 minutes)

Operation mode	Operation start time correction value (Min.)		
At cooling	3 < Room temp. – Setting temp.	1 < Room temp. – Setting temp. ≦ 3	Room temp. – Setting temp. ≦ 1
	+5	No change	–5
At heating	3 < Setting temp. – Room temp.	2 < Setting temp. – Room temp. ≦ 3	Setting temp. – Room temp. ≦ 2
	+5	No change	–5

Notes (1) At 5 minutes before the timer ON time, operation starts regardless of the temperature of the room temperature sensor (Th1).
(2) This function does not actuate when the operation select switch is set at the dehumidifying as well as the dehumidifying in the auto mode. However, the operation of item (1) above is performed during the dehumidifying in the auto mode.
(3) During the comfortable timer operation, both the RUN light and TIMER light illuminate and the TIMER light goes off after expiration of the timer, ON setting time.

(Example) Heating



Corrects the starting time of next operation by calculating the temperature difference.

- If the difference (= Setting temperature – Room temperature) is 4ºC, the correction value is found to be +5 minutes from the table shown above so that the starting time of next operation is determined as follows:

  15 min. earlier + 5 min. = 20 min. earlier
  ↑ Current operation start time
  ↑ Correction value

(6) Outline of heating operation (Heat pump type only)

(a) Operation of major functional components

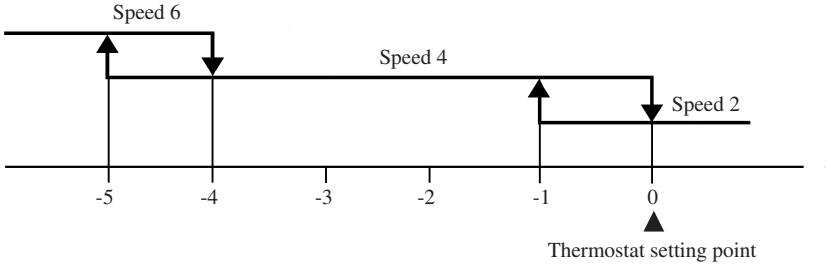
Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an abnormal stop.
Indoor fan motor	ON	ON	OFF
Flaps	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
52C	ON	ON	OFF after stop mode
Outdoor fan motor	OFF	ON	OFF
4-way valve	Depending on the stop mode	ON	Depending on the stop mode

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 6	Speed 4	Speed 2
Swing flap		Speed 6	Speed 4	Speed 2
Swing stop		Speed 6	Speed 4	Speed 2

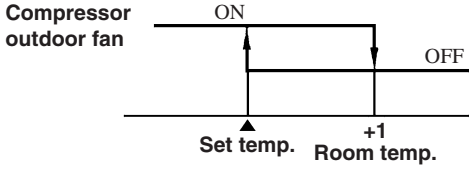
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the thermostat setting as shown below.



(c) Thermostat operation

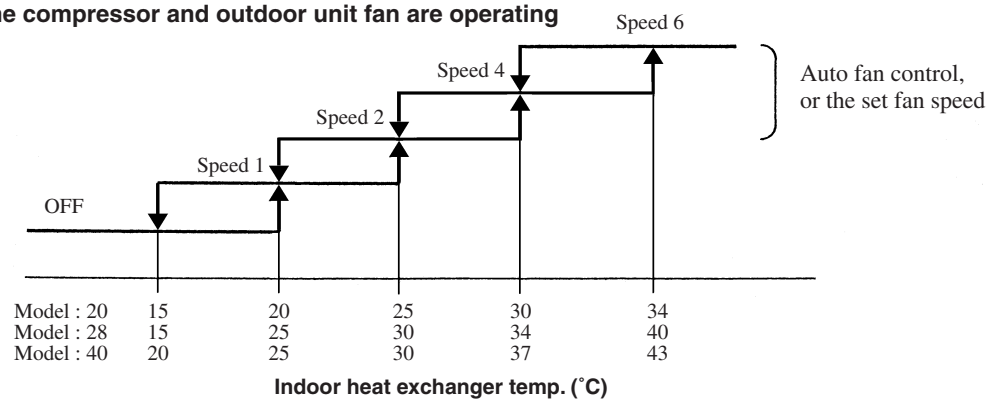
The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) Hot keep

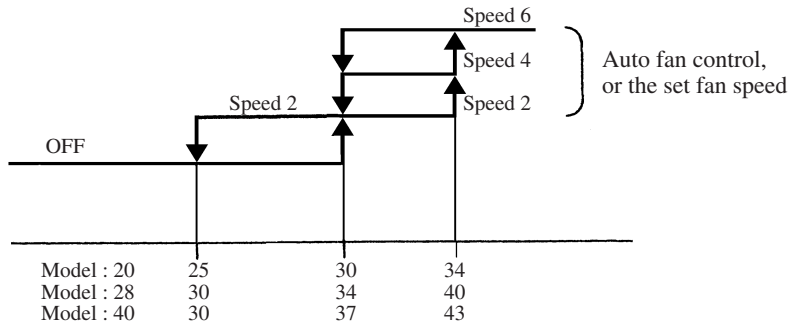
This function controls the indoor unit fan speed as shown below in accordance with the temperature sensed by the indoor heat exchanger sensor.

(i) When the compressor and outdoor unit fan are operating



(ii) When the compressor and outdoor fan are stopped

1) While the compressor operation is delayed.



2) Up until 5 minutes have passed since the end of a compressor start delay operation, when 52C goes OFF, the indoor unit's fan speed changes forcibly from OFF to speed 1.

(iii) To accomplish rapid recovery from the thermostat off state, after the compressor and outdoor unit's fan go OFF, the set temperature is raised by 1ºC until 1 minute passes after the hot keep end temperature has been reached following restarting.

(e) Hot Spurt

(i) For 40 minutes after a heating operation begins, the system runs with set temperature raised by 2ºC.

(ii) In the following cases, this function is canceled and does not activate afterwards.

1) When the compressor and outdoor unit fan have been turned OFF by the thermostat going off.

2) During high pressure control operation.

(f) High Power Operation ("HI POWER" button on the remote controller : ON)

The system runs under the following conditions for 15 minutes without relation to the set temperature or the fan speed setting.

Indoor unit fan	Speed 6 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HI POWER operation.
(2) Protective function will actuate with priority even during the HI POWER operation.

(g) Defrost Operation

(i) Starting conditions (Defrost operation begins when all the following conditions are satisfied.)

① 40 minutes have passed since the heating operation began. (Accumulated operation time)

② 40 minutes have passed since the previous defrosting operation ended. (Accumulated operation time)

③ The outdoor unit heat exchanger sensor temperature is –5ºC or lower continuously for 3 minutes.

④ The difference between the outdoor temperature sensor temperature and the outdoor heat exchange sensor temperature is ≧ 4.5ºC.

⑤ The compressor is running.

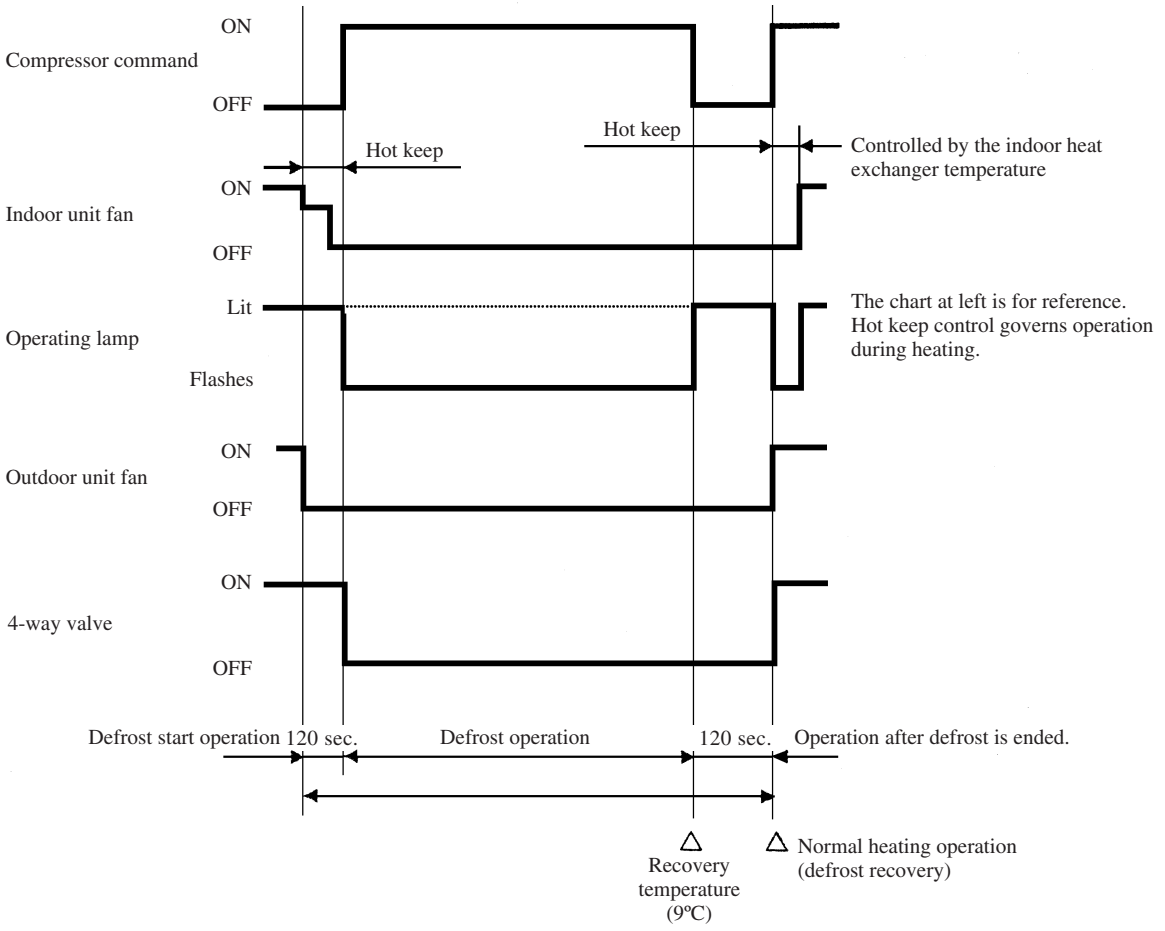
Also, the number of times the compressor goes OFF is counted, and when it reaches 10 or more times, if the conditions in ①, ② and ③ above (except that the outdoor heat exchanger sensor temperature is –1ºC), the defroster operation starts.

(ii) End conditions (when either of the following conditions is satisfied)

① Outdoor heat exchanger sensor temperature: 9ºC or higher

② Defrosting operation has continued for 10 minutes.

(iii) Operation of functional components during defrosting operation



(h) Forced Defrost

(i) During trial operation, if defrost operation is performed, defrost operation can be performed only once time, in accordance with the following operation.

1) Remote control operation

Operation	Run
Operation mode	Heating
Set temperature	19˚C
Fan speed select	Low
Air flow setting	Swing
On timer	ON
Current time	On after 180 min.condition
On timer time	

2) Functional components operation

Compressor	ON
4-way valve	OFF
Indoor unit fan	OFF
Flap	Fully closed
Outdoor unit fan	OFF
Display	Same as defrost

(ii) If remote control operation is performed, for 1 minute after 3-minute timer operation, the operation is canceled if one of the following conditions is satisfied.

① Outdoor heat exchanger sensor temperature: 14ºC or higher

② 10 minutes has passed (including the 1 minute of forced operation).

(i) ECONO operation ("ECONO" button on the remote controller : ON)

The set temperature changes as shown at right and the indoor unit fan runs at speed 3.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature -1.0
1~2 hours	Set temperature -2.0
2 hours ~	Set temperature -2.5

(7) Outline of cooling operation

(a) Operation of major functional components

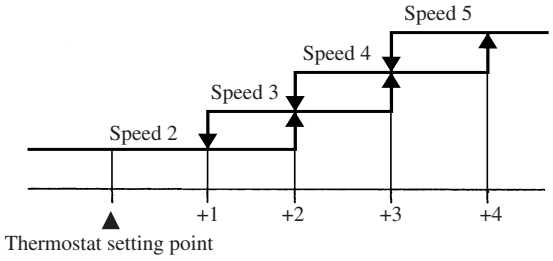
Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an abnormal stop.
Indoor fan motor	ON	ON	OFF
Flaps	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
52C	ON	ON	OFF after stop mode
Outdoor fan motor	OFF	ON	OFF
4-way valve	Depending on the stop mode	OFF	Depending on the stop mode

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 5	Speed 3	Speed 2
Swing flap		Speed 5	Speed 3	Speed 2
Swing stop		Speed 5	Speed 3	Speed 2

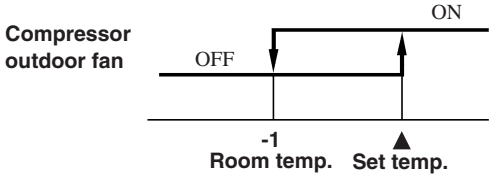
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the thermostat setting as shown below.



(c) Thermostat operation

The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) High Power operation ("HI POWER" button on the remote controller : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 6 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HI POWER operation.
(2) Protective functions will actuate with priority even during the HI POWER operation.

(e) ECONO Operation ("ECONO" button on the remote controller : ON)

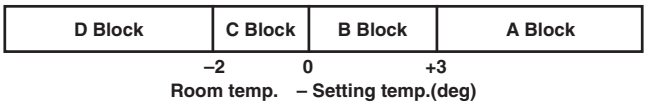
The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 2.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

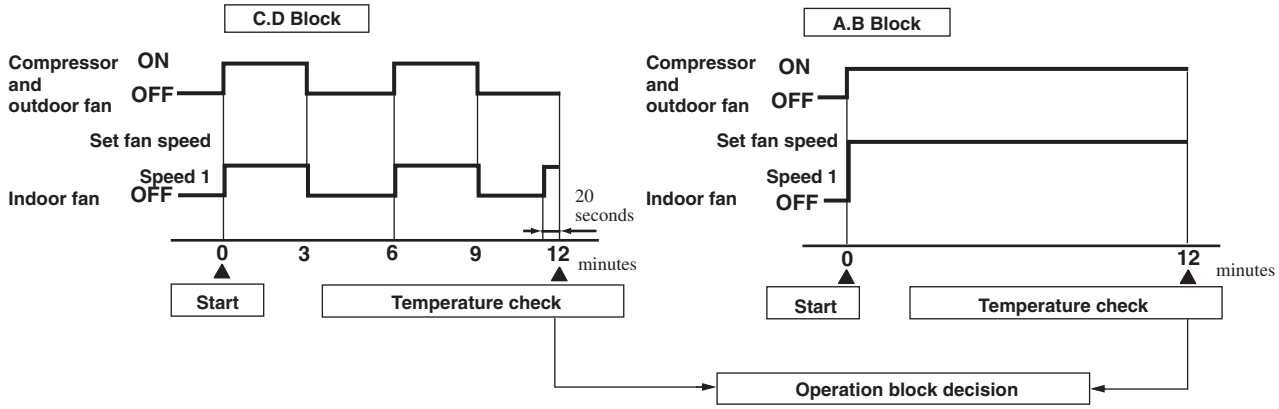
(8) Outline of dehumidifying operation

(a) Choose the appropriate operation block area by the difference between room temperature and thermostat setting temperature as shown below.

- **Operation block area**



(b) Start up operation

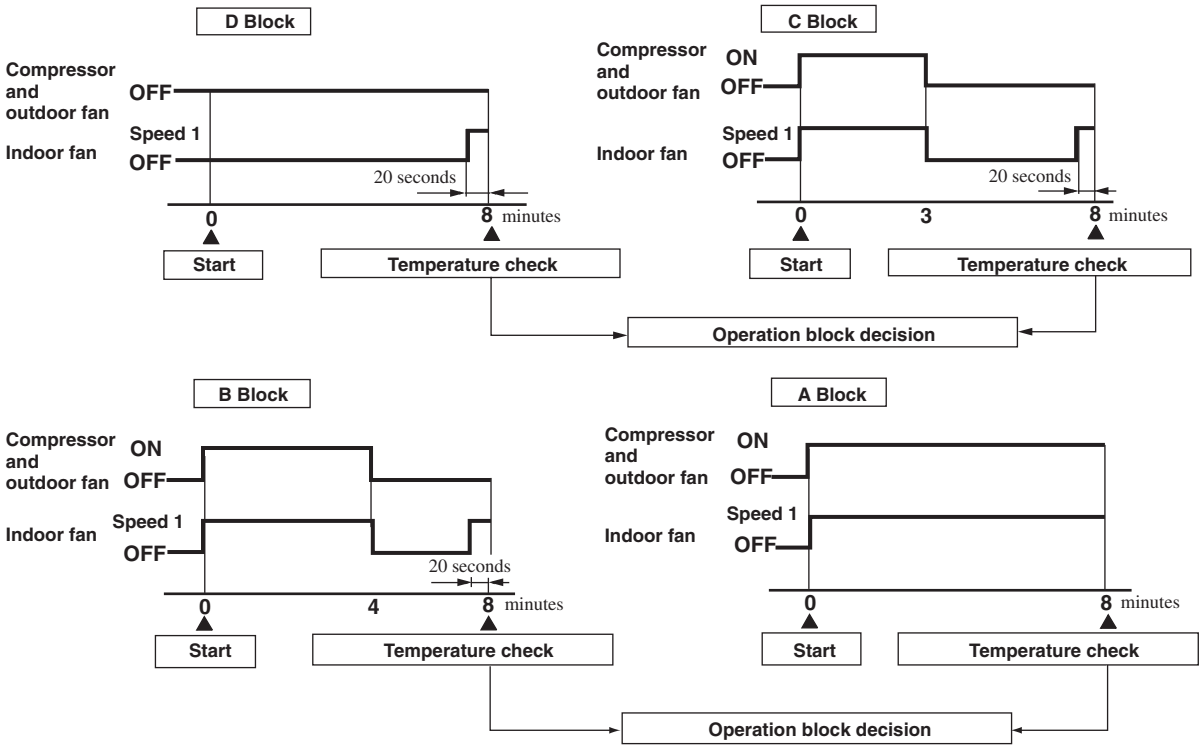


Note (1) Thermostat operation is performed in A, B Block. When compressor and indoor fan stop by thermostat operation within 12 minutes from start, temperature check is performed by operating indoor fan at speed 1 for 20 seconds before finishing 12 minutes and allowing decision of next operation block.

(c) DRY operation

After finishing start up operation described in (b) above, thermal dry operation is performed at 8 minutes intervals, according to the difference between room temperature and thermostat setting temperature as shown below.

Beside, 1 cycle of this operating time consists of 8 minutes, 7 cycle operation is performed then.



(d) ECONO Operation ("ECONO" button on the remote controller : ON)

The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 2 .

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

(9) Automatic operation

(a) Determination of operation mode

The blow operation of the indoor fan is carried out at the 1st speed for 20 seconds and the room temperature is checked to determine the operation mode automatically. (When the unit is operated by the turn-on timer, the blow operation is not carried out.)

Room temperature		Room temp.<21˚C	21˚C≦Room temp.<26˚C	26˚C≦Room temp.
Operation mode	Heat pump type	Heating	Dry	Cooling
	Cooling only type	Dry		

(b) Within 30 minutes after either auto or manual operation stops, if auto operation is started, or if you switch to auto operation during manual operation, the system runs in the previous operation mode.

(c) The temperature is checked 1 time in 30 minutes after the start of operation, and if the judgment differs from the previous operation mode, the operation mode changes.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

		Signals of wireless remote controller (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	19	20	21	22	23	24	25	26	27	28	29	30	31
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(10) Outline of fan operation (Cooling only type only)

(a) Operation of major functional components

Functional components \ Fan speed switching	High power	AUTO	HIGH	MED	LOW	ECONO
52C	OFF					
Indoor fan motor	Speed 6	Speed 5	Speed 4	Speed 3	Speed 2	Speed 1
Outdoor fan motor	OFF					
Flaps	ON or OFF					

(b) High Power operation (“HI POWER” button on the remote controller : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 6 fixed
Outdoor unit fan	OFF
Compressor	OFF

Note (1) Protective functions will actuate with priority even during the HI POWER operation.

(11) Protective control function

(a) Frost prevention for indoor heat exchanger (During cooling or dehumidifying)

(i) Operating conditions

1) Indoor heat exchanger temperature (detected with Th2) is lower than 2.5ºC.

2) 3 minutes elapsed after the start of operation.

(ii) Detail of anti-frost operation

Compressor	OFF
Indoor fan	1st speed
Outdoor fan	OFF
4-way valve	Stop mode

(iii) Reset conditions: Indoor heat exchanger temperature (Th2) is higher than 8ºC.

(b) Indoor fan motor protection

When the air conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

Timer lamp illuminates simultaneously and the operation lamp flashing 6 times at each 8-second.

(c) Dew condensation prevention control for cooling operation

This prevents dew condensation, in the indoor unit, from occurring.

(i) **Operating condition:** when compressor is kept ON for 30 min. after the unit starts operation.

(ii) **Operation content:** forces the indoor fan to change from Speed 1 to Speed 2.

(iii) **Resetting condition:** When compressor is off, or when dew condensation prevention control has been operating continuously for 30 minutes.

(d) Three-minute forced operation

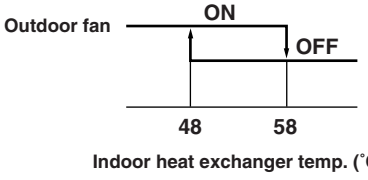
When the compressor begins operating the thermal operation is not effective for 3 minutes, so operation continues as is in the operation mode. (After 3 minutes has passed the thermal operation is effective.)

However, stopping the compressor via a stop signal or protection control has priority.

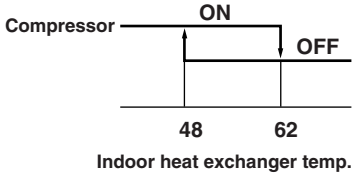
(e) High-pressure control

The indoor heat exchanger sensor detection temperature controls the outdoor fan and compressor.

- **When the indoor heat exchanger temperature is ≧ 58˚C**



- **When the indoor heat exchanger temperature is ≧ 62˚C**

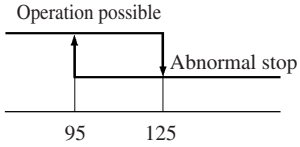


(f) Current Cut

If current that is higher than the set current flows for 0.5 second continuously, the current to the compressor is cut off. After a 3-minute delay, if the current is 1.5 ~ 2 A or less, the compressor restarts, but if the overcurrent is detected 5 times within 60 minutes after it is detected the first time, it results in an abnormal stop. Also, if the overcurrent continues for 60 minutes, it results in an abnormal stop.

(g) Compressor Overheat Protection

If the discharge pipe temperature (sensed by Th6) exceeds the set temperature value, the compressor stops. If the temperature is 95ºC or lower after a 3-minute delay, it starts again, but if this function is reactivated again within 60 minutes, it results in an abnormal stop.



Discharge pipe temperature (˚C)

(h) Serial signal transmission error protection

(i) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(ii) Detail of operation: When the indoor unit controller ↔ outdoor unit controller signals cannot be received, the compressor is stopped immediately. Simultaneously, the red LED on the printed circuit board of outdoor unit controller flashing 6 times for 0.5 second at intervals of 8 seconds. Once the operation stops, it does not start any more.

(Timer lamp on the indoor unit flashing at the same time.)

(i) Sensor disconnection (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor air temperature, discharge pipe)

(i) Room temperature sensor

If the temperature detected by the room temperature sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

(ii) Indoor heat exchanger sensor

If the temperature detected by the indoor heat exchanger sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, if the temperature detected by the indoor heat exchanger sensor is –20ºC or lower continuously for 3 minutes after heating operation has started, the indoor unit's fan speed is forcibly raised to speed 5. After this, the air conditioner is stopped if the detected temperature remains at –20ºC continuously for 40 minutes.

(iii) Outdoor heat exchanger sensor

If the temperature detected by the outdoor heat exchanger sensor is –50ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, the air conditioner is stopped if the temperature detected by the outdoor heat exchanger sensor remains at –50ºC or lower continuously for 40 minutes after heating operation has started.

(iv) Outdoor air temperature sensor

If the temperature detected by the outdoor air temperature sensor is –40ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

(v) Discharge pipe sensor

After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe sensor detected temperature for 15 seconds (less than 7ºC), the compressor stops. After a 3-minute delay, it restarts, but if an abnormality is detected 4 times continuously, the air conditioner is stopped fully and an error indication is displayed.

2.1.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these "Safety Precautions" first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings, ⚠WARNING and ⚠CAUTION, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the ⚠WARNING section. However, there is also a possibility of serious consequences in relationship to the points listed in the ⚠CAUTION section as well. In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner's manual. Moreover, ask the customer to keep this sheet together with the owner's manual.

⚠ WARNING

- To disconnect the appliance from the mains supply this appliance must be connected to the mains by means of a circuit breaker or a switch (use a recognized 16A) with a contact separation of at least 3mm.
- The appliance shall be installed in accordance with national wiring regulations.
- This system should be applied to places as households, residences and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used.
  Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward ,and accurately install the lid/service panel.It's improper installation can also result heat generation or fire.
- When setting up or moving the location of the air conditioner, do not mix air etc. or anything other than the designated refrigerant (R410A) within the refrigeration cycle.
  Rupture and injury caused by abnormal high pressure can result from such mixing.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.
- Ventilate the work area when refrigerant leaks during the operation.
  Coming in contact with fire, refrigerant could generate toxic gas.
- Confirm after the foundation construction work that refrigerant does not leak.
  If coming in contact with fire of a fan heater, a stove or movable cooking stove, etc., refrigerant leaking in the room could generate toxic gas.
- In joining pipes, do not use conventional (R22) pipng flare nuts, etc. The use of conventional pipng materials may lead to the rapture of piping due to higher pressure used for the refrigerant cycle and possible personal injury.
  (Use only piping material designed specifically for R410A)

⚠ CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire.
  Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary depending on the established location of the unit.
  No installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas.
  The rare even of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

(1) Selection of location for installation

(a) Indoor unit

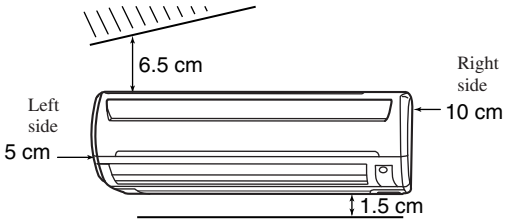
(i) Where there is no obstructions to the air flow and where the cooled air can be evenly distributed.

(ii) A solid place where the unit or the wall will not vibrate.

(iii) A place where there will be enough space for servicing. (Where space mentioned below can be secured)

(iv) Where wiring and the piping work will be easy to conduct.

(v) The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.



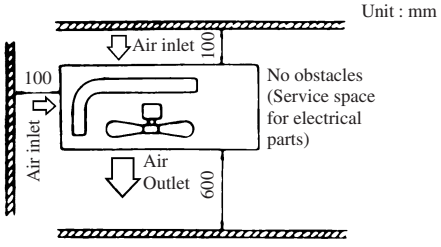
(b) Outdoor unit

(i) A place where good air circulation can be obtained and where rain, snow or sunshine will not directly strike the unit.

(ii) A place where discharged hot air or unit's operating sound will not be a nuisance to the neighborhood.

(iii) A place where servicing space can be secured.

(iv) A place where vibration will not be enlarged.



Notes (1) Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

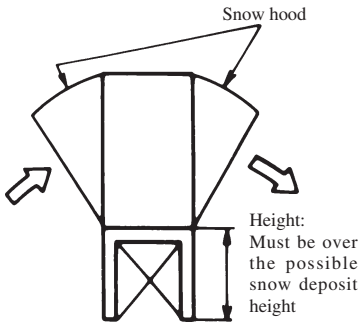
(2) When the unit is installed, the space of the following dimension and above shall be secured.

(v) In heating operation, snow deposit on the heat-exchanger of outdoor unit must be prevented for keeping the normal performance capacity. (Heat pump type only)

1) Snow-hood on outdoor unit as in drawing, will reduce the frequency of defrost operation.

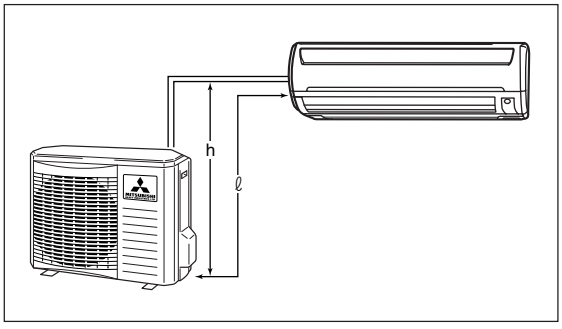
When installing the snow hood, take care so that the air outlet of the snow hood will not face directly into the most windy direction.

2) Design the base higher than possible snow deposit.



(c) Limitations for one way piping length and vertical height difference.

Item \ Model		All models
One way piping length (ℓ)		15 m
Vertical height difference (h)	Outdoor unit is lower	10 m
	Outdoor unit is higher	10 m

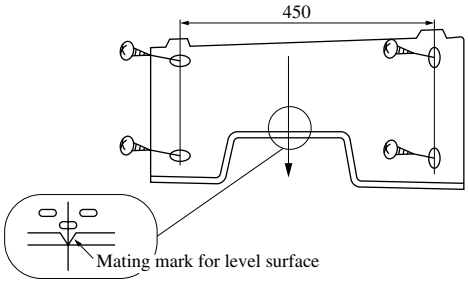


(2) Installation of indoor unit

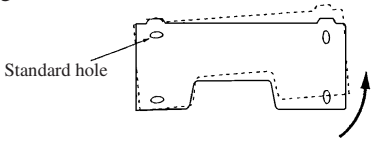
(a) Installation of installation board

(i) Fixing of installation board

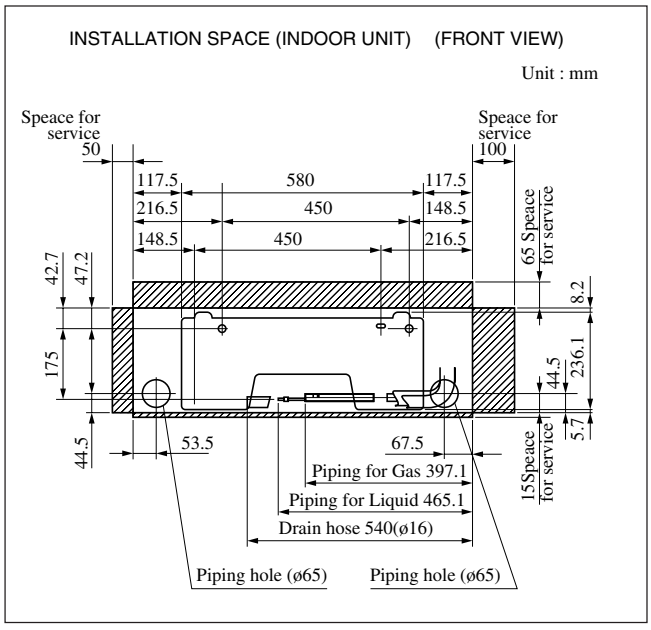
Look for the inside wall structures (Intersediate support or pillar and firaly install the unit after level surface has been checked.)



Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.



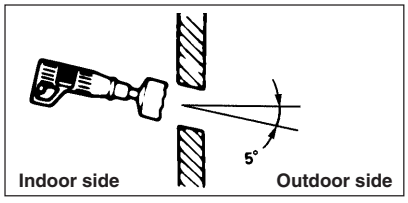
Adjust so that board will be level by turning the board with the standard hole as the center.



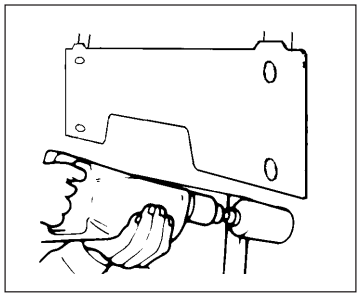
(b) Drilling of holes and fixture sleeve (Option Parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

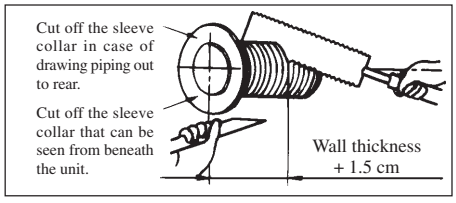
(i) Drill a hole with ø65 whole core drill



Note (1) Drill a hole with incline of 5 degree from indoor side to outdoor side.

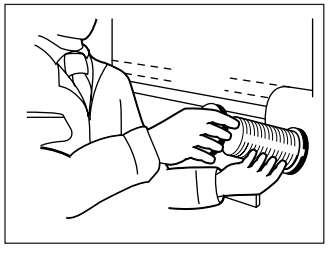


(ii) Adjusting sleeve length

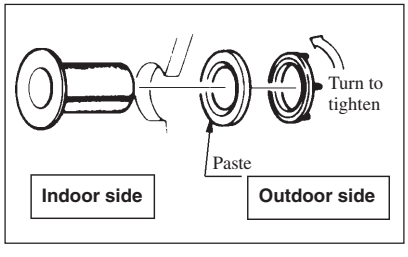


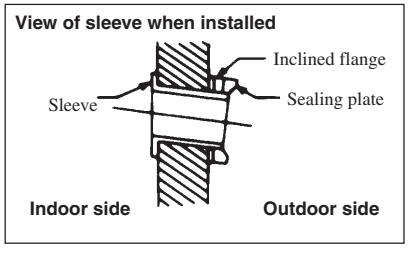
(iii) Install the sleeve

(Inserting sleeve)



(*Sleeve + *Inclined + *Sealing plate)





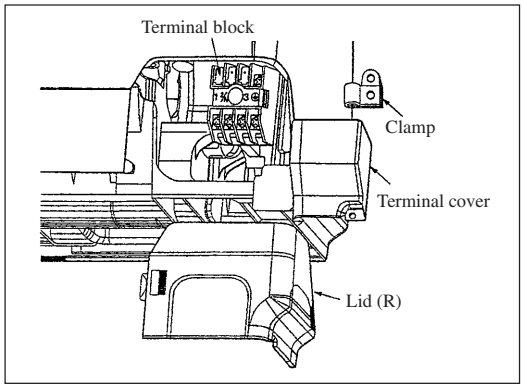
(c) Preparation of indoor unit

(i) Mounting of connecting wires

1) Remove the lid (R).
2) Remove the terminal cover.
3) Remove the wiring clamp.
4) Connect the connecting wire securely to the terminal block.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables. Required field cables.

H05	RNR3G1.5 (Example) or 245IEC57
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Standed core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



① Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor,and it is dangerous as the terminal block may heat up and catch fire.

② Take care not to confuse the terminal numbers for indoor and outdoor connections.

③ Affix the connection wire using the wiring clamp.

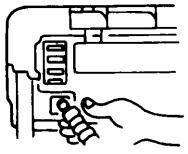
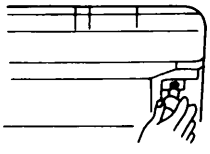
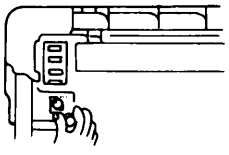
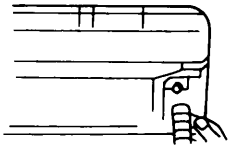
5) Fix the connecting wire by wiring clamp.
6) Attach the lid.
7) Close the suction grille.

(ii) Protective taping (Protect the cable with tape at the section where the cable passes through the hole opened on the wall.)

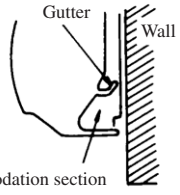
(iii) Forming of pipe (Holding down the pipe at the root, change the pipe direction, extend it and adjust according to the circumstance.)

[When the pipe is extended to left and taken out from the rear center]

(Drain pipe relocation procedure)

1. Remove the drain pipe.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain pipe.
			
● Loosen the spring clamp to remove.	● Remove by hand or use cutting pliers, etc.	● Securely insert the drain cap removed in the step 2. Note: If it is inserted insufficiently, water leakage could result.	● Loosen the spring clamp and securely insert the drain pipe. Note: If it is inserted insufficiently, water leakage could result.

Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.

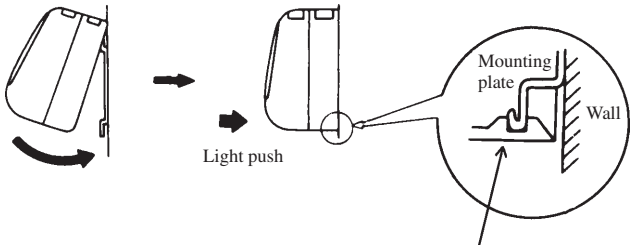


(d) Installation of indoor unit

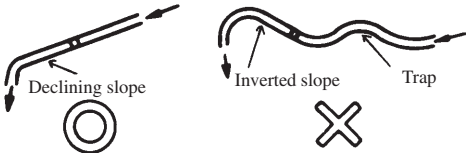
(i) Install the indoor unit on the mounting plate.

Hook the upper part of the indoor unit on the stoppers disposed at the upper part of the mounting plate and lightly push the lower part of the indoor unit so that the unit is fixed in position.

- When removing the indoor unit
  1) Disconnect the lid at right and left.
  2) Pull down the stoppers (right and left) provided at the bottom of the indoor unit base. (See the detail view shown at right.)



(ii) Be sure not to leave any trap on the drain pipe.



(3) Installation of outdoor unit

(a) Installation of outdoor unit

(i) Make sure that sufficient space for installation and service is secured.

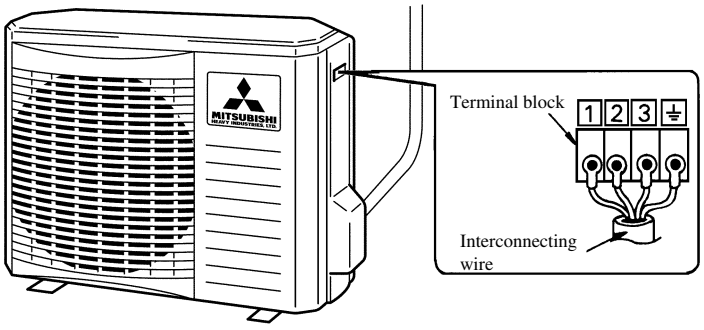
(ii) Fix the leg sections of the unit on a firm base which will not play.
Attach cushion pads, etc. between the unit and the mounting fixtures not to transmit vibration to the building.

(iii) Attach a drain elbow, etc. under the drain port of the bottom plate to guide drain water.
(Drain elbow should not be used where days when temperature drops below 0°C continue for several days. Draining may be disturbed by frozen water.)

(iv) When installing the unit at a higher place or where it could be toppled with strong winds, secure the unit firmly with foundation bolts, wire, etc.

(b) Connection of indoor and outdoor connecting wiring

(i) Connect the wiring according to the number of the indoor terminal block. (Mis-wiring may cause the burning damage, and make sure to connect correctly.)



1 **Brown**	For power supply, indoor outdoor
2 **Blue**	Connecting wiring
3 **Black**	Indoor/outdoor signal wire (Low voltage)
⏚ **Yellow/Green**	Earth wiring terminal

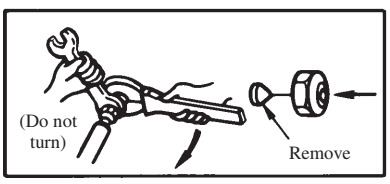
Notes (1) To prevent the mis-operation by noise, when the connecting wire too long for indoor and outdoor. Please hide the fixed wire in the pipe or use vinyl tape to set. Do not put wire into the unit.
(2) Please let the anchorized personal to decide by indoor wiring code whether connect the leakage breaker or not.

(4) Refrigerant piping

(a) Preparation

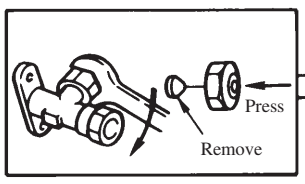
Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

Indoor unit side

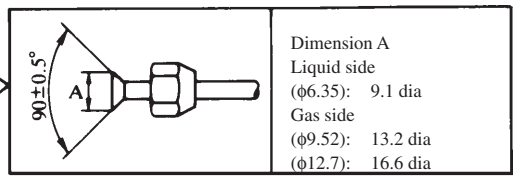


- Remove the flared nuts. (on both liquid and gas sides)

Outdoor unit side



- Remove the flared nuts. (on both liquid and gas sides)

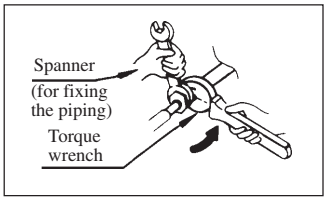


- Install the removed flared nuts to the pipes to be connected, then flare the pipes.

(b) Connection of refrigerant piping

Indoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.

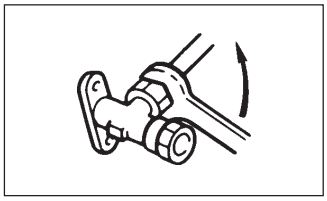


- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø9.52) : 34.0~42.0N·m (3.4~4.2kgf·m)
(ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)

Outdoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.



- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø9.52) : 34.0~42.0N·m (3.4~4.2kgf·m)
(ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)

- Use one more spanner to fix the valve.

- Always use a Torque wrench and back up spanner to tighten the flare nut.

(c) Air purge

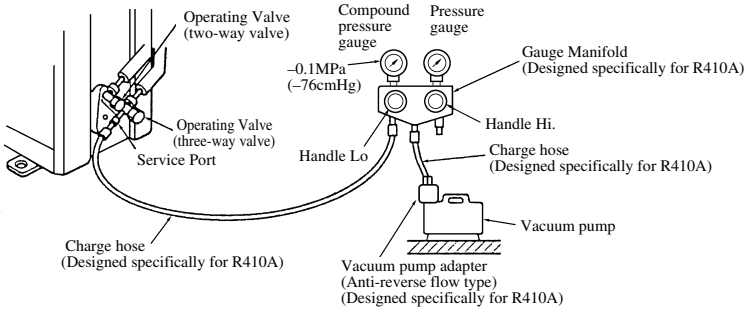
(i) Tighten all flare nuts in the pipings both indoor and outside will so as not to cause leak.

(ii) Connect service valve, charge hose, manifold valve and vacuum pump as is illustrated below.

(iii) Open manifold valve handle Lo to its full width, and perform vacuum or evacuation.
Continue the vacuum or evacuation operation for 15 minutes or more and check to see that the vacuum gauge reads – 0.1 MPa (– 76 cmHg).

(iv) After completing vacuum operation, fully open service valve (Both gas and liquid sides) with hexagon headed wrench.

(v) Check for possible leakage of gas in the connection parts of both indoor and outdoor.



- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable.
Please use one designed specifically for R410A

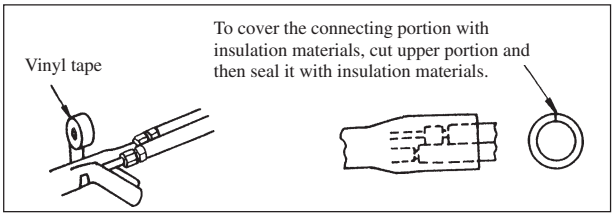
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system.
Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Additional refrigerant charge

Additional refrigerant charge is not required at all.

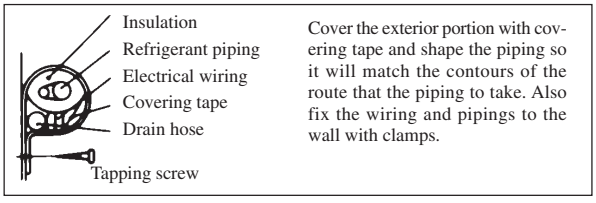
(d) Insulation of connecting portion

(i) Cover the connecting portion of the refrigerant piping with the pipe cover and seal them.
If neglecting to do so, moisture occurs on the piping and water will drip out.



(ii) Finishing and fixing

1) Tie up the piping with wrapping tape, and shape it so that it conforms to which the pipe is attached.
2) Fix them with clamps as right figure.



(5) Test run

(a) Conduct trial run after confirming that there is no gas leaks.

(b) When conducting trial run set the remote controller thermostat to continuous operation position. However when the power source is cut off or when the unit's operation switch is turned off or was turned to fan operation position, the unit will not go into operation in order to protect the compressor.

(c) Insert in electric plug into the electric outlet and make sure that it is not loose.

(i) When there is something wrong with the electric outlet and if the insertion of the electric plug is insufficient, there may occur a burn out.

(ii) It is very important to be careful of above when plugging in the unit to an already furnished electrical outlet.

(d) Explain to the customer on the correct usage of the air conditioner in simple layman's terms.

(e) Make sure that drain flows properly.

(f) Standard operation data

(220/230/240V)

Item \ Model		SRK20HD-S SRK20HC-S1	SRK28HD-S SRK28HC-S1	SRK40HD-S SRK40HC-S1
High pressure MPa (kgf/cm²)	Cooling	–	–	–
	Heating	2.55~2.74 (26~28)	2.55~2.74 (26~28)	2.55~2.74 (26~28)
Low pressure MPa (kgf/cm²)	Cooling	0.78~0.98 (8~10)	0.78~0.98 (8~10)	0.69~0.88 (7~9)
	Heating	–	–	–
Temp. difference between return air and supply air (°C)	Cooling	13~15	13~15	14~16
	Heating	15~17	15~17	20~22
Running current (A)	Cooling	3.1/3.0/2.9	3.9/3.7/3.5	5.3/5.1/4.9
	Heating	3.0/2.9/2.8	3.7/3.5/3.3	5.5/5.3/5.1

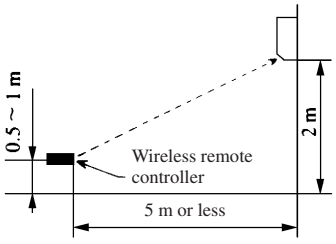
Item \ Model		SRK20CD-S SRK20CC-S	SRK28CD-S SRK28CC-S	SRK40CD-S SRK40CC-S
Low pressure MPa (kgf/cm²)	Cooling	0.78~0.98 (8~10)	0.78~0.98 (8~10)	0.69~0.88 (7~9)
Temp. difference between return air and supply air (°C)	Cooling	13~15	13~15	14~16
Running current (A)	Cooling	3.1/3.0/2.9	3.9/3.7/3.5	5.3/5.1/4.9

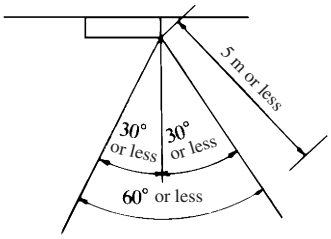
Note (1) The data are measured at following conditions
Ambient air temperature
Indoor side: Cooling ... 27˚C DB, 19˚C WB, Heating ... 20˚C DB
Outdoor side: Cooling ... 35˚C DB, 24˚C WB, Heating ... 7˚C DB, 6˚C WB

(6) Precautions for wireless remote controller installation and operation

(a) Wireless remote controller covers the following distances:

(i) When operating facing the air conditioner:

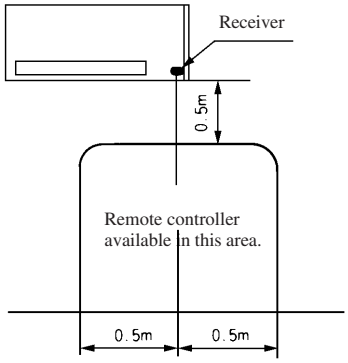




Notes (1) The remote controller is correctly facing the sensing element of the air conditioner when being manipulated.
(2) The typical coverage is indicated (in the left illustration). It may be more or less depending on the installation.
(3) The coverage may be less or even nil. If the sensing element is exposed to strong light, such as direct sunlight, illumination, etc., or dust is deposited on it or it is used behind a curtain, etc.

(ii) When manipulating the remote controller mounted on a wall:

Make sure that it works normally (i.e., transmission/reception signal is audible) before mounting.

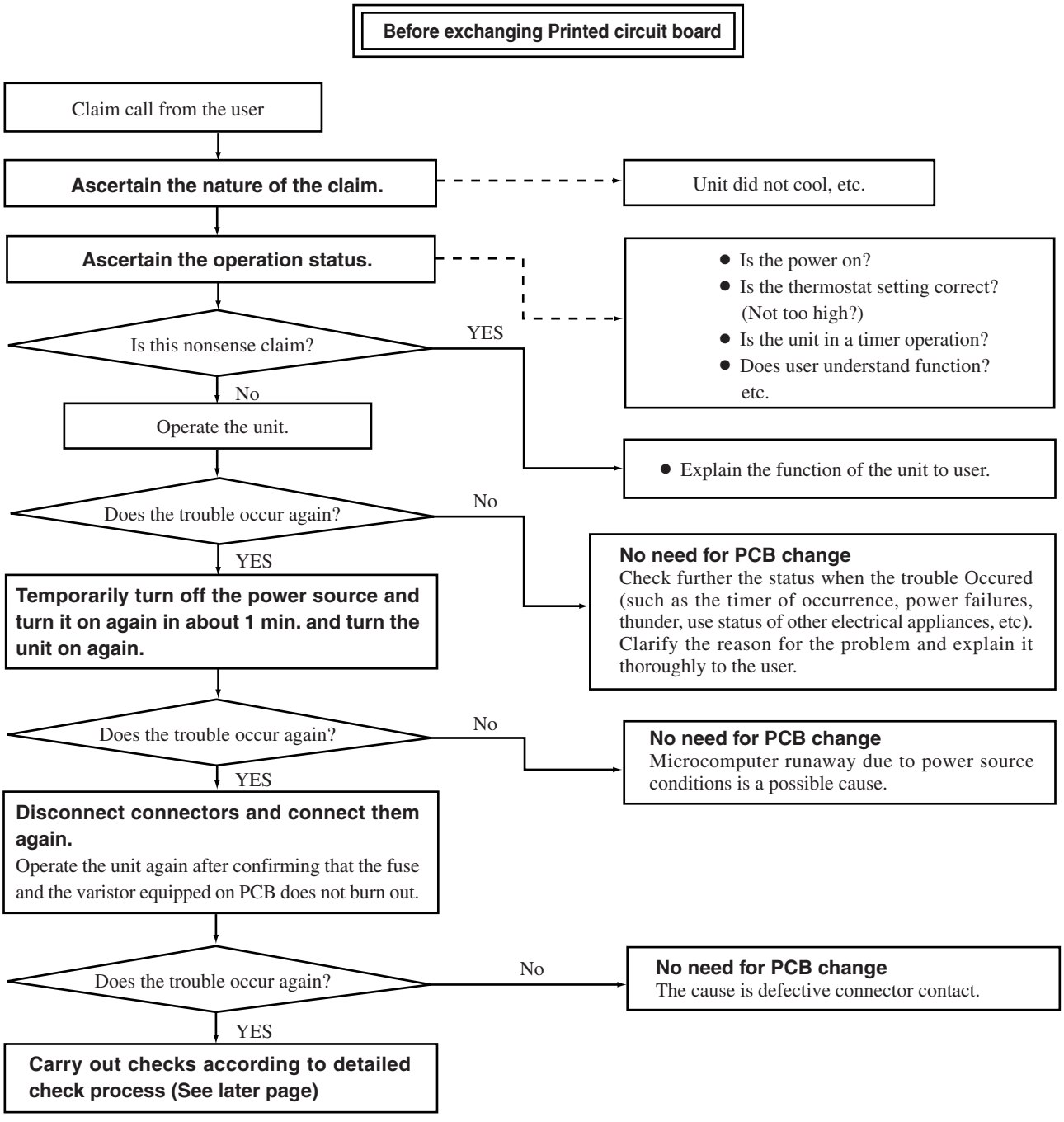


2.1.6 MAINTENANCE DATA

(1) Trouble shooting

(a) Trouble shooting to be performed prior to exchanging PCB, (Printed circuit board) [Common to all models]

All the models described in this chapter are controlled by a microcomputer. When providing maintenance service to customers it is necessary to understand the function controlled by a micro computer thoroughly, so as not to mistakenly identify correct operations as mis-operations. It is also necessary to perform the following simple checks before conducting detailed checks or exchanging printed circuit board.



(b) Self diagnosis display on indoor unit

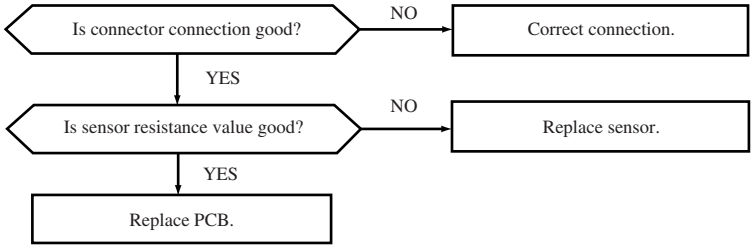
RUN light	Outdoor unit LED	Trouble	Cause
TIMER light ON: 1 time flash	OFF	Heat exchanger sensor error	● Broken heat exchanger sensor wire, connector poor connection
TIMER light ON: 2 time flash	OFF	Room temperature sensor error	● Broken room temperature sensor wire, connector poor connection
TIMER light ON: 6 time flash	OFF	Indoor fan motor error	● Defective fan motor, connector poor connection

TIMER light			
RUN light keeps flashing: 1 time flash	OFF	Outdoor air temperature sensor error	● Broken outdoor air temp. sensor wire, connector poor connection
RUN light keeps flashing: 2 time flash	OFF	Outdoor unit heat exchanger sensor error	● Broken heat exchanger sensor wire, connector poor connection
RUN light keeps flashing: 4 time flash	OFF	Discharge pipe temp. sensor error	● Broken discharge pipe temp. sensor wire, connector poor contact
RUN light ON: 1 time flash	1 time flash	Current cut	● Compressor lock. ● Closed service valve.
RUN light ON: 2 time flash	2 time flash	Outdoor unit error	● Compressor faulty ● Overload operation (51C operation)
RUN light ON: 5 time flash	5 time flash	Compressor overheat	● Gas shortage. ● Defective discharge pipe temp. sensor
RUN light ON: 6 time flash	6 time flash	Serial signal transmission error	● Broken signal wire. ● Defective indoor/outdoor unit PCB.

(c) Inspection procedures corresponding to detail of trouble

Sensor error

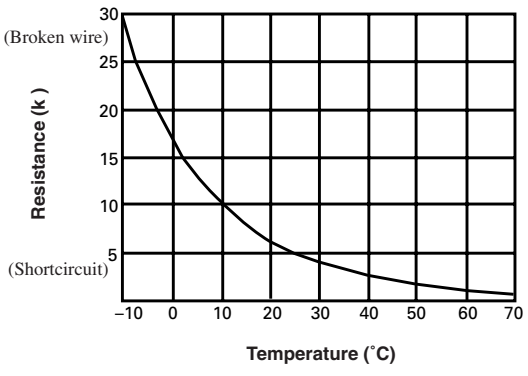
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe temp. sensor temperature characteristics**

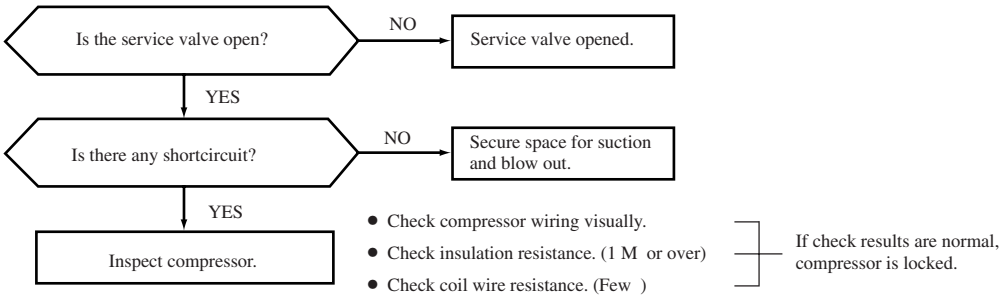
Temperature (˚C)	Resistance (k)	Temperature (˚C)	Resistance (k)
0	164	70	8.7
5	127	75	7.3
10	99	80	6.2
15	78	85	5.3
20	62	90	4.5
25	50	95	3.9
30	40	100	3.3
35	32	105	2.9
40	26	110	2.5
45	21	115	2.2
50	17	120	1.9
55	14	125	1.6
60	12	130	1.4
65	10	135	1.3

◆ **Sensor temperature characteristics (Room temp., indoor unit heat exchanger temp., outdoor unit heat exchanger temp., outdoor temp.)**



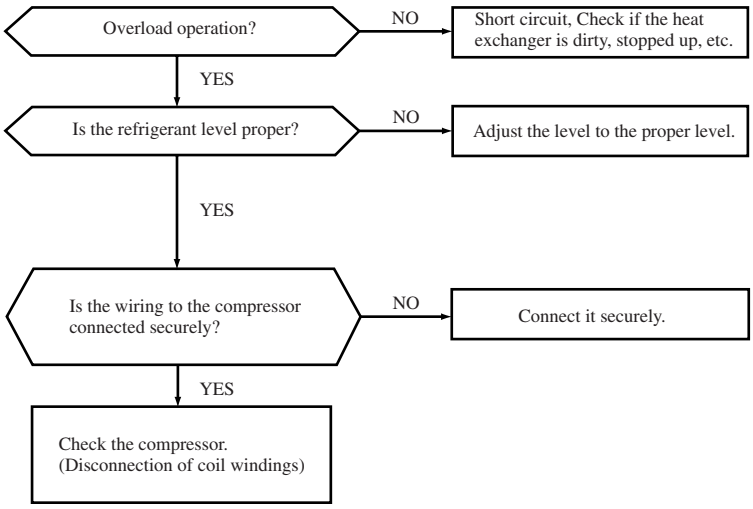
Current cut

[compressor lock]



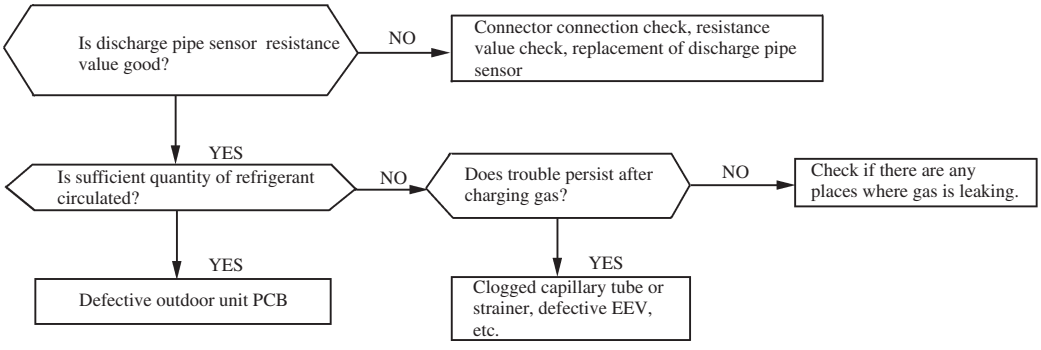
Outdoor unit abnormal

[Compressor faulty, compressor wiring disconnected.]



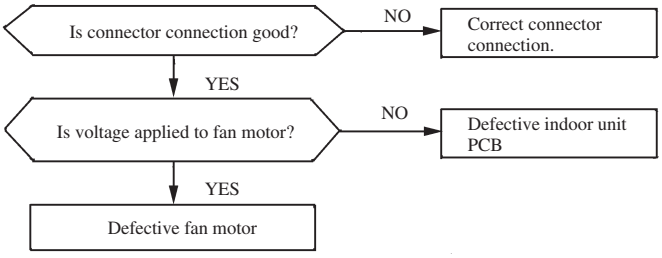
Compressor overheat

[Gas shortage, defective discharge pipe sensor]



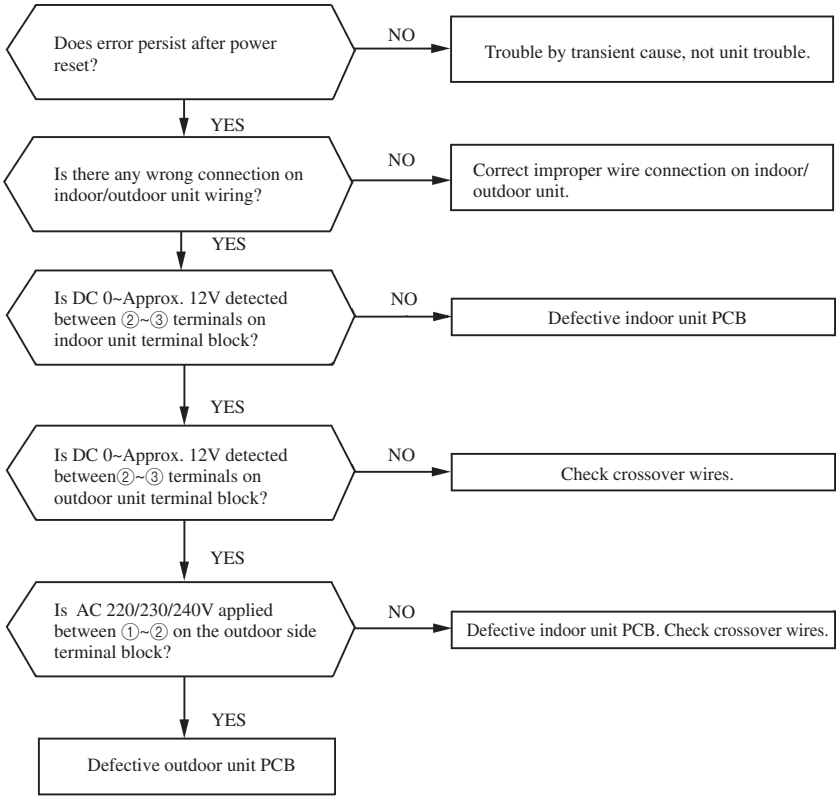
Indoor fan motor error

[Defective fan motor, defective PCB]



Serial signal transmission error

[Wiring error including power cable, defective indoor/ outdoor unit PCB]



(d) Phenomenon observed after shortcircuit, wire breakage on sensor.

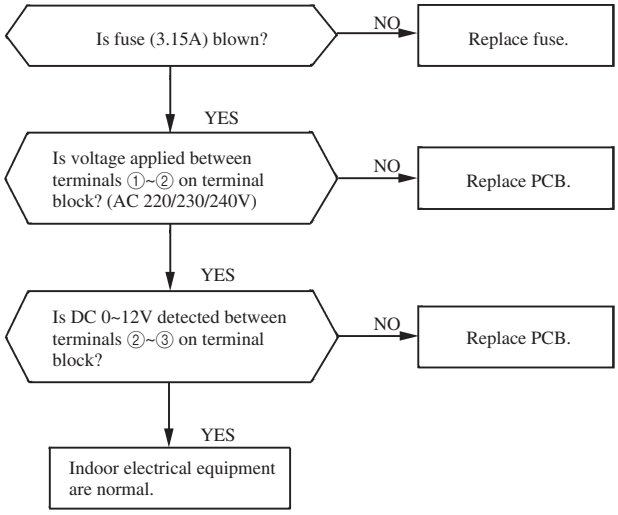
(i) Indoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature sensor	Cooling	Release of continuous compressor operation command	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command
Heat exchanger sensor	Cooling	System can be operated normally.	Continuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode	Hot keep (Indoor fan stop)

(ii) Outdoor unit

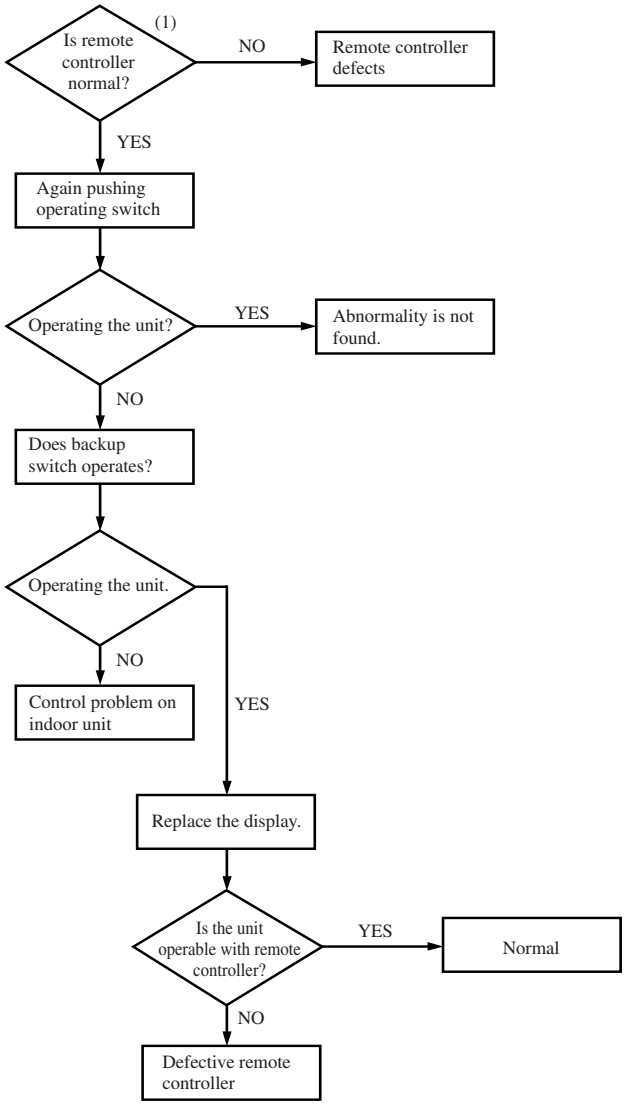
Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 1 hour.
Outdoor temperature sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at intervals of approx. 1 hour.
Discharge pipe sensor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(e) Inspection procedures of indoor electrical equipment

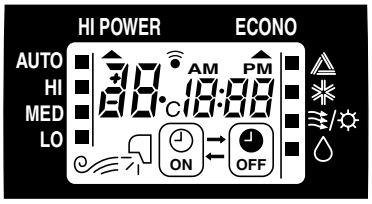


Notes (1) Since the communication timing signal is transmitted only when the 52C is turned ON, check it under the operating condition.
(2) Check the voltage on the terminal block.
- Power supply: Between ①~② (AC 220/230/240V)
- Signal: Between ②~③ (Changing between DC 0~Approx. 12V)

(f) How to make sure of remote controller



Note (1) Check method of remote controller
(a) Press the reset switch of the remote controller.
(b) If all LCD are displayed after zero (0) display, it is basically normal.



(2) Servicing

(a) Evacuation

The evacuation is an procedure to purge impurities.....noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R410A is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called water clogging.

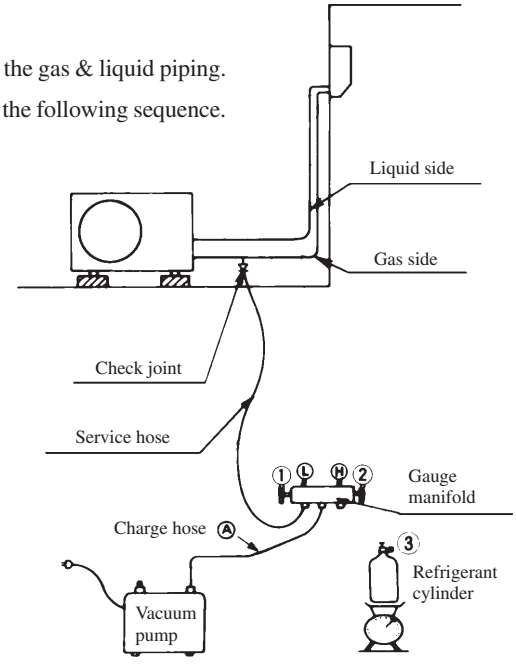
- Evacuation procedure

(i) Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relieved through the check joint.

(ii) Connect the service hoses of the gauge manifold to the check joint of the gas & liquid piping.

(iii) Connect a vacuum pump to the charge hose Ⓐ. Repeat evacuation in the following sequence.

Start the vacuum pump.
↓
Compound pressure gauge indicates 0.1 MPa (–76 cmHg)
↓
Operate the vacuum pump for more than 15 minutes after 0.1 MPa (–76 cmHg) is indicated.
↓
Close low pressure valve ① of gauge manifold.
↓
Stop the vacuum pump.



Notes (1) Do not use the refrigerant pressure to expel air.
(2) Do not use the compressor for evacuation.
(3) Do not operate the compressor in the vacuum condition.

(b) Refrigerant charge

(i) Discharge refrigerant entirely from the unit and evacuate the unit.
Note: Addition of refrigerant without evacuation is unreasonable, because it will result in low charge or overcharge.

(ii) Keep the gauge manifold and connect a refrigerant cylinder to the unit.

(iii) Record the weight of the refrigerant cylinder on the balance. This is necessary for making sure of the charged refrigerant amount.

(iv) Purge air from the charge hose Ⓐ
Firstly loose the connecting portion of the charge hose Ⓐ at the gauge manihold side and open the valve ③ for a few seconds, and then immediately retighten it after observing that gas is blow out from the loosened portion.

(v) Open the valve ① and ③ after discharging air from the charge hose Ⓐ, then the liquid refrigerant begins flowing from the cylinder into the unit. Be sure to erect the refrigerant cylinder upright to let liquid refrigerant flow into the unit.

(vi) When refrigerant has been charged into the system to some extent, refrigerant flow becomes stagnant, when that happens, start the compressor in cooling cycle until the unit is filled with refrigerant to the specified weight.

(vii) Making sure of the refrigerant amount, close the valve ③

(viii) Disconnect the charge hose from the unit. Cover the valve ports of the refrigerant piping with caps and tighten them securely.

(ix) Check for gas leakage applying a gas leak detector along the piping line.

(x) Start the air conditioner and make sure of its operating condition.....high side and low side pressures and temperature difference between suction air and outlet air.

2.1.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A

This is same as chapter 1.1.7. Refer to Page 59.

CONTENTS

2.2.1 GENERAL INFORMATION 181
(1) Specific features 181
(2) How to read the model name 181
2.2.2 SELECTION DATA 182
(1) Specifications 182
(2) Range of usage & limitations 184
(3) Exterior dimensions 184
(4) Piping system 185
(5) Selection chart 186
2.2.3 ELECTRICAL DATA 187
(1) Electrical wiring 187
2.2.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 188
(1) Operation control function by remote control switch 188
(2) Unit ON/OFF button 189
(3) Power blackout auto restart function 189
(4) Custom cord switching procedure 190
(5) Flap control 190
(6) Comfortable timer setting 191
(7) Outline of heating operation 191
(8) Outline of cooling operation 194
(9) Outline of dehumidifying operation 195
(10) Outline of automatic operation 196
(11) Outline of fan operation 196
(12) Protective control function 197
2.2.5 APPLICATION DATA 199
(1) Selection of location for installation 200
(2) Installation of indoor unit 201
(3) Installation of outdoor unit 204
(4) Refrigerant piping 204
(5) Test run 205
(6) Precautions for wireless remote controller installation and operation 206
2.2.6 MAINTENANCE DATA 207
(1) Troubleshooting procedures for electrical equipment 207
(2) Servicing 214
2.2.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A 214

2.2.1 GENERAL INFORMATION

(1) Specific features

The “Mitsubishi Daiya” room air-conditioner: SRK series are of split and wall mounted type and the unit consists of indoor unit and outdoor unit with refrigerant precharged in factory. The indoor unit is composed of room air cooling or heating equipment with operation control switch and the outdoor unit is composed of condensing unit with compressor.

(a) Remote control flap

The flap can be automatically controlled by operating wireless remote controller.

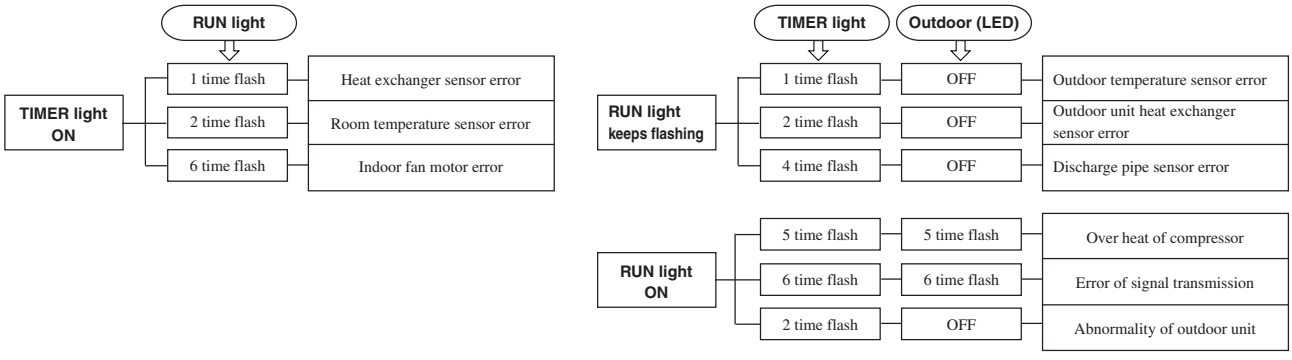
- Air scroll: Flap operation is automatically control.
- Swing: This will swing the flap up and down.
- Memory flap: Once the flap position is set, the unit memorizes the position and continues to operate at the same position from the next time.

(b) Automatic operation

When the remote control switch is set on “auto(⧋)”, it will either automatically decide operation mode such as cooling, heating and thermal dry, or operate in the operation mode before it has been turned to automatic control.

(c) Self diagnosis function

- We are constantly trying to do better service to our customers by installing such judges that show abnormality of operation as follows.



(2) How to read the model name

Example : SR K 50 H E - S

- S: R410A models
- E: Series No.
- H: Heat pump type
- 50: Product capacity
- K: Wall mounted type
- SR: Split type room air-conditioner

2.2.2 SELECTION DATA

(1) Specifications

Model SRK50HE-S (Indoor unit)
SRC50HE-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK50HE-S	SRC50HE-S
Cooling capacity(1)				W	4700	
Heating capacity(1)				W	5300	
Power source					1 Phase, 220-240V, 50Hz	
Operation data(1)	Cooling input			kW	1.41	
	Running current (Cooling)			A	6.5/6.3/6.0	
	Heating input			kW	1.40	
	Running current (Heating)			A	6.5/6.2/6.0	
	Inrush current			A	39.6	
	COP				Cooling: 3.33 Heating: 3.79	
	Noise level	Cooling	Sound level	dB	Hi 43, Me 39, Lo 34	47
			Power level		58	63
		Heating	Sound level		Hi 44, Me 39, Lo 35	49
			Power level		61	64
Exterior dimensions Height × Width × Depth				mm	298 × 840 × 259	640 × 850 × 290
Color					Cool white	Stucco white
Net weight				kg	12	44
Refrigerant equipment Compressor type & Q'ty					–	RM-B5118MNE5 (Rotary type) × 1
Motor				kW	–	1.4
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electronic expansion valve	
Refrigerant(3)				kg	R410A 1.4 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.7 (MA68)	
Deice control					Microcompter control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	27	35
Air flow (at High)			(Cooling)	CMM	10.0	38.0
			(Heating)		12.5	38.0
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					Microcomputer thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, Serial signal error protection, Indoor fan motor error protection, Frost protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	Connecting method				Flare Connection	
	Attached length of piping				Liquid line: 0.54 m Gas line : 0.47 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2 m (3 cores with earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even for the short piping.)
If the piping length is longer, when it is 15 to 25 m, add 20 g refrigerant per meter.

Model SRK56HE-S (Indoor unit)
SRC56HE-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK56HE-S	SRC56HE-S
Cooling capacity(1)				W	5100	
Heating capacity(1)				W	5800	
Power source					1 Phase, 220-240V, 50Hz	
Operation data(1)	Cooling input			kW	1.59	
	Running current (Cooling)			A	7.3/7.1/6.8	
	Heating input			kW	1.58	
	Running current (Heating)			A	7.4/7.1/6.8	
	Inrush current			A	45.2	
	COP				Cooling: 3.21 Heating: 3.67	
	Noise level	Cooling	Sound level	dB	Hi 44, Me 40, Lo 35	49
			Power level		59	64
		Heating	Sound level		Hi 44, Me 39, Lo 35	51
			Power level		61	65
Exterior dimensions Height × Width × Depth				mm	298 × 840 × 259	640 × 850 × 290
Color					Cool white	Stucco white
Net weight				kg	12	44
Refrigerant equipment Compressor type & Q'ty					–	RM-B5120MNE5 [Rotary type] × 1
Motor				kW	–	1.5
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	Straight fins & inner grooved tubing
Refrigerant control					Capillary tubes + Electronic expansion valve	
Refrigerant(3)				kg	R410A 1.4 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.7 (MA68)	
Deice control					Microcomputer control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	27	35
Air flow (at High)			(Cooling)	CMM	11.0	38.0
			(Heating)		12.5	38.0
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote controller	–
Room temperature control					Microcomputer thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: Overheat protection, Serial signal error protection, Indoor fan motor error protection, Frost protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	Connecting method				Flare connection	
	Attached length of piping				Liquid line: 0.54 m Gas line : 0.47 m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source cord					2 m (3 cores with earth)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts					–	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even for the short piping.)
If the piping length is longer, when it is 15 to 25 m, add 20 g refrigerant per meter.

(2) Range of usage & limitations

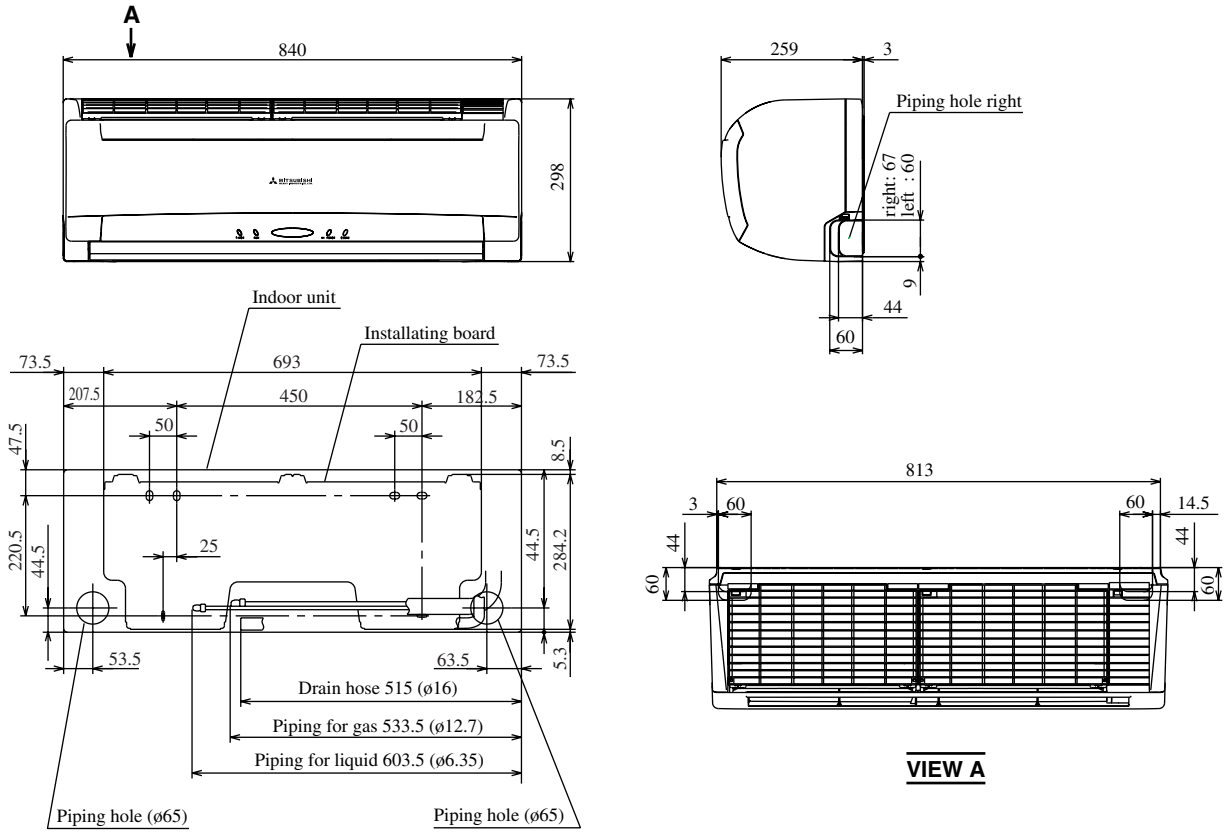
Item \ Models	All models
Indoor return air temperature (Upper, lower limits)	Refer to the selection chart
Outdoor air temperature (Upper, lower limits)	
Refrigerant line (one way) length	Max. 25m
Vertical height difference between outdoor unit and indoor unit	Max. 15m (Outdoor unit is higher) Max. 15m (Outdoor unit is lower)
Power source voltage	Rating ± 10%
Voltage at starting	Min. 85% of rating
Frequency of ON-OFF cycle	Max. 10 times/h
ON and OFF interval	Max. 3 minutes

(3) Exterior dimensions

(a) Indoor unit

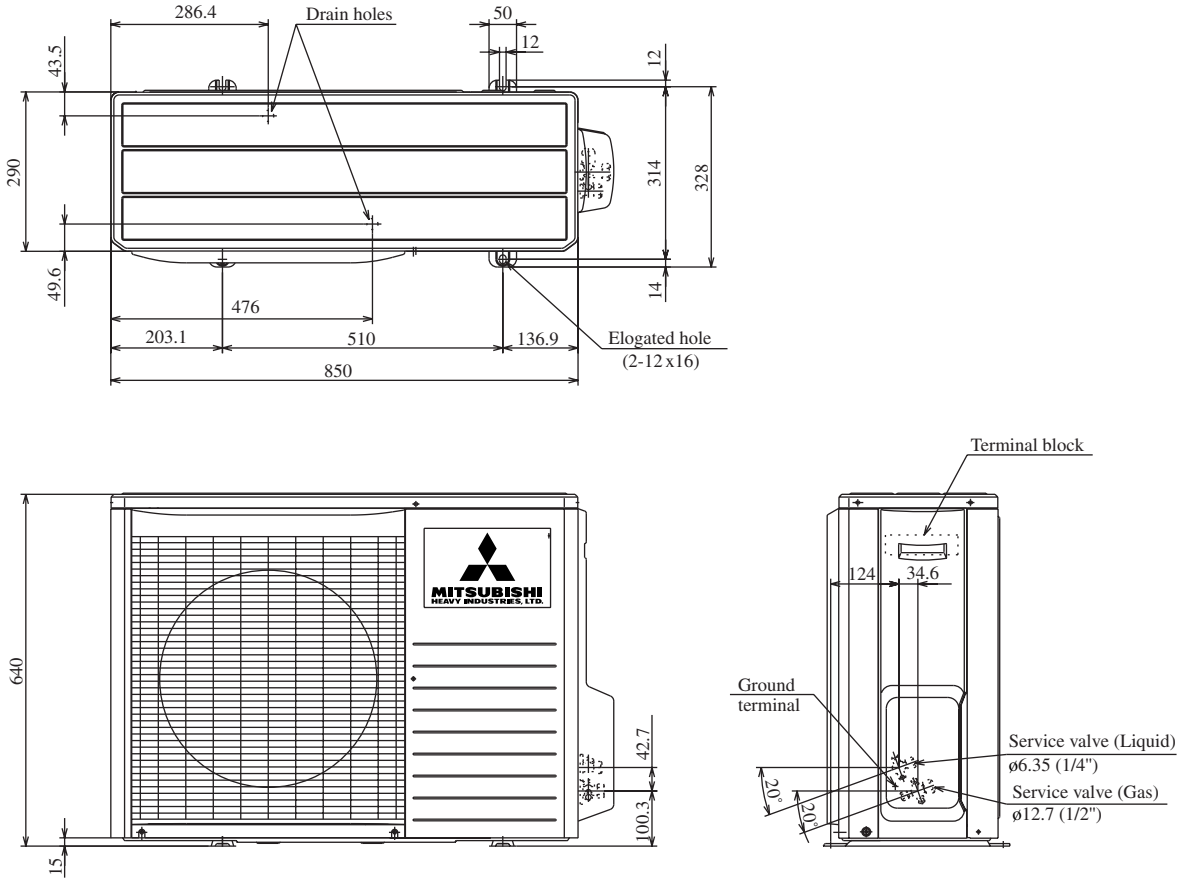
Models All models

Unit: mm



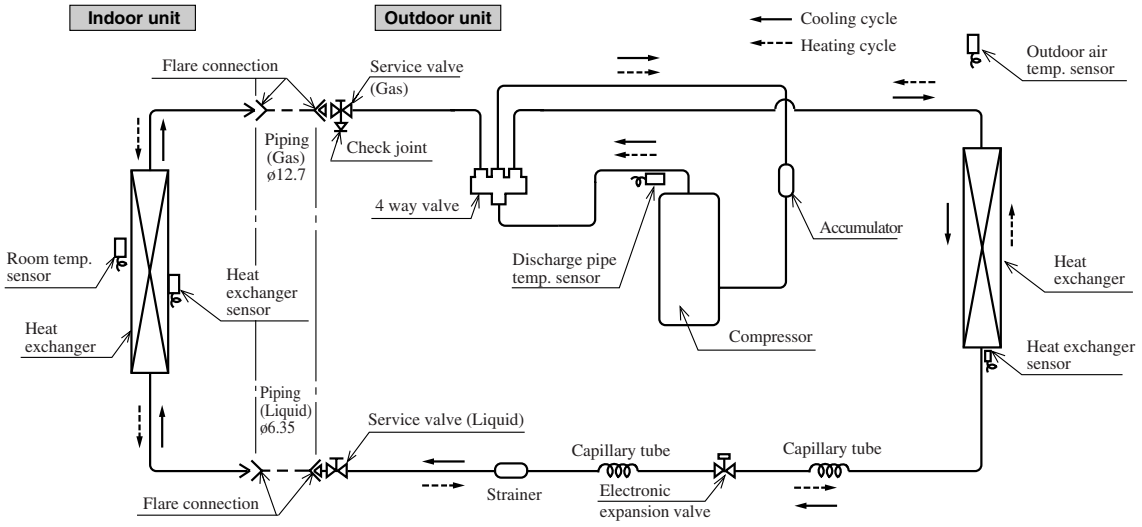
(b) Outdoor unit

Models All models



(4) Piping system

Models SRK50HE-S, 56HE-S

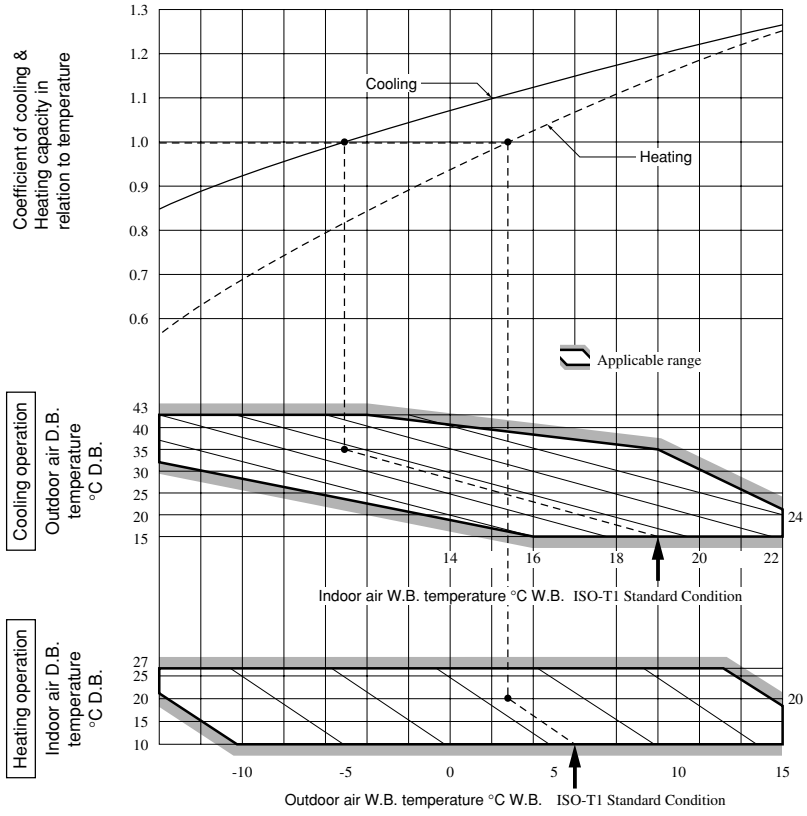


(5) Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(a) Coefficient of cooling and heating capacity in relation to temperatures



(b) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15	20	25
Cooling	1.0	0.99	0.975	0.965	0.95
Heating	1.0	1.0	1.0	1.0	1.0

(c) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (a), (b) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in ˚CWB	-10	-9	-7	-5	-3	-1	1	3	5
Adjustment coefficient	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

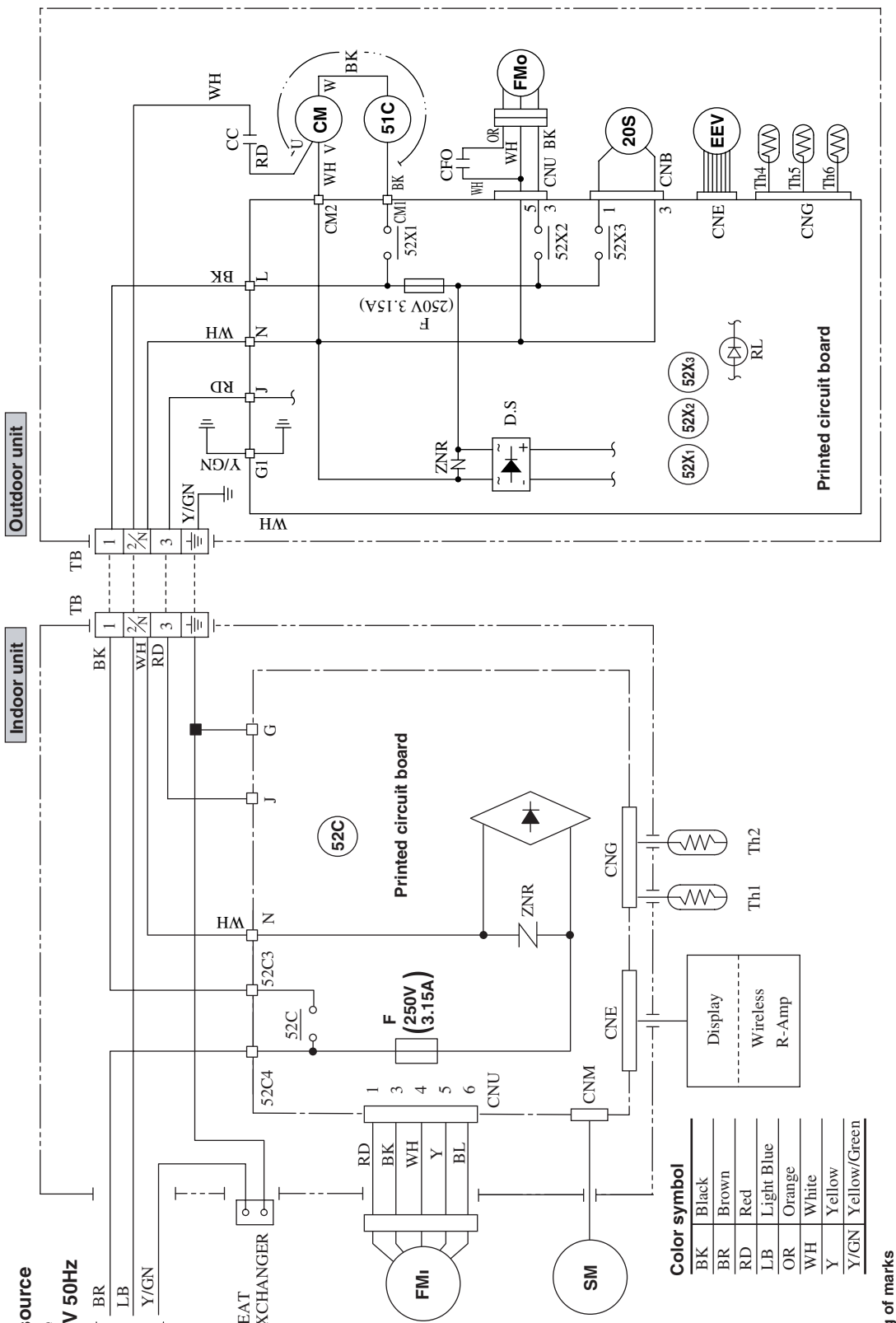
How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK50HE-S with the piping length of 15m, indoor wet-bulb temperature at 19.0˚C and outdoor dry-bulb temperature 35˚C is Net cooling capacity = $\underset{\text{SRK50HE-S}}{4700} \times \underset{\text{Length 15m}}{0.975} \times \underset{\text{Factor by air temperatures}}{1.0} = 4583$ W

2.2.3 ELECTRICAL DATA

(1) Electrical wiring

Models SRK50HE-S, 56HE-S



Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CM	Compressor motor	Th2	Heat exchanger sensor (Indoor unit)	DS	Diode stack
F	Fuse	Th4	Heat exchanger sensor (Outdoor unit)	52X1-3	Auxiliary relay
FMI	Fan motor (Indoor)	Th5	Outdoor air temp. sensor	EEV	Electronic expansion valve
FMo	Fan motor (Outdoor)	Th6	Discharge pipe sensor	51C	Motor Protector for CM
SM	Flap motor	ZNR	Varistor	TB	Terminal block
RL	Inspection lamp	20S	4 way valve (coil)		
Th1	Room temp. sensor	52C	Magnetic contactor		

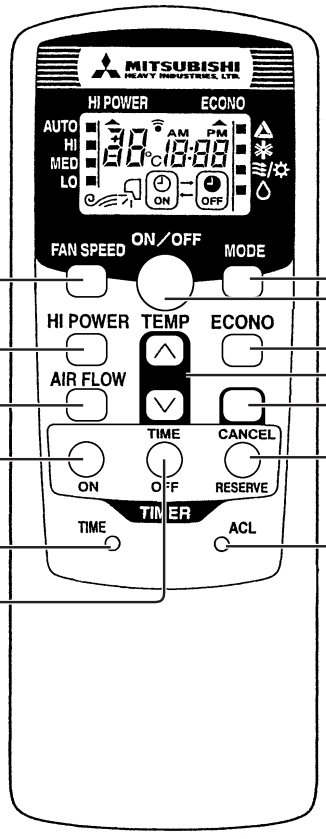
2.2.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Operation control function by remote control switch

Remote controller

Models All models

◆ Operation section



FAN SPEED button

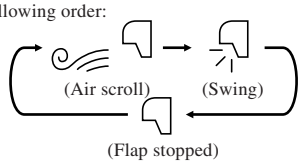
Each time the button is pushed, the ■ indicator is switched over in turn.

HI POWER button

This button changes the HIGH POWER mode.

AIR FLOW button

This button changes the flap mode. When pressed, this button changes the mode in the following order:



ON TIMER button

This button selects ON TIMER operation.

Time switch

This switch for setting the time.

OFF TIMER button

This button selects OFF TIMER operation.

OPERATION MODE select button

Each time the button is pushed, the ■ indicator is switched over in turn.

ON/OFF button

Press for starting operation, press again for stopping.

ECONO button

This button changes the ECONOMY mode.

TEMPERATURE button

This button sets the room temperature.
(This button changes the present time and TIMER time.)

CANCEL button

This button cancels the ON timer and OFF timer.

RESERVE button

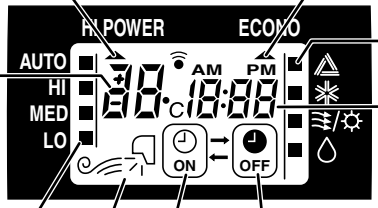
This button sets the present time and TIMER time.

RESET switch

Switch for resetting microcomputer.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

◆ Indication section



HIGH POWER MODE indicator

Indicates during high power mode operation.

TEMPERATURE indicator

Indicates set temperature.
(Does not indicate temperature when operation mode is on AUTO)

FAN SPEED indicator

Indicates set air flow rate with ■ lamp.

AIR FLOW indicator

Shows selected flap mode.

ON TIMER indicator

Indicates during ON TIMER operation.

ECONOMY MODE indicator

Indicates during economy mode operation.

OPERATION MODE indicator

Indicates selected operation with ■ lamp.
Heat pump type:
[△ (Auto) • ❋ (Cool) • ≋/☼ (Heat) • ◊ (Dry)]
Cooling only type:
[△ (Auto) • ❋ (Cool) • ≋/☼ (Fan) • ◊ (Dry)]

TIME indicator

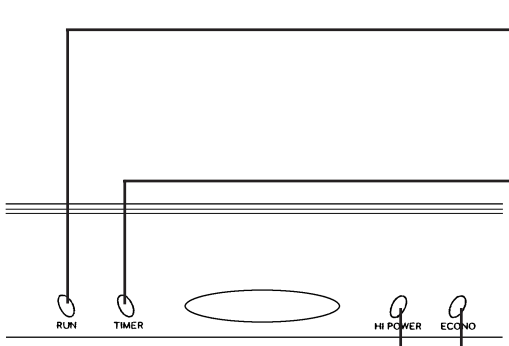
Indicates present time or timer setting time.

OFF TIMER indicator

Indicates OFF TIMER operation.

Unit indication section

Models All models



RUN (HOT KEEP) light (green)

- Illuminates during operation.
- Brinks at air flow stop due to the 'HOT KEEP'.

TIMER light (yellow)

Illuminates during TIMER operation.

HI POWER light (green)

Illuminates during HIGH POWER operation.

ECONOMY light (orange)

Illuminates during ECONOMY operation.

(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

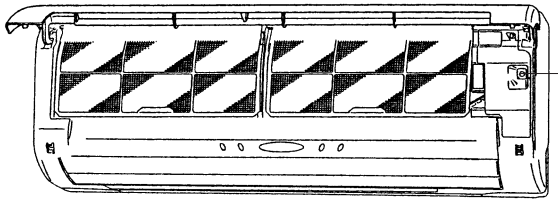
(a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from room temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / Operation mode	Room temperature setting	Fan speed	Flap	Timer switch
Cooling	About 25ºC	Auto	Auto	Continuous
Thermal dry	About 25ºC			
Heating	About 26ºC			



Unit ON/OFF button

(3) Power blackout auto restart function

(a) Power blackout auto restart function is a function that records the operational status of the air-conditioner immediately prior to it being switched off by a power cut, and then automatically resumes operations at that point after the power has been restored.

(b) The following settings will be cancelled:

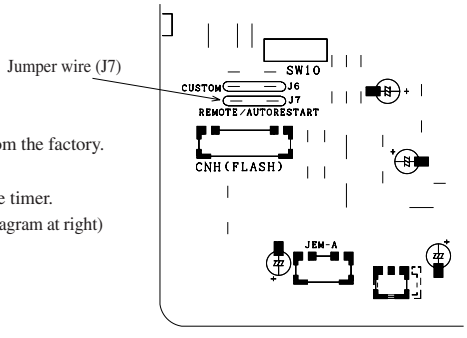
(i) Timer settings

(ii) High-power operations

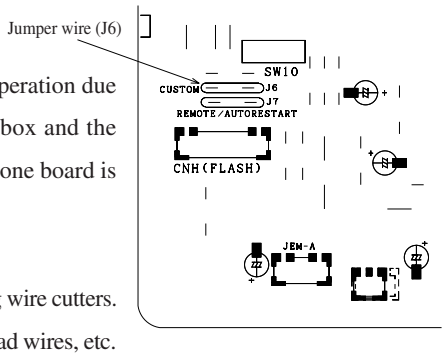
Notes (1) The power blackout auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.

(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.

(3) If the jumper wire (J7) "REMOTE/AUTORESTART" is cut, auto restart is disabled. (See the diagram at right)



(4) Custom cord switching procedure



If two wireless remote controllers are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote controller using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(a) Modifying the indoor unit's printed circuit board

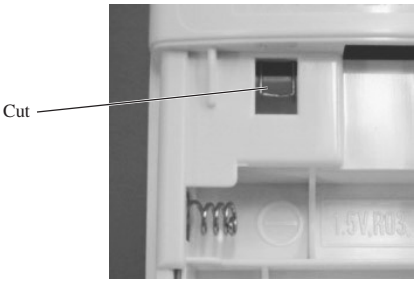
Take out the printed circuit board from the control box and cut off jumper wire (J6) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

(b) Modifying the wireless remote controller

(i) Remove the battery.

(ii) Cut the jumper wire shown in the figure at right.



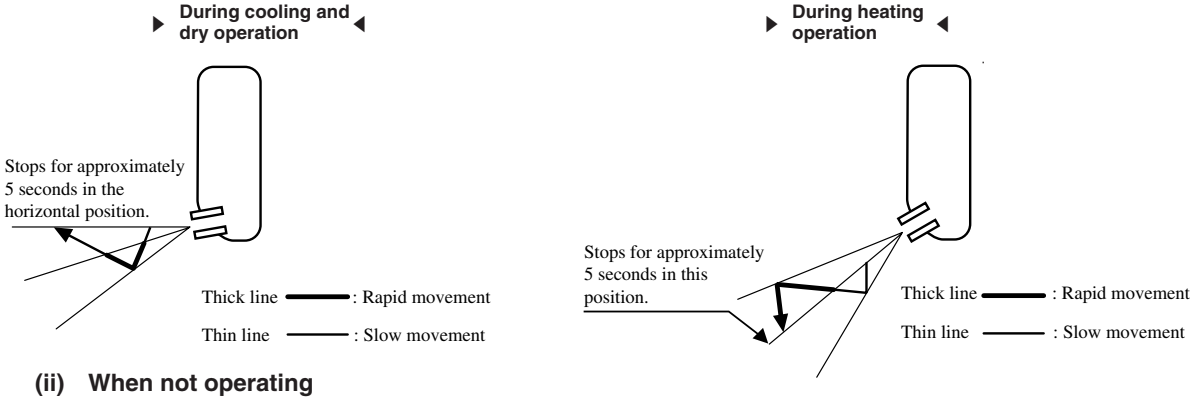
(5) Flap control

Control the flap by AIRFLOW button on the wireless remote controller.

(a) Air scroll

The flap will be automatically set to the angle of air flow best to operation.

(i) Starting time of operation



(ii) When not operating

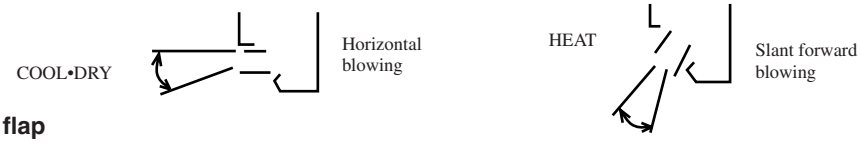
The flap returns to the position of air flow directly below, when operation has stopped.

(b) Memory flap

While the flap is operating if the AIRFLOW button is pushed once, it stops swinging at an angle.

As this angle is memorized in the microcomputer, the flap will be automatically set to the angle when next operation is started.

- Recommendable stopping angle of the flap



(c) Swing flap

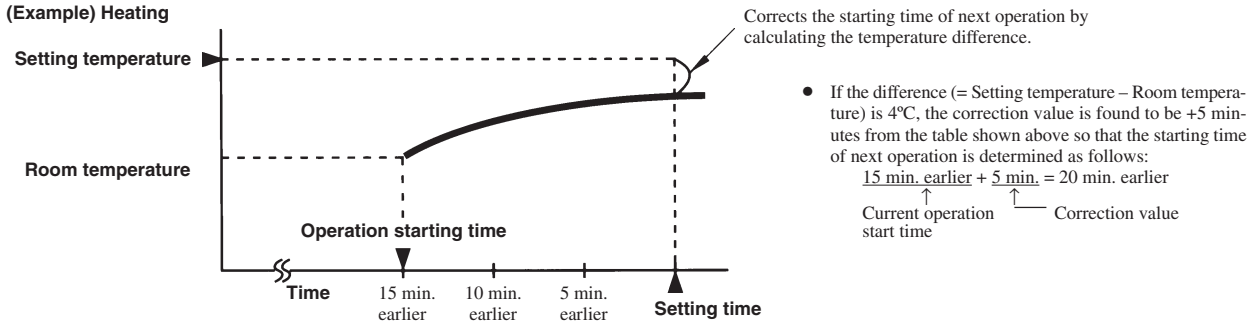
Flap moves in upward and downward directions continuously.

(6) Comfortable timer setting

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the room temperature at the setting time (temperature of room temperature sensor) and the setting temperature. (Max. 60 minutes)

Operation mode	Operation start time correction value (Min.)		
At cooling	3 < Room temp. – Setting temp.	1 < Room temp. – Setting temp. ≦ 3	Room temp. – Setting temp. ≦ 1
	+5	No change	–5
At heating	3 < Setting temp. – Room temp.	2 < Setting temp. – Room temp. ≦ 3	Setting temp. – Room temp. ≦ 2
	+5	No change	–5

Notes (1) At 5 minutes before the timer ON time, operation starts regardless of the temperature of the room temperature sensor (Th1).
(2) This function does not actuate when the operation select switch is set at the dehumidifying as well as the dehumidifying in the auto mode. However, the operation of item (1) above is performed during the dehumidifying in the auto mode.
(3) During the comfortable timer operation, both the run light and timer light illuminate and the timer light goes off after expiration of the timer, ON setting time.



(7) Outline of heating operation (Heat pump type only)

(a) Operation of major functional components

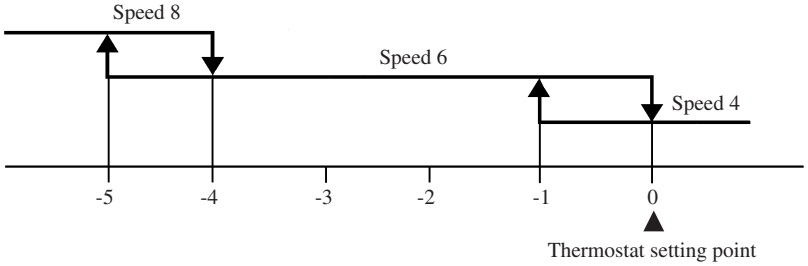
Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an anomalous stop.
Indoor fan motor	ON	ON	OFF
Flaps	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
52C	ON	ON	OFF after stop mode
Outdoor fan motor	OFF	ON	OFF
4-way valve	Depending on the stop mode	ON	Depending on the stop mode
Electric expansion valve		Depending on the EEV control	

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 8	Speed 6	Speed 4
Swing flap		Speed 8	Speed 6	Speed 4
Swing stop		Speed 8	Speed 6	Speed 4

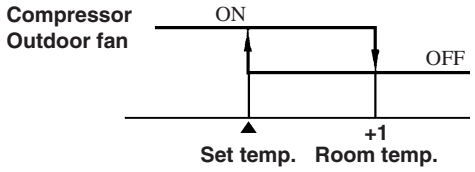
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the thermostat setting as shown below.



(c) Thermostat operation

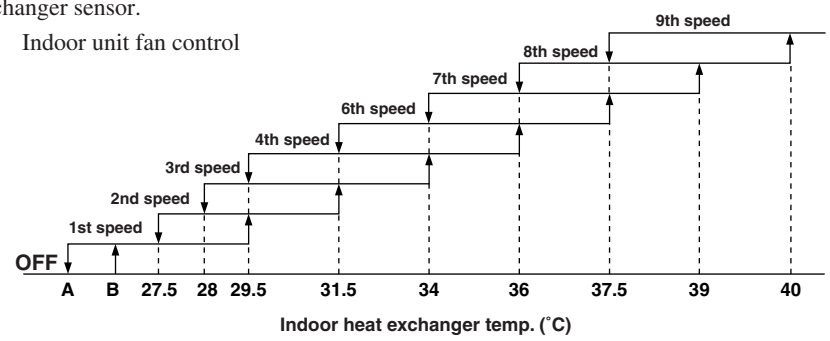
The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) Hot keep

This function controls the indoor unit fan speed as shown below in accordance with the temperature sensed by the indoor heat exchanger sensor.

(i) Indoor unit fan control



● **Values of A, B**

	A	B
When the compressor command is OFF	22	25
When the compressor command is ON	17	19

Note (1) Refer to the table shown above right for the values A and B.

(ii) To accomplish rapid recovery from the thermostat off state, after the compressor and outdoor unit's fan go OFF, the set temperature is raised by 1ºC until 1 minute passes after the hot keep end temperature has been reached following restarting.

(e) Hot spurt

(i) For 40 minutes after a heating operation begins, the system runs with set temperature raised by 2ºC.

(ii) In the following cases, this function is canceled and does not activate afterwards.

1) When the compressor and outdoor unit fan have been turned OFF by the thermostat going off.
2) During high pressure control operation.

(f) HIGH POWER operation ("HI POWER" button on the remote controller : ON)

The system runs under the following conditions for 15 minutes without relation to the set temperature or the fan speed setting.

Indoor unit fan	Speed 9 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HIGH POWER operation.
(2) Protective function will actuate with priority even during the HIGH POWER operation.

(g) Defrost operation

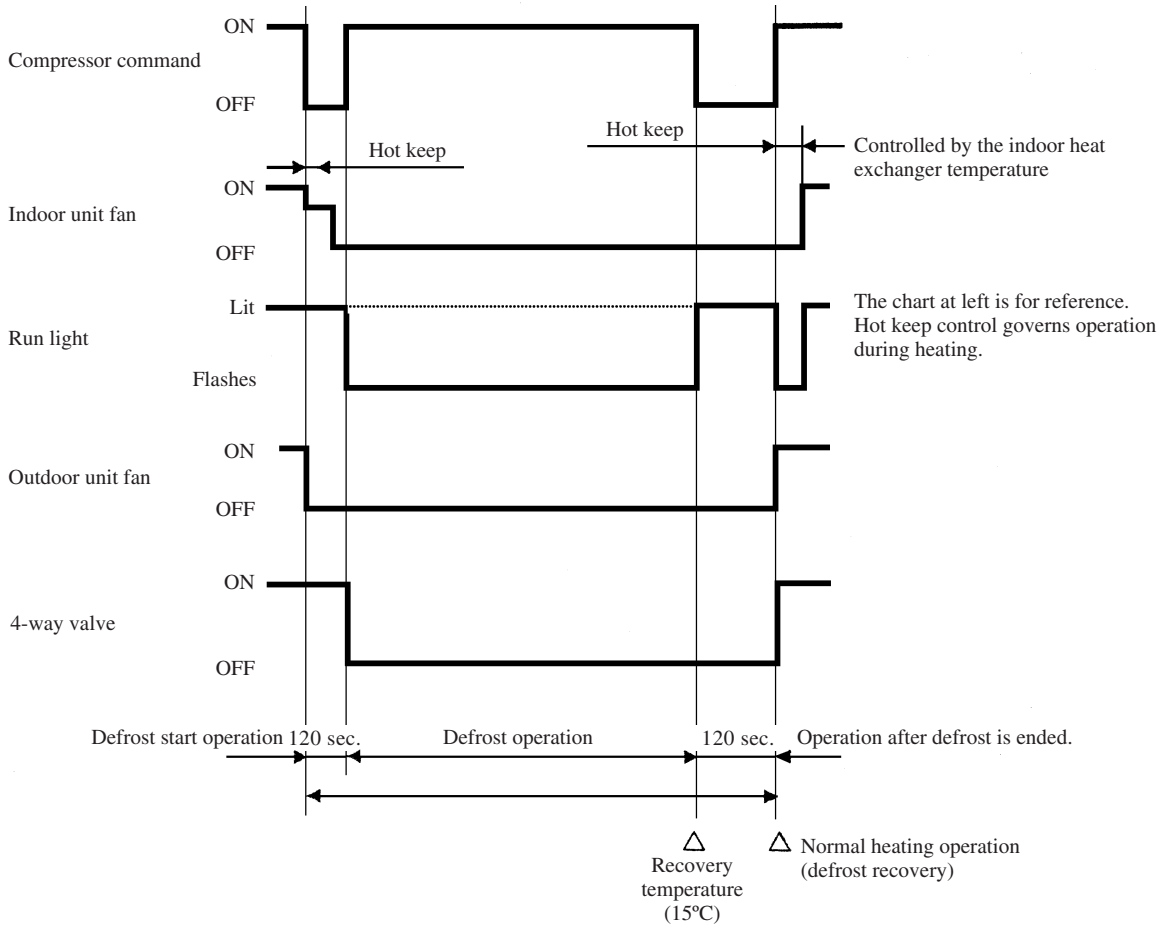
(i) Starting conditions (Defrost operation begins when all the following conditions are satisfied.)

① 35 minutes have passed since the heating operation began. (Accumulated operation time)
② 35 minutes have passed since the previous defrosting operation ended. (Accumulated operation time)
③ The outdoor unit heat exchanger temperature sensor is –5ºC or lower continuously for 3 minutes.
④ ● The outdoor temperature ≧ -15°C
The difference between the outdoor temperature sensor temperature and the outdoor heat exchanger temperature sensor temperature is ≧ 6.0ºC.
● The outdoor temperature < -15°C
The difference between the outdoor temperature sensor temperature and the outdoor heat exchanger temperature sensor temperature is ≧ -5ºC.
⑤ The compressor is running.
Also, the number of times the compressor goes OFF is counted, and when it reaches 10 or more times, if the conditions in ①, ② and ③ above (except that the outdoor heat exchanger temperature sensor is –1ºC), the defroster operation starts.

(ii) End conditions (when either of the following conditions is satisfied)

① Outdoor heat exchanger temperature sensor: 15ºC or higher
② Defrosting operation has continued for 10 minutes.

(iii) Operation of functional components during defrosting operation



(h) Forced Defrost

(i) Forced defrost operation can be performed only once time within 20 second, after the power source is turned on, in accordance with the following operation.

1) Remote control operation

Operation	Run
Operation mode	Heating
Set temperature	19˚C
Fan speed select	Low
Air flow setting	Swing
On timer	ON
Current time	On after 180 min.condition
On timer time	

2) Functional components operation

Compressor	ON
4-way valve	OFF
Indoor unit fan	OFF
Flap	Fully closed
Outdoor unit fan	OFF
Display	Same as defrost

(ii) If remote control operation is performed, for 1 minute after 3-minute timer operation, the operation is canceled if one of the following conditions is satisfied.

① Outdoor heat exchanger temperature sensor: 14ºC or higher

② 10 minutes has passed (including the 1 minute of forced operation).

(i) ECONOMY operation ("ECONO" button on the remote controller : ON)

The set temperature changes as shown at right and the indoor unit fan runs at speed 4.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature -1.0
1~2 hours	Set temperature -2.0
2 hours ~	Set temperature -2.5

(8) Outline of cooling operation

(a) Operation of major functional components

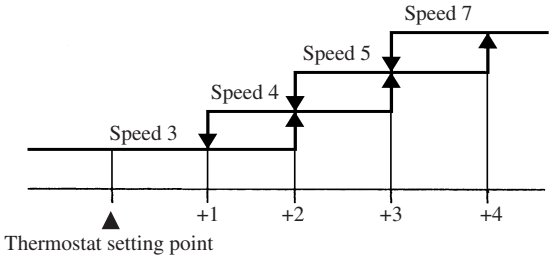
Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an anomalous stop.
Indoor fan motor	ON	ON	OFF
Flaps	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
52C	ON	ON	OFF after stop mode
Outdoor fan motor	OFF	ON	OFF
4-way valve	Depending on the stop mode	OFF	Depending on the stop mode
Electric expansion valve		Depending on the EEV control	

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 7	Speed 5	Speed 3
Swing flap		Speed 7	Speed 5	Speed 3
Swing stop		Speed 7	Speed 5	Speed 3

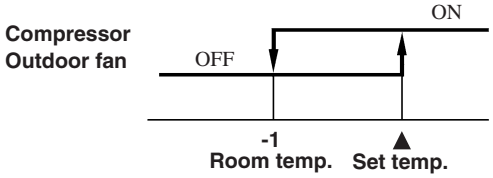
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the termostat setting as shown below.



(c) Thermostat operation

The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) HIGH POWER operation ("HI POWER" button on the remote controller : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 8 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HIGH POWER operation.
(2) Protective functions will actuate with priority even during the HIGH POWER operation.

(e) ECONOMY operation ("ECONO" button on the remote controller : ON)

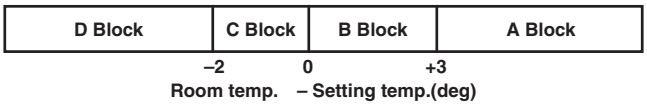
The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 3.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

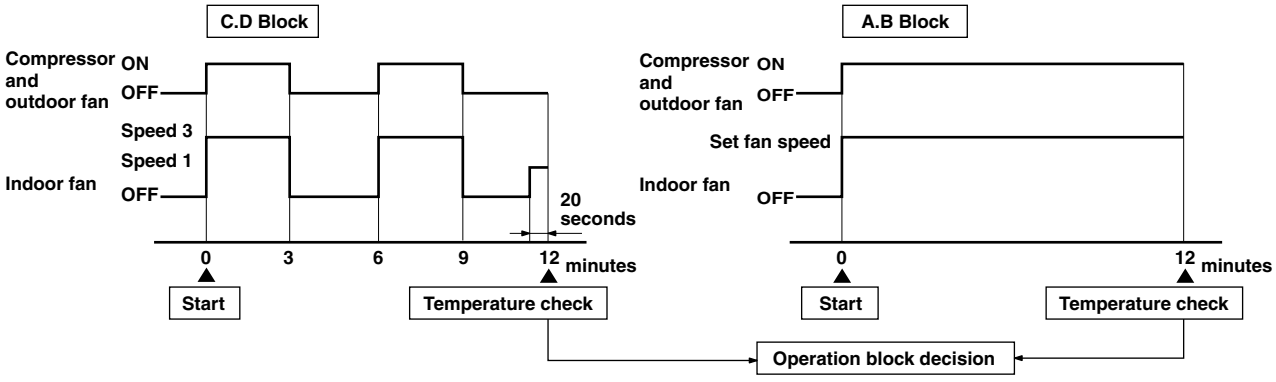
(9) Outline of dehumidifying operation

(a) Choose the appropriate operation block area by the difference between room temperature and thermostat setting temperature as shown below.

- **Operation block area**



(b) Start up operation

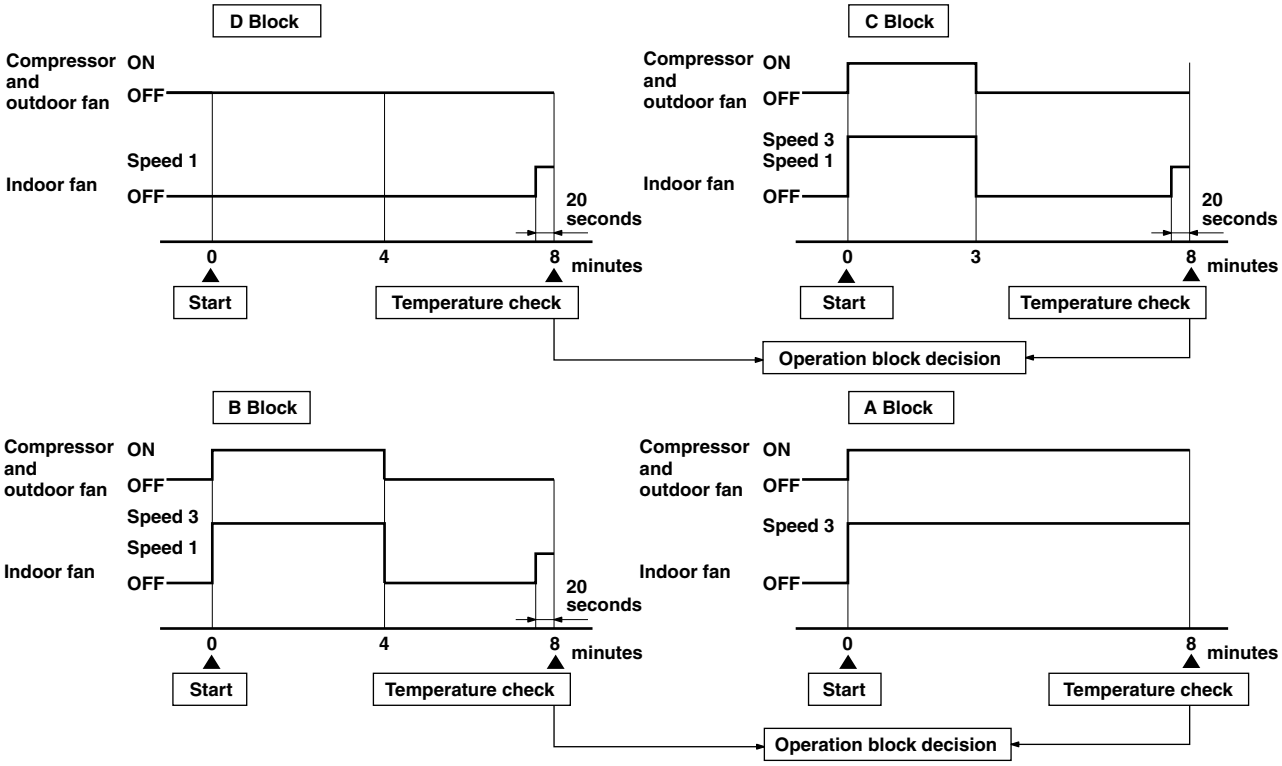


Note (1) Thermostat operation is performed in A, B Block. When compressor and indoor fan stop by thermostat operation within 12 minutes from start, temperature check is performed by operating indoor fan at speed 1 for 20 seconds before finishing 12 minutes and allowing decision of next operation block.

(c) DRY operation

After finishing start up operation described in (b) above, thermal dry operation is performed at 8 minutes intervals, according to the difference between room temperature and thermostat setting temperature as shown below.

Beside, 1 cycle of this operating time consists of 8 minutes, 7 cycle operation is performed then.



(d) ECONOMY operation ("ECONO" button on the remote controller : ON)

The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 3 .

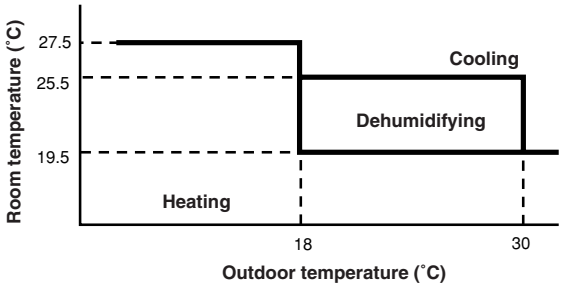
Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

(10) Outline of automatic operation

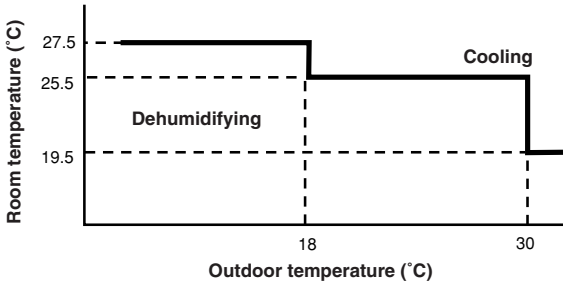
(a) Determination of operation mode

The unit checks the room temperature and the outdoor air temperature after operating the indoor and outdoor blowers for 20 seconds, determines the operation mode and the room temperature setting correction value, and then begins in the automatic operation.

- **Heat pump type**



- **Cooling only type**



(b) Within 30 minutes after either auto or manual operation stops, if auto operation is started, or if you switch to auto operation during manual operation, the system runs in the previous operation mode.

(c) The temperature is checked 1 time in 30 minutes after the start of operation, and if the judgment differs from the previous operation mode, the operation mode changes.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

		Signals of wireless remote controller (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	19	20	21	22	23	24	25	26	27	28	29	30	31
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(11) Outline of fan operation (Cooling only type only)

(a) Operation of major functional components

Functional components \ Fan speed switching	High power	AUTO	HIGH	MED	LOW	ECONO
52C	OFF					
Indoor fan motor	Speed 8	Speed 7	Speed 6	Speed 5	Speed 4	Speed 3
Outdoor fan motor	OFF					
Flaps	Depend on the flap control					

(b) HIGH POWER operation ("HI POWER" button on the remote controller : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 8 fixed
Outdoor unit fan	OFF
Compressor	OFF

Note (1) Protective functions will actuate with priority even during the HIGH POWER operation.

(12) Protective control function

(a) Frost prevention for indoor heat exchanger (During cooling or dehumidifying)

(i) Operating conditions

(i) Indoor heat exchanger temperature sensor (detected with Th2) is lower than 2.5ºC.

(ii) 10 minutes elapsed after the start of operation.

(ii) Detail of frost prevention operation

Compressor	OFF
Indoor fan	Protects the fan tap just before frost prevention control.
Outdoor fan	OFF
4-way valve	Stop mode

(iii) Reset conditions: Indoor heat exchanger temperature sensor (Th2) is higher than 8ºC.

(b) Indoor fan motor protection

When the air-conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

Timer light illuminates simultaneously and the run light flashing 6 times at each 8-second.

(c) Three-minute forced operation

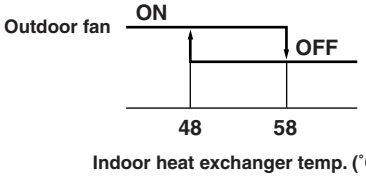
When the compressor begins operating the thermal operation is not effective for 3 minutes, so operation continues as is in the operation mode. (After 3 minutes has passed the thermal operation is effective.)

However, stopping the compressor via a stop signal or protection control has priority.

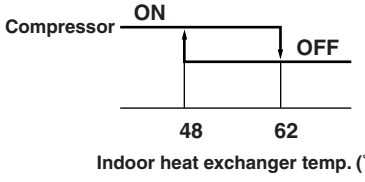
(d) High-pressure control

The indoor heat exchanger temperature sensor detection temperature controls the outdoor fan and compressor.

- **When the indoor heat exchanger temperature is ≧ 58˚C**



- **When the indoor heat exchanger temperature is ≧ 62˚C**



(e) Heating overload protective control

(i) Operating conditions: when the unit is heating with the compressor is on, and the outdoor air temperature rose beyond 17°C for 30 seconds continuously.

(ii) Detail of operation: indoor fan speed is raised forcibly by 1 step.

(iii) Reset conditions: when the outdoor air temperature drops below 16°C.

(f) Abnormality of outdoor unit

(i) Cooling operation

When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start, the abnormality stop occurs. (The timer lamp flashes 2 times.)

(ii) Heating operation

① The indoor heat exchanger temperature < 5°C for 5 minutes and more

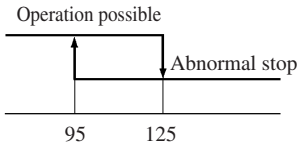
The unit is stopped due to the outdoor unit abnormality excepting the defrost operation time. (The timer lamp flashes 2 times.)

② 5°C ≦ the indoor heat exchanger temperature < 30°C for 40 minutes and more

When the indoor heat exchanger temperature does not rise to 30°C or over for more than 40 minutes after 5 minutes have elapsed since the compressor operation start, the abnormality stop occurs. However, when the indoor fan began operation once, this function is not activated until the unit is stopped or the mode is changed. (The timer lamp flashes 2 times when 20 minutes have elapsed.)

(g) Compressor overheat protection

If the discharge pipe temperature (sensed by Th6) exceeds the set temperature value, the compressor stops. If the temperature is 95ºC or lower after a 3-minute delay, it starts again, but if this function is reactivated again within 60 minutes, it results in an abnormal stop. (Run light : ON, Timer light : 5 time flash, outdoor unit LED : 5 time flash)



Discharge pipe temperature (˚C)

(h) Serial signal transmission error protection

(i) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(ii) Detail of operation: When the indoor unit controller ↔ outdoor unit controller signals cannot be received, the compressor is stopped immediately. Simultaneously, the red LED on the printed circuit board of outdoor unit controller flashing 6 times for 0.5 second at intervals of 8 seconds. Once the operation stops, it does not start any more.

(The run light illuminates simultaneously and timer light on the indoor unit flashing 6 times at the same time.)

(i) Sensor disconnection (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor temperature, discharge pipe)

(i) Room temperature sensor

If the temperature detected by the room temperature sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light: 2 time flash, Time light: ON)

(ii) Indoor heat exchanger temperature sensor

If the temperature detected by the indoor heat exchanger temperature sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, if the temperature detected by the indoor heat exchanger temperature sensor is –20ºC or lower continuously for 3 minutes after heating operation has started, the indoor unit's fan speed is forcibly raised to speed 5. After this, the air-conditioner is stopped if the detected temperature remains at –20ºC continuously for 40 minutes. (Run light : 1 time flash, Timer light : ON)

(iii) Outdoor heat exchanger temperature sensor

If the temperature detected by the outdoor heat exchanger temperature sensor is –64ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, the air-conditioner is stopped if the temperature detected by the outdoor heat exchanger temperature sensor remains at –50ºC or lower continuously for 40 minutes after heating operation has started. (Run light : keep flashing, Timer light : 2 time flash)

(iv) Outdoor air temperature sensor

If the temperature detected by the outdoor air temperature sensor is –64ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light : keep flashing, Timer light : 1 time flash)

(v) Discharge pipe temperature sensor

After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds, the compressor stops. After a 3-minute delay, it restarts, but if an abnormality is detected 4 times continuously, the air-conditioner is stopped fully and an error indication is displayed. (Run light : keep flashing, Timer light : 4 time flash)

2.2.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these "Safety Precautions" first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings, ⚠WARNING and ⚠CAUTION, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the ⚠WARNING section. However, there is also a possibility of serious consequences in relationship to the points listed in the ⚠CAUTION section as well. In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner's manual.
  Moreover, ask the customer to keep this sheet together with the owner's manual.

⚠ WARNING

- To disconnect the appliance from the mains supply this appliance must be connected to the mains by means of a circuit breaker or a switch (use a recognized 16A) with a contact separation of at least 3mm.
- The appliance shall be installed in accordance with national wiring regulations.
- This system should be applied to places as households, residences and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used.
  Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it. Improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward, and accurately install the lid/service panel.It's improper installation can also result heat generation or fire.
- When setting up or moving the location of the air conditioner, do not mix air etc. or anything other than the designated refrigerant (R410A) within the refrigeration cycle.
  Rupture and injury caused by abnormal high pressure can result from such mixing.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.
- Ventilate the work area when refrigerant leaks during the operation.
  Coming in contact with fire, refrigerant could generate toxic gas.
- Confirm after the foundation construction work that refrigerant does not leak.
  If coming in contact with fire of a fan heater, a stove or movable cooking stove, etc., refrigerant leaking in the room could generate toxic gas.
- In joining pipes, do not use conventional (R22) pipng flare nuts, etc. The use of conventional pipng materials may lead to the rapture of piping due to higher pressure used for the refrigerant cycle and possible personal injury.
  (Use only piping material designed specifically for R410A)

⚠ CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire.
  Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary depending on the established location of the unit.
  Not installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas.
  The rare even of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

(1) Selection of location for installation

(a) Indoor unit

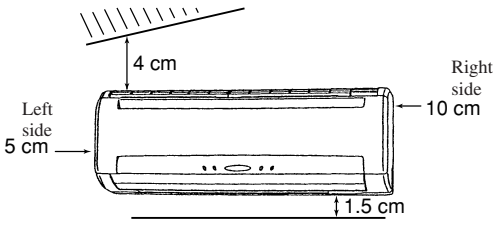
(i) Where there is no obstructions to the air flow and where the cooled air can be evenly distributed.

(ii) A solid place where the unit or the wall will not vibrate.

(iii) A place where there will be enough space for servicing. (Where space mentioned below can be secured)

(iv) Where wiring and the piping work will be easy to conduct.

(v) The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.



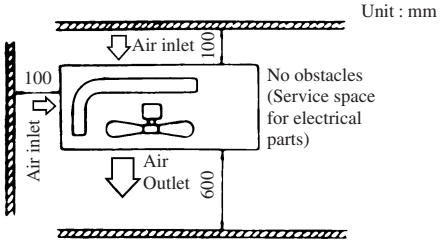
(b) Outdoor unit

(i) A place where good air circulation can be obtained and where rain, snow or sunshine will not directly strike the unit.

(ii) A place where discharged hot air or unit's operating sound will not be a nuisance to the neighborhood.

(iii) A place where servicing space can be secured.

(iv) A place where vibration will not be enlarged.



Notes (1) Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

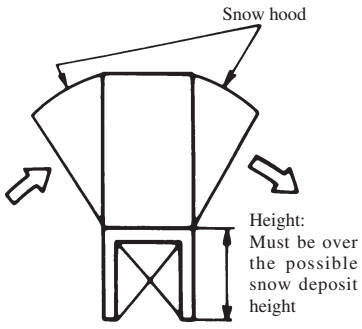
(2) When the unit is installed, the space of the following dimension and above shall be secured.

(v) In heating operation, snow deposit on the heat-exchanger of outdoor unit must be prevented for keeping the normal performance capacity. (Heat pump type only)

1) Snow-hood on outdoor unit as in drawing, will reduce the frequency of defrost operation.

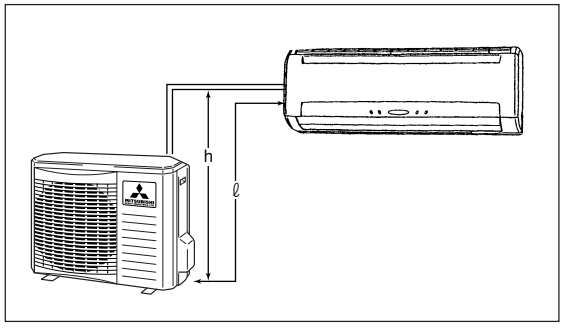
When installing the snow hood, take care so that the air outlet of the snow hood will not face directly into the most windy direction.

2) Design the base higher than possible snow deposit.



(c) Limitations for one way piping length and vertical height difference.

Item \ Model		All models
One way piping length (ℓ)		25 m
Vertical height difference (h)	Outdoor unit is lower	15 m
	Outdoor unit is higher	15 m

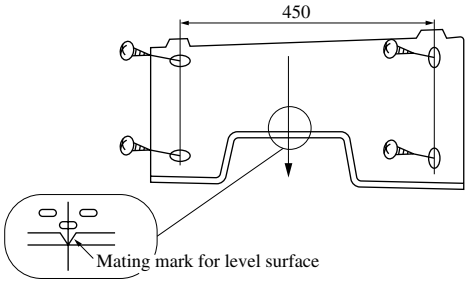


(2) Installation of indoor unit

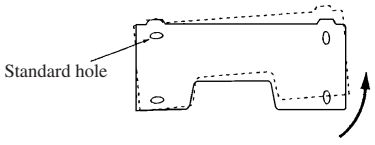
(a) Installation of installation board

(i) Fixing of installation board

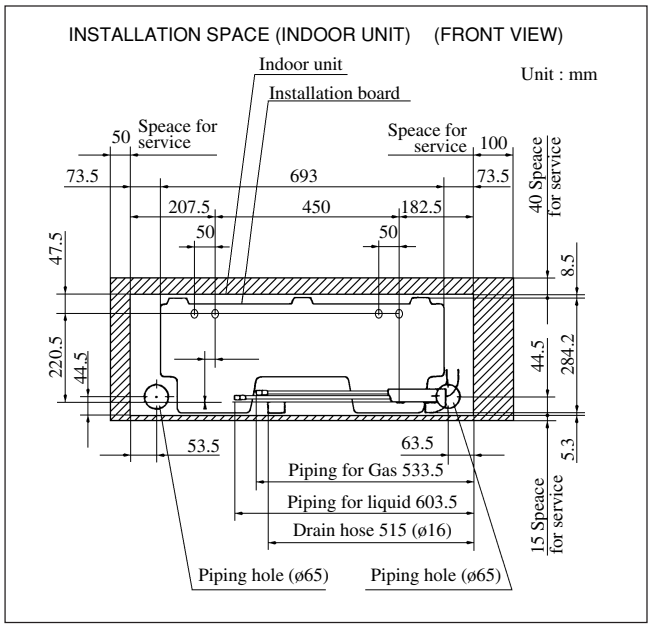
Look for the inside wall structures (Intersediate support or pillar and firaly install the unit after level surface has been checked.)

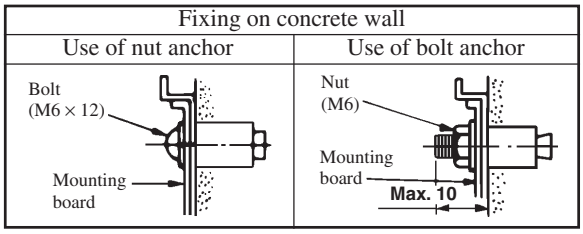


Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.



Adjust so that board will be level by turning the board with the standard hole as the center.

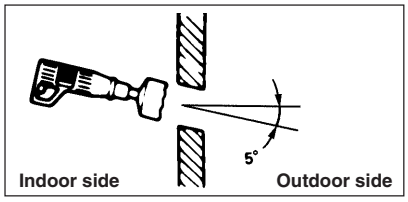




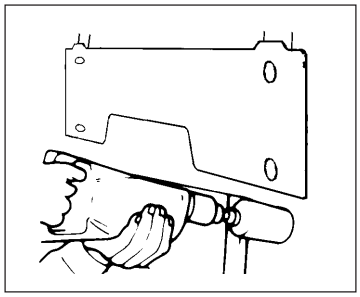
(b) Drilling of holes and fixture sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

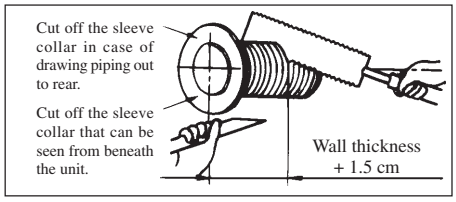
(i) Drill a hole with ø65 whole core drill



Note (1) Drill a hole with incline of 5 degree from indoor side to outdoor side.

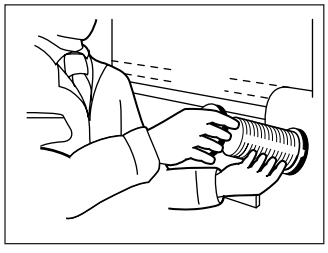


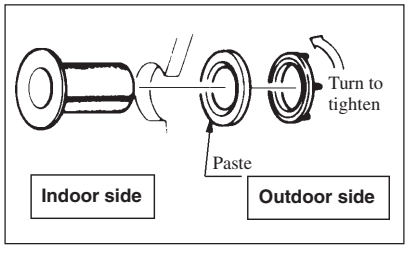
(ii) Adjusting sleeve length

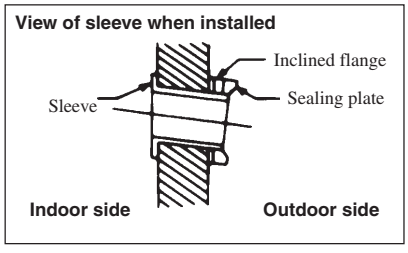


(iii) Install the sleeve

(Inserting sleeve) (*Sleeve + *Inclined + *Sealing plate)







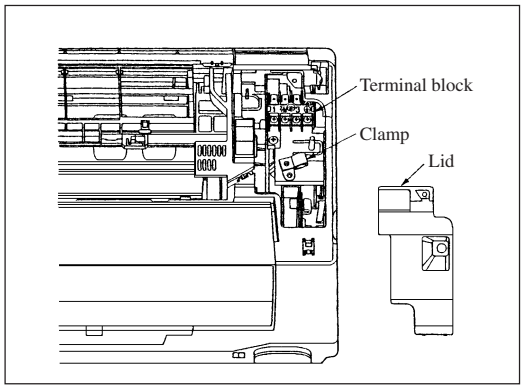
(c) Preparation of indoor unit

(i) Mounting of connecting wires

1) Remove the lid.
2) Remove the wiring clamp.
3) Connect the connecting wire securely to the terminal block.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables. Required field cables.

H05	RNR3G1.5 (Example) or 245IEC57
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Standed core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



① Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.

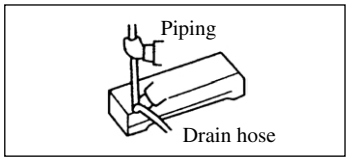
② Take care not to confuse the terminal numbers for indoor and outdoor connections.

③ Affix the connection wire using the wiring clamp.

4) Fix the connecting wire by wiring clamp.
5) Attach the lid.
6) Close the air inlet grille.

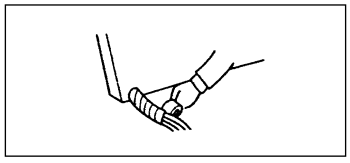
(ii) Installing the support of piping

[Shaping the piping]



- Hold the bottom of the piping and fix direction before stretching it and shaping it.

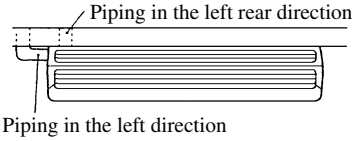
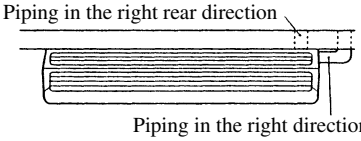
[Taping of the exterior]



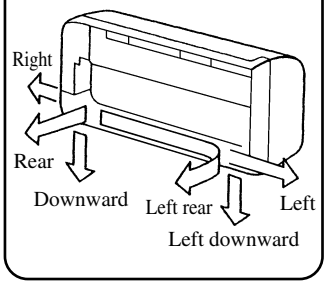
- Tape only the portion that goes through the wall. Always tape the crossover wiring with the piping.

[When the hose is extended to left and taken out from the rear center]

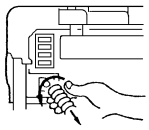
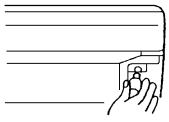
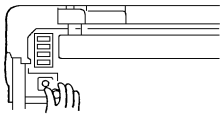
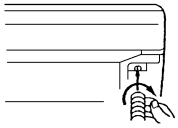
[Top View]

Left-hand-sided-piping	Right-hand-sided-piping
	
Piping in the left rear direction Piping in the left direction	Piping in the right rear direction Piping in the right direction

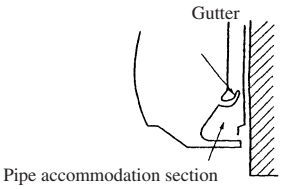
Piping is possible in the rear, left, left lear, left downward, right or downward direction.



[Drain hose changing procedures]

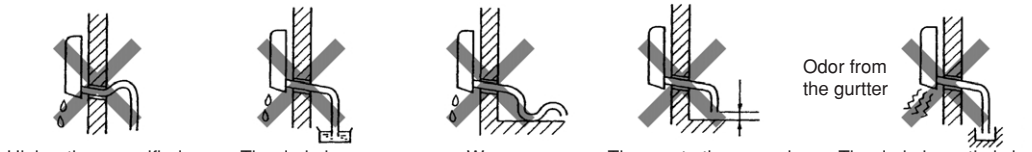
1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
● Remove the drain hose, making it rotate.	● Remove it with hand or pliers.	● Insert the drain cap which was removed at proce-dure "2" securely using a hexagonal wrench, etc. Note: Be careful that if it is not inserted securely, water leakage may occur.	● Insert the drain hose securely, makingit rotate. Note: Be careful that if it is not inserted securely, water leakage may occur.

Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.

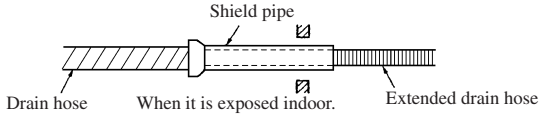


Drainage

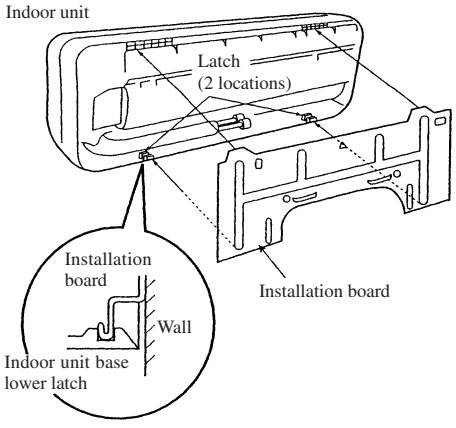
- Arrange the drain hose in a downward angle.
- Avoid the following drain piping.



- Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
- When the extended drain hose is indoor, always use a shield pipe (to be arranged by the user) and ensure it is thermally insulated.

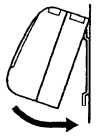


(iii) Fixing of indoor unit

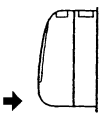


Installation Steps

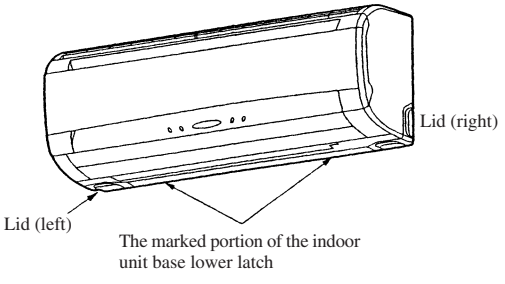
① Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.



② Gently push the lower part to secure the unit.



- How to remove the indoor unit from the installation board
  - ① Remove the right and left lids.
  - ② At the marked portion of the indoor unit base lower latch, pull downward with fingers.
    (both right and left hand sides)
    (The indoor unit base lower latch can be removed from the installation board)



(3) Installation of outdoor unit

(a) Installation of outdoor unit

(i) Make sure that sufficient space for installation and service is secured.

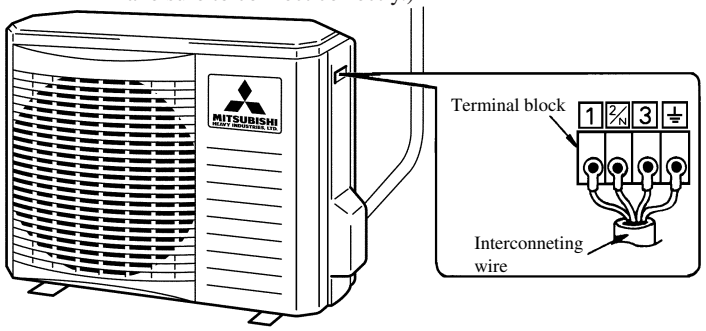
(ii) Fix the leg sections of the unit on a firm base which will not play.
Attach cushion pads, etc. between the unit and the mounting fixtures not to transmit vibration to the building.

(iii) Attach a drain elbow, etc. under the drain port of the bottom plate to guide drain water.
(Drain elbow should not be used where days when temperature drops below 0°C continue for several days. Draining may be disturbed by frozen water.)

(iv) When installing the unit at a higher place or where it could be toppled with strong winds, secure the unit firmly with foundation bolts, wire, etc.

(b) Connection of indoor and outdoor connecting wiring

(i) Connect the wiring according to the number of the indoor terminal block. (Mis-wiring may cause the burning damage, and make sure to connect correctly.)



1 **Brown**	For power supply, indoor outdoor
2/N **Blue**	Connecting wiring
3 **Black**	Indoor/outdoor signal wire (Low voltage)
⏚ **Yellow/Green**	Earth wiring terminal

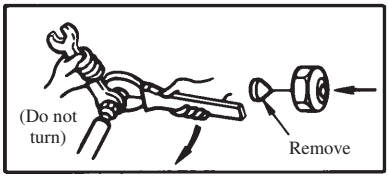
Notes (1) To prevent the mis-operation by noise, when the connecting wire too long for indoor and outdoor. Please hide the fixed wire in the pipe or use vinyl tape to set. Do not put wire into the unit.
(2) Please let the anchorized personal to decide by indoor wiring code whether connect the leakage breaker or not.

(4) Refrigerant piping

(a) Preparation

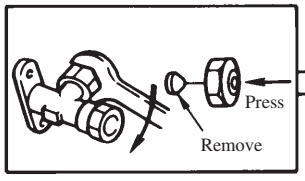
Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

Indoor unit side

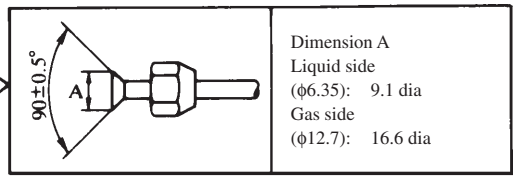


- Remove the flared nuts. (on both liquid and gas sides)

Outdoor unit side



- Remove the flared nuts. (on both liquid and gas sides)

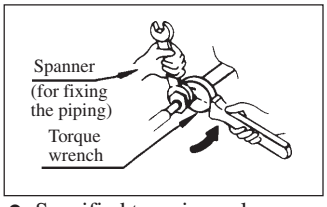


- Install the removed flared nuts to the pipes to be connected, then flare the pipes.

(b) Connection of refrigerant piping

Indoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.



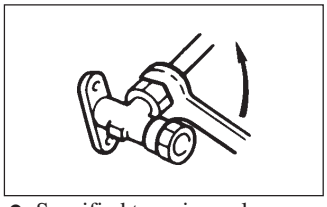
- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)

- Always use a Torque wrench and back up spanner to tighten the flare nut.

Outdoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.



- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)

- Use one more spanner to fix the valve.

(c) Air purge

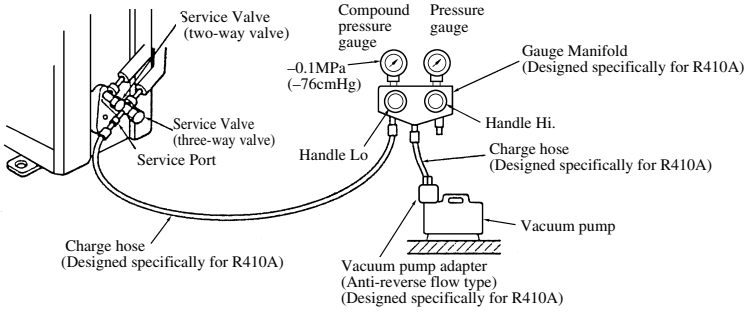
(i) Tighten all flare nuts in the pipings both indoor and outside will so as not to cause leak.

(ii) Connect service valve, charge hose, manifold valve and vacuum pump as is illustrated below.

(iii) Open manifold valve handle Lo to its full width, and perform vacuum or evacuation.
Continue the vacuum or evacuation operation for 15 minutes or more and check to see that the vacuum gauge reads – 0.1 MPa (– 76 cmHg).

(iv) After completing vacuum operation, fully open service valve (Both gas and liquid sides) with hexagon headed wrench.

(v) Check for possible leakage of gas in the connection parts of both indoor and outdoor.



- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable.
  Please use one designed specifically for R410A
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system.
  Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Additional refrigerant charge

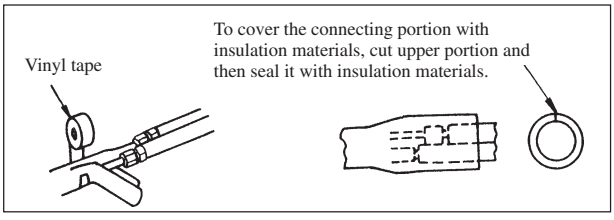
When refrigerant piping exceeds 15m conduct additional refrigerant charge by weight after refrigerant piping completion.
Additional charge amount per meter = 20g/m

[Example]

How much amount of additional charge for 25m piping?
(25 – 15)m × 20g/m = 200g | 200g for additional charge

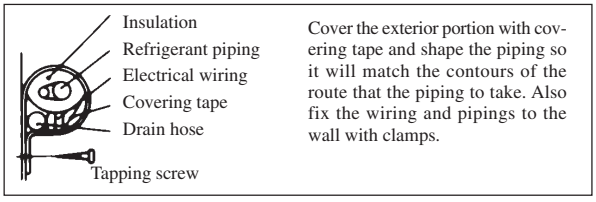
(d) Insulation of connecting portion

(i) Cover the connecting portion of the refrigerant piping with the pipe cover and seal them.
If neglecting to do so, moisture occurs on the piping and water will drip out.



(ii) Finishing and fixing

1) Tie up the piping with wrapping tape, and shape it so that it conforms to which the pipe is attached.
2) Fix them with clamps as right figure.



(5) Test run

(a) Conduct trial run after confirming that there is no gas leaks.

(b) When conducting trial run set the remote controller thermostat to continuous operation position. However when the power source is cut off or when the unit's operation switch is turned off or was turned to fan operation position, the unit will not go into operation in order to protect the compressor.

(c) Insert in electric plug into the electric outlet and make sure that it is not loose.

1) When there is something wrong with the electric outlet and if the insertion of the electric plug is insufficient, there may occur a burn out.
2) It is very important to be careful of above when plugging in the unit to an already furnished electrical outlet.

(d) Explain to the customer on the correct usage of the air conditioner in simple layman's terms.

(e) Make sure that drain flows properly.

(f) Standard operation data

(220/230/240V)

Item \ Model		SRK50HE-S	SRK56HE-S
High pressure (MPa)	Cooling	–	–
	Heating	2.6~2.8	2.8~3.0
Low pressure (MPa)	Cooling	0.8~1.0	0.8~1.0
	Heating	–	–
Temp. difference between return air and supply air (°C)	Cooling	14~16	15~17
	Heating	20~22	23~25
Running current (A)	Cooling	6.5/6.3/6.0	7.3/7.1/6.8
	Heating	6.5/6.2/6.0	7.4/7.1/6.8

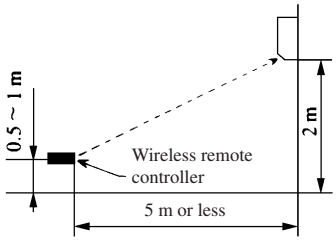
Item \ Model		SRK50CE-S	SRK56CE-S
Low pressure (MPa)	Cooling	0.8~1.0	0.8~1.0
Temp. difference between return air and supply air (°C)	Cooling	14~16	15~17
Running current (A)	Cooling	6.5/6.3/6.0	7.3/7.1/6.8

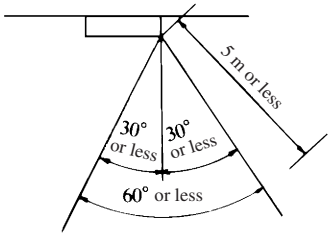
Note (1) The data are measured at following conditions
Ambient air temperature
Indoor side: Cooling ... 27˚C DB, 19˚C WB, Heating ... 20˚C DB
Outdoor side: Cooling ... 35˚C DB, 24˚C WB, Heating ... 7˚C DB, 6˚C WB

(6) Precautions for wireless remote controller installation and operation

(a) Wireless remote controller covers the following distances:

(i) When operating facing the air conditioner:

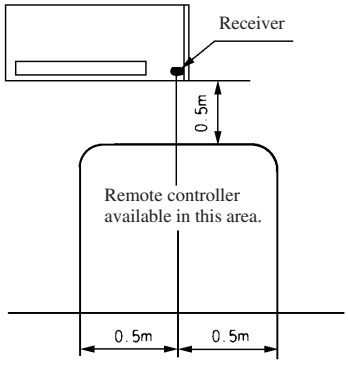




Notes (1) The remote controller is correctly facing the sensing element of the air conditioner when being manipulated.
(2) The typical coverage is indicated (in the left illustration). It may be more or less depending on the installation.
(3) The coverage may be less or even nil. If the sensing element is exposed to strong light, such as direct sunlight, illumination, etc., or dust is deposited on it or it is used behind a curtain, etc.

(ii) When manipulating the remote controller mounted on a wall:

Make sure that it works normally (i.e., transmission/reception signal is audible) before mounting.



2.2.6 MAINTENANCE DATA

(1) Troubleshooting procedures for electrical equipment

(a) Cautions

① If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).

② When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

③ When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(b) Items to check before troubleshooting

① Have you thoroughly investigated the details of the trouble which the customer is complaining about?

② Is the air conditioner running? Is it displaying any self-diagnosis information?

③ Is a power supply with the correct voltage connected?

④ Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

⑤ Is the outdoor unit's refrigerant service valve open?

(c) Troubleshooting procedure (If the air conditioner does not run at all)

If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (d).

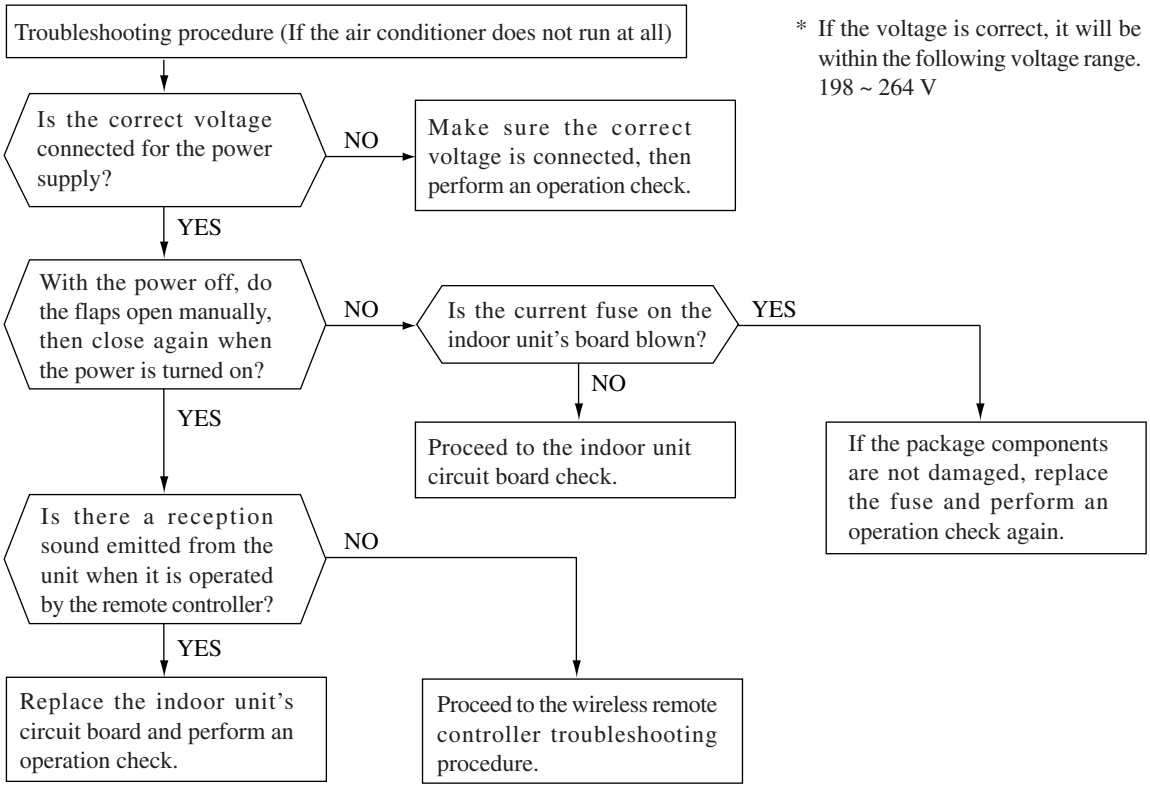
Important When all the following conditions are met, we say that the air conditioner will not run at all.

① The Run light does not light up.

② The flaps do not open.

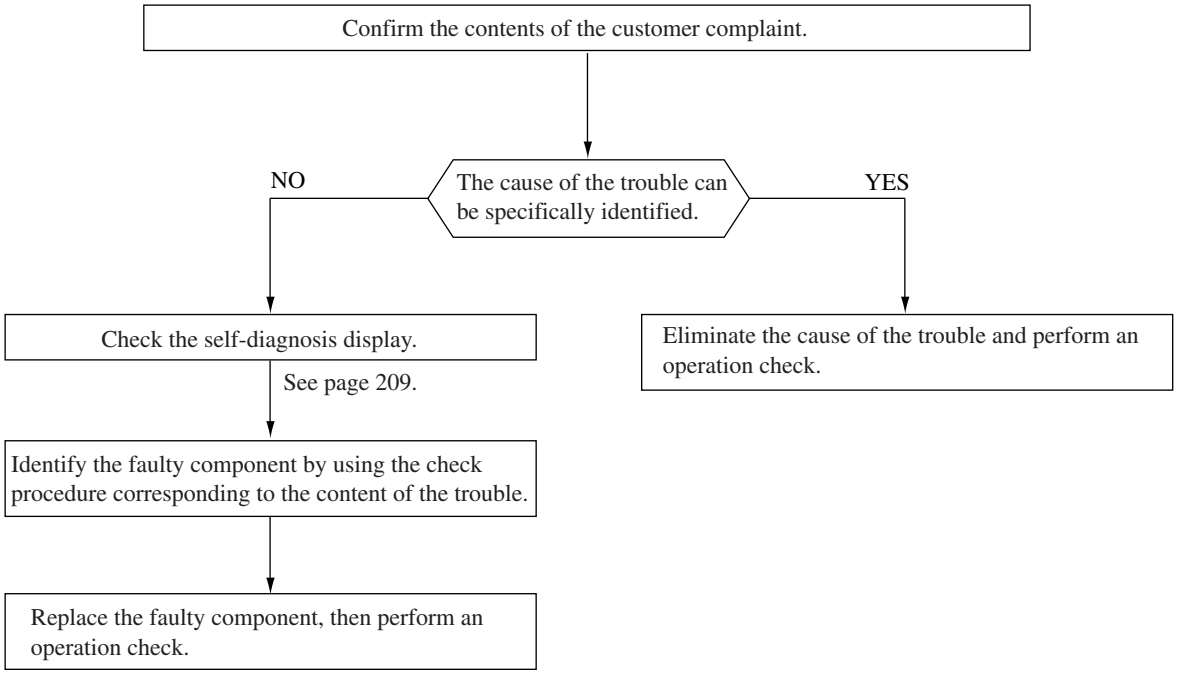
③ The indoor unit fan motors do not run.

④ The self-diagnosis display does not function.



* If the voltage is correct, it will be within the following voltage range.
198 ~ 264 V

(d) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(e) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote controller 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. (1)

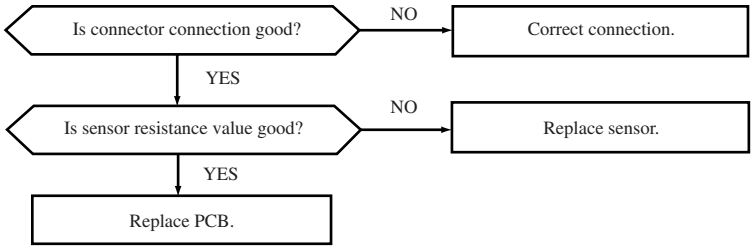
Indoor unit display panel		Outdoor unit LED	Description of trouble	Cause	Display (flashing) condition
Run light	Timer light				
ON	6 time flash	6 time flash	Error of signal transmission	• Defective power supply, Broken signal wire, defective in/outdoor unit boards	When there is no signal between the indoor unit's board and outdoor unit's board for 10 seconds or longer (when the power is turned on), or when there is no signal for 1 minute 50 seconds or longer (during operation)(the compressor is stopped).
1 time flash	ON	OFF	Heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a heat exchanger sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 3 minutes, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 time flash	ON	OFF	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
6 time flash	ON	OFF	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
ON	5 time flash	5 time flash	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, closed service valve	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
Keeps flashing	2 time flash	OFF	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a sensor wire disconnection is detected while operation is stopped. (If a temperature of –64ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	1 time flash	OFF	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection	When an outdoor air temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –64ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	4 time flash	OFF	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection	After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds.
ON	2 time flash	OFF	Abnormality of outdoor unit	• Broken compressor wire • Broken discharge pipe sensor wire, poor connector connection • Compressor blockage	Cooling operation When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start. Heating operation ① The indoor heat exchanger temperature < 5°C for 5 minutes and more ② 5°C ≦ the indoor heat exchanger temperature < 30°C for 40 minutes and more

Notes (1) The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.
(2) The outdoor unit's power supply is cut off 3 minutes after an abnormal stop, so the outdoor unit LED cannot be checked (52C OFF).

(f) Inspection procedures corresponding to detail of trouble

Sensor error

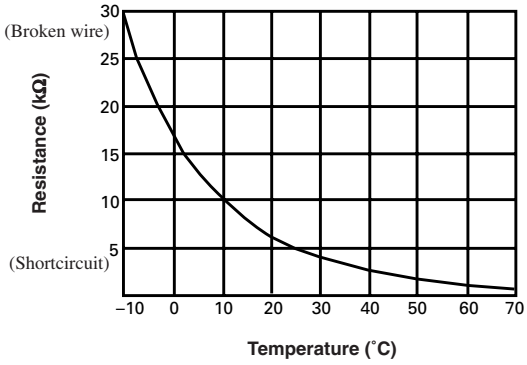
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe sensor temperature characteristics**

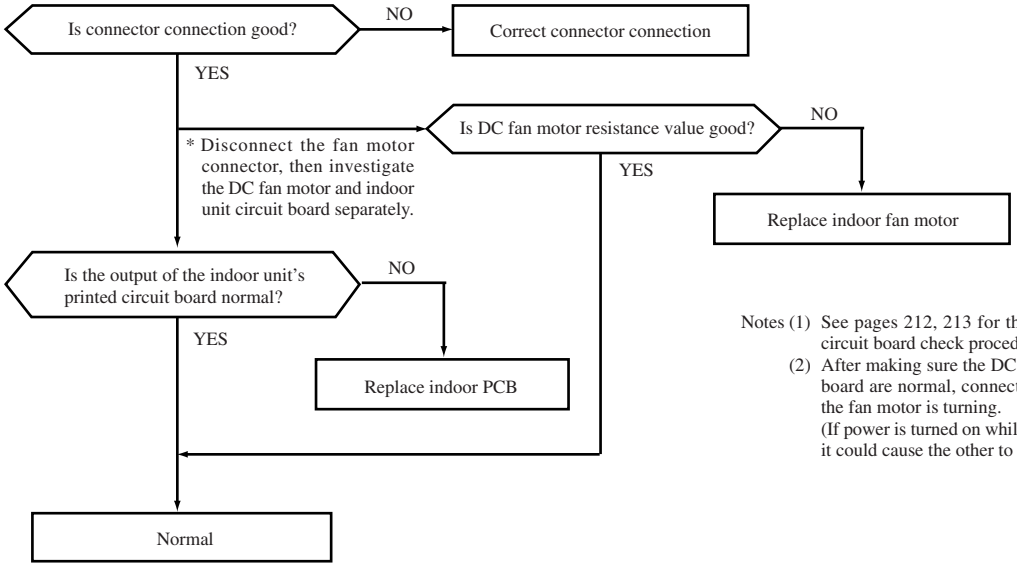
Temperature (˚C)	Resistance (kΩ)	Temperature (˚C)	Resistance (kΩ)
0	164	70	8.7
5	127	75	7.3
10	99	80	6.2
15	78	85	5.3
20	62	90	4.5
25	50	95	3.9
30	40	100	3.3
35	32	105	2.9
40	26	110	2.5
45	21	115	2.2
50	17	120	1.9
55	14	125	1.6
60	12	130	1.4
65	10	135	1.3

◆ **Sensor temperature characteristics (Room temp., indoor unit heat exchanger temp., outdoor unit heat exchanger temp., outdoor air temp.)**



Indoor fan motor error

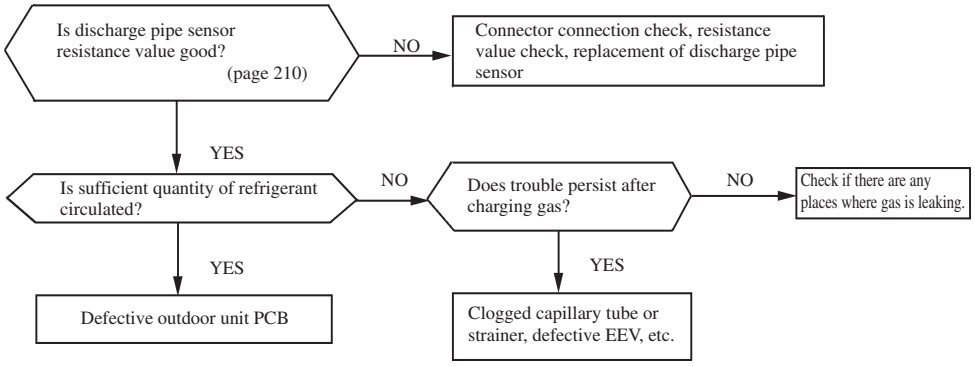
[Defective fan motor, connector poor connection, defective PCB]



Notes (1) See pages 212, 213 for the DC fan motor and indoor unit circuit board check procedure.
(2) After making sure the DC fan motor and indoor unit circuit board are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

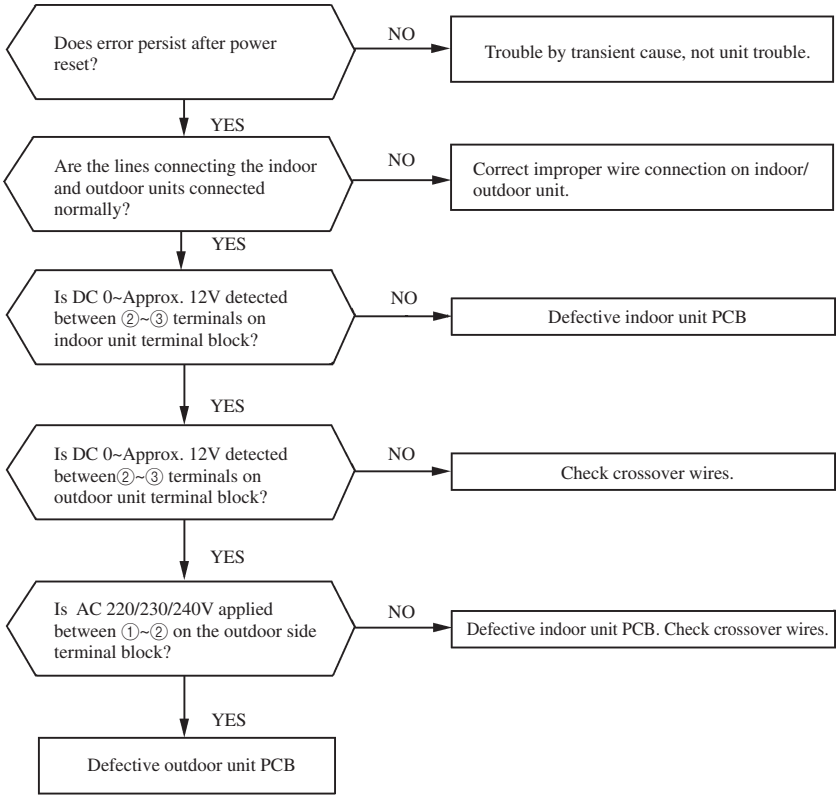
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



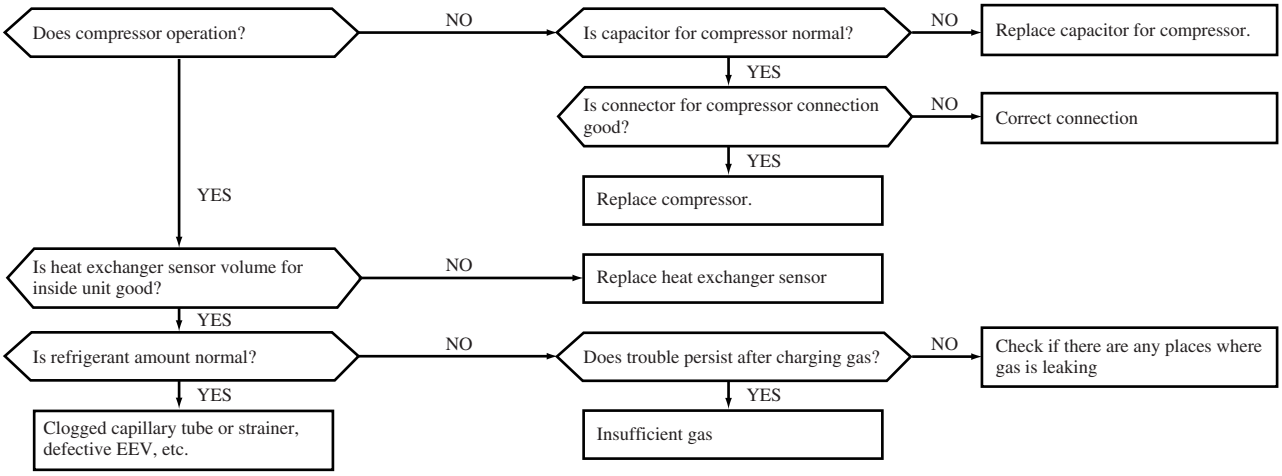
Error of signal transmission

[Wiring error including power cable, defective indoor/ outdoor unit PCB]



Abnormality of outdoor unit

[Compressor malfunction of insufficient gas (refrigerant)]



(g) Phenomenon observed after shortcircuit, wire breakage on sensor.

(i) Indoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature sensor	Cooling	Release of continuous compressor operation command	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command
Heat exchanger sensor	Cooling	Compressor stop. (Abnormality of outdoor unit)	Continuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode	Hot keep (Indoor fan stop)

(ii) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Outdoor air temperature sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Discharge pipe sensor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(h) Checking the indoor electrical equipment

(i) Indoor unit circuit board check procedure

1) Turn off the power.
2) Disconnect the wires connected between the indoor and outdoor units at the terminal block. (They can be disconnected at either the indoor or outdoor unit's terminal block.)
3) Turn on the power.
4) The voltage between ① and ② on the terminal block should not be AC 220-240 V.
5) Press the unit's ON/OFF button for 5 seconds or longer (a beep which indicates receiving will be emitted). Then check the following items.
   ① The indoor unit's fan motor runs.
   ② The run light lights up.
6) There should be voltage (AC 220-240 V) between terminals ① and ② on the terminal block.
   With the analog tester set in the DC 30 V range, if the voltage at ② (+) and ③ (-) is measured, the needle oscillates at about 12V.
7) It is possible to run and stop the unit using the remote controller. (The hot keep function is activated.)
   If operation is as described above, the indoor unit's board is normal.

Notes (1) Since the communication timing signal is transmitted only when the 52C is turned ON, check it under the operating condition.
(2) Check the voltage on the terminal block.
- Power supply : Between ①-② (AC 220-240V)
- Signal : Between ②-③ (Changing between DC 0-Approx. 12V)

(ii) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the circuit board is broken down.

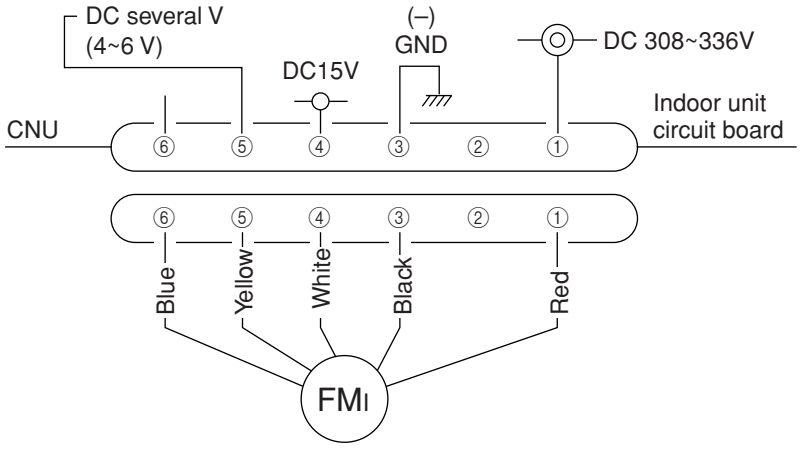
1) Indoor unit printed circuit board output check

a) Turn off the power.

b) Remove the front panel, then disconnect the fan motor lead wire connector.

c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the circuit board is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor unit's circuit board has failed and the fan motor is normal.

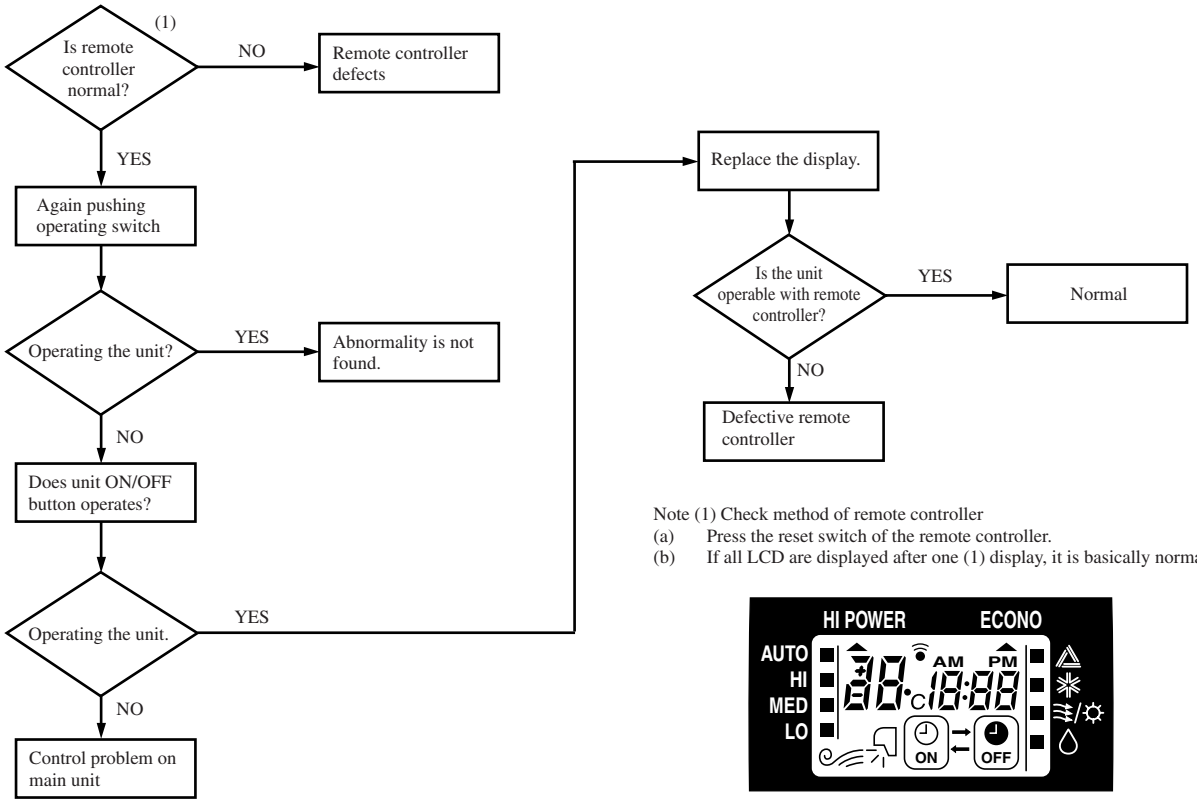


2) DC Fan motor resistance check

Measuring Point	Resistance when Normal
① – ③ (Red – Black)	25 M or higher
④ – ③ (White – Black)	30 k or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(i) How to make sure of remote controller



Note (1) Check method of remote controller
(a) Press the reset switch of the remote controller.
(b) If all LCD are displayed after one (1) display, it is basically normal.

(2) Servicing

(a) Evacuation

The evacuation is an procedure to purge impurities.....noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R410A is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called water clogging.

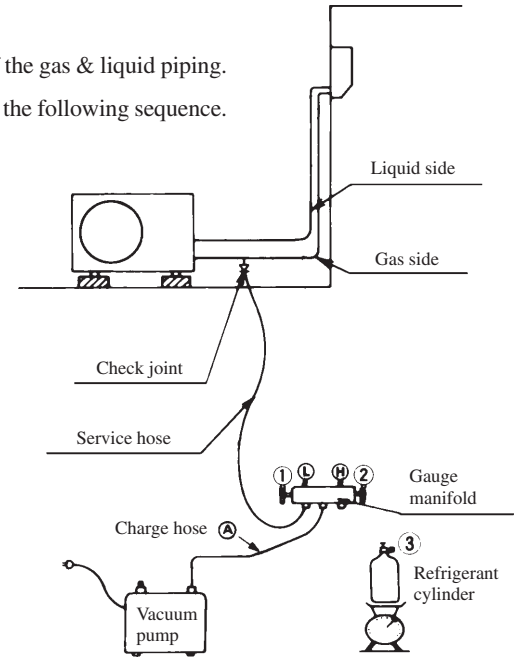
- Evacuation procedure

(i) Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relieved through the check joint.

(ii) Connect the service hoses of the gauge manifold to the check joint of the gas & liquid piping.

(iii) Connect a vacuum pump to the charge hose Ⓐ. Repeat evacuation in the following sequence.

Start the vacuum pump.
⇩
Compound pressure gauge indicates 0.1 MPa (–76 cmHg)
⇩
Operate the vacuum pump for more than 15 minutes after 0.1 MPa (–76 cmHg) is indicated.
⇩
Close low pressure valve ① of gauge manifold.
⇩
Stop the vacuum pump.



Notes (1) Do not use the refrigerant pressure to expel air.
(2) Do not use the compressor for evacuation.
(3) Do not operate the compressor in the vacuum condition.

(b) Refrigerant charge

(i) Discharge refrigerant entirely from the unit and evacuate the unit.
Note: Addition of refrigerant without evacuation is unreasonable, because it will result in low charge or overcharge.

(ii) Keep the gauge manifold and connect a refrigerant cylinder to the unit.

(iii) Record the weight of the refrigerant cylinder on the balance. This is necessary for making sure of the charged refrigerant amount.

(iv) Purge air from the charge hose Ⓐ
Firstly loose the connecting portion of the charge hose Ⓐ at the gauge manihold side and open the valve ③ for a few seconds, and then immediately retighten it after observing that gas is blow out from the loosened portion.

(v) Open the valve ① and ③ after discharging air from the charge hose Ⓐ, then the liquid refrigerant begins flowing from the cylinder into the unit. Be sure to erect the refrigerant cylinder upright to let liquid refrigerant flow into the unit.

(vi) When refrigerant has been charged into the system to some extent, refrigerant flow becomes stagnant, when that happens, start the compressor in cooling cycle until the unit is filled with refrigerant to the specified weight.

(vii) Making sure of the refrigerant amount, close the valve ③

(viii) Disconnect the charge hose from the unit. Cover the valve ports of the refrigerant piping with caps and tighten them securely.

(ix) Check for gas leakage applying a gas leak detector along the piping line.

(x) Start the air conditioner and make sure of its operating condition.....high side and low side pressures and temperature difference between return air and supply air.

2.2.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A

This is same as chapter 1.1.7 Refer to page 59.

CONTENTS

2.3.1 GENERAL INFORMATION 216
(1) Specific features 216
(2) How to read the model name 216
2.3.2 SELECTION DATA 217
(1) Specifications 217
(2) Range of usage & limitations 219
(3) Exterior dimensions 219
(4) Piping system 221
(5) Selection chart 222
2.3.3 ELECTRICAL DATA 223
(1) Electrical wiring 223
2.3.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER 225
(1) Operation control function by remote control switch 225
(2) Unit ON/OFF button 227
(3) Power blackout auto restart function 227
(4) Custom cord switching procedure 228
(5) Flap and louver control 228
(6) Comfortable timer setting 229
(7) Sleep timer operation 229
(8) Outline of heating operation (Heat pump type only) 230
(9) Outline of cooling operation 232
(10) Outline of dehumidifying operation 233
(11) Outline of automatic operation 234
(12) Outline of fan operation (Cooling only type only) 235
(13) Regulation of outdoor air flow 235
(14) Stop mode 236
(15) External control (remote display)/control of input signal 237
(16) Operation permission/prohibition control 238
(17) Protective control function 238
2.3.5 APPLICATION DATA 241
(1) Selection of location for installation 242
(2) Installation of indoor unit 243
(3) Installation of outdoor unit 246
(4) Refrigerant piping 246
(5) Test run 247
(6) Precautions for wireless remote control installation and operation 248
(7) Installation of wired remote control and super link adapter (SC-AD-E) (Optional parts) 249
2.3.6 MAINTENANCE DATA 256
(1) Troubleshooting procedures for electrical equipment 256
(2) Servicing 263
2.3.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A 263

2.3.1 GENERAL INFORMATION

(1) Specific features

The “Mitsubishi Daiya” room air-conditioner: SRK series are of split and wall mounted type and the unit consists of indoor unit and outdoor unit with refrigerant precharged in factory. The indoor unit is composed of room air cooling or heating equipment with operation control switch and the outdoor unit is composed of condensing unit with compressor.

(a) Remote control flap & louver

The flap & louver can be automatically controlled by operating wireless remote control.

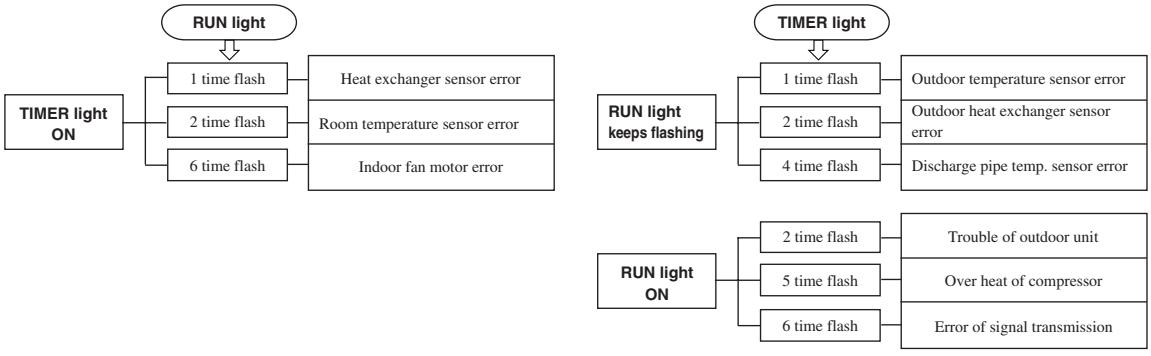
- Flap swing : The flaps swing up and down successively.
- Louver swing : The louvers swing left and right successively.
- Multi-directional Air Flow (up/down air scroll and left/right air scroll) : Activating both up/down air swing and left/right air swing at the same time results in a multi-directional air flow.
- Memory flap : Once the flap & louver position is set, the unit memorizes the position and continues to operate at the same position from the next time.

(b) Automatic operation

When the remote control switch is set on “auto( )”, it will either automatically decide operation mode such as cooling, heating and thermal dry, or operate in the operation mode before it has been turned to automatic control.

(c) Self diagnosis function

- We are constantly trying to do better service to our customers by installing such judges that show abnormality of operation as follows.



(2) How to read the model name

Example : SR K 63 H E - S

- S — R410A models
- E — Series No.
- H — Heat pump type
- 63 — Product capacity
- K — Wall mounted type
- SR — Split type room air-conditioner

2.3.2 SELECTION DATA

(1) Specifications

Model SRK63HE-S (Indoor unit)
SRC63HE-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK63HE-S	SRC63HE-S
Cooling capacity(1)				W	6300	
Heating capacity(1)				W	6700	
Power source					1 Phase, 220-240V, 50Hz	
Operation data(1) (2)	Cooling input			kW	2.19	
	Running current (Cooling)			A	10.9/10.5/10.0	
	Heating input			kW	1.85	
	Running current (Heating)			A	9.2/8.8/8.5	
	Inrush current			A	53	
	COP				Cooling: 2.88 Heating: 3.62	
	Noise level	Cooling	Sound level	dB	Hi 44, Me 40, Lo 37	49
			Power level		59	65
		Heating	Sound level		Hi 45, Me 41, Lo 37	49
			Power level		60	65
Exterior dimensions Height × Width × Depth				mm	318 × 1098 × 248	640 × 850 × 290
Color					Yellowish white	Stucco white
Net weight				kg	15	47
Refrigerant equipment Compressor type & Q'ty					–	RM-B5125MNE5 (Rotary type) × 1
Motor				kW	–	1.9
Starting method					–	Line starting
Heat exchanger					Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(3)				kg	R410A 1.5 (Pre-Charged up to the piping length of 15m)	
Refrigerant oil				ℓ	0.7 (MA68)	
Deice control					Microcomputer control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	46	43
Air flow (at High)			(Cooling)	CMM	18	42
			(Heating)		20.5	42
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote control	–
Room temperature control					Microcomputer thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: overheat protection, Heating overload protection (High pressure control), Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ12.7 (1/2″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.70m Gas line: 0.63m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source supply					Terminal block (Screw fixing type)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts					Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)
If the piping length is longer, when it is 15 to 25m, add 20g refrigerant per meter.

Model SRK71HE-S (Indoor unit)
SRC71HE-S (Outdoor unit)

(220/230/240V)

Item				Model	SRK71HE-S	SRC71HE-S
Cooling capacity(1)				W	7100	
Heating capacity(1)				W	7500	
Power source					1 Phase, 220-240V, 50Hz	
Operation data(1) (2)	Cooling input			kW	2.21	
	Running current (Cooling)			A	11.0/10.6/10.1	
	Heating input			kW	2.07	
	Running current (Heating)			A	10.3/9.9/9.5	
	Inrush current			A	49	
	COP				Cooling: 3.21 Heating: 3.62	
	Noise level	Cooling	Sound level	dB	Hi 45,Me 41,Lo 38	54
			Power level		59	69
		Heating	Sound level		Hi 46, Me 41, Lo 38	55
			Power level		60	70
Exterior dimensions Height × Width × Depth				mm	318 × 1098 × 248	750 × 880 × 340
Color					Yellowish white	Stucco white
Net weight				kg	15	68
Refrigerant equipment Compressor type & Q'ty					–	5JS270DAA01
Motor				kW	–	1.8
Starting method					–	Line starting
Heat exchanger					Slit fins & inner grooved tubing	Straight fin & inner grooved tubing
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(3)				kg	R410A 2.0 (Pre-charged up to the piping length of 15m)	
Refrigerant oil				ℓ	1.13 (RB68A or Freol Alpha 68M)	
Deice control					Microcomputer control	
Air handling equipment Fan type & Q'ty					Tangential fan × 1	Propeller fan × 1
Motor				W	46	85
Air flow (at High)			(Cooling)	CMM	19	60
			(Heating)		21	60
Air filter, Q'ty					Polypropylene net (washable) × 2	–
Shock & vibration absorber					–	Cushion rubber (for compressor)
Electric heater					–	–
Operation control Operation switch					Wireless-Remote control	–
Room temperature control					Microcomputer thermostat	–
Pilot lamp					RUN (Green), TIMER (Yellow), HI POWER (Green), ECONO (Orange)	
Safety equipment					Compressor: overheat protection, Heating overload protection (High pressure control), Frost protection, Serial signal error protection, Indoor fan motor error protection	
Refrigerant piping	O.D			mm (in)	Liquid line: ϕ6.35 (1/4″) Gas line: ϕ15.88 (5/8″)	
	Connecting method				Flare connecting	
	Attached length of piping				Liquid line: 0.70m Gas line : 0.63m	–
	Insulation				Necessary (Both sides)	
Drain hose					Connectable	
Power source supply					Terminal block (Screw fixing type)	
Connection wiring	Size × Core number				1.5 mm² × 4 cores (Including earth cable)	
	Connecting method				Terminal block (Screw fixing type)	
Accessories (included)					Mounting kit, Clean filter (Natural enzyme filter × 1, Photocatalytic washable deodorizing filter × 1)	
Optional parts					Wired-Remote control	

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling	27ºC	19ºC	35ºC	24ºC	ISO-T1, JIS C9612
Heating	20ºC	–	7ºC	6ºC	ISO-T1, JIS C9612

The piping length is 7.5m.

(2) The operation data are applied to the 220/230/240V districts respectively.

(3) The refrigerant quantity to be charged includes the refrigerant in 15 m connecting piping.
(Purging is not required even in the short piping.)
If the piping length is longer, when it is 15 to 25m, add 25g refrigerant per meter.

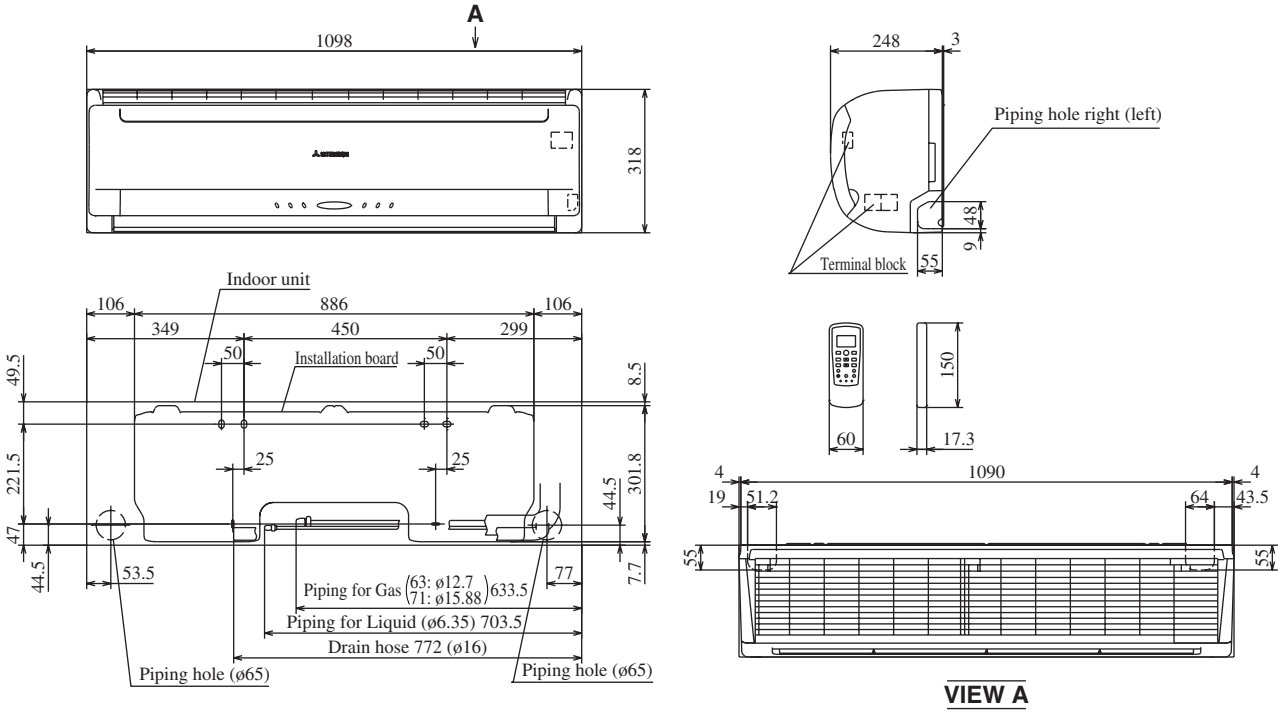
(2) Range of usage & limitations

Item \ Models	All models
Indoor return air temperature (Upper, lower limits)	Refer to the selection chart
Outdoor air temperature (Upper, lower limits)	
Refrigerant line (one way) length	Max. 25m
Vertical height difference between outdoor unit and indoor unit	Max. 15m
Power source voltage	Rating ± 10%
Voltage at starting	Min. 85% of rating
Frequency of ON-OFF cycle	Max. 10 times/h
ON and OFF interval	Max. 3 minutes

(3) Exterior dimensions

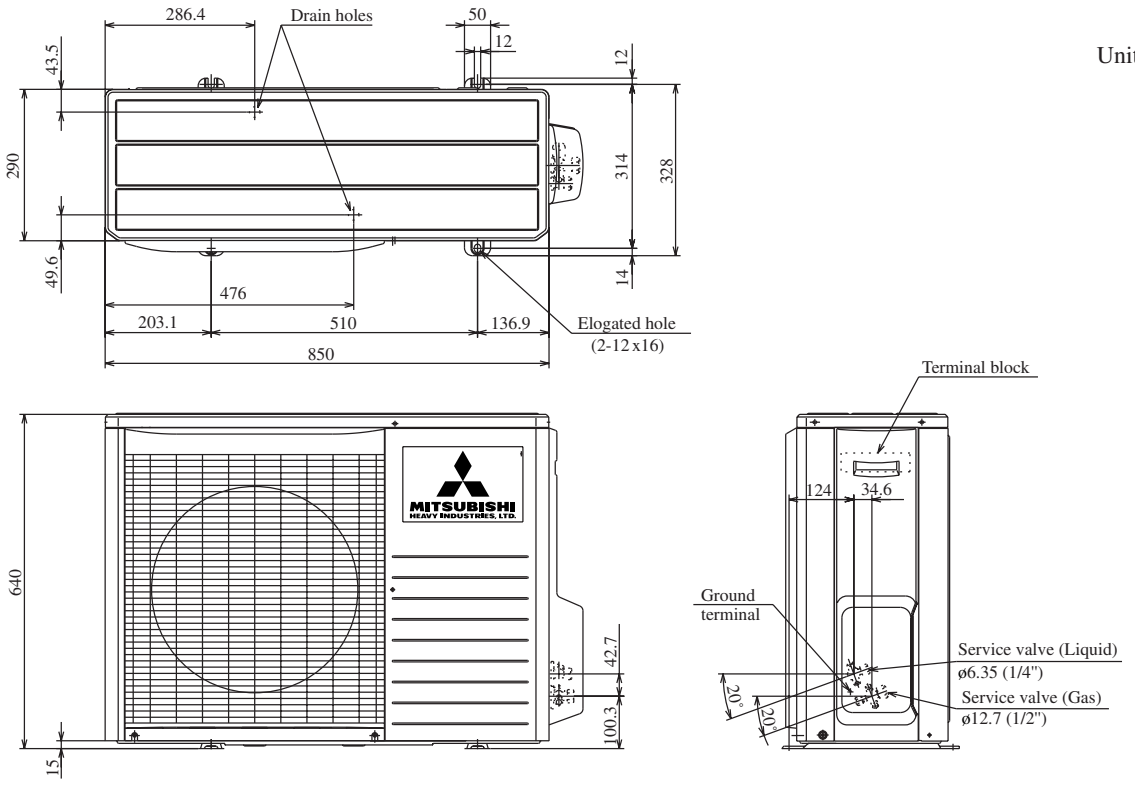
(a) Indoor unit
Models SRK63HE-S, 71HE-S

Unit: mm



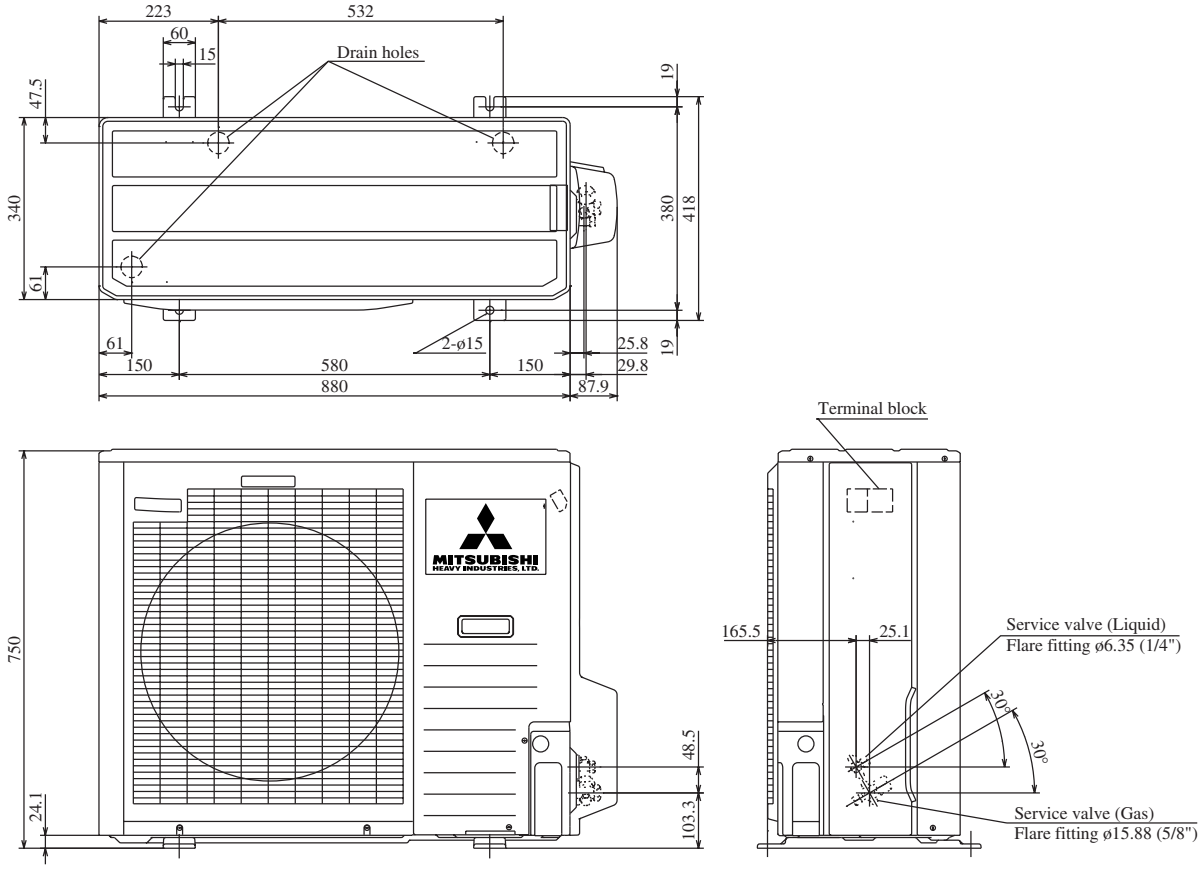
(b) Outdoor unit
Model SRC63HE-S

Unit: mm



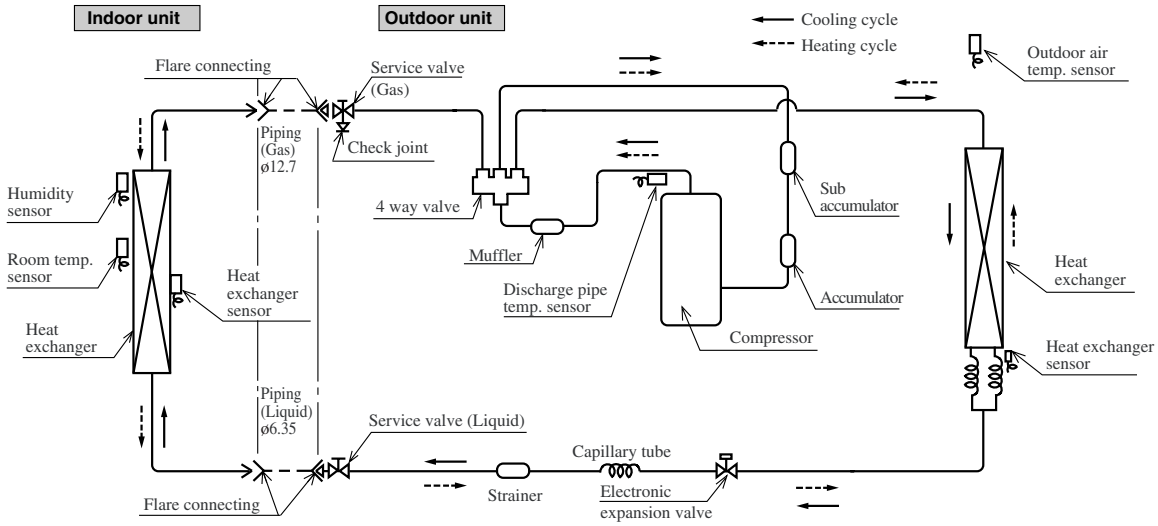
Model SRC71HE-S

Unit: mm

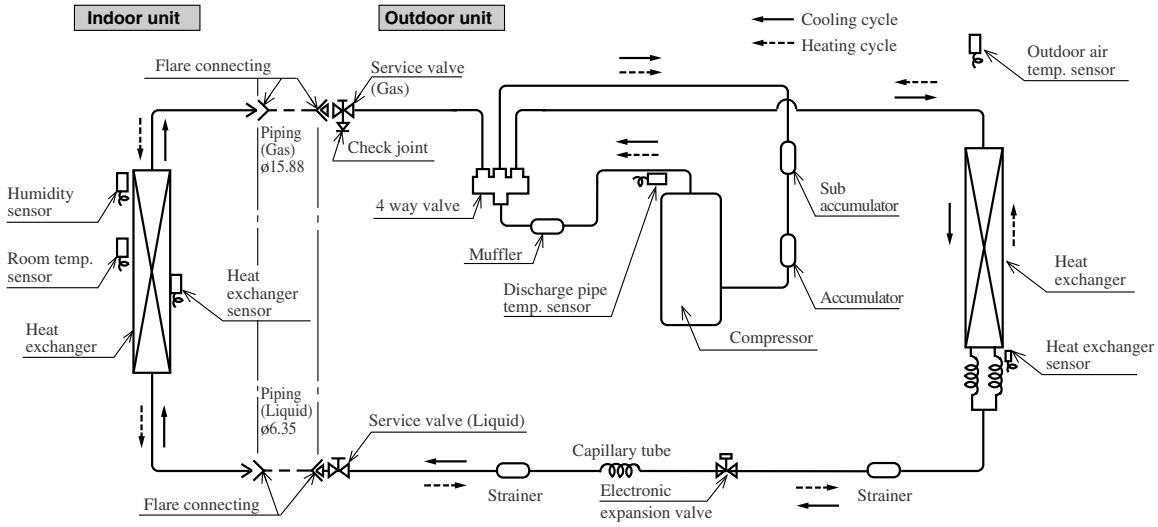


(4) Piping system

Model SRK63HE-S



Model SRK71HE-S

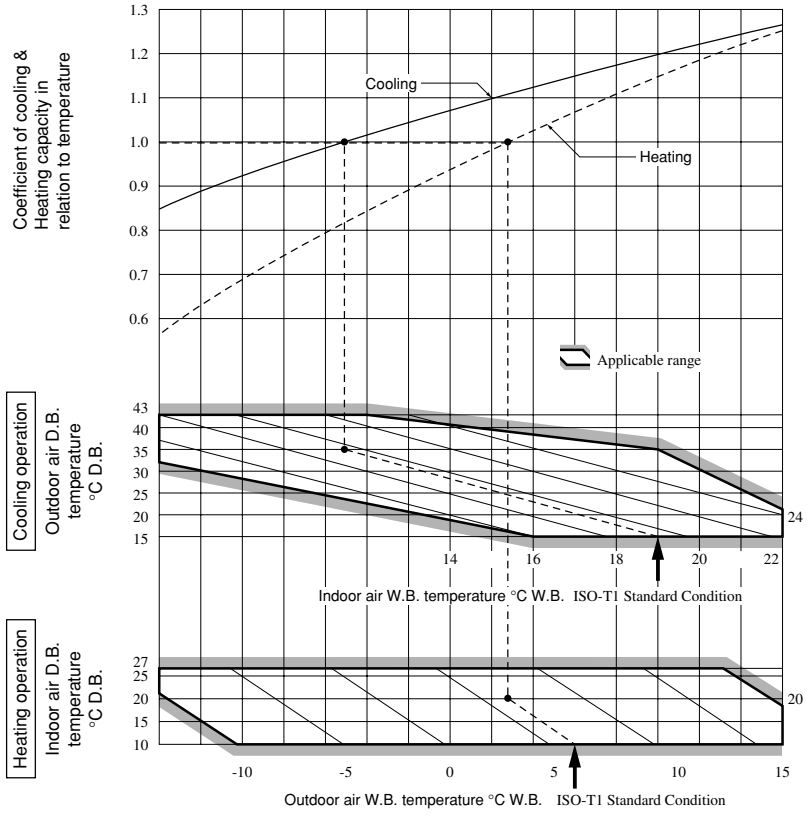


(5) Selection chart

Correct the cooling and heating capacity in accordance with the conditions as follows. The net cooling and heating capacity can be obtained in the following way.

Net capacity = Capacity shown on specification × Correction factors as follows.

(a) Coefficient of cooling and heating capacity in relation to temperatures



(b) Correction of cooling and heating capacity in relation to one way length of refrigerant piping

It is necessary to correct the cooling and heating capacity in relation to the one way piping length between the indoor and outdoor units.

Piping length [m]	7	10	15	20	25
Cooling	1.0	0.99	0.975	0.965	0.95
Heating	1.0	1.0	1.0	1.0	1.0

(c) Correction relative to frosting on outdoor heat exchanger during heating

In additions to the foregoing corrections (a), (b) the heating capacity needs to be adjusted also with respect to the frosting on the outdoor heat exchanger.

Air inlet temperature of outdoor unit in ˚CWB	-10	-9	-7	-5	-3	-1	1	3	5
Adjustment coefficient	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1.00

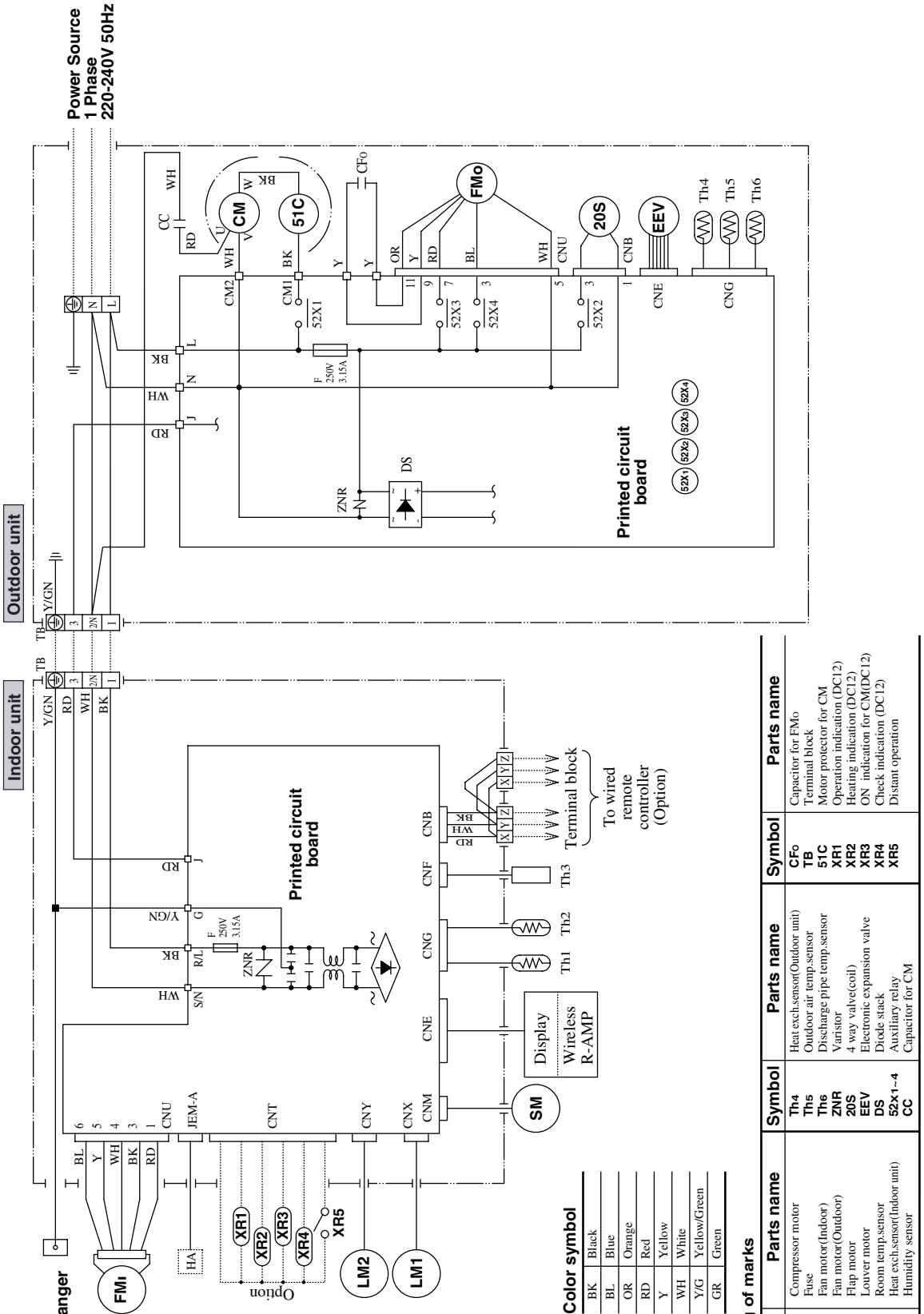
How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK63HE-S with the piping length of 15m, indoor wet-bulb temperature at 19.0˚C and outdoor dry-bulb temperature 35˚C is Net cooling capacity = $\underset{\text{SRK63HE-S}}{6300} \times \underset{\text{Length 15m}}{0.975} \times \underset{\text{Factor by air temperatures}}{1.0} = 6143\text{w}$

2.3.3 ELECTRICAL DATA

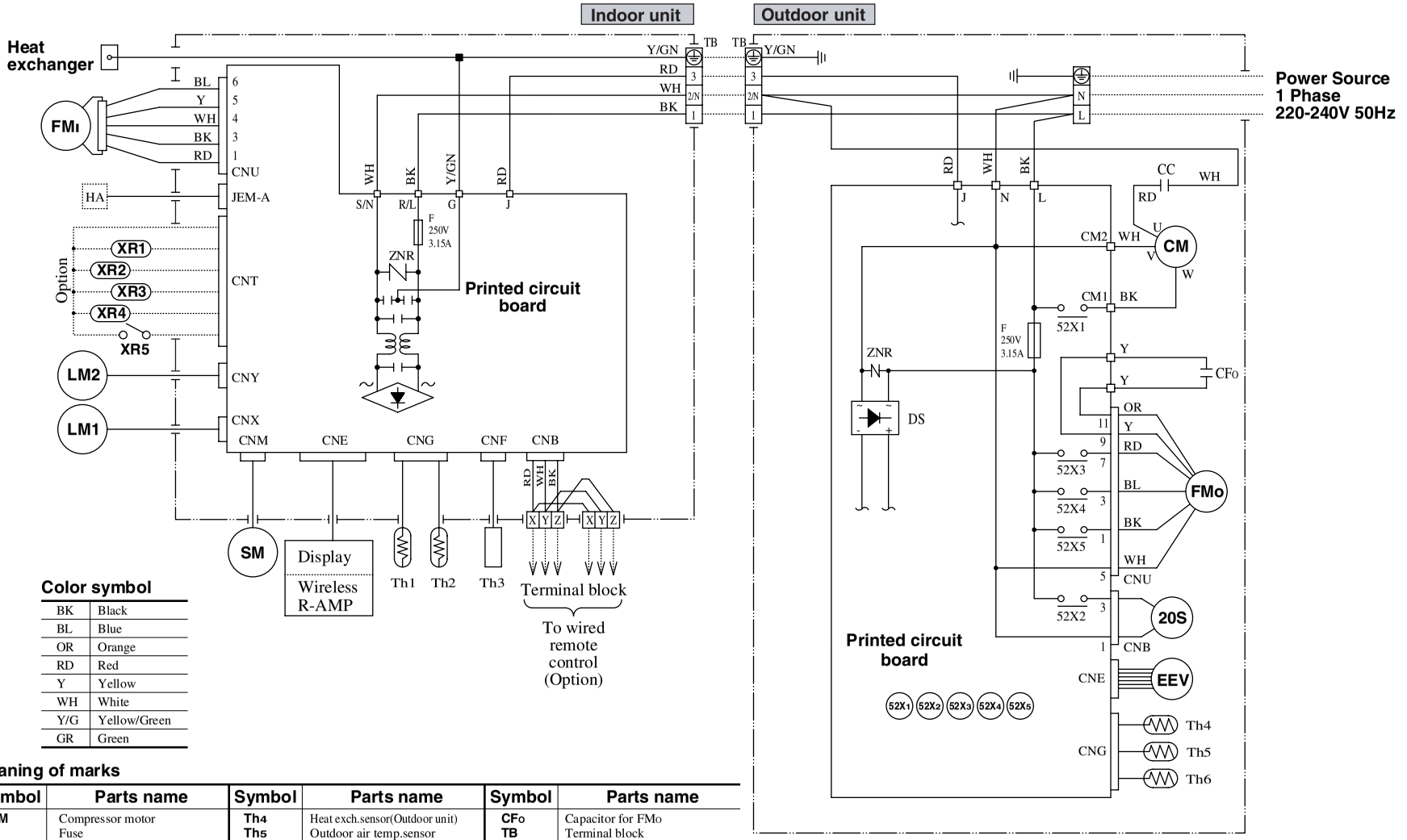
(1) Electrical wiring

Model SRK63HE-S



Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CM	Compressor motor	Th4	Heat exch.sensor(Outdoor unit)	CFo	Capacitor for FMo
F	Fuse	Th5	Outdoor air temp.sensor	TB	Terminal block
FMI	Fan motor(Indoor)	Th6	Discharge pipe temp.sensor	51C	Motor protector for CM
FMo	Fan motor(Outdoor)	ZNR	Varistor	XR1	Operation indication (DC12)
SM	Flap motor	20S	4 way valve(coil)	XR2	Heating indication (DC12)
LM1,2	Louver motor	EEV	Electronic expansion valve	XR3	ON indication for CM(DC12)
Th1	Room temp.sensor	DS	Diode stack	XR4	Check indication (DC12)
Th2	Heat exch.sensor(Indoor unit)	52×1~4	Auxiliary relay	XR5	Distant operation
Th3	Humidity sensor	CC	Capacitor for CM		



Color symbol

BK	Black
BL	Blue
OR	Orange
RD	Red
Y	Yellow
WH	White
Y/G	Yellow/Green
GR	Green

Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CM	Compressor motor	**Th4**	Heat exch.sensor(Outdoor unit)	**CFo**	Capacitor for FMo
F	Fuse	**Th5**	Outdoor air temp.sensor	**TB**	Terminal block
FMI	Fan motor(Indoor)	**Th6**	Discharge pipe temp.sensor	**XR1**	Operation indication (DC12)
FMo	Fan motor(Outdoor)	**ZNR**	Varistor	**XR2**	Heating indication (DC12)
SM	Flap motor	**20S**	4 way valve(coil)	**XR3**	ON indication for CM(DC12)
LM1,2	Louver motor	**EEV**	Electronic expansion valve	**XR4**	Check indication (DC12)
Th1	Room temp.sensor	**DS**	Diode stack	**XR5**	Distant operation
Th2	Heat exch.sensor(Indoor unit)	**52X1~5**	Auxiliary relay		
Th3	Humidity sensor	**CC**	Capacitor for CM		

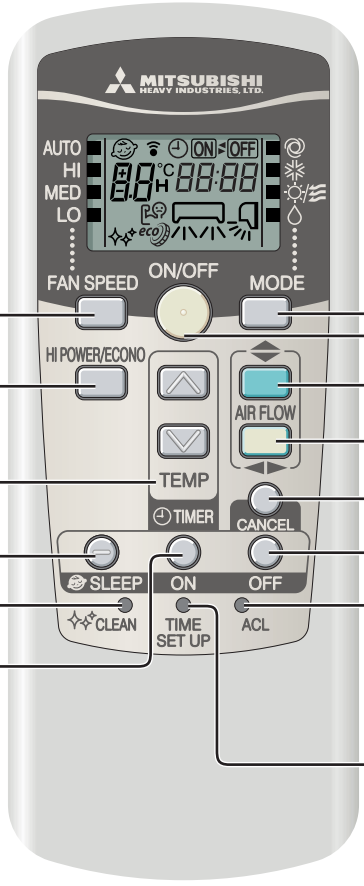
2.3.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

(1) Operation control function by remote control switch

(a) Wireless remote control

Models All models

◆ **Operation section**



FAN SPEED button

Each time the button is pushed, the ■ indicator is switched over in turn.

HI POWER/ECONO button

This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button

This button sets the room temperature. (This button changes the present time and TIMER time.)

SLEEP button

This button changes to SLEEP operation.

CLEAN switch

This switch changes the CLEAN mode.

ON TIMER button

This button selects ON TIMER operation.

OPERATION MODE select button

Each time the button is pushed, the ■ indicator is switched over in turn.

ON/OFF (luminous) button

Press for starting operation, press again for stopping.

AIR FLOW (UP/DOWN) button

This button changes the air flow (up/down) mode.

AIR FLOW (LEFT/RIGHT) button

This button changes the air flow (left/right) mode.

CANCEL button

This button cancels the ON timer, OFF timer, and SLEEP operation.

OFF TIMER button

This button selects OFF TIMER operation.

RESET switch

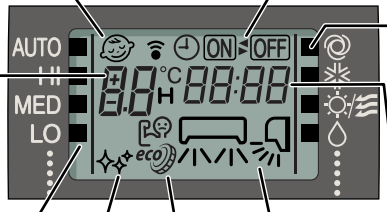
Switch for resetting microcomputer.

TIME SET UP switch

This switch for setting the time.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

◆ **Indication section**



SLEEP indicator

Indicates during SLEEP operation.

TEMPERATURE indicator

Indicates set temperature.
(Does not indicate temperature when operation mode is on AUTO)

FAN SPEED indicator

Indicates set air flow rate with ■ lamp.

CLEAN indicator

Indicates during CLEAN operation.

ON/OFF TIMER indicator

Indicates during ON/OFF TIMER operation.

OPERATION MODE indicator

Indicates selected operation with ■ lamp.
Heat pump type (HE)
[(Auto) • (Cool) • (Heat) • (Dry)]
Cooling only type (CE)
[(Auto) • (Cool) • (Fan) • (Dry)]

TIME indicator

Indicates present time or timer setting time.

AIR FLOW indicator

Shows selected flap and louver mode.

HI POWER/ ECONO MODE indicator

Indicates during High power/economy mode operation.

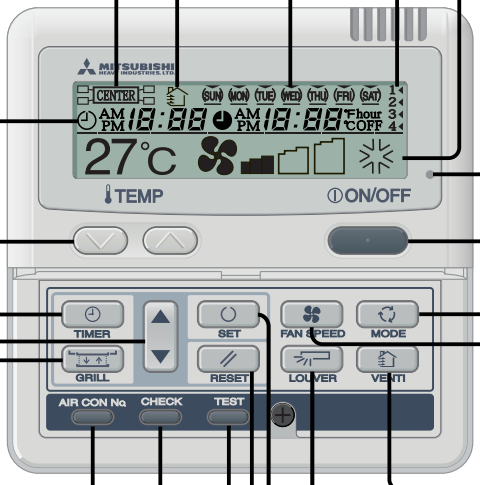
(b) Wired remote control (Optional parts)

The figure below shows the remote control with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation.

Characters displayed with dots in the liquid crystal display area are abbreviated.

Notes (1) The SRK models don't support the switches and functions displayed in [ ].

Pull the cover downward to open it.



Central control display
Displayed when the air conditioning system is controlled by the option controller.

Timer operation display
Displays the settings related to timer operation.

Temperature setting switches
These switches are used to set the temperature of the room.

TIMER switch
This switch is used to select a timer mode.
(The comfortable timer or sleep operation cannot be selected.)

Timer setting switches
These switches are used to set the timer mode and time.

[GRILL switch]
This switch has no function.
When this switch is pressed,
INVALID OPER (Invalid Operation)
is displayed, but it does not mean a failure.

AIR CON No. (Air conditioning system No.) switch
Displays the number of the connected air conditioning system.
("00" appears.)

[CHECK switch]
This switch is used at servicing.

[TEST switch]
This switch is used during test operation.

[Vent indicator]
Indicates operation in the ventilation mode.

Weekly timer display
Displays the settings of the weekly timer.

Operation setting display area
Displays setting temperature, airflow volume, operation mode and operation message.

Operation/Check indicator light
During operation: Lit in green
In case of error: Flashing in red

Operation/Stop switch
This switch is used to operate and stop the air conditioning system.
Press the switch once to operate the system and press it once again to stop the system.

MODE switch
This switch is used to switch between operation modes.
(The clean operation cannot be selected.)

FAN SPEED switch
This switch is used to set the airflow volume.
(AUTO, HI POWER or ECONO cannot be selected.)

[VENT switch]
Switch that operates the connected ventilator.

LOUVER switch
This switch is used to operate/stop the swing louver.
(UP/down swing only)

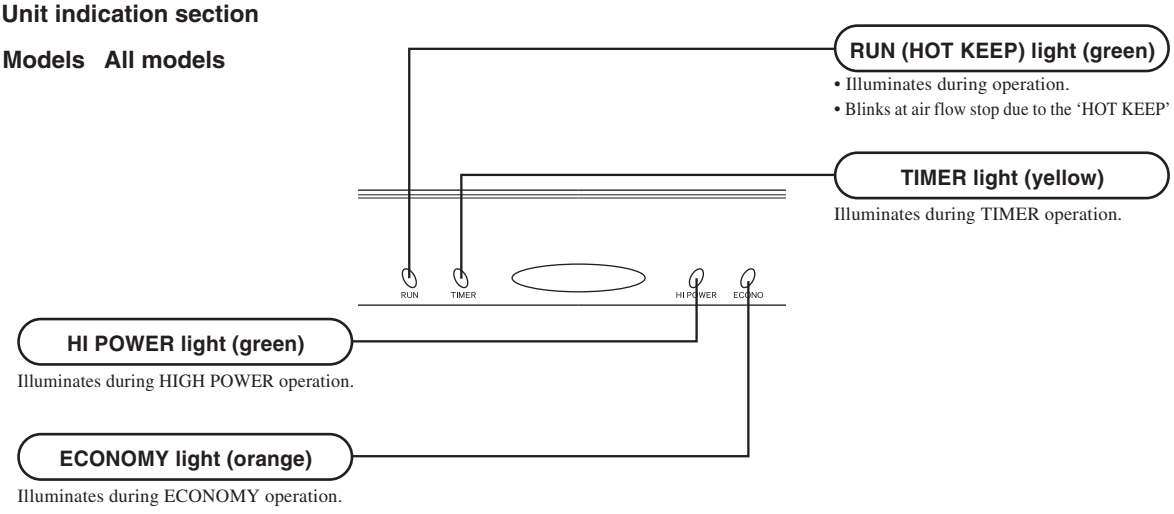
SET switch
This switch is used to apply the timer operation setting.
This switch is also used to make silent mode operation settings.

[RESET switch]
Press this switch while making settings to go back to the previous operation.
This switch is also used to reset the "FILTER CLEANING" message display.
(Press this switch after cleaning the air filter.)

* If you oress any of the switches above and " INVALID OPER" is display, the switch has no function.
But it does not mean a failure.

(c) Unit indication section

Models All models



(2) Unit ON/OFF button

When the remote control batteries become weak, or if the remote control is lost or malfunctioning, this button may be used to turn the unit on and off.

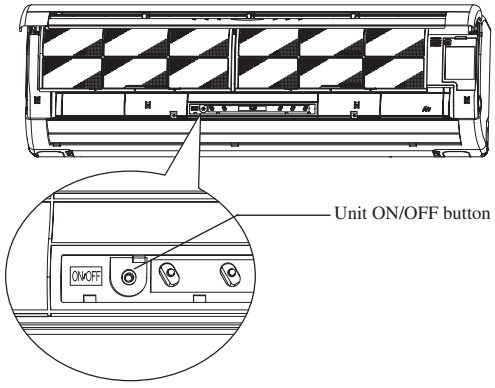
(a) Operation

Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

The unit will go into the automatic mode in which it automatically determines, from room temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / Operation mode	Room temperature setting	Fan speed	Flap	Timer switch
Cooling	About 24ºC	Auto	Auto	Continuous
Thermal dry	About 24ºC			
Heating	About 26ºC			



(3) Power blackout auto restart function

(a) Power blackout auto restart function is a function that records the operational status of the air-conditioner immediately prior to it being switched off by a power cut, and then automatically resumes operations at that point after the power has been restored.

(b) The following settings will be cancelled:

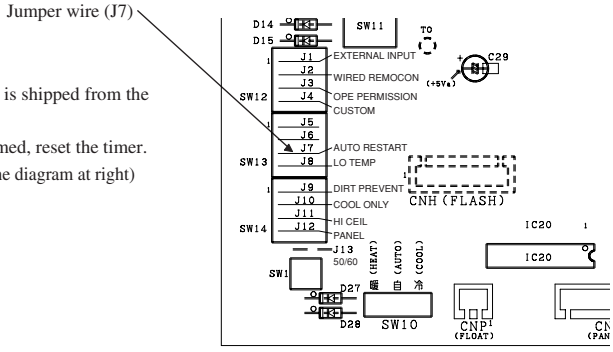
(i) Timer settings

(ii) High-power operations

Notes (1) The power blackout auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.

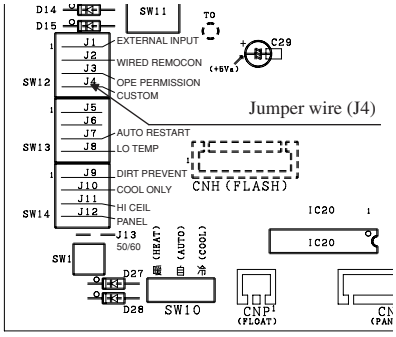
(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.

(3) If the jumper wire (J7) "AUTO RESTART" is cut, auto restart is disabled. (See the diagram at right)



(4) Custom cord switching procedure

If two wireless remote controls are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's control box and the remote control using the following procedure. Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.



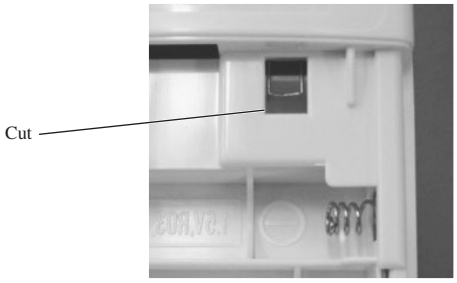
(a) Modifying the indoor unit's printed circuit board

Take out the printed circuit board from the control box and cut off jumper wire (J4) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

(b) Modifying the wireless remote control

1) Remove the battery.
2) Cut the jumper wire shown in the figure at right.



(5) Flap and louver control

Control the flap and louver by AIRFLOW ⬍ (UP/DOWN) and ⬌ (LEFT/RIGHT) button on the wireless remote control.

(a) Swing flap

Flap moves in upward and downward directions continuously.

(b) Swing louver

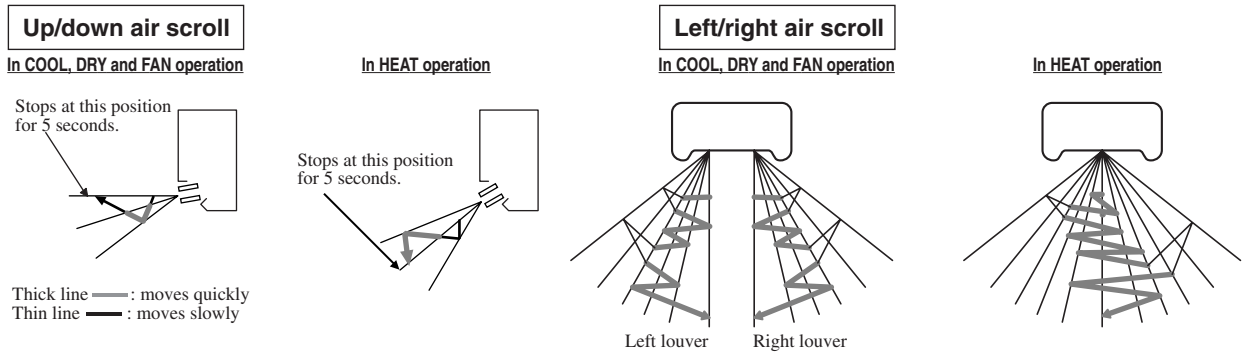
Louver moves in left and right directions continuously.

(c) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

(d) Multi-directional Air Flow (up/down air scroll and left/right air scroll)

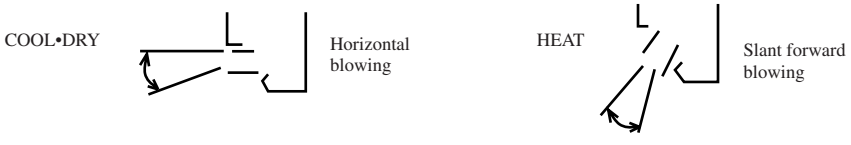
Activating both up/down air swing and left/right air swing at the same time results in a multi-directional air flow.



(e) Memory flap (Flap or Louver stopped)

When you press the AIRFLOW (UP/DOWN or LEFT/RIGHT) button once while the flap or louver is operating, it stops swinging at an angle. Since this angle is memorized in the micro-computer, the flap or louver will automatically be set at this angle when the next operation is started.

- Recommendable stopping angle of the flap

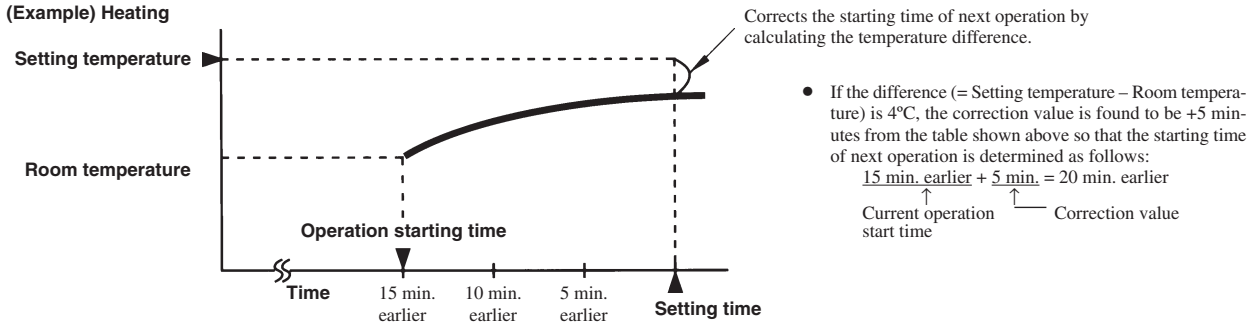


(6) Comfortable timer setting

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the room temperature at the setting time (temperature of room temperature sensor) and the setting temperature. (Max. 60 minutes)

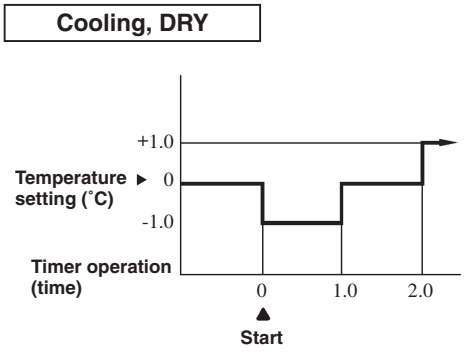
Operation mode	Operation start time correction value (Min.)		
At cooling	3 < Room temp. – Setting temp.	1 < Room temp. – Setting temp. ≦ 3	Room temp. – Setting temp. ≦ 1
	+5	No change	–5
At heating	3 < Setting temp. – Room temp.	2 < Setting temp. – Room temp. ≦ 3	Setting temp. – Room temp. ≦ 2
	+5	No change	–5

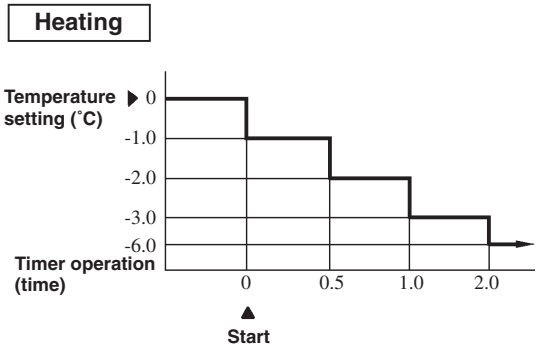
Notes (1) At 5 minutes before the timer ON time, operation starts regardless of the temperature of the room temperature sensor (Th1).
(2) This function does not actuate when the operation select switch is set at the dehumidifying as well as the dehumidifying in the auto mode. However, the operation of item (1) above is performed during the dehumidifying in the auto mode.
(3) During the comfortable timer operation, both the run light and timer light illuminate and the timer light goes off after expiration of the timer, ON setting time.



(7) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled as shown in the following chart with respect to the set temperature.





(8) Outline of heating operation (Heat pump type only)

(a) Operation of major functional components

Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an anomalous stop.
Indoor fan motor	ON	ON	OFF
Flap and louver	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
Outdoor fan motor	OFF	ON	Depending on the stop mode
4-way valve	Depending on the stop mode	ON	
Electric expansion valve		Depending on the EEV control	

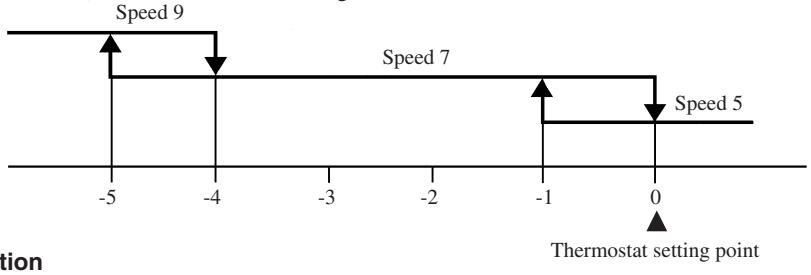
∗ However, the outdoor fan motor doesn't stop for one minute after the compressor stops.

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 9	Speed 7	Speed 5
Swing flap or louver		Speed 9	Speed 7	Speed 5
Swing stop		Speed 9	Speed 7	Speed 5

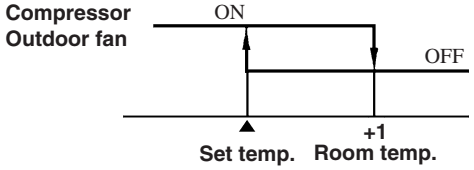
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the thermostat setting as shown below.



(c) Thermostat operation

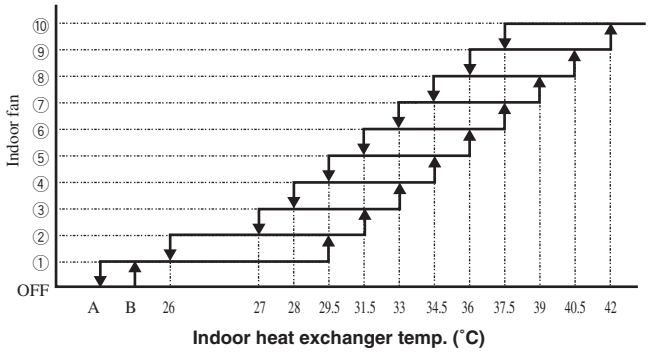
The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) Hot keep

This function controls the indoor unit fan speed as shown below in accordance with the temperature sensed by the indoor heat exchanger sensor.

(i) Indoor unit fan control



● **Values of A, B**

	A	B
When the compressor command is OFF	22	25
When the compressor command is ON	17	19

Note (1) Refer to the table shown above right for the values A and B.

(ii) To accomplish rapid recovery from the thermostat off state, after the compressor and outdoor unit's fan go OFF, the set temperature is raised by 1ºC until 1 minute passes after the hot keep end temperature has been reached following restarting.

(e) Hot spurt

(i) For 40 minutes after a heating operation begins, the system runs with set temperature raised by 2ºC.

(ii) In the following cases, this function is canceled and does not activate afterwards.

1) When the compressor and outdoor unit fan have been turned OFF by the thermostat going off.

2) During high pressure control operation.

(f) HIGH POWER operation ("HI POWER" button on the remote control : ON)

The system runs under the following conditions for 15 minutes without relation to the set temperature or the fan speed setting.

Indoor unit fan	Speed 10 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HIGH POWER operation.

(2) Protective function will actuate with priority even during the HIGH POWER operation.

(g) Defrost operation

(i) Starting conditions (Defrost operation begins when all the following conditions are satisfied.)

1) ① 45 minutes have passed since the heating operation began. (Accumulated operation time)
② 45 minutes have passed since the previous defrosting operation ended. (Accumulated operation time)
③ The outdoor unit heat exchanger temperature sensor is –5ºC or lower continuously for 3 minutes.
④ ● The outdoor temperature ≧ -7°C
The difference between the outdoor temperature sensor temperature and the outdoor heat exchanger temperat ure sensor temperature is ≧ 7ºC.
● The outdoor temperature < -7°C
The difference between the outdoor temperature sensor temperature and the outdoor heat exchanger tempera ture sensor temperature is ≧ -5ºC.
⑤ The compressor is running.(Defrost shall not be performed once the Compressor has been ON for 10 minutes.)

2) Also, the number of times the compressor goes OFF is counted, and when it reaches 10 or more times, if the conditions in ①, ②, ③ above (except that the outdoor heat exchanger temperature sensor is –1ºC) and outdoor temperature is 3ºC or lower, the defroster operation starts.

3) ① Less than 45 minutes since the heating operation began. (Accumulated operation time)
② Less than 45 minutes since the previous defrosting operation ended. (Accumulated operation time)
③ The outdoor unit heat exchanger temperature sensor is –5ºC or lower continuously for 3 minutes.
④ The difference between the outdoor temperature sensor temperature and the outdoor heat exchanger temperature sensor temperature is ≧ 11ºC (15ºC).

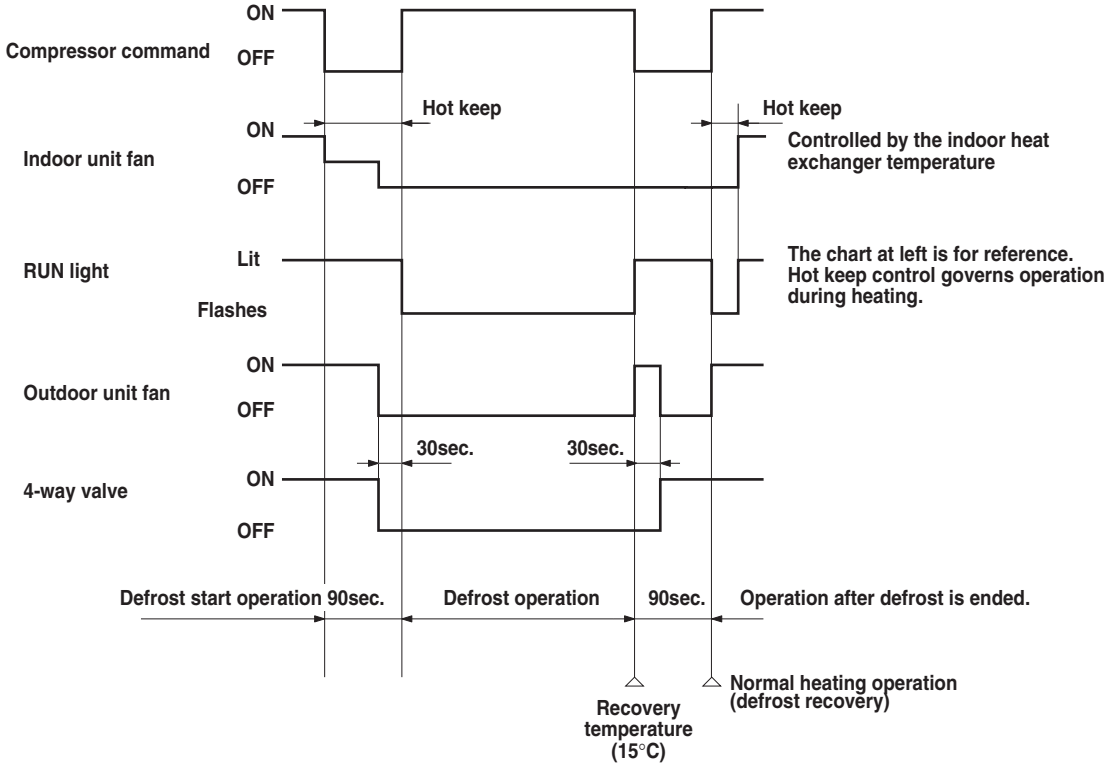
Note (1) Values in ( ) are for type 71.

(ii) End conditions (when either of the following conditions is satisfied)

① Outdoor heat exchanger temperature sensor: 15ºC or higher

② Defrosting operation has continued for 10 minutes.

(iii) Operation of functinal components during defrosting operation



(h) Forced defrost

(i) Forced defrost operation can be performed only once time within 20 second, after the power source is turned on, in accordance with the following operation.

1) Remote control operation

Operation	Run
Operation mode	Heating
Set temperature	19˚C
Fan speed select	Low
Air flow setting	Up/down swing
On timer	ON
Current time	On after 180 min.condition
On timer time	

2) Functional components operation

Compressor	ON
4-way valve	OFF
Indoor unit fan	OFF
Flap and louver	Fully closed
Outdoor unit fan	OFF
Display	Same as defrost

(ii) If remote control operation is performed, for 1 minute after 3-minute timer operation, the operation is canceled if one of the following conditions is satisfied.

① Outdoor heat exchanger temperature sensor: 14ºC or higher

② 10 minutes has passed (including the 1 minute of forced operation).

(i) ECONOMY operation (“ECONO” button on the remote control : ON)

The set temperature changes as shown at right and the indoor unit fan runs at speed 5.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature -1.0
1~2 hours	Set temperature -2.0
2 hours ~	Set temperature -2.5

(9) Outline of cooling operation

(a) Operation of major functional components

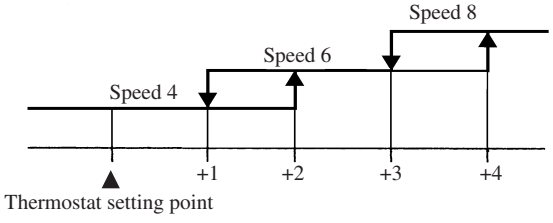
Item / Functional components	When the compressor command is OFF	When the compressor command is ON	When the compressor goes OFF due to an anomalous stop.
Indoor fan motor	ON	ON	OFF
Flap and louver	ON or OFF	ON or OFF	Stop position control
Display	Lights up	Lights up	Lights up or flashes
Outdoor fan motor	Depending on the stop mode	ON	Depending on the stop mode
4-way valve		OFF	
Electric expansion valve		Depending on the EEV control	

(b) Fan speed switching

Fan speed switching / Flow control	AUTO	HIGH	MED	LOW
Air scroll	Auto fan control	Speed 8	Speed 6	Speed 4
Swing flap or louver		Speed 8	Speed 6	Speed 4
Swing stop		Speed 8	Speed 6	Speed 4

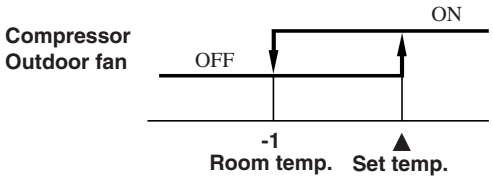
(i) Auto fan control

The indoor fan is automatically controlled in accordance with the difference between the room temperature (detected by the room temperature sensor) and the termostat setting as shown below.



(c) Thermostat operation

The compressor and outdoor fan and turned on and off as shown below according to the temperature setting.



(d) HIGH POWER operation (“HI POWER” button on the remote control : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 9 fixed
Outdoor unit fan	ON
Compressor	ON

Notes (1) Room temperature is not adjusted during the HIGH POWER operation.
(2) Protective functions will actuate with priority even during the HIGH POWER operation.

(e) ECONOMY operation (“ECONO” button on the remote control : ON)

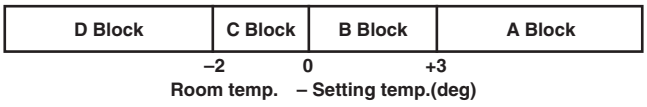
The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 4.

Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

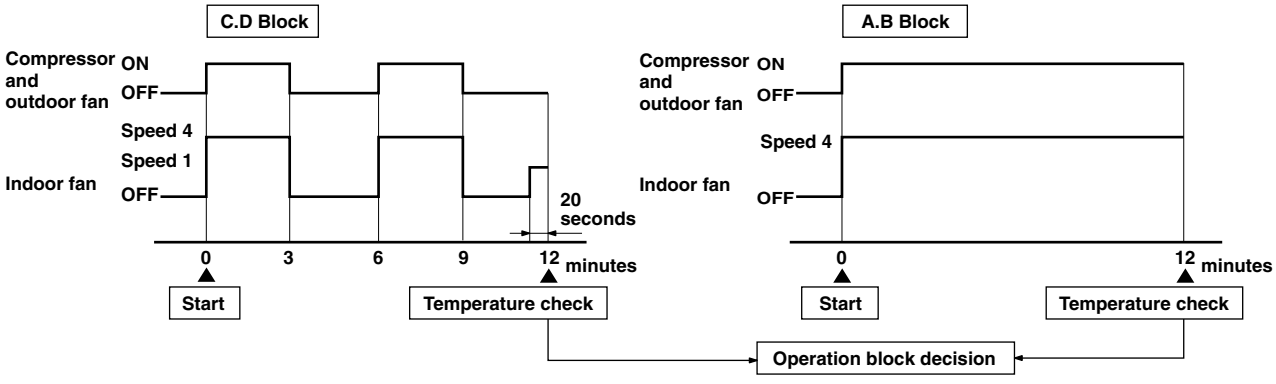
(10) Outline of dehumidifying operation

(a) Choose the appropriate operation block area by the difference between room temperature and thermostat setting temperature as shown below.

- **Operation block area**



(b) Start up operation

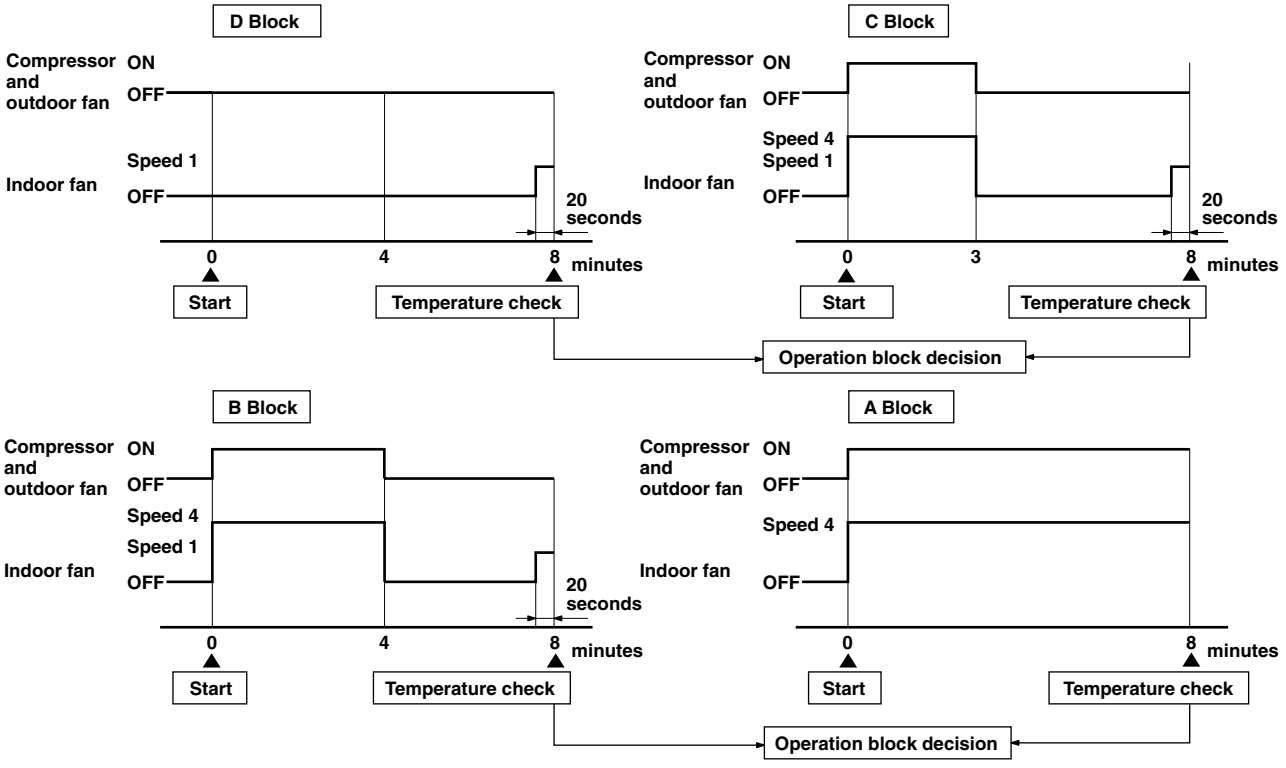


Note (1) Thermostat operation is performed in A, B Block. When compressor and indoor fan stop by thermostat operation within 12 minutes from start, temperature check is performed by operating indoor fan at speed 1 for 20 seconds before finishing 12 minutes and allowing decision of next operation block.

(c) DRY operation

After finishing start up operation described in (b) above, thermal dry operation is performed at 8 minutes intervals, according to the difference between room temperature and thermostat setting temperature as shown below.

Beside, 1 cycle of this operating time consists of 8 minutes, 7 cycle operation is performed then.



(d) ECONOMY operation (“ECONO” button on the remote control : ON)

The set temperature changes as shown at right, and the indoor unit fan speed is set on speed 4 .

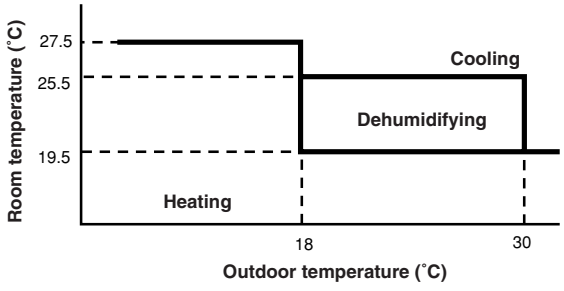
Running time	Set temperature compensation
Running start ~ 1 hour	Set temperature +0.5
1~2 hours	Set temperature +1.0
2 hours ~	Set temperature +1.5

(11) Outline of automatic operation

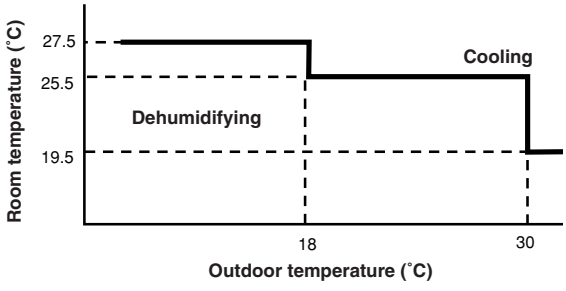
(a) Determination of operation mode

The unit checks the room temperature and the outdoor air temperature after operating the indoor and outdoor blowers for 20 seconds, determines the operation mode and the room temperature setting correction value, and then begins in the automatic operation.

- **Heat pump type**



- **Cooling only type**



(b) Within 30 minutes after either auto or manual operation stops, if auto operation is started, or if you switch to auto operation during manual operation, the system runs in the previous operation mode.

(c) The temperature is checked 1 time in 30 minutes after the start of operation, and if the judgment differs from the previous operation mode, the operation mode changes.

(d) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote control and the setting temperature.

		Signals of wireless remote control (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	18	19	20	21	22	23	24	25	26	27	28	29	30
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

(12) Outline of fan operation (Cooling only type only)

(a) Operation of major functional components

Functional components \ Fan speed switching	High power	AUTO	HIGH	MED	LOW	ECONO
52C	OFF					
Indoor fan motor	Speed 9	Speed 8	Speed 8	Speed 6	Speed 4	Speed 2
Outdoor fan motor	OFF					
Flap and louver	Depend on the flap and louver control					

(b) HIGH POWER operation ("HI POWER" button on the remote control : ON)

The following operation is performed for 15 minutes without relation to the set temperature or fan speed setting.

Indoor unit fan	Speed 9 fixed
Outdoor unit fan	OFF
Compressor	OFF

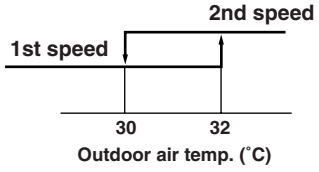
Note (1) Protective functions will actuate with priority even during the HIGH POWER operation.

(13) Regulation of outdoor air flow

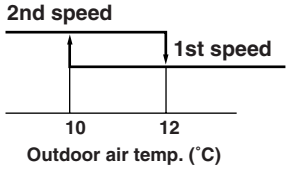
The fan operates as follows according to the outdoor air temperature. (Except during defrost.)

◆ **SRK63 HE-S, 63CE-S**

Cooling, thermaldry

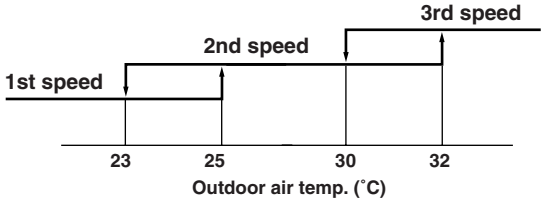


Heating

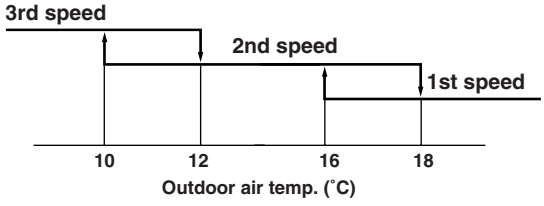


◆ **SRK71 HE-S, 63CE-S**

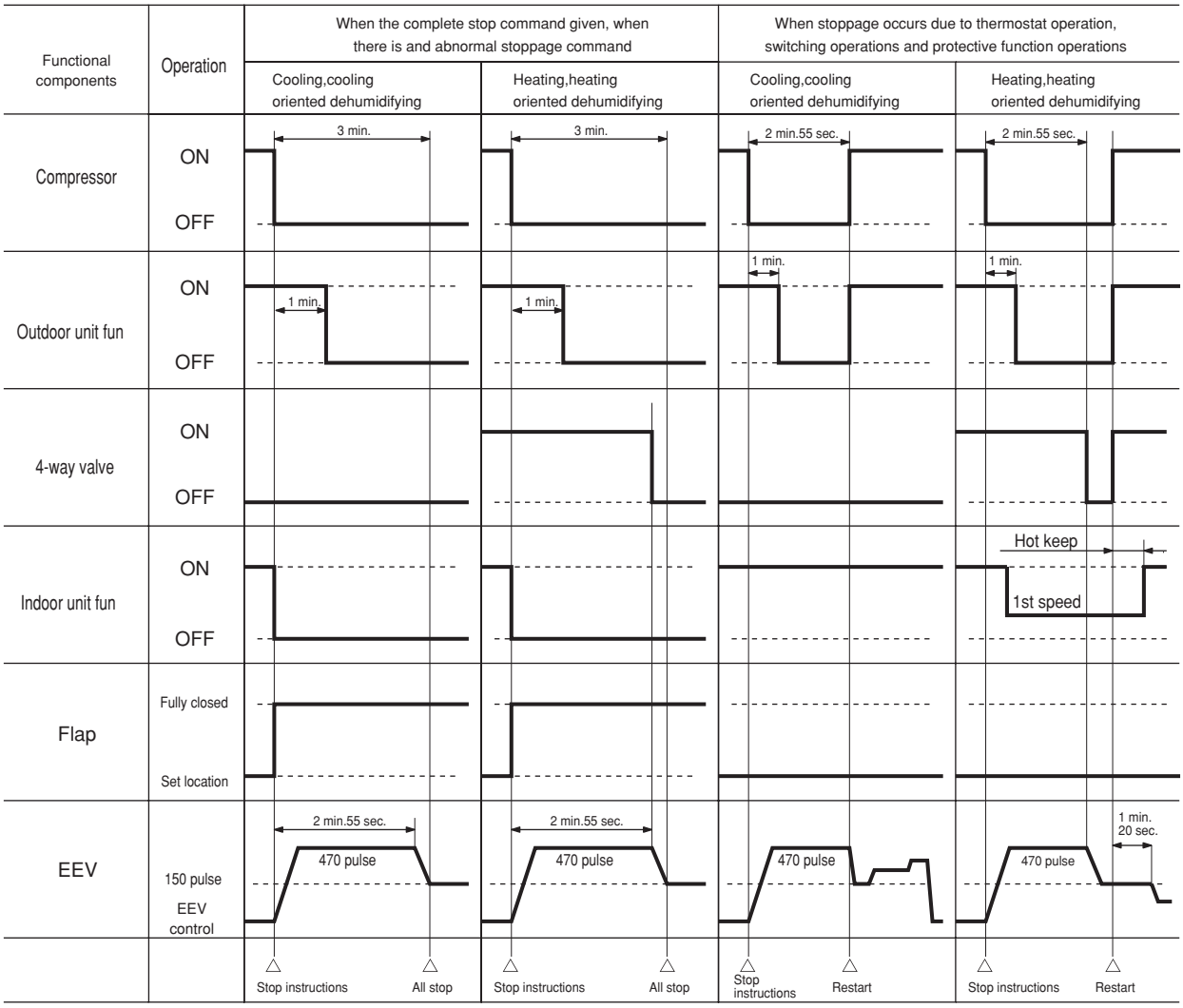
Cooling, thermaldry



Heating



(14) Stop mode


Functional components
Operation
When the complete stop command given, when there is and abnormal stoppage command
When stoppage occurs due to thermostat operation, switching operations and protective function operations
Cooling,cooling oriented dehumidifying
Heating,heating oriented dehumidifying
Cooling,cooling oriented dehumidifying
Heating,heating oriented dehumidifying
Compressor
ON
OFF
3 min.
2 min.55 sec.
Outdoor unit fun
1 min.
4-way valve
Indoor unit fun
Hot keep
1st speed
Flap
Fully closed
Set location
EEV
150 pulse
EEV control
470 pulse
2 min.55 sec.
1 min. 20 sec.
Stop instructions
All stop
Restart

(15) External control (remote display)/control of input signal

Make sure to connect the standard remote control unit. Control of input signal is not available without the standard remote control unit.

(a) External control (remote display) output

Following output connectors (CNT) are provided on the printed circuit board of indoor unit.

(i) Operation output: Power to engage DC 12V relay (provided by the customer) is outputted during operation.

(ii) Heating output: Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.

(iii) Compressor ON output: Power to engage DC 12V relay (provided by the customer) is outputted while the compressor is operating.

(iv) Error output: When any error occurs, the power to engage DC 12V relay (provided by the customer) is outputted.

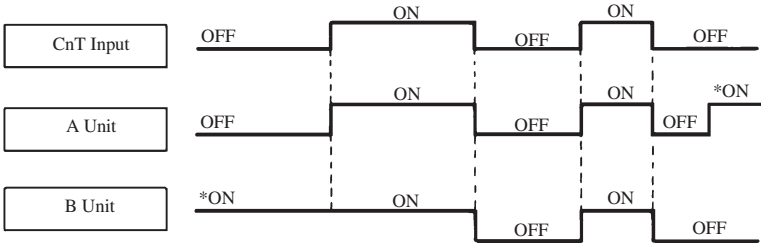
(b) Control of input signal

Control of input signal (switch input, timer input) connectors (CNT) are provided on the control circuit board of the indoor unit. However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

(i) If the factory settings (Jumper wire J1 EXTERNAL INPUT on the PCB) are set, or "LEVEL INPUT" is selected in the wired remote control's indoor unit settings.

1) Input signal to CnT OFF → ON – – – – Air conditioner ON

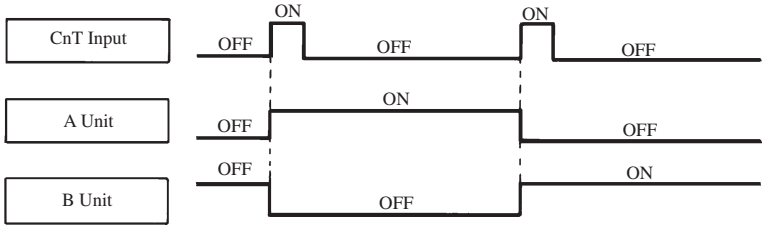
2) Input signal to CnT ON → OFF – – – – Air conditioner OFF



Note (1) The ON with the * mark indicates an ON operation using the remote control unit switch, etc.

(ii) When Jumper wire J1 on the PCB of indoor unit is cut at the field or "PULSE INPUT" is selected in the wired remote control's indoor unit settings.

Input signal to CnT becomes valid at OFF → ON only and the motion of air conditioner [ON/OFF] is inverted.



(16) Operation permission/prohibition control

The air conditioner operation is controlled by releasing the jumper wire (J3) on the indoor control board and inputting the external signal into the CnT.

(a) The operation mode is switched over between Permission and Prohibition by releasing the jumper wire(1) on the indoor control board.

When the jumper wire (J3) is short circuited	When the jumper wire (J3) is released
Normal operation is enable (when shipping) When CnT input is set to ON, the operation starts and if the input is set to OFF, the operation stops. For the CnT and remote control inputs, the input which is activated later has priority and can start and stop the operation.	Permission / Prohibition mode When Cnt input is set to ON, the operation mode is changed to permission and if input is set to OFF the operation is prohibited.

(b) When the CnT input is set to ON (Operation permission)

(i) The air conditioner can be operated or stopped by the signal from the remote control signal line.
(When the "CENTER" mode is set, the operation can be controlled only by the center input.

(ii) When the CnT input is changed from OFF to ON, the air conditioner operation mode is changed depending on the status of the jumper wire (J1) on the indoor control board.

When the jumper wire (J1) is short circuited	When the jumper wire (J1) is released
The signal (i) above starts the air conditioner. (Shipping status)	When the CnT input is set to ON, the air conditioner starts operation. After that, the operation of the air conditioner depends on (i) above. (Local status)

(c) When the CnT input is set to OFF (Prohibition)

(i) The air conditioner cannot be operated or stopped by the signal from the remote control signal line.

(ii) The air conditioner operation is stopped when the CnT input is changed from ON to OFF.

(d) When the operation permission / prohibition mode is set to effective by the indoor function setting selected by the remote control, the operation depends on (a) above.

(17) Protective control function

(a) Frost prevention for indoor heat exchanger (During cooling or dehumidifying)

(i) Operating conditions

1) Indoor heat exchanger temperature sensor (detected with Th2) is lower than 2.5ºC.
2) 5 minutes elapsed after the start of operation.

(ii) Detail of frost prevention operation

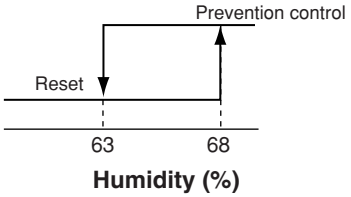
Compressor	OFF
Indoor fan	Protects the fan tap just before frost prevention control.
Outdoor fan	Depending on the stop mode
4-way valve	Stop mode

(iii) Reset condition: Indoor heat exchanger temperature sensor (Th2) is higher than 8ºC.

(b) Dew condensation prevention control [Cooling (including automatic), cooling oriented dehumidifying operation]

(i) Operating condition: When the following conditions are met after 5 minutes or more of continuous operation after operation starts.

- The humidity sensor value is 68% or higher



(ii) Operation contents

1) Command of the electronic expansion valve.
2) When such a command is continued for 30 minutes or more, air direction controls will be as listed below:

UP/ DOWN air scroll	Flap swing, UP/DOWN air scroll	Executes the command to the left.
	Situations besides the ones described above	Controls the level of the UP/DOWN flap.
LEFT/ RIGHT air scroll	Louver swing, LEFT/RIGHT air scroll, Multi-directional Air Flow	Executes the command to the left.
	Situations besides the ones described above	Controls the front of the LEFT/RIGHT louver .

(iii) Reset condition: When the following condition is satisfied.

- The humidity sensor value is less than 63%.

(c) Indoor fan motor protection

When the air-conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.
Timer light illuminates simultaneously and the run light flashing 6 times at each 8-second.

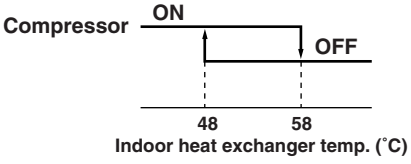
(d) Three-minute forced operation

When the compressor begins operating the thermal operation is not effective for 3 minutes, so operation continues as is in the operation mode. (After 3 minutes has passed the thermal operation is effective.)
However, stopping the compressor via a stop signal or protection control has priority.

(e) High-pressure control (During heating)

The indoor heat exchanger temperature sensor detection temperature controls the compressor.

- **When the indoor heat exchanger temperature is ≧ 58˚C**



(f) Abnormality of outdoor unit

(i) Cooling operation

When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start, the abnormality stop occurs. (The timer lamp flashes 2 times.)

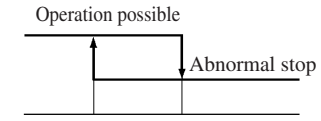
(ii) Heating operation

① The indoor heat exchanger temperature < 5°C for 5 minutes and more
The unit is stopped due to the outdoor unit abnormality excepting the defrost operation time. (The timer lamp flashes 2 times.)

② 5°C ≦ the indoor heat exchanger temperature < 30°C for 40 minutes and more
When the indoor heat exchanger temperature does not rise to 30°C or over for more than 40 minutes after 5 minutes have elapsed since the compressor operation start, the abnormality stop occurs. However, when the indoor fan began operation once, this function is not activated until the unit is stopped or the mode is changed. (The timer lamp flashes 2 times when 20 minutes have elapsed.)

(g) Compressor overheat protection

If the discharge pipe temperature (sensed by Th6) exceeds the set temperature value, the compressor stops. If the temperature is 95ºC or lower after a 3-minute delay, it starts again, but if this function is reactivated again within 60 minutes, it results in an abnormal stop. (Run light : ON, Timer light : 5 time flash)



Discharge pipe temperature (˚C)

(h) Serial signal transmission error protection

(i) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(ii) Detail of operation: If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continuously for 1 minute and 55 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(RUN light: ON, TIMER light: 6 time flash)

(i) Sensor disconnection (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor temperature, discharge pipe)

(i) Room temperature sensor

If the temperature detected by the room temperature sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light: 2 time flash, Time light: ON)

(ii) Indoor heat exchanger temperature sensor

If the temperature detected by the indoor heat exchanger temperature sensor is –20ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, if the temperature detected by the indoor heat exchanger temperature sensor is –20ºC or lower continuously for 3 minutes after heating operation has started, the indoor unit's fan speed is forcibly raised to speed 5. After this, the air-conditioner is stopped if the detected temperature remains at –20ºC continuously for 40 minutes. (Run light : 1 time flash, Timer light : ON)

(iii) Outdoor heat exchanger temperature sensor

If the temperature detected by the outdoor heat exchanger temperature sensor is –64ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed.

Also, the air-conditioner is stopped if the temperature detected by the outdoor heat exchanger temperature sensor remains at –50ºC or lower continuously for 40 minutes after heating operation has started. (Run light : keep flashing, Timer light : 2 time flash)

(iv) Outdoor air temperature sensor

If the temperature detected by the outdoor air temperature sensor is –64ºC or lower continuously for 15 seconds or longer while operation is stopped, an error indication is displayed. (Run light : keep flashing, Timer light : 1 time flash)

(v) Discharge pipe temperature sensor

After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds, the compressor stops. After a 3-minute delay, it restarts, but if an abnormality is detected 4 times continuously, the air-conditioner is stopped fully and an error indication is displayed. (Run light : keep flashing, Timer light : 4 time flash)

2.3.5 APPLICATION DATA

SAFETY PRECAUTIONS

- Please read these "Safety Precautions" first then accurately execute the installation work.
- Though the precautionary points indicated herein are divided under two headings, ⚠WARNING and ⚠CAUTION, those points which are related to the strong possibility of an installation done in error resulting in death or serious injury are listed in the ⚠WARNING section. However, there is also a possibility of serious consequences in relationship to the points listed in the ⚠CAUTION section as well. In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the user (customer) of this equipment, based on the owner's manual.
  Moreover, ask the customer to keep this sheet together with the owner's manual.

⚠ WARNING

- To disconnect the appliance from the mains supply this appliance must be connected to the mains by means of a circuit breaker or a switch (use a recognized 20A) with a contact separation of at least 3mm.
- The appliance shall be installed in accordance with national wiring regulations.
- This system should be applied to places as households, residences and the like. Application to inferior environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the company which sold you the equipment or to a professional contractor. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the installation manual. Again, improper installations can result in water leakage, electric shocks and fires.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the unit.
- For electrical work, please see that a licensed electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used.
  Insufficient power source circuit capacity and defective installment execution can be the cause of electric shocks and fires.
- Accurately connect wiring using the proper cable, and insure that the external force of the cable is not conducted to the terminal connection part, through properly securing it. Improper connection or securing can result in heat generation or fire.
- Take care that wiring does not rise upward, and accurately install the lid/service panel.It's improper installation can also result heat generation or fire.
- When setting up or moving the location of the air conditioner, do not mix air etc. or anything other than the designated refrigerant (R410A) within the refrigeration cycle.
  Rupture and injury caused by abnormal high pressure can result from such mixing.
- Always use accessory parts and authorized parts for installation construction. Using parts not authorized by this company can result in water leakage, electric shock, fire and refrigerant leakage.
- Ventilate the work area when refrigerant leaks during the operation.
  Coming in contact with fire, refrigerant could generate toxic gas.
- Confirm after the foundation construction work that refrigerant does not leak.
  If coming in contact with fire of a fan heater, a stove or movable cooking stove, etc., refrigerant leaking in the room could generate toxic gas.
- In joining pipes, do not use conventional (R22) pipng flare nuts, etc. The use of conventional piping materials may lead to the rapture of piping due to higher pressure used for the refrigerant cycle and possible personal injury.
  (Use only piping material designed specifically for R410A)

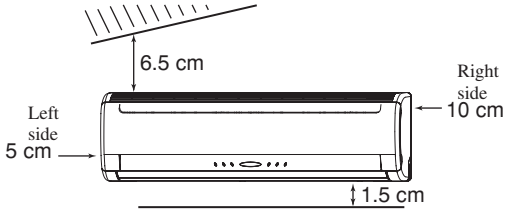
⚠ CAUTION

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or a telephone ground wire.
  Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary depending on the established location of the unit.
  Not installing an earth leakage breaker may result in electric shock.
- Do not install the unit where there is a concern about leakage of combustible gas.
  The rare event of leaked gas collecting around the unit could result in an outbreak of fire.
- For the drain pipe, follow the installation manual to insure that it allows proper drainage and thermally insulate it to prevent condensation. Inadequate plumbing can result in water leakage and water damage to interior items.

(1) Selection of location for installation

(a) Indoor unit

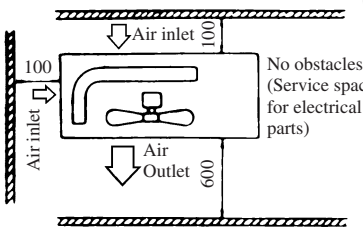
(i) Where there is no obstructions to the air flow and where the cooled air can be evenly distributed.
(ii) A solid place where the unit or the wall will not vibrate.
(iii) A place where there will be enough space for servicing. (Where space mentioned below can be secured)
(iv) Where wiring and the piping work will be easy to conduct.
(v) The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
(vi) A place where it can be easily drained.
(vii) A place separated at least 1m away from the television or the radio. (To prevent interfence to images and sound.)



(b) Outdoor unit

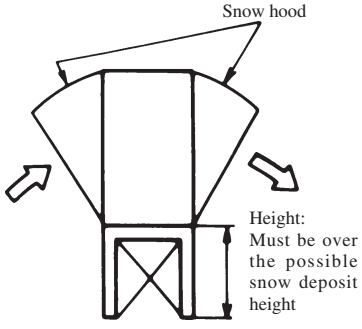
(i) A place where good air circulation can be obtained and where rain, snow or sunshine will not directly strike the unit.
- A place where intake air temperature is over 46°C , it is desirable to install a roof avoiding the sunlight.

(ii) A place where discharged hot air or unit's operating sound will not be a nuisance to the neighborhood.
(iii) A place where servicing space can be secured.
(iv) A place where vibration will not be enlarged.
(v) Avoid installing in the following places.
- A place near the bedroom and the like, so that the operation noise will cause no trouble.
- A place where there is possibility of flammable gas leakage.
- A place exposed to strong wind.



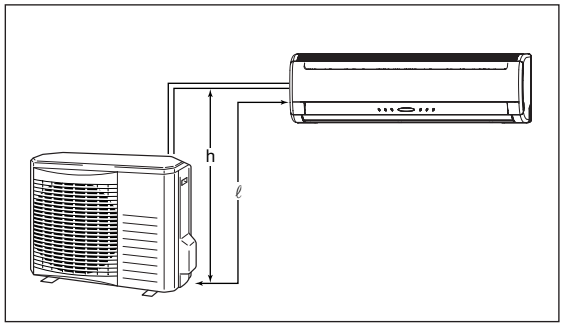
Notes (1) Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)
(2) When the unit is installed, the space of the following dimension and above shall be secured.

(vi) In heating operation, snow deposit on the heat-exchanger of outdoor unit must be prevented for keeping the normal performance capacity. (Heat pump type only)
1) Snow-hood on outdoor unit as in drawing, will reduce the frequency of defrost operation.
When installing the snow hood, take care so that the air outlet of the snow hood will not face directly into the most windy direction.
2) Design the base higher than possible snow deposit.



(c) Limitations for one way piping length and vertical height difference.

Item	Model	All models
One way piping length (ℓ)		25 m
Vertical height difference (h)	Outdoor unit is lower	15 m
	Outdoor unit is higher	15 m

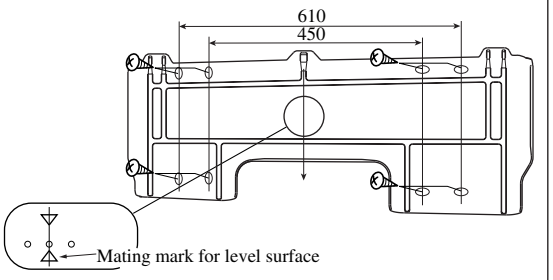


(2) Installation of indoor unit

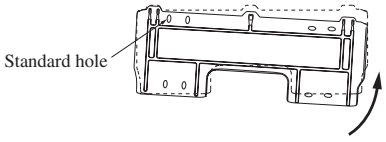
(a) Installation of installation board

(i) Fixing of installation board

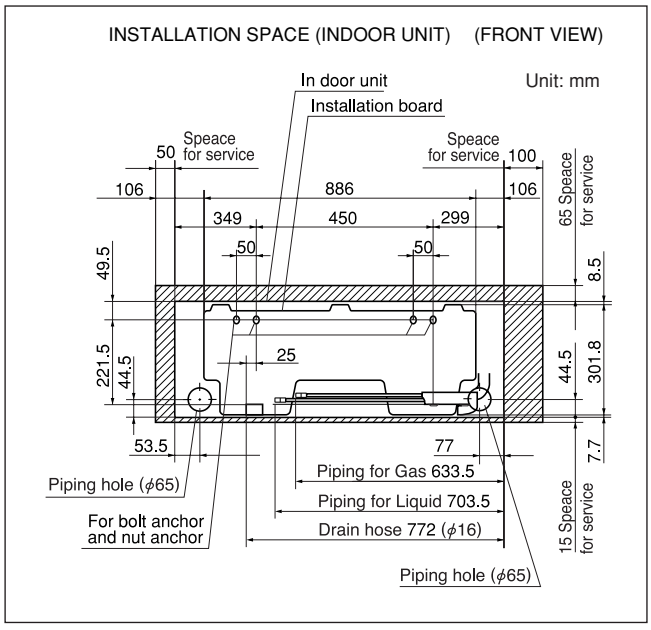
Look for the inside wall structures (Intersediate support or pillar and firaly install the unit after level surface has been checked.)

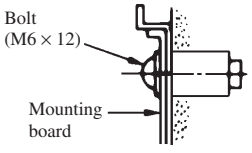
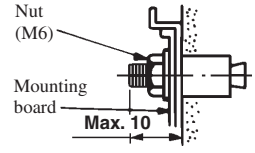


Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.



Adjust so that board will be level by turning the board with the standard hole as the center.

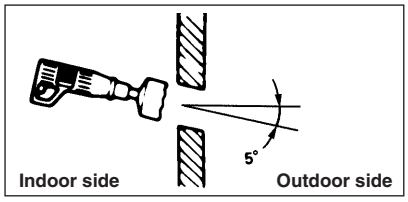


Fixing on concrete wall	
Use of nut anchor	Use of bolt anchor
	

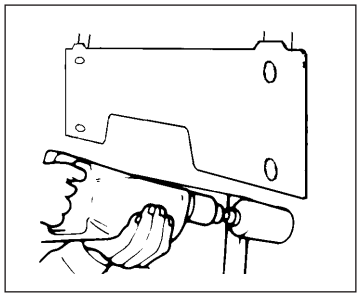
(b) Drilling of holes and fixture sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

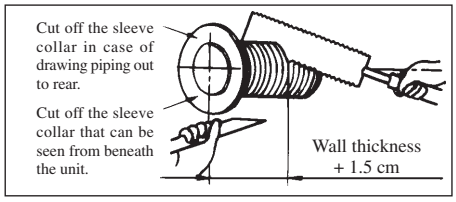
(i) Drill a hole with ø65 whole core drill



Note (1) Drill a hole with incline of 5 degree from indoor side to outdoor side.

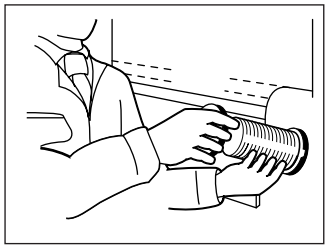


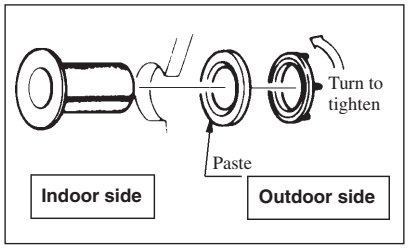
(ii) Adjusting sleeve length

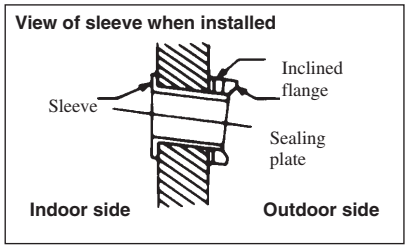


(iii) Install the sleeve

(Inserting sleeve) (*Sleeve + *Inclined + *Sealing plate)







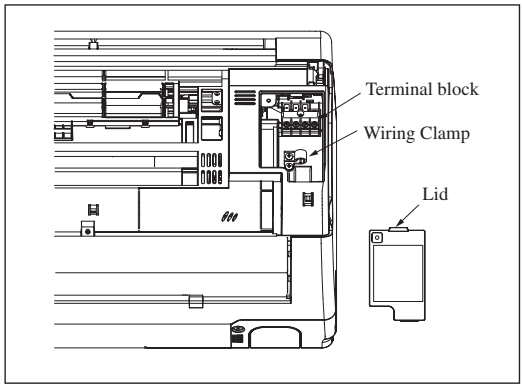
(c) Preparation of indoor unit

(i) Mounting of connecting wires

1) Open the air inlet panel.
2) Remove the lid.
3) Remove the wiring clamp.
4) Connect the connecting wire securely to the terminal block.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables. Required field cables.
H05RNR4G1.5 (Example)

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Standed core
4	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



① Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.

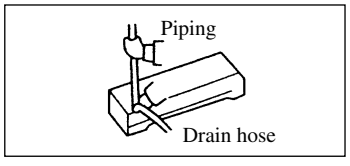
② Take care not to confuse the terminal numbers for indoor and outdoor connections.

③ Affix the connection wire using the wiring clamp.

5) Fix the connecting wire by wiring clamp.
6) Attach the lid.
7) Close the air inlet panel.

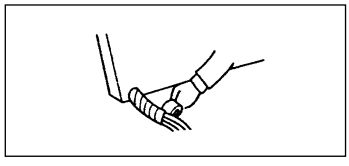
(ii) Installing the support of piping

[Shaping the piping]



- Hold the bottom of the piping and fix direction before stretching it and shaping it.

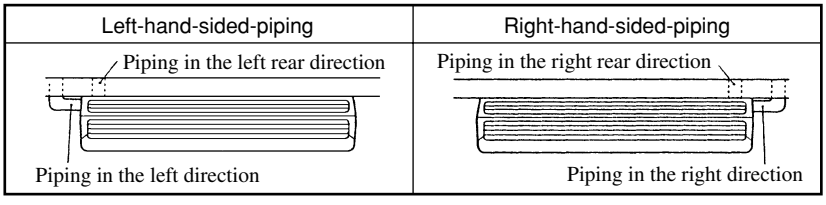
[Taping of the exterior]

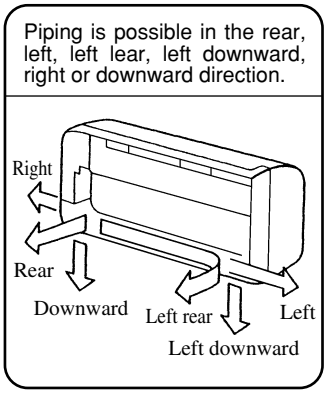


- Tape only the portion that goes through the wall. Always tape the crossover wiring with the piping.

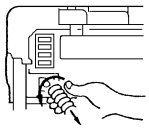
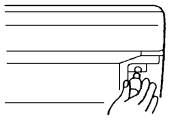
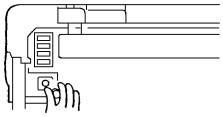
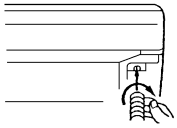
[When the hose is extended to left and taken out from the rear center]

[Top View]

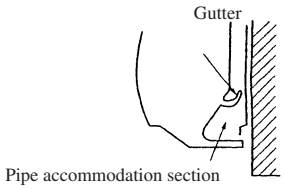




[Drain hose changing procedures]

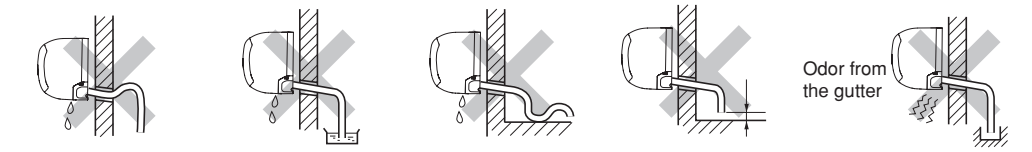
1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.
			
● Remove the drain hose, making it rotate.	● Remove it with hand or pliers.	● Insert the drain cap which was removed at proce-dure "2" securely using a hexagonal wrench, etc. Note: Be careful that if it is not inserted securely, water leakage may occur.	● Insert the drain hose securely, makingit rotate. Note: Be careful that if it is not inserted securely, water leakage may occur.

Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.

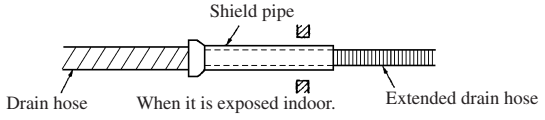


Drainage

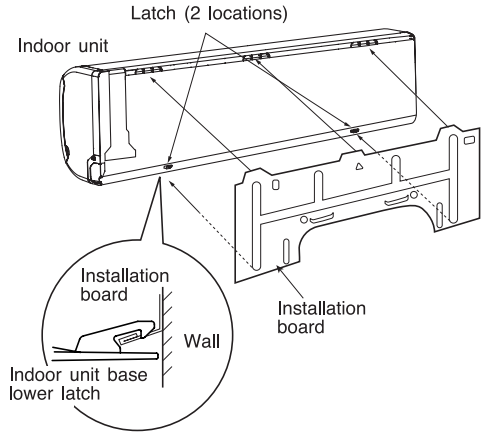
- Arrange the drain hose in a downward angle.
- Avoid the following drain piping.



- Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
- When the extended drain hose is indoor, always use a shield pipe (to be arranged by the user) and ensure it is thermally insulated.

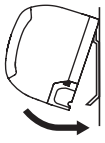


(iii) Fixing of indoor unit

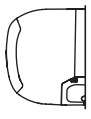


Installation Steps

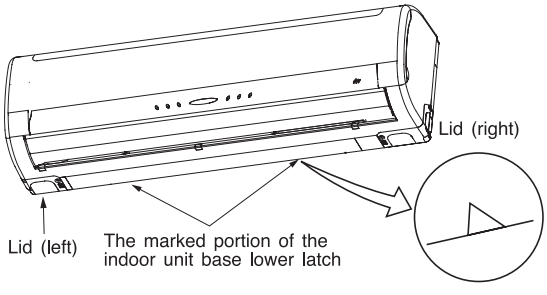
① Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.



② Gently push the lower part to secure the unit.



- How to remove the indoor unit from the installation board
  - ① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)
  - ② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



(3) Installation of outdoor unit

(a) Installation of outdoor unit

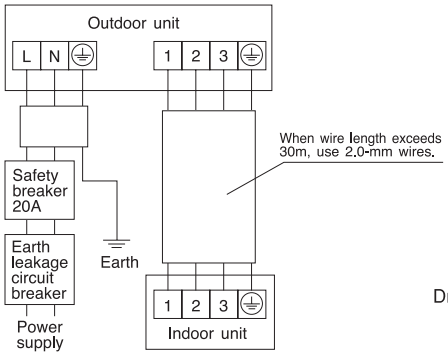
(i) Make sure that the unit is stable in installation. Fix the unit to stable base.

(ii) When installing the unit at a higher place or where it could be toppled by strong winds, secure the unit firmly with foundation bolts, wire, etc.

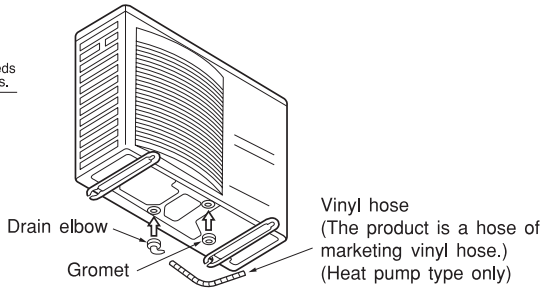
(iii) Perform wiring, making wire terminal numbers conform to terminal numbers of indoor unit terminal block.

(iv) Connect using ground screw located near ⏚ mark.

(v) In areas where the temperatures drop below 0ºC for several continuous days, do not install a drain elbow. (Water dischange could stop due to freezing.) (Heat pump type only)



Power supply code
CENELEC code for cables requiring field cables
H05RNR3G2.5

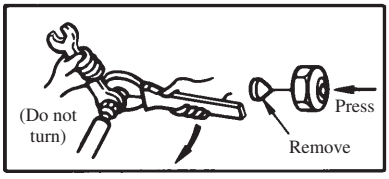


(4) Refrigerant piping

(a) Preparation

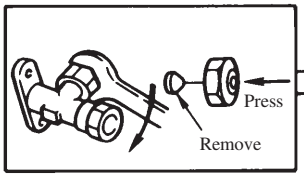
Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

Indoor unit side

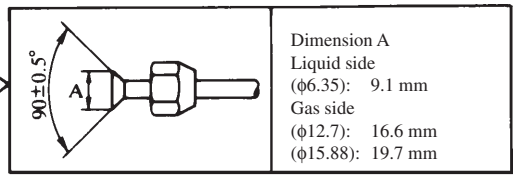


- Remove the flared nuts. (on both liquid and gas sides)

Outdoor unit side



- Remove the flared nuts. (on both liquid and gas sides)

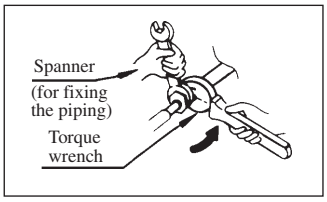


- Install the removed flared nuts to the pipes to be connected, then flare the pipes.

(b) Connection of refrigerant piping

Indoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.



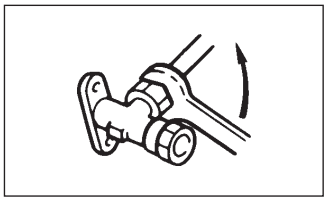
- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)
(ø15.88) : 68.0~82.0N·m (6.8~8.2kgf·m)

- Always use a Torque wrench and back up spanner to tighten the flare nut.

Outdoor unit side

- Connect firmly gas and liquid side pipings by Torque wrench.



- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø12.7) : 49.0~61.0N·m (4.9~6.1kgf·m)
(ø15.88) : 68.0~82.0N·m (6.8~8.2kgf·m)

- Use one more spanner to fix the valve.

(c) Air purge

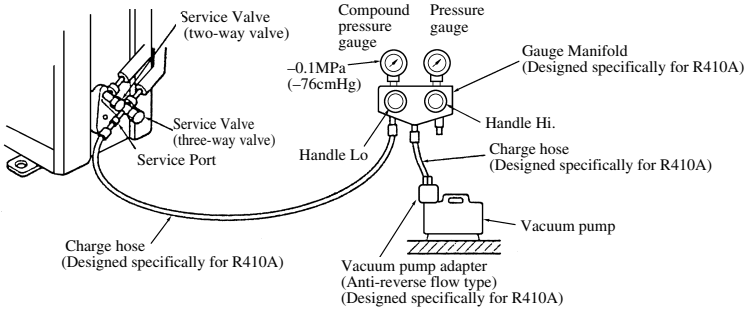
(i) Tighten all flare nuts in the pipings both indoor and outside will so as not to cause leak.

(ii) Connect service valve, charge hose, manifold valve and vacuum pump as is illustrated below.

(iii) Open manifold valve handle Lo to its full width, and perform vacuum or evacuation.
Continue the vacuum or evacuation operation for 15 minutes or more and check to see that the vacuum gauge reads – 0.1 MPa (– 76 cmHg).

(iv) After completing vacuum operation, fully open service valve (Both gas and liquid sides) with hexagon headed wrench.

(v) Check for possible leakage of gas in the connection parts of both indoor and outdoor.



- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable.
  Please use one designed specifically for R410A
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system.
  Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Additional refrigerant charge

When refrigerant piping exceeds 15m conduct additional refrigerant charge by weight after refrigerant piping completion.
Additional charge amount per meter = 25g/m (71 type), 20g/m (63 type)

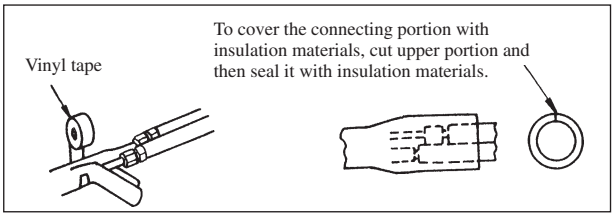
[Example] (71 type)

How much amount of additional charge for 25m piping?

(25 – 15)m × 25g/m = 250g | 250g for additional charge

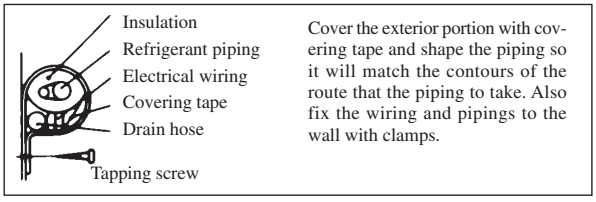
(d) Insulation of connecting portion

(i) Cover the connecting portion of the refrigerant piping with the pipe cover and seal them.
If neglecting to do so, moisture occurs on the piping and water will drip out.



(ii) Finishing and fixing

1) Tie up the piping with wrapping tape, and shape it so that it conforms to which the pipe is attached.
2) Fix them with clamps as right figure.



(5) Test run

(a) Conduct trial run after confirming that there is no gas leaks.

(b) When conducting trial run set the remote controller thermostat to continuous operation position. However when the power source is cut off or when the unit's operation switch is turned off or was turned to fan operation position, the unit will not go into operation in order to protect the compressor.

(c) Insert in electric plug into the electric outlet and make sure that it is not loose.

(i) When there is something wrong with the electric outlet and if the insertion of the electric plug is insufficient, there may occur a burn out.

(ii) It is very important to be careful of above when plugging in the unit to an already furnished electrical outlet.

(d) Explain to the customer on the correct usage of the air conditioner in simple layman's terms.

(e) Make sure that drain flows properly.

(f) Standard operation data

(220/230/240V)

Item \ Model		SRK63HE-S	SRK71HE-S
High pressure (MPa)	Cooling	–	–
	Heating	2.37	2.62
Low pressure (MPa)	Cooling	0.89	0.88
	Heating	–	–
Temp. difference between return air and supply air (°C)	Cooling	12.9	13.4
	Heating	16.2	17.4
Running current (A)	Cooling	10.9/10.5/10.0	11.0/10.6/10.1
	Heating	9.2/8.8/8.5	10.3/9.9/9.5

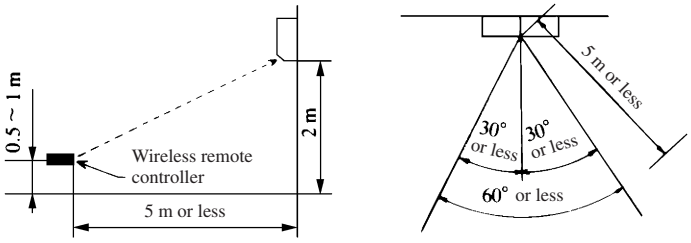
Item \ Model		SRK63CE-S	SRK71CE-S
Low pressure (MPa)	Cooling	0.89	0.88
Temp. difference between return air and supply air (°C)	Cooling	12.9	13.4
Running current (A)	Cooling	10.9/10.5/10.0	11.0/10.6/10.1

Note (1) The data are measured at following conditions
Ambient air temperature
Indoor side: Cooling ... 27˚C DB, 19˚C WB, Heating ... 20˚C DB
Outdoor side: Cooling ... 35˚C DB, 24˚C WB, Heating ... 7˚C DB, 6˚C WB

(6) Precautions for wireless remote control installation and operation

(a) Wireless remote control covers the following distances:

(i) When operating facing the air conditioner:

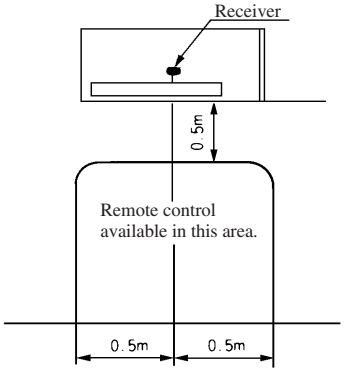


Notes (1) The remote control is correctly facing the sensing element of the air conditioner when being manipulated.
(2) The typical coverage is indicated (in the left illustration). It may be more or less depending on the installation.
(3) The coverage may be less or even nil. If the sensing element is exposed to strong light, such as direct sunlight, illumination, etc., or dust is deposited on it or it is used behind a curtain, etc.

If the distances exceed the area indicated above, be sure to check the receiver status.

(ii) When manipulating the remote control mounted on a wall:

Make sure that it works normally (i.e., transmission/reception signal is audible) before mounting.



(7) Installation of wired remote control and super link adapter (SC-AD-E) (Optional parts)

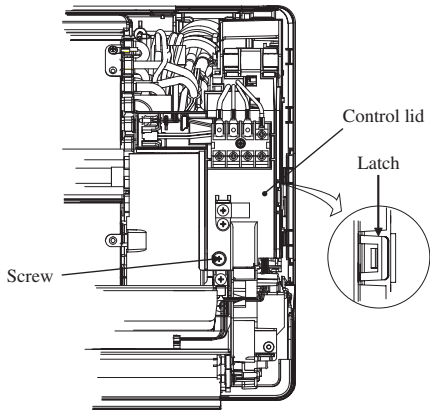
(a) Modifying the indoor unit's printed circuit board

(i) Remove the air inlet panel (Refer to the installa tion directions).

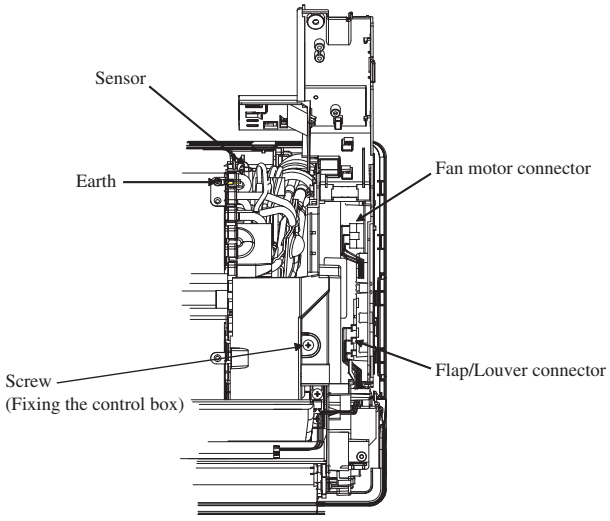
(ii) Remove the front panel (Refer to the installation directions).

(iii) Remove the control box

- Remove the screw and the latch, and open the control lid.

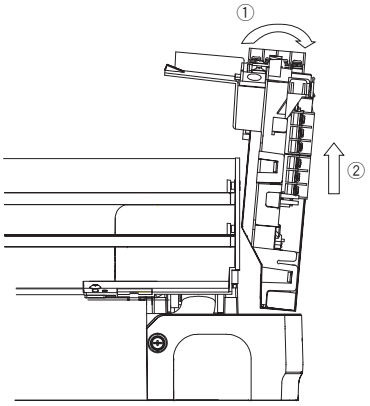


- Remove the flap connector, the louver connector, the fan motor connector, the earth and the sensor.



- Remove the screw fixing the control box.
- Remove the control box from the base .

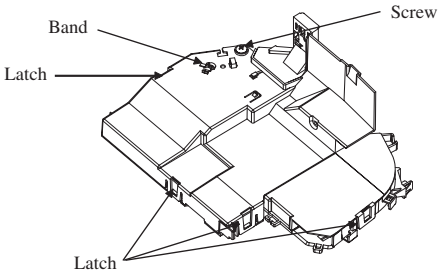
※ It is possible to remove the control box from the base by leaning the control box slightly to right-hand side and pulling it toward you.



(iv) Cut the jumper attached on the board.

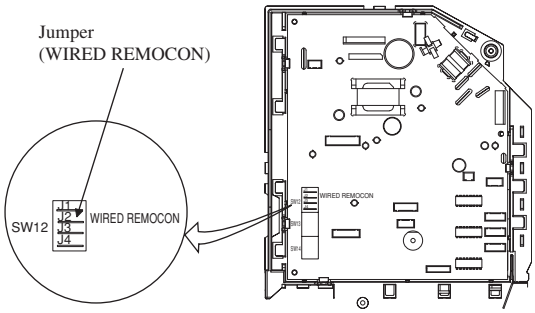
- Remove the upper box.

※ Remove the screw, the latch and the band.



- Cut the jumper (printed "WIRED REMOCON") attached on the board.

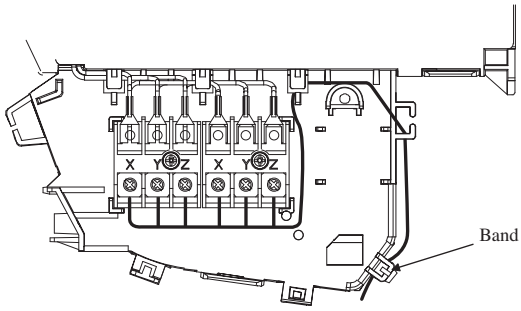
※ It is impossible to control by the wireless remote control after cutting the jumper.



- Install the upper box.

(v) Connect the wire

- Connect the wired remote control and super link wire.
  (Please refer to the installation manual of attachment in wired remote control for details)



※ Each wire can be connected the left or right terminal block.

(vi) Install the control box.

※ Be careful not to bite the wire.

(vii) Install the front panel.

(vii) Install the air inlet panel.

Notes (1) One remote control cannot control two or more indoor units.
(2) To connect the super link, the optional SC-AD-E (super link adapter) is required.

(b) Installation of wired remote control (Optional parts)

(i) Selection of installation location

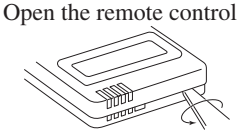
Avoid the following locations

1) Direct sunlight.
2) Close to heating device.
3) Highly humid or water splashing area.
4) Uneven surface.

(ii) Installation procedure

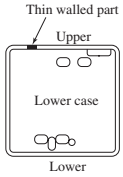
1) Exposed fiting

a) Open the remote control case.



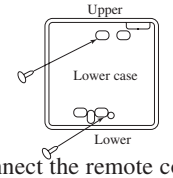
- Put a screw driver (flat-head) into the concavity made on the upper part of a remote control unit and twist it lightly to open the casing.

b) The cord of a remote control unit can only be pulled out in the upward direction.



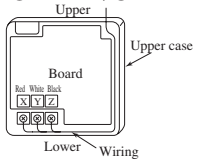
- Cut off with nippers or a knife a thin walled part made on the upper end of the rmote control unit's bottom casing, and then remove burrs with a file or the like.

c) Fix the remote control unit's bottom casing onto a wall with two wood screws supplied as accessories.

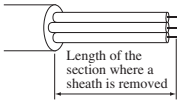


d) Connect the remote control to the terminal block. Connect the terminals of the remote control to the indoor unit with the same numbers. Because the terminal block has polarity, the device becomes inoperative if there are wrong connections.

Terminals: ⓧRed wire, ⓨWhite wire, ⓩBlack wire



- Use a cord of 0.3mm^2 (recommended) - 0.5mm^2 (maximum) for a remote control unit cord. Remove a sheathe of the remote control unit cord for the section laid within the remote control unit casing.
  The length of each wire that should be left after a sheath is removed is as follows:



Black: 195mm, White: 205mm, Red: 215mm

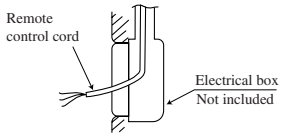
e) Replace the top casing as before.

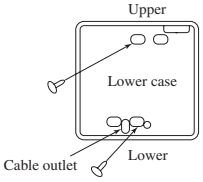
f) Use a cord clamp to attach the remote control cord to the wall.

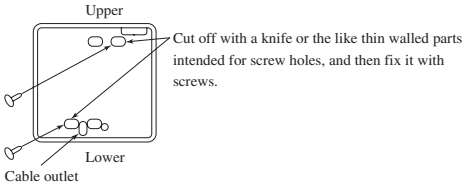
g) Set the functions according to the types of in door unit. See Section "Function Setting".

2) Recessed fitting

a) The Electrical box and remote control (shield wire must be use in case of extension) are first embedded.







b) Remove the upper case to the remote control.

c) Attach the lower case to the Electricl box with two M4 screws. (Head diameter must be 8 mm). Choose either of the following two positions in fixing it with screws.

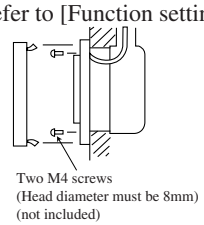
d) Connect the remote cord to the remote control.

Refer to [Exposed Fitting].

e) Installation work is completed by replacing the top casing onto the bottom casing as before.

f) Set the function switch according to the type of the indoor unit.

Refer to [Function setting].



Precation in Extending the Remote control cord

▶ Maximum total extension 600m.

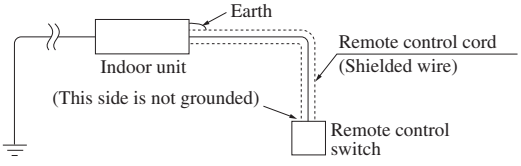
The cord should be a shielded wire.

● For all types : 0.3mm^2 × 3 cores

Note (1) Use cables up to 0.5mm^2 (maximum) for those laid inside the remote control unit casing and connect to a different size cable at a vicinity point outside the remote control unit, if necessary.

Within 100-200m····· 0.5 mm^2 × 3 cores
Within 300m····· 0.75 mm^2 × 3 cores
Within 400m····· 1.25 mm^2 × 3 cores
Within 600m····· 2.0 mm^2 × 3 cores

● The shielded wire should be grounded at one side only.



(c) Setting functions using the wired remote control

(i) The default settings of this unit's functions are as follows: If you want to charge a setting, follow the procedure found in the installation manual and set to your desired setting.

For the method of setting, please refer to the installation manual of a remote control unit.

① Remote control unit functions (FUNCTION ▼)

Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting
(01)	GRILLE ↑↓ SET (Grille lift panel setting)	↑↓ INVALID	○
		50Hz AREA ONLY	
		60Hz AREA ONLY	
02	AUTO RUN SET	AUTO RUN ON	○
		AUTO RUN OFF	
03	TEMP S/W	VALID	○
		INVALID	
04	MODE S/W	VALID	○
		INVALID	
05	ON/OFF S/W	VALID	○
		INVALID	
06	FANSPEED S/W	VALID	○
		INVALID	
07	LOUVER S/W	VALID	○
		INVALID	
08	TIMER S/W	VALID	○
		INVALID	
(09)	SENSOR S/W (Remote control sensor setting)	SENSOR OFF (Invalid)	○
		SENSOR ON (Valid)	
10	POWER FAILURE COMPENSATION SET	INVALID	○
		VALID	✻
(11)	VENTI SET	NO VENTI	○
		VENTI LINK SET	
		NO VENTI LINK	○
12	TEMP RANGE SET	DISP CHANGE	○
		NO DISP CHANGE	
13	I/U FAN SPEED (Indoor unit fan speed setting)	3 FAN SPEED	○
		2 FAN SPEED	
		1 FAN SPEED	
14	MODEL TYPE	HEAT PUMP	○
		COOLING ONLY	
15	EXTERNAL CONTROL SET	INDIVIDUAL OPERATION	○
		SAME OPERATION FOR ALL UNITS	
16	ERROR DISP SET	ERROR DISP	○
		NO ERROR DISP	
17	POSITION (Louver control setting)	FIX (1 OF 4) (4 position stop)	○
		IN MOTION (Free stop)	
(18)	°C/°F SET	°C	○
		°F	

Notes(1) Setting marked with [○] are the default setting.
(2) Setting marked with [✻] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.
(3) When Item 17 : "POSITION" is changed, please also change Item 04 "POSITION" setting found in "Indoor unit functions".
(4) The SRK model cannot set the items described in ( ) in the function number Ⓐ.

② Indoor unit functions (I/U FUNCTION ▲)

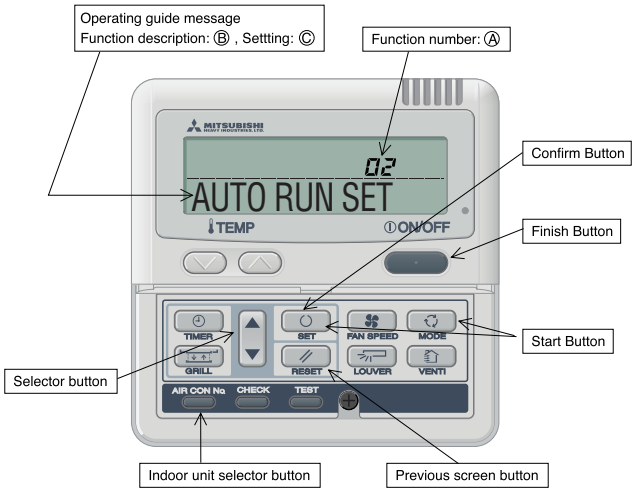
Function number Ⓐ	Function description Ⓑ	Setting Ⓒ	Default setting
(01)	Hi CEILING SET	STANDARD (Mild mode)	✻
		Hi CEILING 1 (Powerful mode)	
(03)	FILTER SIGN SET	NO DISPLAY	✻
		AFTER 180H	
		AFTER 600H	
		AFTER 1000H	
		1000H→STOP	
04	POSITION (Louver control setting)	FIX (1 OF 4) (4 positiion stop)	○
		IN MOTION (Free stop)	
05	EXTERNAL INPUT SET	LEVEL INPUT	○
		PULSE INPUT	
06	OPERATION PERMISSION PROHIBITED	NORMAL OPERATION	○
		VALID	
(07)	ROOM TEMP OFFSET (Heating room temperature offset)	NORMAL OPERATION	○
		TEMP SHIFT +3°C	
(08)	FAN CONTROL (Heating fan control)	LOW FAN	✻
		STOP→LOW FAN (Intermittent operation)	
(09)	FREEZE PREVENT TEMP	TEMP Hi	
		TEMP Lo	○
(10)	FREEZE PREVENT CONTROL	FAN CONTROL ON	○
		FAN CONTROL OFF	

Notes(1) Setting marked with [○] are the default setting.
(2) Setting marked with [✻] are those that are set automatically according to an indoor unit or an outdoor unit connected. Please check default settings with the indoor unit's installation manual.
(3) The SRK model cannot set the items described in ( ) in the function number Ⓐ.

(ii) Function setting method

1) Stop the air conditioner
2) Press the SET and MODE buttons simultaneously for 3 seconds or longer.
   The screen display will be switched as follows:
   "◆☝ SELECT ITEM" →
   "○☝ SET" →
   "FUNCTION SET ▼ "

3) Press the SET button.
   The unit will enter the function setting mode. The screen display will charge to " FUNCTION ▼".



4) Check which category your desired setting belongs to, " FUNCTION ▼ (Remote control unit function)" or "I/U FUNCTION ▲" (Indoor unit function).
5) Press either ▲ or ▼ button.
   Select either " FUNCTION ▼ " or "I/U FUNCTION ▲".

6) Press the SET button.

When " FUNCTION▼ " is selected.

① "DATA LOADING" (blinking) → "◆☝ FUNCTION"→
"01 GRILLE ↑↓ SET" (Function number: Ⓐ, Function description: Ⓑ)
The screen display will be switched like this.

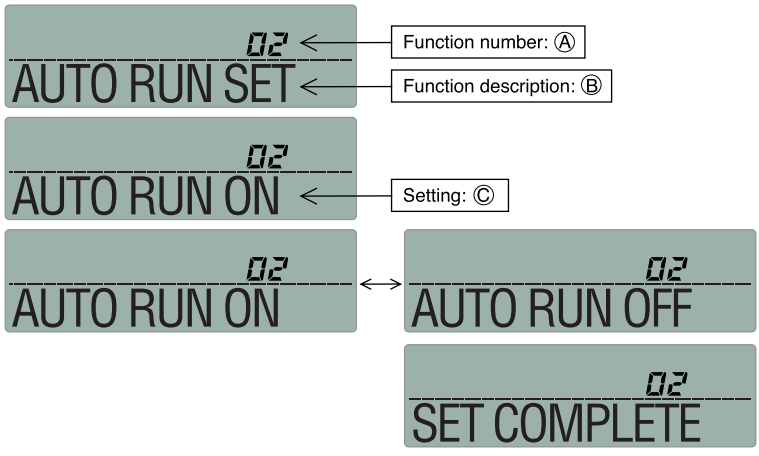
② Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ "from the list of remote control unit functions will be displayed one by one. Select a desired function.

③ Press the SET button.
The screen display will be switched as follows:
"◆☝ SETTING" → "Setting: Ⓒ" (ex. "AUTO RUN ON")

④ Press either ▲ or ▼ button.
A list of "Settings: Ⓒ" will be displayed one by one. Select your desired setting.

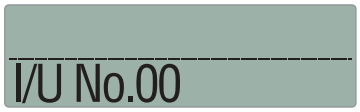
⑤ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be swiched to "Function number: Ⓐ, Function description: Ⓑ," so if you want to continue to set another function, repeat the steps as explained above.
To finish the function setting process, please proceed to Step (c).

* When "02 AUTO RUN SET " is selected.



When "I/U FUNCTION ▲" is selected.

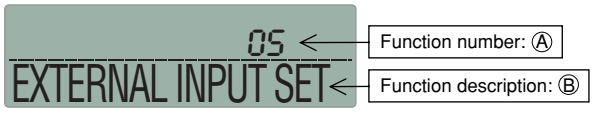
① The screen display will be switched as follows:
"◆☝ I/U SELECT" → "○☝ SET" → "I/U No.00" (blinking)



② Press either ▲ or ▼ button.
Select the indoor unit number that you want to change settings. If only one indoor unit is connected, the indoor unit number will not charge, so please proceed to Step ③.
If "ALL I/U ▼ " is selected while indoor group control is in effect, you can set all units to the same settings.

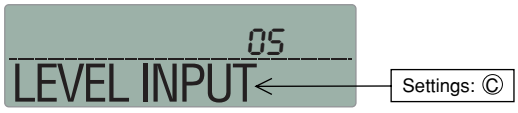
③ Press the SET button.
Indoor unit number indication will change from blinking to lit continuously, The screen display will be switched as follows:
"DATA LOADING" (blinking for about 2 to 23 seconds) → "◆☝ FUNCTION" → "05 EXTERNAL INPUT SET"
(Function number: Ⓐ, Function description: Ⓑ)

* When "05 EXTERNAL INPUT SET" is selected.



④ Press either ▲ or ▼ button.
"Function number: Ⓐ, Function description: Ⓑ" from the list of indoor unit functions will be displayed one by one. Select a desired function.

⑤ Press the SET button.
The screen display will be switched as follows: "◆☝ SETTING" → "Setting: Ⓒ" (ex. "LEVEL INPUT")



⑥ Press either ▲ or ▼ button.
A list "Setting: Ⓒ" will be displayed one by one. Select your desired setting.

⑦ Press the SET button.
The selected setting is displayed for 2 seconds, then followed by "SET COMPLETE" and the function setting process is completed.
Then the screen display will be switched to "Function number: Ⓐ, Function description: Ⓑ" so if you want to continue to set another function, repeat the stepa as explained above. To finish the function setting process, please proceed to Step 8.

⑧ Press AIR CON No. button.
The screen display will go back to the indoor unit selection screen (ex. " I/U No.00").

(iii) Press the ON/OFF button.
This ends a function setting process. Even if a function setting process is not completed, this ends the process.
Please note that any setting that is not completed will become void.

- **Pressing the RESET button during a function setting process will allow you to go back the previous step. Please note that any setting that is not completed will become void.**
- **Method of checking the current setting**
  While following the above mentioned step, the setting that appears when the SET button is pressed for each "Function number: Ⓐ, Function description: Ⓑ" is the current setting "Stting: Ⓒ". (When "ALL I/U ▼" is selected, the setting of the indoor unit with the lowest number is displayed)
- **Settings are stored in the controller and not lost even a power outage occurs.**

(iv) Changing the remote control's temperature setting range

1) The temperature setting range of the remote controller can be changed.
   Through remote controller button operations, the upper limit and lower limit set temperature values can be changed individually.
   During heating operation, the changed upper limit value becomes valid and at times other than during heating operation, (during cooling, dehumidification, auto and fan operation), the changed lower limit value becomes valid.
   Range of Possible Changes
   Upper Limit Value: 22~30ºC (valid during heating) Lower Limit Value: 18 ~ 26ºC (valid at times other than during heating)
2) Operation
   a) With the remote controller in the stopped state, press the SET and MODE buttons simultaneously for 3 seconds or longer. The display will changed from " SELECT ITEM" → " SET" → "FUNCTION SET ▼ "
   b) Press the ▼ button once. The display will change to TEMP RANGE ▲ .
   c) Press the SET button to enter the temperature range setting mode.
   d) Using the ▲ or ▼ button, select "Hi LIMIT SET ▼ " or "Lo LIMIT SET ▲ ," the press the SET button.
   e) If "Hi LIMIT SET" is selected,
      ① The display changes from " SET UP" → "Hi LIMIT 22ºC " (flashing).
      ② Using the " " button, select the upper limit value. Display example: "Hi LIMIT 22ºC " (flashing)
      ③ Press the SET button to fix the setting. Display example: "Hi LIMIT 22ºC" (lighted up)
   f) If "Lo LIMIT SET" is selected,
      ① The display changes from " SET UP" → "Lo LIMIT 26ºC " (flashing).
      ② Using the " " button, select the upper limit value. Display example: "Lo LIMIT 26ºC " (flashing)
      ③ Press the SET button to fix the setting. Display example: "Lo LIMIT 26ºC" (lighted up)
   g) Press the ON/OFF button to end the setting procedure.
      (The procedure also ends if the ON/OFF button is pressed during the setting operation. However, settings which have not been fixed become invalid, so exercise caution.)

- If the RESET button is pressed during a setting operation, the display returns to the previously displayed setting screen. However, settings which have not been fixed become invalid, so exercise caution.
  * If "NO DISP CHANGE" is selected in No. 12, "TEMP RANGE SET" of the remote control's functions, of the function setting modes, the remote control's display does not change even if the temperature range has been changed.

(Example) If the upper limit is set at 28˚C

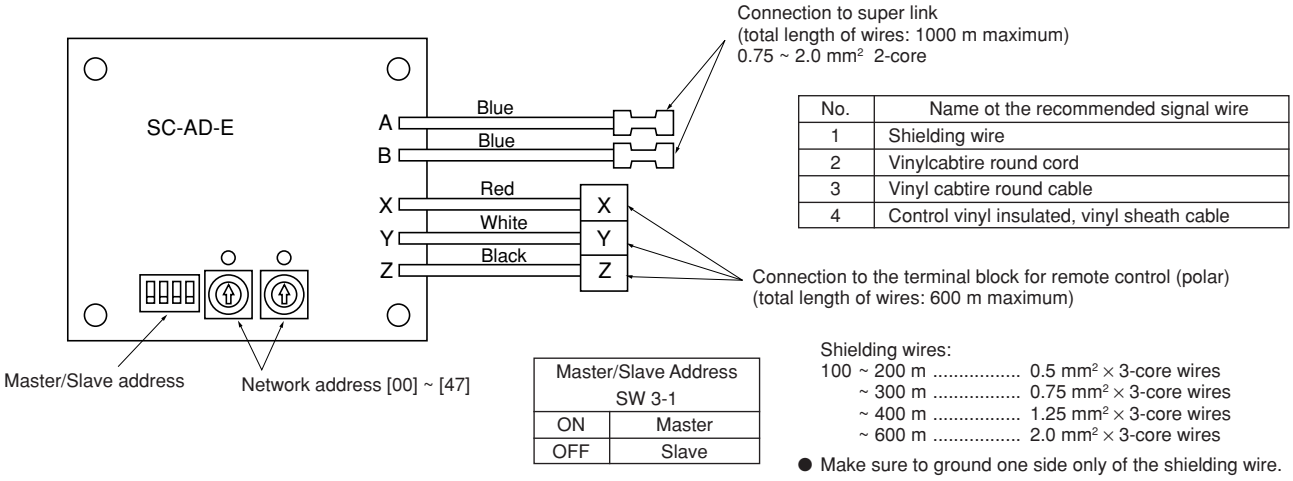
Function No. A	Function Contents B	Setting Contents C	Control Contents
12	TEMP RANGE SET	DISP CHANGE	The remote control's display and sent data upper limit changes to 28°C.
		NO DISP CHANGE	The remote control's display upper limit remains at 30ºC and only the upper limit of the sent data is changed to 28°C.

(d) SUPER LINK ADAPTER (SC-AD-E)

(i) Functions

1) Transmits the settings from the Super link option to the indoor units.
2) Returns the priority indoor unit data in response to a data request from the Super link option.
3) Inspects the error status of connected indoor units and transmits the inspection codes to the Super link option.
4) A maximum of 16 units can be controlled (if in the same operation mode).

(ii) Wiring connection diagram



No.	Name ot the recommended signal wire
1	Shielding wire
2	Vinylcabtire round cord
3	Vinyl cabtire round cable
4	Control vinyl insulated, vinyl sheath cable

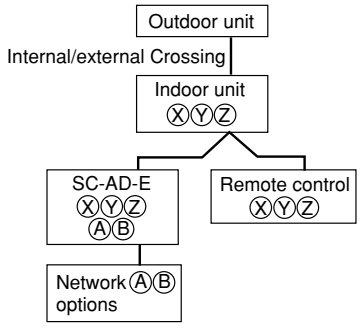
Master/Slave Address SW 3-1	
ON	Master
OFF	Slave

Shielding wires:
100 ~ 200 m ..... 0.5 mm² × 3-core wires
~ 300 m ..... 0.75 mm² × 3-core wires
~ 400 m ..... 1.25 mm² × 3-core wires
~ 600 m ..... 2.0 mm² × 3-core wires

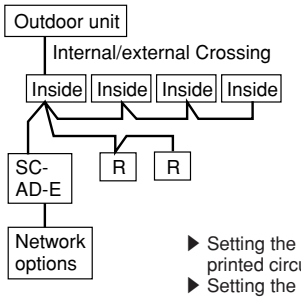
● Make sure to ground one side only of the shielding wire.

1) Set the super link network address with SW1 (10-position) and SW2 (1-position).
2) Without a remote control (no wired remote control and no wireless remote control), set SC-AD-E SW3-1 to ON (Master).

Basic Connections



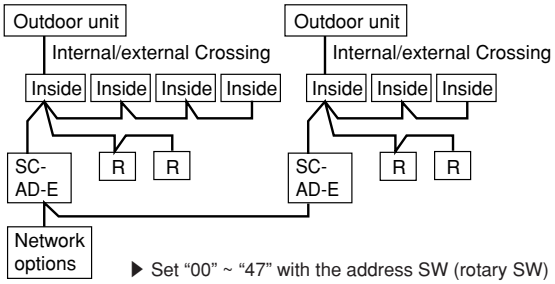
Plural Controls by Multiple Remote Controls. Mixture of Multiple Units



* Transmit the information of plural "Master" units to the network.
• Transmit the abnormalities of the "Slave" units to the network.

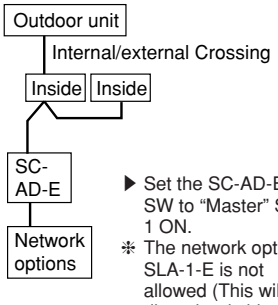
▶ Setting the plural "Master/Slave" units with the dip SW of the printed circuit board.
▶ Setting the "Master/Slave" remote controls with the dip SW of the remote control board.

Plural Controls by Multiple Remote Controls. Mixture of Multiple Units



▶ Set "00" ~ "47" with the address SW (rotary SW) of the SC-AD-E.

Without Remote Control



▶ Set the SC-AD-E dip SW to "Master" SW3-1 ON.
❊ The network option SLA-1-E is not allowed (This will disturd switching of the operation mode)

2.3.6 MAINTENANCE DATA

(1) Troubleshooting procedures for electrical equipment

(a) Cautions

① If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).

② When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

③ When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(b) Items to check before troubleshooting

① Have you thoroughly investigated the details of the trouble which the customer is complaining about?

② Is the air conditioner running? Is it displaying any self-diagnosis information?

③ Is a power supply with the correct voltage connected?

④ Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

⑤ Is the outdoor unit's refrigerant service valve open?

(c) Troubleshooting procedure (If the air conditioner does not run at all)

If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (d).

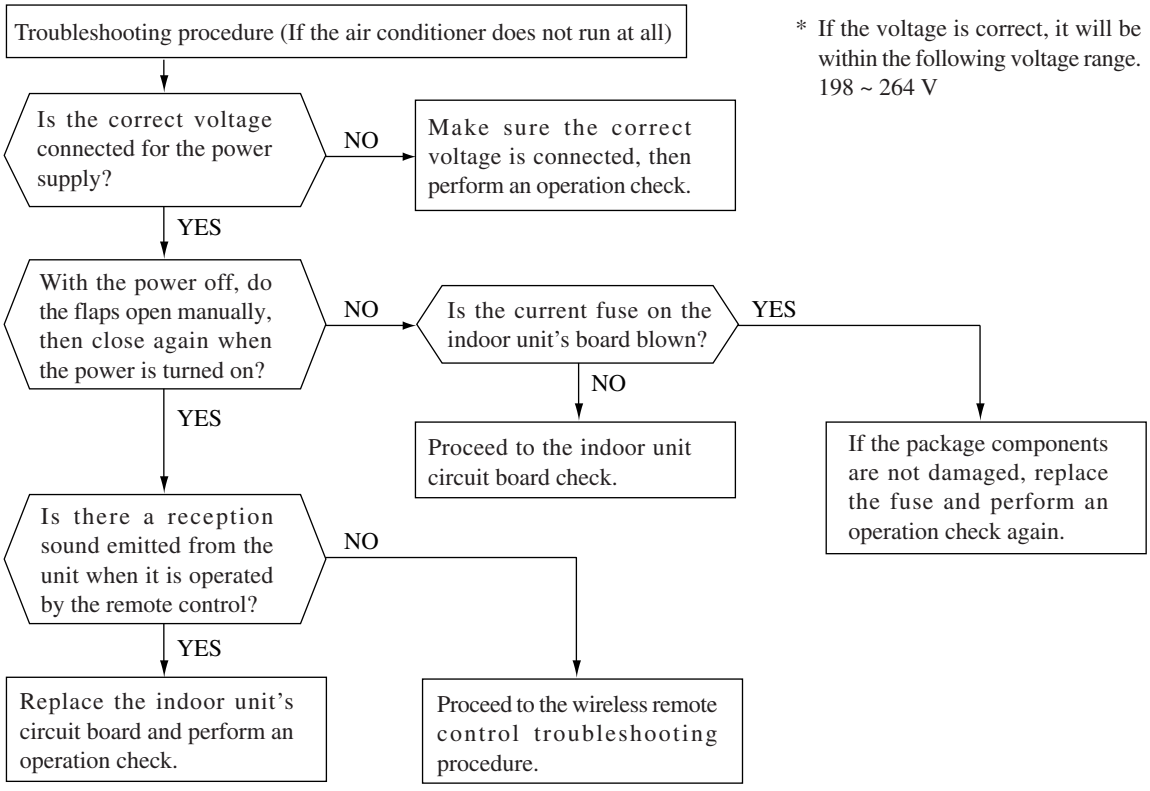
Important When all the following conditions are met, we say that the air conditioner will not run at all.

① The Run light does not light up.

② The flaps do not open.

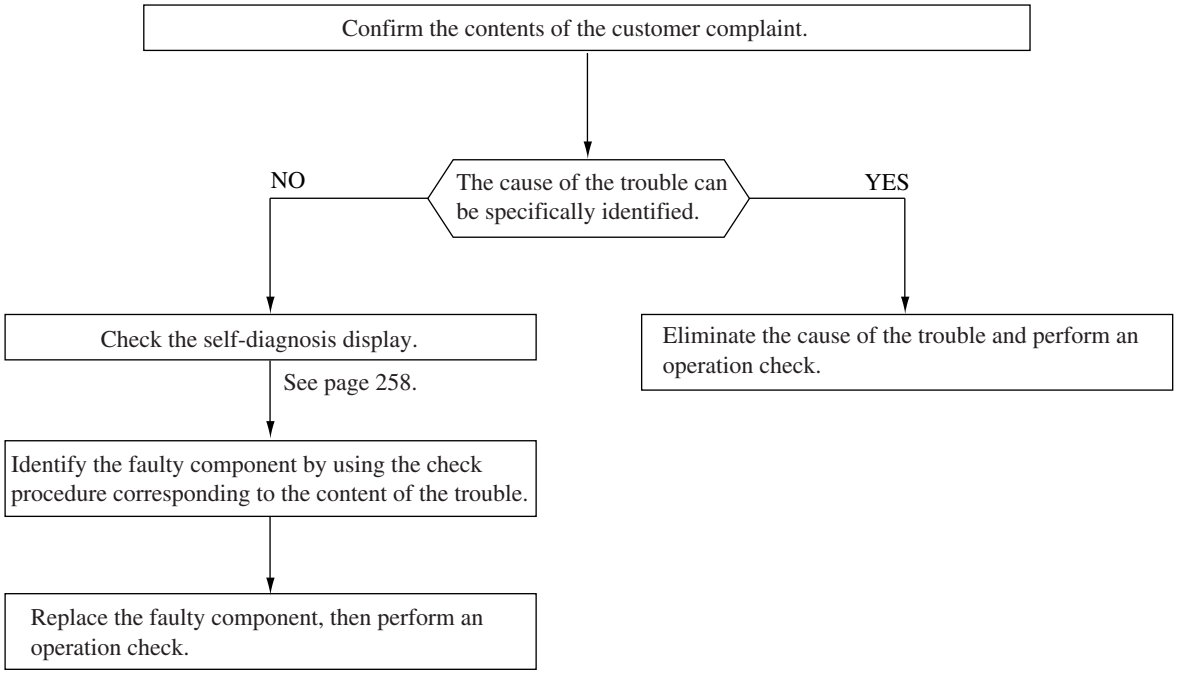
③ The indoor unit fan motors do not run.

④ The self-diagnosis display does not function.



* If the voltage is correct, it will be within the following voltage range.
198 ~ 264 V

(d) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(e) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote control 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. (1)

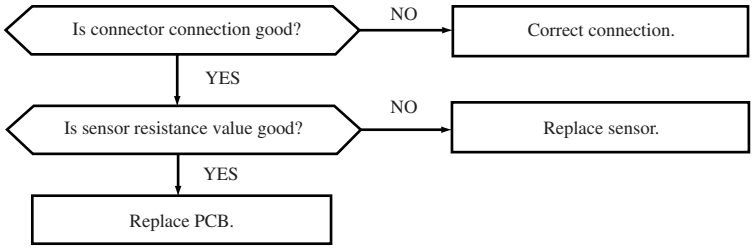
Indoor unit display panel		Wired remote control display	Description of trouble	Cause	Display (flashing) condition
Run light	Timer light				
ON	6 time flash	E 5	Error of signal transmission	• Defective power supply, Broken signal wire, defective in/outdoor unit boards	When there is no signal between the indoor unit's board and outdoor unit's board for 10 seconds or longer (when the power is turned on), or when there is no signal for 1 minute 50 seconds or longer (during operation)(the compressor is stopped).
1 time flash	ON	E 6	Heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a heat exchanger sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 3 minutes, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 time flash	ON	E 7	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –20ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
6 time flash	ON	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
ON	5 time flash	E 36	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, closed service valve	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
Keeps flashing	2 time flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection	When a sensor wire disconnection is detected while operation is stopped. (If a temperature of –64ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	1 time flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection	When an outdoor air temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –64ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
Keeps flashing	4 time flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection	After the compressor has operated for 9 minutes continuously, if there is a disconnected signal for the discharge pipe temperature sensor detected -64°C for 15 seconds.
ON	2 time flash	E 59	Abnormality of outdoor unit	• Broken compressor wire • Broken discharge pipe sensor wire, poor connector connection • Compressor blockage	Cooling operation When the indoor heat exchanger temperature does not fall to 25°C or below for 40 minutes after 5 minutes have elapsed since the compressor operation start. Heating operation ① The indoor heat exchanger temperature < 5°C for 5 minutes and more ② 5°C ≦ the indoor heat exchanger temperature < 30°C for 40 minutes and more
—	—	E 1	Error of wired remote control wiring	• Broken wired remote control wire, defective in door unit boards	The wired remote control wire Y is open. The wired remote control wires X and Y are reversely connected. Noise is penetrating the wired remote control lines. The wired remote control or indoor control PCB is faulty. (Thhe communications circuit is faulty.)

Notes (1) The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.
(2) The wired remote control is optional parts.

(f) Inspection procedures corresponding to detail of trouble

Sensor error

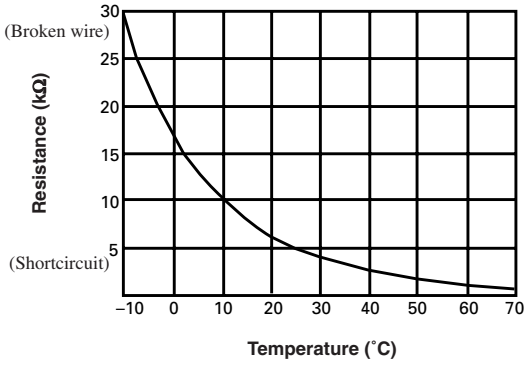
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe sensor temperature characteristics**

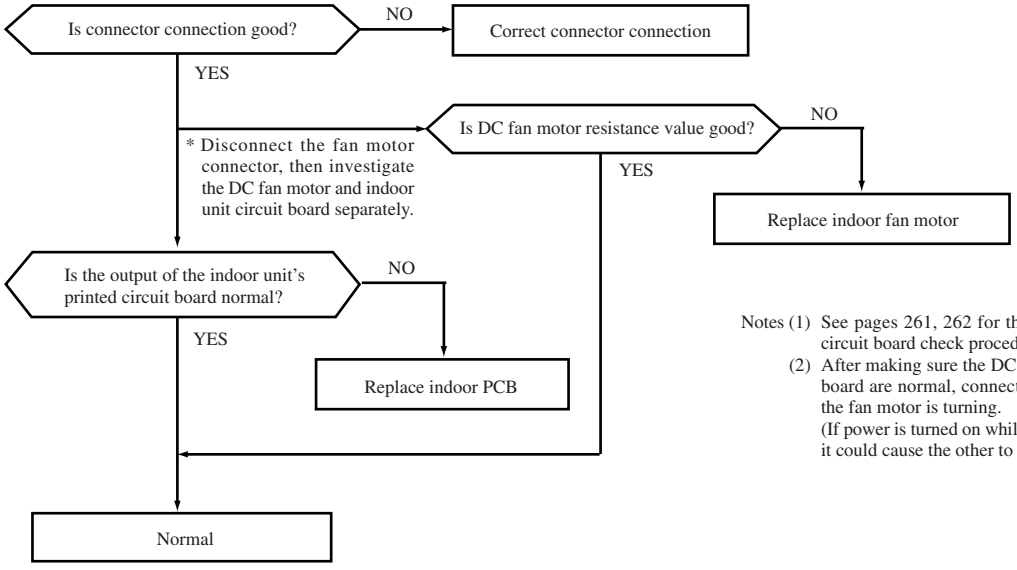
Temperature (˚C)	Resistance (kΩ)	Temperature (˚C)	Resistance (kΩ)
0	164	70	8.7
5	127	75	7.3
10	99	80	6.2
15	78	85	5.3
20	62	90	4.5
25	50	95	3.9
30	40	100	3.3
35	32	105	2.9
40	26	110	2.5
45	21	115	2.2
50	17	120	1.9
55	14	125	1.6
60	12	130	1.4
65	10	135	1.3

◆ **Sensor temperature characteristics (Room temp., indoor unit heat exchanger temp., outdoor unit heat exchanger temp., outdoor air temp.)**



Indoor fan motor error

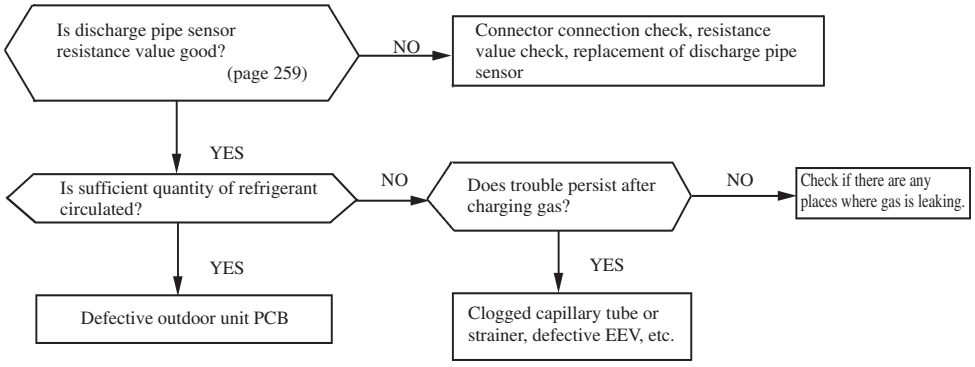
[Defective fan motor, connector poor connection, defective PCB]



Notes (1) See pages 261, 262 for the DC fan motor and indoor unit circuit board check procedure.
(2) After making sure the DC fan motor and indoor unit circuit board are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

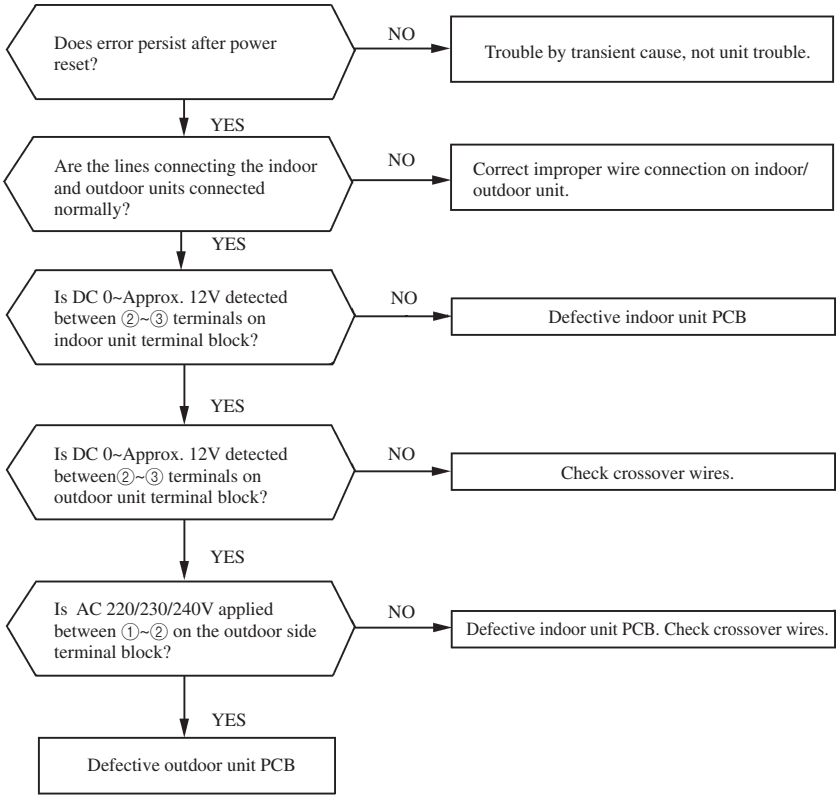
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



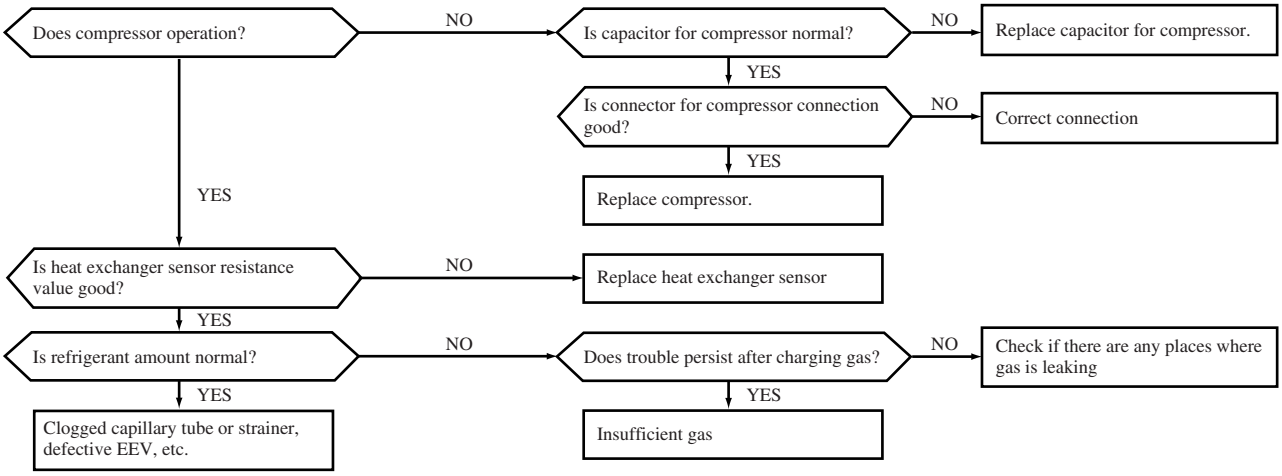
Error of signal transmission

[Wiring error including power cable, defective indoor/ outdoor unit PCB]



Abnormality of outdoor unit

[Compressor malfunction of insufficient gas (refrigerant)]



(g) Phenomenon observed after shortcircuit, wire breakage on sensor.

(i) Indoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature sensor	Cooling	Release of continuous compressor operation command	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command
Heat exchanger sensor	Cooling	Compressor stop. (Abnormality of outdoor unit)	Continuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode	Hot keep (Indoor fan stop)

(ii) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Outdoor air temperature sensor	Cooling	System can be operated normally.	System can be operated normally.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at approx. 35 minutes.
Discharge pipe sensor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(h) Checking the indoor electrical equipment

(i) Indoor unit circuit board check procedure

1) Press the unit's ON/OFF button for 5 seconds or longer (a beep which indicates receiving will be emitted). Then check the following items.
   ① The indoor unit's fan motor runs.
   ② The run light lights up.
2) There should be voltage (AC 220-240 V) between terminals ① and ② on the terminal block.
   With the analog tester set in the DC 30 V range, if the voltage at ② (+) and ③ (-) is measured, the needle oscillates at about 12V.
3) It is possible to run and stop the unit using the remote controller. (The hot keep function is activated.)
   If operation is as described above, the indoor unit's board is normal.

Note (1) Check the voltage on the terminal block.
- Power supply : Between ①-② (AC 220-240V)
- Signal : Between ②-③ (Changing between DC 0-Approx. 12V)

(ii) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the circuit board is broken down.

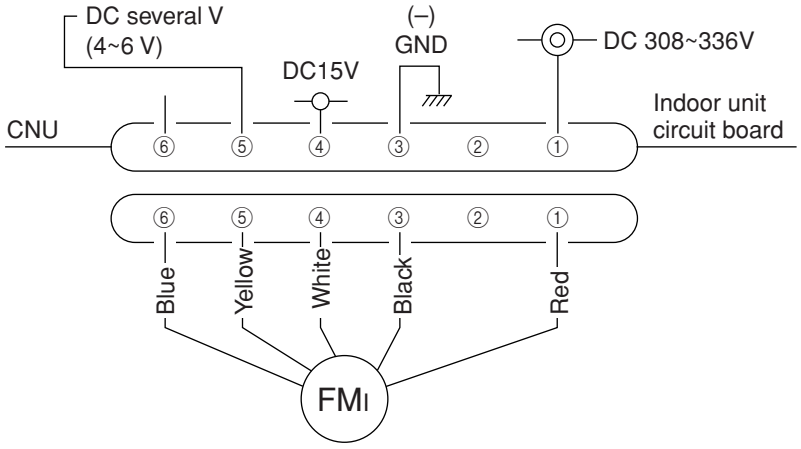
1) Indoor unit printed circuit board output check

a) Turn off the power.

b) Remove the front panel, then disconnect the fan motor lead wire connector.

c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the circuit board is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor unit's circuit board has failed and the fan motor is normal.

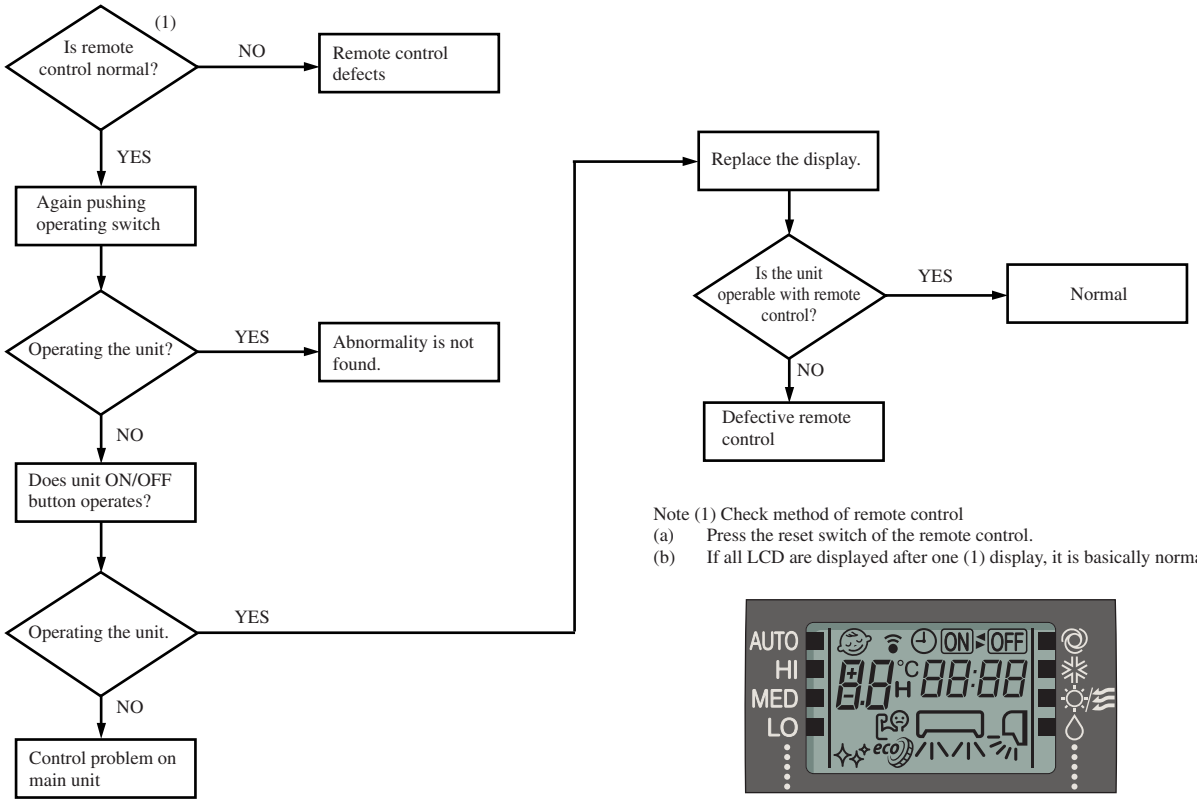


(ii) DC Fan motor resistance check

Measuring Point	Resistance when Normal
① – ③ (Red – Black)	25 M or higher
④ – ③ (White – Black)	30 k or higher

Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(i) How to make sure of remote control



Note (1) Check method of remote control
(a) Press the reset switch of the remote control.
(b) If all LCD are displayed after one (1) display, it is basically normal.

(2) Servicing

(a) Evacuation

The evacuation is an procedure to purge impurities.....noncondensable gas, air, moisture from the refrigerant equipment by using a vacuum pump. Since the refrigerant R410A is very insoluble in water, even a small amount of moisture left in the refrigerant equipment will freeze, causing what is called water clogging.

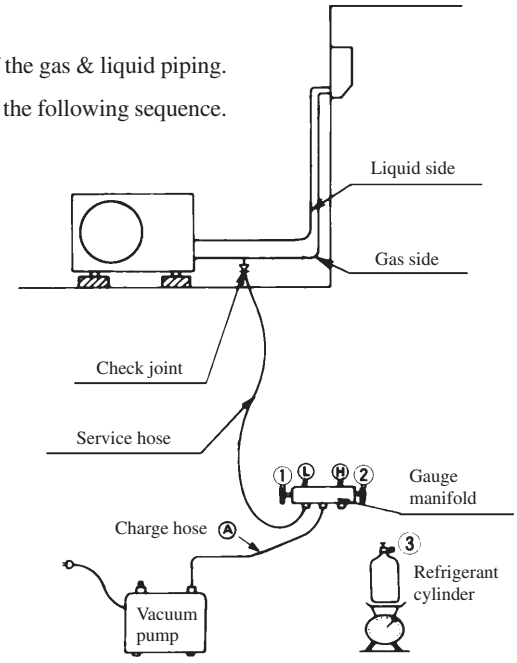
- Evacuation procedure

(i) Check to ensure that there is no internal pressure in the unit. If there is an internal pressure, it should be relieved through the check joint.

(ii) Connect the service hoses of the gauge manifold to the check joint of the gas & liquid piping.

(iii) Connect a vacuum pump to the charge hose Ⓐ. Repeat evacuation in the following sequence.

Start the vacuum pump.
⇩
Compound pressure gauge indicates 0.1 MPa (–76 cmHg)
⇩
Operate the vacuum pump for more than 15 minutes after 0.1 MPa (–76 cmHg) is indicated.
⇩
Close low pressure valve ① of gauge manifold.
⇩
Stop the vacuum pump.



Notes (1) Do not use the refrigerant pressure to expel air.
(2) Do not use the compressor for evacuation.
(3) Do not operate the compressor in the vacuum condition.

(b) Refrigerant charge

(i) Discharge refrigerant entirely from the unit and evacuate the unit.
Note: Addition of refrigerant without evacuation is unreasonable, because it will result in low charge or overcharge.

(ii) Keep the gauge manifold and connect a refrigerant cylinder to the unit.

(iii) Record the weight of the refrigerant cylinder on the balance. This is necessary for making sure of the charged refrigerant amount.

(iv) Purge air from the charge hose Ⓐ
Firstly loose the connecting portion of the charge hose Ⓐ at the gauge manihold side and open the valve ③ for a few seconds, and then immediately retighten it after observing that gas is blow out from the loosened portion.

(v) Open the valve ① and ③ after discharging air from the charge hose Ⓐ, then the liquid refrigerant begins flowing from the cylinder into the unit. Be sure to erect the refrigerant cylinder upright to let liquid refrigerant flow into the unit.

(vi) When refrigerant has been charged into the system to some extent, refrigerant flow becomes stagnant, when that happens, start the compressor in cooling cycle until the unit is filled with refrigerant to the specified weight.

(vii) Making sure of the refrigerant amount, close the valve ③

(viii) Disconnect the charge hose from the unit. Cover the valve ports of the refrigerant piping with caps and tighten them securely.

(ix) Check for gas leakage applying a gas leak detector along the piping line.

(x) Start the air conditioner and make sure of its operating condition.....high side and low side pressures and temperature difference between return air and supply air.

2.3.7 REFRIGERANT PIPING INSTALLATION/SERVICING MANUAL FOR AIR CONDITIONERS USING R410A

This is same as chapter 1.1.7. Refer to page 59.

MEMO