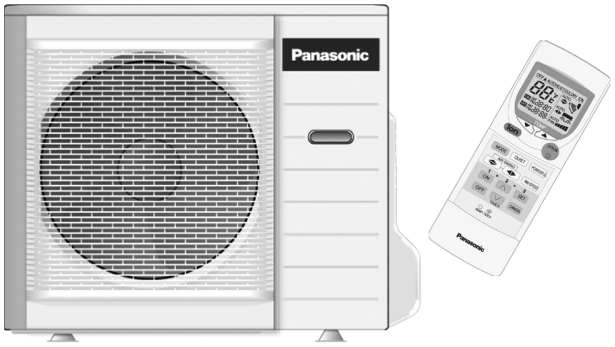
Order No. MAC0501007C3

Service Manual

Air Conditioner

CS-A18DKD CU-A18DKD
CS-A24DKD CU-A24DKD



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

Panasonic®

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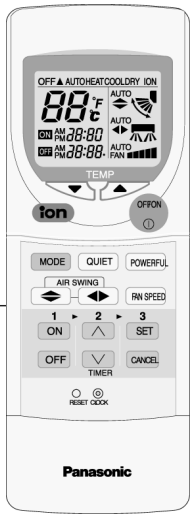
1 Features

- High efficiency.
- Compact design.
- Wider range of horizontal discharge air.
- Air Filter with function to reduce dust and smoke.
- Automatic air swing and manual adjusted by Remote Control for horizontal and vertical airflow.
- Long installation piping up to 25 meter.
- Supersonic Air Purifying System with SUPER alleru-buster.
  - Inactive various harmful airbone elements including allergens, viruses and bacteria.
  - Generated supersonic waves enhance the ability to collect dust and dirt in the air.

- **Quality Improvement**
  - Random auto restart after power failure for safety restart operation.
  - Gas leakage detection.
  - Prevent Compressor reverse cycle.
  - Inner protector to protect Compressor.
  - Noise prevention during soft dry operation.
  - Blue coated Condenser for high resistance to corrosion.
  - Anti-dew formation control (Cooling & Soft Dry).
  - Overload Protection Control (Heating).
    - Outdoor Fan Control.
    - Compressor High Pressure Control.
- **Operation Improvement**
  - Quiet mode to provide quiet operation.
  - Powerful mode to reach the desired room temperature quickly.
  - Ionizer control for generating negative ion in discharge air.
  - 24-hour timer setting.
- **Serviceability Improvement**
  - Removable and washable Front Panel.

2 Functions

2.1. Remote Control



OFF / ON ⏻ — **Operation Start/Stop**

MODE — **Operation Mode Selection**

- AUTO Automatic Operation
- HEAT Heating Operation Mode
- COOL Cooling Operation
- DRY Soft Dry Operation

FAN SPEED — **Indoor Fan Speed Selection**

- FAN ■ Low Fan Speed
- FAN ■■■ Medium Fan Speed
- FAN ■■■■■ High Fan Speed
- AUTO FAN Automatic Fan Speed

AIR SWING — **Airflow Direction Control**

- ▲▼ Vertical Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).
- ◀▶ Horizontal Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).

POWERFUL — **Powerful Operation Start/Stop**

QUIET — **Quiet Operation Start/Stop**

TEMP. — **Room Temperature Setting**

Cooling, Soft Dry Operation.
- Increase or decrease set temperature (16°C to 30°C)

Automatic Operation
- Hi Operation with 2°C higher than standard temperature.
- Operation with standard temperature.
- Lo Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER — **Timer Operation Selection**

- 24-hour, OFF / ON Real Timer Setting.

▲ ▼ — **Time / Timer Setting**

- Hours and minutes setting.

SET
CANCEL — **Timer Operation Set / Cancel**

- ON Timer and OFF Timer setting and cancellation.

CLOCK — **Clock Setting**

- Current time setting.

ion — **Ionizer Operation Start/Stop**

2.2. Indoor Unit

AUTO OFF / ON

Automatic Operation Button

- Press for < 5 second to operate Automatic operation mode.Use when the remote control cannot be used.
- Press for ≥ 5 second to operate Cooling operation mode and compressor force to on ("beep" sound will be heard). Used when test running or servicing.
- Within 20 second of Cooling operation, press continuously for ≥ 5 second to enter various setting mode. "beep, beep" sound will be heard. (Used to toggle remote control signal receiving sound or select remote control transmission code.)

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation judging.
- TIMER (Orange) ..... Lights up in Timer Setting.
- QUIET (Orange) ..... Lights up in Quiet Operation.
- POWERFUL (Orange) .. Lights up in Powerful Operation.
- ION (Green) ..... Lights up in Ionizer Operation.
- SUPER ALLERU-BUSTER (Blue) ... Lights up in operation.

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Operation.

Powerful Operation

- Reaches the desired room temperature quickly.

Timer Operation

- Delay OFF/ON Timer control.

Quiet Operation

- To provide quiet operation.

Ionizer Operation

- Generate and discharge negative ion.

Random Auto Restart Control

- Unit will be restarted, when resume from power failure, at previous setting.

Anti-Freezing Control

- To prevent indoor heat exchanger from freezing.

Indoor Fan Speed Control

- Manual control fan speed (High, Medium and Low).
- Automatic fan speed

Airflow Direction Control

- Vertical airflow control can be adjusted automatically or manually by remote control.
- Horizontal airflow control can be adjusted automatically or manually by remote control.

Time Delay Safety Control

- Restarting is inhibited for approximately 3 minutes.

7 Minutes Time Save Control

- To reduce the built up humidity inside the room.

Anti-Dew Formation Control

- Anti-Dew Formation Control for indoor unit discharge area.

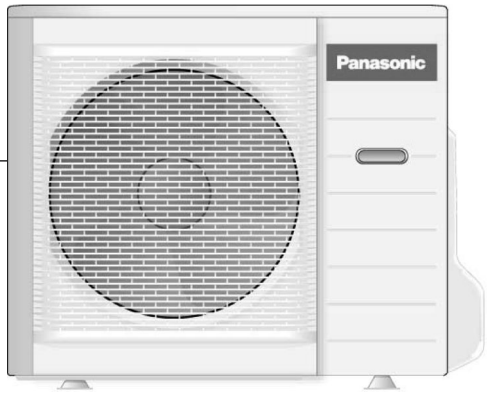
Hot-Start Control

- To prevent cold air being discharge during Heating operation starts.

Anti Cold Draft Control

- To prevent the cold draft during Heating mode operation in thermo off condition.

2.3. Outdoor Unit



Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is an instantaneous power failure.

Overload Protector

- Inner protector.

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- 6-pole induction motor (2 speed).
- For Cooling or Soft Dry operation
  Hi-speed ..... When outdoor temperature reaches to 31°C.
  Lo-speed ..... When outdoor temperature reaches to 29°C.
- For Heating operation
  Hi-speed ..... When outdoor temperature reaches to 13.5°C.
  Lo-speed ..... When outdoor temperature reaches to 15.5°C.
- For Over-heating Protection, the Fan is switched ON or OFF depending on the piping temperature and the outdoor temperature.

Deice Control

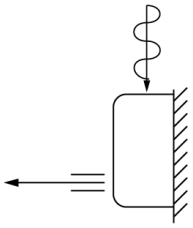
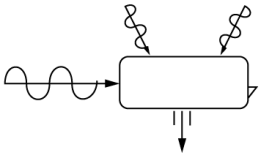
- To prevent frosting at outdoor heat exchanger during Heating Operation.

4-Way Valve Control

- When the unit is switched to “OFF” during Heating Operation, 4-way valve stays at Heating position for 5 minutes.

3 Product Specifications

3.1. CS-A18DKD CU-A18DKD

		Unit	CS-A18DKD	CU-A18DKD
Power Source (Phase, Voltage, Cycle)		Ø, V, Hz	Single, 220 - 230, 50	
Cooling Capacity		kW (BTU/h)	5.30 (18,100) - 5.30 (18,100)	
Heating Capacity		kW (BTU/h)	5.65 (19,300) - 5.70 (19,400)	
Moisture Removal		l/h (Pint/h)	2.9 (6.1)	
Airflow Method		OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Volume	Lo	m^3/min (cfm)	Cooling; 13.1 (460) - 13.1 (460) Heating; 14.2 (500) - 14.2 (500)	28.6 (1,010) - 31.1 (1,100)
	Me	m^3/min (cfm)	Cooling; 14.5 (510) - 14.5 (510) Heating; 14.7 (520) - 14.7 (520)	—
	Hi	m^3/min (cfm)	Cooling; 15.3 (540) - 15.3 (540) Heating; 16.0 (560) - 16.0 (560)	50.7 (1,790) - 52.7 (1,860)
	SHi	m^3/min (cfm)	Cooling; 16.0 (560) - 16.0 (560)	—
Noise Level		dB (A)	Cooling; High 43 - 43, Low 38 -38 Heating; High 42 - 42, Low 38 -38	Cooling; High 53 - 54 Heating; High 54 - 55
Electrical Data	Input Power	kW	Cooling; 1.72 - 1.76 Heating; 1.65 - 1.71	
	Running Current	A	Cooling; 8.0 - 7.8 Heating; 7.7 - 7.6	
	EER	W/W (BTU/hW)	Cooling; 3.08 - 3.01 (10.52 - 10.28)	
	COP	W/W (BTU/hW)	Heating; 3.42 - 3.33 (11.70 - 11.35)	
	Starting Current	A	44.5	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way valve 1/2” L ; 3-way valve 1/4”
Pipe Size (Flare piping)		inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas side) 1/2” L ; (liquid side) 1/4”
Drain Hose	Inner diameter	mm	12	—
	Length	mm	650	—
Power Cord	Length	m	1.9	—
	Number of core-wire		3 (1.5 mm^2)	—
Dimensions	Height	inch (mm)	10 - 13/16 (275)	29 - 17/32 (750)
	Width	inch (mm)	39 - 9/32 (998)	34 - 7/16 (875)
	Depth	inch (mm)	9 - 1/16 (230)	13 - 19/32 (345)
Net Weight		lb (kg)	24 (11.0)	132 (60.0)
Compressor	Description		—	Rotary (1 cylinder) rolling piston type
	Motor Type		—	Induction (2-poles)
	Rated Output	kW	—	1.5

			Unit	CS-A18DKD	CU-A18DKD
Air Circulation	Description			Cross-flow Fan	Propeller Fan
	Material			ASHT-18	PP
	Motor	Type		Transistor (8-poles)	Induction (6-poles)
	Input		W	50.0 - 50.0	150.3 - 150.3
	Rated	Output	W	30	80
	Fan Speed	Low	rpm	Cooling; 1,160 - 1,160 Heating; 1,240 - 1,240	460 - 490
		Medium	rpm	Cooling; 1,290 - 1,290 Heating; 1,290 - 1,290	—
		High	rpm	Cooling; 1,360 - 1,360 Heating; 1,400 - 1,400	815 - 830
		SuperHigh	rpm	Cooling; 1,400 - 1,400	—
Heat Exchanger	Description			Evaporator	Condenser
	Tube material			Copper	Copper
	Fin material			Aluminium (Pre Coat)	Aluminium
	Fin Type			Slit Fin	Corrugated Fin
	Row / Stage			(Plate fin configuration, forced draft)	
				2 × 15	2 × 28
	FPI			21	16
	Size (W × H × L)		mm	810 × 315 × 25.4	827.7 × 711.2 × 44 862.2
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(cm^3)	—	SUNISO 4GDID or ATMOS M60 or ATMOS 56M
Refrigerant (R-22)			g (oz)	—	1,710 (60.4)
Thermostat				—	—
Protection Device				—	Inner Protector
Capillary Tube	Length		mm	—	Cooling; 970, Heating; 820
	Flow Rate		l/min	—	Cooling; 11.0, Heating; 27.0
	Inner Diameter		mm	—	Cooling; 1.6, Heating; 2.2
Air Filter	Material Style			P.P. Honeycomb	—
Capacity Control				Capillary Tube	
Compressor Capacitor			μF, VAC	—	45 μF, 400/440VAC
Fan Motor Capacitor			μF, VAC	—	3.5 μF, 440VAC

Note:

- Specifications are subject to change without notice for further improvement.

3.2. CS-A24DKD CU-A24DKD

			Unit	CS-A24DKD	CU-A24DKD
Power Source (Phase, Voltage, Cycle)			Ø, V, Hz	Single, 220 - 230, 50	
Cooling Capacity			kW (BTU/h)	7.03 - 7.03 (24,000 - 24,000)	
Heating Capacity			kW (BTU/h)	7.80 - 7.80 (26,600 - 26,600)	
Moisture Removal			l/h (Pint/h)	4.0 (8.5)	
Airflow Method			OUTLET / INTAKE	SIDE VIEW	TOP VIEW
Air Volume	Lo		m^3/min (cfm)	Cooling; 13.7 (480) - 13.7 (480) Heating; 14.7 (520) - 14.7 (520)	28.1 (990) - 29.9 (1,055)
	Me		m^3/min (cfm)	Cooling; 15.8 (560) - 15.8 (560) Heating; 15.8 (560) - 15.8 (560)	—
	Hi		m^3/min (cfm)	Cooling; 16.8 (590) - 16.8 (590) Heating; 17.6 (620) - 17.6 (620)	49.7 (1,750) - 50.7 (1,790)
	SHi		m^3/min (cfm)	Cooling; 17.6 (620) - 17.6 (620)	—
Noise Level			dB (A)	Cooling; High 47 - 47, Low 41 - 41 Heating; High 46 - 46, Low 41 - 41	Cooling; High 53 - 54 Heating; High 54 - 55
Electrical Data	Input Power		kW	Cooling; 2.54 - 2.58 Heating; 2.53 - 2.56	
	Running Current		A	Cooling; 12.3 - 12.2 Heating; 12.2 - 12.1	
	EER		W/W (BTU/hW)	Cooling; 2.77 - 2.72 (9.45 - 9.30)	
	COP		W/W (BTU/hW)	Heating; 3.08 - 3.05 (10.51 - 10.39)	
	Starting Current		A	65.0	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 5/8” L ; Half Union 1/4”	G ; 3-way valve 5/8” L ; 3-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G ; (gas side) 5/8” L ; (liquid side) 1/4”	G ; (gas side) 5/8” L ; (liquid side) 1/4”
Drain Hose	Inner diameter		mm	12	—
	Length		mm	650	—
Power Cord	Length		m	1.9	—
	Number of core-wire			3 (2.5 mm^2)	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)	29 - 17/32 (750)
	Width		inch (mm)	39 - 9/32 (998)	34 - 7/16 (875)
	Depth		inch (mm)	9-1/16 (230)	13 - 19/32 (345)
Net Weight			lb (kg)	26 (12.0)	139 (63.0)
Compressor	Description			—	Rotary (1 cylinder) rolling piston type
	Motor	Type		—	Induction (2-poles)
	Rated	Output	kW	—	2.0
Air Circulation	Description			Cross-flow Fan	Propeller Fan
	Material			ASHT-18	PP
	Motor	Type		Transistor (8-poles)	Induction (6-poles)
	Rated	Output	W	30	80
	Fan Speed	Low	rpm	Cooling; 1,280 - 1,280 Heating; 1,380 - 1,380	460 - 490
		Medium	rpm	Cooling; 1,480 - 1,480 Heating; 1,480 - 1,480	—
		High	rpm	Cooling; 1,570 - 1,570 Heating; 1,650 - 1,650	815 - 830
		SuperHigh	rpm	Cooling; 1,650 - 1,650	—

		Unit	CS-A24DKD	CU-A24DKD
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium (Pre Coat)	Aluminium
	Fin Type		Slit Fin	Corrugated Fin
	Row / Stage		(Plate fin configuration, forced draft)	
			2 × 15	2 × 28
	FPI		21	18
	Size (W × H × L)	mm	810 × 315 × 25.4	827.7 × 711.2 × 44.0 862.2
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(cm^3)	—	SUNISO 4GDID or ATMOS M60 or ATMOS 56M
Refrigerant (R-22)		g (oz)	—	2,050 (72.4)
Thermostat			—	—
Protection Device			—	Inner Protector
Capillary Tube	Length	mm	—	Cooling; 730, Heating; 340
	Flow Rate	l/min	—	Cooling; 12.5, Heating; 21.0
	Inner Diameter	mm	—	Cooling; 1.6, Heating; 2.0
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	—	45 μF, 400/440VAC
Fan Motor Capacitor		μF, VAC	—	3.5 μF, 440VAC

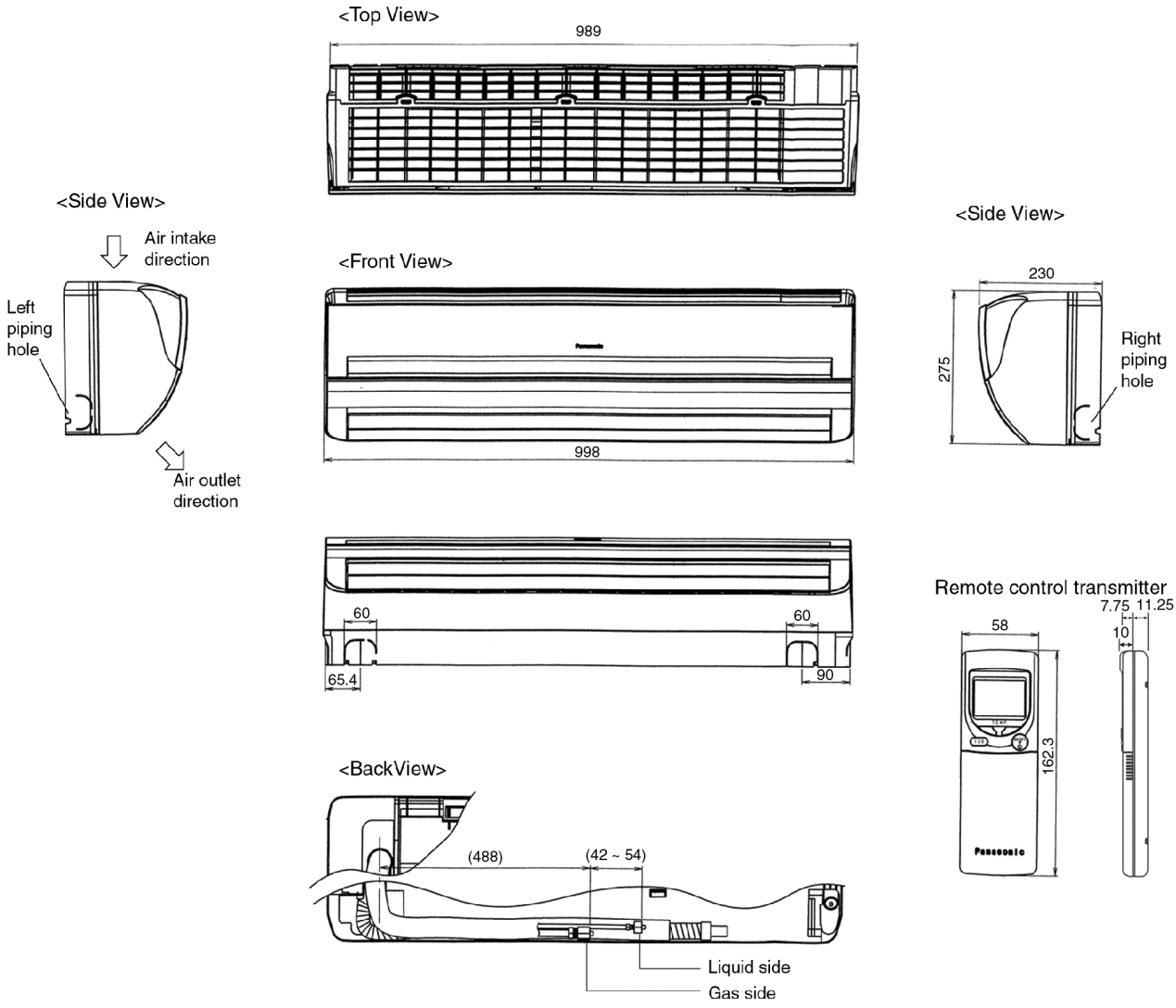
Note:

- Specifications are subject to change without notice for further improvement.

4 Dimensions

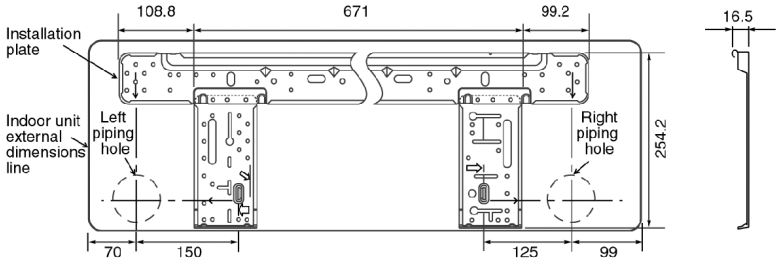
4.1. Indoor Unit & Remote Control

4.1.1. CS-A18DKD CS-A24DKD



Unit : mm

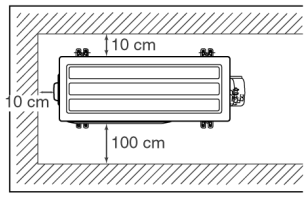
Relative position between the indoor unit and the installation plate <Front View>



4.2. Outdoor Unit

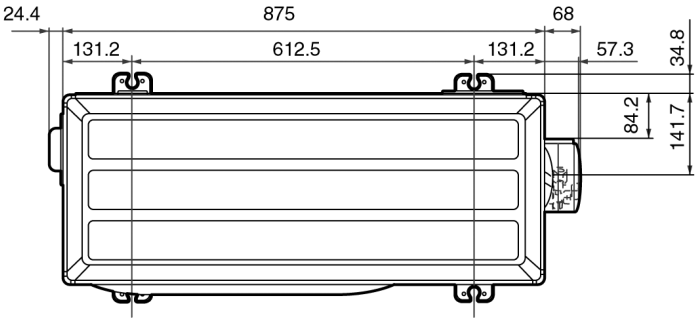
4.2.1. CU-A18DKD CU-A24DKD

Space necessary for installation

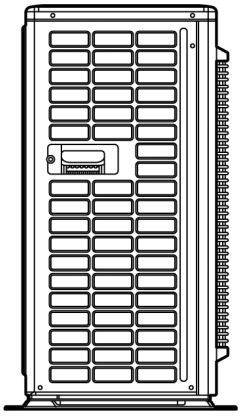


Anchor Bolt Pitch
383 x 612.5

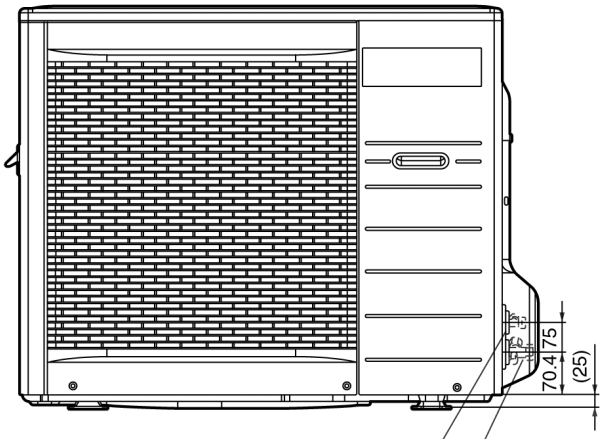
<Top View>



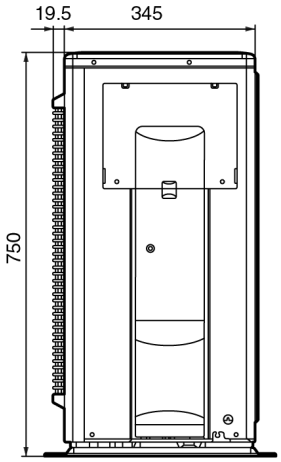
<Side View>



<Front View>



<Side View>



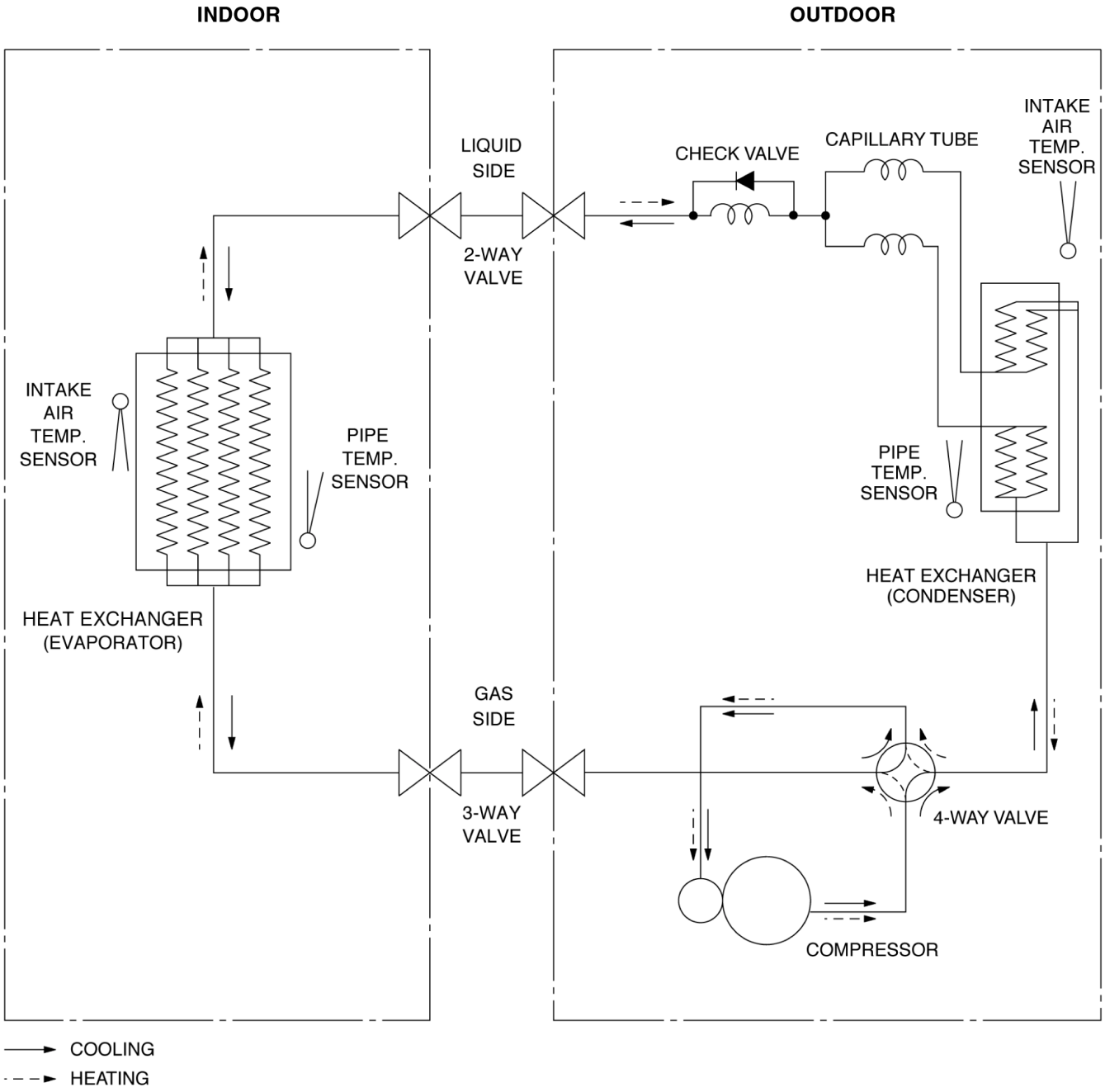
3-way valve at Gas side
(Low Pressure)

2-way valve at Liquid side
(High Pressure)

Unit: mm

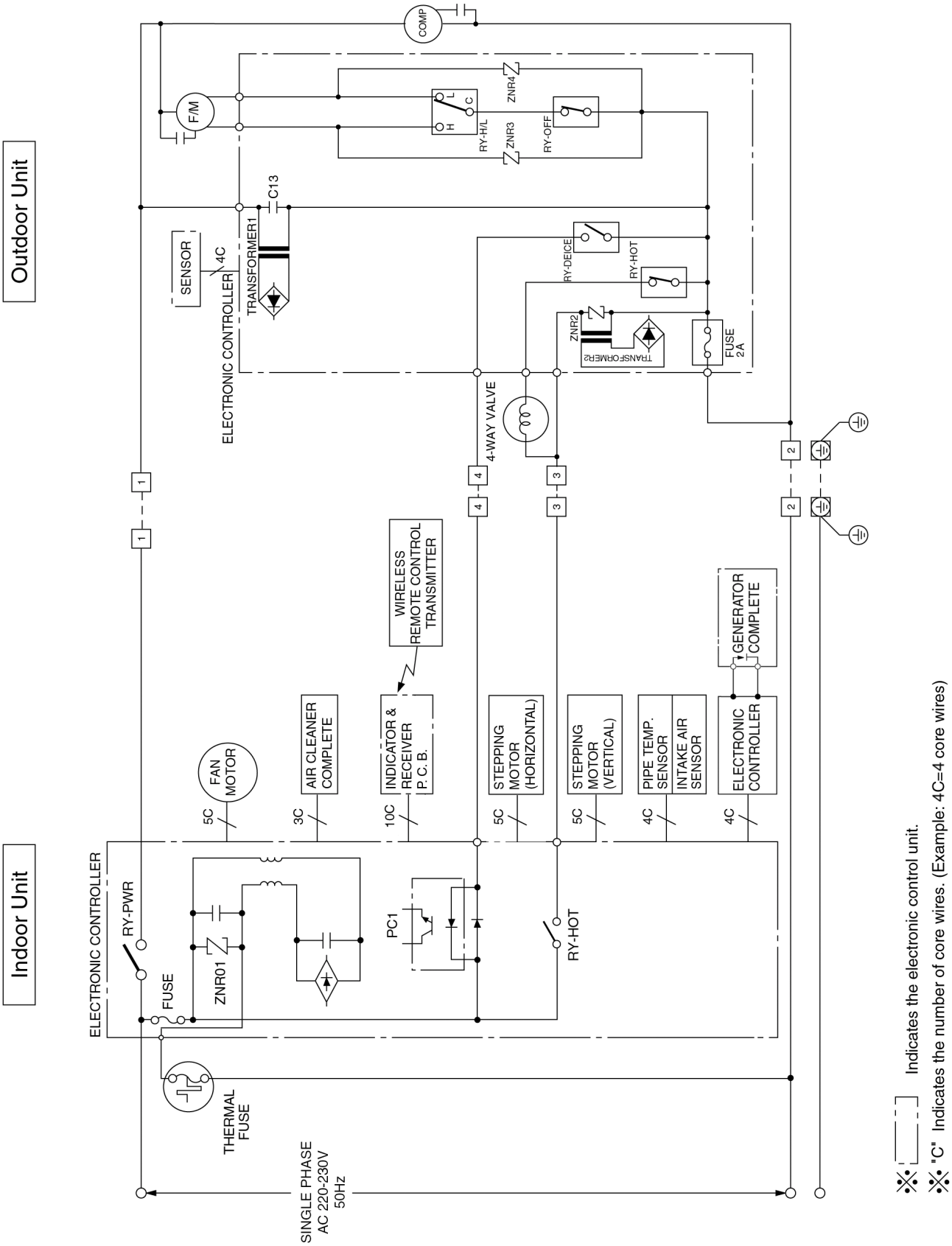
5 Refrigeration Cycle Diagram

CS-A18DKD CU-A18DKD
CS-A24DKD CU-A24DKD



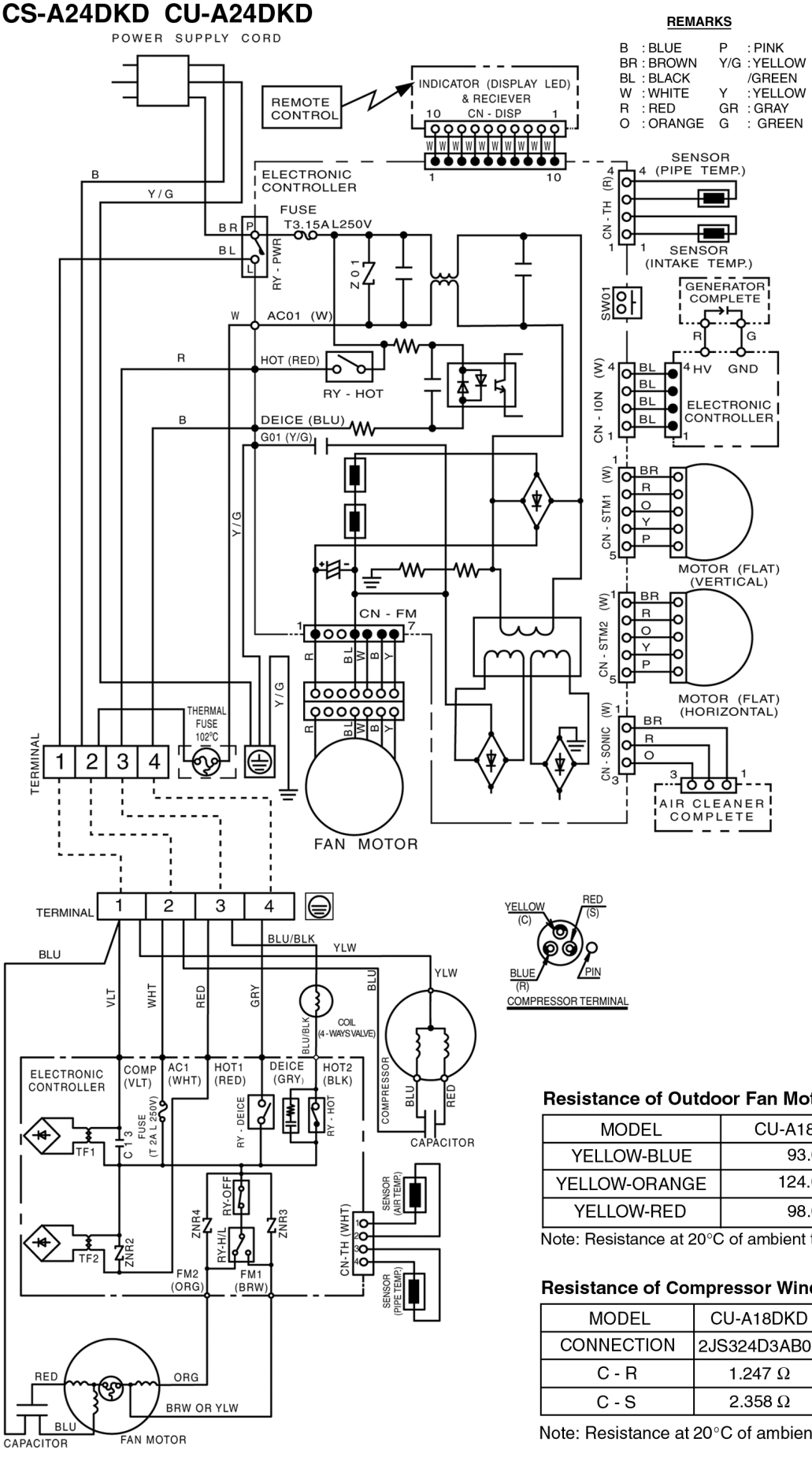
6 Block Diagram

CS-A18DKD CU-A18DKD
CS-A24DKD CU-A24DKD



7 Wiring Diagram

CS-A18DKD CU-A18DKD
CS-A24DKD CU-A24DKD



Resistance of Outdoor Fan Motor Windings

MODEL	CU-A18/24DKD
YELLOW-BLUE	93.0 Ω
YELLOW-ORANGE	124.0 Ω
YELLOW-RED	98.0 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

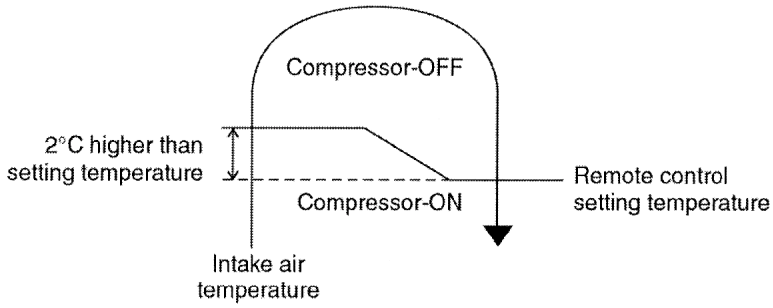
MODEL	CU-A18DKD	CU-A24DKD
CONNECTION	2JS324D3AB07	2JS438D3JA02
C - R	1.247 Ω	0.803 Ω
C - S	2.358 Ω	2.053 Ω

Note: Resistance at 20°C of ambient temperature.

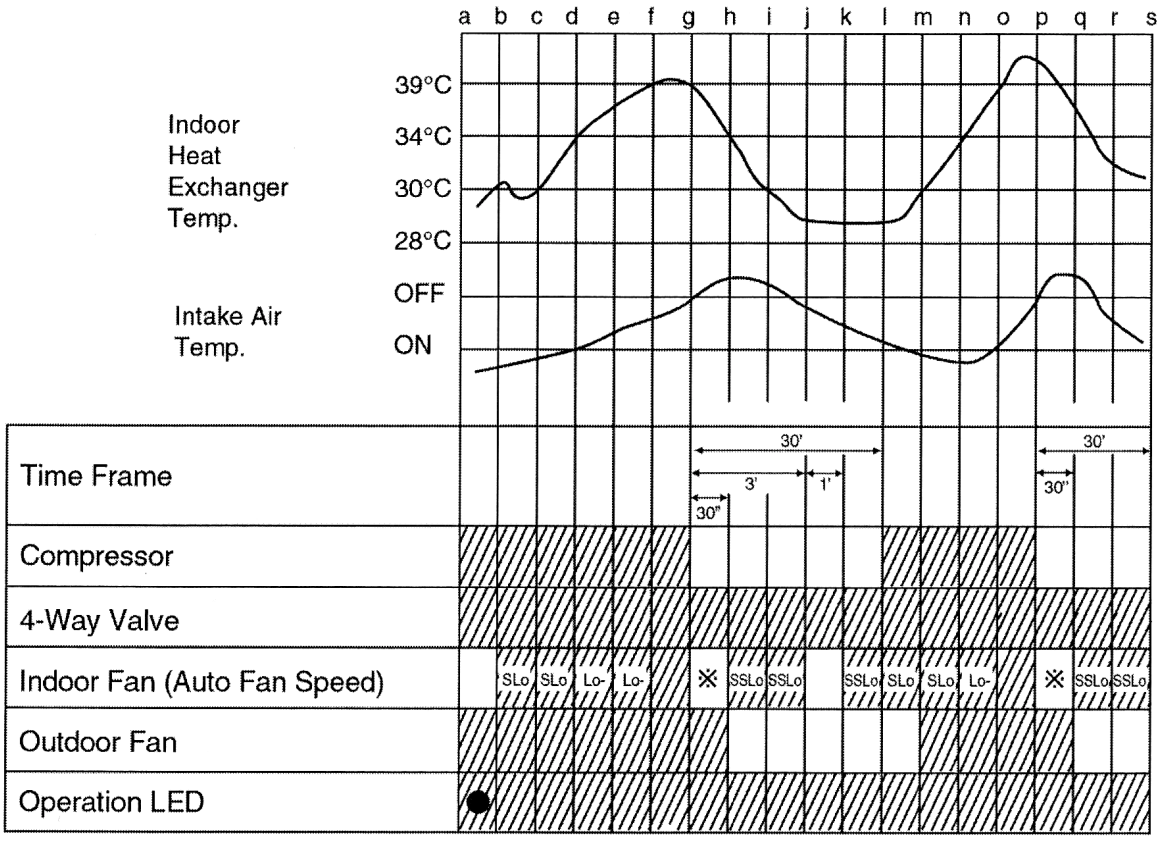
8 Operation Details

8.1. Heating Operation

- Heating operation can be set using remote control.
- This operation is applied to warm the room temperature reaches the setting temperature set on the remote control.
- The remote control setting temperature, which takes the reading of intake air temperature sensor, can be adjusted from 16°C to 30°C.
- During Heating operation, the compressor will stop running and restart as shown in below figure.



8.1.1. Heating Operation Time Diagram

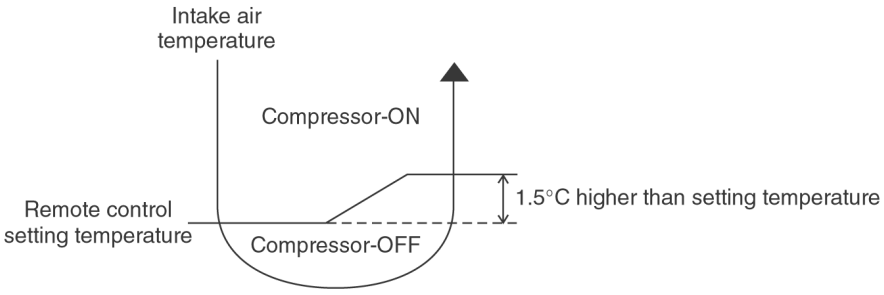


<Description of operation>
a – f, l – o : Hot start
g – l : 30 Minutes Time Save Control/Anti Cold Draft Control
g – h, p – q : Outdoor Fan Motor Control (30 sec. Forced Operation) after compressor stops.

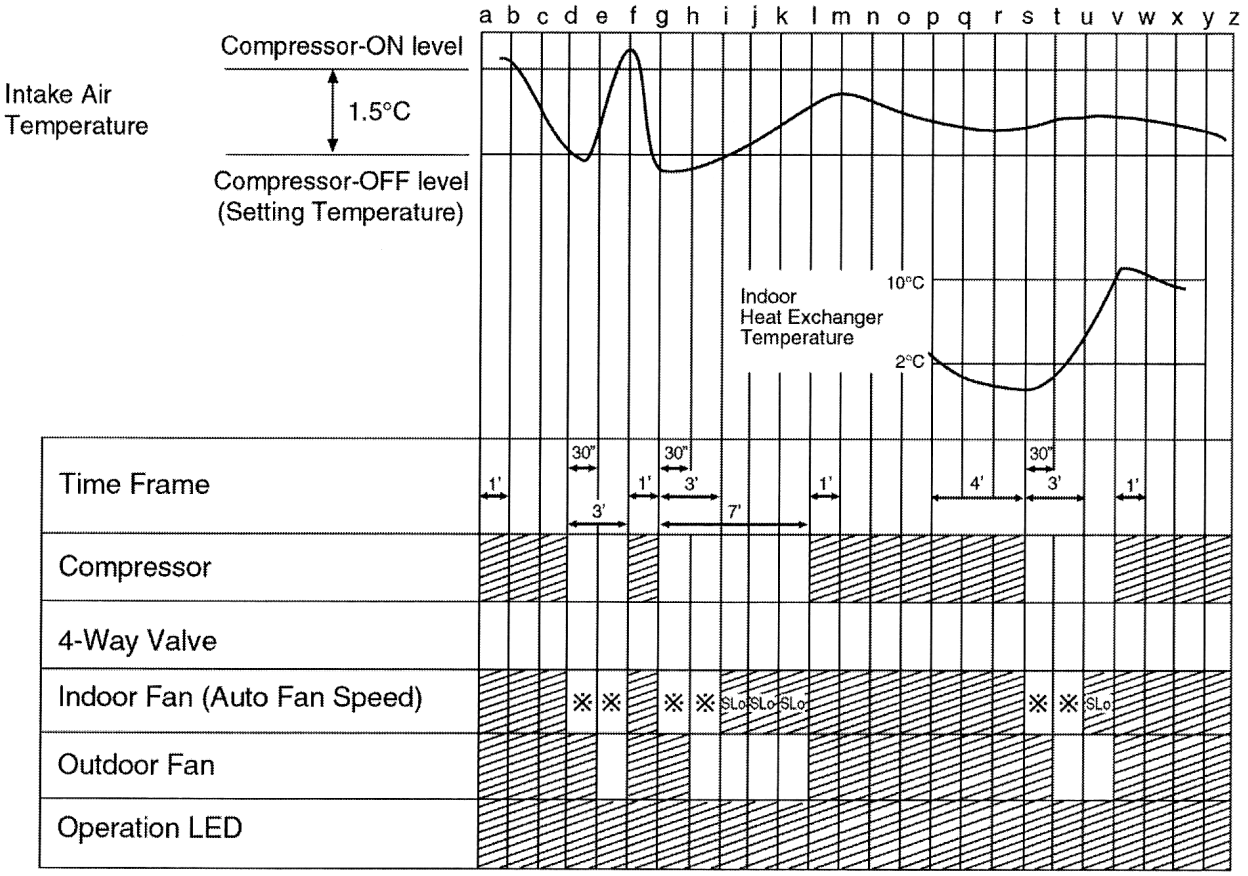
● : Blinking
※ : Fan Speed will follow Indoor heat exchanger temperature.
Operation
Stop

8.2. Cooling Operation

- Cooling operation can be set using remote control.
- This operation is applied to cool down the room temperature reaches the setting temperature set on the remote control.
- The remote control setting temperature, which takes the reading of intake air temperature sensor, can be adjusted from 16°C to 30°C.
- During cooling operation, the compressor will stop running and restart as shown in below figure.



8.2.1. Cooling Operation Time Diagram

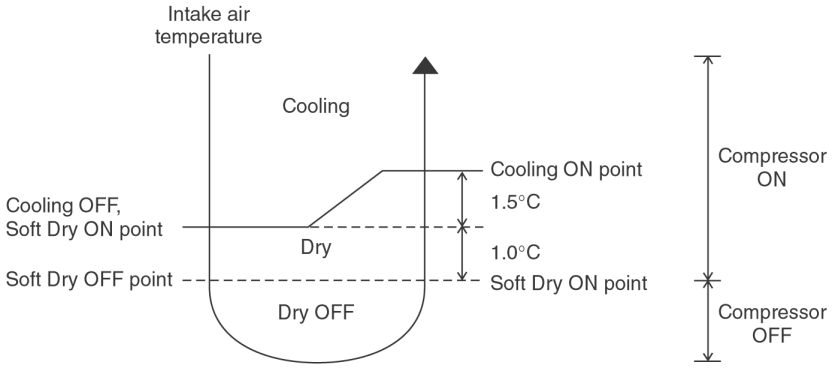


<Description of operation>

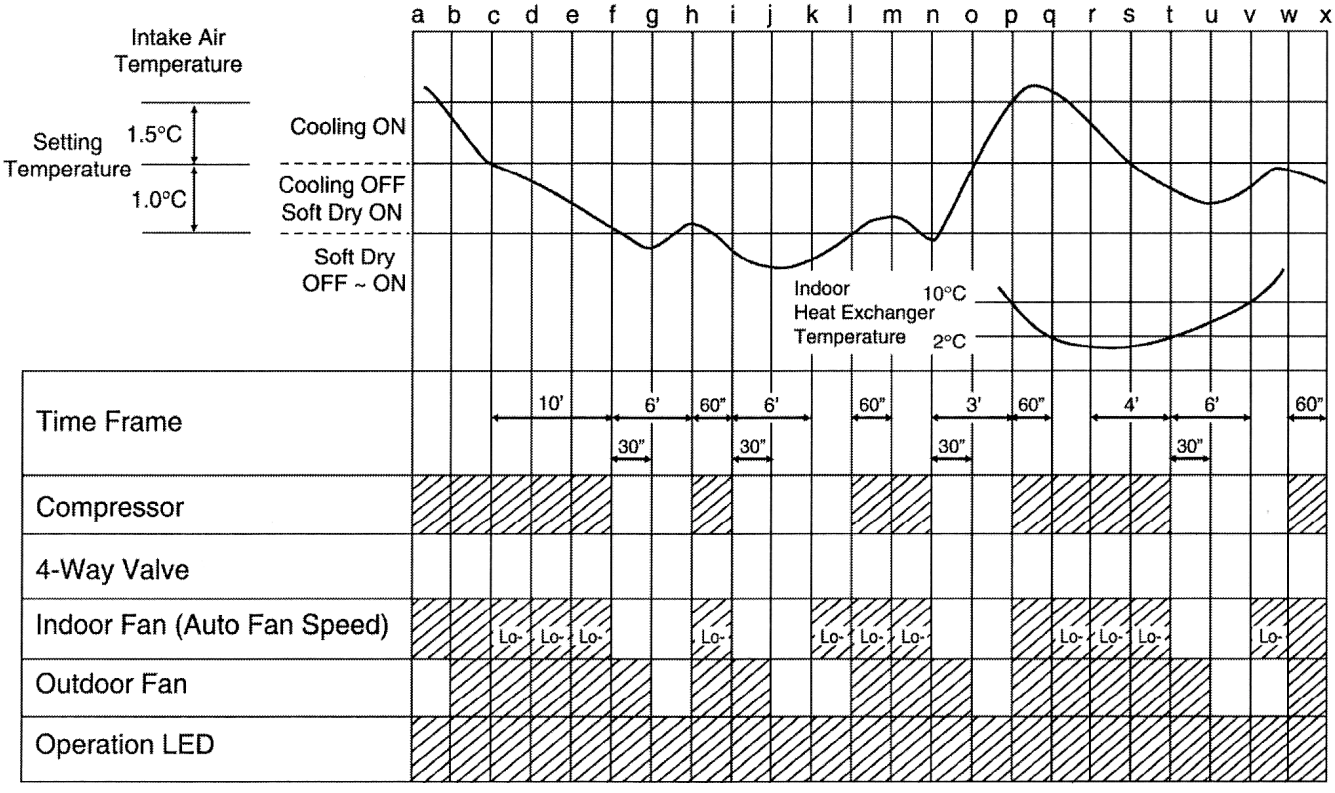
a – b, f – g, l – m, v – w	: Minimum 60 seconds forced operation	Operation
d – f, g – i, s – u	: Minimum 3 minutes restart control (Time Delay Safety Control)	
g – l	: Maximum 7 minutes time save control	Stop
p – v	: Anti-Freezing Control	
d – e, g – h, s – t	: Outdoor Fan Motor Control (30 sec. Forced Operation) after compressor stops	
(※) d – f, g – i, s – u	: Indoor fan rotates at SLo for 20 seconds and off for 160 seconds.	

8.3. Soft Dry Operation

- Soft Dry operation can be set using remote control.
- Soft Dry operation is applied to dehumidify and to perform a gentle cooling to the room.
- This operation starts when the intake air temperature sensor reaches the setting temperature on the remote control.
- When operation begins, Soft Dry will be switched “ON” for a maximum 10 minutes, then Soft Dry operation will be turned “OFF” for a minimum 6 minutes. After that, the Soft Dry operation will be “ON” and “OFF” based on the setting temperature as shown in below figure.
- However after 3 minutes of compressor off, during Soft Dry “OFF” (within 6 minutes Soft Dry restart control), the indoor unit will start to operate at normal Cooling mode if the intake temperature is higher than Cooling “ON” point.



8.3.1. Soft Dry Operation Time Diagram



<Description of operation>

h – i, l – m, p – q, w – x : Minimum 60 seconds foreced operation

n – p : Minimum 3 minutes restart control (Time Delay Safety Control) - Cooling operation

f – h, i – k, t – v : Minimum 6 minutes restart control (Time Delay Safety Control) - Soft dry operation

r – w : Anti-Freezing Control

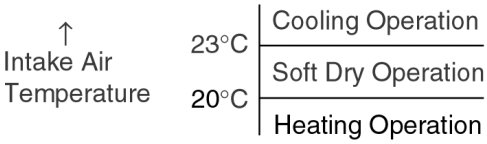
f – g, i – j, n – o, t – u : Outdoor Fan Motor Control

Operation

Stop

8.4. Automatic Operation

- Automatic operation can be set using remote control.
- This operation starts to operate with indoor fan at SLo speed for 25 seconds to judge the intake air temperature.
- After judged the temperature, the operation mode is determined by refering to the below standard.



- Then, the unit start to operate at determined operation mode, until it is switched off using remote control, with the setting temperature as shown in below table.

	Setting Temperature (Standard)
Cooling Operation	25°C
Soft Dry Operation	22°C
Heating Operation	21°C

- Operation mode will be determine again for judgement after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※ The present mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) eventhrough after 1 hour from automatic operation mode started.

Standard for Determining Operation Mode
2nd Judgement onwards

Present Mode	Judgement	Next Mode		
		Cooling	Soft Dry	Heating
Cooling	23°C: Cooling / Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement: Below 23°C)
Soft Dry	20°C: Soft Dry / Heating	Not Applicable	O (Judgement: 20°C & Above)	O (Judgement: Below 20°C)
Heating	25°C: Cooling / Heating	O (Judgement: 25°C & Above)	Not Applicable	O (Judgement: Below 25°C)

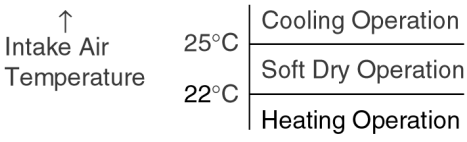
- Automatic Set Temperature

  For each operation, set temperature will automaticlly set as shown below.

- The setting temperature for all the operations can be changed one level up or one level down from the standard temperature as shown in below table by pressing on the temperature up or temperature down button at remote control.

Operation	Hi	(Standard)	Lo
	(+2°C)	(±0°C)	(-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

- The operation mode judging temperature and standard setting temperature can be increased by 2°C permanently, by open the circuit of JX1 at indoor electronic controller.



	Setting Temperature (Standard)
Cooling Operation	27°C
Soft Dry Operation	24°C
Heating Operation	23°C

8.5. Operation Control

8.5.1. Restart Control (Time Delay Safety Control)

- When the thermo-off temperature (temperature which compressor stops to operate) is reached during:-
  - – Cooling/Heating operation - the compressor stops for 3 minutes (minimum) before resume operation.
  - – Soft Dry operation - the compressor stops for 6 minutes (minimum) before resume operation.
- If the operation is stopped by the remote control, the compressor will not turn on within 3 minutes from the moment operation stop, although the unit is turn on again within the period.
- This phenomenon is to balance the pressure inside the refrigerant cycle.

8.5.2. Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C (cooling mode)/5°C (heating mode) or less for continuous 2 minutes, compressor will stop and restart automatically.
- Time Delay Safety Control is activated before the compressor restart.

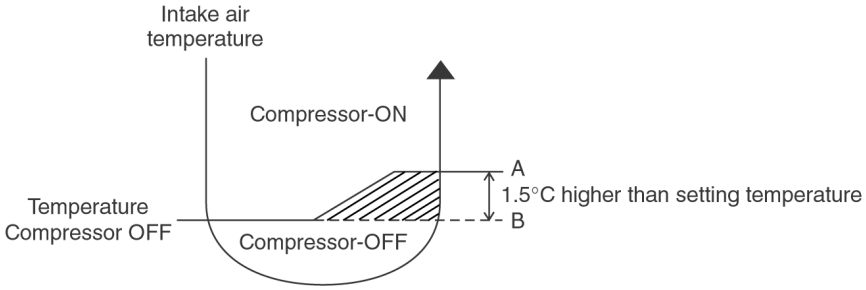
▲T = Intake air temperature - Indoor heat exchanger temperature

- This is to prevent compressor from rotate reversely when there is an instantaneous power failure.

(For 8.5.3. to 8.5.7. information applies only to Cooling and Soft Dry Operation)

8.5.3. 7 Minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes and the intake air temperature falls between the compressor ON temperature (A) and compressor OFF temperature (B) during the period.
- This phenomenon is to reduce the built up humidity inside a room.



8.5.4. 60 Seconds Forced Operation

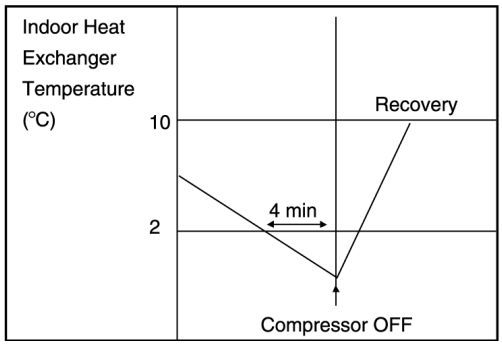
- Once the air conditioner is turned on, the compressor will not stop within 60 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, force stop by pressing the OFF/ON operation button at the remote control is permitted.
- The reason for the compressor to force operate at minimum 60 seconds is to allow the refrigerant oil run in a full cycle and return back to the outdoor unit.

8.5.5. Starting Current Control

- When the compressor, outdoor fan motor and indoor fan motor are simultaneously started, the indoor fan motor will start to operate at 1.6 second later.
- The reason of the difference is to reduce the starting current flow.

8.5.6. Anti-Freezing Control

- If the temperature of the indoor heat exchanger falls below 2°C continuously for 4 minutes or more, the compressor turns off. The fan speed setting remains the same.
- This phenomenon is to protect the indoor heat exchanger from freezing and to prevent higher volume of refrigerant in liquid form returning to the compressor.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).
- Restart control (Time Delay Safety Control) will be applied in this Control if the recovery time is too short.



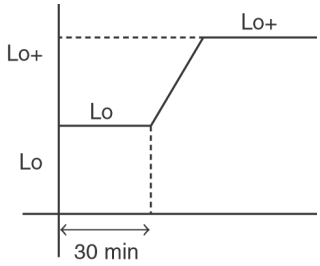
8.5.7. Anti-Dew Formation Control

- Purpose is to prevent dew formation on indoor unit air discharge area.
- When room temperature is constant (±1°C) the following conditions occur for 30 minutes continuously, anti-dew formation will activate:
  - Remote Control setting temperature is less than 25°C.
  - Compressor is on.
  - Cooling operation mode.
  - Indoor Fan motor operate at Low fan speed or QLo.
- This control is cancelled immediately when above condition is changed.
- Anti-Dew formation is control by:

1. Increasing Air Flow Volume

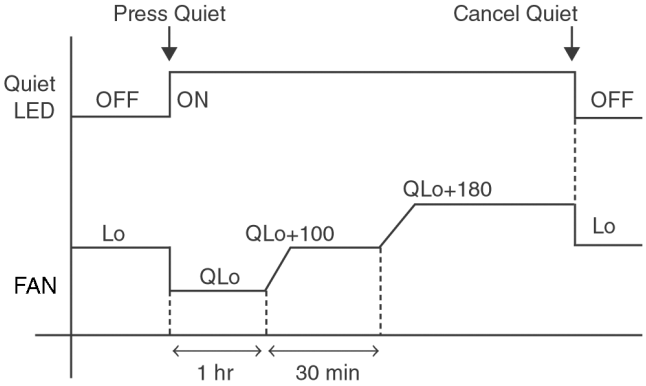
a. Lo fan speed

Lo fan speed is changed to Lo+ after 30 min to prevent dew formation.



b. QLo fan speed

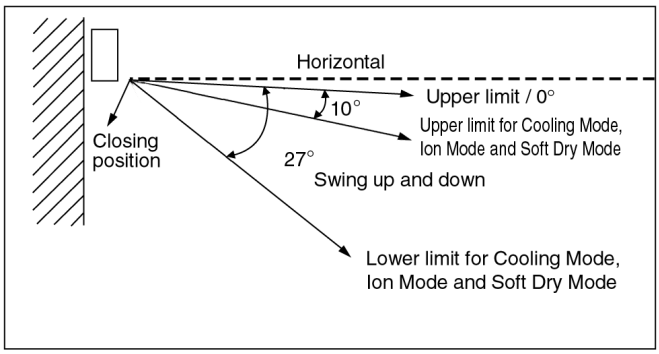
Dew formation may occurs at QLo cool, therefore QLo cool is operated only 1 hr 30 min (1 hr QLo, 30 min QLo +100 rpm). After that, it operates at QLo +180rpm (However Quiet LED remains on).



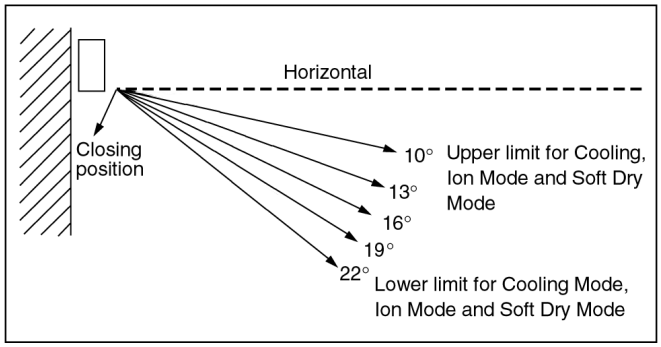
2. Norrowing

Vertical Airflow Direction

– During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from 10° - 38° to 10° - 27° under Cooling and Soft Dry operation mode.



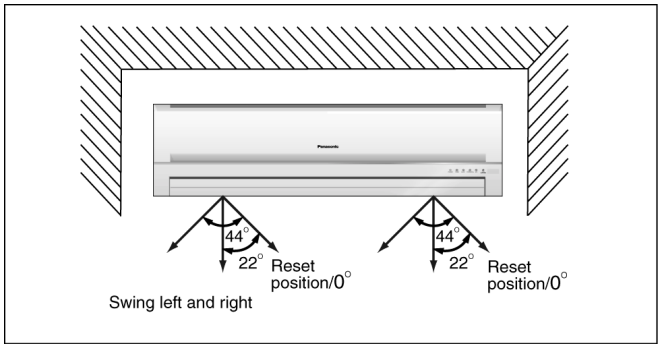
– During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 10°, 14°, 18°, 22°, 27° to 10°, 13°, 16°, 19°, 22° under Cooling and Soft Dry operation mode.



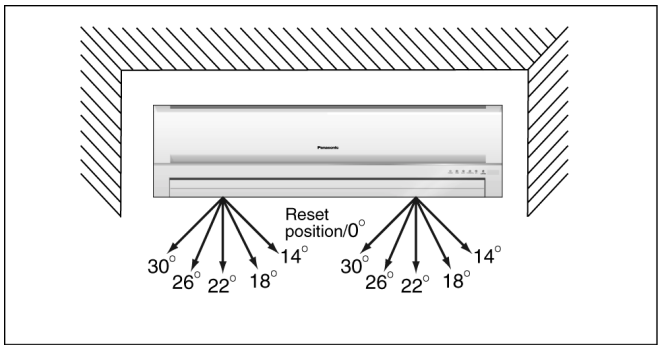
3. Narrowing

Horizontal Airflow Direction

– During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from 0° - 44° to 14° - 30° under Cooling and Soft Dry operation mode.



– During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 0°, 11°, 22°, 33°, 44° to 14°, 18°, 22°, 26°, 30° under Cooling and Soft Dry operation mode.



(For 8.5.8. to 8.5.13. information applies only to Heating Operation)

8.5.8. Overload Protection Control

• Outdoor Fan Control

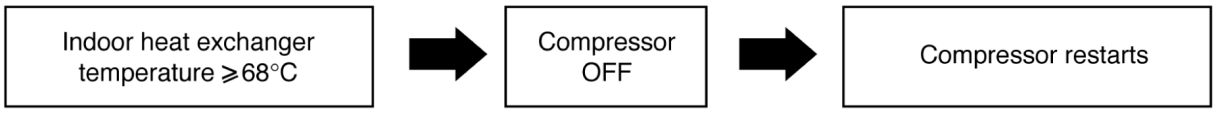
– If the temperature of the Outdoor Heat Exchanger less than -3°C, Outdoor Fan is ON. The Outdoor Fan stop, when Outdoor Heat Exchanger temperature is T_b or more according to Outdoor Air Temperature region as table below:

The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.

Outdoor Air Temperature	<10°C	⩾10°C ~ <15°C	⩾15°C ~ <20°C	⩾20°C ~ <25°C	⩾ 25°C	Outdoor Fan OFF
T_b	⩾5°C	⩾3°C	⩾ 1.5°C	⩾ 0.5°C	⩾ -0.5°C	

– During starting of Heating mode and after deice, Outdoor Fan ON for 90 sec. (Hi).

- Compressor high pressure protection
  - If the indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.
  - Time Delay Safety Control is activated before the compressor restart.



8.5.9. 4-Way Valve Control

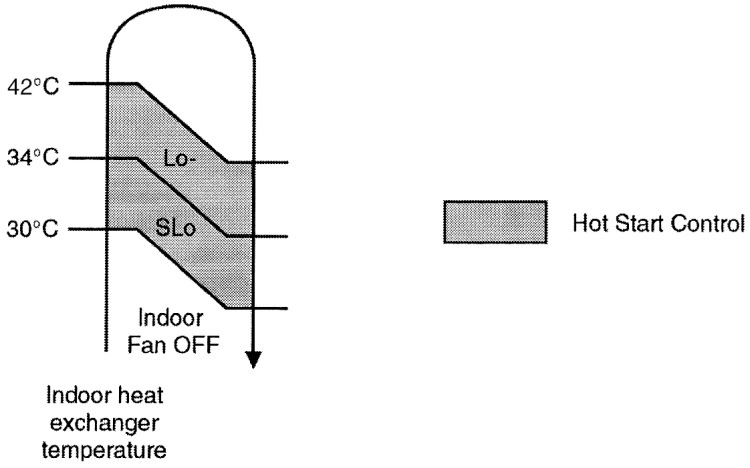
- 4-way valve always on during Heating operation. (except deicing operation)
- When the unit is switched off by remote control during Heating operation, the 4-way valve stay at Heating position for 5 minutes.
- This is to prevent the refrigerant flow process sound for being occur.

8.5.10. Outdoor Fan Motor Control

- When compressor stops (reaches room temperature), outdoor fan will operate for 30 seconds (forced operation).
- This is to release the heat and to obtain the lowest pressure as fast as possible.

8.5.11. Hot Start Control

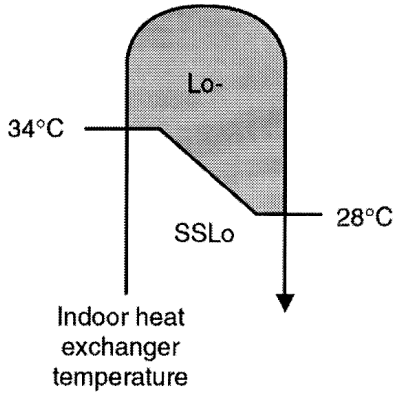
- Hot Start Control is to prevent cool air discharge into the room when heating operation start.
- When Heating operation starts, Indoor fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.



- Hot start is completed when indoor heat exchanger rises to 42°C or operation over 4 minutes.

8.5.12. Anti Cold Draft Control

- This operation is to prevent the Cold Draft during Heating mode operation.
- The operation will start when compressor OFF (Thermo OFF) during Heating operation.
- For the first 30 sec. from compressor OFF (Termo OFF), Indoor fan speed will operate accordingly to the Indoor heat exchanger temperature as shown below:



- After 30 sec. from compressor OFF (thermo OFF), Indoor fan will run at SSLo speed only.
- Anti Cold Draft Control will stop when:
  - Intake temperature < set temperature. (Time Delay Safety Control 4 minutes waiting is valid)
  - 30 Minutes Time Save Control activates.

8.5.13. Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

  Deice operations detection commences after 60 minutes of Heating operation starts or 60 minutes after previous deice operation. If the TRS (Thermal Read Switch) senses the outdoor piping temperature drops to -4°C (TRS CLOSE) or less for 50 sec. continuously during compressor is in operation, deice will start.

  (There is no detection during Outdoor Fan stops.)

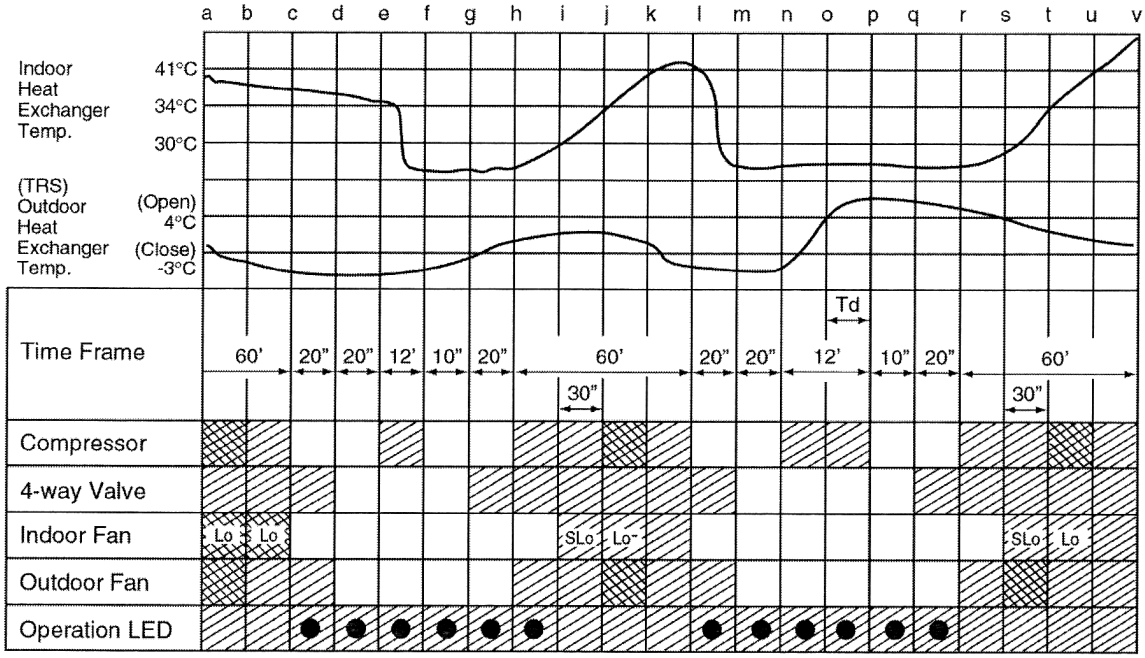
- Overload Deicing

  During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.

- Deicing ends when
  1. 12 minutes after deicing operation starts;
  2. The outdoor piping temperature rises to 12°C.

- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

Normal Deicing Time Diagram

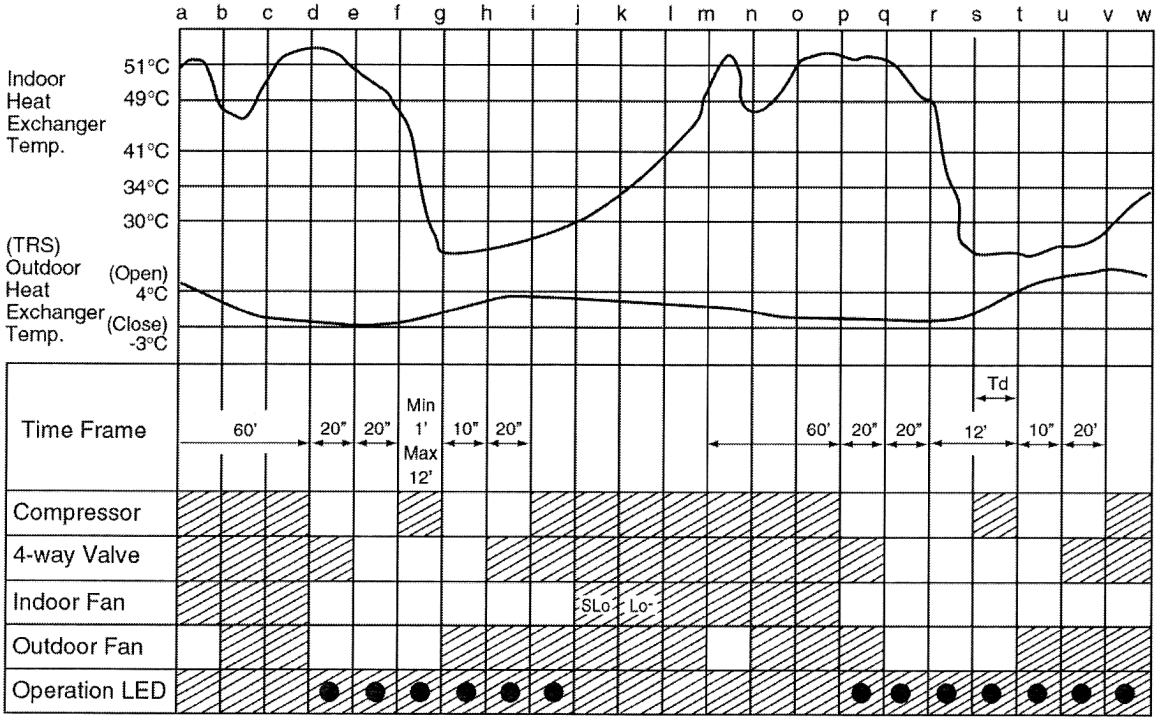


<Description of operation>

a – c	:	Deicing operation judging condition established
c – e, l – n	:	Deicing operation (timer detected)
e – h	:	Deice operation (timer detected)
h – i, r – s	:	Hot start (no thermo OFF)
i – j, s – t	:	No thermo OFF (after finished hot start)
n – r	:	Deicing operation (TRS detected)

● : Blinking
Operation
Stop
Operation or Stop
Td : Time Delay

Overload Deicing Time Diagram



<Description of operation>

a – d, m – p	:	Overload control. (intergrate)
d – f, p – r	:	Preparation time for Deicing
f – i	:	Overload deicing (timer detected)
i – j	:	Hot start (indoor fan OFF)
j – k	:	Hot start (indoor fan SLo)
r – t	:	Overload control (TRS detected)

● : Blinking
Operation
Stop
Td : Time Delay

8.6. Indoor Fan Speed Control

- Indoor Fan Speed can be set using remote control.

8.6.1. Fan Speed Rotation Chart

Fan Speed		CS-A18DKD	CS-A24DKD
Cool, Dry	Heat		
SHi	Hi	1460	1650
Hi	-	1400	1590
Me	Me	1320	1480
Lo+	Lo	1270	1380
Lo	-	1190	1280
Lo-	Lo-	980	1070
SLo	SLo	760	830
-	SSLo	300	300
QSHi	QHi	1360	1550
QHi	-	1300	1490
QMe	QMe	1220	1380
-	QLo	1170	1280
QLo	-	1090	1180

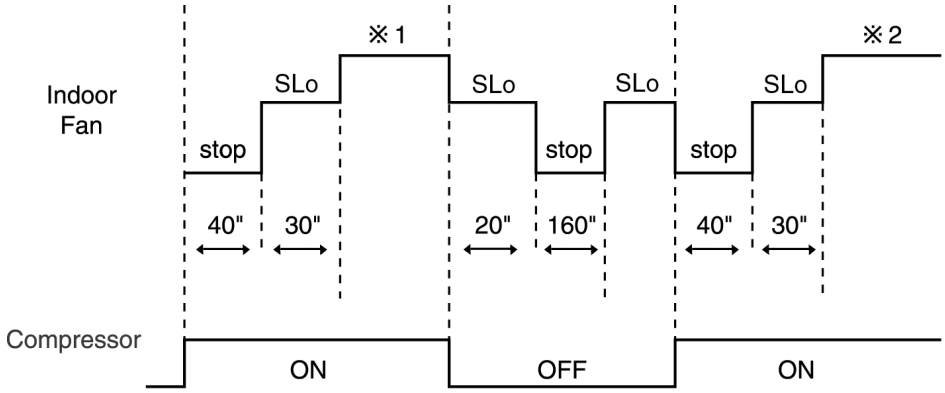
8.6.2. Automatic Fan Speed Control

- When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.
  - – Fan speed rotates in the range of Hi and Me.
  - – Deodorizing Control will be activated.

Speed Mode				S Hi	Hi	Me	H Lo	C Lo	Lo-	S Lo	SSLo	Stop
Cooling	Normal	Manual	Hi		○							
			Me			○						
			Lo					○				
		Air Volume Auto			○	○			○			○
	Powerful	Manual		○								
		Air Volume Auto		○								
Dry		Manual							○			○
		Air Volume Auto							○			○
Heating	Normal	Manual	Hi	○					○	○	○	○
			Me			○			○	○	○	○
			Lo				○		○	○	○	○
		Air Volume Auto				○	○		○	○	○	○
	Powerful	Manual		○		○	○		○	○	○	○
		Air Volume Auto				○	○		○	○	○	○
Mode judgement										○		
Cooling	Quiet	Manual	QHi		Hi-100							
			QMe			Me-100						
			QLo					CLo-100				
		Air Volume Auto			Hi-100	Me-100			○			○
Dry	Quiet	Manual							○			○
		Air Volume Auto							○			○
Heating	Quiet	Manual	QHi	SHi-100					○	○	○	○
			QMe			Me-100			○	○	○	○
			QLo				HLo-70		○	○	○	○
		Air Volume Auto				Me-100	HLo-70		○	○	○	○
Ion		Manual			○	○		○				○
		Air Volume Auto					○	○				○

• Auto Fan Speed during Cooling operation:

1. Indoor fan will rotate alternately between off and on as shown in below diagram.
2. At the beginning of each compressor start operation, indoor fan will increase fan speed gradually for deodorizing purpose.
3. For the first time the compressor operate, indoor fan will be switched to Hi fan speed from SLo after 70 seconds from the start of compressor. This cause the room temperture to achieve the setting temperature quickly.
4. During compressor stop, indoor fan will operate at SLo for the beginning 20 seconds to prevent higher volume of refrigerant in liquid form returning to the compressor.
5. After the compressor at turn off condition for 3 minutes, indoor fan will start to operate at SLo to circulate the air in the room. This is to obtain the actual reading of the intake air temperature.
6. When the compressor resume operation, indoor fan will operate at Me fan speed (after 70 seconds from the restart of compressor) to provide comfort and lesser noise environment.

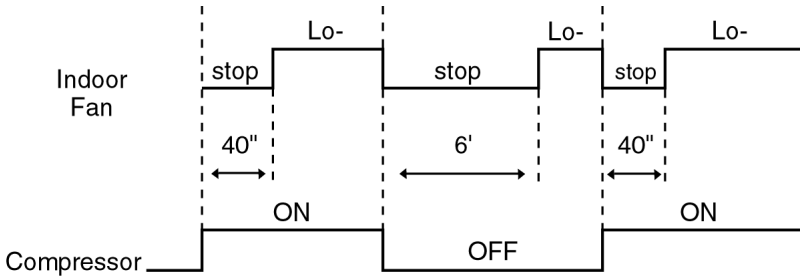


※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

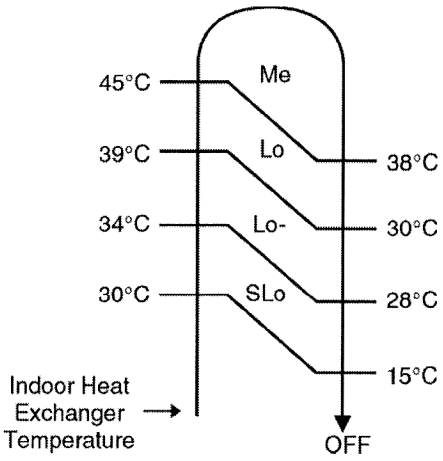
• Auto Fan Speed during Soft Dry operation:

1. Indoor fan will rotate alternately between off and Lo-.
2. At the beginning of each compressor start operation, indoor fan will increase fan speed gradually for deodorizing purpose.
3. When compressor at turn off condition for 6 minutes, indoor fan will start fan speed at Lo- to circulate the air in the room. This is to obtain the actual reading of intake air temperature.



• Auto Fan Speed during Heating operation.

1. Indoor fan will rotate in the range of SLo → Me according to the heat exchanger temperature.



8.6.3. Manual Fan Speed Control

- Manual fan speed adjustment can be carried out by using the Fan Speed selection button at the remote control.
- There are 3 types of fan speed settings: Lo, Me, Hi.

8.7. Outdoor Fan Speed Control

- There is only one speed for outdoor fan motor.
- When the air conditioner is turned on, the compressor and the outdoor fan will operate simultaneously.
- Likewise, both compressor and outdoor fan will stop at the same time if the unit is turned off.

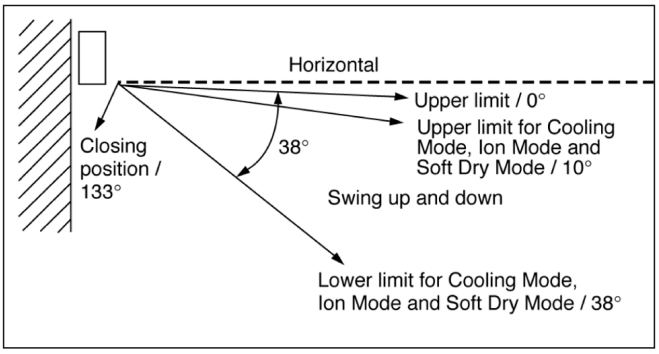
8.8. Vertical Airflow Direction Control

8.8.1. Auto Control

(Cooling and Soft Dry Operation condition)

- When the vertical airflow direction is set to Auto using the remote control, the louver swings up and down as shown in the diagram.
- When stop operation using the remote control, the discharge vent is reset, and stop at the closing position.
- During Cooling operation or Soft Dry operation, indoor fan motor may stop to rotate at certain periods. At that condition, the louver will stop swinging and rest at the upper limit.

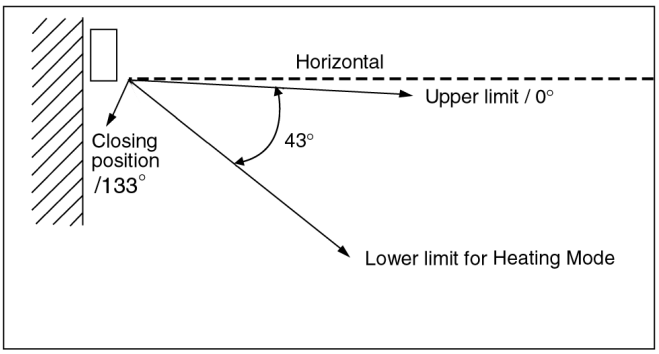
Cooling and Soft Dry Operation



(Heating Operation condition)

- When the intake air temperature reaches 38°C, the louver is changed from upper to lower limit. When the intake air temperature falls to 35°C, the louver is changed from louver to upper limit.

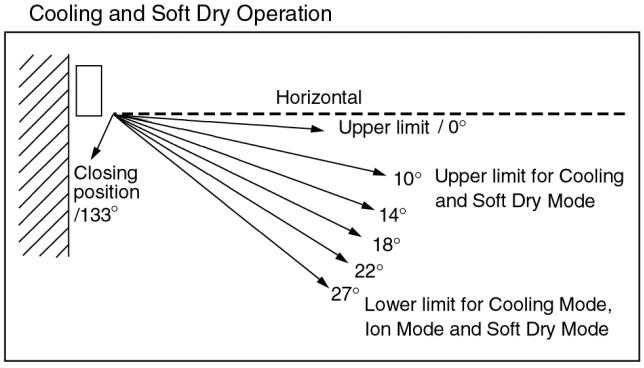
Heating Operation



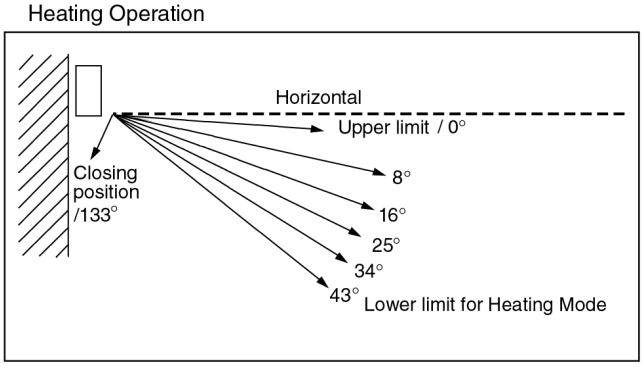
8.8.2. Manual Control

- When the vertical airflow direction is set to Manual using the remote control, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.
- The louver can be adjusted by pressing the button to the desired louver position.
- When stop operation using the remote control, the discharge vent is reset, and stop at the closing position.

Cooling and Soft Dry Operation



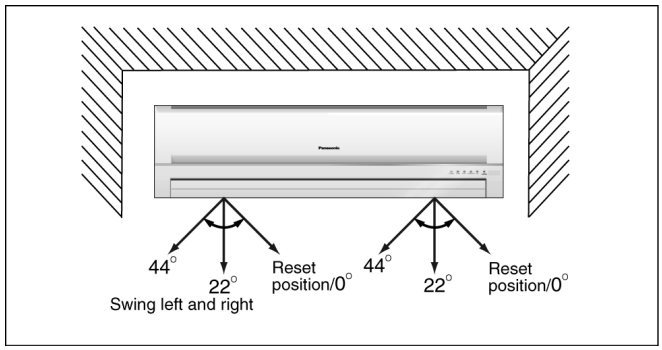
Heating Operation



8.9. Horizontal Airflow Direction Control

8.9.1. Auto Control

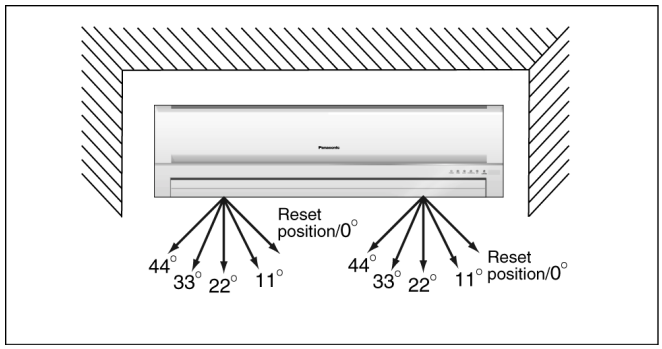
- When the horizontal airflow direction is set to Auto using the remote control, the vanes swings left and right as shown in the diagram.
- When stopped with remote control, the discharge vane is reset, and stop at the reset position.
- During Cooling operation or Soft Dry operation, indoor fan motor may stop to rotate at certain periods. At that condition, the vane will stop swinging and rest at 22° angle.



8.9.2. Manual Control

- When the horizontal airflow direction is set to Manual using the remote control, the automatic airflow is released and the airflow direction vane move left and right in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired vane position.
- When stopped with remote control, the vanes is reset, and stopped at reset position.



8.10. Powerful Operation

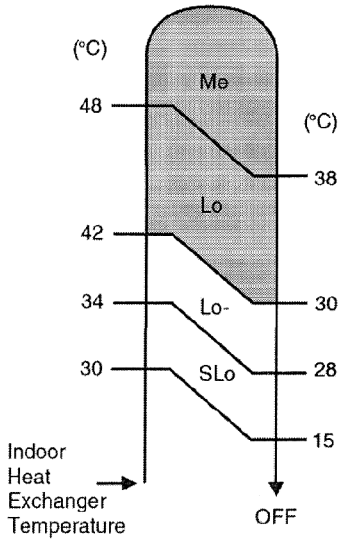
- The Powerful operation is to achieve the setting temperature quickly.

(Cooling and Soft Dry Operation condition)

- When Powerful operation is set, the setting temperature will be automatically decreased 3°C internally against the present setting temperature (Lower temperature limit: 16°C).
- This operation automatically will be running under SHi Fan Speed (Cooling), Lo- Fan Speed (Soft Dry).
- Vertical Airflow Direction:-
  - In “Manual” setting, the vane will automatically shift down 10° lower than previous.
  - In “Auto” setting, the vane will automatically swing up and down. However the lower limit will be shifted 10° downward.

(Heating Operation condition)

- When Powerful operation is set, the setting temperature will be automatically increased 3°C against the present setting temperature (Higher temperature: 30°C).
- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from SLo to Me depending to the Indoor Heat Exchanger Temperature.
- When the manual Fan Speed is selected, the fan speed will change to the fan speed setting when the Indoor Heat Exchanger Temperature reaches 42°C.

Set Fan Speed

- Vertical Airflow Direction:-
  - In “Manual” setting, the vane will automatically shift down 5° lower than previous setting.
  - In “Auto” setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5° downward.

- Powerful Mode will operate for 15 minutes only and operation will shift back to previous setting mode.
- Powerful operation stops when:-
  - Powerful operation has operate for 15 minutes.
  - Powerful button is pressed again.
  - Quiet button is pressed.
  - Stopped by OFF/ON operation button.
  - Timer OFF activates.
  - Operation mode is changed.

8.11. Quiet Operation

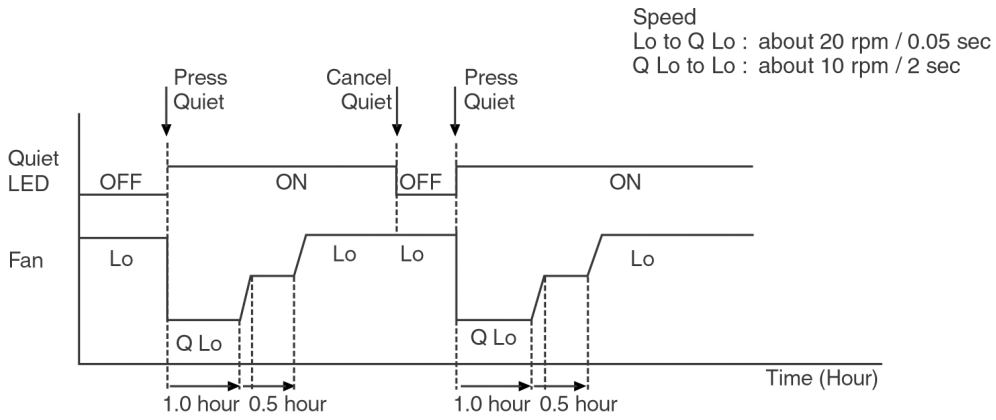
- The Quiet operation is to provide quiet cooling/heating operation condition compare to normal operation.

(Cooling and Soft Dry Operation condition)

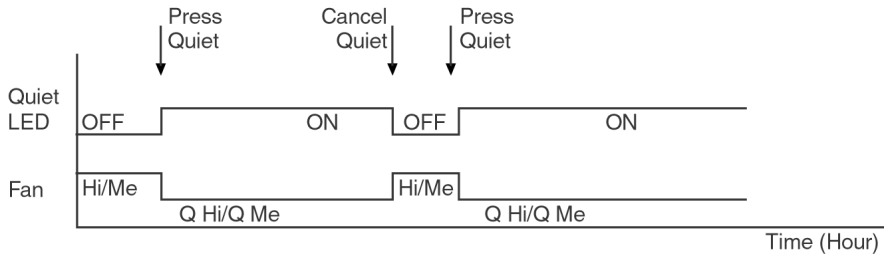
- Once the Quiet Mode is set at the remote control, the Quiet Mode LED illuminated. The sound level will reduce either around 2 dB(A) for Lo fan speed or 3 dB(A) for Hi/Me fan speed against the present sound level operation.
- Dew formation become severe at Quiet Lo cool, therefore Quiet Lo cool is operated only 1hr 30 min (1hr QLo, 30 min QLo + 50rpm). After that, it goes back to Lo cool (However Quiet LED remains on).

• Manual Airflow Direction:-

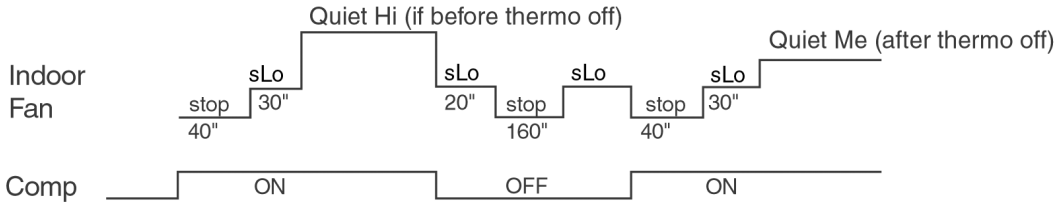
– RPM control during Lo cool



– RPM control during Hi & Me cool



• Auto Airflow Direction:-



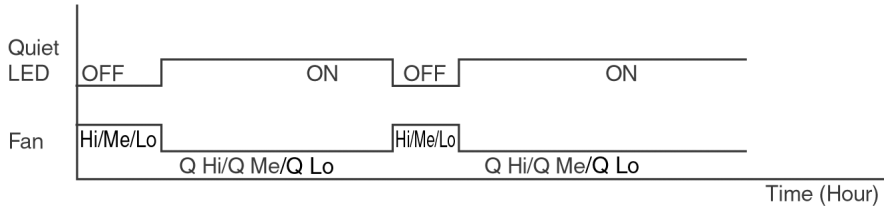
(Heating Operation condition)

• When the Quiet Mode is set at the remote control, Quiet Mode LED illuminates. The sound level will reduce either around 2 dB(Lo) or 3 dB(Hi, Me), against the present sound level operation.

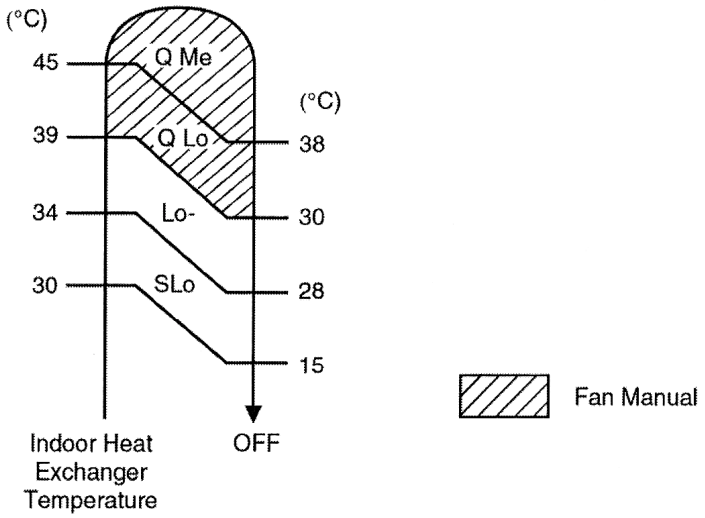
• Quiet setting of fan speed rpm refer to Indoor Fan Speed Control.

• Manual Airflow Direction:-

– Rpm control during Lo, Me & Hi Cool



- Auto Airflow Direction:-
  – Rpm control depends on the piping air temperature sensor of Indoor heat exchanger

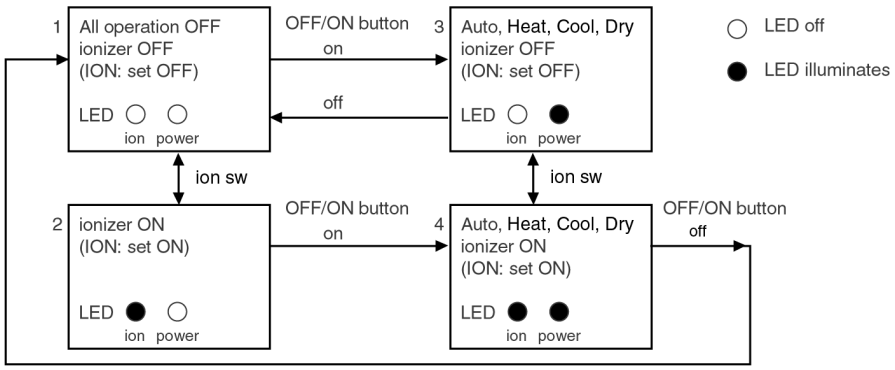


- Quiet operation stops when:-
  – Quiet/Powerful button is pressed again.
  – Stopped by OFF/ON operation button.
  – Timer OFF activates.
  – Operating mode is changed.

8.12. Ionizer Operation

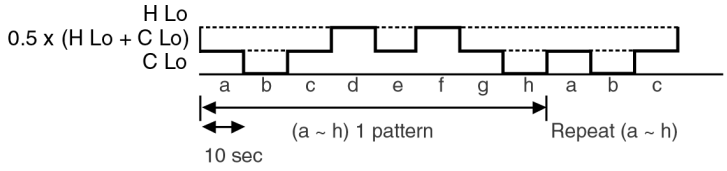
- The Ionizer operation is to provide fresh air effect to user by producing minus ion in discharge air.

8.12.1. Operation Control



1. Ionizer individual operation
   a. When air-conditioner unit is at “OFF” condition (standby) and ION operation button at the remote control is pressed, the Ionizer and Air Circulation operations will turn on. Only ION LED will illuminates. Power LED maintain off. (1 → 2)
   b. Ionizer individual operation can be turned off by pressing the ION button again. (2 → 1)
   c. Fan speed can be adjusted later by customer during this operation.

Indoor fan mode	Fan speed
Manual	Hi, Me, CLo
Auto	between H Lo & C Lo at the pattern shown below



d. Vertical airflow direction can be adjusted using remote control during Ionizer individual operation.

e. During Ionizer individual operation, operated mode (Auto, Cool, Dry, Heat) can be activated by turning on the OFF/ON operation button. (2 → 4)

f. If power failure occur during Ionizer individual operation, after power resume, Ionizer operation will be activated immediately.

g. When the Ionizer circuit feedback process error occur for 24 times (about 11hr 30 min.), Ionizer and Air Circulation operations will turn off with ION LED blinks continuously.

(For details, please refer to Ionizer Error detection control)

2. Operation mode & Ionizer operation.

a. When air-conditioner unit is at “ON” condition and ION operation button at the remote control is pressed, the Ionizer operation will turn on. ION & Power LED will illuminate. (3 → 4)

b. Ionizer operation stops when:

- ION operation button is press again.
- Stopped by OFF/ON operation button.
- Timer OFF activates.
- Ionizer circuit feedback signal shows error.

c. Ionizer operation status is not memorised when the air conditioner has been switched off. The air-conditioner will operate without ionizer operation when it is turned on again. However, if power failure occurs during Ionizer operation together with Cooling operation, air-conditioner will start to operate at Cooling operation with Ionizer operation when the power is resumed.

8.12.2. Error Detection Control

- The error detection control is to inform user that error occurs at ionizer system and repairing job will be needed.
- There are two types of error detection control:

a. When Ionizer is ON

– If ionizer feedback = Lo for 24 times within 11hr 30min, ION LED blinks continuously.

b. When ionizer is OFF

– If ionizer feedback = Hi, ION LED blinks continuously.

- During ionizer at breakdown condition, if ionizer feedback voltage = Lo (become normal), ION LED will stop blinking.
- The error detection control can be reset by:

i) Pressing the OFF/ON operation button to switch the operation OFF.

ii) Pressing the Auto Operation button to force the operation OFF.

iii) Setting the OFF Timer to stop the operation (Not applicable when ionizer is OFF).

8.13. Timer Control

8.13.1. Delay ON Timer

- When the Delay ON Timer is set by using the remote control, the unit will start to operate slightly before the set time, so that the room will reach nearly to the set temperature by the set time.
- For Cooling and Soft Dry operation, the operation will start 15 minutes before the set time.
- For Heating operation, the operation will start 30 minutes before the set time.
- For Automatic operation, the indoor fan will operate at SLo speed for 20 seconds, 15 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.13.2. Delay OFF Timer

- When the Delay OFF Timer is set by using the remote control, the unit will stop operate according to the desired setting.

Notes:

1. By pressing OFF/ON operation button, the Delay ON Timer or Delay OFF Timer setting will not be cancelled.
2. To activate the previous timer setting, press SET/CANCEL button once again.

8.14. Random Auto Restart Control

- If there is a power failure during operation, the air conditioner will automatically restart after 3 to 4 minutes when the power is resumed.
- It will start with previous operation mode and airflow direction.
- If there are more than one air conditioner unit in operation and power failure occur, restart time for each unit to operate will be decided randomly using 4 parameters:- intake air temperature, setting temperature, fan speed and air swing louver position.
- This Random Auto Restart Control is not available when Timer is set.
- This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram)

8.15. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
  - Stopping the air conditioner using OFF/ON operation button.
  - Stopping the Quiet Mode.
  - Stopping the Powerful Mode.
  - Stopping the Ion Mode.
- Short beep sound will be heard for other setting.
- To switch off the beep sound:-

  Press the “Auto Operation Button” (behind the front grille) continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second). Repeat the above if you want to switch on the beep sound.

※However, if the “Automatic Operation Button” has been pressed the Automatic operation will be activated. If you do not require this operation, you may change it by using the remote control.

9 Operating Instructions

Thank you for purchasing Panasonic Air Conditioner

SAFETY PRECAUTIONS

■ Definition

To prevent personal injury, injury to others and property damage, the following instructions must be followed.

Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as below:

Warning
This sign warns of death or serious injury.

Caution
This sign warns of injury or damage to property.

The instructions to be followed are classified by the following symbols:

This symbol denotes an action that is PROHIBITED.

These symbols denote actions that are COMPULSORY.

Installation Precautions

Warning

Do not install, remove and reinstall the unit by yourself.
- Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.

Caution

- This air conditioner must be earthed. Improper grounding will cause electric shock.
- Ensure that the drainage piping is connected properly. Otherwise, water will leak.
- Current leakage protection equipment must be installed. Otherwise, electric shock or fire may occur.
- Do not install the unit in a potentially explosive atmosphere.

Operation Precautions

Warning

- Do not share power outlet.
- Do not modify power cord.
- Do not use an extension cord.
- Do not operate with wet hands.
- Do not operate or stop the unit by inserting or pulling out the power plug.
- Do not insert finger or other objects into the indoor or outdoor unit.
- Do not attempt to repair the unit by yourself.
- Do not use rechargeable (Ni-Cd) batteries.
- Keep the remote control away from infants and small children to prevent them from accidentally swallowing the batteries.
- Insert the power plug properly.
- Use specified supply cord.
- If the supply cord is damaged or needed to be replaced, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.
- Remove the batteries if the unit is not going to be use for a long period of time.
- New batteries of the same type must be inserted following the polarity stated to prevent malfunction of the remote control.
- In case of emergency or abnormal condition (burnt smell, etc) occurs, turn off the power supply and unplug.

Caution

- Do not pull the cord to disconnect the plug.
- Do not wash the unit with water, benzene, thinner or scouring powder.
- Do not use for other purposes such as preservation of food.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the indoor or outdoor unit.
- Do not expose directly to cold air for a long period.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after long period of usage.
- Switch off the power supply and unplug before cleaning or servicing.
- Turn off the power supply and unplug if the unit is not used for a long period of time.

Safety Regulation

The appliance is not intended for use by young children or infirm person without supervision. Young children should be supervised to ensure that they do not play with the appliance.

Replacement or installation of power plugs shall be performed by authorized/qualified personnel only. The wires in this mains lead are coloured in accordance with the following code:

Terminals	wires	colours (GB Standard)
L red	live	brown
N black	neutral	blue
E green/yellow	earth	green-yellow

Different countries may have different colour coding for the wires.

Operation Condition (°C)

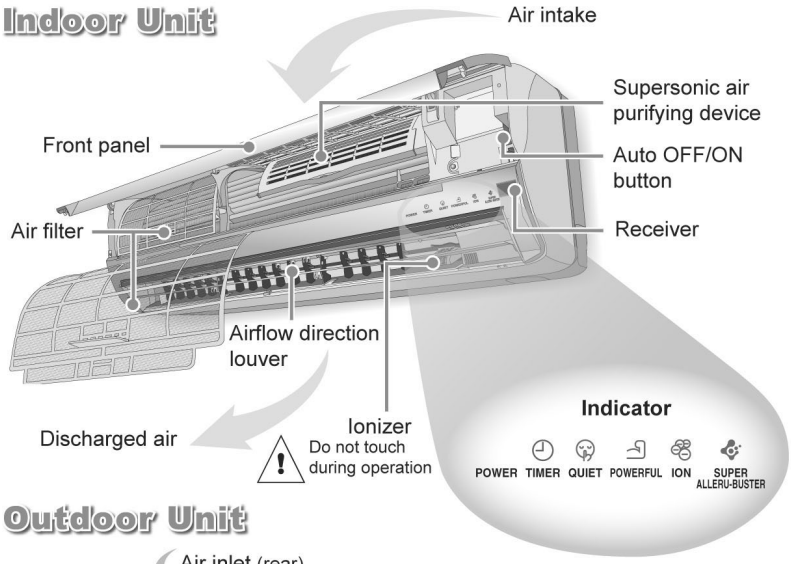
Use this air conditioner under the following temperature range.

DBT: Dry Bulb Temperature WBT: Wet Bulb Temperature	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature (COOL)	32	23	43	26
Maximum Temperature (HEAT)	30	–	24	18
Minimum Temperature (COOL)	16	11	16	11
Minimum Temperature (HEAT)	16	–	-5	-6

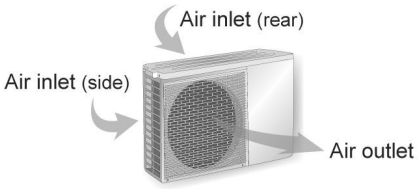
Note: The illustrations in this manual are for explanation purposes only and may differ from the actual unit. It is subjected to change without notice for future improvement.

PRODUCT OVERVIEW

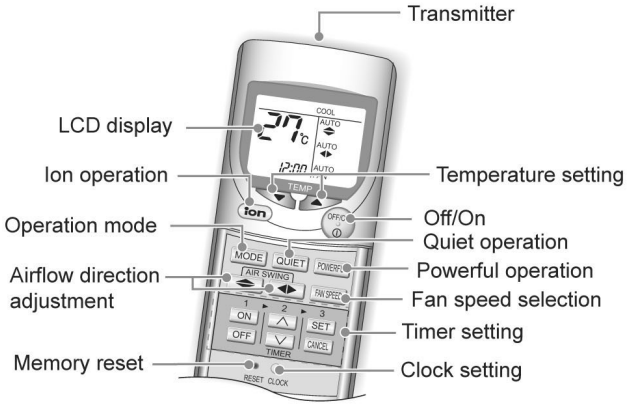
Indoor Unit



Outdoor Unit

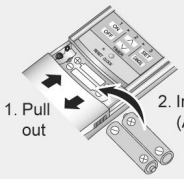


Remote Control

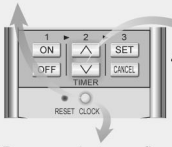


■ About

Remote Control Preparation



3. Press CLOCK button



5. Press again to confirm

- Timer operation will be based on current time set.
- The batteries can be used for approximately 1 year.
- The batteries must be recycled or disposed of properly.

Remote Control Signal

- Make sure it is not obstructed.
- Maximum distances : 10m.
- Certain fluorescent lights may interfere with signal transmission. Consult your dealer.

Auto OFF/ON Button

- To operate the unit if the remote control is misplaced or malfunctioning.

Action	Operation mode
Press once	Automatic Operation
Press until “beep” sound	Cooling Operation

- To OFF, press again the Auto OFF/ON button.
- To switch the remote control signal receiving sound off or on.
  1. Press until “beep” sound and release.
  2. Press again until “beep-beep” sound and release.
  3. Press to switch the sound off or on. (Long “beep” - OFF; short “beep” - ON)

Troubleshooting

● Operation delayed for few minutes after restart.	➤ This is a normal self protection control.
● Sound like water flowing during operation.	➤ Caused by refrigerant flow inside.
● Mist emerges from indoor unit.	➤ Condensation effect due to cooling process.
● Noisy during operations.	➤ Installation work could be slanted or front panel didn’t close properly.
● Remote control/display does not work.	➤ Check whether batteries are correctly inserted or need replacement.
● The unit cannot operate.	➤ Check either circuit breaker is tripped, power plug is inserted correctly or timer is used correctly.
● Outdoor unit emits water/steam.	➤ Condensation or evaporation happens at piping surface.

HOW TO OPERATE

Auto, Heat, Cool, Dry

● Supersonic air purifying device (super alleru-buster) operates automatically while the air conditioner is switched on.

● Powerful, Quiet and Ion operations can be activated in all operation modes.

● Press OFF/ON button again to stop the operation.

■ Operation Details

AUTO - Automatic Operation

- The unit will automatically select the operation mode according to the room temperature.
- Once the operation mode is selected, the unit will operate at the standard setting temperature as shown:

Room temperature	Operation mode	Standard setting temperature
23°C & above	Cool	25°C
Below 23°C	Dry	22°C
Below 20°C	Heat	21°C

- You may press or button to change the standard setting temperature to "HI" or "LO" as shown:

Operation mode	HI	LO
Cool	27°C	23°C
Dry	24°C	20°C
Heat	23°C	19°C

HEAT - Heating Operation

- Enables you to enjoy the warming effect at your preferred setting temperature.
- The range of temperature can be selected from 16°C ~ 30°C.

COOL - Cooling Operation

- Enables you to enjoy the cooling effect at your preferred setting temperature.
- The range of temperature can be selected from 16°C ~ 30°C.

DRY - Soft Dry Operation

- Enables you to set the desired temperature at low fan speed which provides you with the dehumidifying surroundings.
- The range of temperature can be selected from 16°C ~ 30°C.

Hint

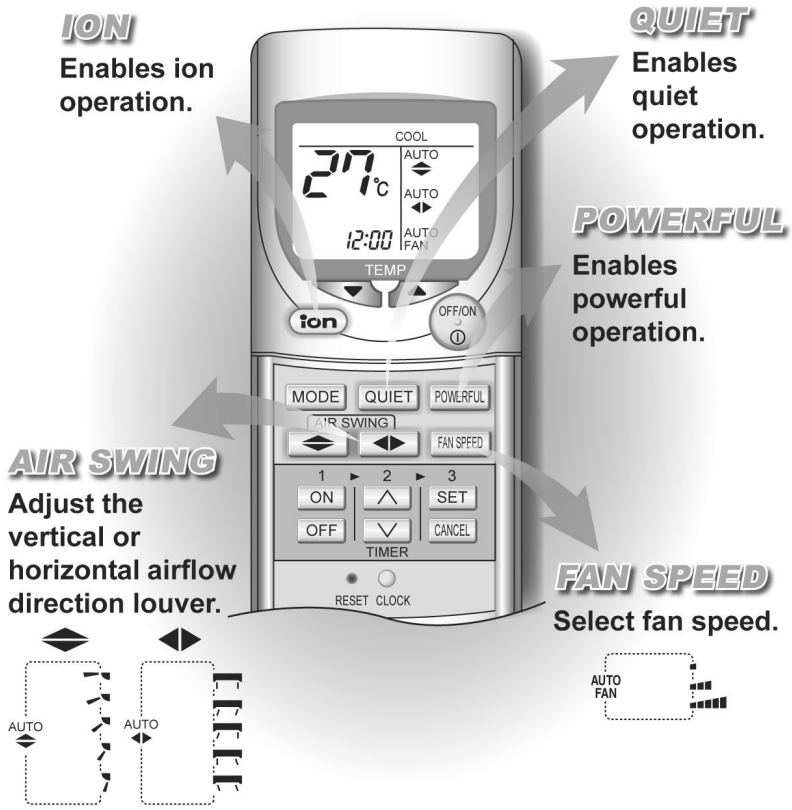
- To save electricity, close the curtains when using air conditioner to prevent sunlight and heat from coming in.

Troubleshooting

● The room has a peculiar odour.	➤ This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.
● Air conditioner does not cool or heat efficiently.	➤ Ensure the temperature has been set correctly. ➤ Ensure windows and doors have been closed properly. ➤ Ensure filters are cleaned or replaced when necessary. ➤ Ensure inlet and outlet vents of the units have not been obstructed.
● In heating operation, power indicator blinking and no warm air discharge.	➤ Defrost operation at outdoor unit, maximum 12 minutes.

HOW TO OPERATE

Powerful, Quiet, Ion, Fan Speed, Air Swing



- Ion operation could be activated independently.
- Powerful and Quiet operations could not be activated at the same time.
- Powerful, Quiet and Ion operations could be cancelled by pressing the respective button again.

■ Operation Details

POWERFUL

- To achieve setting temperature quickly. It will operate for 15 minutes and return to the previous setting.

QUIET

- To provide a quiet environment.

ION

- To provide fresh air effect by producing negative ions.

FAN SPEED

- To provide you with the various fan speed selections.
- There are 3 levels of fan speed in addition to automatic fan speed.
- Automatic fan speed:
  The speed of the indoor fan is automatically adjusted according to the operation.

AIR SWING

- To ventilate air in the room.
- There are 5 selections in addition to automatic vertical airflow direction.
- If automatic vertical airflow direction has been set, the louver swings up and down automatically.

- To ventilate air in the room.
- There are 5 selections in addition to automatic horizontal airflow direction.
- If automatic horizontal airflow direction has been set, the louver swings left and right automatically.

- Please do not adjust the vertical and horizontal airflow direction louver manually.

Hints

- If you wish to have the cool air blowing directly on you, set the airflow direction downward but not for an excessive length of time, as it may harm your health.
- Approximately 10% of electricity can be saved if you set the temperature 1°C higher in cooling operation or 2°C lower in heating operation than the desired temperature.

Troubleshooting

● ION indicator on the indoor unit is blinking.	➤ Press ION button twice. If the indicator is still blinking, please consult the dealer.
● Indoor fan stops occasionally during Automatic Fan Speed setting.	➤ This is an advanced feature that helps to remove smell from the surrounding area during operation.
● Indoor fan stops occasionally during heating operation.	➤ To avoid unintended cooling effect.

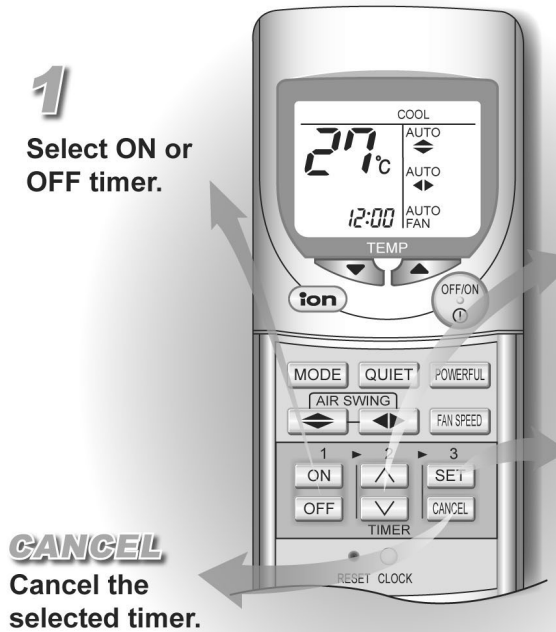
■ Operation Details

TIMER

- Use the ON timer to turn on the air conditioner at the desired time. This will give you a cooling or warming environment, e.g. when you return from work or wake up.
- When the ON timer is set, operation will start 15 minutes for COOL/DRY or 30 minutes for AUTO/HEAT before the actual set time.
- Use the OFF timer to stop the air conditioner operation at the desired time. This can save electricity while you are going out or sleeping.
- The set timer will repeat daily once it is set.
- If there is a power failure, you can press SET button to restore the previous setting once the power is resumed.
- If the timer is cancelled, you can restore the previous setting by pressing SET button.

HOW TO OPERATE

Timer



- Ensure the clock on the remote control has been set correctly.
- You could use the ON and OFF timers at the same time.
- To cancel either the ON or OFF timer, press ON or OFF, then press CANCEL.

Hints

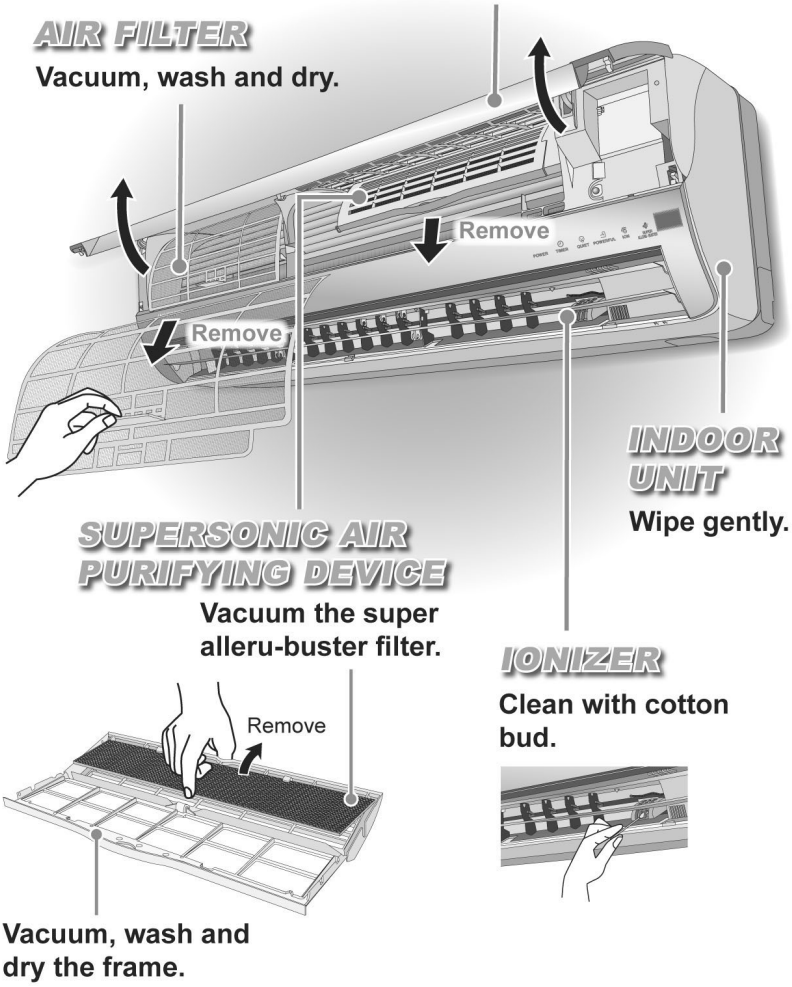
- Press CLOCK button more than 10 seconds to change the time format from 24 hours to AM/PM format.
- For your convenience, you could set the air conditioner to operate automatically by using both ON and OFF timer.

Troubleshooting

● TIMER indicator always on.	➤ Timer is activated and the setting will repeat itself daily.
● POWER indicator is blinking 30 minutes before ON timer is activated.	➤ The unit is determining the operation mode by sensing the room temperature. This happens when it has been set to AUTO operation mode.

CARE & CLEANING

Switch off the power supply before cleaning



■ Washing Instructions

- Do not use benzene, thinner or scouring powder.
- Use soaps or neutral household detergent (≃pH7) only.
- Do not use water with temperature higher than 40°C.

INDOOR UNIT

- Wipe the unit gently with a soft, dry cloth.

AIR FILTER

- It is recommended to clean the air filters once every 2 weeks.
- Purchase the replacement filter if it is damaged.
  Part no.: CWD001137 (Left)
  CWD001138 (Right)

SUPER ALLERU-BUSTER

- It is recommended to clean the filter every 6 months.
- Replace the filter every 3 years or purchase the replacement filter if it is damaged.
  Part no.: CZ-SA13P

IONIZER

- It is recommended to clean the ionizer every 6 months.

■ Preparation for extended Non-operation

- Operate the unit for 2~3 hours using ion operation to dry the internal parts.
- Turn off the power supply and unplug.
- Remove the remote control batteries.

■ Pre-season Inspection

- This inspection is recommended before operating the air conditioner at every season.
- Check if the remote control batteries needed to be replaced.
- Ensure there is no obstruction at all air intake and outlet vents.
- After the start of operation for 15 minutes, it is normal if the temperature differences between air intake and outlet vents at indoor unit is:-

Operation	Temperature
Cooling	⩾ 8°C
Heating	⩾ 14°C

Hints

- Clean the filter regularly as dirty filters will cause unpurified air, low cooling or heating capacity, unpleasant smells and higher energy consumption.
- The unit will become dirty and the performance of the unit will decrease after used for several seasons. Please consult an authorized dealer to perform seasonal inspections in addition to regular cleaning.
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the power supply.

10 Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 55 N.m (5.5 kgf.m) 65 N.m (6.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ **WARNING**	This indication shows the possibility of causing death or serious injury.

⚠ **CAUTION**	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

⃠	Symbol with background white denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ **WARNING**	
1. Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.	
2. Install according to this installation instruction strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
3. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
4. Install at a strong and firm location which is able to withstand the set’s weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.	
5. For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
6. Use the specified cable (2.5 mm^2) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.	
7. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.	
8. When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9. Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.	⃠
10. Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.	⃠

⚠ CAUTION

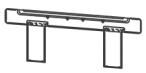
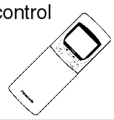
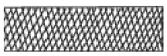
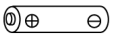
1. This equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.

3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

ATTENTION

1. Selection of the installation location.
   Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2. Power supply connection to the air conditioner.
   Connect the power supply cord of the air conditioner to the mains using one of the following method.
   Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency.
   In some countries, permanent connection of this air conditioner to the power supply is prohibited.
   1. Power supply connection to the receptacle using a power plug.
      Use an approved 16A power plug with earth pin for 2.0HP (A18DK) and 20A for 2.5HP (C24DK, A24DK) for the connection to the receptacle.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for 2.0HP (A18DK) and 20A for 2.5HP (C24DK, A24DK) for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
3. Do not release refrigerant.
   Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.
   It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	5	Remote Control holder 	1
2	Installation plate fixing screw 	6	6	Remote Control holder fixing screw 	2
3	Remote control 	1	7	Super alleru-buster filter 	1
4	Battery 	2	8	Drain elbow (A18DK, A24DK) 	1

Applicable piping kit

CZ-4F5, 7, 10AN (A18DK)

CZ-52F5, 7, 10AN (C24DK, A24DK)

SELECT THE BEST LOCATION

INDOOR UNIT

- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Recommended installation height for indoor unit shall be at least 2.3 m.

OUTDOOR UNIT

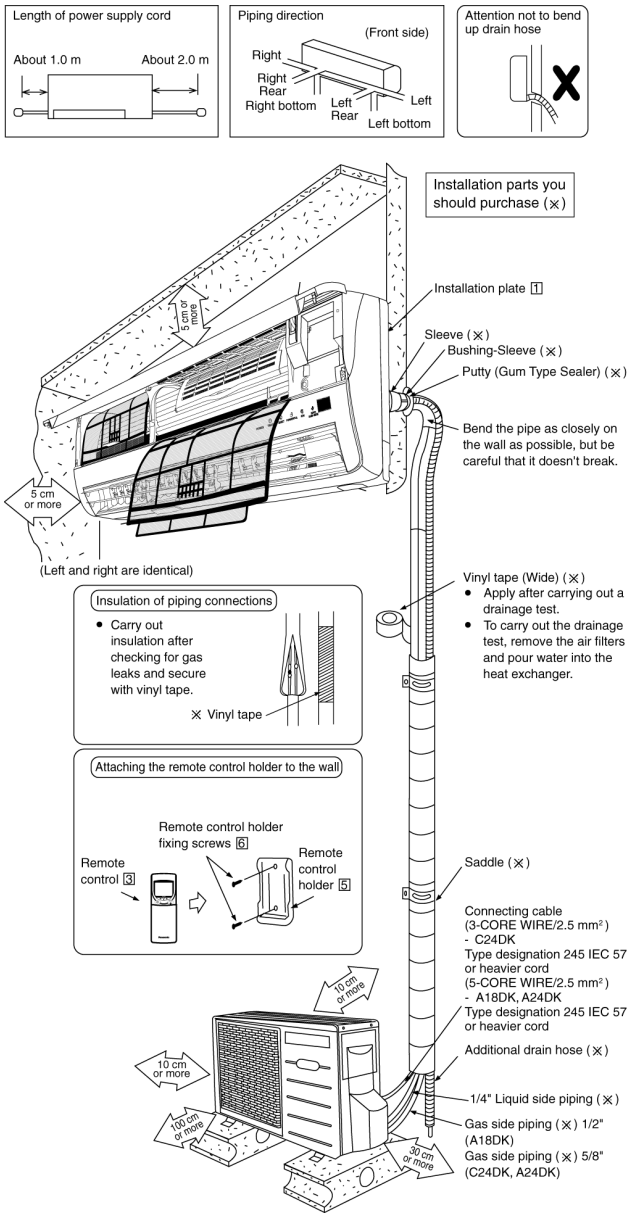
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over 7.5m, additional refrigerant should be added as shown in the table.

Model	Piping size		Rated Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
C24DK	5/8"	1/4"	5	20	25	30
A18DK	1/2"	1/4"	5	20	25	20
A24DK	5/8"	1/4"	5	20	25	30

Example: For A24DK

If the unit is installed at a 10m distance, the quantity of additional refrigerant should be 75g ..... (10 - 7.5)m x 30g/m = 75g

Indoor/Outdoor Unit Installation Diagram



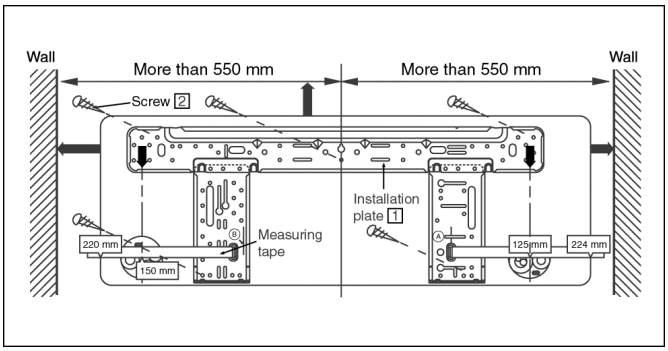
- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

10.2. Indoor Unit

10.2.1. SELECT THE BEST LOCATION (Refer to "Select the best location" section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



The centre of installation plate should be at more than 550 mm at right and left of the wall.

The distance from installation plate edge to ceiling should more than 67 mm.

From installation plate left edge to unit's left side is 47 mm.

From installation plate right edge to unit's right is 73 mm.

Ⓑ : For left side piping, piping connection for liquid should be about 126 mm from this line.
: For left side piping, piping connection for gas should be about 174 mm from this line.
: For left side piping, piping connection cable should be about 984 mm from this line.

1. Mount the installation plate on the wall with 5 screws or more.
   (If mounting the unit on the concrete wall, consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

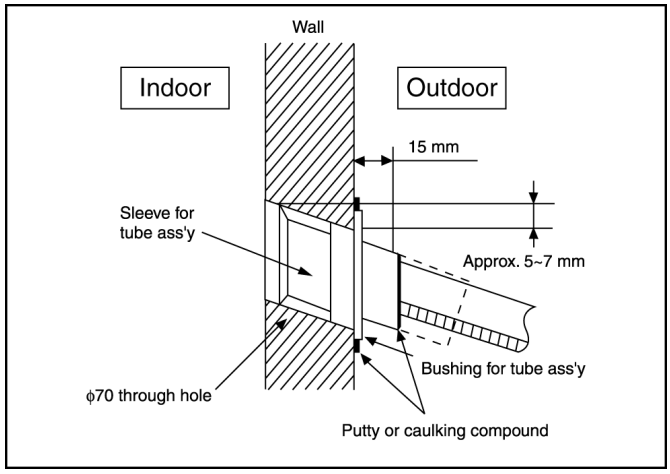
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

Caution
When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



10.2.4. INDOOR UNIT INSTALLATION

1. **For the right rear piping**

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Secure the Indoor Unit
↓
Insert the connecting cable

2. **For the right and right bottom piping**

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Insert the connecting cable
↓
Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

↓

Bend the embedded piping

↓

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

↓

Cut and flare the embedded piping

↓

- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
- Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

↓

- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

↓

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

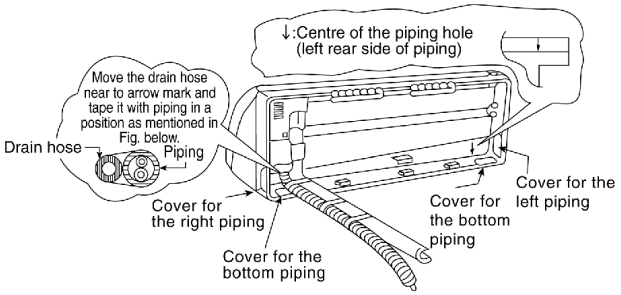
Insulate and finish the piping

↓

- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Secure the Indoor Unit

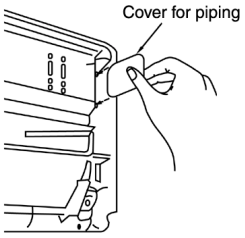
Pull out the piping and drain hose



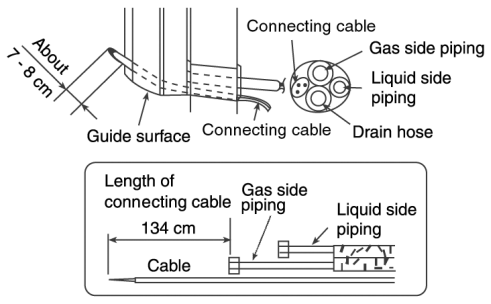
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping.)



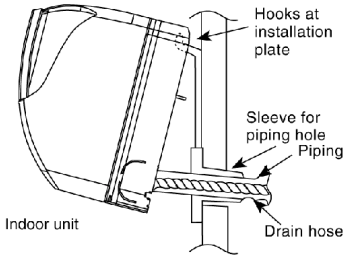
Insert the connecting cable



(This can be used for left rear piping & left bottom piping also.)

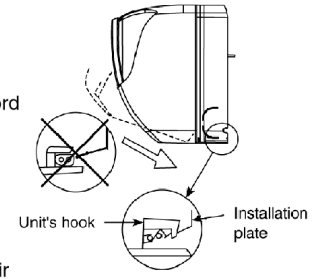
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate.(Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

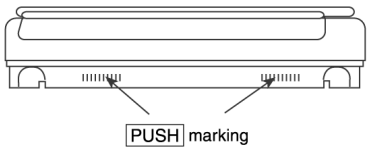


Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).

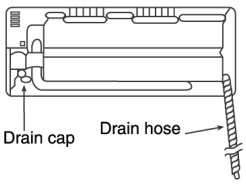


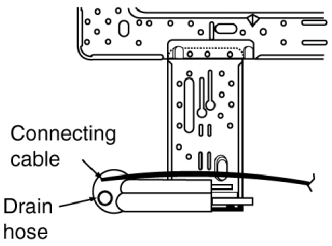
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.



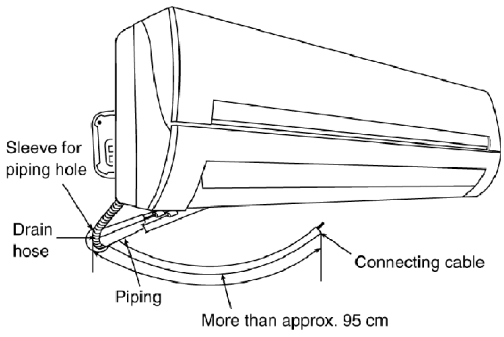
Exchange the drain hose and the cap

Rear view for left piping installation

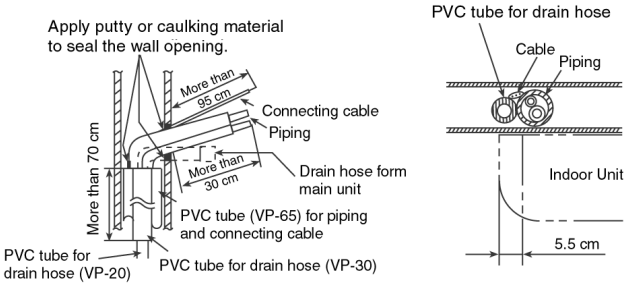




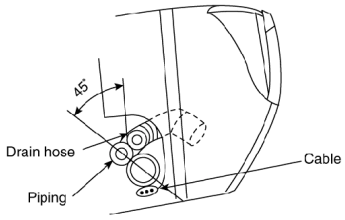
Adjust the piping slightly downwards.



- How to pull the piping and drain hose out, in case of the embedded piping.



- In case of left piping how to insert the connecting cable and drain hose.



(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

1. The inside and outside connecting cable can be connected without removing the front grille.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 2.5 mm^2 (C24DK) or 5 × 2.5 mm^2 (A18DK, A24DK) flexible cord, type designation 245 IEC 57 or heavier cord.
   - Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
   - Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.

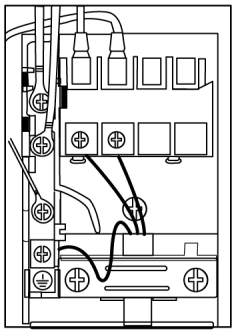
CS/CU-C24DK

Terminals on the indoor unit	1	2	⏚
Colour of wires			
Terminals on the outdoor unit	1	2	⏚

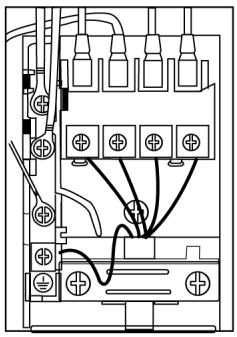
CS/CU-A18DK, A24DK

Terminals on the indoor unit	1	2	3	4	⏚
Colour of wires					
Terminals on the outdoor unit	1	2	3	4	⏚

- Secure the cable onto the control board with the holder (clamper).



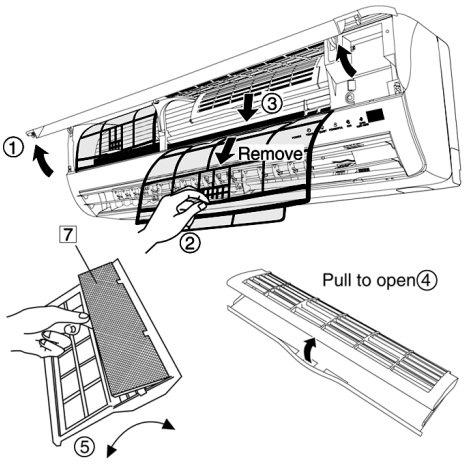
C24DK



A18DK, A24DK

INSTALLATION OF SUPER ALLERU-BUSTER FILTER

1. Open the front panel.
2. Remove the air filter.
3. Remove Supersonic air purifying device.
4. Open the Supersonic air purifying device frame.
5. Insert the super alleru-buster filter and close the Supersonic air purifying device frame as shown in illustration at right.

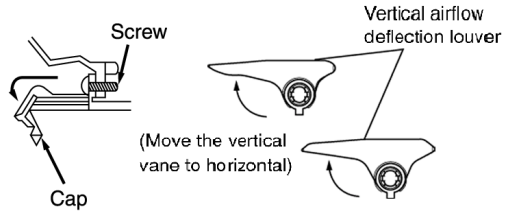


HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. Open the intake grille.
2. Set the vertical airflow direction louver to the horizontal position.
3. Slide down the 3 caps on the front grille as shown in the illustration below, and then remove the 3 mounting screws.
4. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louvers to the horizontal position and then carry out above steps 2 - 3 in the reverse order.



AUTO SWITCH OPERATION

The below operations will be performed by pressing the “AUTO” switch.

1. AUTO OPERATION MODE

   The Auto operation will be activated immediately once the Auto Switch is pressed.

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

   The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. A “beep” sound will occur at the fifth sec., in order to identify the starting of Test Run operation.

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

   The ON/OFF of remote controller receiving sound can be changed over by the following step:

   a. Release the Auto Switch after Test Run operation is activated.

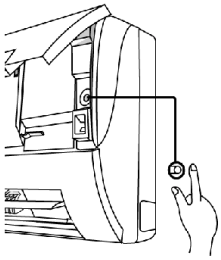
   b. Then, within 20 sec after (a), press Auto Switch for more than 5 sec.

      A “beep” “beep” sound will occur at the fifth sec., then release the Auto switch.

   c. Within 20 sec after (b), press Auto Switch again. Everytime Auto Switch is pressed (within 20 sec interval), remote controller receiving sound status will be reversed between ON and OFF.

      Long “beep” sound indicates that remote controller receiving sound is OFF.

      Short “beep” sound indicates that remote controller receiving sound is ON.



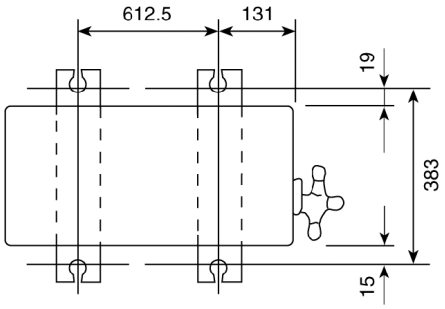
10.3. Outdoor Unit

10.3.1. SELECT THE BEST LOCATION (Refer to “Select the best location” section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).
2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.



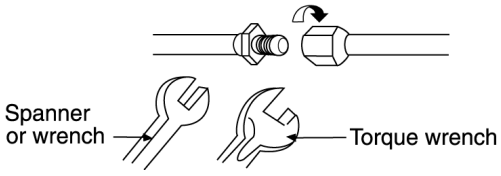
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (in case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



MODEL	Piping size (Torque)	
	Gas	Liquid
A18DK	1/2” (55 N.m)	1/4” (18 N.m)
C24DK, A24DK	5/8” (65 N.m)	1/4” (18 N.m)

Connecting The Piping To Outdoor Unit

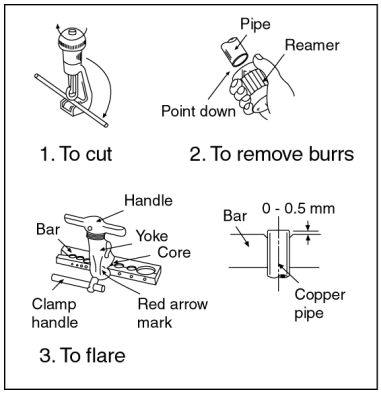
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

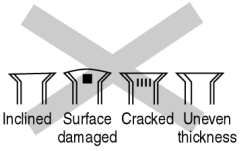
CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.

   Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



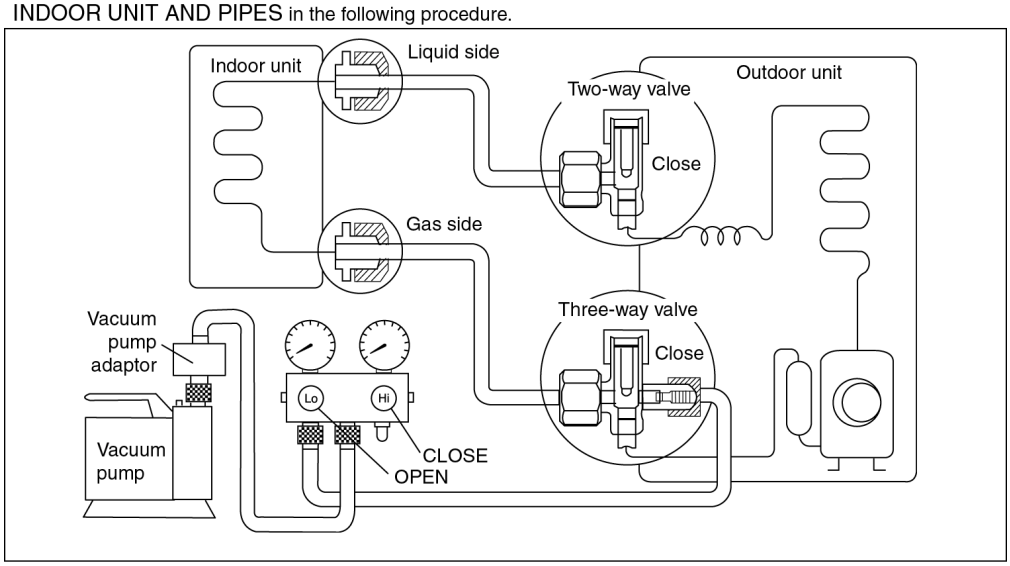
■ Improper flaring ■



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3.4. EVACUATION OF THE EQUIPMENT

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



1. Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump and vacuum pump adaptor.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 Mpa) to -76 cmHg (-0.1 Mpa). Then evacuate the air approximately ten minutes.
4. Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.

   Note : BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6. Tighten the service port caps of the 3-way valve at a torque of 18 N.m with a torque wrench.
7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.
   - Be sure to check for gas leakage.

CAUTION

- If gauge needle does not move from 0 cmHg (0 Mpa) to -76 cmHg (-0.1 Mpa), in step ③ above take the following measure.-
- If the leak stops when the piping connections are tightened further, continue working from step ③.
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation. Take care of the liquid refrigerant , it may cause frostbite.

10.3.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the control board cover from the unit by loosening the screw.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 2.5 mm^2 (C24DK) or 5 × 2.5 mm^2 (A18CK, A24DK) flexible cord, type designation 245 IEC 57 or heavier cord.

CS/CU-C24DK

Terminals on the indoor unit	1	2	⏚
Colour of wires			
Terminals on the outdoor unit	1	2	⏚

CS/CU-A18DK, A24DK

Terminals on the indoor unit	1	2	3	4	⏚
Colour of wires					
Terminals on the outdoor unit	1	2	3	4	⏚

3. Secure the cable onto the control board with the holder (clamper).
4. Attach the control board cover to the original position with the screw.

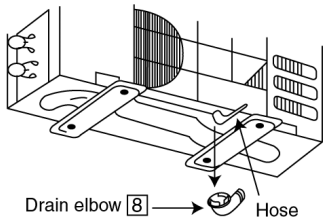
10.3.6. PIPE INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.

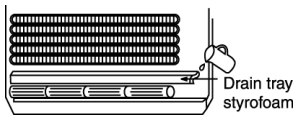
CU-A18DK, A24DK



Install the hose at an angle so that the water smoothly flows out.

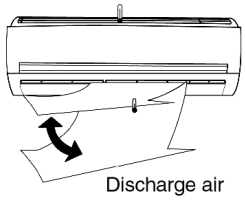
CHECK THE DRAINAGE

- Open front panel and remove air filters.
  (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.



EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



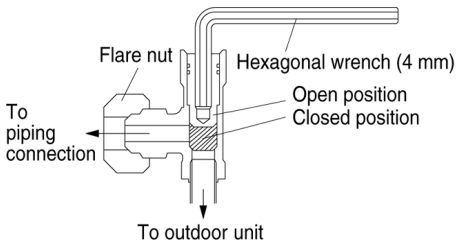
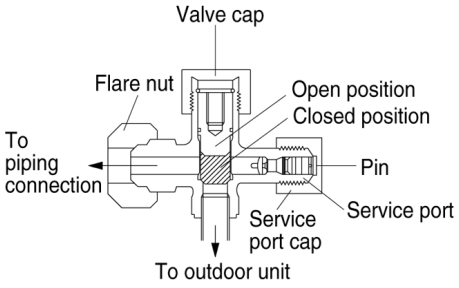
NOTE:
These equipment shall be connected to a suitable mains network with a main impedance less than the following:

CS/CU-C24DKD:0.13 Ω CS/CU-A24DKD:0.06 Ω

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connecting cable being fixed to terminal board firmly?
- ☐ Is the connecting cable being clamped firmly?
- ☐ Is the drainage OK?
  (Refer to “Check the drainage” section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control’s LCD operation normal?
- ☐ Is the super alleru-buster filter is installed?

11 2-way, 3-way Valve

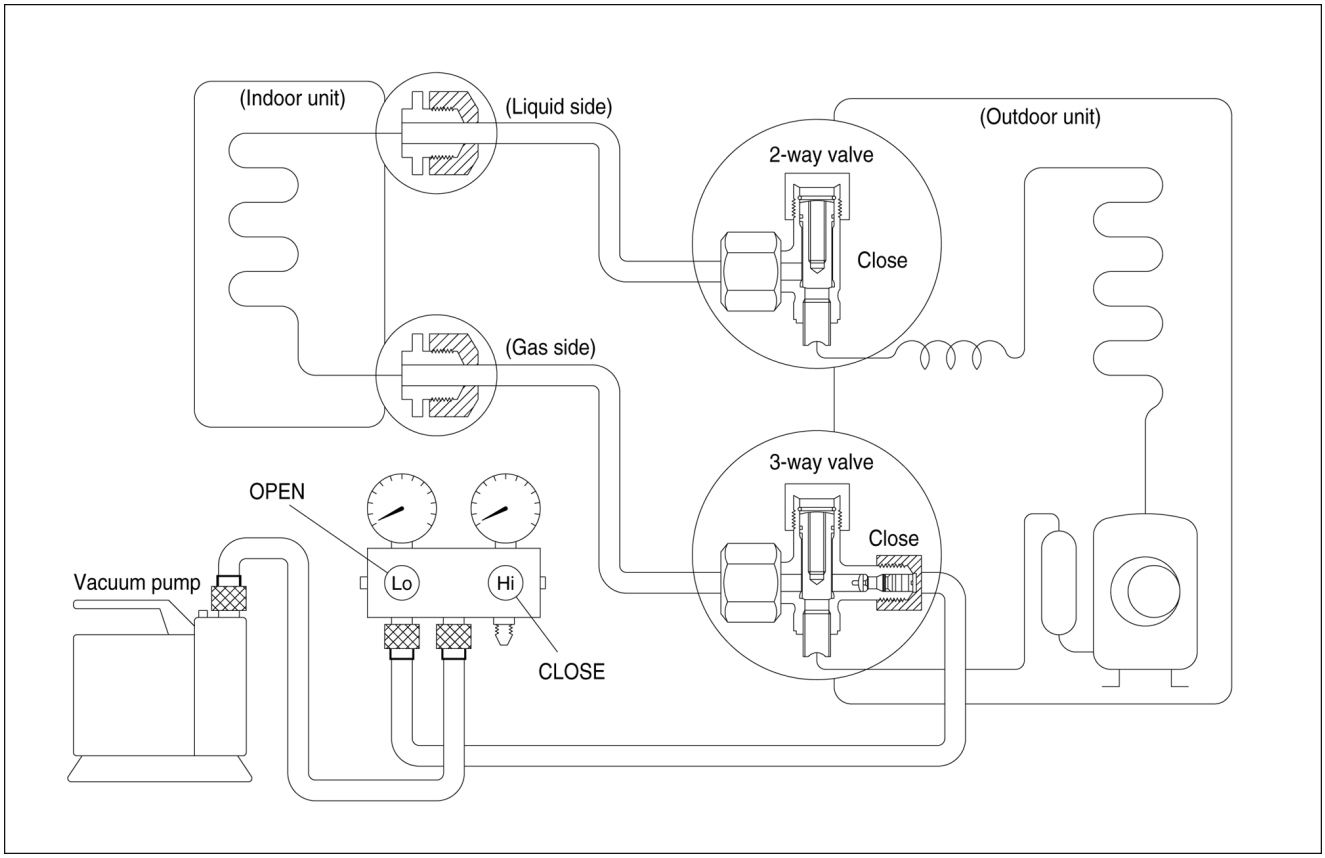
	2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
			
Works	Shaft Position	Shaft Position	Service Port
Shipping	Close (With valve cap)	Close (With valve cap)	Close (With cap)
Evacuation (Installation and Re-installation)	Close (Counter-Clockwise)	Close (Clockwise)	Open (Push-pin)
Operation	Open (With valve cap)	Open (With valve cap)	Close (With cap)
Pumping down (Transferring)	Close (Clockwise)	Open (Counter-Clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open	Open	Open With vacuum pump
Gas charging (Servicing)	Open	Open	Open (With charging cylinder)
Pressure check (Servicing)	Open	Open	Open (Connected manifold gauge)
Gas releasing (Servicing)	Open	Open	Open (Connected manifold gauge)

11.1. Evacuation of the Equipment (For Europe & Oceania Destination)

11.1.1. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of a 3-way valve.**
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto the 2-way and 3-way valves.**
   - Be sure to check for gas leakage.

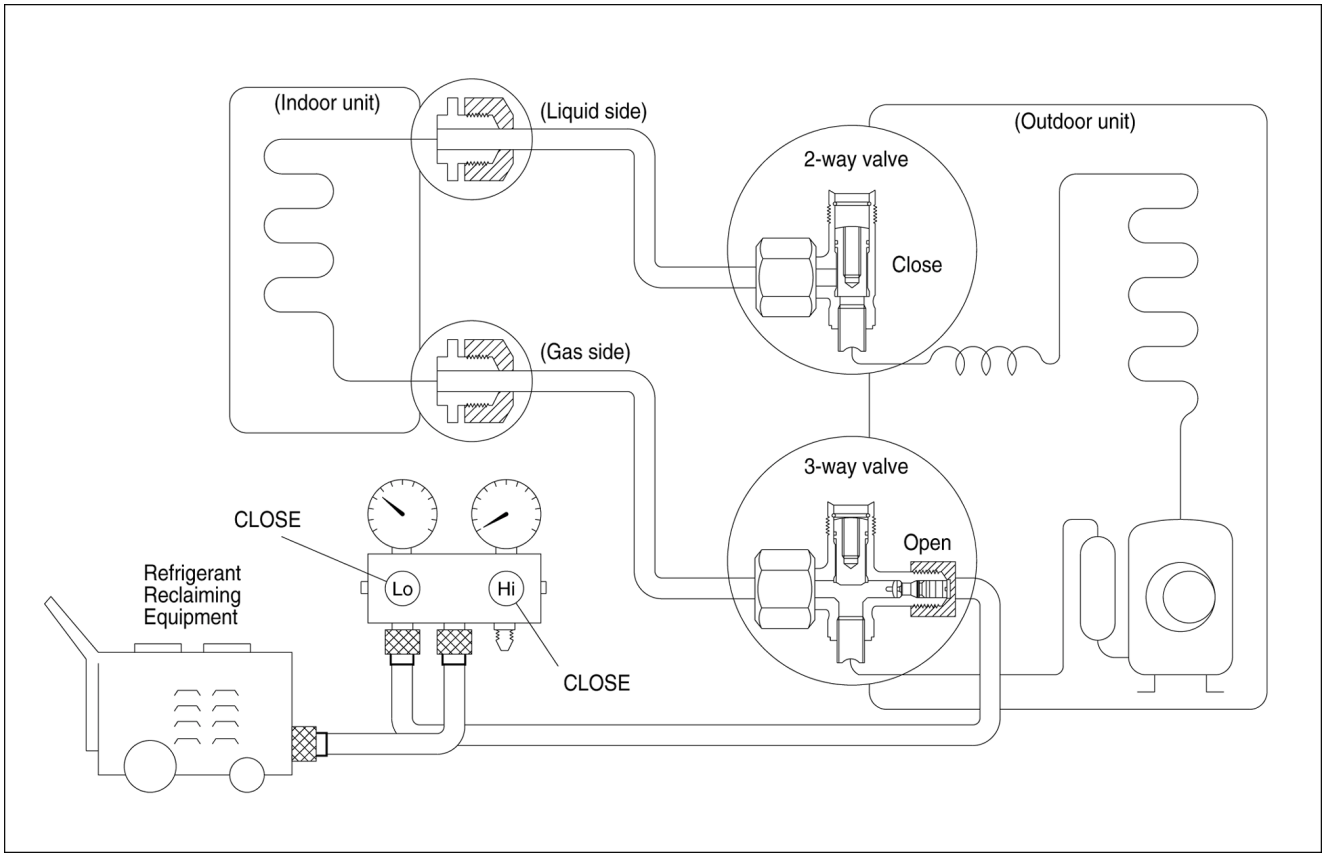
Caution

If gauge needle does not move from 0 cmHg to -76 cmHg in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (3).

If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.2. Pumping down



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the opened position.**
   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.
2. **Operate the unit for 10 to 15 minutes.**
3. **Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**
   - Connect the charge hose with the push pin to the Gas service port.
4. **Air purging of the charge hose.**
   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. **Set the 2-way valve to the closed position.**
6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 MPa (0 kg/cm^{2}G).**

   If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control P.C.B.

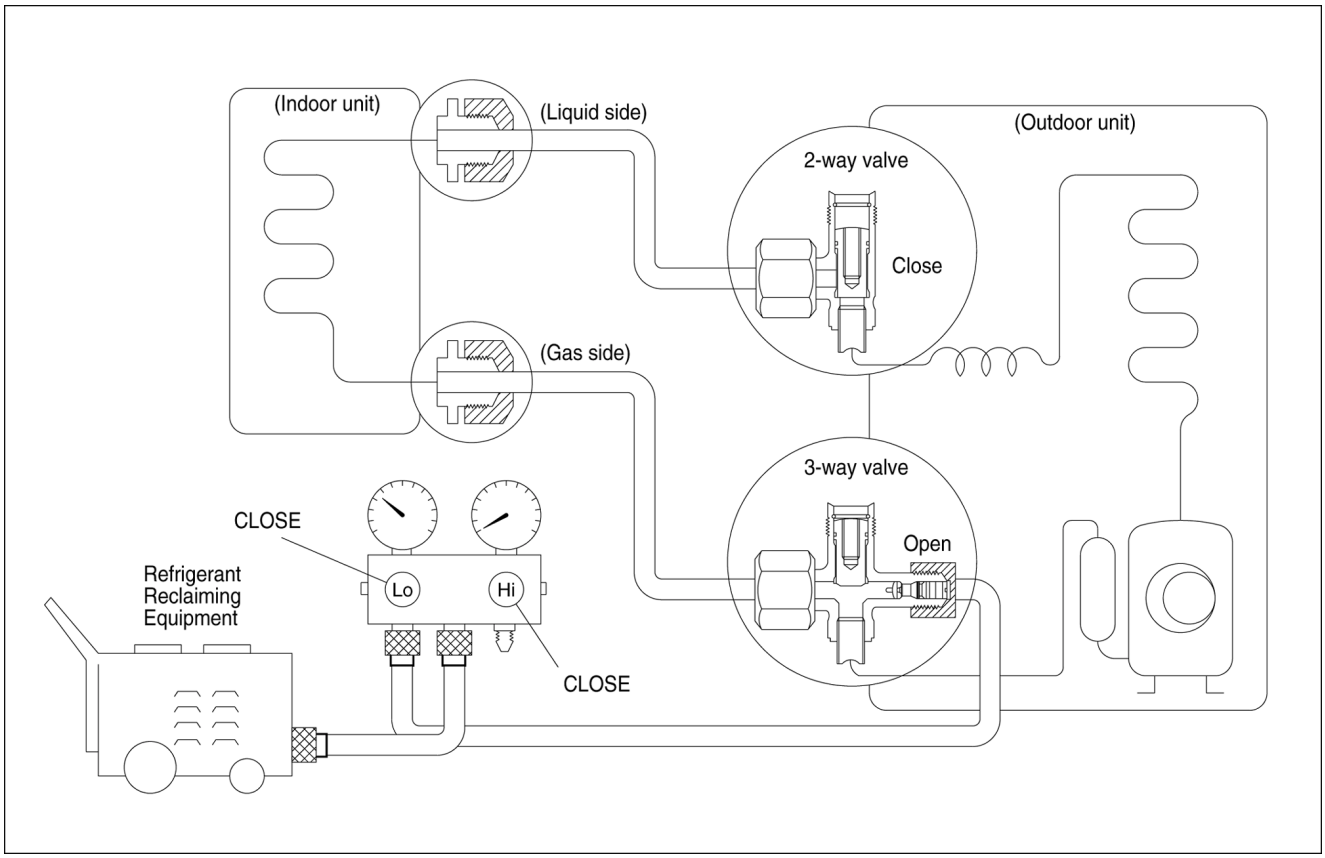
   (Simply press the pumping down button if it is equipped.)

   So that the unit can be operated.
7. **Immediately set the 3-way valve to the closed position.**
   - Do this quickly so that the gauge ends up indicating 0.1 MPa (1 kg/cm^{2}G) to 0.3 MPa (3 kg/cm^{2}G).
8. **Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.**
9. **Disconnect the charge set, and mount the 2-way and 3-way valve's stem caps and the service port caps.**
   - Use a torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.
10. **Disconnect pipes from indoor unit and outdoor unit.**

11.1.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.

If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.**
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from 3-way valve service port, and then discharge the refrigerant until low side (gas side) gauge needle indicates 0.3 MPa (3 kg/cm^2).**
7. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 2-way and 3-way valves.**
   - **BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.**
   - Purge the air from charge set's centre hose.
   - Be sure to check for gas leakage.

Caution

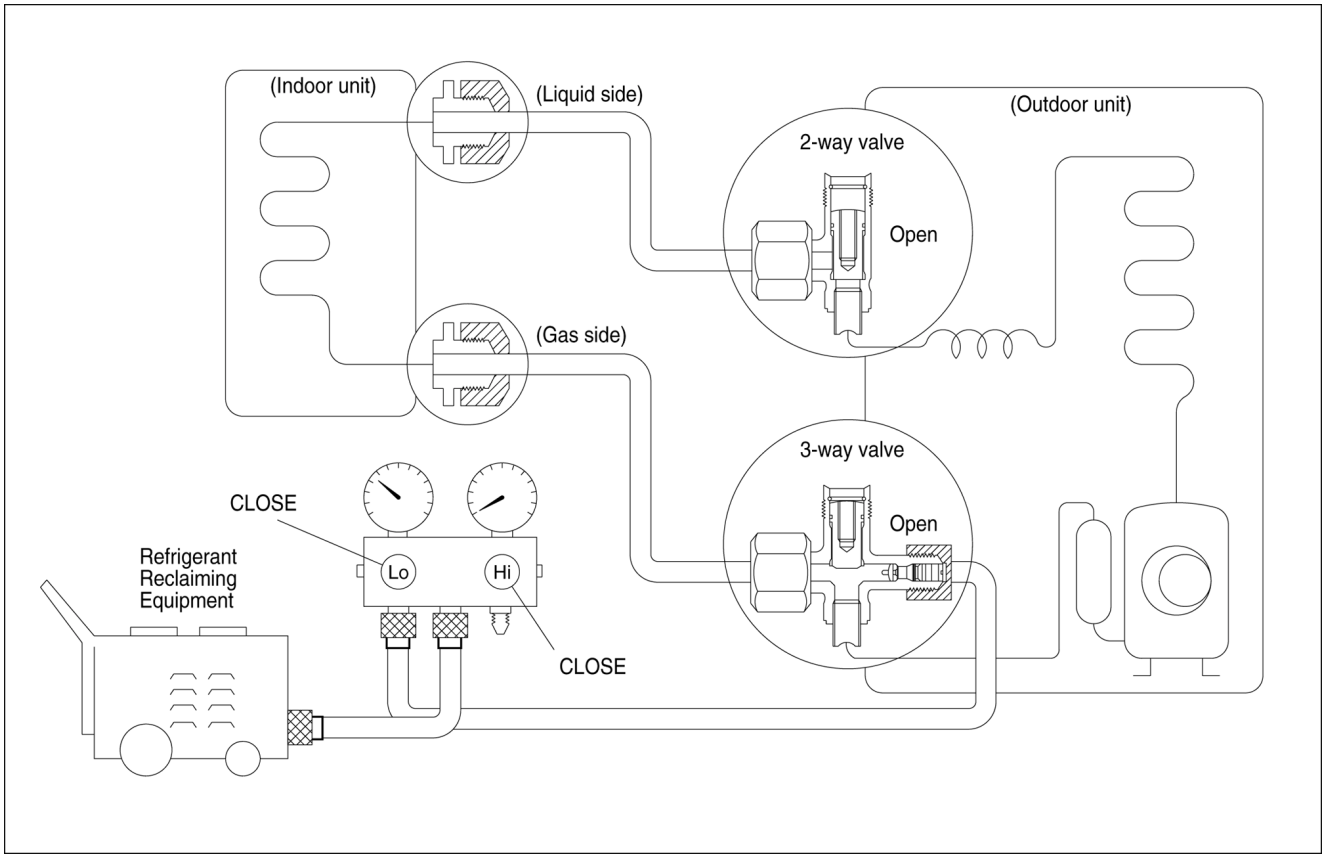
If gauge needle does not move from 0 MPA (0 cmHg) to -0.1 MPa (-76 cmHg) in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step 3.

If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.4. Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)

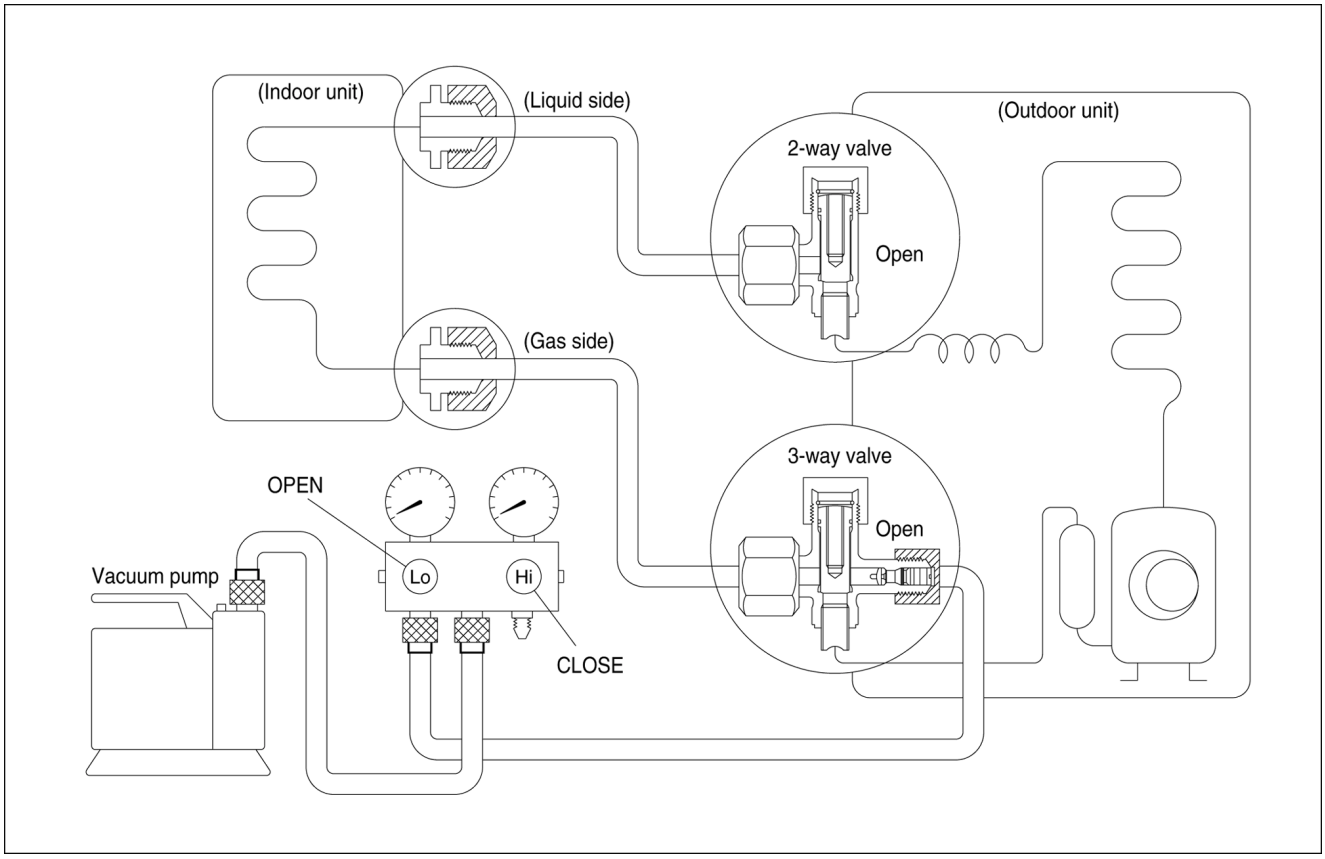


Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the open position.**
2. **Connect the charge set to the 3-way valve's service port.**
   - Leave the valve on the charge set closed.
   - Connect the charge hose with the push-pin to the service port.
3. **Connect the charge set's centre hose to refrigerant reclaiming equipment.**
   - Purge the air from charge hose.
4. **Open the valve (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G).**
   - If there is no air in the refrigeration cycle (the pressure when the air conditioner is not running is higher than 0.1 MPa (1 kg/cm^{2}G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 km/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G). If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.
5. **Turn on refrigerant reclaiming equipment.**

11.1.5. Evacuation

(No refrigerant in the refrigeration cycle)



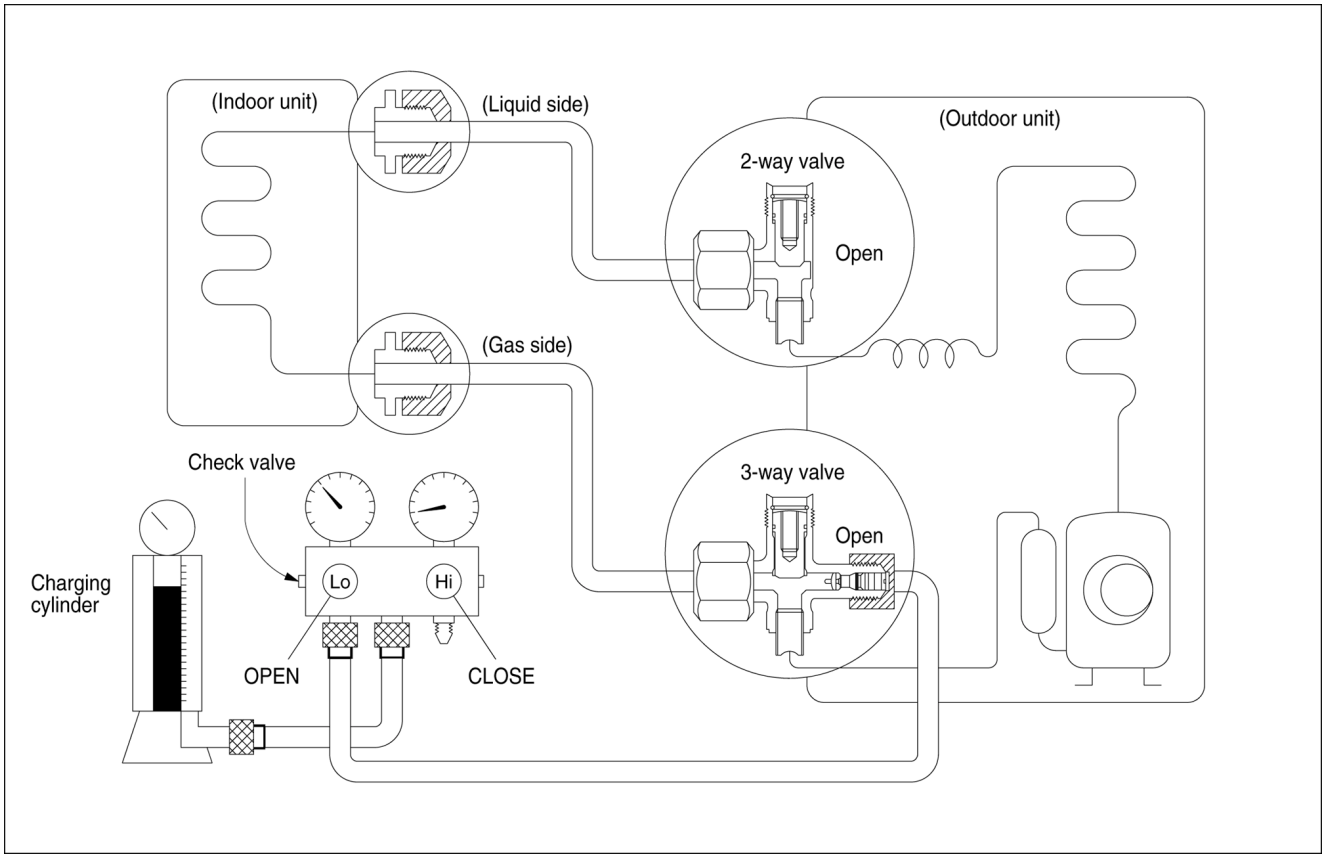
Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Evacuation for approximately one hour.**
   - Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]
3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**
4. **Disconnect the charge hose from the vacuum pump.**
   - Vacuum pump oil

     If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.1.6. Gas charging

(After Evacuation)



Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
2. **Purge the air from the charge hose.**
   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**
   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

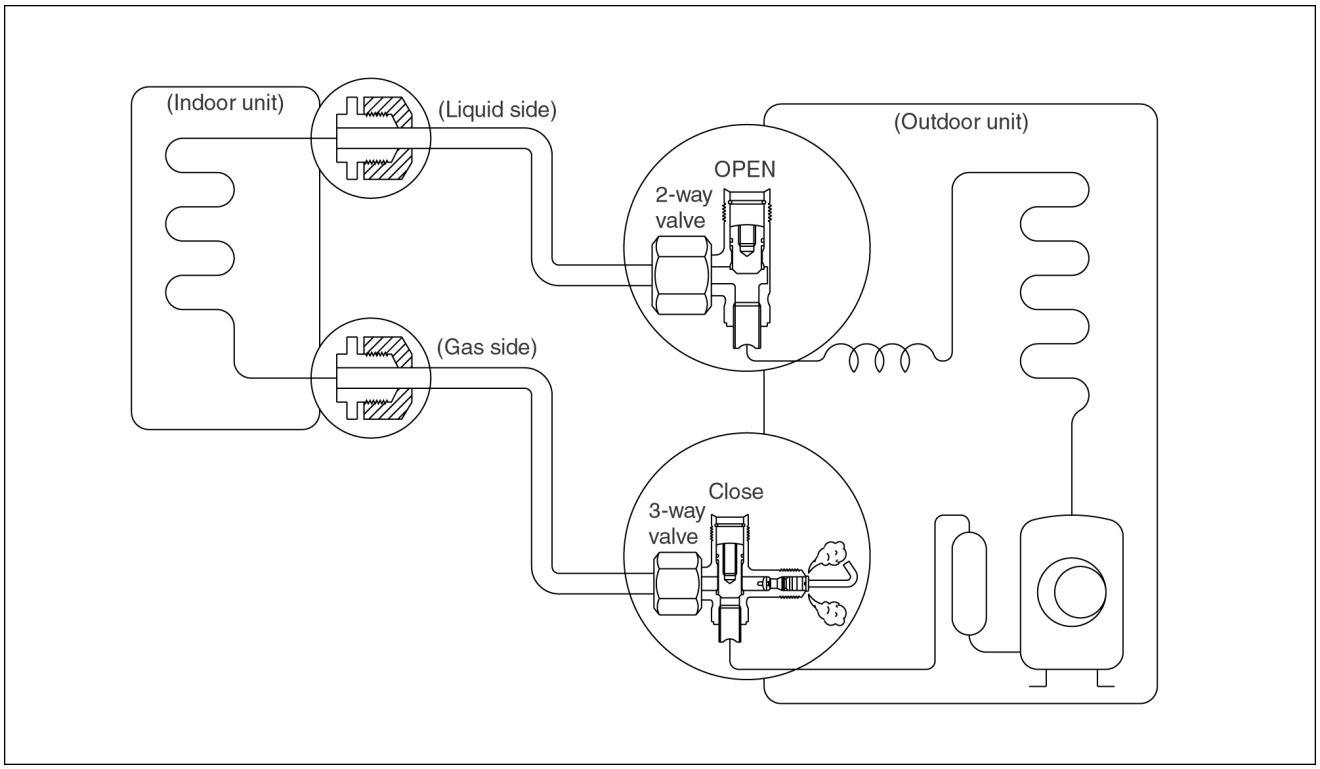
4. **Immediately disconnect the charge hose from the 3-way valve's service port.**
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. **Mount the valve stem caps and the service port cap.**
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

11.2. Air Purging of the Piping and Indoor Unit

11.2.1. Air purging (Installation)

Required tools: hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints and gas leak detector.
The additional gas for air purging has been charged in the outdoor unit.
However, if the flare connections have not been done correctly and there gas leaks, a gas cylinder and the charge set will be needed.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.



Service port cap
Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Recheck the piping connections.**
2. **Open the valve stem of the 2-way valve counter-clockwise approximately 90°, wait 10 seconds, and then set it to closed position.**
   - Be sure to use a hexagonal wrench to operate the valve stem.
3. **Check for gas leakage.**
   - Check the flare connection for gas leakage.
4. **Purge the air from the system**
   - Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port.
   - Using the hexagonal wrench to press the valve core pin, discharge for three seconds and then wait for one minute.
     Repeat this three times.
5. **Use torque wrench to tighten the service port cap to a torque of 1.8 kg.m. (18 N.m).**
6. **Set the 3-way valve to the opened position.**
7. **Mount the valve stem nuts to the 2-way and 3-way valves.**
8. **Check for gas leakage.**
   - At this time, especially check for gas leakage from the 2-way and 3-way's stem nuts, and from the service port cap.

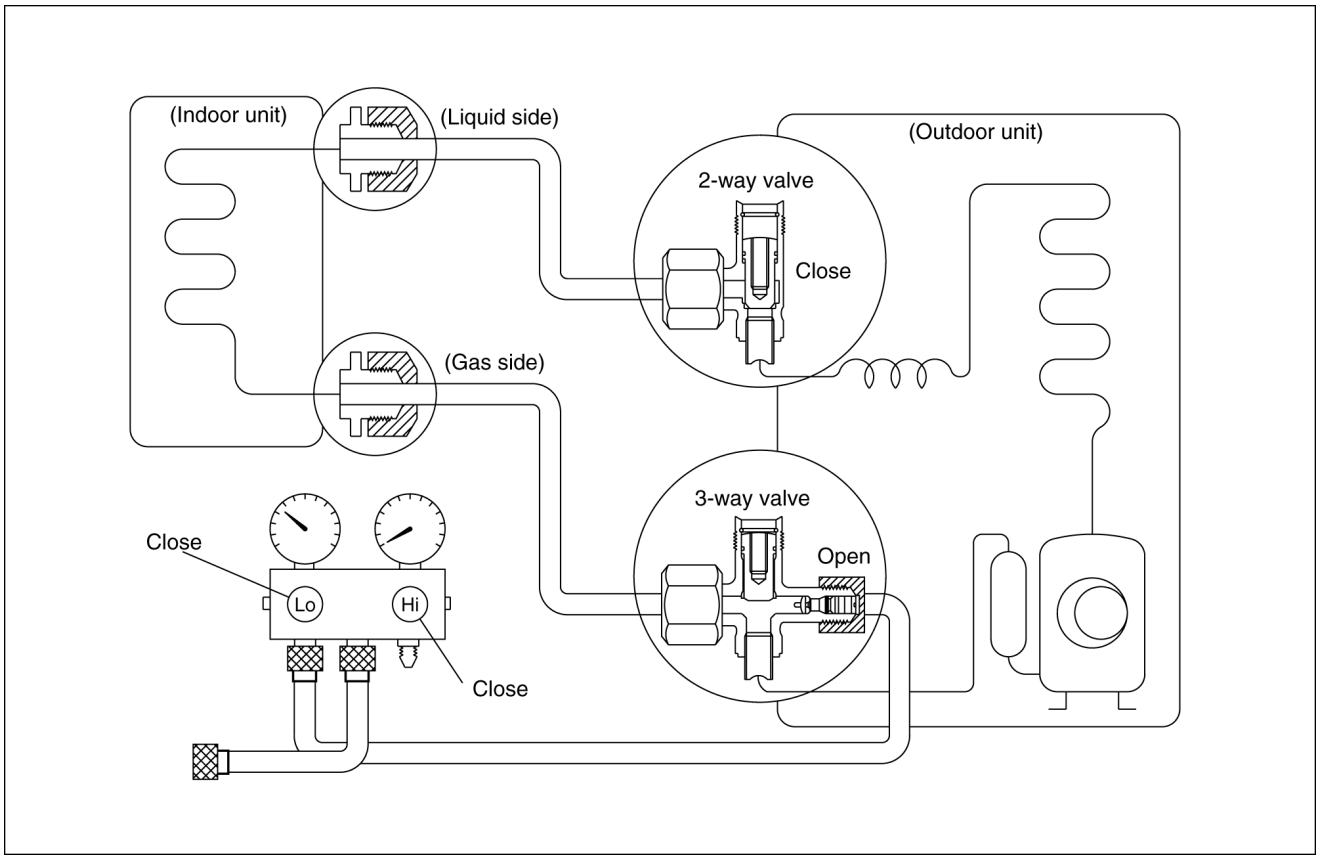
Caution

If gas leakage is discovered in step (3) above, take the following measures:

If the leaks stop when the piping connections are tightened further, continue working from step (4).

If the gas leaks do not stop when the connections are retightened, repair the location of the leak, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

11.2.2. Pumping down (Re-installation)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the opened position.**
   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.

2. **Operate the unit for 10 to 15 minutes.**

3. **Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**
   - Connect the charge hose with the push pin to the Gas service port.

4. **Air purging of the charge hose.**
   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

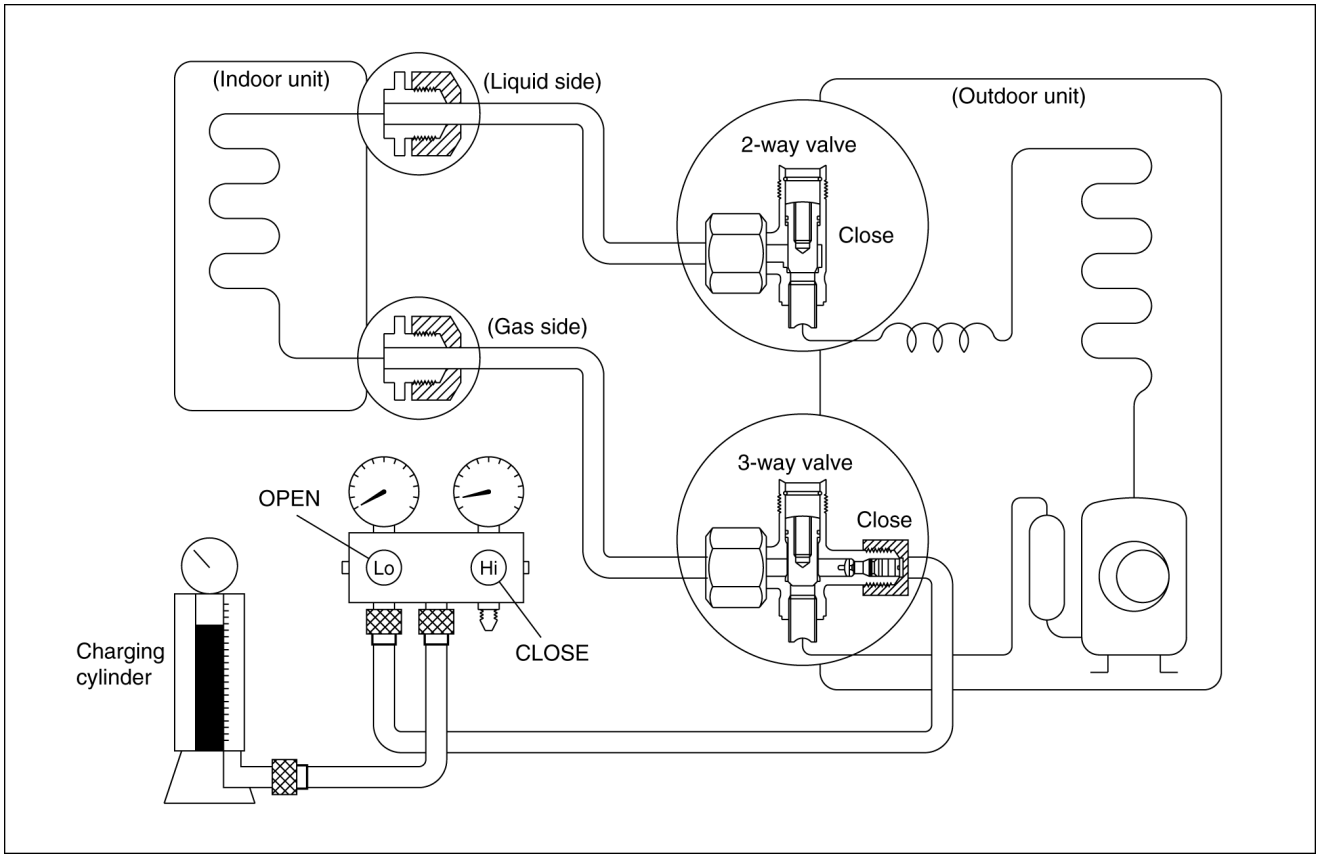
5. **Set the 2-way valve to the close position.**

6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1 kg/cm^{2}G (0.1 MPa).**

7. **Immediately set the 3-way valve to the closed position.**
   - Do this quickly so that the gauge ends up indicating 3 to 5 kg/cm^{2}G (0.3 to 0.5 MPa).

8. **Disconnect the charge set, and mount the 2-way and 3-way valve's stem nuts and the service port caps.**
   - Use a torque wrench to tighten the service port cap to a torque of 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.2.3. Re-air purging (Re-installation)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the closed position.**

2. **Connect the charge set and a charging cylinder to the service port of the 3-way valve.**
   - Leave the valve on the charging cylinder closed.

3. **Air purging.**
   - Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.
   - After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.

4. **Check for gas leakage.**
   - Check the flare connections for gas leakage.

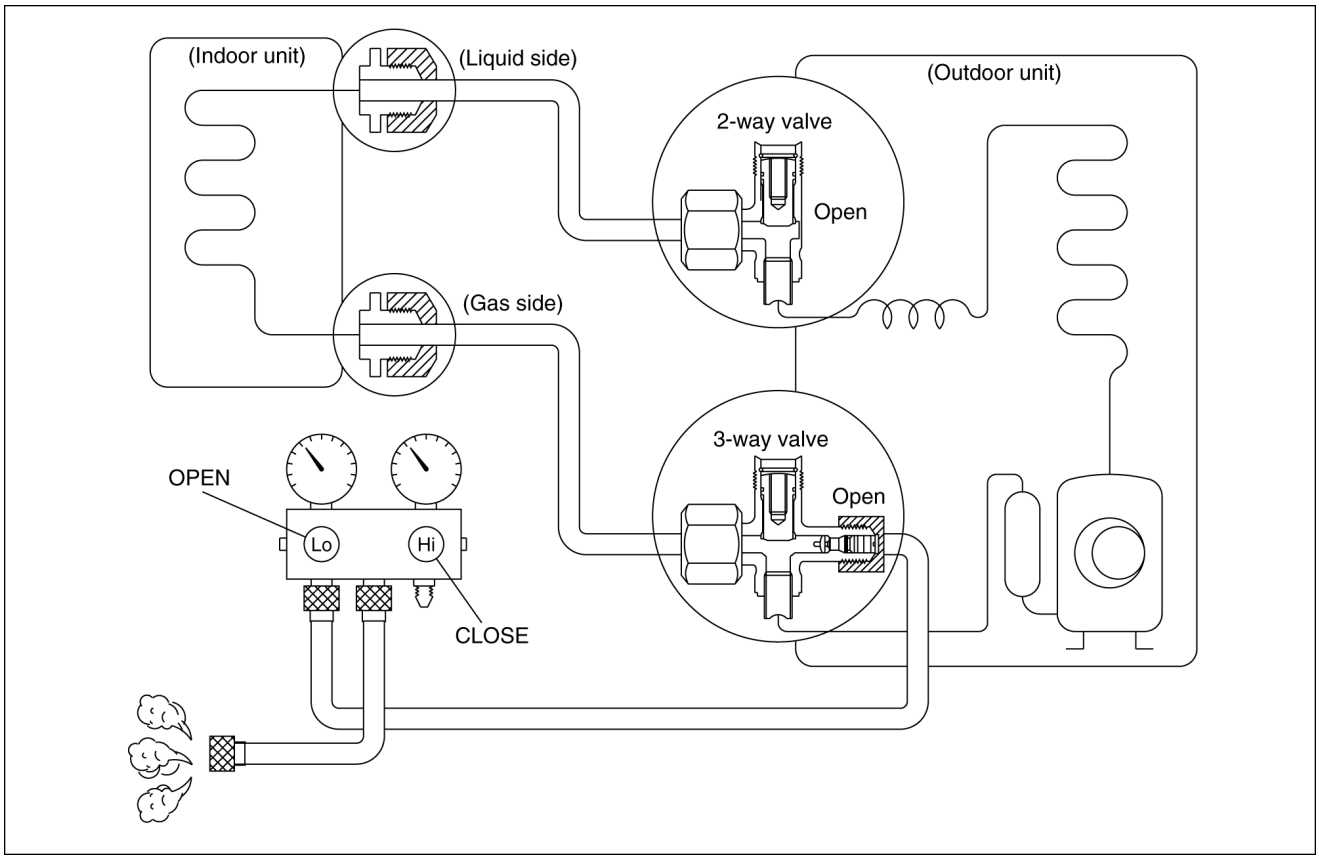
5. **Discharge the refrigerant.**
   - Close the valve on the charging cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm^{2}G (0.3 to 0.5 MPa)

6. **Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.**
   - Be sure to use a hexagonal wrench to operate the valve stems.

7. **Mount the valve stem nuts and the service port cap.**
   - Be sure to use a torque wrench to tighten the service port cap to a torque 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.2.4. Balance refrigerant of the 2-way, 3-way valves

(Gas leakage)



Procedure:

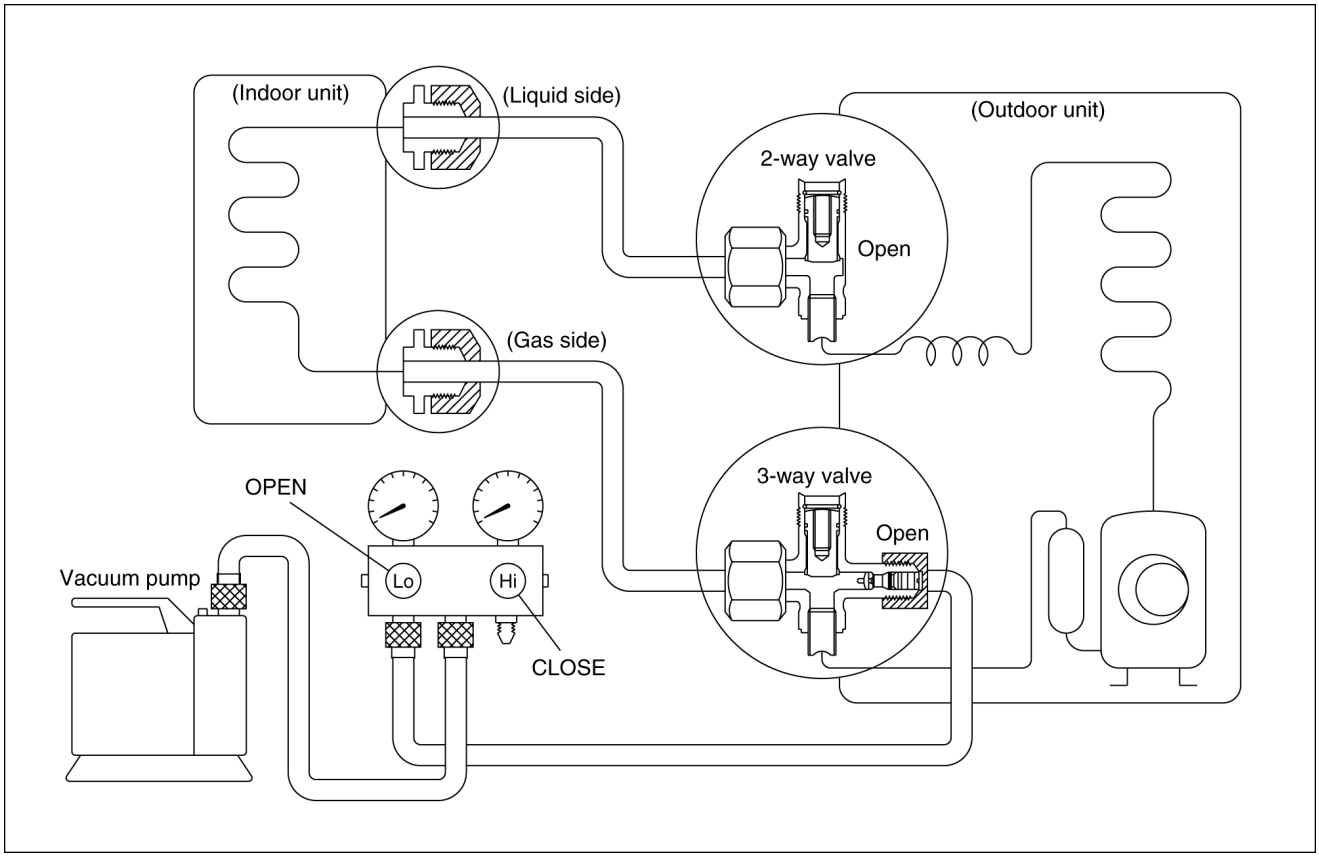
1. **Confirm that both the 2-way and 3-way valves are set to the open position.**

2. **Connect the charge set to the 3-way valve's service port.**
   - Leave the valve on the charge set closed.
   - Connect the charge hose with the push pin to the service port.

3. **Open the valves (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^{2}G (0.05 to 0.1 MPa) .**
   - If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1 kg/cm^{2}G (0.1 MPa)], discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^{2}G (0.05 to 0.1 MPa). If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will be discharged.

11.2.5. Evacuation (Installation)

(No refrigerant in the refrigeration cycle)



Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**

2. **Evacuation for approximately one hour.**
   - Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]

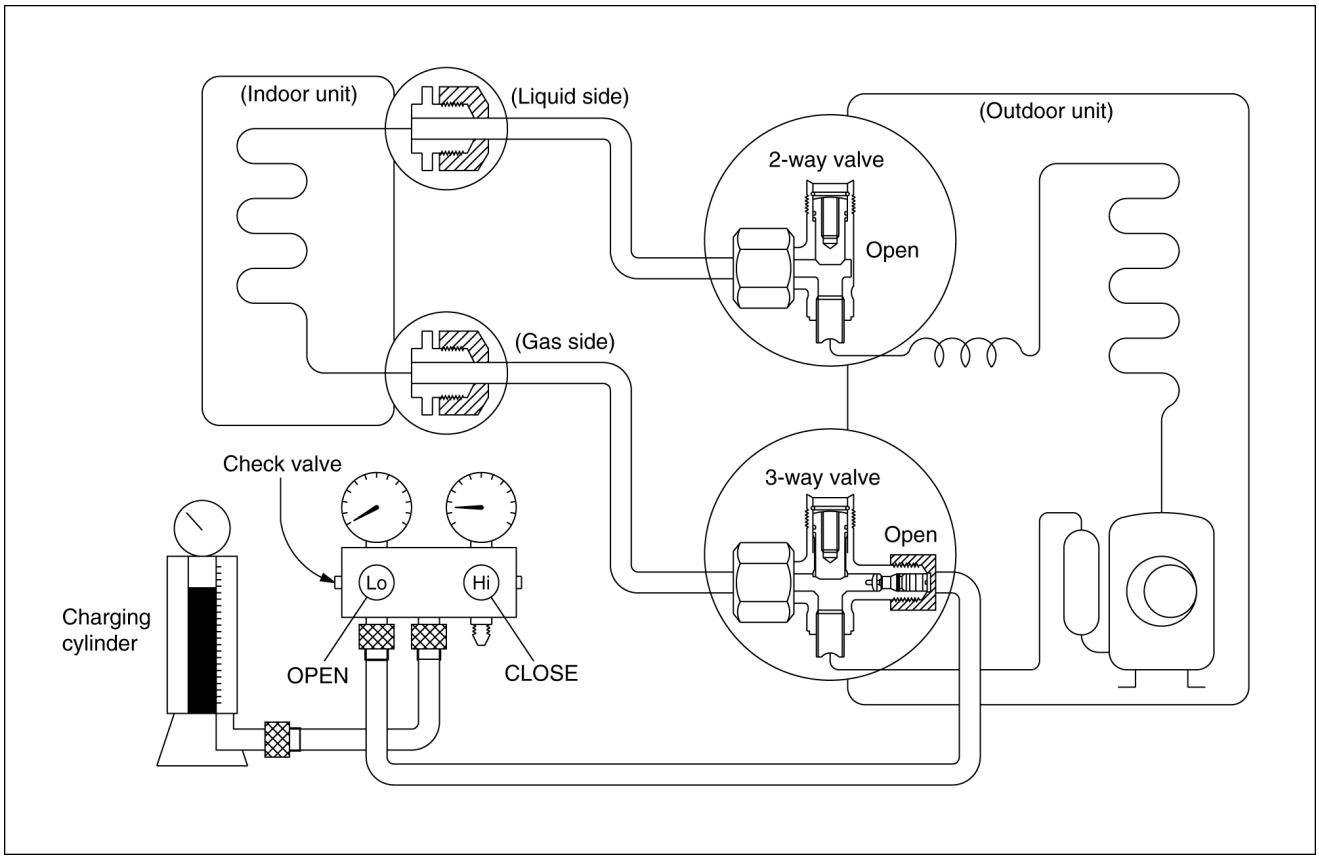
3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**

4. **Disconnect the charge hose from the vacuum pump.**
   - Vacuum pump oil

     If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.2.6. Gas charging

(After Evacuation)



Procedure:

1. **Connect the charge hose to the charging cylinder.**
   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
2. **Purge the air from the charge hose.**
   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**
   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. **Immediately disconnect the charge hose from the 3-way valve's service port.**
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
5. **Mount the valve stem caps and the service port cap.**
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12 Servicing Information

Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C).
- Pb free solder will tend to splash when heated too high (about 1100° F/600°C).

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:

   - Remove the 3 caps and 3 screws at the bottom of the Front Grille. (Fig. 1)
   - Remove the Front Grille by releasing the 3 hooks at the top of the Front Grille. (Fig. 1)

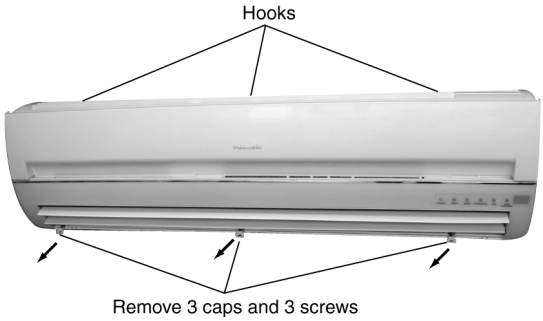


Fig. 1

   - Unhook the tabs at the Control Board to remove the Control Board Cover. (Fig. 2)

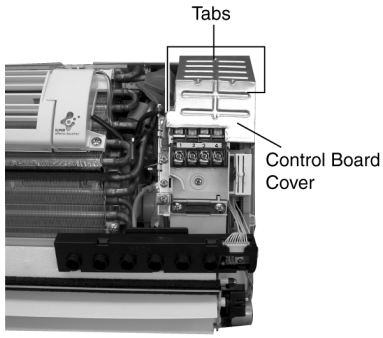


Fig. 2

2. To remove the Electronic Controllers:
   - Release the 2 Particular Piece. (Fig. 3)
   - Release the earth wire screw. (Fig. 3)
   - Release the screw holder terminal board. (Fig. 3)
   - Release the CN-DISP connector. (Fig. 3)
   - Release the CN-TH connector. (Fig. 4)
   - Release the CN-ION connector. (Fig. 4)
   - Release the CN-SONIC connector. (Fig. 4)
   - Release the CN-STM1 connector. (Fig. 4)
   - Release the CN-STM2 connector. (Fig. 4)
   - Release the hooks that hold the Electronic Controller and pull out the Electronic Controller. (Fig. 4)
   - Release the CN-FM connector. (Fig. 4)
   - Release the AC01 (white) connector. (Fig. 4)
   - Release the two RY-PWR connector. (Fig. 4)

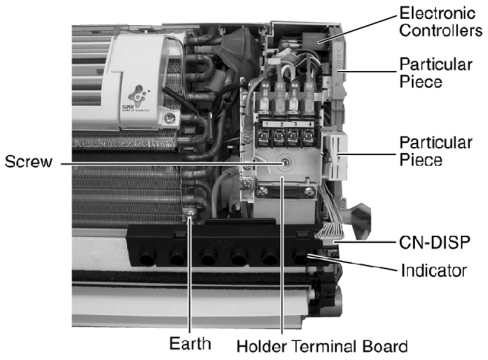


Fig. 3

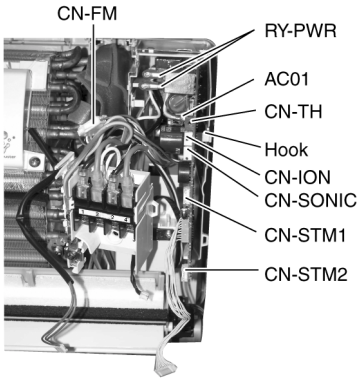


Fig. 4

12.2. Cross Flow Fan and Indoor Fan Motor Removal Procedures

1. In order to remove the Cross Flow Fan and Indoor Fan Motor, Control Board need to be taken out by releasing all the connectors as indicated below.
   a. Release the Earth Wire screw. (Fig. 5)
   b. Release the CN-TH connector. (Fig. 5)
   c. Release the CN-ION connector. (Fig. 5)
   d. Release the CN-SONIC connector. (Fig. 5)
   e. Release the CN-STM1 connector. (Fig. 5)
   f. Release the CN-STM2 connector. (Fig. 5)
   g. Release the CN-DISP connector. (Fig. 5)
   h. Pull out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 5)

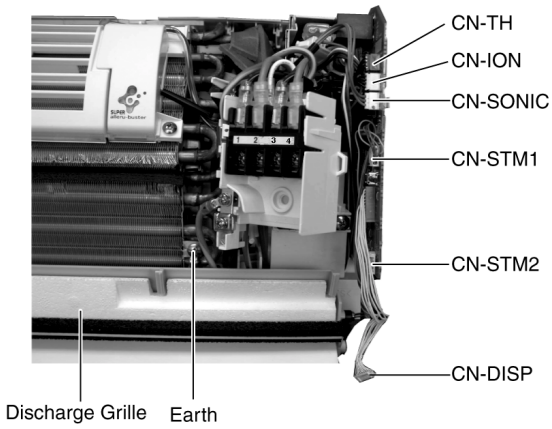


Fig. 5

2. Release the ION connectors. (Fig. 6)

3. Release the 3 screws. (Fig. 6)

4. By pressing down the hook at the left, you will be able to remove the Control Board. (Fig. 6)

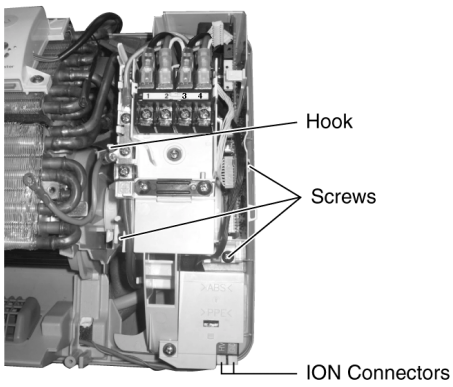


Fig. 6

5. Remove the screw at the Cross Flow Fan. (Fig. 7)

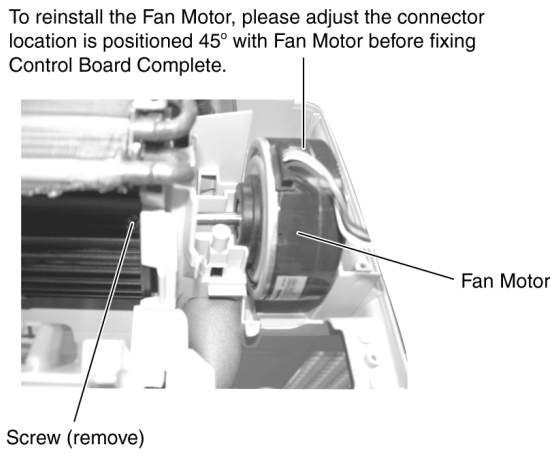


Fig. 7

6. Remove the Bearing. (Fig. 8)

7. Remove the screws at the left of the Evaporator. (Fig. 8)

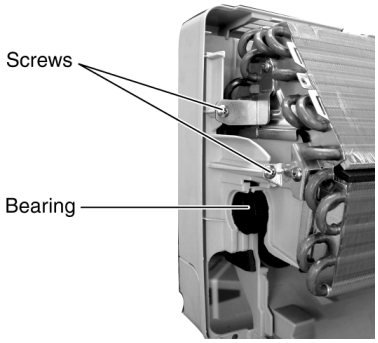


Fig. 8

8. Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 9)

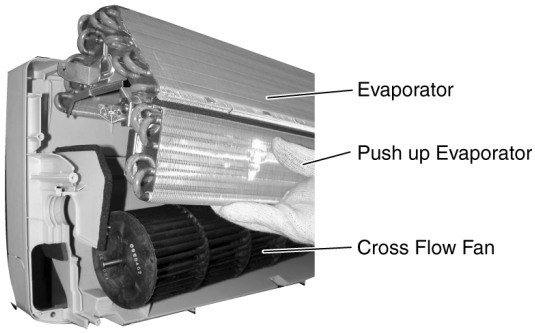


Fig. 9

REMINDER - To reinstall the Fan Motor, put it back in place, adjust the position of the Fan Motor's leadwire appropriately as shown in the Fig. 7--- before installing the Cross Flow Fan.

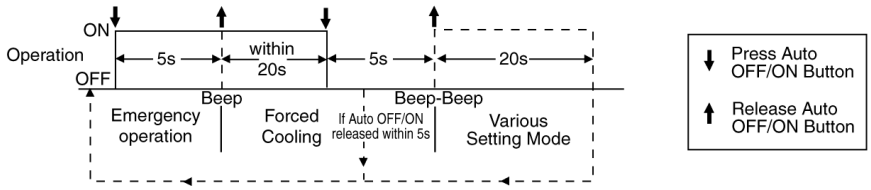
12.3. Remote Control Reset

When the batteries are inserted for the first time or the batteries are replaced, all the indications will blink and the remote control might not work.

If this happen, remove the cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

12.4. Auto OFF/ON Button

- The “Auto OFF/ON Button” (behind the front grille) is used to operate the air conditioner if remote control is misplaced or malfunctioning.
- Forced cooling operation is possible by pressing the “Auto OFF/ON Button” for more than 5s where “beep” sound is heard then release the button.
- User able to select remote control transmission code and toggle remote control signal receiving sound under various setting mode.
- To enter various setting mode:
  - Press the “Auto OFF/ON Button” continuosly for 5s (beep sound is heard) and release.
  - Within 20s, press the “Auto OFF/ON Button” continuously for 5s again (2 beep sound is heard) and release.
  - Various setting mode has limit up to 20s. Then return to normal operation.

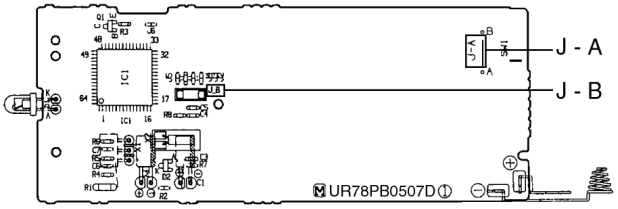


12.4.1. Toggle Remote Control Signal Receiving Sound

- Under various setting mode, press the “Auto OFF/ON Button” to toggle the remote control sound.
  - Short “beep” : Turn ON remote control signal receiving sound.
  - Long “beep” : Turn OFF remote control signal receiving sound.
- After “Auto OFF/ON Button” is pressed, the 20s counter for various setting mode is restarted.

12.4.2. Select Remote Control Transmission Code

- There are 4 type of remote control transmission code could be selected and stored in EEPROM of indoor unit. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal inteference when there are 2 or more indoor unit installed nearby together.
- To change remote control transmission code, short or open jumpers at the remote control printed circuit board.

Remote Control Printed Circuit Board	Transmission Code Combination		
	J-A	J-B	Remote Control No.
	* Short	Open	A (default)
	Open	Open	B
	Short	Short	C
	Open	Short	D

- Under various setting mode, after select the transmission code combination of remote control, press any button of remote control to transmit a signal to indoor unit. The transmission code will be stored in EEPROM.
- After signal is received, the various setting mode is cancelled and return to normal operation.

13 Troubleshooting Guide

13.1. Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

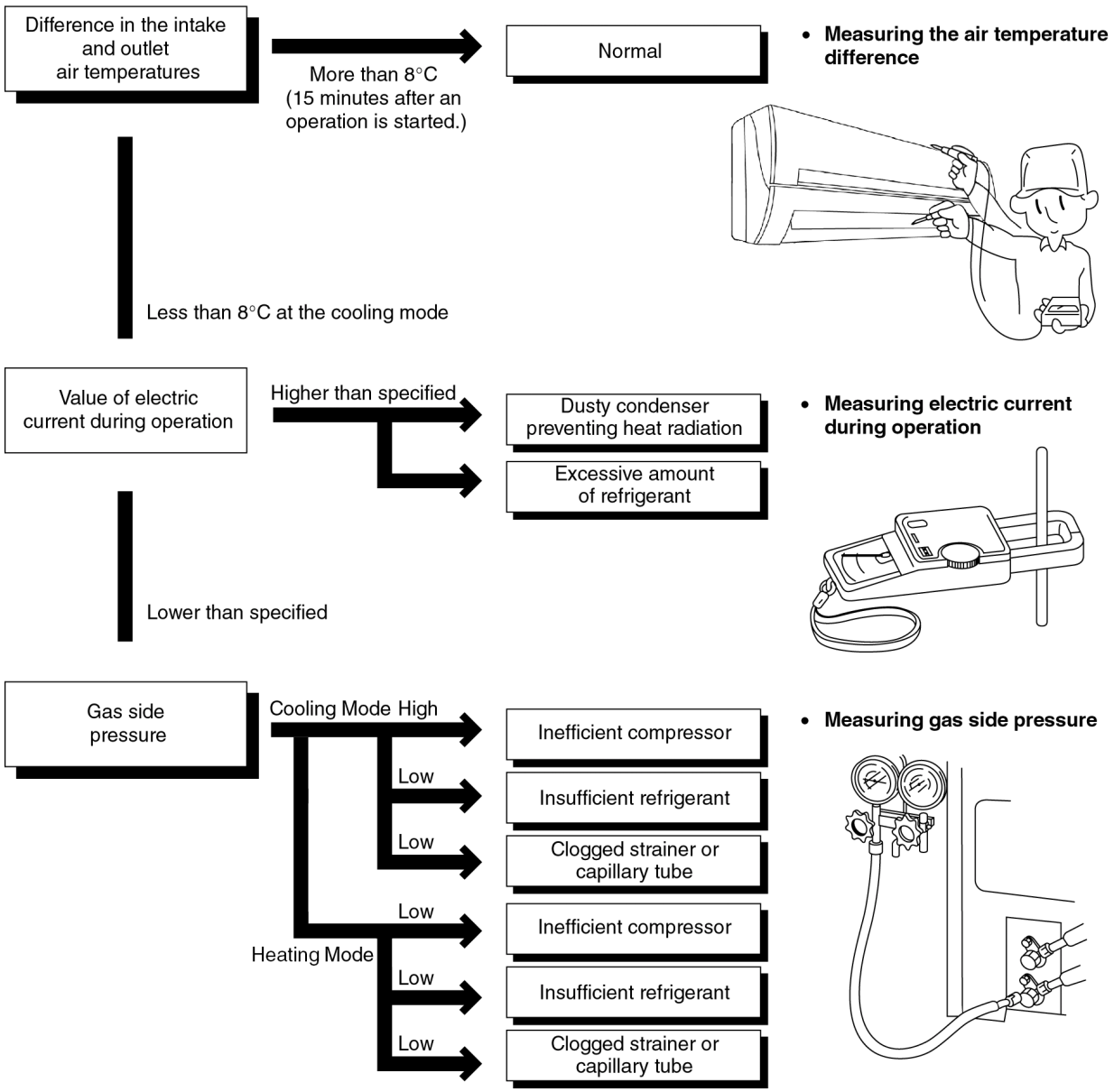
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.9 ~ 1.2 (9 ~ 12)	10 ~ 16
Heating Mode	2.1 ~ 3.5 (21 ~ 35)	30 ~ 45

* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode

-



13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditioner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	Electric current during operation
Insufficient refrigerant (gas leakage)						
Clogged capillary tube or Strainer						
Short circuit in the indoor unit						
Heat radiation deficiency of the outdoor unit						
Inefficient compression						

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

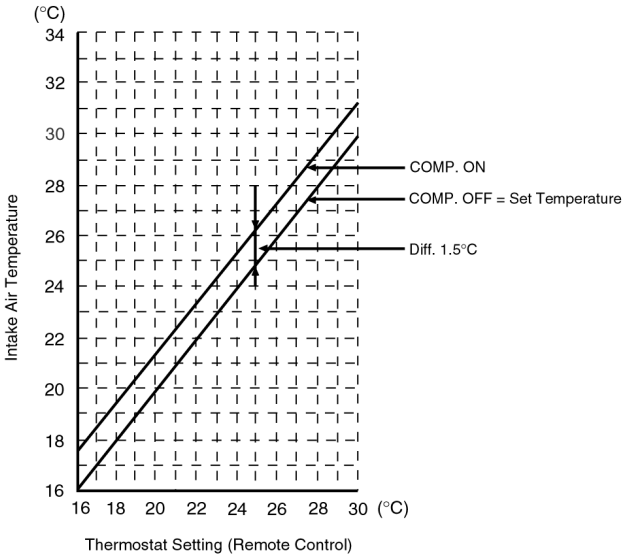
Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	• Electric current reaches a high level abnormally, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off. • The compressor has a humming sound.
Insufficient switches of the 4-way valve	• Electric current during operation becomes approximately 80% lower than the normal value. • The temperature different between from the discharge tube to the 4-way valve and from suction tube to the 4-way valve becomes almost zero.

14 Technical Data

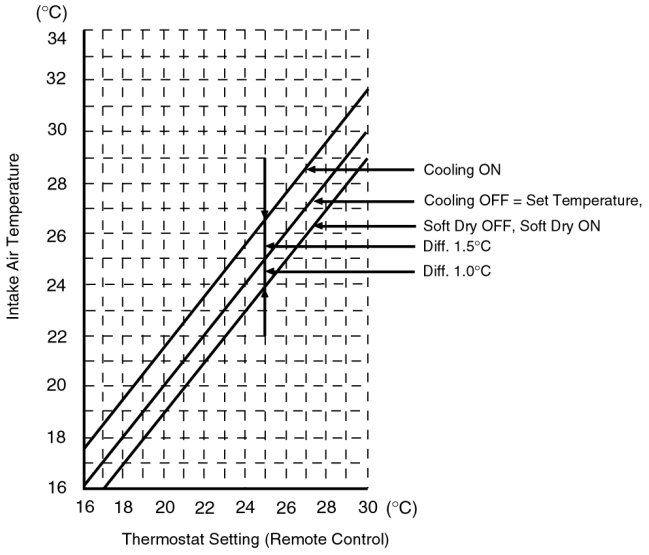
14.1. Thermostat characteristics

CS-A18DKD CS-A24DKD

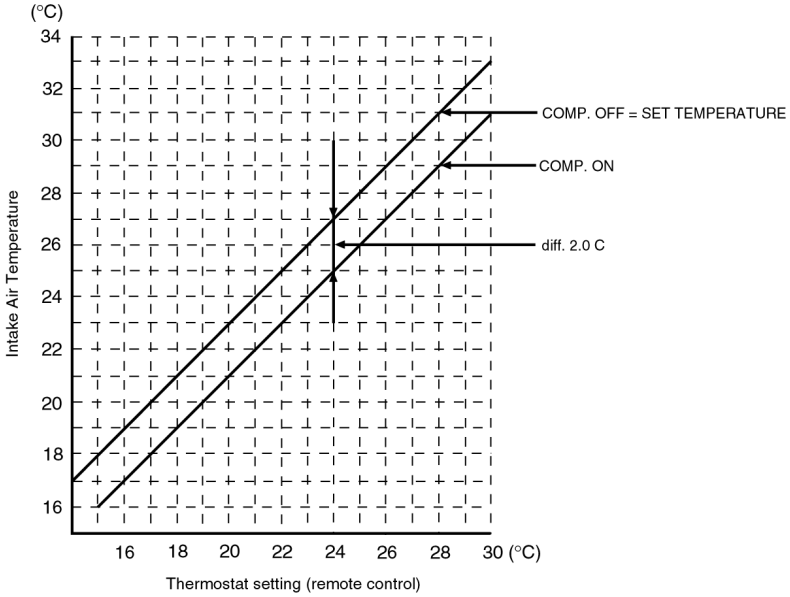
- **Cooling**



- **Soft Dry**



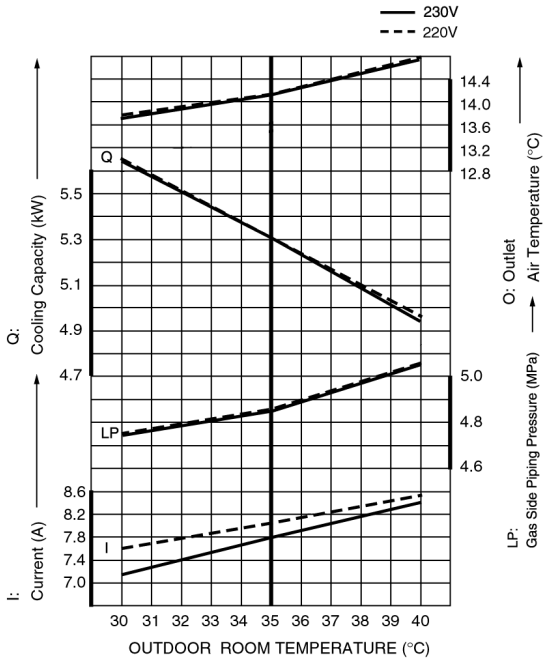
- **Heating**



14.2. Operation characteristics

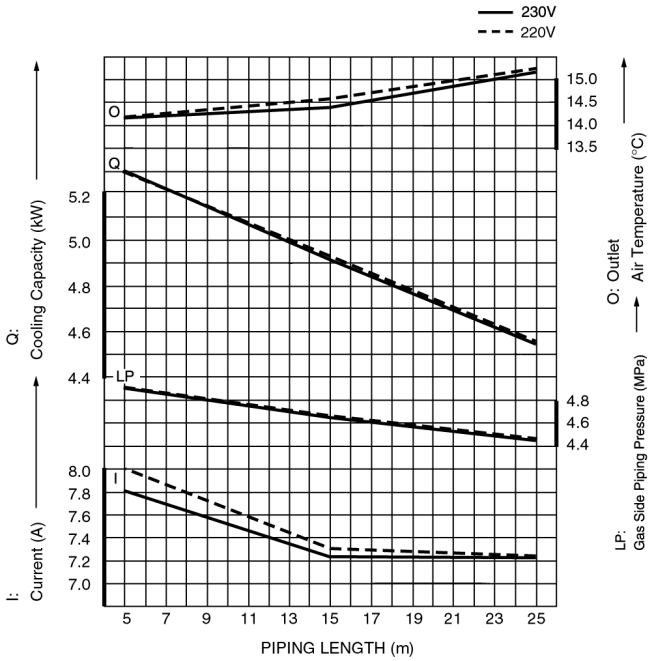
CS-A18DKD CU-A18DKD

- **Cooling Characteristic**



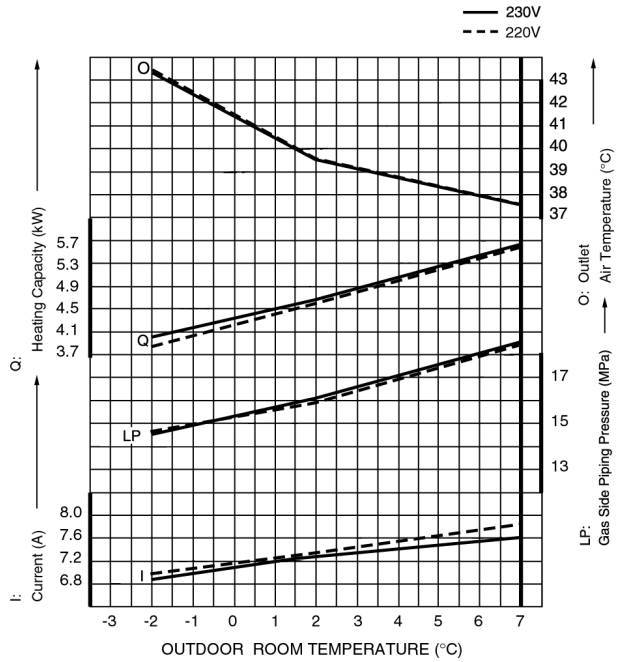
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

- **Piping Length Characteristic (Cooling)**



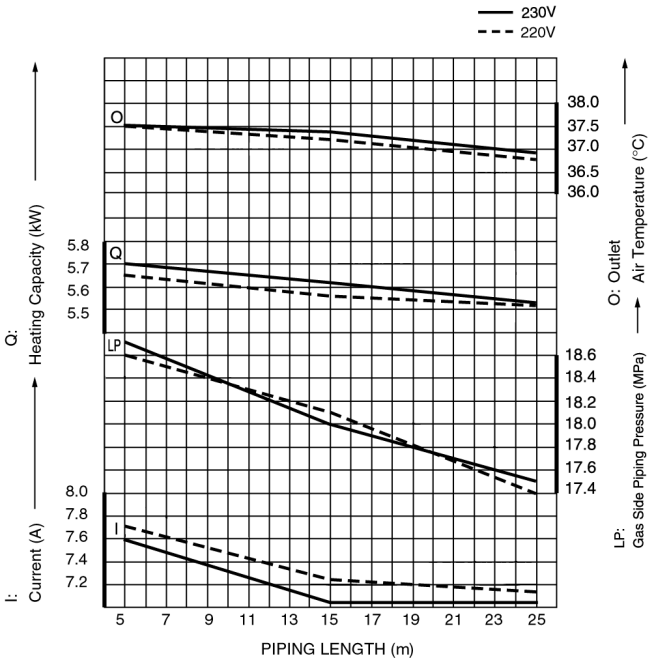
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

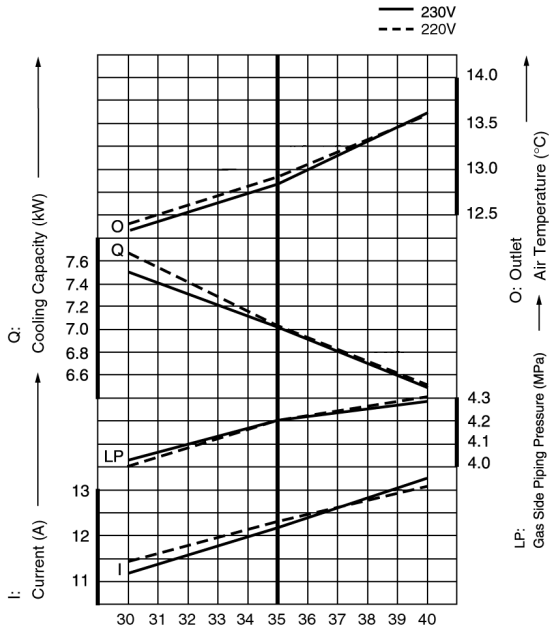
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: At High fan

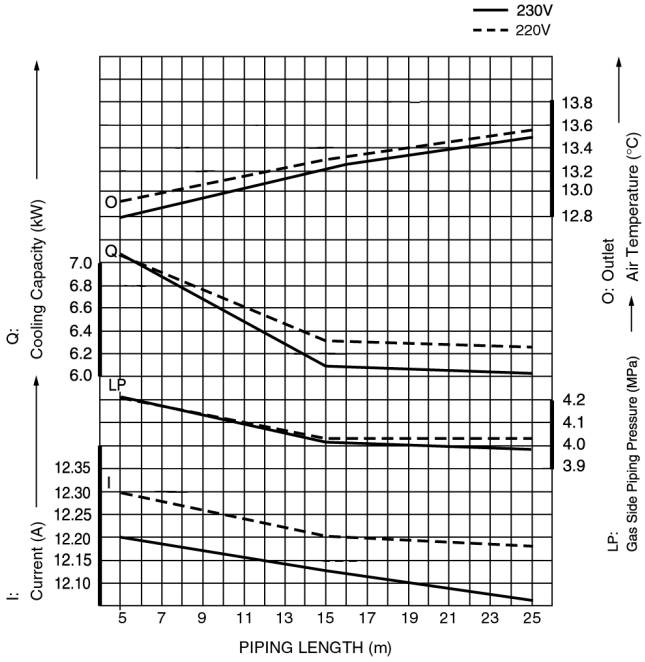
CS-A24DKD CU-A24DKD

• Cooling Characteristic



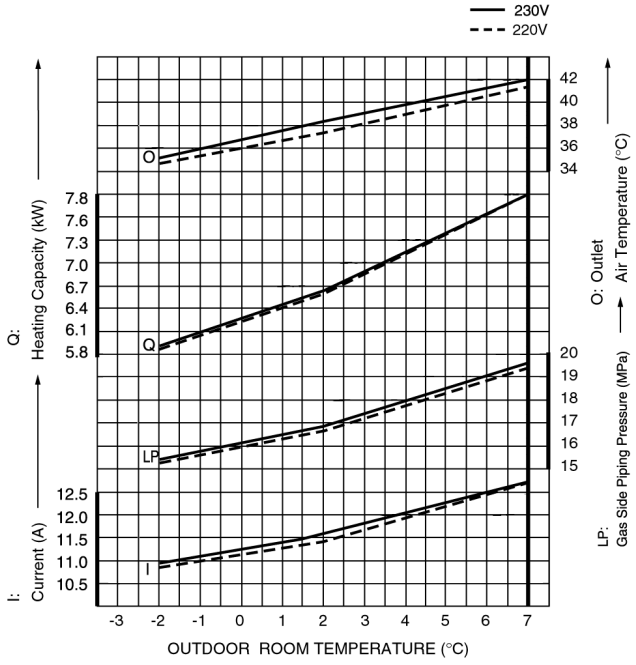
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Cooling)



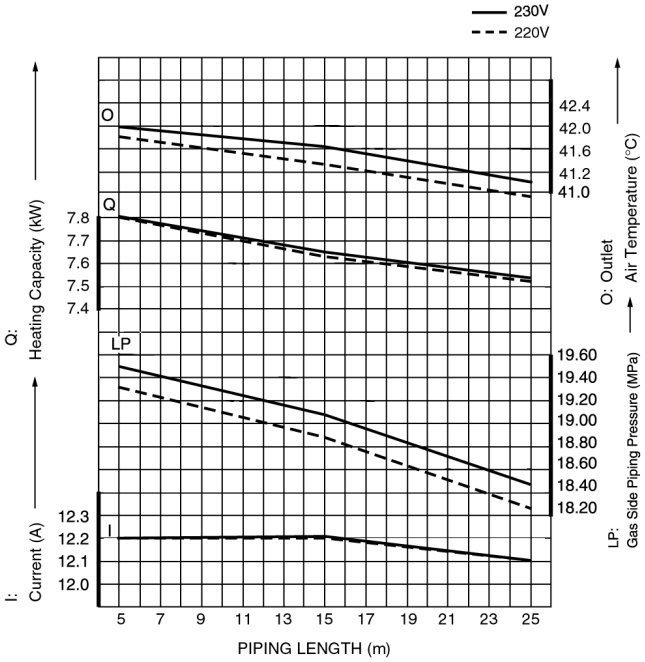
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: At High fan

• Heating Characteristic



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

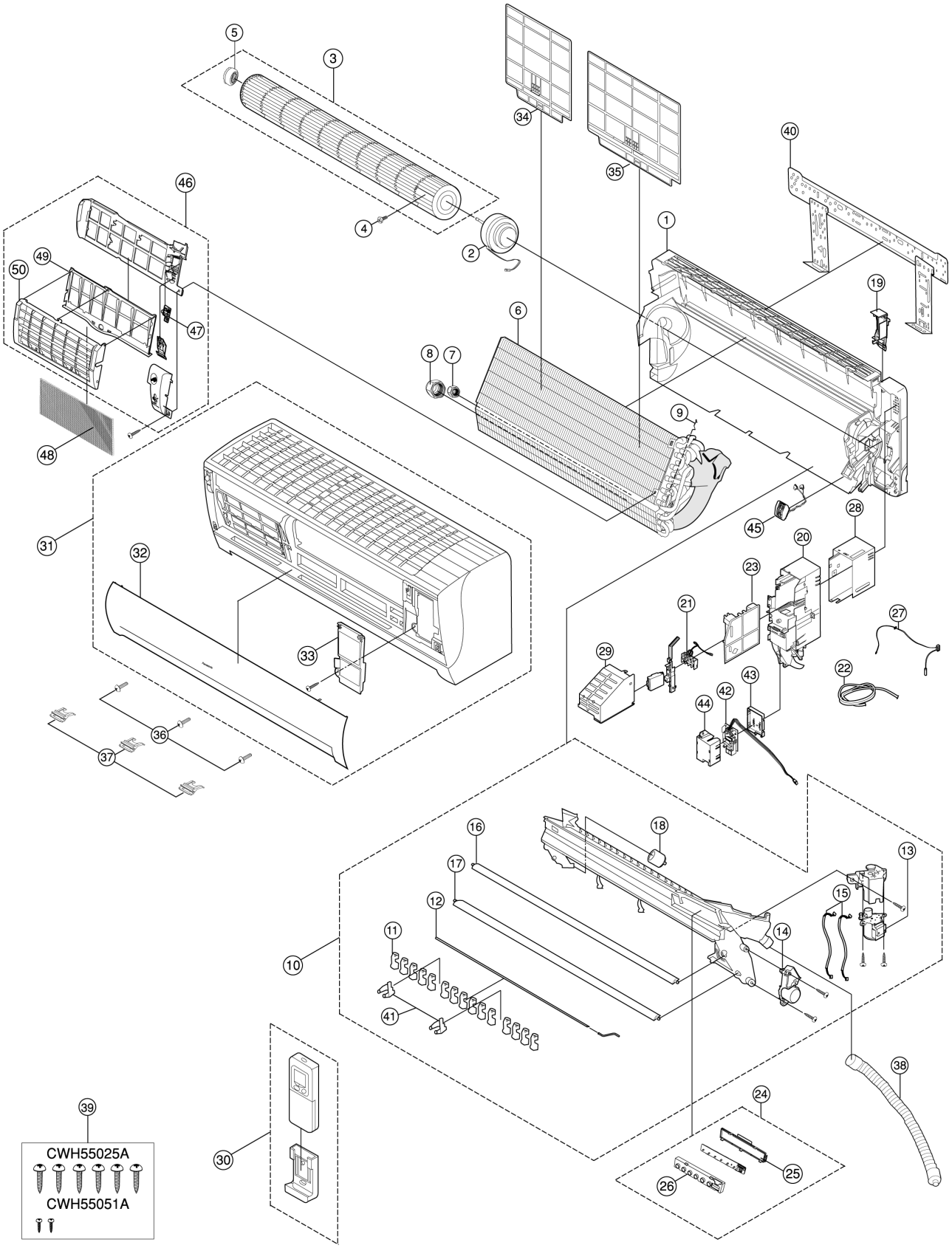
• Piping Length Characteristic (Heating)



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating operation: At High fan

15 Exploded View (Indoor Unit)

15.1. CS-A18DKD CS-A24DKD



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

16 Replacement Parts List (Indoor Unit)

16.1. CS-A18DKD CS-A24DKD

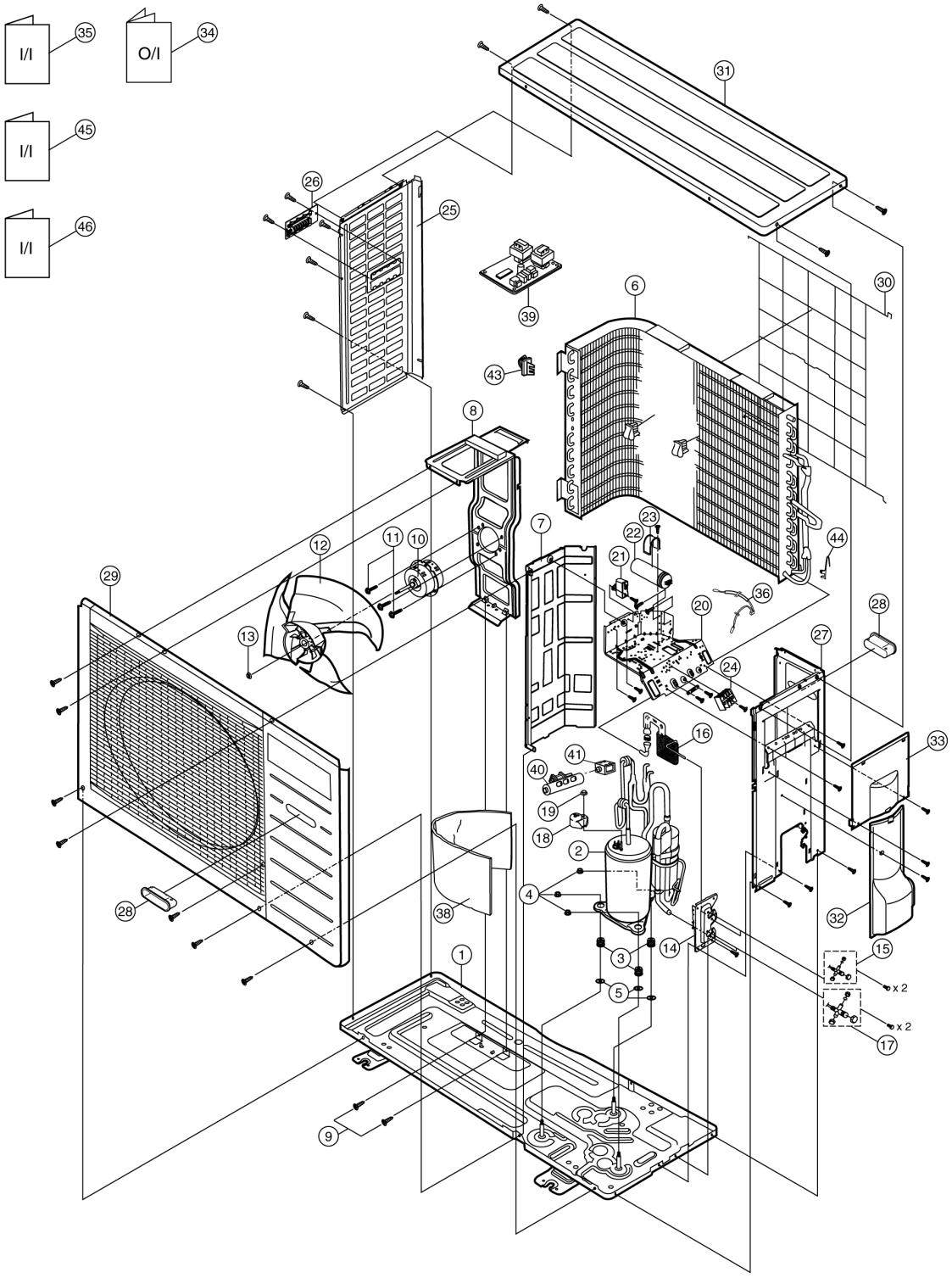
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-A18DKD	CS-A24DKD	REMARKS
1	CHASSY COMPLETE	1	CWD50C1382	←	
2	FAN MOTOR	1	CWA981149	←	0
3	CROSS FLOW FAN COMPLETE	1	CWH02C1010	←	
4	SCREW - CROSS FLOW FAN	1	CWH4580304	←	
5	BEARING ASS'Y	1	CWH64K007	←	
6	EVAPORATOR	1	CWB30C1549	CWB30C1572	
7	FLARE NUT (1/4")	1	CWH6002140	←	
8	FLARE NUT (1/2") (5/8")	1	CWT25007	CWT25004	
9	HOLDER SENSOR	1	CWH32143	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2345	←	
11	VERTICAL VANE	15	CWE241088	←	
12	CONNECTING BAR	1	CWE261025	←	
13	AIR SWING MOTOR	1	CWA98260	←	0
14	AIR SWING MOTOR	1	CWA98K1008	←	0
15	LEAD WIRE - AIR SWING MOTOR	2	CWA67C3731	←	
16	HORIZONTAL VANE	1	CWE241152A	←	
17	HORIZONTAL VANE	1	CWE241153A	←	
18	CAP - DRAIN TRAY	1	CWH52C1001	←	
19	BACK COVER CHASSIS	1	CWD932162B	←	
20	CONTROL BOARD CASING	1	CWH102250	←	
21	TERMINAL BOARD COMPLETE	1	CWA28C2095	CWA28C2096	0
22	POWER SUPPLY CORD	1	CWA20C2163	CWA20C2164	
23	ELECTRONIC CONTROLLER - MAIN	1	CWA743487	CWA743670	0
24	INDICATOR COMPLETE	1	CWE39C1116	←	0
25	INDICATOR HOLDER	1	CWD932435	←	
26	INDICATOR HOLDER	1	CWD932436	←	
27	SENSOR COMPLETE	1	CWA50C2122	←	0
28	CONTROL BOARD TOP COVER	1	CWH131210	←	
29	CONTROL BOARD FRONT COVER	1	CWH131209	←	
30	REMOTE CONTROL COMPLETE	1	CWA75C2624	←	0
31	FRONT GRILLE COMPLETE	1	CWE11C3126	CWE11C3127	0
32	INTAKE GRILLE COMPLETE	1	CWE22C1159	←	
33	GRILLE DOOR	1	CWE141076	←	
34	AIR FILTER (L)	1	CWD001137	←	
35	AIR FILTER (R)	1	CWD001138	←	
36	SCREW - FRONT GRILLE	3	XTT4+16C	←	
37	CAP - FRONT GRILLE	3	CWH521062A	←	
38	DRAIN HOSE	1	CWH851063	←	
39	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	
40	INSTALLATION PLATE	1	CWH36K1007	←	
41	FULCRUM	2	CWH621047	←	
42	ELECTRONIC CONTROLLER - IONIZER	1	CWA743675	←	0
43	CASING - IONIZER	1	CWD932464	←	
44	CASING - IONIZER	1	CWD932527	←	
45	ION - GENERATOR	1	CWH94C0001	←	
46	SUPERSONIC AIR PURIFYING DEVICE	1	CWH91C1013	←	
47	ELEC. CONTROLLER - SUPERSONIC	1	CWA743874	←	0
48	SUPER ALLERU BUSTER FILTER	1	CWD00C1133	←	0
49	FRAME FR AIR FILTER SUPERSONIC	1	CWD011026	←	
50	FRAME FR AIR FILTER SUPERSONIC	1	CWD011027	←	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- "O" marked parts are recommended to be kept in stock.

17 Exploded View (Outdoor Unit)

17.1. CU-A18DKD CU-A24DKD



Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

18 Replacement Parts List (Outdoor Unit)

18.1. CU-A18DKD CU-A24DKD

REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-A18DKD	CU-A24DKD	REMARKS
1	CHASSY ASS'Y	1	CWD50K2087	←	
2	COMPRESSOR	1	2JS324D3AB07	2JS438D3JA02	0
3	ANTI - VIBRATION BUSHING	3	CWH50055	←	
4	NUT - COMPRESSOR MOUNT	3	CWH4582065	←	
5	PACKING	3	CWB81043	←	
6	CONDENSER	1	CWB32C1349	CWB32C1350	
7	SOUND PROOF BOARD ASS'Y	1	CWH151051	←	
8	FAN MOTOR BRACKET	1	CWD541055	←	
9	SCREW - FAN MOTOR BRACKET	2	CWH551060	←	
10	FAN MOTOR	1	CWA951385	←	0
11	SCREW - FAN MOTOR MOUNT	3	CWH55252	←	
12	PROPELLER FAN ASS'Y	1	CWH03K1017	←	
13	NUT - PROPELLER FAN	1	CWH561038	←	
14	HOLDER COUPLING	1	CWH351036	←	
15	2-WAY VALVE (LIQUID)	1	CWB021173	←	0
16	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT01C3391	CWT01C3390	
17	3-WAY VALVE (GAS)	1	CWB011212	CWB011213	0
18	TERMINAL COVER	1	CWH171012	←	
19	NUT - TERMINAL COVER	1	CWH7080300	←	
20	CONTROL BOARD CASING	1	CWH102206	←	
21	CAPACITOR-F.M	1	DS441355NPQA	←	0
22	CAPACITOR - COMP	1	CWA312079	←	0
23	HOLDER CAPACITOR	1	CWH30060	←	
24	TERMINAL BOARD ASS'Y	1	CWA28K1070	←	
25	CABINET SIDE PLATE (L)	1	CWE041082A	←	
26	HANDLE	1	CWE161010	←	
27	CABINET SIDE PLATE (R)	1	CWE041083A	←	
28	HANDLE	2	CWE16000E	←	
29	CABINET FRONT PLATE ASS'Y	1	CWE06K1043	←	
30	WIRE NET COMPLETE	1	CWD041041A	←	
31	CABINET TOP PLATE ASS'Y	1	CWE03K1009A	←	
32	CONTROL BOARD COVER	1	CWH131168	←	
33	CONTROL BOARD COVER COMPLETE	1	CWH131169A	←	
34	OPERATION INSTRUCTIONS	1	CWF564548	←	
35	INSTALLATION INSTRUCTIONS	1	CWF612685	←	
36	SENSOR COMPLETE	1	CWA50C618	←	0
38	SOUND PROOF MATERIAL	1	CWG30221	←	
39	ELECTRONIC CONTROLLER	1	CWA743367	←	0
40	4-WAY VALVE ASS'Y	1	CWB00K1025	CWB00K1026	0
41	V-COIL COMPLETE	1	CWA43C2121	←	0
43	HOLDER SENSOR	1	CWH32089	←	
44	HOLDER SENSOR	1	CWH32074	←	
45	INSTALLATION INSTRUCTIONS	1	CWF612686	←	
46	INSTALLATION INSTRUCTIONS	1	CWF612718	←	

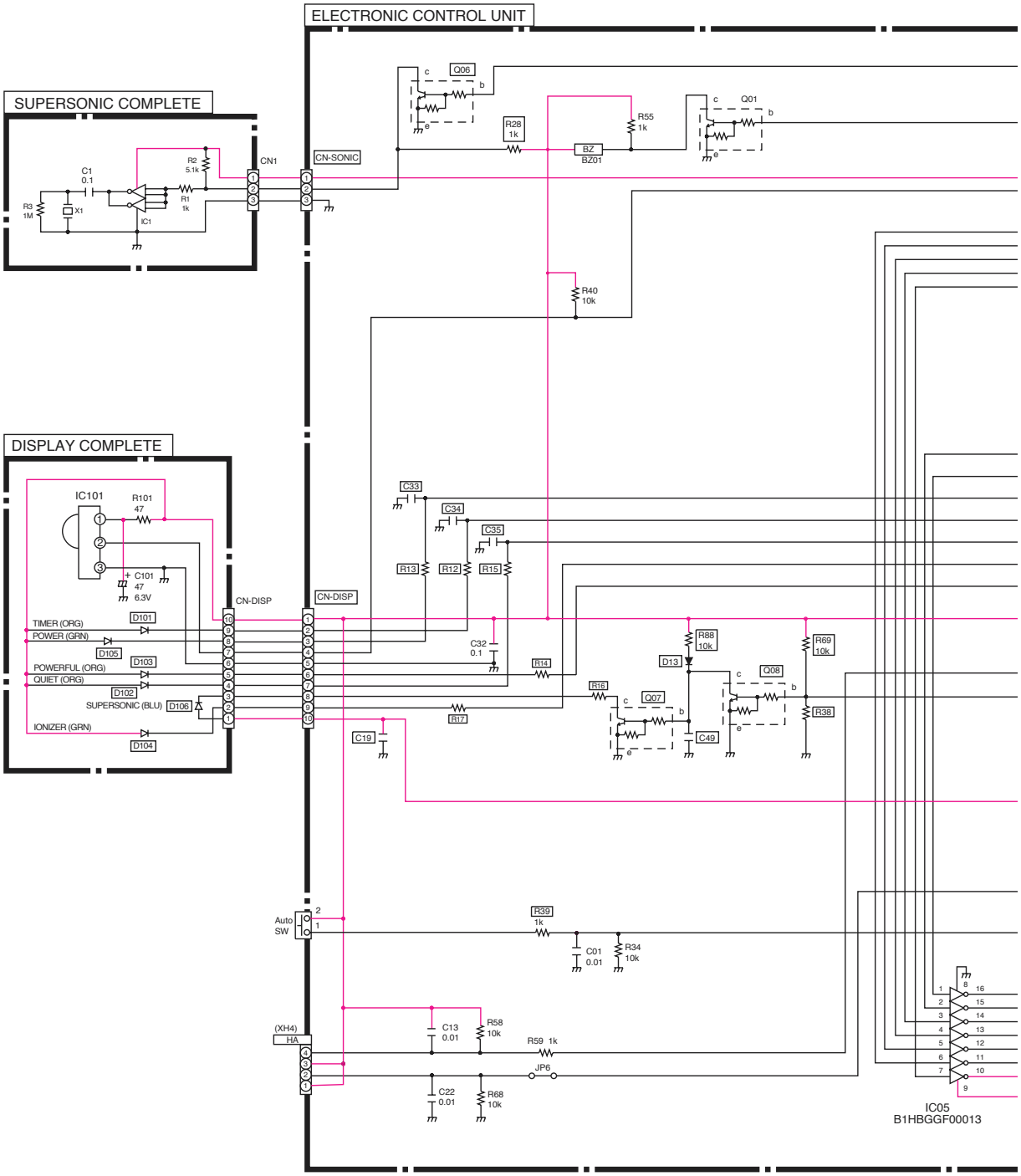
(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 061).
- "O" marked parts are recommended to be kept in stock.

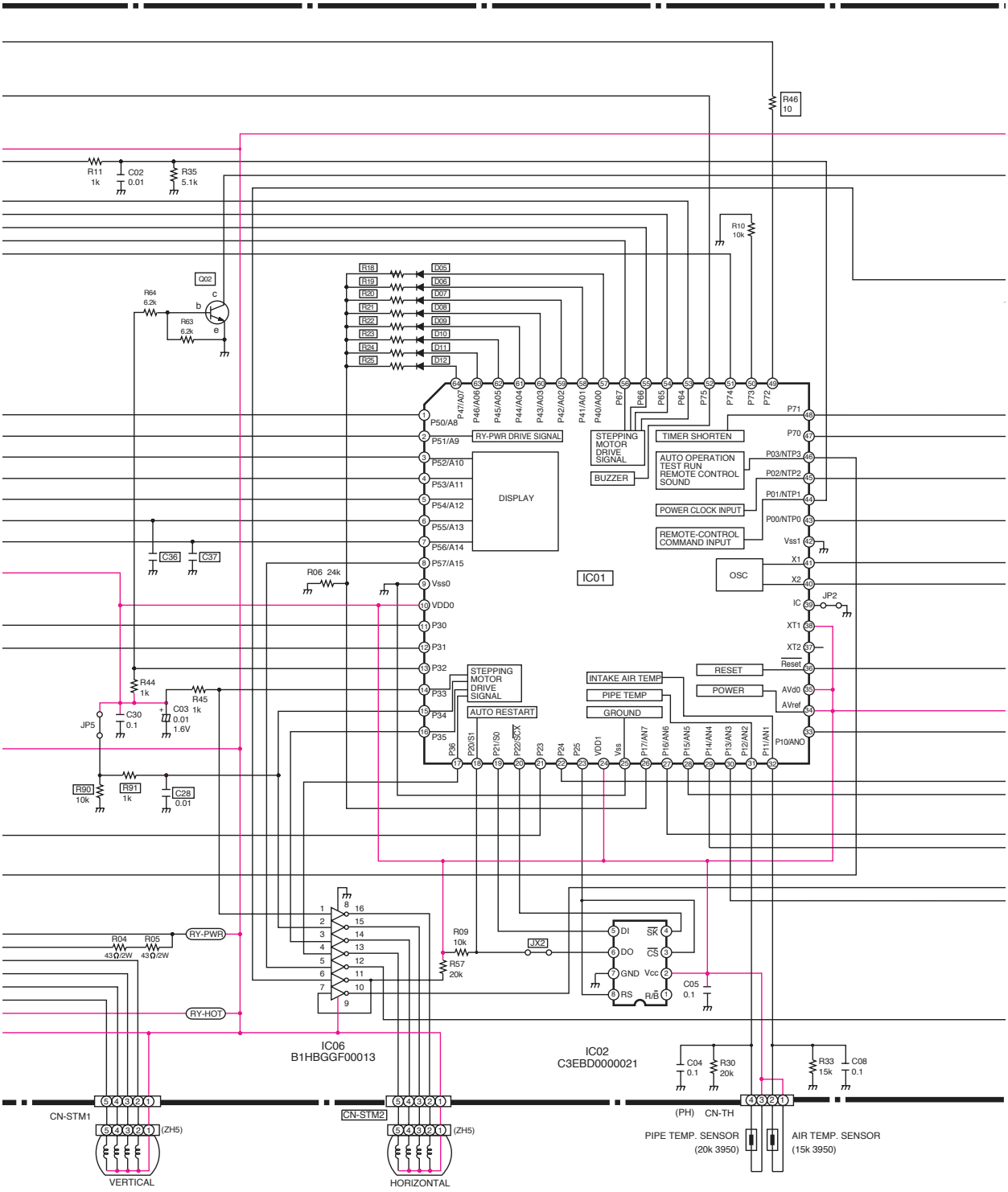
19 Electronic Circuit Diagram

19.1. Indoor Unit & Outdoor Unit

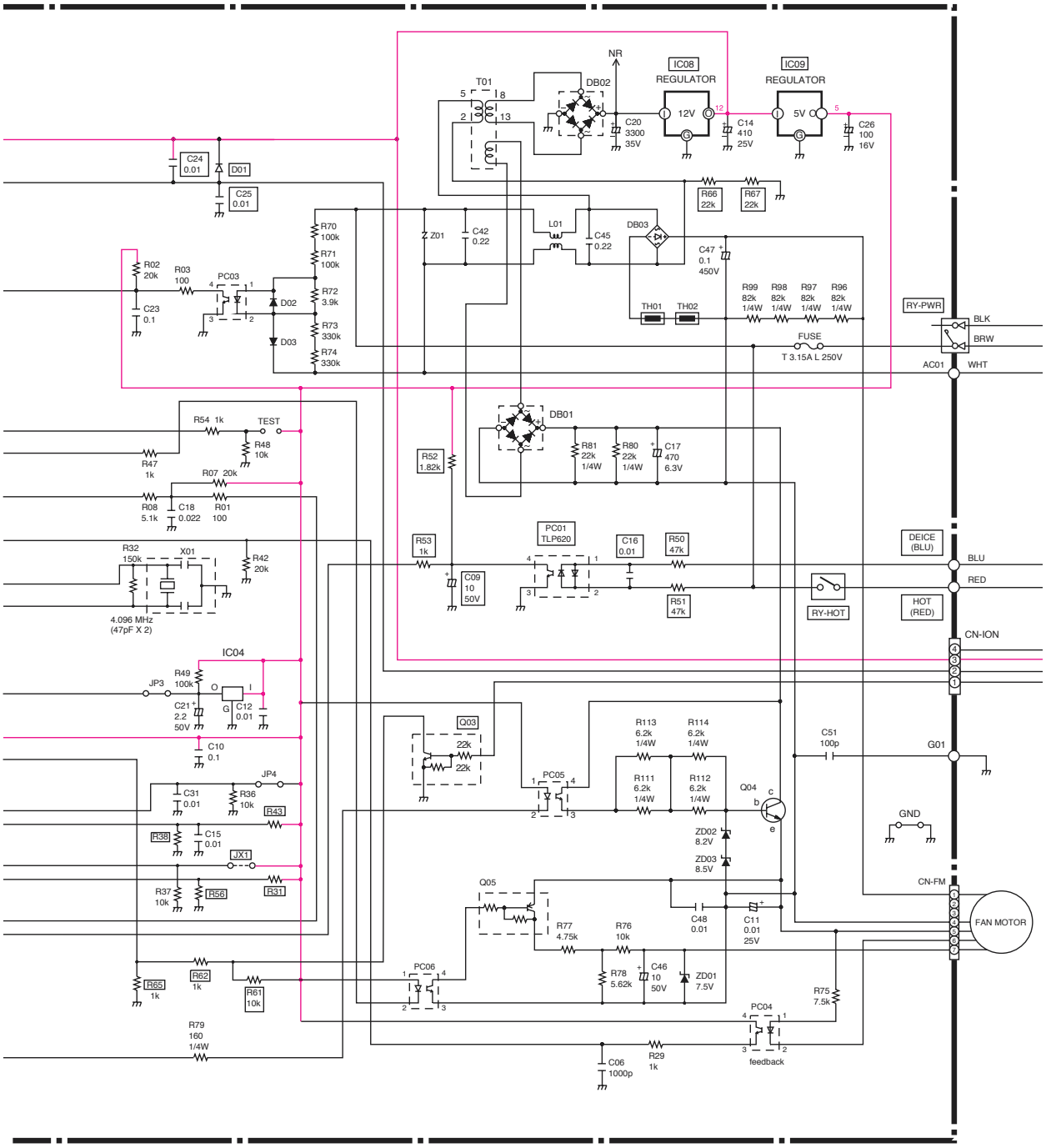
CS-A18DKD CU-A18DKD
CS-A24DKD CU-A24DKD
SCHEMATIC DIAGRAM 1/4



SCHEMATIC DIAGRAM 2/4



SCHEMATIC DIAGRAM 3/4



SCHEMATIC DIAGRAM 4/4

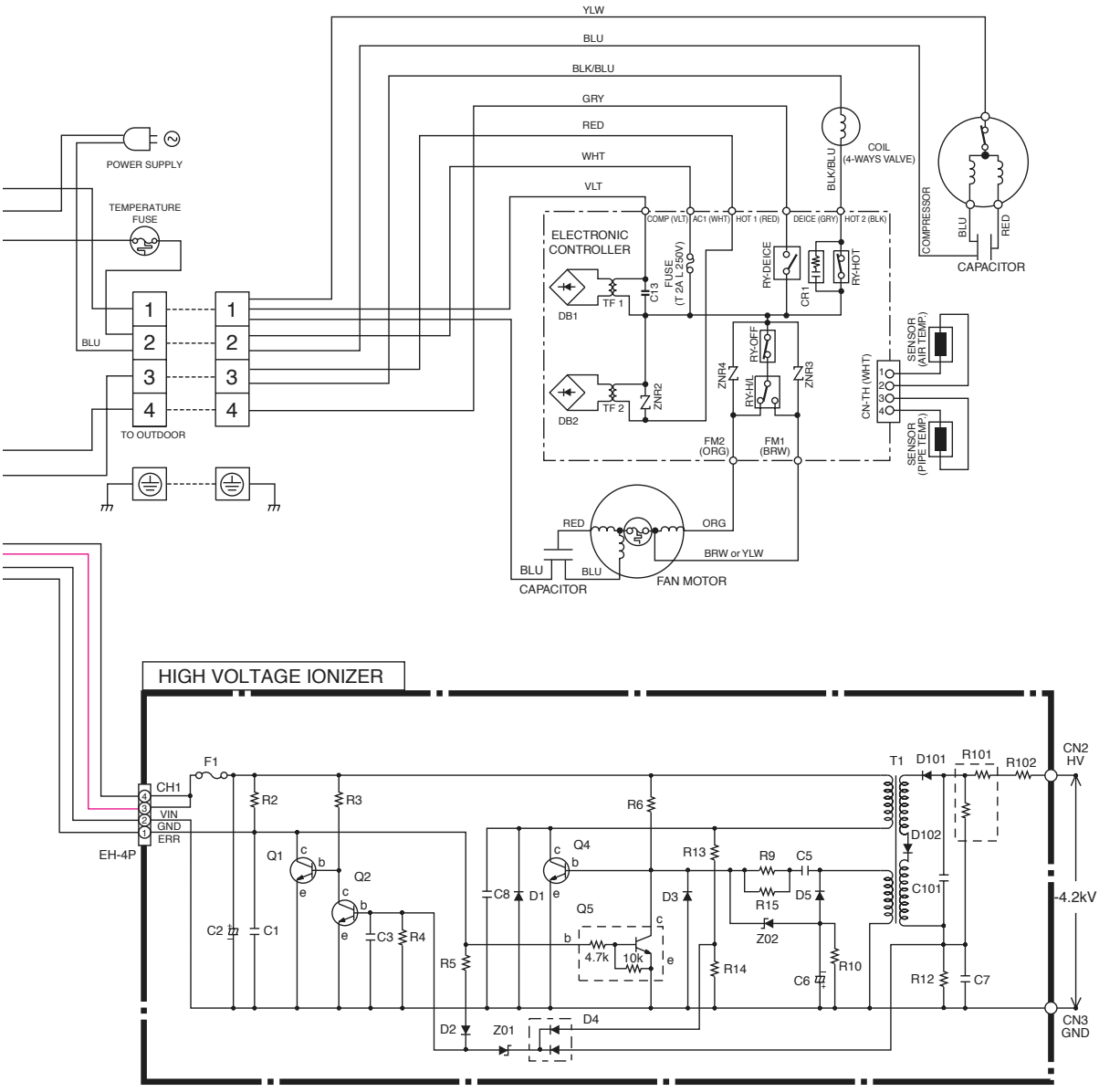


Fig. 1

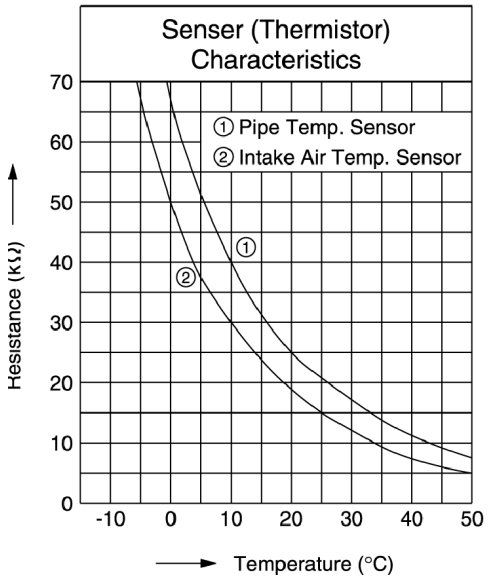


Fig. 2

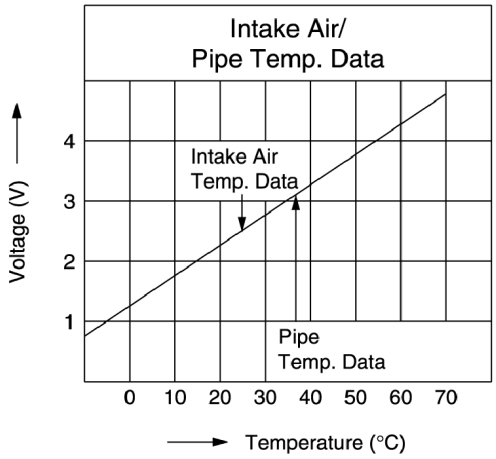


Fig. 3

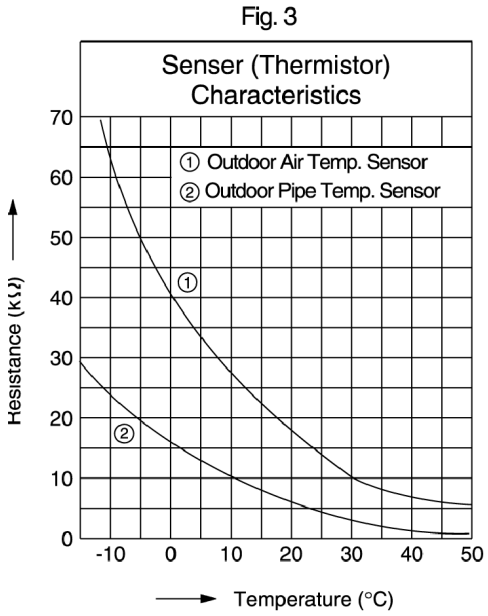
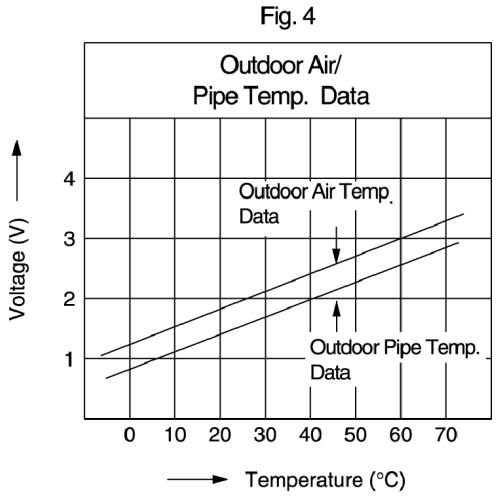


Fig. 4



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer. Use them for servicing.
  Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
   .....metal oxide resister
  Tolerance±1%

* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor

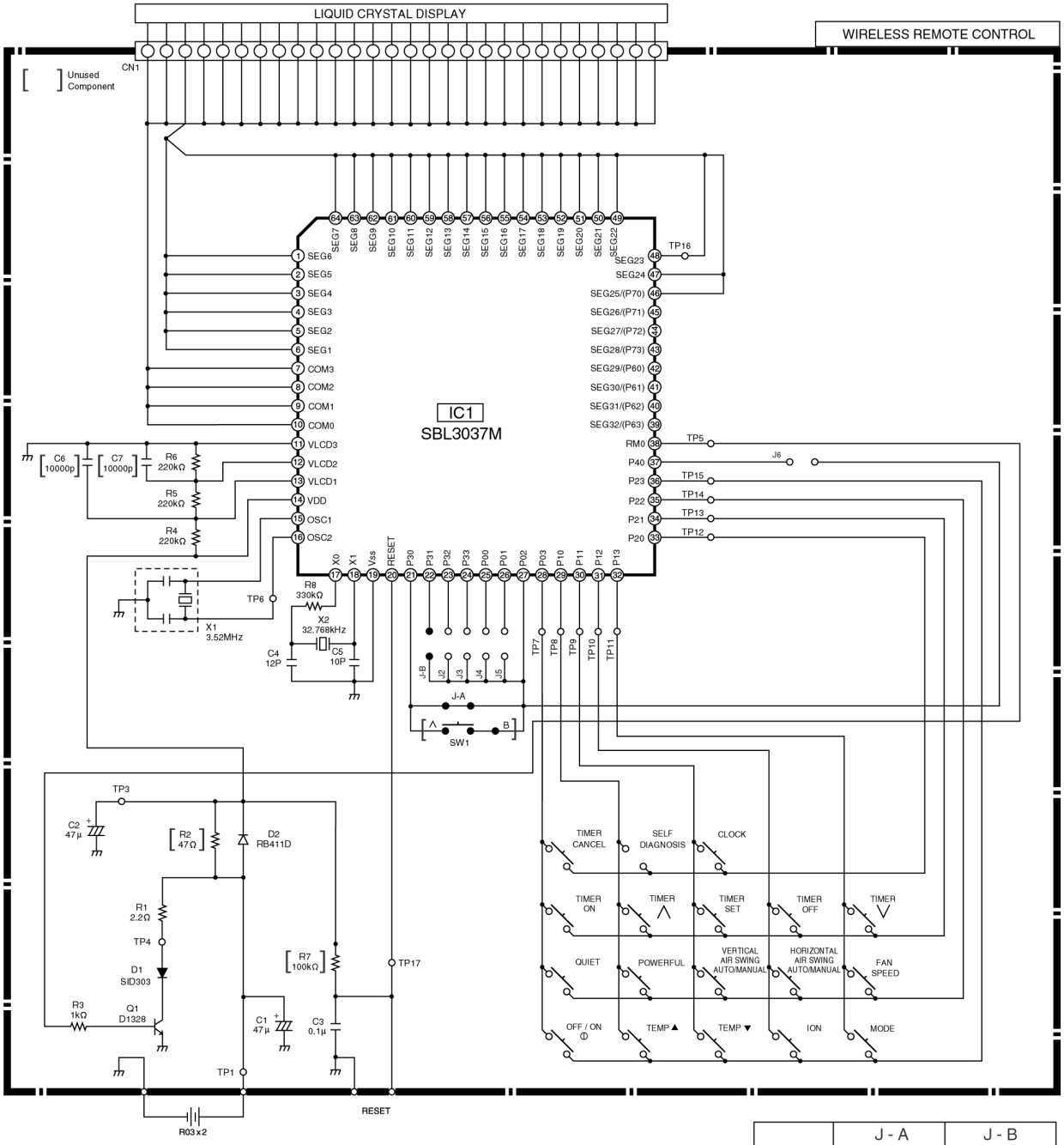
* Diode without indication.....MA165

※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test Mode (When test point Short-circuited)	Remarks
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	42 sec.	
Anti-Freezing		4 min.	0 sec.	
Auto Mode Judgement		25 sec.	0 sec.	
Soft Dry	OFF	6 min.	36 sec.	
	ON	10 min.	60 sec.	Soft Dry: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	
		70 sec.	7 sec.	
		20 sec.	2 sec.	
		180 sec.	18 sec.	
	Soft Dry	40 sec.	4 sec.	
		360 sec.	36 sec.	
Comp. Reverse Rotation Detection		5 min.	30 sec.	Comp. ON 5 min. and above
		2 min.	0 sec.	
Comp./ Fan Motor Delay Timer		1.6 sec.	0 sec.	
Powerful Mode Operation		15 min.	15 sec.	
Random Auto Restart Control		0 ~ 62 sec.	0 ~ 6.2 sec.	
4 Way Valve		5 min.	30 sec.	
After Deice Ended		30 sec.	3 sec.	Comp. OFF after deice
Hotstart Delay Times		4 min.	0 sec.	
Hotstart Finish Times		2 min.	0 sec.	
Ion OFF Timer		30 min.	180 sec.	
Ion ON Timer		10 sec.	1 sec.	
Quiet operation timer		1 hr. 30 min.	9 sec.	

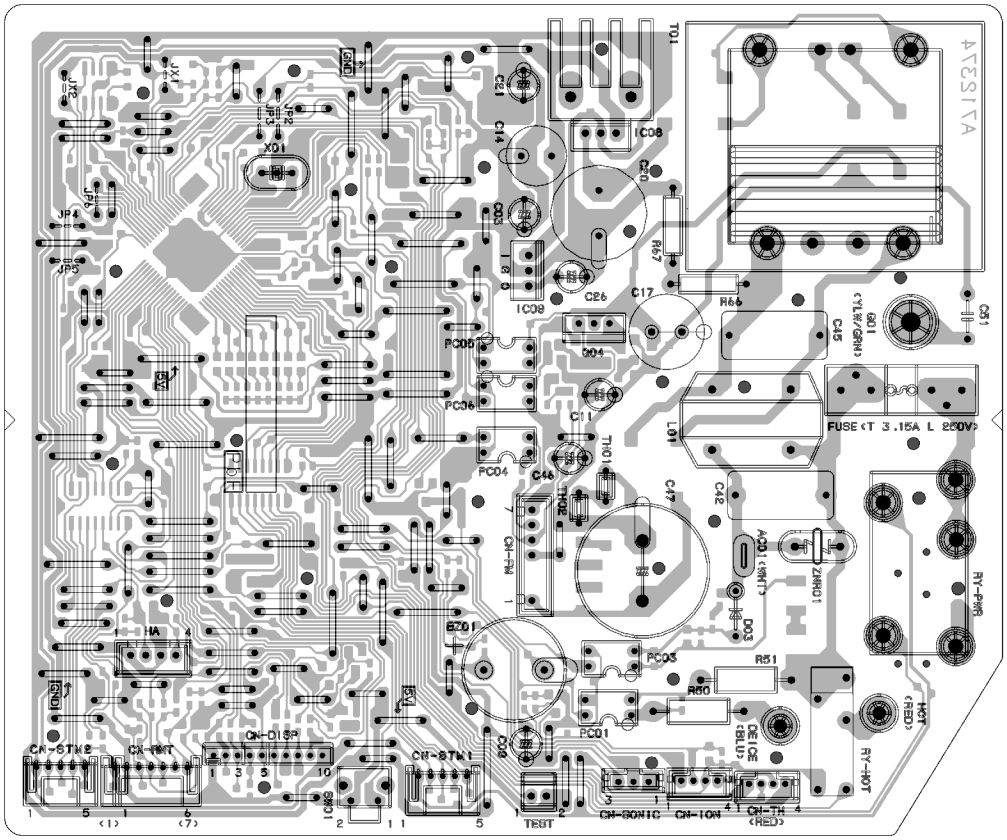
19.2. Remote Control



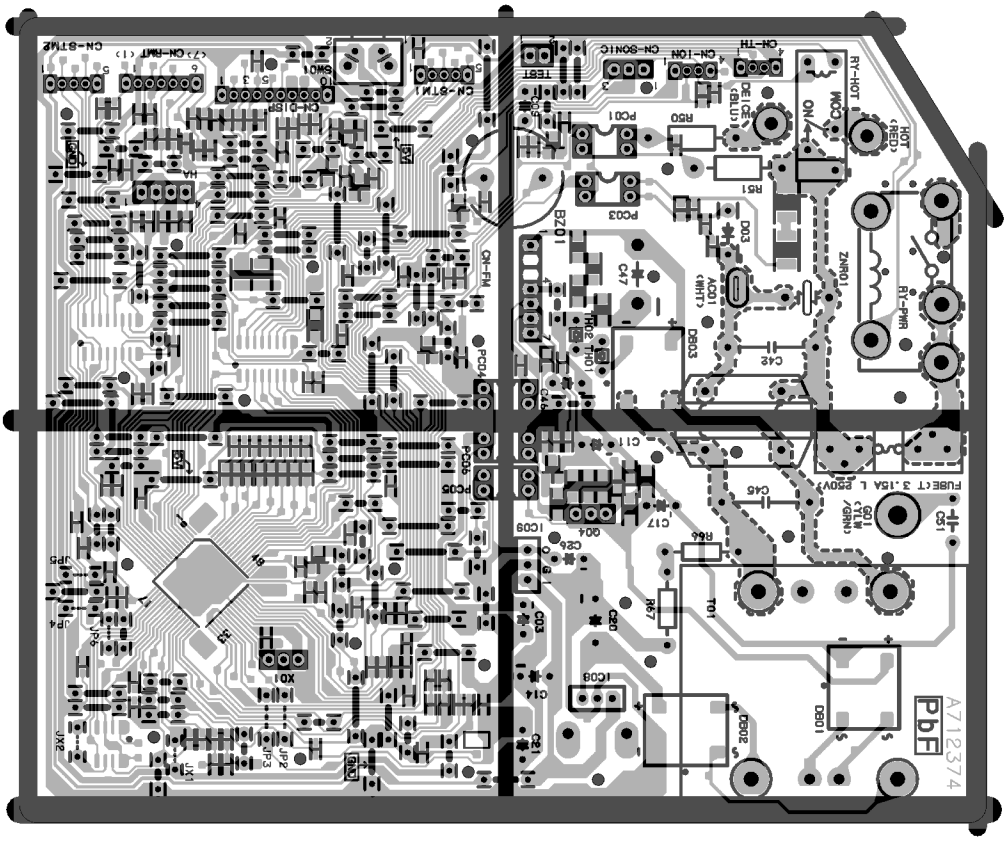
	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

19.3. Print Pattern
Indoor Unit Printed Circuit Board

TOP VIEW

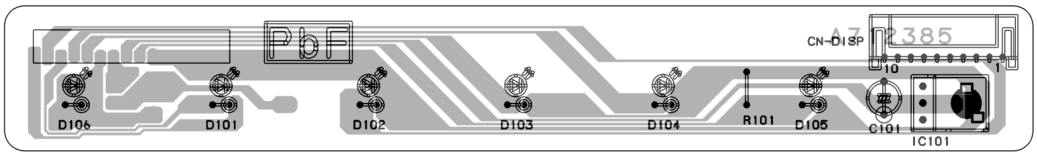


BOTTOM VIEW

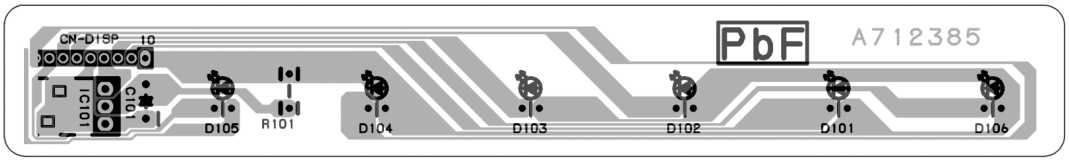


19.4. Print Pattern
Indicator & Receiver Printed Circuit Board

TOP VIEW

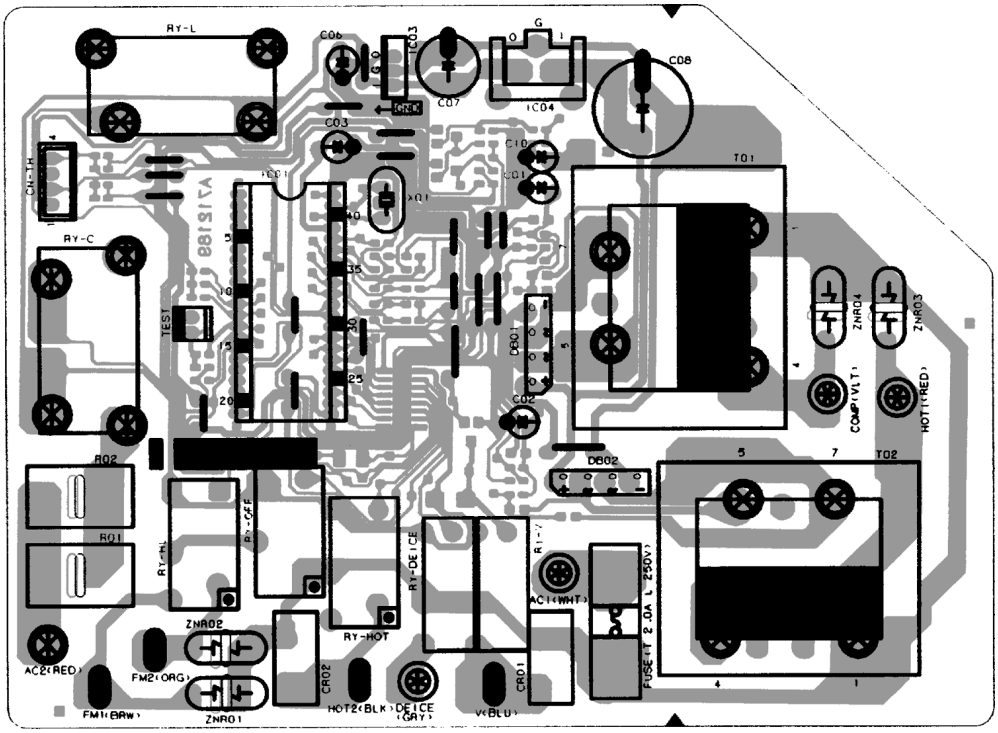


BOTTOM VIEW



19.5. Print Pattern
Outdoor Unit Printed Circuit Board

TOP VIEW



BOTTOM VIEW