1. INVERTER WALL MOUNTED TYPE ROOM AIR-CONDITIONER
(Split system, air to air heat pump type)

Alternative refrigerant R410A use models
SRK25ZB-S, SRK35ZB-S

CONTENTS

1.1 GENERAL INFORMATION

1.1.1 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.

(1) Inverter (Frequency converter) for multi-steps power control

- Heating/Cooling

  The rotational speed of a compressor is changed in step in relation to varying load, to interlock with the indoor and outdoor unit fans controlled to changes in frequency, thus controlling the power.
- Allowing quick heating/cooling operation during start-up period. Constant room temperature by fine-tuned control after the unit has stabilized.

(2) Fuzzy control

- Fuzzy control calculates the amount of variation in the difference between the suction air temperature and the setting temperature in compliance with the fuzzy rules in order to control the air capacity and the inverter frequency.

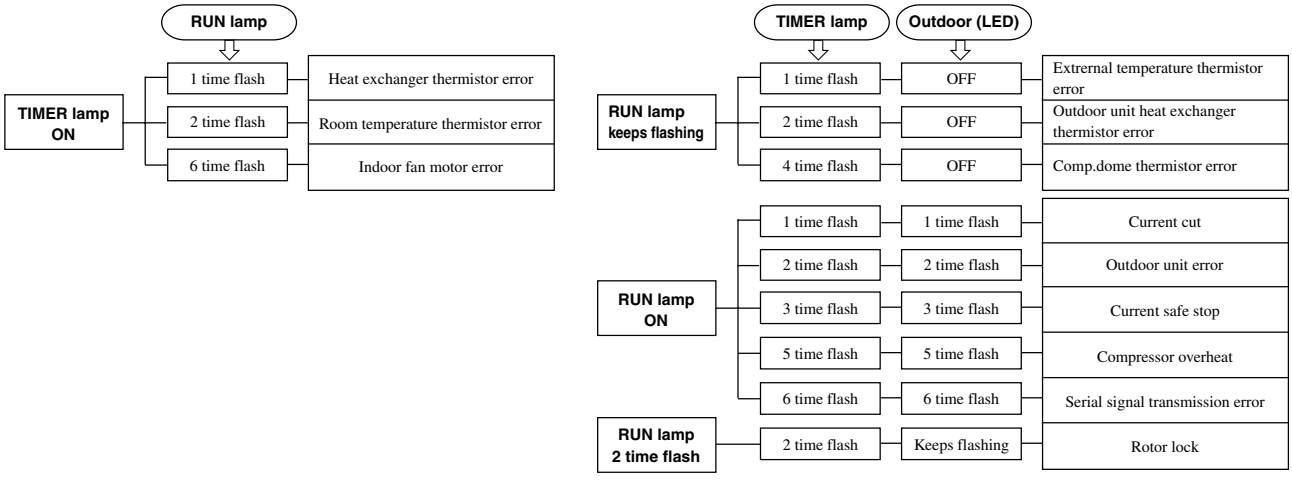
(3) Remote control flap

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

- Air scroll (AUTO): 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.

(4) 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.



1.1.2 How to read the model name

Example : SR K 35 Z B - S

- S — Split type room air-conditioner
- K — Wall mounted type
- 35 — Product capacity
- Z — Inverter type
- B — Series No.
- S — R410A models

1.2 SELECTION DATA

1.2.1 Specifications

Model SRK25ZB-S (Indoor unit)
SRC25ZB-S (Outdoor unit)

Item				Model	SRK25ZB-S	SRC25ZB-S
Cooling capacity(1)				W	2500 [900~3000]	
Heating capacity(1)				W	3400 [900~4100]	
Power source					1 Phase, 220/230/240V, 50Hz	
Operation data(1)	Cooling input			kW	0.780 [0.30~1.090]	
	Running current (Cooling)			A	3.8/3.6/3.5	
	Heating input			kW	0.945 [0.29~1.380]	
	Running current (Heating)			A	4.5/4.3/4.1	
	Inrush current			A	4.5/4.3/4.1	
	COP (In cooling)				3.21	
	Noise level	Cooling	Sound level	dB	Hi: 39 Lo: 28	44
			Power level		Hi: 53 Lo: 42	58
		Heating	Sound level		Hi: 41 Lo: 24	47
			Power level		Hi: 55 Lo: 38	61
Exterior dimensions Height × Width × Depth				mm	275 × 790 × 174	595 × 720 × 290
Color					Noble white	Stucco white
Net weight				kg	9.0	37
Refrigerant equipment Compressor type & Q'ty					–	RM-A5077MD1 (Rotary type) × 1
Motor				kW	–	0.75
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(4)				kg	R410A 0.95 (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	27	18
Air flow (at High)			(Cooling)	CMM	7.5	27
			(Heating)		9.5	27
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, heating overload protection (High pressure control), 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: 0.46 m Gas line : 0.39 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	
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 values for performance and power consumption shown in brackes [~] indicate the range from minimum to maximum.

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

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

Model SRK35ZB-S (Indoor unit)
SRC35ZB-S (Outdoor unit)

Item				Model	SRK35ZB-S	SRC35ZB-S
Cooling capacity(1)				W	3500 [0.9~3900]	
Heating capacity(1)				W	4500 [0.9~6100]	
Power source					1 Phase, 220/230/240V, 50Hz	
Operation data(1)	Cooling input			kW	1.095 [0.33~1.470]	
	Running current (Cooling)			A	5.1/4.9/4.7	
	Heating input			kW	1.250 [0.33~1.850]	
	Running current (Heating)			A	5.8/5.5/5.3	
	Inrush current			A	5.8/5.5/5.3	
	COP (Cooling)				3.20	
	Noise level	Cooling	Sound level	dB	Hi: 44 Lo: 29	48
			Power level		Hi: 58 Lo: 43	62
		Heating	Sound level		Hi: 45 Lo: 28	50
			Power level		Hi: 59 Lo: 42	64
Exterior dimensions Height × Width × Depth				mm	298 × 815 × 241	640 × 850 × 290
Color					Noble white	Stucco white
Net weight				kg	10	44
Refrigerant equipment Compressor type & Q'ty					–	RM-A5077MD2 [Rotary type] × 1
Motor				kW	–	0.75
Starting method					–	Line starting
Heat exchanger					Louver fins & inner grooved tubing	
Refrigerant control					Capillary tubes + Electric expansion valve	
Refrigerant(4)				kg	R410A 1.20 (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	27	35
Air flow (at High)			(Cooling)	CMM	11.5	39
			(Heating)		14.0	39
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, heating overload protection (High pressure control), overcurrent protection, frosting 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: 0.47 m Gas line : 0.4 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	
Optional parts					–	

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

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The piping length is 7.5m.

(2) The values for performance and power consumption shown in brackets [~] indicate the range from minimum to maximum.

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

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

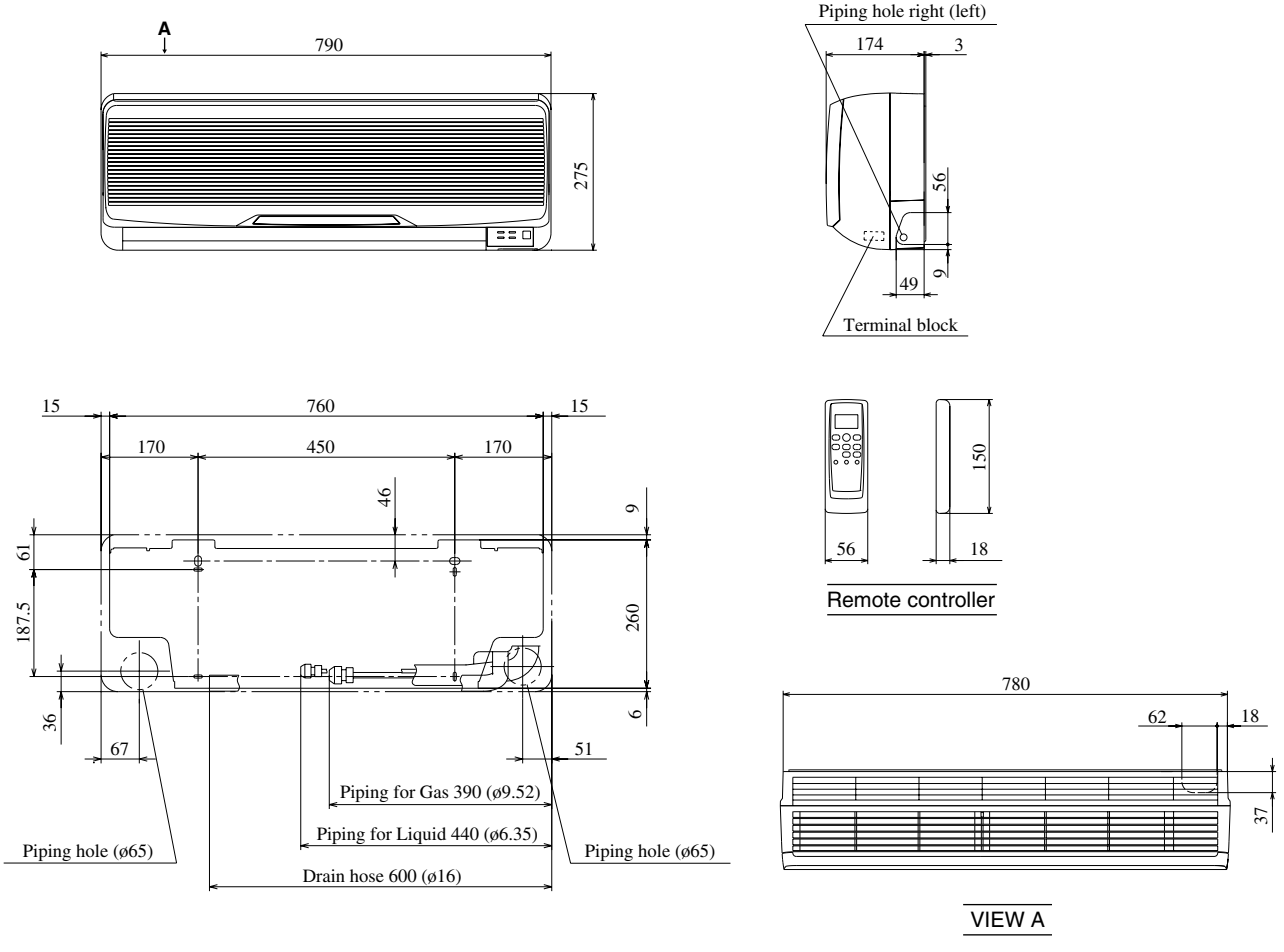
1.2.2 Range of usage & limitations

Item \ Models	SRK25ZB-S	SRK35ZB-S
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. 5m (Outdoor unit is higher) Max. 5m (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	Max. 6 times/h
ON and OFF interval	ON : Min. 5 minutes OFF : Min. 4 minutes	

1.2.3 Exterior dimensions

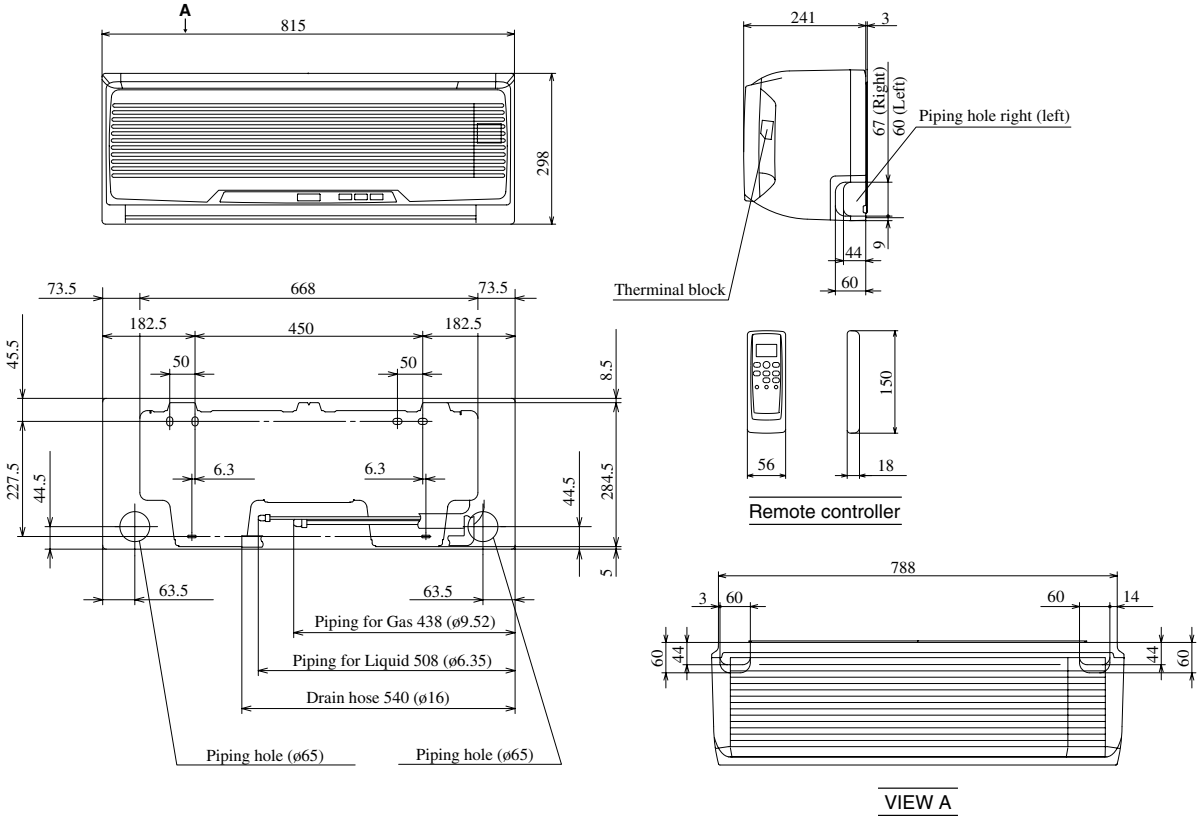
(1) Indoor unit
Model SRK25ZB-S

Unit: mm



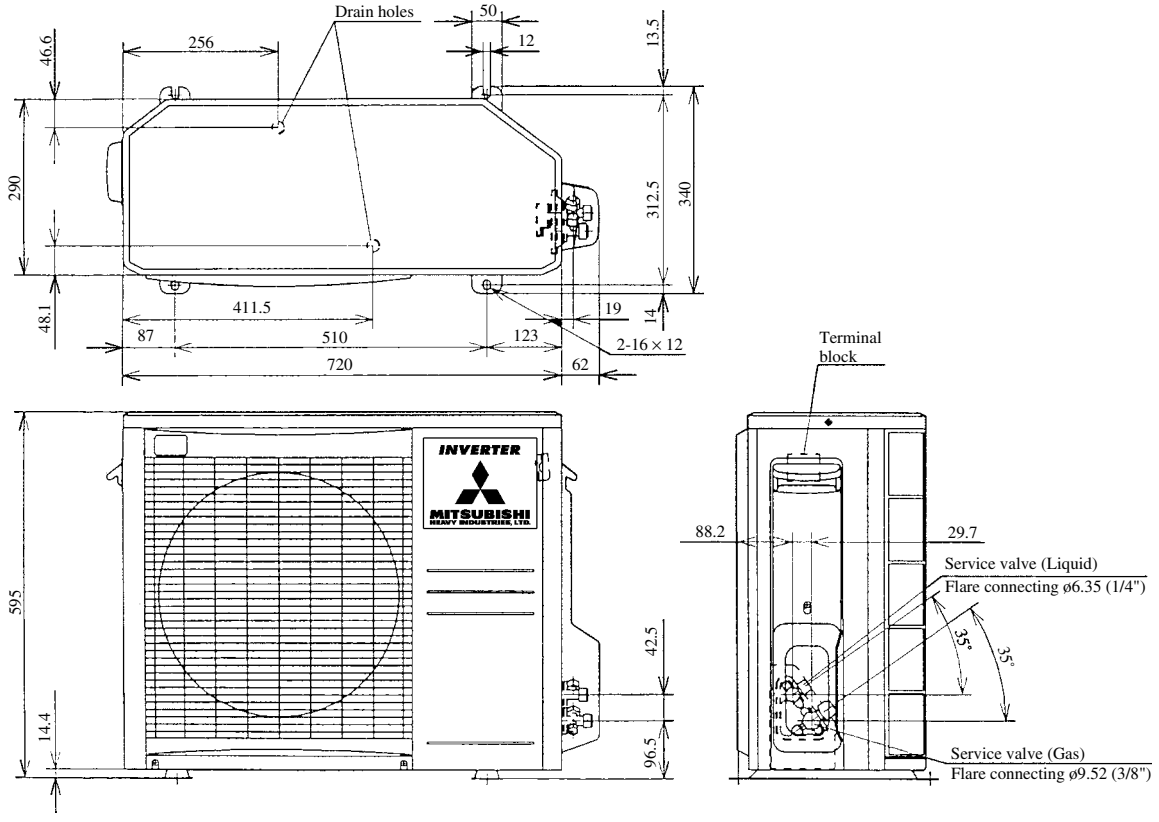
Model SRK35ZB-S

Unit: mm

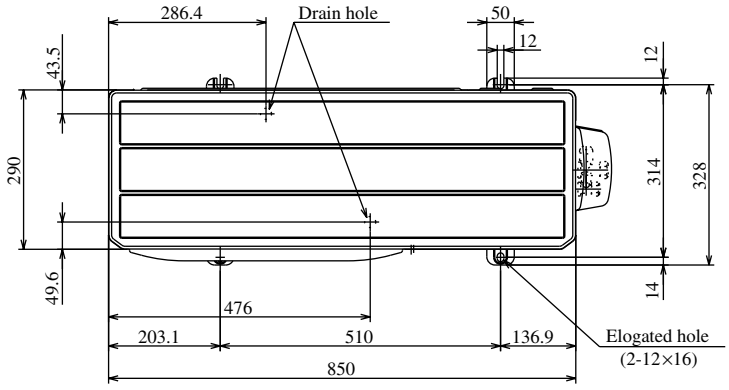


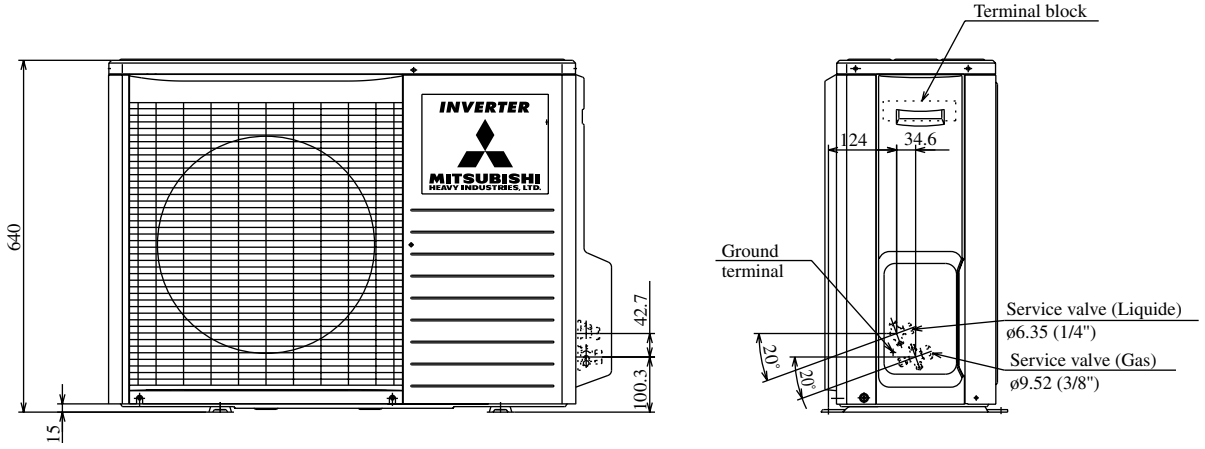
(2) Outdoor unit
Model SRC25ZB-S

Unit: mm



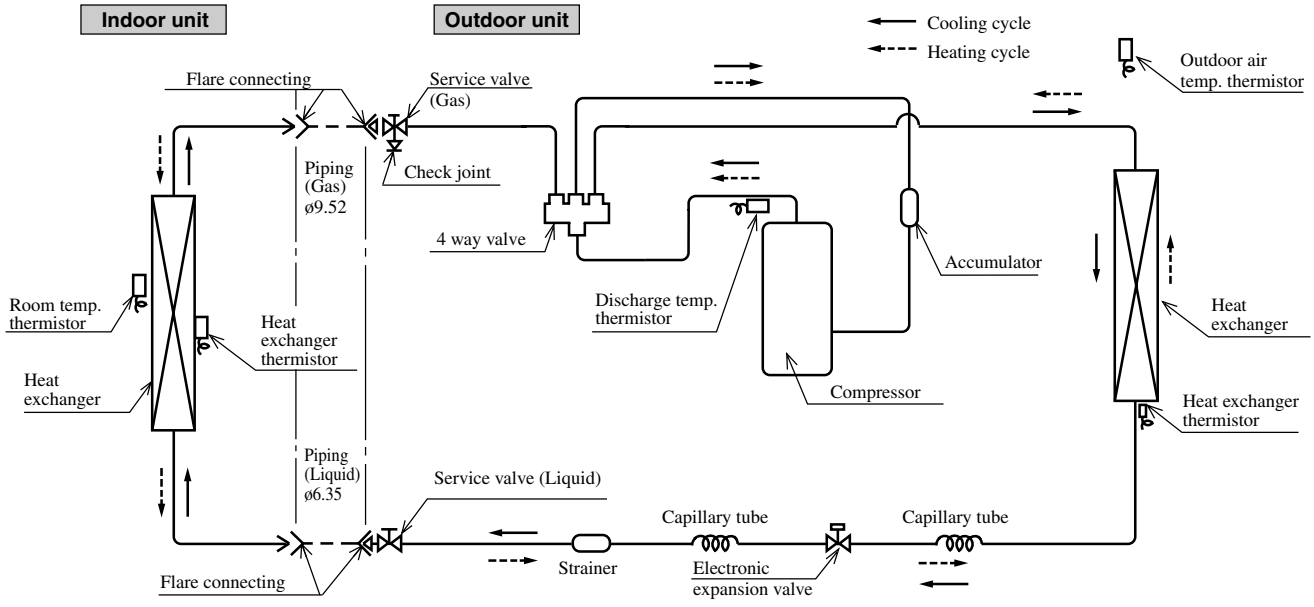
Model SRC35ZB-S





1.2.4 Piping system

Models SRK25ZB-S, 35ZB-S

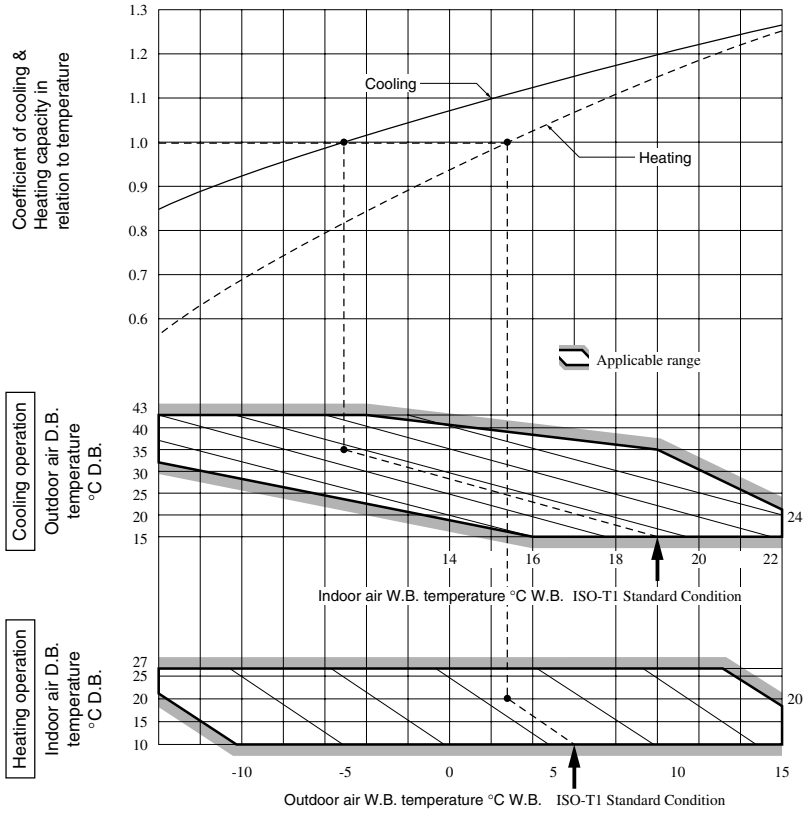


1.2.5 Selection chart

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.

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



(2) 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

(3) 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

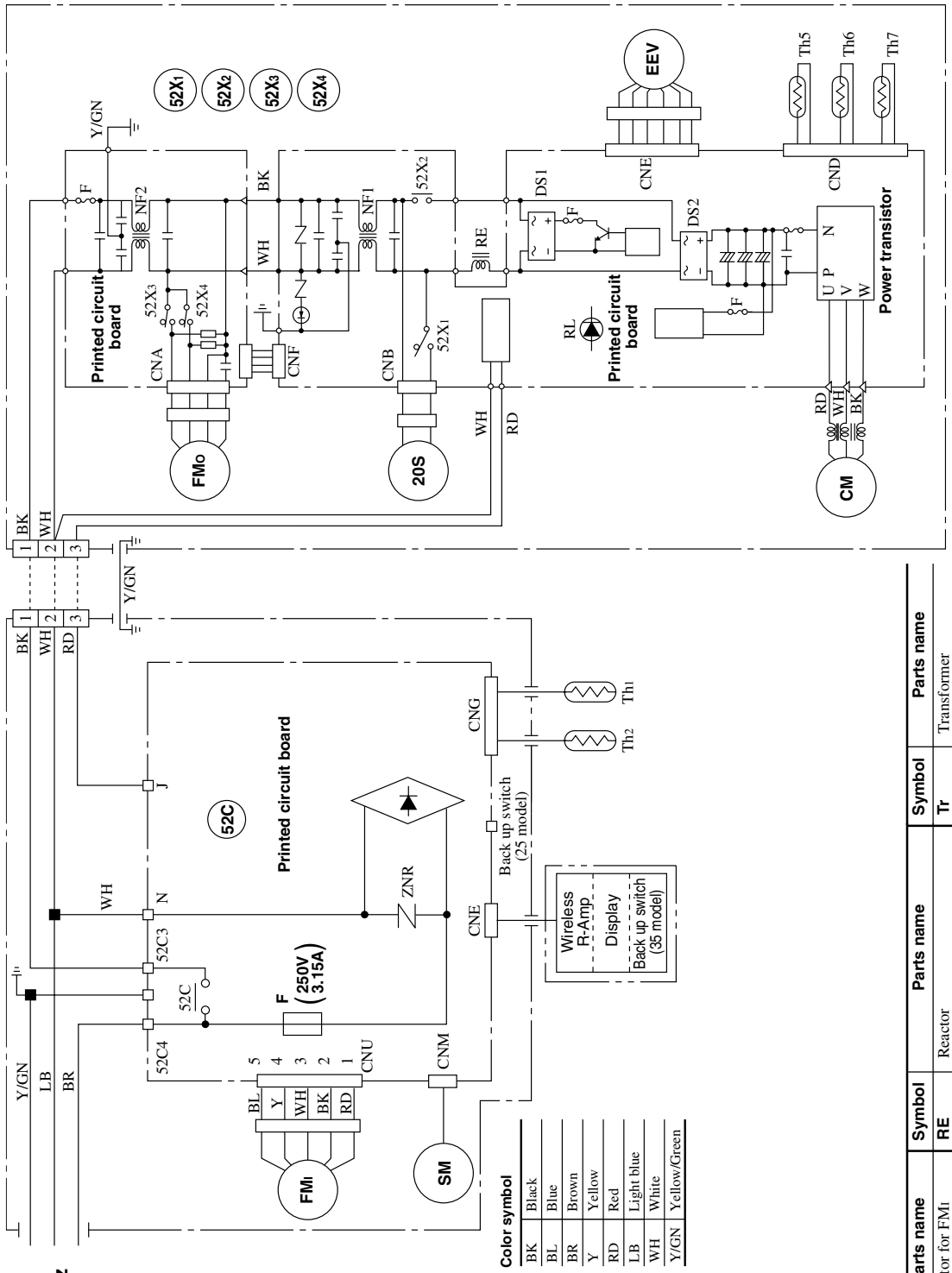
How to obtain the cooling and heating capacity

Example : The net cooling capacity of the model SRK25ZB-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 = $\underset{\text{SRK25ZB-S}}{2500} \times \underset{\text{Length 15m}}{0.975} \times \underset{\text{Factor by air temperatures}}{1.0} = 2437$ w

1.3 ELECTRICAL DATA

1.3.1 Electrical wiring

Models SRK25ZB-S, 35ZB-S



Meaning of marks

Symbol	Parts name	Symbol	Parts name	Symbol	Parts name
CFi	Capacitor for FMi	RE	Reactor	Tr	Transformer
CM	Compressor motor	SM	Flap motor	ZNR	Varistor
F	Fuse	Th1	Room temp. thermistor	20S	4 way valve (coil)
FMi	Fan motor (Indoor)	Th2	Heat exchanger thermistor (Indoor unit)	52C	Magnetic contactor
FMo	Fan motor (Outdoor)	Th5	Heat exchanger thermistor (Outdoor unit)	DS1,2	Diode stack
NF1,2	Noise filter	Th6	Outdoor air temp. thermistor	52X1-4	Auxiliary relay
RL	Inspection lamp	Th7	Discharge pipe thermistor	EEV	Electronic expansion valve

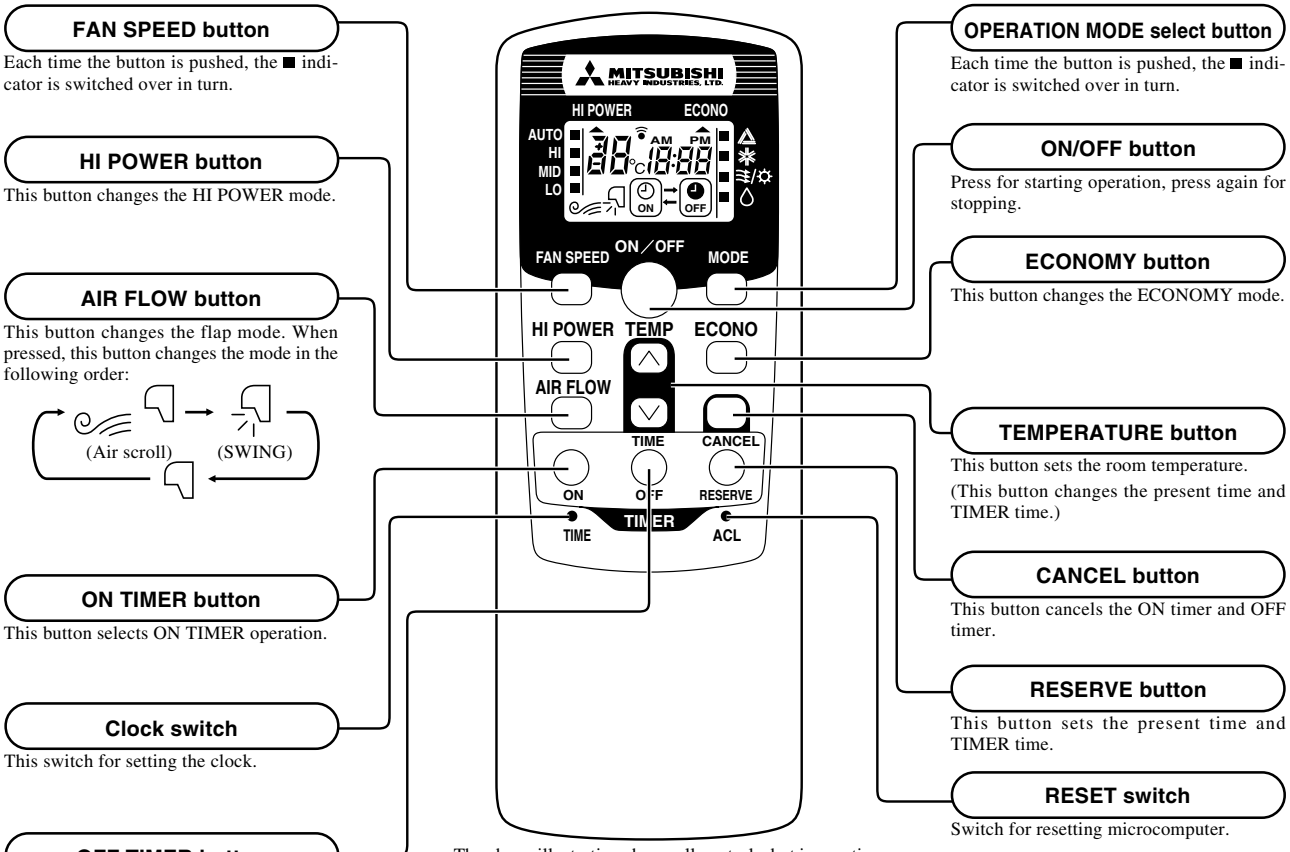
1.4 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

1.4.1 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:

(Air scroll) (SWING)

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.

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

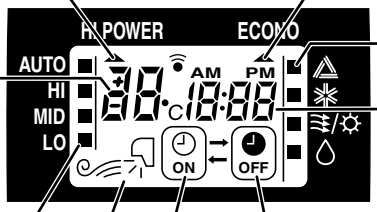
This button sets the present time and TIMER time.

RESET switch

Switch for resetting microcomputer.

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

◆ **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.

[△ (Auto) • ✳ (Cool) • ≋/☼ (Heat) • ◊ (Dry)]

Clock Indicator

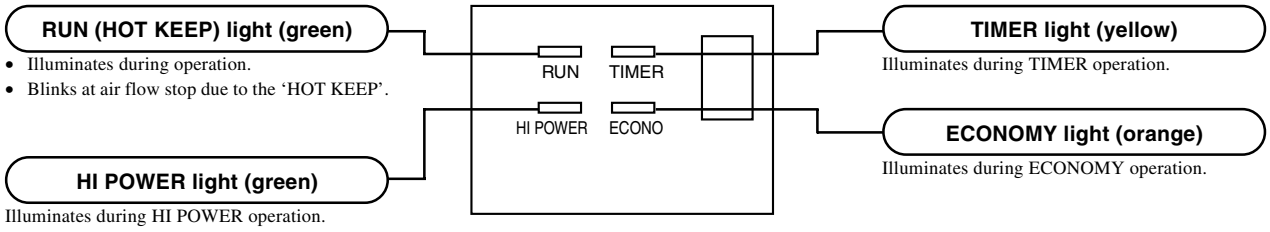
Indicates present time or timer setting time.

OFF TIMER Indicator

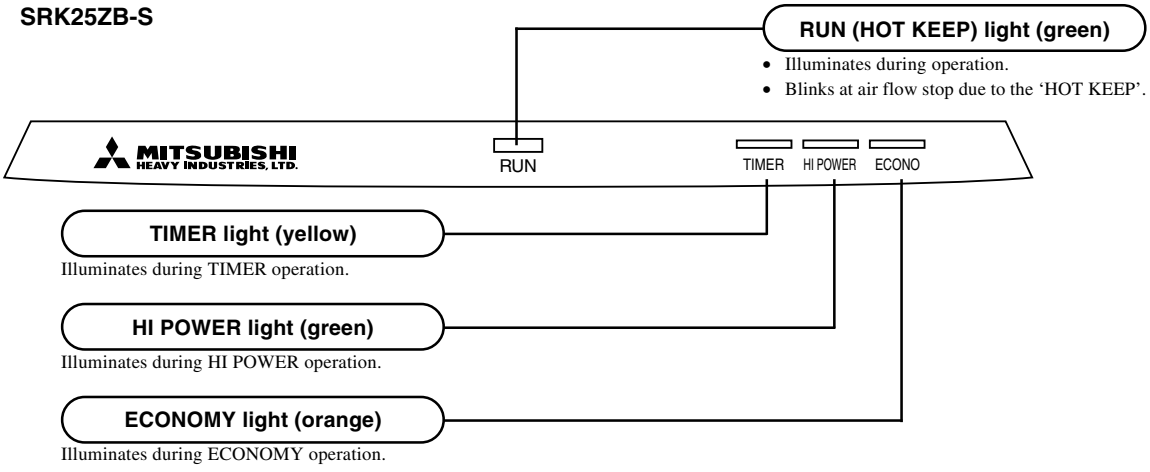
Indicates during OFF TIMER operation.

Indoor unit indicator

Model SRK25ZB-S



Model SRK25ZB-S



1.4.2 Back-up switch

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

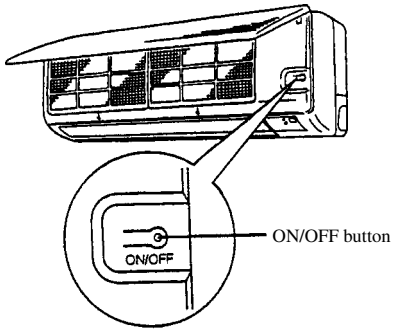
(1) Operation

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

(2) Detail of operation

Operation starts in the same way as the previous operation.

Model SRK25ZB-S



1.4.3 Power-cut compensation

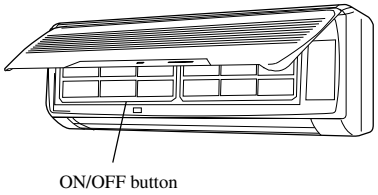
(1) Power-cut compensation is a function that records the operational status of the air-conditioner immediately prior to it being switched off by a power cut, and then automatically resumes operations at that point after the power has been restored.

(2) The floolwing settings will be cancelled:

(a) Timer settings

(b) High-power operations

Model SRK35ZB-S



Notes (1) The power-cut compensation 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) If the power-cut compensation function is set at on, ensure that the power switch is turned off after operations have been halted.
(If the power switched is turned off while the air-conditioner is still operating, the fan in the indoor unit will start operating in the same way as when the switch is turned on. The indoor unit will commence operations approximately three minutes after the power has been switched on.)

(3) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reser the timer.

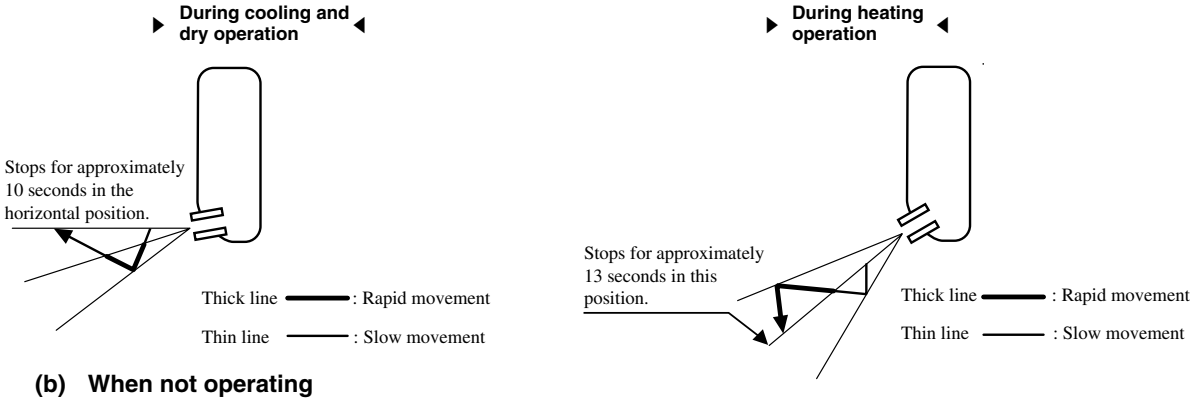
1.4.4 Flap control

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

(1) Air scroll (AUTO)

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

(a) Starting time of operation



(b) When not operating

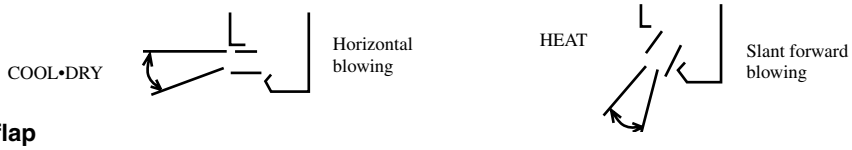
The flap returns to the position of air flow directly below, when operation has stopped.

(2) 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



(3) Swing flap

Flap moves in upward and downward directions continuously.

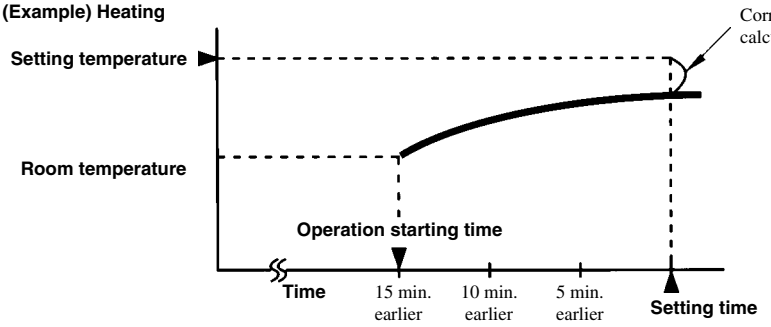
1.4.5 Comfort timer setting

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 comfort 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 thermistor) 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 thermistor (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 pleasant reservation operation, both the operation lamp and timer lamp illuminate and the timer lamp 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

1.4.6 Outline of heating operation

(1) Air flow selection

(a) Frequency of inverter changes within the range of selected air flow.

Air flow selection \ Model		SRK25ZB-S	SRK35ZB-S
Auto	Frequency	30~100 rps	30~102 rps
	Air flow	Depends on frequency.	
HI	Frequency	30~100 rps	30~102 rps
	Air flow	6th speed fixed	
MED	Frequency	30~80 rps	30~96 rps
	Air flow	5th speed fixed	
LO	Frequency	30~50 rps	30~60 rps
	Air flow	3rd speed fixed	3rd/4th speed

(b) When the defrosting, protection device, etc. is actuated, operation is performed in the corresponding mode.

(c) Outdoor unit blower operates in accordance with the frequency.

(2) Details of control at each operation mode (pattern)

(a) Fuzzy operation

Deviation between the room temperature setting correction temperature and the suction air temperature is calculated in accordance with the fuzzy rule, and used for control of the air capacity and the inverter frequency.

(b) Heating thermostat operation

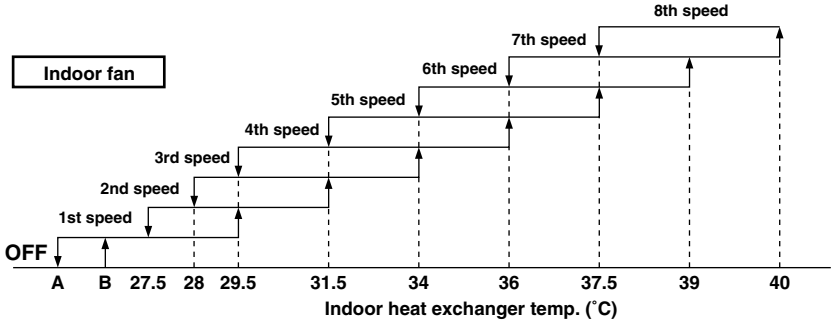
- Operating conditions
  If the frequency obtained with the fuzzy calculation drops below -24 rps during the heating fuzzy operation, the operation changes to the heating thermostat operation.
- Detail of operation

Inverter frequency	0 rps [Comp. stopped]
Indoor fan	Hot keep normal mode → 1st speed
Outdoor fan	Stop
Flap	Horizontal

(c) Hot keep operation

If the hot keep operation is selected during the heating operation, the indoor blower is controlled based on the temperature of the indoor unit heat exchanger (detected with Th2, indoor unit heat exchanger thermistor) to prevent blowing of cool wind.

- **Normal mode (Normal heating operation, operation after HI POWER completion)**

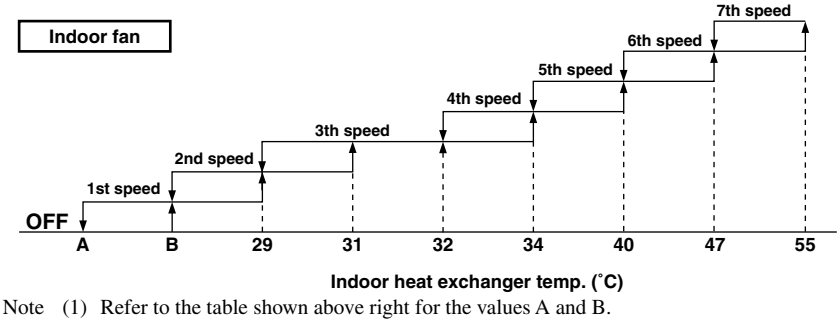


- **Values of A, B**

	A	B
At 0 rps command	22	25
Other than 0 rps command	17	19

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

- **Hot keep M mode [During HI POWER operation (for 15 min.)]**



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

(d) Defrosting operation

(i) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)

① After start of heating operation → When it elapsed 45 minutes. (Accumulated operation time)

② After end of defrosting operation → When it elapsed 45 minutes. (Accumulated compressor operation time)

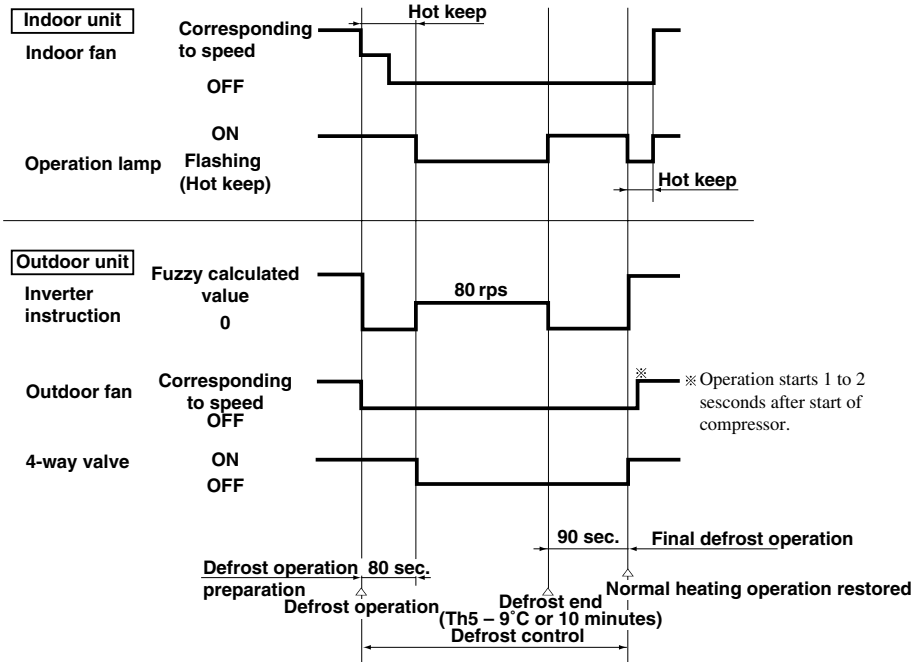
③ Outdoor unit heat exchanger thermistor (Th5) temperature → When the temperature has been below –5ºC for 3 minutes continuously.

④ When the temperature difference between the outdoor air thermistor temperature and the outdoor unit heat exchanger thermistor temperature exceeded 4.5ºC

⑤ During continuous compressor operation

In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of ①, ② and ③ above are satisfied (note that when the temperature for Th5 is 62 rps or more: -2 ˚C or less, less than 62: - 1 ˚C), defrost operation is started.

(ii) Operation of functional components during defrosting operation



(iii) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)

① Outdoor heat exchanger thermistor (Th5) temperature: 9ºC or higher

② Continued operation time of defrosting → For more than 10 min.

(e) Heating "HI POWER" operation (HI POWER button on remote controller: ON)

Operation is maintained for 15 minutes with a higher blow out air temperature.

- Detail of operation

Item \ Model	SRK25ZB-S	SRK35ZB-S
Inverter frequency	100 rps	102 rps
Indoor fan	Hot keep M mode	
Outdoor fan	2nd speed	

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.

1.4.7 Outline of cooling operation

(1) Air flow selection

(a) Frequency of inverter changes within the range of selected air flow.

Air flow selection \ Model		SRK25ZB-S	SRK35ZB-S
AUTO	Frequency	30~84 rps	30~100 rps
	Air flow	Depends on frequency.	
HI	Frequency	30~84 rps	30~100 rps
	Air flow	5th speed fixed	
MED	Frequency	30~60 rps	30~72 rps
	Air flow	4th speed fixed	
LO	Frequency	30~40 rps	30~48 rps
	Air flow	3th speed fixed	

(b) When any protective function actuates, the operation is performed in the mode corresponding to the function.

(c) Outdoor blower is operated in accordance with the frequency.

(2) Detail of control in each mode (Pattern)

(a) Fuzzy operation

During the fuzzy operation, the air flow and the inverter frequency are controlled by calculating the difference between the room temperature setting correction temperature and the suction air temperature.

(b) Cooling thermostat operation

(i) Operating conditions

During the cooling fuzzy operation or when the frequency obtained by the fuzzy calculation is less than -24 rps.

(ii) Detail of operation

Inverter frequency	0 rps [Comp. stopped]
Indoor fan	Corresponds to fan speed switch.
Outdoor fan	Stop

(c) Cooling "HI POWER" operation (HI POWER button on remote controller: ON)

The unit is operated continuously for 15 minutes regardless of the setting temperature.

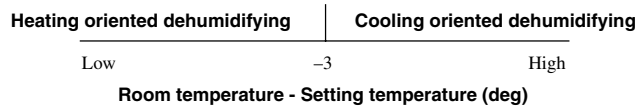
(i) Detail of operation

Item \ Model	SRK25ZB-S	SRK35ZB-S
Inverter frequency	84 rps	100 rps
Indoor fan	6th speed	
Outdoor fan	1st speed	

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

1.4.8 Outline of dehumidifying operation

(1) After operating the indoor blower for 20 seconds from immediately after the start of operation, the indoor temperature is checked and, based on the result of check, the cooling oriented dehumidifying or heating oriented dehumidifying is selected.

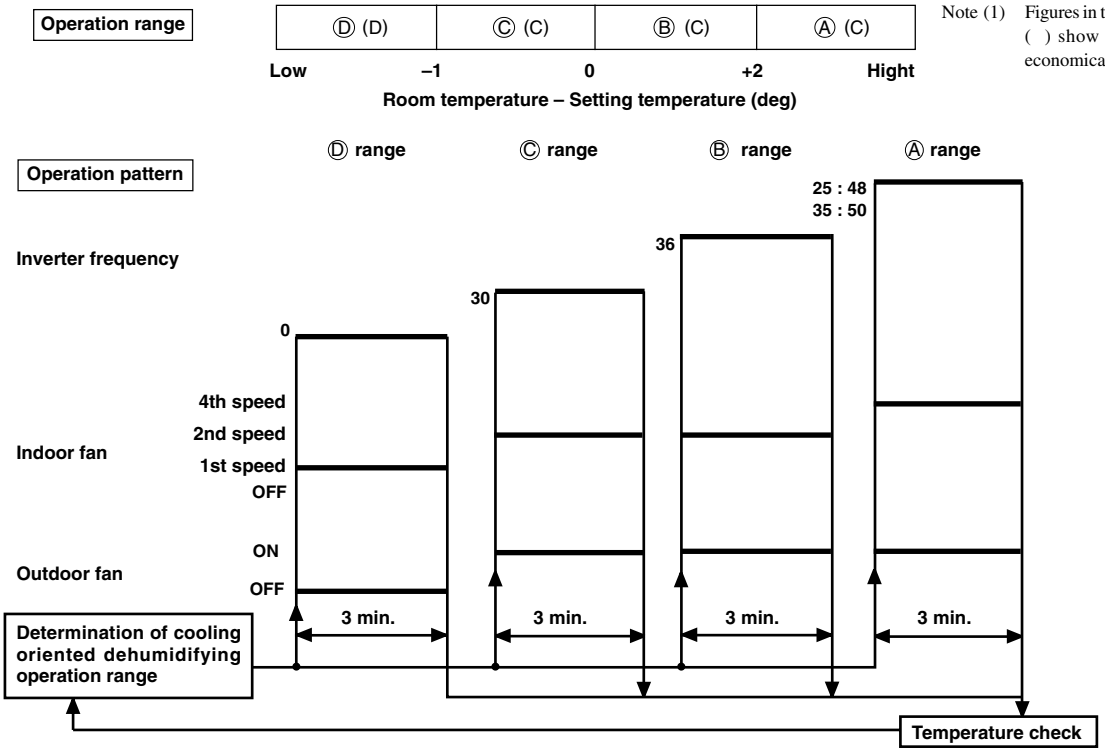


Cooling or heating oriented dehumidifying is selected again one hour after the first selection of the cooling or heating oriented dehumidifying.

(2) Outline of control

(a) Cooling oriented dehumidifying

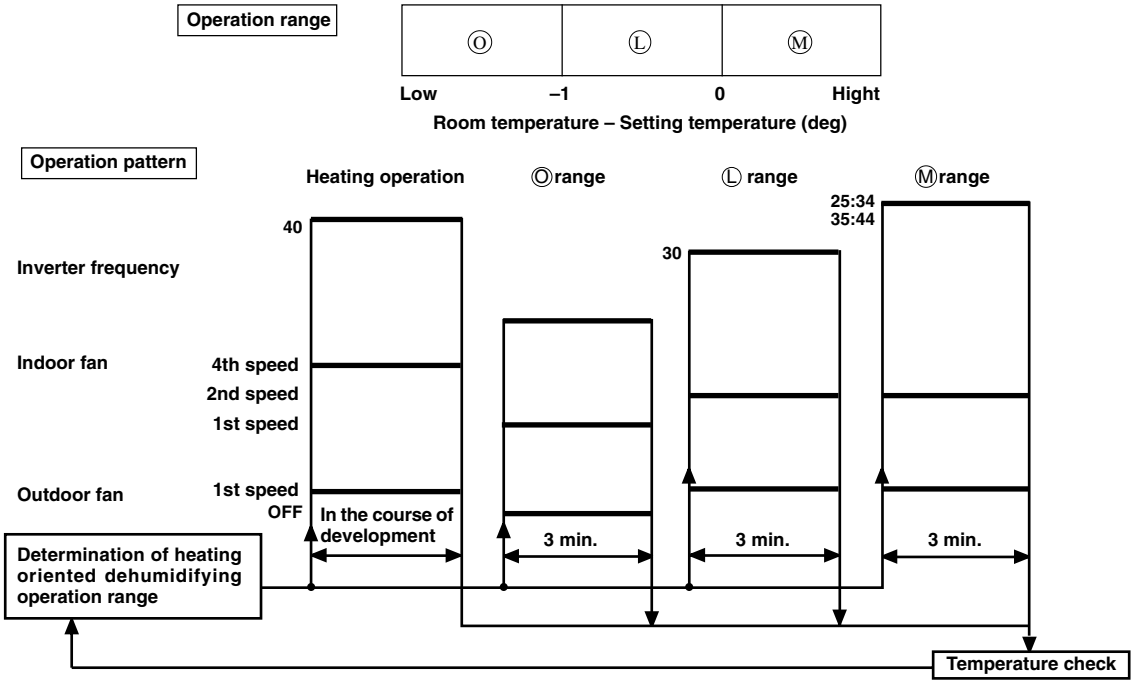
Room temperature is checked at 3-minute intervals after selecting the cooling or heating oriented dehumidifying in order to determine the operation range.



Note (1) Figures in the parentheses ( ) show the values at economical operation.

(b) Heating oriented dehumidifying

After interrupting the compressor operation for 3 minutes (by the 3-minute timer) following the determination of heating oriented dehumidifying, the unit enters in the heating operation. If the room temperature exceeds the setting temperature by 2ºC or more, the unit checks the room temperature at 3-minute intervals and, depending on the result, determines the range of heating oriented dehumidifying operation.

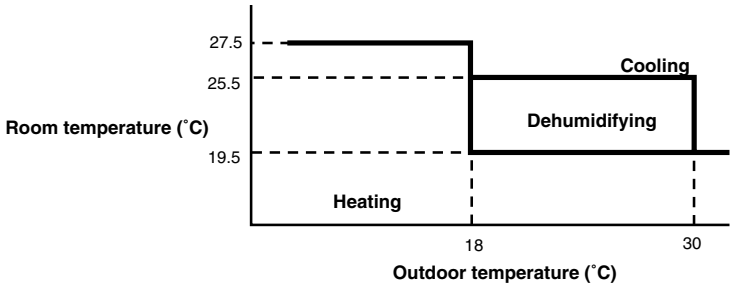


Note (1) When the economical operation signal was received during the heating oriented operation, the operation is changed immediately to cooling oriented dehumidifying operation.

1.4.9 Outline of automatic operation

(1) Determination of operation mode

The unit checks the room temperature and the outdoor air temperature after operating the indoor and outdoor blowers for 30 seconds, determines the operation mode and the room temperature setting correction value, and then enters in the automatic operation.



(2) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.

(3) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.

(4) 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

1.4.10 Economical operation (ECONO button on remote controller: ON)

(1) The set temperature is raised by 1.5ºC (0.5ºC every one hour) at cooling operation and lowered by 2.5ºC (Steps of 1ºC, 1ºC and 0.5ºC every one hour) at heating operation to continue the operation with the following contents.

(2) Detail of operation

Item \ Model	SRK25ZB-S		SRK35ZB-S	
Operation mode	Cooling	Heating	Cooling	Heating
Inverter command frequency	30~52 rps	30~60 rps	30~62 rps	30~72 rps
Indoor fan	3rd, 4th speed		3rd, 4th speed	
Outdoor fan	1st speed		1st speed	

1.4.11 Protective control function

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

(a) Operating conditions

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

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

(b) Detail of anti-frost operation

Inverter command speed	0 rps
Indoor fan	2nd speed
Outdoor fan	OFF
4-way valve	Stop mode

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

(2) 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.

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

(a) Operating conditions: When the following condition is met continuously for more than 30 minutes after operation start

① The indoor air temperature (detected by Th1) is 24ºC or below

② The outdoor air temperature (detected by Th6) is 30ºC or over

(b) Detail of operation

Item \ Model	SRK25ZB-S	SRK35ZB-S
Upper limit of command frequency	61 rps	82 rps

(c) Restoration conditions: When either of the following conditions is met

① When indoor air temperature (detected by Th1) becomes less than 24ºC

② When outdoor air temperature (detected by Th6) exceeds 30ºC

(4) Prevention of continuous low frequency operation: For oil return to compressor

(a) Operating conditions: When command frequency of less than 40 rps continues for 8 minutes

(b) Detail of operation: The unit is operated at command frequency of 40 rps forcibly for 15 seconds. (The indoor and outdoor fans are not changed.)

Note (1) When the command of exceeding 40 rps is directed during 40 rps forced operation, the unit follows it.

(5) Compressor protection start

(a) When the indoor unit calculated frequency is 64 rps or over at operation start, the unit is operated with 64 rps for 1 minute and 45 seconds. After that when the calculated frequency is 96 rps or over, the unit is operated with 96 rps for 5 minutes then moved to command frequency.

(b) At thermo operation (OFF → ON) this control is not executed.

(c) The indoor unit fan corresponds to the command frequency of each operation mode.

Note (1) When the calculated frequency is less than 64 rps, the unit is started with low load starting described in article (6).

(6) Low load starting

The unit is controlled as follows to secure oil feed to the compressor.

(a) When the unit is started with calculated frequency of less than 60 rps, it is operated with 60 rps for 80~240 seconds, then the operation is moved to the command frequency.

(b) The indoor fan corresponds to the operation mode.

Cooling: Frequency corresponding to the command frequency at air flow switching

Dehumidification: Frequency decided in the operation region

Heating: The lower one between the frequency corresponding to the command frequency and the hot keep frequency

(7) Inching prevention

When the compressor becomes to the thermo operation within 5 minutes since operation start or becomes various dehumidifying operations, the operation is continued with the command frequency of 30 rps forcibly.

(8) Current safe

(a) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

(b) Detail of operation: Input current to the converter is monitored with the current sensor assembled on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the inverter frequency is reduced.

If the mechanism is actuated when the frequency of outdoor unit is less than 30 rps, the compressor is stopped immediately. Simultaneously, a red LED on the printed circuit board provided on the outdoor unit controller flashing 3 times for 0.5 second at intervals of 8 seconds. Operation starts again after a delay time of 3 minutes but, if the mechanism is actuated again at less than 30 rps, the operation does not start on the 5 time.

(9) Current cut

(a) Purpose: Inverter is protected from overcurrent.

(b) Detail of operation: Output current from the converter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Simultaneously, a red LED on the printed circuit board provided on the outdoor unit controller flashing for 0.5 second at intervals of 8 seconds. Operation starts again after a delay time of 3 minutes but, if the current cut mechanism is actuated again before it reaches less than 20 rps, the operation does not start on the 4 time.

(10) Heating overload protective control

(a) Operating conditions: When the unit is operating with the outdoor unit frequency other than 0 rps or when the outdoor air temperature (detected by Th6) rose beyond 17ºC for 2 minutes continuously.

(b) Detail of operation

1) Indoor fan speed is raised forcibly by 1 step.

2) Taking the upper limit of control frequency range at 60 rps, if the output frequency obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

(c) Reset conditions: When the outdoor air temperature drops below 16ºC.

(11) Cooling overload protective control

(a) Operating conditions: When the outdoor unit is operating with the frequency of other than 0 rps, or when the outdoor air temperature (detected by Th6) becomes 41ºC or over for 30 seconds continuously.

(b) Detail of operation

1) Outdoor fan is stepped up by one speed step.

2) The lower limit of control frequency is set to 30 rps and even if the calculated result becomes lower than that after fuzzy calculation, the frequency is kept to 30 rps. However, when the thermo becomes OFF, the frequency is reduced to 0 rps.

(c) The upper limit of control frequency is 25: 60 rps and 35: 76 rps.

(d) Restoration condition: When the outdoor air temperature becomes 40ºC or less

(12) Freezing cycle system protective control

(a) Operating conditions: When both of following conditions have continued for more than 5 minutes later than 5 minutes after the start of operation.

1) Command frequency is higher than 60 rps

2) During cooling, dehumidifying: Indoor heat exchanger temperature - Room temperature > –4ºC
During heating: Indoor heat exchanger temperature - Room temperature < 6ºC

(b) Detail of operation

The command speed repeats 30 minutes at 30rps ↔ 2 minutes at 62 rps.

(c) Restoration conditions: When the condition becomes outside of either conditions 1) or 2) shown above

Note (1) This control is valid when the room air temperature is in the range of 10 to 40ºC at cooling and dehumidification operation and 0 to 40ºC at heating operation.

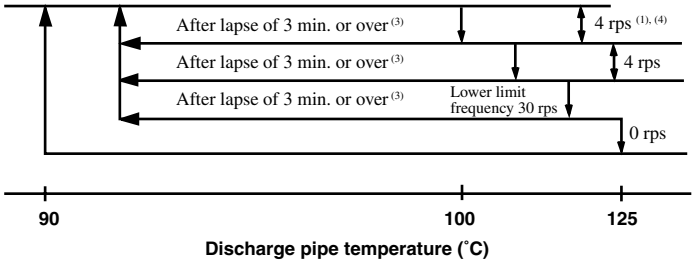
(13) Compressor overheat protection

(a) Purpose: It is designed to prevent deterioration of oil, burn of motor oil and other trouble resulting from the compressor overheat.

(b) Detail of operation

1) Frequencies are controlled with temperature detected by the thermistor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 100 to 125ºC, the frequency is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without charging, then the frequency is reduced again by 4 rps.

(3) When the discharge pipe temperature is in the range of 95 to 100ºC, and if the inverter frequency is being maintained and the operation has continued for more than 3 minutes at the same frequency, it returns to the normal operation.

2) If the temperature of 125ºC is detected by the thermistor on the discharge pipe, then the compressor will stop immediately. Simultaneously, the red LED on the printed circuit board of outdoor unit controller flashing 5 times for 0.5 second at interval of 8 seconds.When the comp. dome temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(14) Serial signal transmission error protection

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

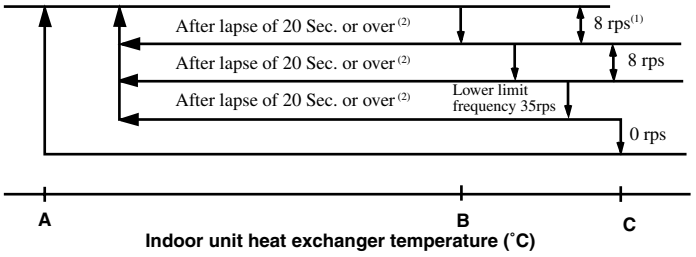
(b) Detail of operation: When the indoor unit controller ↔ outdoor unit controller signals cannot be received, the compressor is stopped immediately. Simultaneously, the red LED on the printed circuit board of outdoor unit controller flashing 6 times for 0.5 second at intervals of 8 seconds. Once the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

(15) High pressure control

(a) Purpose: Prevents abnormally high pressure operation during heating.

(b) Detector: Indoor unit heat exchanger thermistor (Th2)

(c) Detail of operation:
(Example) Fuzzy



Notes (1) When the indoor unit heat exchanger temperature is in the range of B~C ºC, the frequency is reduced by 8 rps at each 20 seconds. When the temperature is C ºC or over for 1 minute continuously, the inverter is stopped.
(2) When the indoor unit heat exchanger temperature is in the range of A~B ºC, if the inverter command frequency is been maintained and the operation has continued for more than 20 seconds at the same frequency, it returns to the normal heating operation.
(3) Indoor blower retains the fan tap when it enters in the high pressure control. Outdoor blower is operated in accordance with the frequency.
(4) At HI POWER operation, the compressor is stopped immediately when temperature becomes D ºC.

- **Temperature list**

Unit : ºC

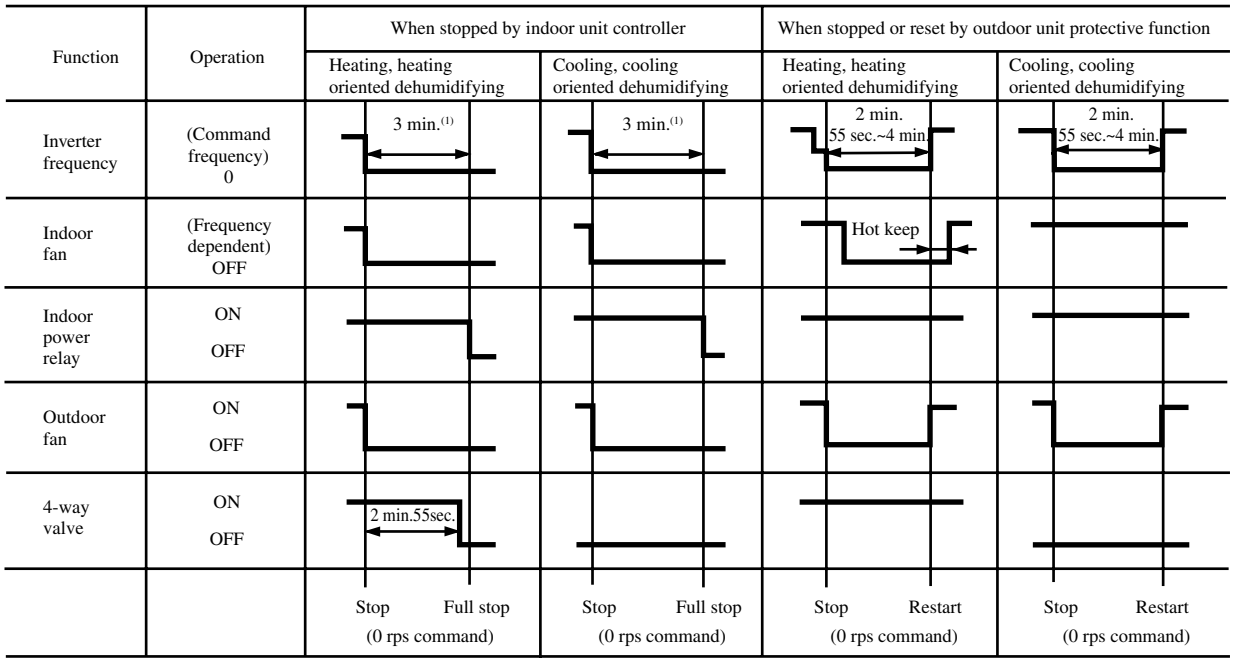
	A	B	C	D
RPSmin < 98	46	53.5	58.5	–
98 ≦ RPSmin < 118	46	52.5	55.5	–
118 ≦ RPSmin	46	52.5	55.5	–
At heating HI POWER	–	–	–	64

Note (1) RPSmin: The lower one between the outdoor unit frequency and the command frequency

(16) Stop mode

(a) Operating conditions: When the operation mode is changed, when the dehumidifying operation is changed from the heating oriented mode to the cooling oriented mode or vice versa, or when the inverter frequency turns to 0 rps. [When 0 rps is commanded from the indoor unit controller, when an outdoor protective function is actuated]

(b) Detail of operation



Note (1) When the start delay of compressor of indoor unit controller is actuated and the operation is reset, it takes 2 minutes and 55 seconds.

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 breater 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 wirimg 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 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.

1.5.1 Selection of location for installation

(1) Indoor unit

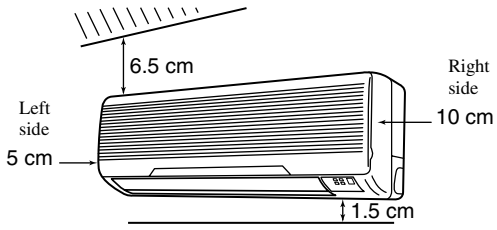
(a) Where there is no obstructions to the air flow and where the cooled air can be evenly distributed.

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

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

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

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



(2) Outdoor unit

(a) A place where good air circulation can be obtained.

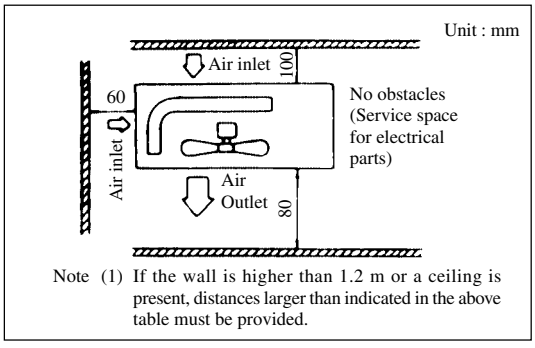
(b) A place where the exhausted air will not be sucked in for the second time.

(c) A place where the unit will not be affected by other heat sources. (When there are several units installed or another heat source)

(d) Do not install the unit near the seaside, or where there is possibility of chlorine gas generation.

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

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



Note (1) If the wall is higher than 1.2 m or a ceiling is present, distances larger than indicated in the above table must be provided.

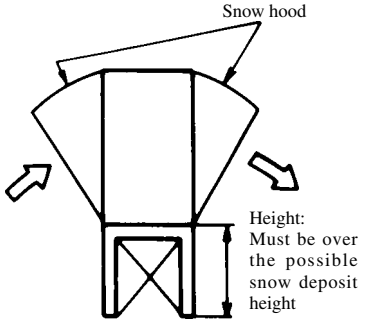
(g) A place where vibration will not be enlarged.

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

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

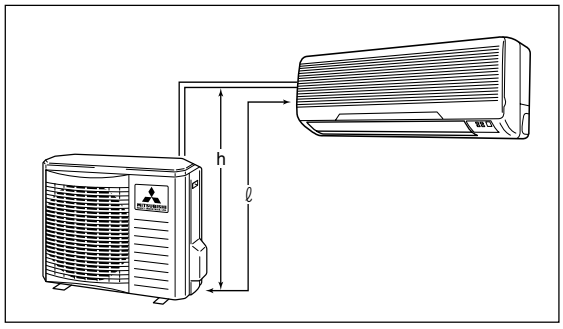
When installing the snow hood, take care so that the air outlet of the snow hood will not face directly into the most windy direction.

(ii) Design the base higher than possible snow deposit.



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

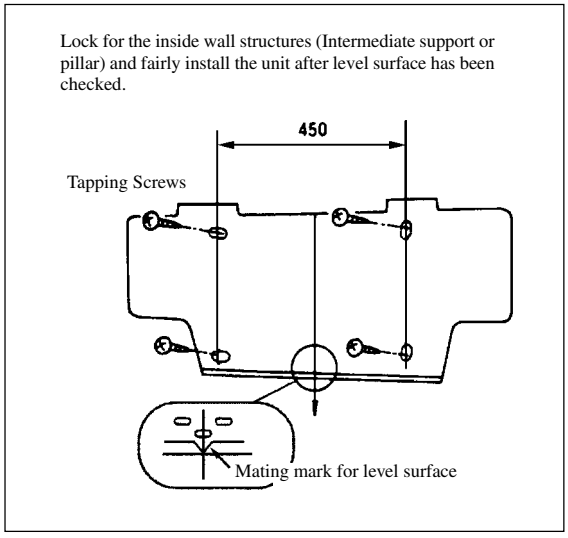
Item		Model: SRK25ZB-S SRK35ZB-S
One way piping length (ℓ)		15 m
Vertical height difference (H)	Outdoor unit is lower	5 m
	Outdoor unit is higher	5 m



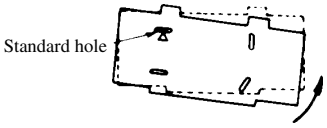
1.5.2 Installation of indoor unit

(1) Installation of installation board

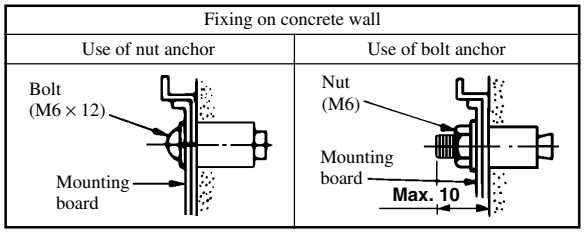
(a) Fixing of installation board



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



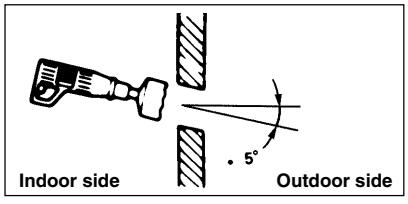
Adjust so that board will be level by turning the board with the standard hole as the center.



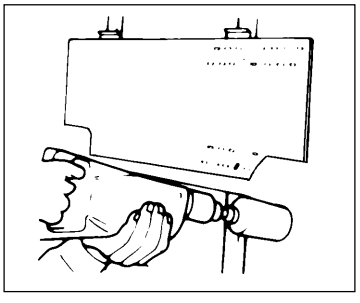
(2) Drilling of holes and fixture sleeve (Option Parts)

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

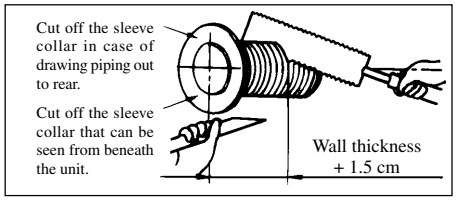
(a) Drill a hole with ø65 whole core drill



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

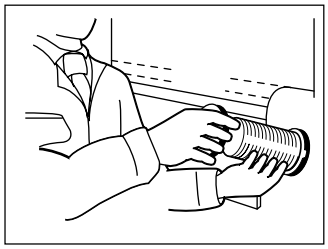


(b) Adjusting sleeve length

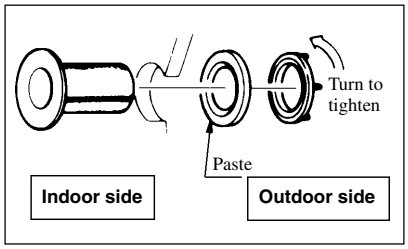


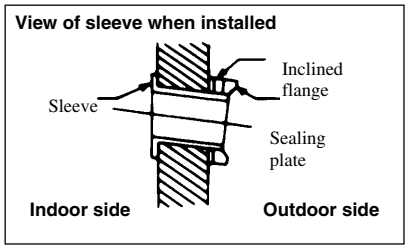
(c) Install the sleeve

(Inserting sleeve)



(*Sleeve + *Inclined + *Sealing plate)





(3) Preparation of indoor unit

(a) Mounting of connecting wires

(i) Open the suction grille, then remove the lid.

(ii) Remove the wiring clamp.

(iii) Pass the connecting wire to terminal block from behind of indoor unit.

(iv) Connect the connecting wire securely to the terminal block.

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.

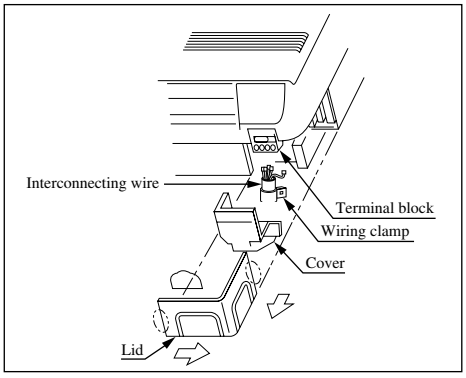
③ Affix the connection wire using the wiring clamp.

(v) Fix the connecting wire by wiring clamp.

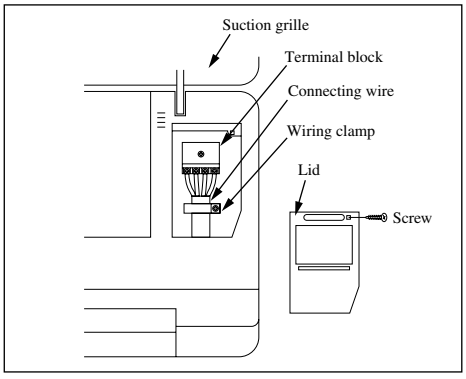
(vi) Attach the lid.

(vii) Close the suction grille.

Model SRK25ZB-S



Model SRK35ZB-S



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

Note (1) Connection wiring should not exceed 15 m. If this length is exceeded, communication errors are likely to occur between the outdoor and indoor units, which could stop the air conditioner.

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

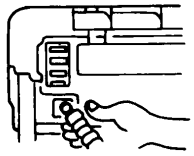
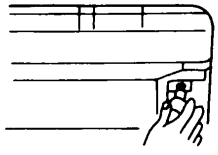
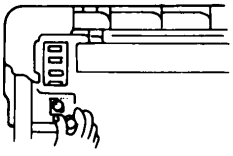
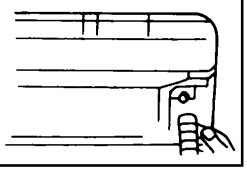
H05	RNR3G1.5(Example)	R	Stranded core
H	Harmonized cable type	3or5	Number of conductors
05	300/500 volts	G	One conductor of the cable is the earth conductor (yellow/green)
R	Natural and/or synth, rubber wire insulation		
N	Polychloroprene rubber conductors insulation	1.5	Section of copper wire (mm^2)

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

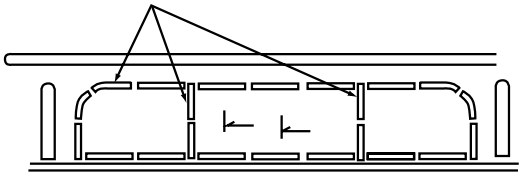
(c) Forming of pipe (Holding down the pipe at the root, change the pipe direction, extend it and adjust according to the circumstance.)

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

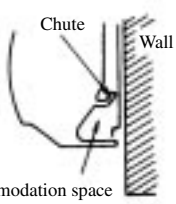
(Drain pipe relocation procedure)

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.

- When arranging the pipe through a hole opened at the center, open the knockout hole using nippers, etc. (25 model only)



Note (1) It is designed to collect moisture accumulated on the rear face in the drain pan. Be sure not to accommodate the power cable, etc. above the chute.

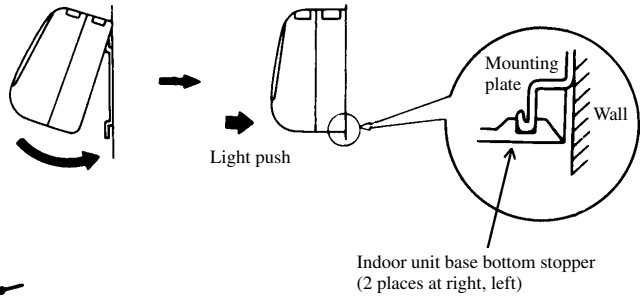


(4) Installation on indoor unit

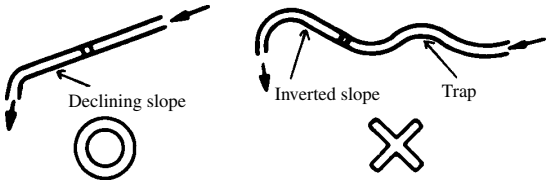
(a) Install the indoor unit on the mounting plate.

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.)



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



1.5.3 Installation of outdoor unit

(1) Installation of outdoor unit

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

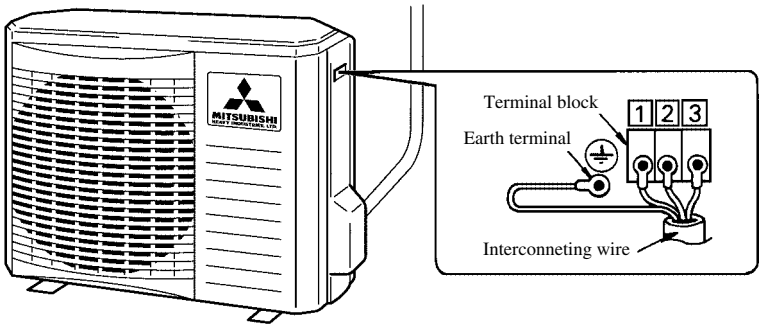
(b) Fix the leg sections of the unit on a firm base which will not play.
Attach cushion pads, etc. between the unit and the mounting fixtures not to transmit vibration to the building.

(c) 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.)

(d) 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.

(2) Connection of indoor and outdoor connecting wiring

(a) 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

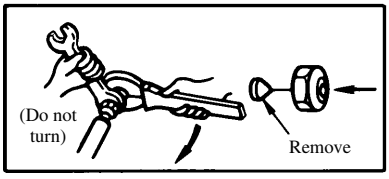
Notes (1) To prevent the mis-operation by noise, when the connecting wire too long for indoor and outdoor. Please hide the fixed wire in the pipe or use vinyl tape to set. Do not put wire into the unit.
(2) Please let the anchorized personal to decide by indoor wiring code whether connect the leakage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

1.5.4 Refrigerant piping

(1) Preparation

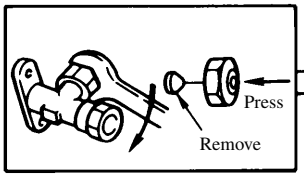
Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

Indoor unit side

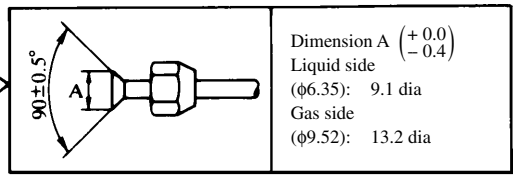


- Remove the flared nuts. (on both liquid and gas sides)

Outdoor unit side



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

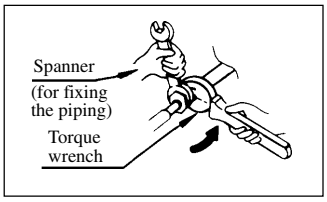


- Install the removed flared nuts to the pipes to be connected, then flare the pipes.

(2) Connection of refrigerant piping

Indoor unit side

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

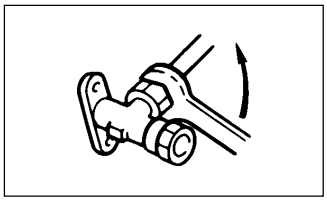


- Specified torquing value:

Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø9.52) : 33.0~42.0N·m (3.3~4.2kgf·m)

Outdoor unit side

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



- Specified torquing value:

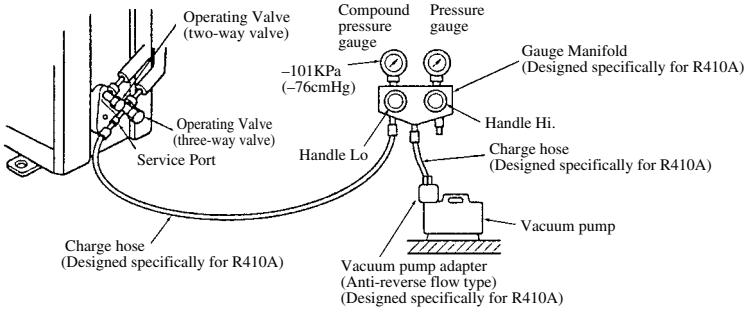
Liquid side (ø6.35) : 14.0~18.0N·m (1.4~1.8kgf·m)
Gas side (ø9.52) : 33.0~42.0N·m (3.3~4.2kgf·m)

- Use one more spanner to fix the valve.

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

(3) Air purge

(a) Tighten all flare nuts in the pipings both indoor and outside wall so as not to cause leak.
(b) Connect service valve, charge hose, manifold valve and vacuum pump as is illustrated below.
(c) 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).
(d) After completing vacuum operation, fully open service valve (Both gas and liquid sides) with hexagon headed wrench.
(e) Check for possible leakage of gas in the connection parts of both indoor and outdoor.



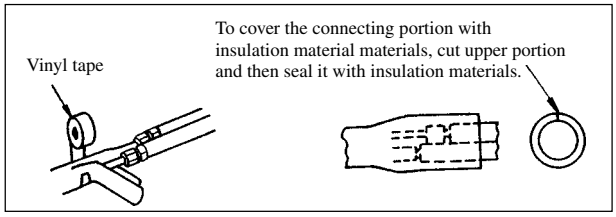
- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable.
Please use one designed specifically for R410A
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil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

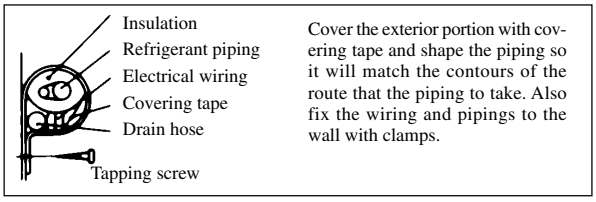
Additional refrigerant charge is not required at all.

(4) Insulation of connecting portion

(a) 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.



(b) Finishing and fixing
(i) Tie up the piping with wrapping tape, and shape it so that it conforms to which the pipe is attached.
(ii) Fix them with clamps as right figure.



1.5.5 Test run

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

(2) 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.

(3) Insert in electric plug into the electric outlet and make sure that it is not loose.
(a) 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.
(b) It is very important to be careful of above when plugging in the unit to an already furnished electrical outlet.

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

(5) Make sure that drain flows properly.

(6) Standard operation data

(220/230/240V)

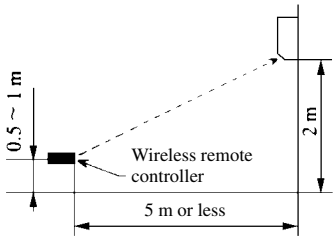
Item \ Model		SRK25ZB-S	SRK35ZB-S
High pressure MPa (kgf/cm²)	Cooling	–	–
	Heating	2.6~2.8 (26~28)	2.5~2.7 (25~27)
Low pressure MPa (kgf/cm²)	Cooling	0.7~0.9 (7~9)	0.6~0.8 (6~8)
	Heating	–	–
Temp. difference between suction air and discharge air (deg)	Cooling	14~16	14~16
	Heating	19~21	19~21
Running current (A)	Cooling	3.8/3.6/3.5	5.1/4.9/4.7
	Heating	4.5/4.3/4.1	5.8/5.5/5.3

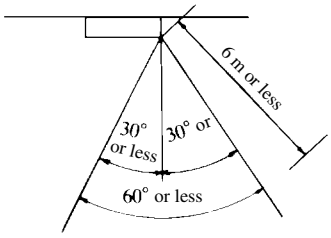
Note (1) The data are measured at following conditions
Ambient air temperature
Indoor side: Cooling ... 27˚C DB, 19˚C WB, Heating ... 20˚C DB
Outdoor side: Cooling ... 35˚C DB, 24˚C WB, Heating ... 7˚C DB, 6˚C WB

1.5.6 Precautions for wireless remote controller installation and operation

(1) Wireless remote controller covers the following distances:

(a) When operating facing the air conditioner:

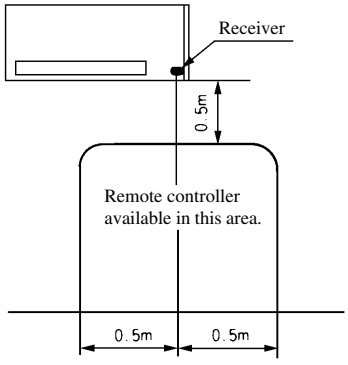




Notes (1) The remote controller is correctly facing the sensing element of the air conditioner when being manipulated.
(2) The typical coverage is indicated (in the left illustration). It may be more or less depending on the installation.
(3) The coverage may be less or even nil. If the sensing element 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.

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

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

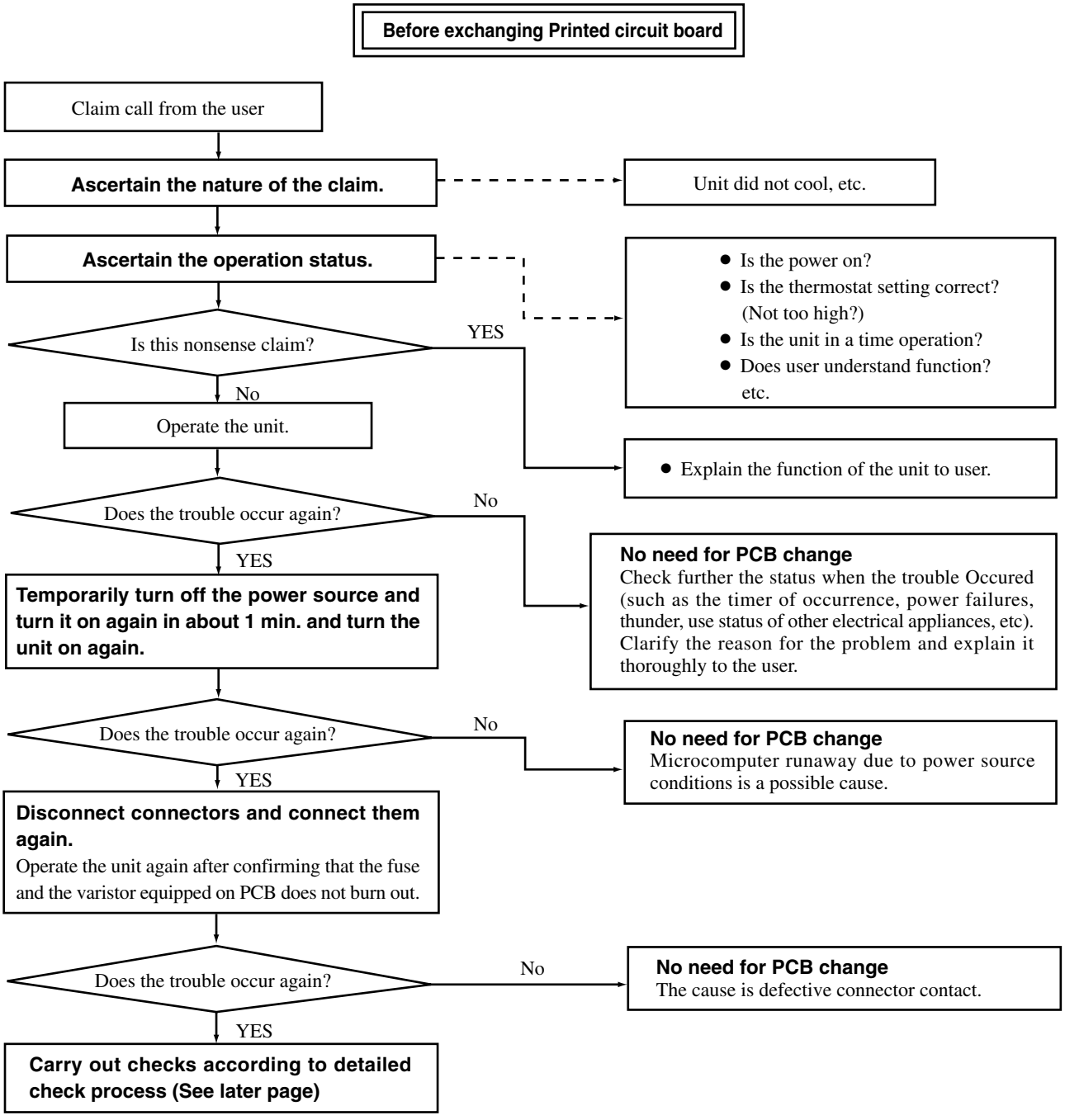


1.6 MAINTENANCE DATA

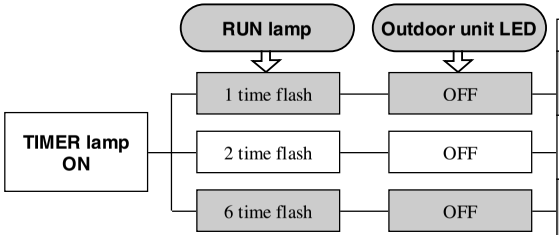
1.6.1 Trouble shooting

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

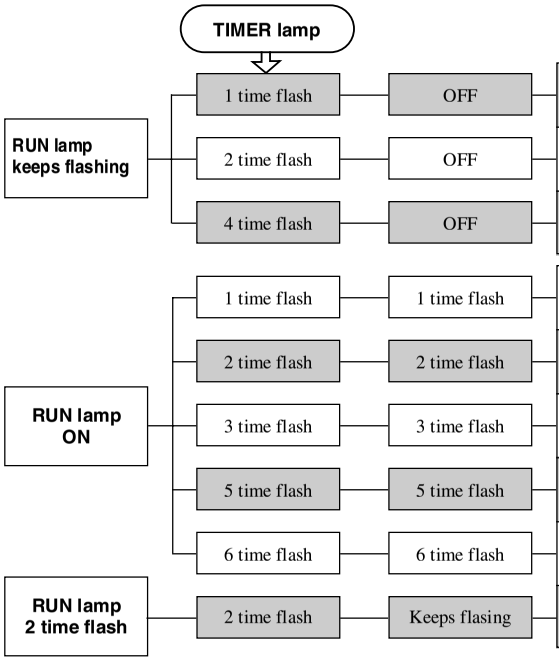
All the models described in this chapter are controlled by a microcomputer. When providing maintenance service to customers it is necessary to understand the function controlled by a micro computer thoroughly, so as not to mistakenly identify correct operations as mis-operations. It is also necessary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



(2) Self diagnosis display on indoor unit



Trouble	Cause	Conditions of flashing
Heat exchanger thermistor error	● Broken heat exchanger thermistor wire, connector poor connection	When heat exchanger sensor temperature of –20˚C or under continued for more than 3 minutes while operation is stopped. (This is not displayed during operation.)
Room temperature thermistor error	● Broken room temperature thermistor wire, connector poor connection	When room temperature sensor temperature of –20˚C or under continued for more than 3 minutes while operation is stopped. (This is not displayed during operation.)
Indoor fan motor error	● Defective fan motor, connector poor connection	When air conditioner is operating and indoor fan motor is turned ON, indoor fan motor speed of 300 rpm or under continued for more than 30 seconds. (Air conditioner stops.)

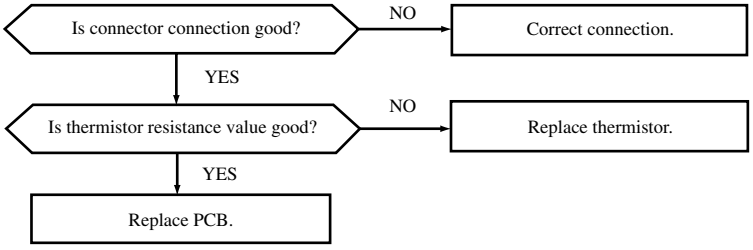


External temperature thermistor error	● Broken outdoor thermistor wire, connector poor connection	When outdoor temperature thermistor temperature of –40˚C or under continued for more than 3 seconds while operation is stopped. (This is not displayed during operation.)
Outdoor unit heat exchanger thermistor error	● Broken heat exchanger thermistor wire, connector poor connection	When heat exchanger entrance thermistor temperature of –50˚C or under continued for more than 3 seconds while operation is stopped. (This is not displayed during operation.)
Discharge pipe thermistor error	● Broken discharge pipe thermistor wire, connector poor contact	When outdoor revolution speed of 0 rps continued for 3 minutes and then broken wire signal has been transmitted by discharge pipe thermistor data for more than 10 seconds. (Compressor stops.)
Current cut	● Compressor lock, open phase on compressor output terminals, shortcircuit on power transistor.	When converter output current which exceeds setting value is detected. (Compressor stops.)
Outdoor unit error	● Broken power transistor, broken compressor wire ● Discharge pipe thermistor poor contact.	When input current value which is lower than setting value continued for more than 3 minutes. (Compressor stops.)
Current safe stop	● Overload operation, overcharge, compressor lock	When inverter revolution speed is lower than setting value, when current safe function is actuated. (Compressor stops.)
Compressor overheat	● Gas shortage, defective discharge pipe (Comp. dome) thermistor, closed service valve	When discharge pipe (Comp. dome) thermistor value exceeds setting value. (Compressor stops.)
Serial signal transmission error	● Power supply problem ● Broken signal wire, defective indoor/outdoor unit PCB	Indoor unit controller ↔ Outdoor unit controller signals have not been transmitted for more than 10 seconds. (Compressor stops.)
Rotor lock	● Compressor defective ● Outdoor unit circuit board defective	When the position of the magnetic pole of the compressor motor cannot be properly detected.

(3) Inspection procedures corresponding to detail of trouble

Thermistor error

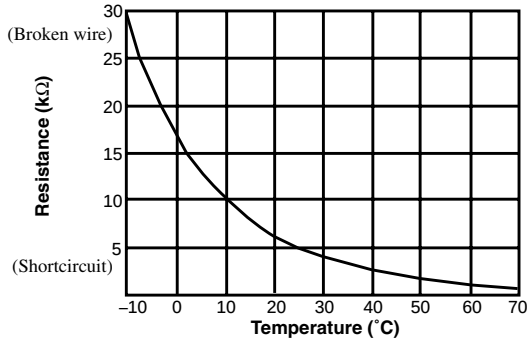
[Broken thermistor wire, connector poor connection]



◆ **Discharge pipe thermistor temperature characteristics**

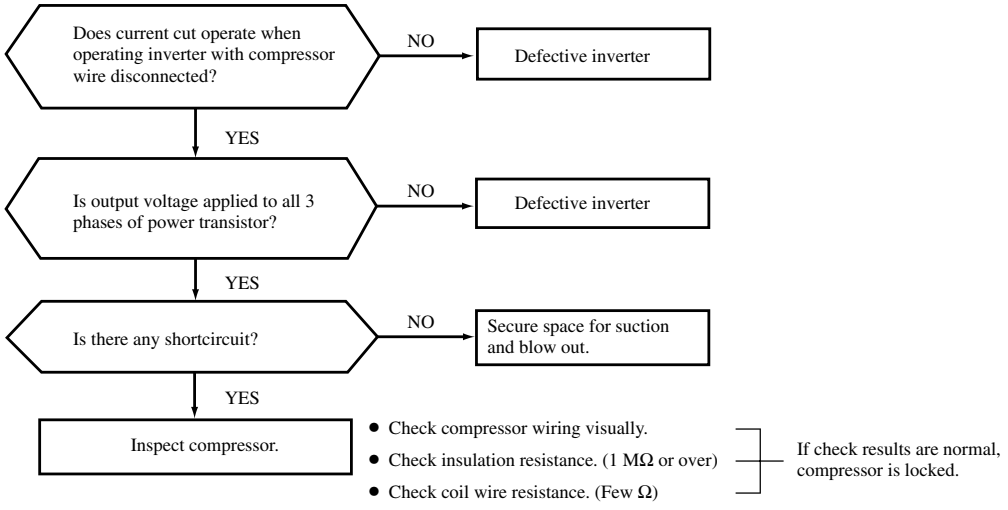
Temperature (˚C)	Resistance (kΩ)	Temperature (˚C)	Resistance (kΩ)
0	164	70	8.7
5	127	75	7.3
10	99	80	6.2
15	78	85	5.3
20	62	90	4.5
25	50	95	3.9
30	40	100	3.3
35	32	105	2.9
40	26	110	2.5
45	21	115	2.2
50	17	120	1.9
55	14	125	1.6
60	12	130	1.4
65	10	135	1.3

◆ **Thermistor temperature characteristics (Room temperature, indoor unit heat exchanger temperature, outdoor unit heat exchanger temperature, external temperature)**



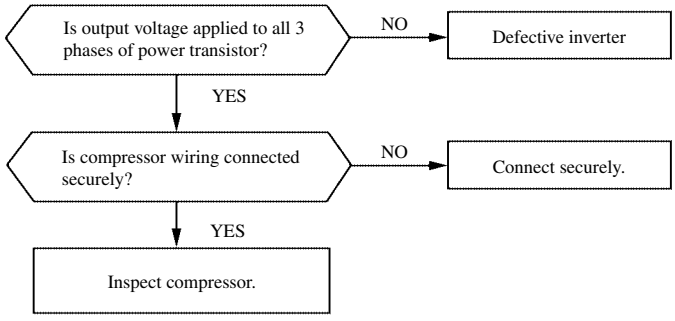
Current cut

[Open phase on compressor output terminal, compressor lock]



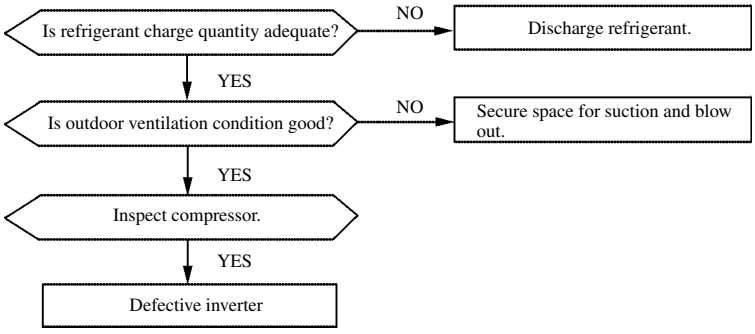
Outdoor unit error

[Broken power transistor broken compressor wire]



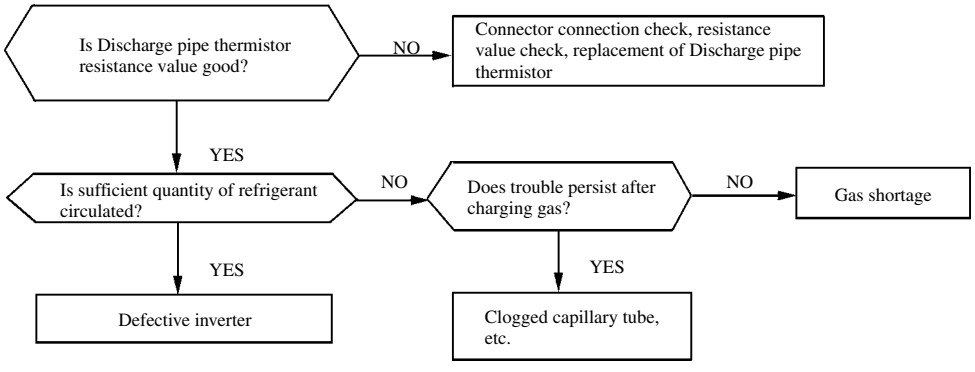
Current safe stop

[Overload operation, compressor lock, overcharge]



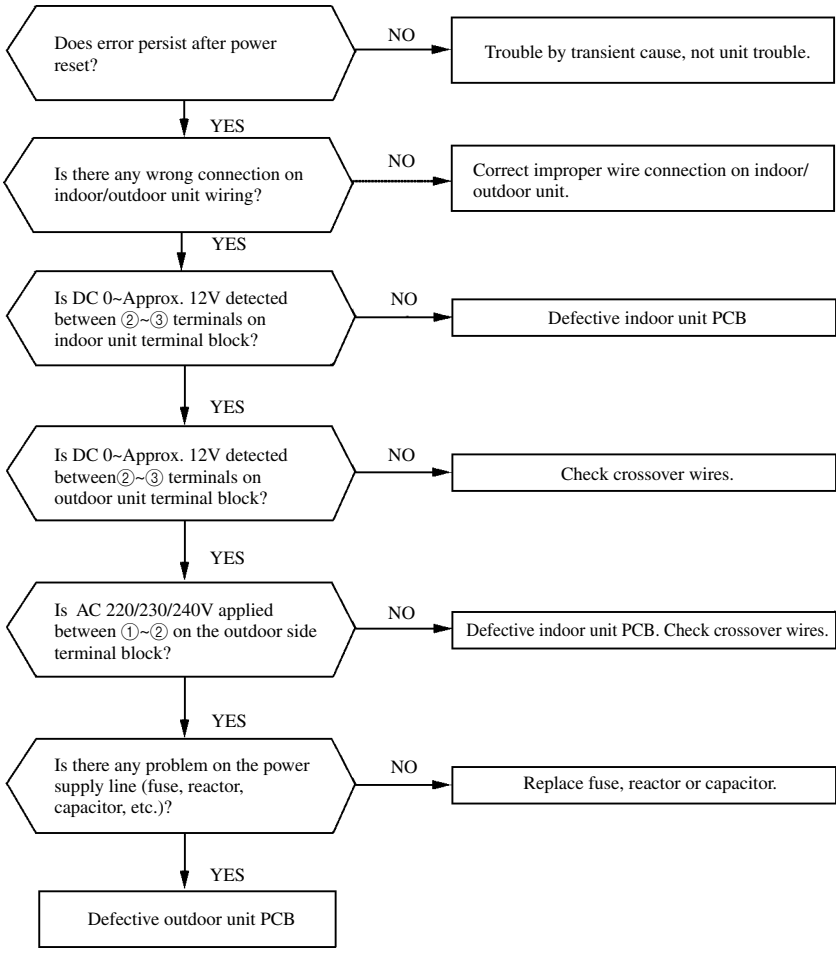
Compressor overheat

[Gas shortage, defective discharge pipe thermistor]



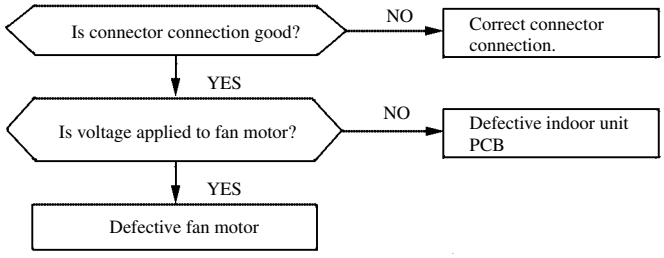
Serial signal transmission error

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



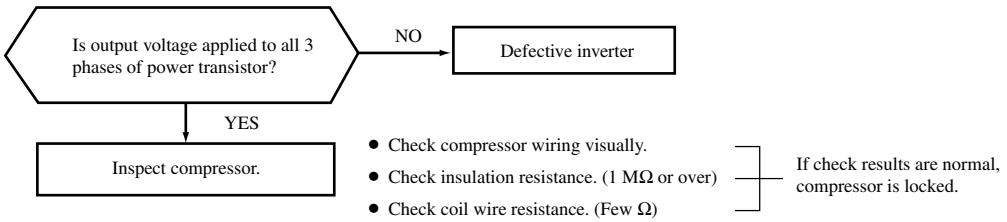
Indoor fan motor error

[Defective fan motor, defective PCB]



Rotor lock

[Compressor defect, outdoor unit circuit defect]



(4) Phenomenon observed after shortcircuit, wire breakage on thermistor.

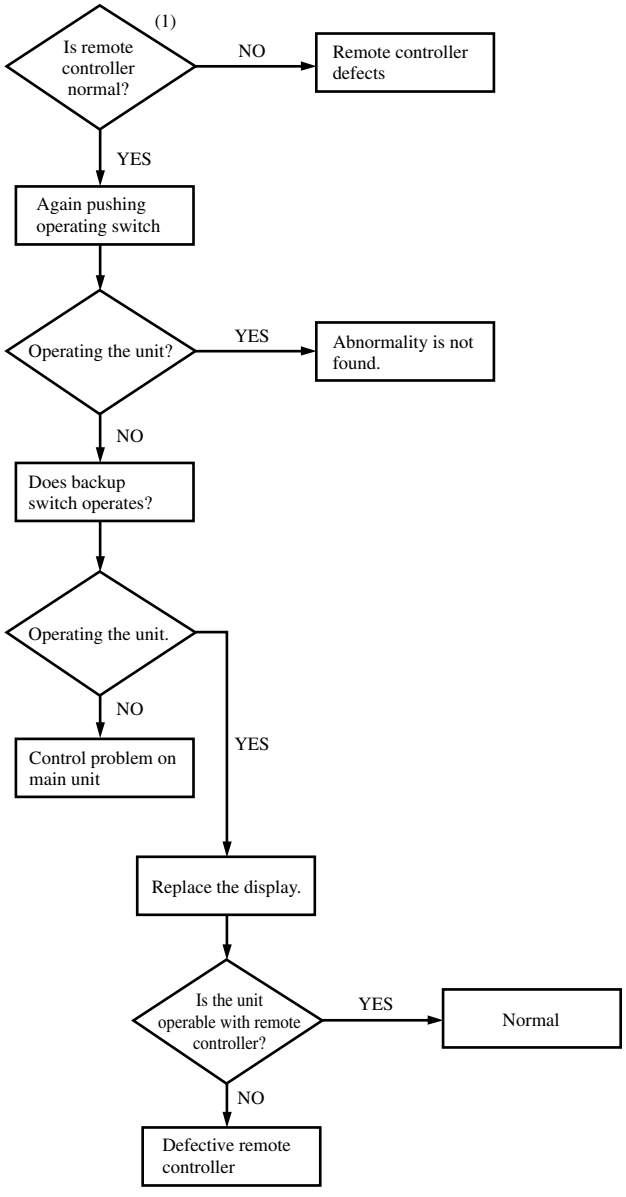
(a) Indoor unit

Thermistor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Room temperature thermistor	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 thermistor	Cooling	System can be operated normally.	Continuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode (Inverter stop command)	Hot keep (Indoor fan stop)

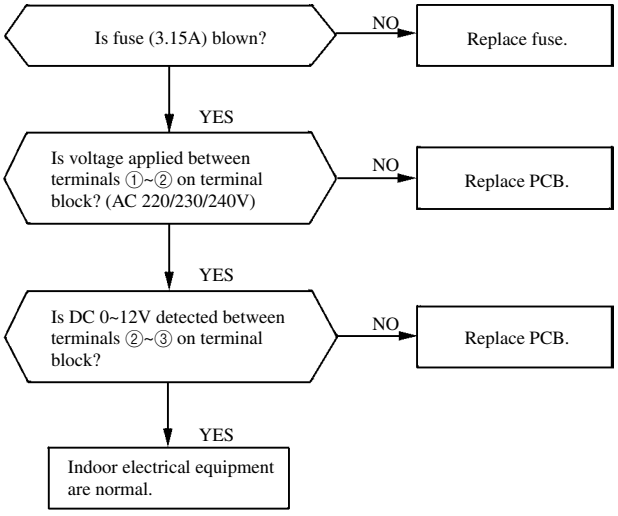
(b) Outdoor unit

Thermistor	Operation mode	Phenomenon	
		Shortcircuit	Broken wire
Heat exchanger pipe thermistor	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.
External temperature thermistor	Cooling	System can be operated normally.	
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at intervals of approx. 1 hour.
Discharge pipe thermistor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop (There is no inverter output

(5) How to make sure of remote controller

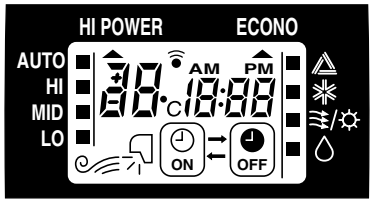


(6) Inspection procedures of indoor electrical equipment



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)

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.



◆ Check point of outdoor unit

⚠CAUTION – HIGH VOLTAGE

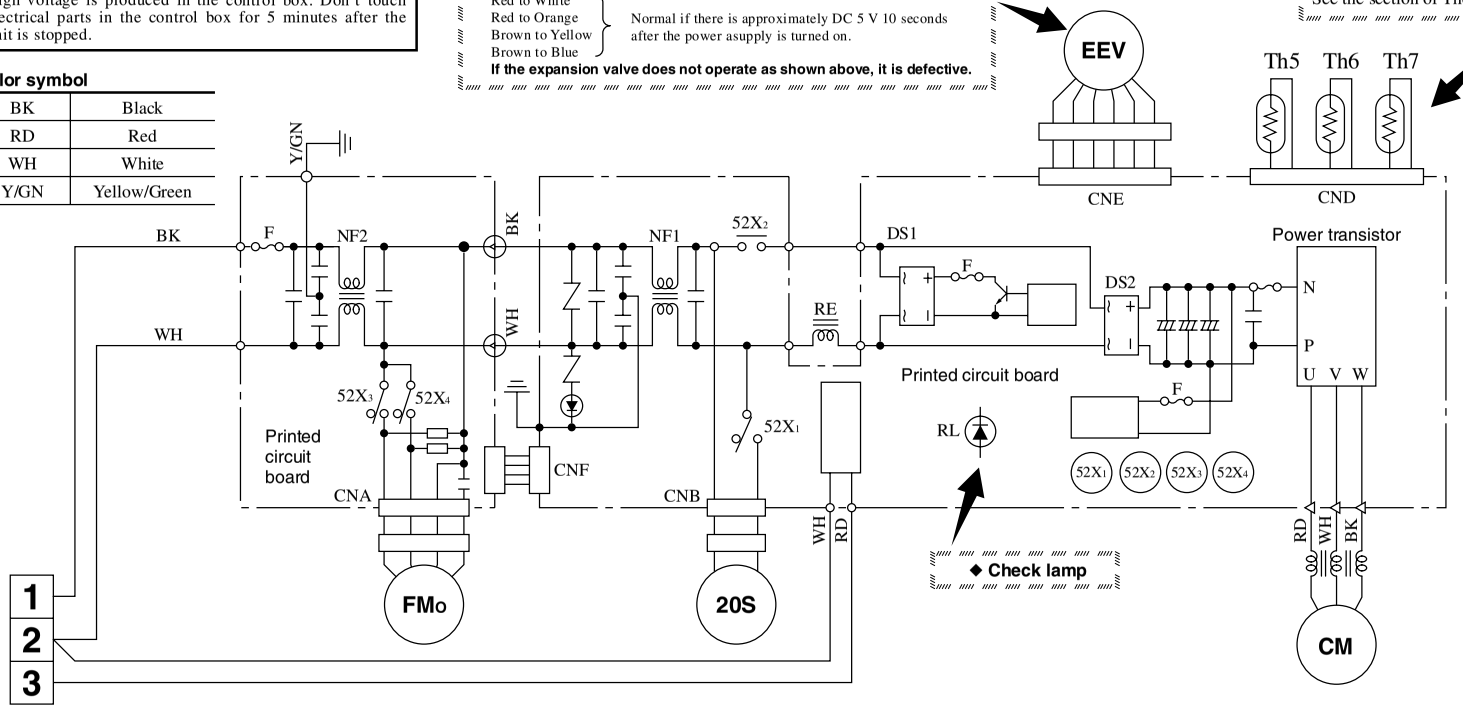
High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

Color symbol

BK	Black
RD	Red
WH	White
Y/GN	Yellow/Green

◆ Inspection of electronic expansion valve
To test if there is voltage.
(Voltage is only applied to the electronic expansion valve when the valve angle is being changed.)
Red to White
Red to Orange
Brown to Yellow
Brown to Blue
} Normal if there is approximately DC 5 V 10 seconds after the power asupply is turned on.
If the expansion valve does not operate as shown above, it is defective.

◆ Inspection of resistance value of discharge pipe thermistor
Remove the connector and check the resistance value.
See the section of Thermistor characteristics on page 32.



◆ Check lamp

◆ Inspection of input to PCB
- Check the voltage between terminals ①~② on the terminal block. (It is normal if AC 220/230/240V is detected.)

◆ Inspection of serial signal
Check the voltage between terminals ②~③on the terminal block.(It is normal if the needle swing in the range of DC 0~Approx.12V)

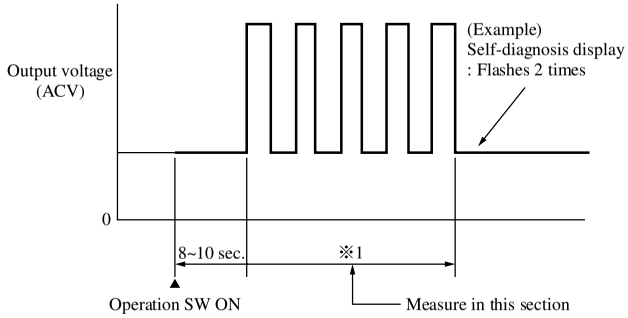
◆ Power transistor inspection procedure

[Use a tester with a needle indicator for the inspection. (Do not use a digital tester. Check in the AC 300 volt range.)]

(1) If there is a self-diagnosis display, inspect the compressor system (burns, wiring mistakes, etc.) If no problems are found, ckeck the output of the power transistor.

(2) Output inspection procedure
Disconnect the terminals for the compresseor.
If an output such as the one shown in the figure on the right can be measured, the power transistor and the circuit board for the outdoor unit are normal.

※ For about 50 seconds. After being switched on, the will be a delay of approximately one minute depending on the conditions.



1.6.2 Servicing

(1) 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.

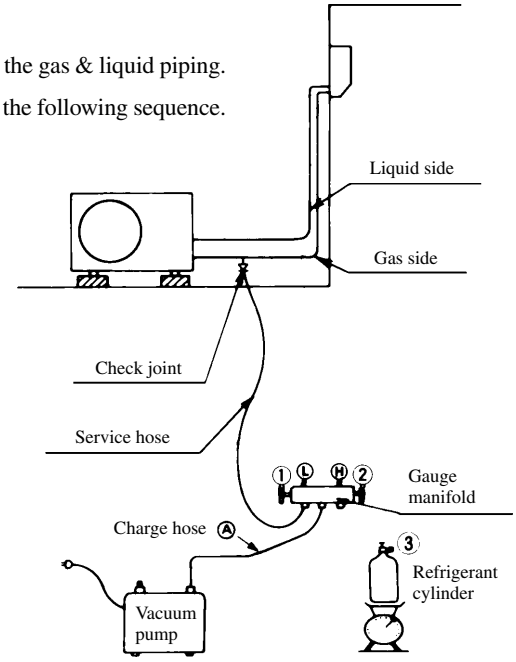
- Evacuation procedure

(a) 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.

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

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

Start the vacuum pump.
↓
Compound pressure gauge indicates –101 KPa (–76 cmHg)
↓
Operate the vacuum pump for more than 15 minutes after –101 KPa (–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.

(2) Refrigerant charge

(a) 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.

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

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

(d) 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.

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

(f) 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 gas to the specified weight.

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

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

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

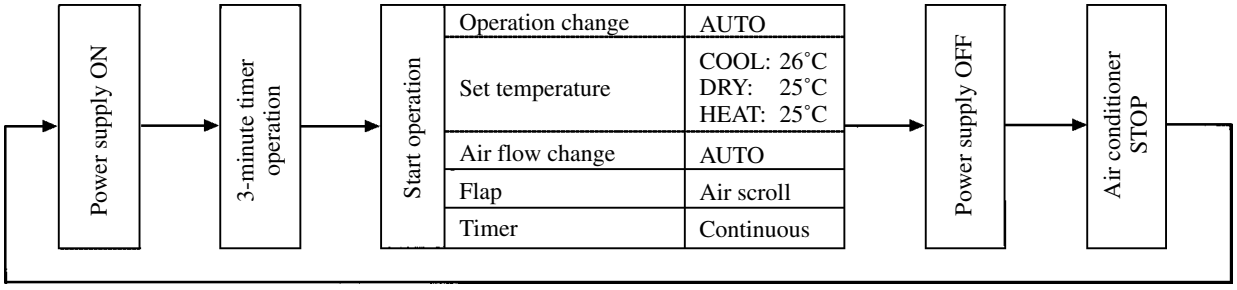
(j) Start the air conditioner and make sure of its operating condition.....high side and low side pressures and temperature difference between suction air and outlet air.

1.6.3 Power supply remote operation

When the remote part on indoor unit PCB is modified, the air conditioner is turned ON-OFF by power supply ON-OFF operation without using remote control switch.

After the power supply remote operation, the operation contents can be modified by the remote controller.

(1) Operation contents



(2) Modification method

Cut the jumper wire for the “REMOTE” section on the printed circuit board.

Carefully position the jumper wire so that it does not come in contact with other parts.