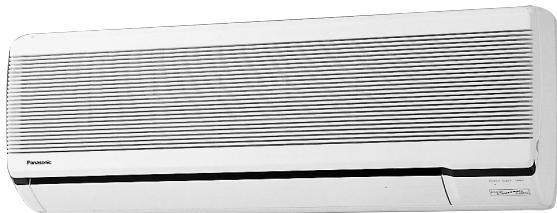


Service Manual

Room Air Conditioners

**CS-A73KE / CU-A73KE
CS-A93KE / CU-A93KE
CS-A123KE / CU-A123KE**



Contents

• Features	1
• Functions	2 – 4
• Product Specifications	5 – 10
• Dimensions	11 – 12
• Refrigeration Cycle Diagram	13
• Block Diagram	14
• Wiring Diagram	15
• Operation Details	16 – 30
• Installation Information	31 – 32
• 2-way, 3-way Valves	33 – 39
• Servicing Information	40 – 42
• Troubleshooting Guide	43 – 44
• Technical Data	45 – 48
• Exploded View	49, 51, 53
• Replacement Parts List	50, 52, 54
• Electronic Parts List	55

Panasonic

© 1999 Matsushita Air-Conditioning Corp. Sdn. Bhd.
(183914D)
All rights reserved. Unauthorized copying and distribution
is a violation of law.

⚠ 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.

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

Features

- **High Efficiency**
- **Compact Design**
- **Comfort Environment**
 - 8 hours of sleep mode operation
 - Air purifying filter with deodorizing function to reduce dust, smoke and odours.
- **Random Auto Restart**
 - Auto restart at randomly after power failure
- **Removable and Washable Front Panel**
- **Quality Improvement**
 - Gas leakage protection
 - Prevent compressor reverse rotation
 - 2-stage OLP to protect compressor
- **Service Improvement**
 - Easy fan motor replacement procedure
- **Operation Improvement**
 - Economy mode to reduce electrical power consumption.
 - Powerful mode to reaches the desired room temperature quickly.
- **Long Installation Piping**
 - CS/CU-A73KE, CS/CU-A93KE, long piping up to 10 meter.
 - CS/CU-A123KE, long piping up to 15 meter.

Functions

Remote Control



OFF / ON	Operation OFF / ON	TEMP.	Room Temperature Setting
MODE	Operation Mode Selection	ON-TIMER OFF-TIMER	Timer Operation Selection
	<ul style="list-style-type: none"> AUTO Automatic Operation Mode HEAT Heating Operation Mode COOL Cooling Operation Mode DRY Soft Dry Operation Mode 		<ul style="list-style-type: none"> Temperature Setting (16°C to 30°C) Automatic Operation <ul style="list-style-type: none"> ▲ HI Operation with 2°C higher than standard temperature. AUTO Operation with standard temperature. ▼ LO Operation with 2°C lower than standard temperature.
FAN SPEED	Indoor Fan Speed Selection	TIMER	Time / Timer Setting
	<ul style="list-style-type: none"> Low Speed Medium Speed High Speed AUTO FAN Automatic Fan Speed 		<ul style="list-style-type: none"> Hours and minutes setting.
AIR SWING	Airflow Direction Control	SET CANCEL	Timer Operation Set / Cancel
	<ul style="list-style-type: none"> AUTO Automatic Airflow Direction Control MANUAL Airflow Direction Manual Control 		<ul style="list-style-type: none"> ON Timer and OFF Timer setting and cancellation.
POWERFUL	Powerful Mode Operation OFF/ON	CLOCK	Clock Setting
ECONOMY	Economy Mode Operation OFF/ON	SLEEP	Sleep Mode Operation OFF / ON

Functions

Indoor Unit



POWER (I)	Power Switch OFF / ON
AUTO OFF / ON	Auto Operation Button <ul style="list-style-type: none"> Used when the remote control cannot be used.
	Remote Control Signal Receiving Sound <ul style="list-style-type: none"> It can be controlled by pressing Auto Operation Button for 10 seconds.
TEST RUN OFF / ON	Operation Test Running / Pump Down Switch <ul style="list-style-type: none"> Used when test running or servicing.
	Operation Indication Lamps (LED) <ul style="list-style-type: none"> POWER (Red)..... Lights up in operation, blinks in Automatic Operation Mode judging SLEEP (Orange).... Lights up in Sleep Mode Operation TIMER (Orange).... Lights up in Timer Setting POWERFUL (Orange).... Lights up in Powerful Mode Operation ECONOMY (Green).... Lights up in Economy Mode Operation
	Operation Mode <ul style="list-style-type: none"> Heating, Cooling, Soft Dry and Automatic Mode.
	Powerful Operation <ul style="list-style-type: none"> Reaches the desired room temperature quickly.
	Economy Operation <ul style="list-style-type: none"> To reduce electrical power consumption.

Random Auto Restart Control <ul style="list-style-type: none"> Operation is restarted randomly after power failure at previous setting mode.
Anti-Freezing Control <ul style="list-style-type: none"> Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)
Sleep Mode Auto Control <ul style="list-style-type: none"> Indoor Fan operates at low speed. Operation stops after 8 hours.
Indoor Fan Speed Control <ul style="list-style-type: none"> High, Medium and Low. Automatic Fan Speed Mode <ul style="list-style-type: none"> – Heating : Fan speed varies from Me → SLo in accordance with indoor heat exchanger. – Cooling : Fan rotates at Hi and Me speed. Deodorizing control is available. – Soft Dry : Fan rotates at SLo speed. Deodorizing control is available.
Airflow Direction Control <ul style="list-style-type: none"> Automatic air swing and manual adjusted by remote control for vertical airflow. Manually adjusted by hand for horizontal airflow.
Starting Current Control
Time Delay Safety Control <ul style="list-style-type: none"> Restarting is inhibited for appro. 3 minutes.
7 Minutes Time Save Control <ul style="list-style-type: none"> Cooling Operation only.
Hot-Start Control <ul style="list-style-type: none"> The indoor fan remain stop until the indoor heat exchanger temperature reaches 30°C The indoor fan will operate at SLo and Lo when indoor heat exchanger temperature reaches 30°C - 39°C

Functions

Outdoor Unit

CU-A73KE, CU-A93KE



CU-A123KE



Compressor Reverse Rotation Protection Control

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

Overload Protector

- 2-Stage OLP to protect the compressor. Overload Protector will trip when
 - Temperature of compressor increases to 120°C.
 - High temperature or high current flows to compressor.
(Refer circuit diagram for OLP characteristic)

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

- Inner protector.

Deice Control

- To prevent frosting at outdoor heat exchanger. (Only for Heating Operation)
- Temperature of outdoor heat exchanger is sensed by TRS (Thermal Reed Switch).

Overload Protection Control

- Outdoor fan stops when indoor heat exchanger temperature rises to 51°C and above, and restarts when the indoor heat exchanger temperature drops to 49°C and below.
- Compressor stop when indoor heat exchanger temperature reaches 65°C or above. (Heating Operation Only)

Compressor Protection Control

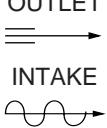
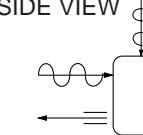
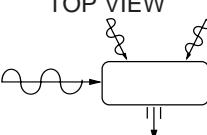
- If the outdoor fan motor is not running after compressor starts for 50 secs., compressor will stop. (Cooling and Soft Dry Operation only).

4-Way Valve Control

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

Outdoor Fan Motor Control

Product Specifications

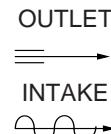
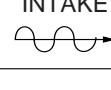
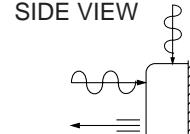
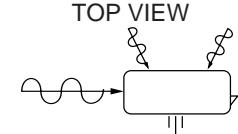
		Unit	CS-A73KE	CU-A73KE
Cooling Capacity		kW Btu/h	2.20 - 2.10 7,500 - 7,200	
Heating Capacity		kW Btu/h	2.45 - 2.40 8,360 - 8,200	
Moisture Removal		ℓ/h Pint/h	1.4 3.0	
Power Source		Phase V Cycle	Single 230 - 220 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)	m³/min (cfm)	Cooling ; 5.9 (206) - 5.7 (200) Heating ; 6.7 (238) - 6.6 (233)	—
	Indoor Air (Me)	m³/min (cfm)	Cooling ; 6.7 (237) - 6.4 (227) Heating ; 7.6 (269) - 7.5 (265)	—
	Indoor Air (Hi)	m³/min (cfm)	Cooling ; 7.5 (260) - 7.2 (250) Heating ; 8.5 (300) - 8.4 (300)	—
	Outdoor Air	m³/min (cfm)	—	27.8 (981) - 26.8 (946)
Noise Level		dB (A)	Cooling ; High 34/33, Low 29/27 Heating ; High 36/35, Low 30/28	Cooling ; High 47/45 Heating ; High 49/47
Electrical Data	Input	W	Cooling ; 700 - 680 Heating ; 640 - 600	
	Running Current	A	Cooling ; 3.6 - 3.5 Heating ; 3.4 - 3.2	
	COP	W/W	Cooling ; 3.14 - 3.09 Heating ; 3.83 - 4.00	
	Starting Current	A	15.5	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 3/8" L ; Half Union 1/4"	G ; 3-way valve 3/8" L ; 2-way valve 1/4"
Pipe Size (Flare piping)		inch inch	G (gas side) ; 3/8" L (liquid side) ; 1/4"	G (gas side) ; 3/8" L (liquid side) ; 1/4"
Drain Hose	Inner diameter	mm	12	—
	Length	m	0.7	—
Power Cord Length Number of core-wire		m	2.0 3 (1.0 mm²)	—
Dimensions	Height	inch (mm)	10-31/32 (279)	18-29/32 (480)
	Width	inch (mm)	31-15/32 (799)	30-23/32 (780)
	Depth	inch (mm)	7-15/32 (190)	9-21/32 (245)
Net Weight		lb (kg)	20 (9.0)	64 (29.0)
Compressor	Type		—	Rotary (1 cylinder) rolling piston type
	Motor Type		—	Induction (2-pole)
	Rated Output	W	—	600
Air Circulation	Type		Cross-flow Fan	Propeller Fan
	Material		AS + Glass Fiber 30%	AES + Glass Fiber 12%
	Motor Type		Induction (4-pole)	Induction (6-pole)
	Input	W	29.0 - 27.0	65.8 - 57.5
	Rated Output	W	10	20
	Fan Speed	Low rpm	835 - 810	—
		Medium rpm	945 - 920	—
		High rpm	1055 - 1030	730 - 705

Product Specifications

		Unit	CS-A73KE	CU-A73KE
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium
	Fin Type		Slit Fin	Louver Fin
	Row / Stage		(Plate fin configuration, forced draft) 2 x 14	1 x 18
	FPI		18	19
	Size (W x H x L)	mm	614 x 294 x 25.4	856 x 457.2 x 22
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(c.c)	—	SUNISO 4GDID or ATMOS M60 (290)
Refrigerant (R-22)		g (oz)	—	815 (28.8)
Thermostat			Electronic Control	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	Cooling ;850, Heating ;360
	Flow Rate	ℓ/min	—	Cooling ;4.5, Heating ;10.5
	Inner Diameter	mm	—	Cooling ;1.1, Heating ;1.3
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	—	15 μF, 440VAC
Fan Motor Capacitor		μF, VAC	1.5 μF, 400VAC	1.2 μF, 400VAC

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

Product Specifications

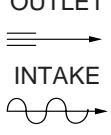
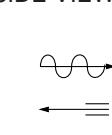
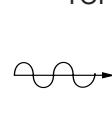
		Unit	CS-A93KE	CU-A93KE
Cooling Capacity		kW Btu/h	2.80 - 2.70 9,550 - 9,200	
Heating Capacity		kW Btu/h	3.40 - 3.30 11,590 - 11,250	
Moisture Removal		ℓ/h Pint/h	1.6 3.4	
Power Source		Phase V Cycle	Single 230 - 220 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)	m³/min (cfm)	Cooling ; 6.4 (226) - 5.9 (209) Heating ; 6.8 (240) - 6.5 (228)	-
	Indoor Air (Me)	m³/min (cfm)	Cooling ; 7.6 (269) - 7.1 (251) Heating ; 8.1 (286) - 7.7 (273)	-
	Indoor Air (Hi)	m³/min (cfm)	Cooling ; 9.2 (320) - 8.9 (310) Heating ; 9.8 (350) - 9.7 (340)	-
	Outdoor Air	m³/min (cfm)	-	27.8 (981) - 26.8 (946)
Noise Level		dB (A)	Cooling ; High 39/38, Low 29/28 Heating ; High 39/39, Low 30/28	Cooling ; High 49/48 Heating ; High 49/47
Electrical Data	Input	W	Cooling ; 980 - 950 Heating ; 885 - 870	
	Running Current	A	Cooling ; 4.6 - 4.6 Heating ; 4.2 - 4.2	
	COP	W/W	Cooling ; 2.86 - 2.84 Heating ; 3.84 - 3.79	
	Starting Current	A	22	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 3/8" L ; Half Union 1/4"	G ; 3-way valve 3/8" L ; 2-way valve 1/4"
Pipe Size (Flare piping)		inch inch	G (gas side) ; 3/8" L (liquid side) ; 1/4"	G (gas side) ; 3/8" L (liquid side) ; 1/4"
Drain Hose	Inner diameter	mm	12	-
	Length	m	0.7	-
Power Cord Length	Number of core-wire		2.0 3 (1.0 mm²)	-
Dimensions	Height	inch (mm)	10-31/32 (279)	18-29/32 (480)
	Width	inch (mm)	31-15/32 (799)	30-23/32 (780)
	Depth	inch (mm)	7-15/32 (190)	9-21/32 (245)
Net Weight		lb (kg)	20 (9.0)	71 (32.0)
Compressor	Type		-	Rotary (1 cylinder) rolling piston type
	Motor Type		-	Induction (2-pole)
	Rated Output	W	-	800
Air Circulation	Type		Cross-flow Fan	Propeller Fan
	Material		AS + Glass Fiber 30%	AES + Glass Fiber 12%
	Motor Type		Induction (4-pole)	Induction (6-pole)
	Input	W	37.0 - 34.0	65.8 - 57.5
	Rated Output	W	14	20
	Fan Speed	Low rpm	865 - 810	-
		Medium rpm	1030 - 970	-
		High rpm	1245 - 1215	730 - 705

Product Specifications

		Unit	CS-A93KE	CU-A93KE
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium
	Fin Type		Slit Fin	Louver Fin
	Row / Stage		(Plate fin configuration, forced draft) 2 × 14	1 × 18
	FPI		18	19
	Size (W × H × L)	mm	614 × 294 × 25.4	856 × 457.2 × 22
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(c.c)	—	SUNISO 4GDID or ATMOS M60 (350)
Refrigeration (R-22)		g (oz)	—	935 (33.0)
Thermostat			Electronic Control	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	Cooling ; 1,075, Heating ; 325
	Flow Rate	ℓ/min	—	Cooling ; 5.0, Heating ; 13.4
	Inner Diameter	mm	—	Cooling ; 1.2, Heating ; 1.4
Air Filter	Material Style		P.P. Honeycomb	— —
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	—	25 μF, 370VAC
Fan Motor Capacitor		μF, VAC	1.5 μF, 400VAC	1.2 μF, 400VAC

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

Product Specifications

		Unit	CS-A123KE	CU-A123KE
Cooling Capacity		kW Btu/h	3.55 - 3.40 12,110 - 11,590	
Heating Capacity		kW Btu/h	4.20 - 4.05 14,320 - 13,810	
Moisture Removal		ℓ/h Pint/h	2.1 4.4	
Power Source		Phase V Cycle	Single 230 - 220 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW  TOP VIEW 	
Air Volume	Indoor Air (Lo)	m³/min (cfm)	Cooling ; 7.5 (263) - 7.0 (247) Heating ; 8.0 (281) - 7.5 (266)	—
	Indoor Air (Me)	m³/min (cfm)	Cooling ; 8.1 (284) - 7.7 (271) Heating ; 8.6 (303) - 8.3 (293)	—
	Indoor Air (Hi)	m³/min (cfm)	Cooling ; 9.0 (320) - 8.8 (310) Heating ; 9.6 (340) - 9.5 (340)	—
	Outdoor Air	m³/min (cfm)	—	35.0 (1,236) - 32.8 (1,193)
Noise Level		dB (A)	Cooling ; High 39/39, Low 34/33 Heating ; High 39/39, Low 33/32	Cooling ; High 49/48 Heating ; High 49/48
Electrical Data	Input	kW	Cooling ; 1.24 - 1.20 Heating ; 1.17 - 1.13	
	Running Current	A	Cooling ; 5.6 - 5.6 Heating ; 5.2 - 5.2	
	COP	W/W	Cooling ; 2.86 - 2.83 Heating ; 3.59 - 3.58	
	Starting Current	A	26	
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 1/2" L ; Half Union 1/4"	G ; 3-way valve 1/2" L ; 2-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	m	0.7	—
Power Cord Length Number of core-wire		m	2.0 3 (1.0 mm²)	— —
Dimensions	Height	inch (mm)	10-31/32 (279)	21-1/4 (540)
	Width	inch (mm)	31 -15/32 (799)	27-17/32 (699)
	Depth	inch (mm)	7-15/32 (190)	11-7/32 (285)
Net Weight		lb (kg)	20 (9.0)	86 (39.0)
Compressor	Type		—	Rotary (1 cylinder) rolling piston type
	Motor Type		—	Induction (2-pole)
	Rated Output	W	—	1,100
Air Circulation	Type		Cross-flow Fan	Propeller Fan
	Material		AS + Glass Fiber 30%	AES + Glass Fiber 12%
	Motor Type		Induction (4-pole)	Induction (6-pole)
	Input	W	35.5 - 33.0	71.0 - 67.0
	Rated Output	W	15	25
	Fan Speed	Low	1060 - 1000	—
		Medium	1145 - 1100	—
		High	1280 - 1260	805 - 780

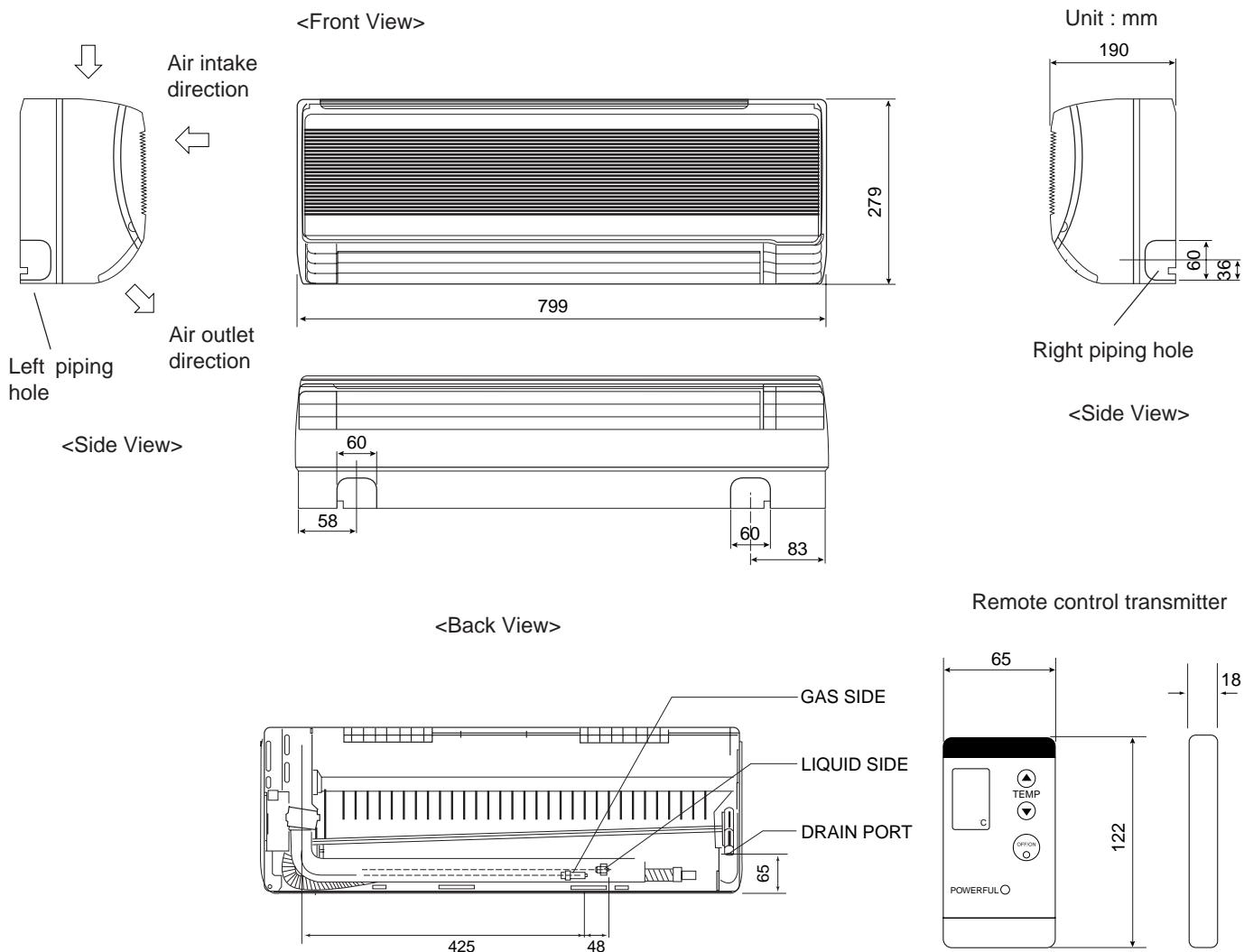
Product Specifications

		Unit	CS-A123KE	CU-A123KE
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium
	Fin Type		Slit Fin	Louver Fin
	Row / Stage		(Plate fin configuration, forced draft) 2 × 14	1 × 20
	FPI		21	18
	Size (W × H × L)	mm	614 × 294 × 25.4	782.9 × 508 × 22
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(c.c)	—	SUNISO 4GDID or ATMOS M60 (410)
Refrigeration (R-22)		g (oz)	—	990 (34.9)
Thermostat			Electronic Control	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	Cooling ;1,100, Heating ;470
	Flow Rate	ℓ/min	—	Cooling ;6.0, Heating ; 13.4
	Inner Diameter	mm	—	Cooling ; 1.3, Heating ; 1.5
Air Filter	Material Style		P.P. Honeycomb	— —
Capacity Control			Capillary Tube	
Compressor Capacitor		μF, VAC	—	30 μF, 370VAC
Fan Motor Capacitor		μF, VAC	1.5 μF, 400VAC	1.5 μF, 400VAC

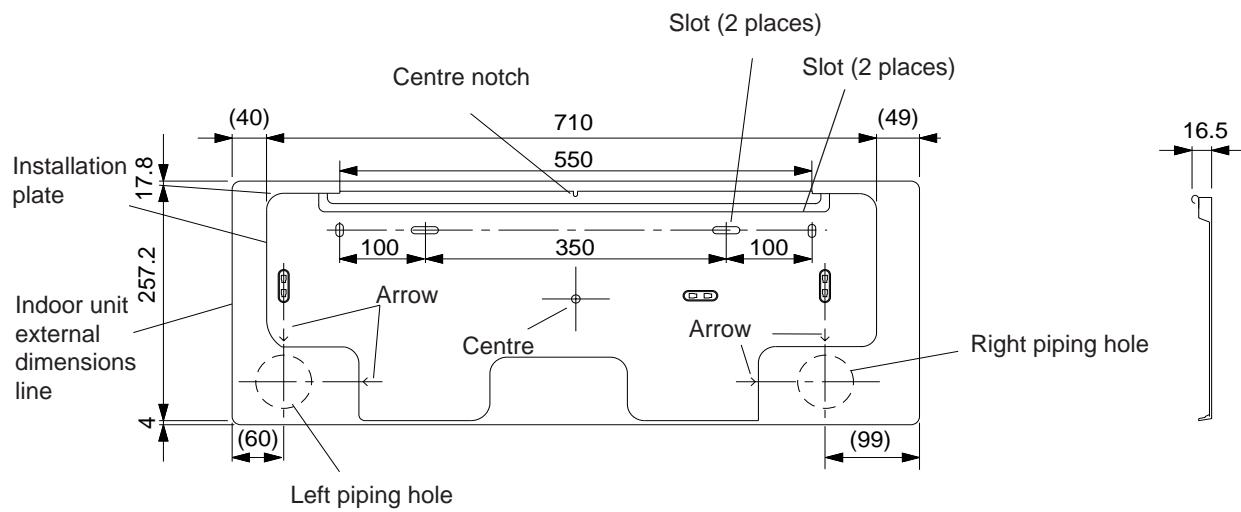
- Specifications are subject to change without notice for further improvement.

Dimensions

CS-A73KE / CS-A93KE / CS-A123KE

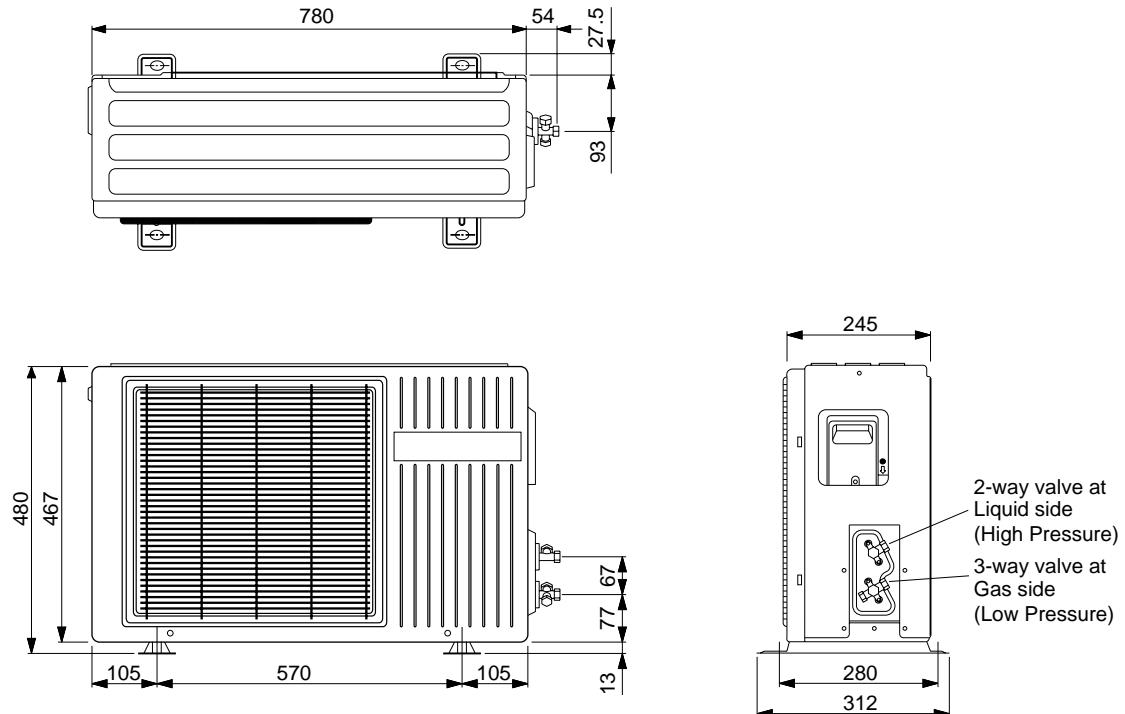


Relative position between the indoor unit and the installation plate <Front View>

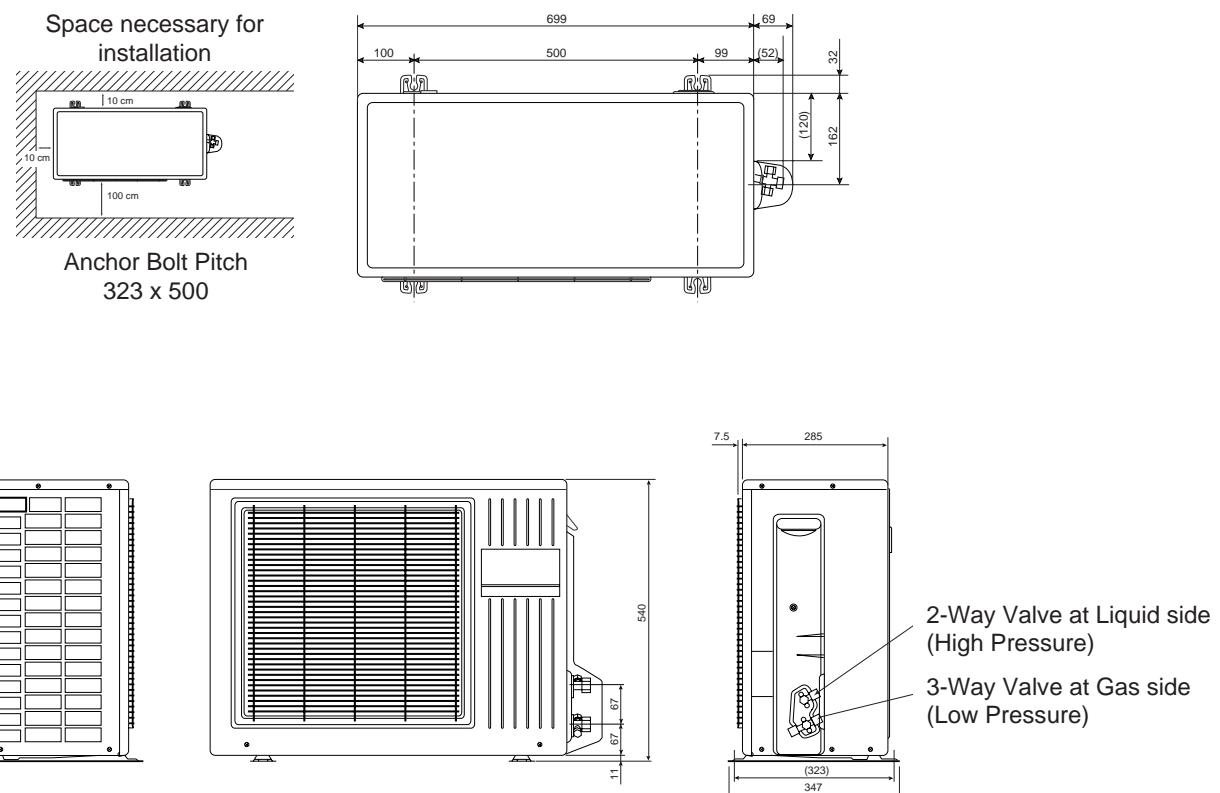


Dimensions

CU-A73KE / CU-A93KE

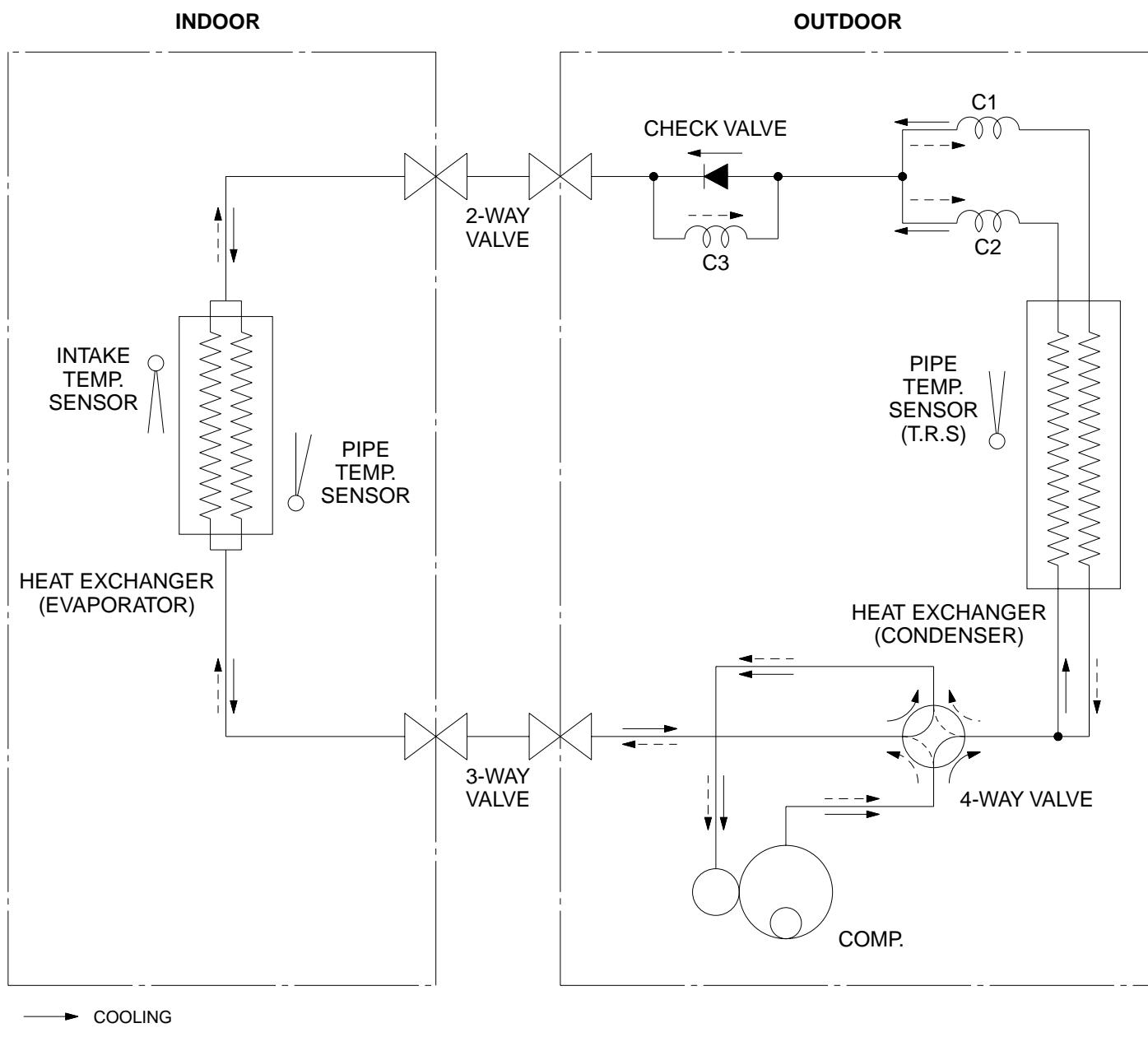


CU-A123KE



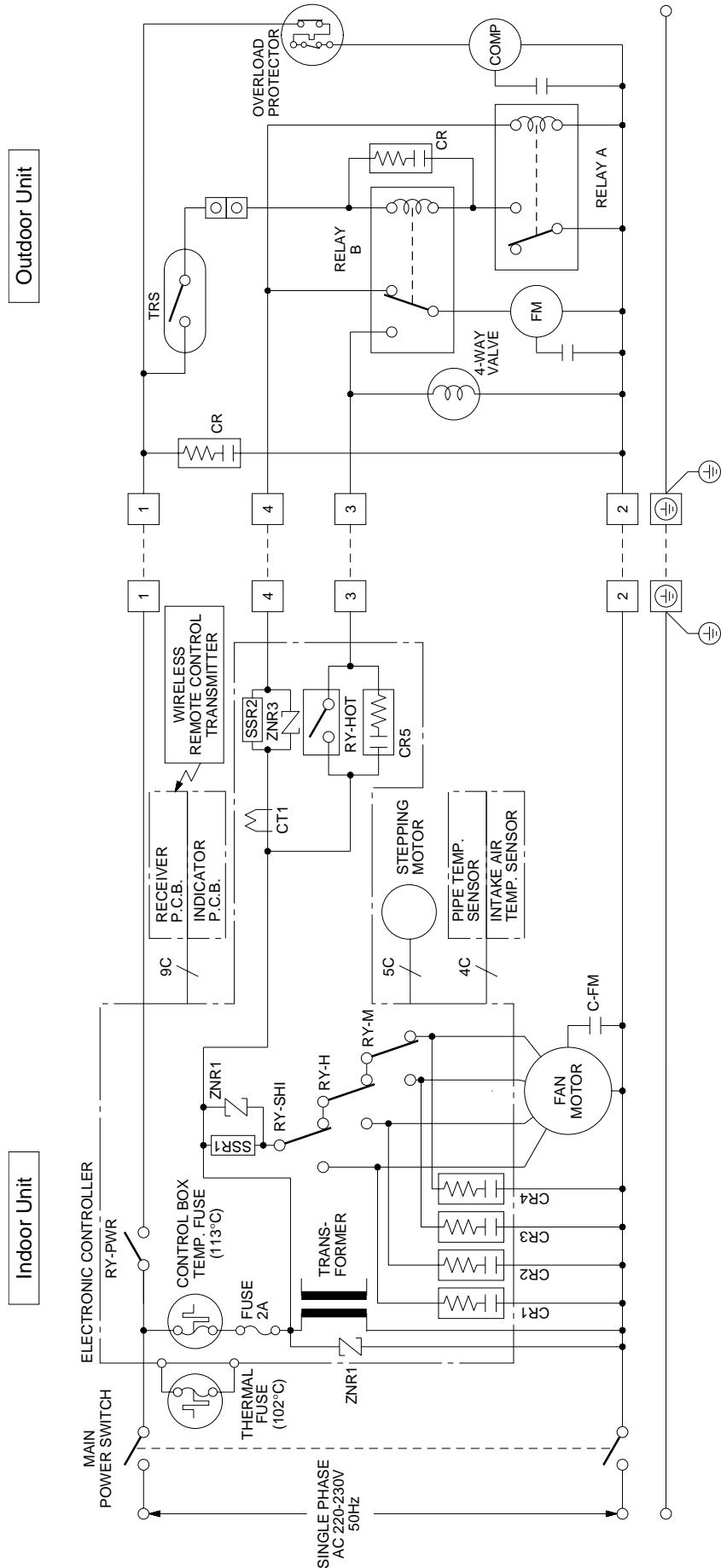
Refrigeration Cycle Diagram

CS-A73KE / CU-A73KE
 CS-A93KE / CU-A93KE
 CS-A123KE / CU-A123KE



Block Diagram

CS-A73KE / CU-A73KE
CS-A93KE / CU-A93KE
CS-A123KE / CU-A123KE

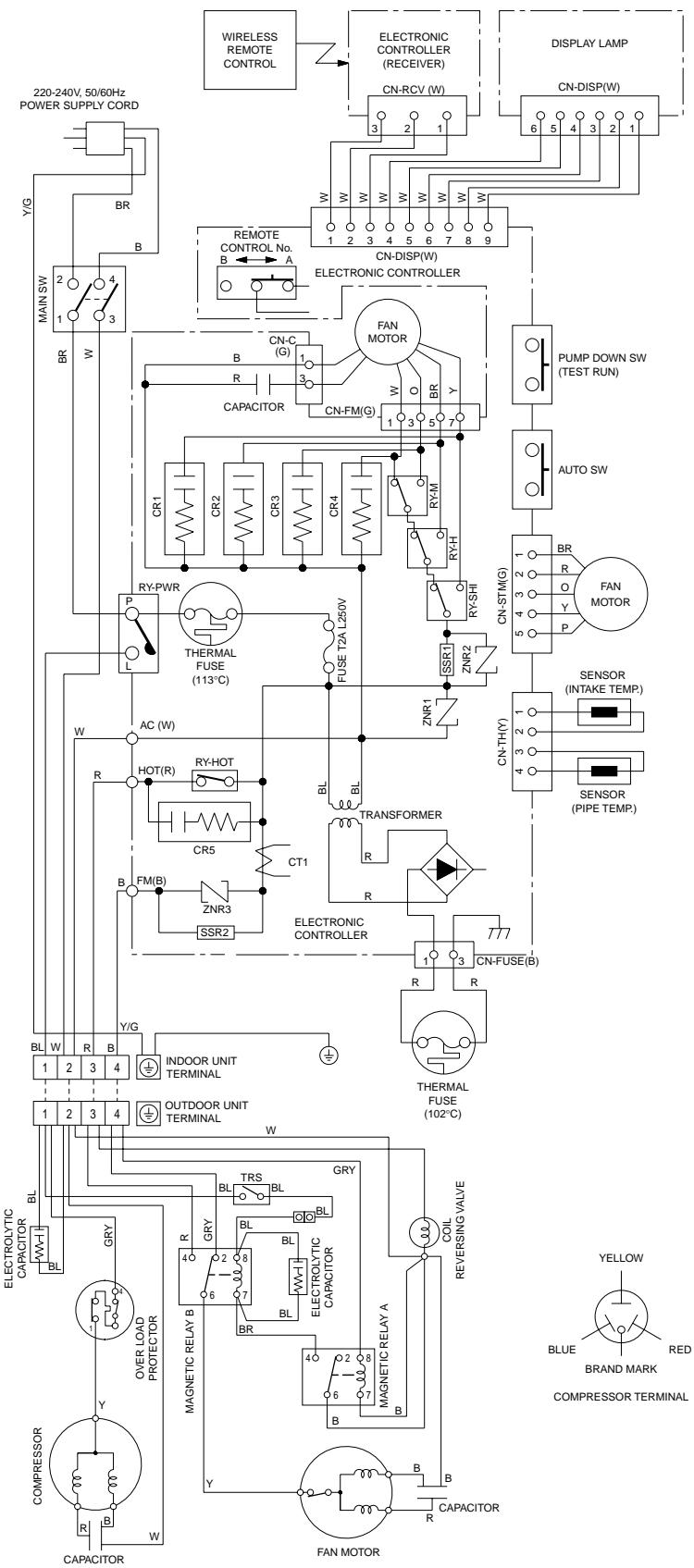


※ [] Indicates the electronic control unit.

※ "C" Indicates the number of core wires. (Example: 6C=6 core wires).

Wiring Diagram

**CS-A73KE / CU-A73KE
CS-A93KE / CU-A93KE
CS-A123KE / CU-A123KE**



REMARKS:

B	: BLUE
BR	: BROWN
BL	: BLACK
W	: WHITE
R	: RED
O	: ORANGE
P	: PINK
Y/G	: YELLOW/GREEN

Resistance of Indoor Fan Motor Windings

MODEL	CS-A73KE	CS-A93KE	CS-A123KE
CONNECTION	CWA92288	CWA92296	CWA92290
YELLOW-BLUE	536.5 Ω	450.8 Ω	457.4 Ω
YELLOW-BROWN	77.1 Ω	56.9 Ω	56.1 Ω
BROWN-ORANGE	43.9 Ω	74.2 Ω	61.2 Ω
ORANGE-WHITE	42.7 Ω	37.3 Ω	25.3 Ω
WHITE-RED	111.4 Ω	122.6 Ω	142.5 Ω

Resistance of Outdoor Fan Motor Windings

MODEL	CU-A73KE	CU-A93KE	CU-A123KE
CONNECTION	CWA95245	↔	CWA95381
BLUE-YELLOW	260.5 Ω	↔	174.5 Ω
YELLOW-RED	446.0 Ω	↔	331.0 Ω

Resistance of Compressor Windings

MODEL	CU-A73KE	CU-A93KE	CU-A123KE
CONNECTION	2RS127D3CA04	2PS174D3AA02	2KS224D5CA02
C-R	4.023	2.798 Ω	2.211 Ω
C-S	8.803	5.432 Ω	2.924 Ω

Operation Details

1) Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Power Switch or Remote Control, it restarts after 3 minutes when the Power Switch or Remote Control is turned ON.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Saved Control

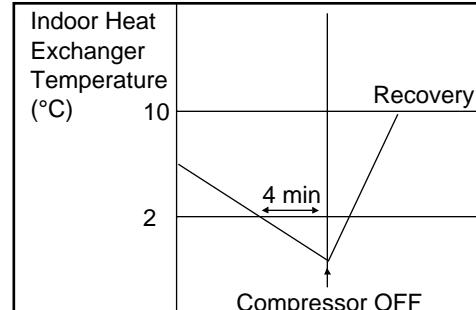
- The compressor will start automatically if it has stopped for 7 minutes if the room temperature is between the compressor ON temperature and OFF temperature.

Starting Current Control

- When the compressor, outdoor fan motor & indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

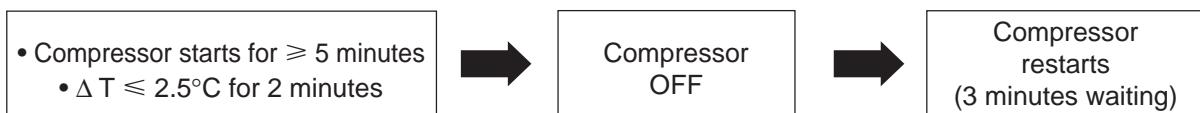
Anti-Freezing Control

- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor recommences when the indoor heat exchanger temperature rises to 10°C (Recovery).
※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



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 or less for 2 minutes, compressor will stop and restart automatically. (Time Delay Safety Control is valid).



$\Delta T = \text{Intake air temperature} - \text{Indoor heat exchanger temperature}$

This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Operation Details

Compressor Protection Control

- After the compressor starts for 50 seconds but the outdoor fan motor is still OFF, the compressor will stop and restart automatically. (Time Delay Safety Control is valid).

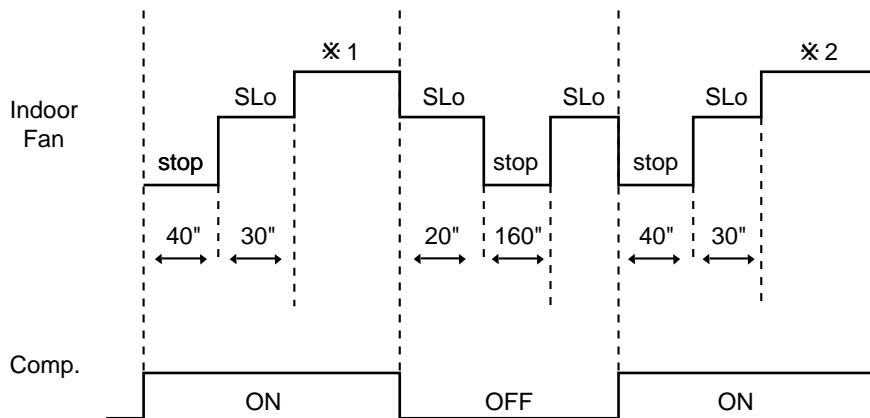


- If the above phenomenon is repeated for 3 times, the compressor will stops.
- The above phenomenon is reset when there is a change to heating mode or stopped by Remote Control Switch.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- Fan speed rotates in the range of Hi to Me.
- Deodorizing Control.



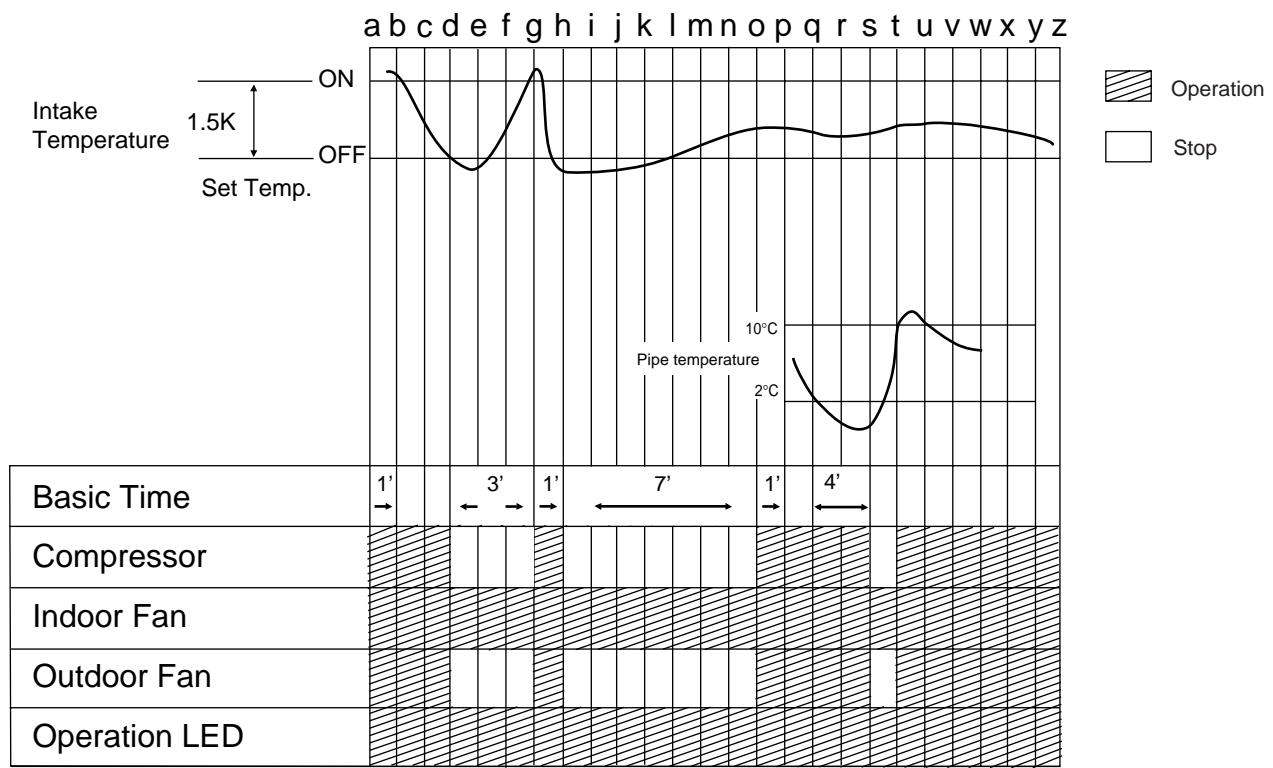
*1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

*2 Fan Speed is Me after the compressor restarts.

* SLo: Indoor Fan rotates at 4 second intervals at low speed.

Operation Details

Cooling Operation Time Diagram



<Description of operation>

- d - g : Time Delay Safety Control (waiting for 3 minutes)
- g - h : 60 sec. Forced Operation
- h - o : 7 min. Time Saved Control
- q - t : Anti Freezing Control

Operation Details

2) Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.
- During Soft Dry operation, the Indoor Fan will operate and stop at 4-second intervals at low speed.
- The operation will be switched on and off for up to 10 minutes "ON" and 6 minutes "OFF". Once Soft Dry operation is turned off, it stops for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Starting Current Control

- Same as Starting Current Control for Cooling Mode operation.

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

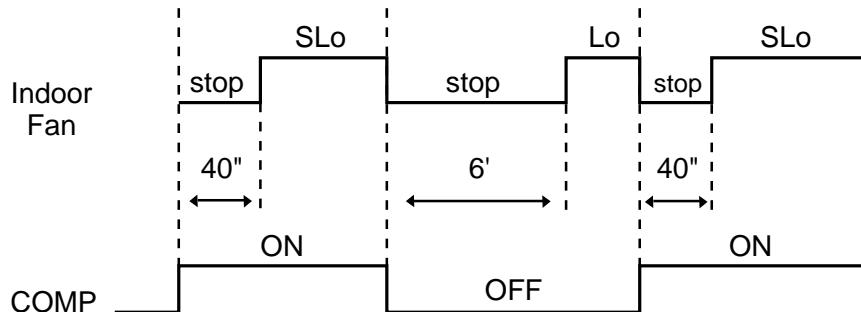
Compressor Protection Control

- Same as Compressor Protection Control for Cooling Mode Operation.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry Operation.

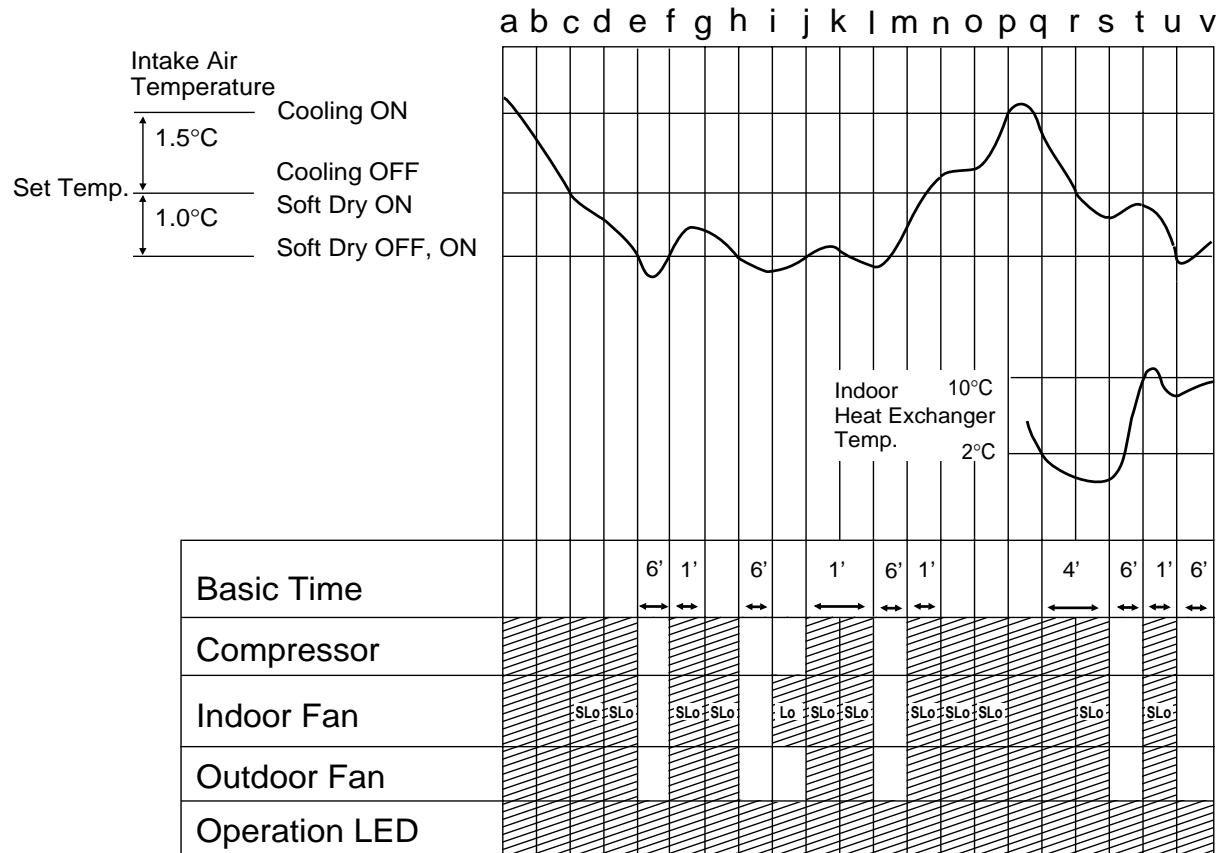
- Fan speed rotates at SLo and Lo speed.
- Deodorizing Control.



※ SLo: Indoor Fan rotates at 4-second intervals at low speed.

Operation Details

Soft Dry Operation Time Diagram



<Description of operation>

- a - c, p~r : Cooling Operation
- c - p, r - v : Soft Dry Operation
- e - f : Soft Dry OFF
- j - l : 60 sec. Forced Operation
- q - t : Anti Freezing Control

Operation

Stop

Operation Details

3) Heating Mode Operation

Heating in operation according to Remote Control setting.

Time Delay Safety Control

- When the compressor is stopped by Power Switch or Remote Control, it restarts after 3 minutes when the Power Switch or Remote Control is turned ON.
- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes.
Indoor Fan stops for 1 minute after 3 minutes compressor stops. Then, it will operate with Lo⁻ fan speed for 40 seconds then change to SLo fan speed.

Overload Protection Control

- If the temperature of the indoor heat exchanger rises to 51°C, Outdoor Fan stops.
The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.
- If the indoor heat exchanger becomes 65°C or more, the compressor will stop and restart automatically.
(Time Delay Safety Control – 4 minutes waiting)



Compressor Reverse Rotation Protection Control

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



ΔT = Indoor heat exchanger temperature – intake air temperature

This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

4-way Valve Control

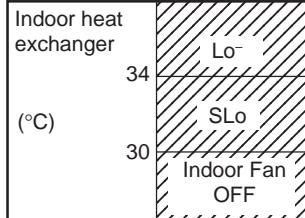
- 4-way valve always ON during Heating operation.(Except Deicing operation)
- When the unit is switched to "OFF" during Heating operation, 4-way valve stays at Heating position for 5 minutes.

Outdoor Fan Motor Control

- When compressor stop (reaches room temperature), outdoor fan will operate for 30 seconds.
(30 seconds Forced Operation).

Hot Start Control

When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.



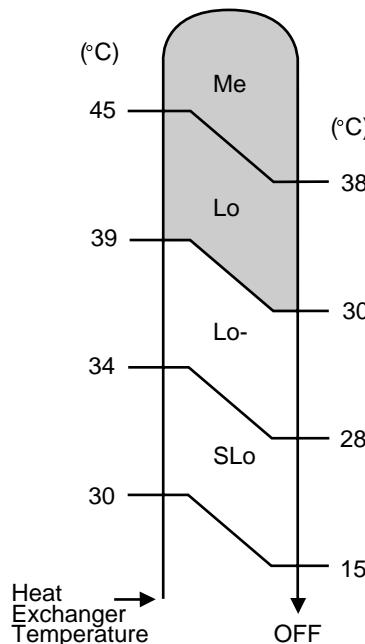
Hot Start is completed when indoor heat exchanger reaches 39°C.

Operation Details

Automatic Fan Speed Mode

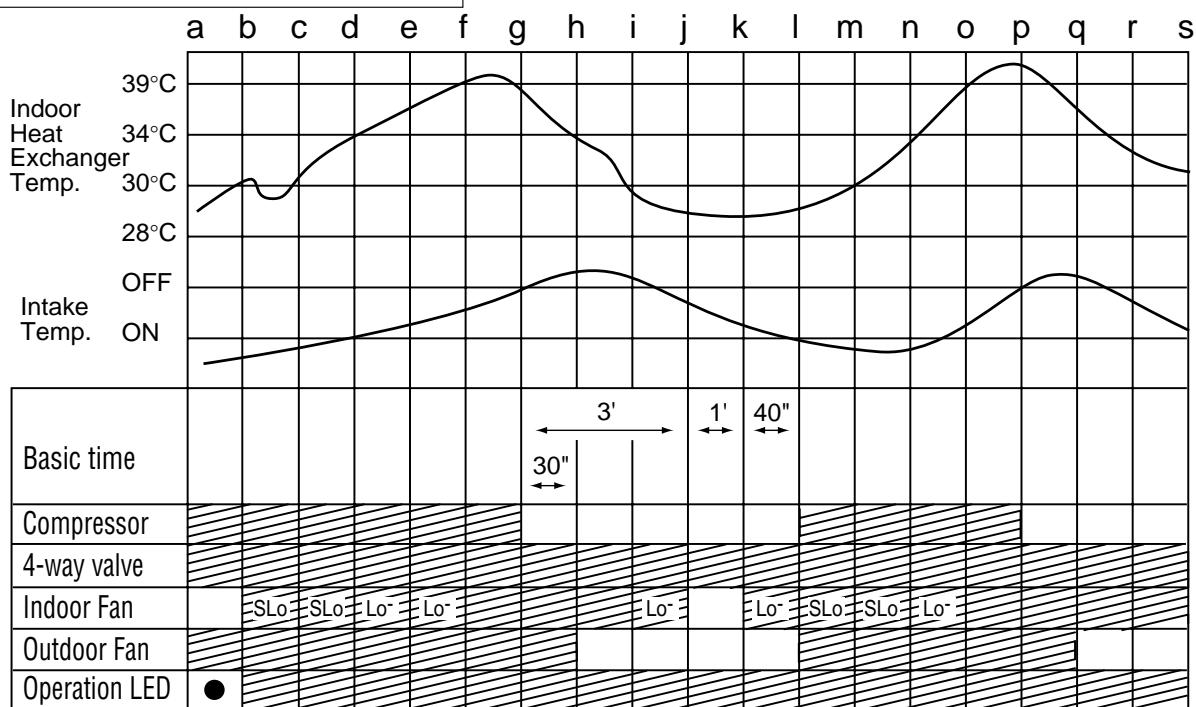
When Automatic Fan Speed is selected at Remote Control during heating operation.

- Fan speed rotates in the range of Me → SLo according to the heat exchanger temperature.



- If use Manual Fan Speed, [] at above diagram will operate with setting Fan Speed.

Heating Operating Time Diagram



<Description of operation>

- a - b : Hot start (Indoor fan = OFF)
- b - d : Hot start (Indoor fan = SLo)
- g - l : Indoor fan control (controlled during thermostat OFF)
- g - h : Outdoor fan control (30 sec. Forced Operation) after compressor stops.

- : Blinking
- ▨ : Operation
- : Stop

Operation Details

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

Deice operation detection commences after 30 minutes of Heating operation starts or 60 minutes after previous deice operation. If the TRS (Thermal Reed Switch) senses the outdoor piping temperature drops to -3°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

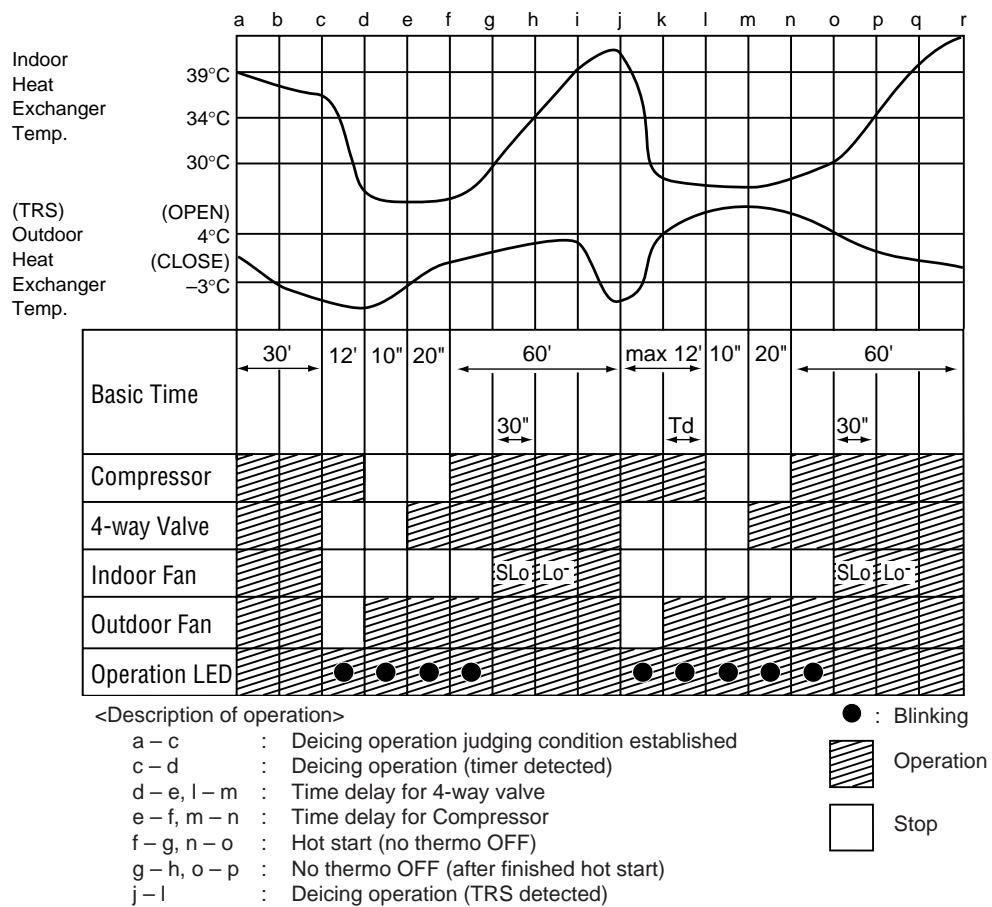
- 12 minutes after deicing operation starts;
- TRS senses the outdoor piping temperature rises to 4°C (TRS OPEN).
- Deicing will not end immediately as time delay (T_d) is valid as shown below.

Time taken from deicing starts to TRS OPEN (T)	T_d (seconds)
$T < 3$ minutes	0
$3 \text{ minutes} \leq T < 6$ minutes	60
$6 \text{ minutes} \leq T < 9$ minutes	120
$T \geq 9$ minutes	180

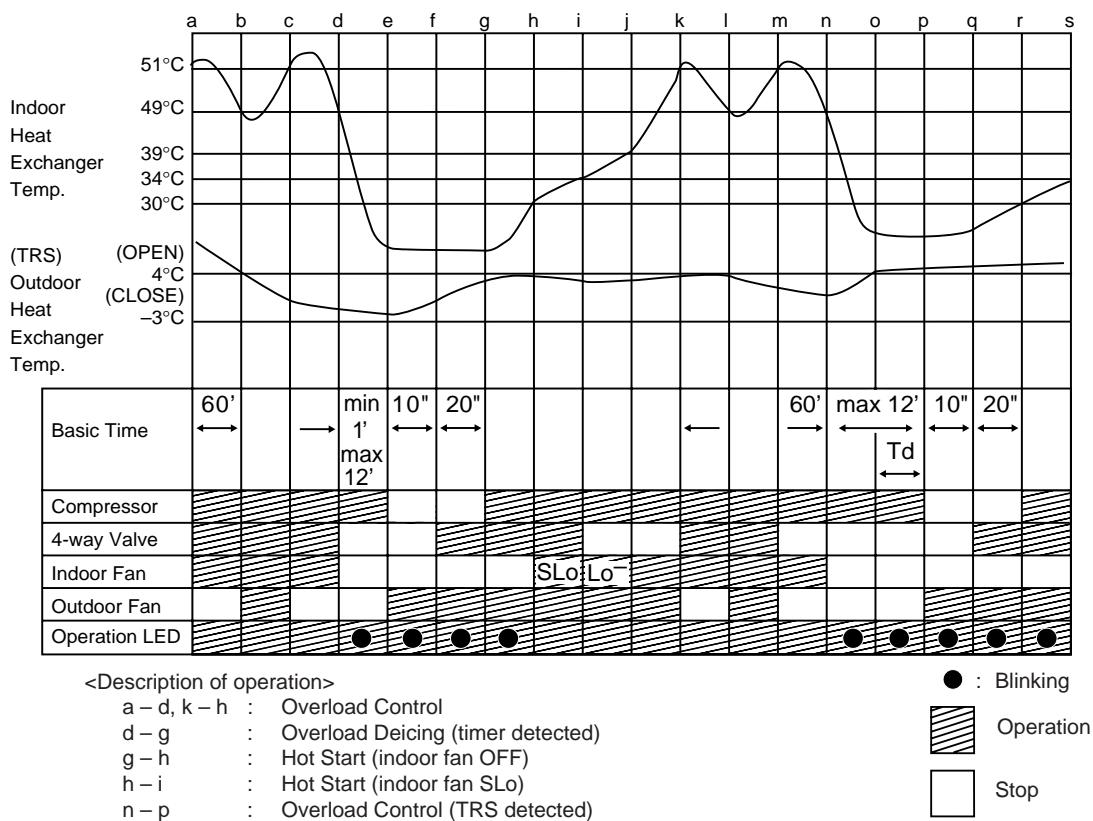
- Once deicing operation starts, it will not end for 60 seconds.
- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

Operation Details

Normal Deicing Time Diagram



Overload Deicing Time Diagram

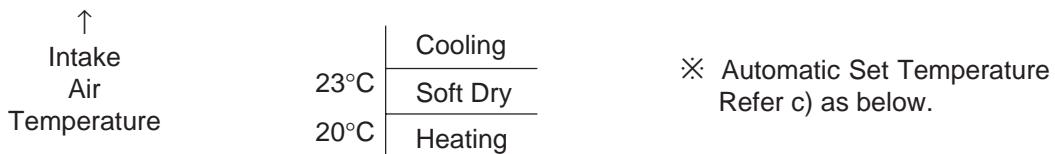


Operation Details

4) Automatic Mode Operation

- a) When the Automatic Mode Operation is selected, the indoor fan operates at Lo-- fan speed for 20 second to sense intake air temperature and determine the 1st operation mode.

Standard for Determining Operation Mode	
1st Judgement	



- b) Operation mode will be determine again after 1hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.
- ※ The present operation mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) eventhough after 1 hour from automatic operation mode started.
- For 2nd judgement onwards, indoor fan will operate for 25 seconds to sense the intake air temperature for determining operation mode.

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)
		Not Applicable	O Judgement : 20°C & Above)	O Judgement : Below 20°C)
Heating	25°C Cooling Heating	O (Judgement : Above 25°C)	Not Applicable	O (Judgement : 25°C & below)

※ Automatic Set Temperature
Refer c) as below.

- c) Automatic Set Temperature
For each operation, set temperature will automatically set as shown below.
However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the "Room Temperature Setting button"

Operation Mode	▲ Hi AUTO	AUTO	AUTO ▼ 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

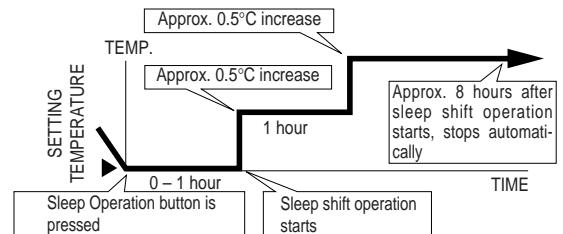
Operation Details

5) Sleep Mode Auto Operation

Cooling or Soft Dry Operation

When you press the SLEEP Mode, the following movement will start to avoid overcooling.

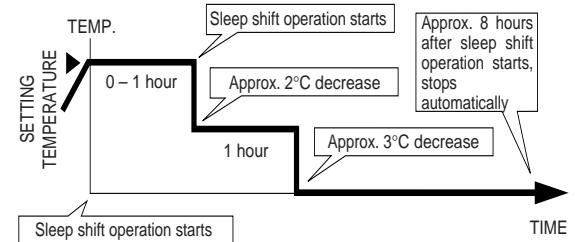
- The fan speed refer to Indoor Fan Motor Control.
- The setting temperature will be risen by **0.5°C** at the start of operation and by **0.5°C** one hour later.
- The operation will stop after **8 hours**.
- When using together with the Timer, the ON-Timer has priority.



Heating Operation

When you press the SLEEP Mode, the following movement will start to avoid overheating.

- The fan speed refer to Indoor Fan Motor Control.
- The setting temperature will be decrease by **2°C** at the start of operation and by **3°C** one hour later.
- The operation will stop after **8 hours**.
- When using together with the Timer, the ON-Timer has priority.



6) Random Auto Restart Control

- If there is a power failure, operation will be automatically restarted after 3 to 5 1/2 minutes when the power is resumed. It will start with previous operation mode and airflow direction.
- Restart time is decided randomly using 4 parameter:- Intake air temperature, setting temperature, fan speed and Air Swing Blade position.
- Random Auto Restart Control is not available when Timer or Sleep Mode is set.
- This control can be omitted by open the circuit of J X 1. (Refer Circuit Diagram)

7) Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at Lo⁻⁻ speed for 20 seconds, 30 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) Remote Control Signal Receiving Sound

- Peep sound (Long) will be heard when:
 - Stopping the Air Conditioner using ON/OFF switch.
 - Stopping the Sleep Mode.
 - Stopping the Powerful Mode.
 - Stopping the Economy Mode.
- Pep sound (Short) will be heard for others.
- To switch off the peep sound
press the "Auto Operation Button" continuously for 10 seconds or more.
Repeat the above if you want to switch ON the beep sound or switch OFF the power switch at the indoor unit and switch it ON again.

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

Operation Details

6) Indoor Fan Speed Control

Auto Fan Speed Control

When set to Auto Fan Speed, the fan speed is shifted automatically between Stop to SHi depend on each operation as shown below.

Manual Fan Speed Control

Basic fan speed adjustment (3 setting, from Lo to Hi) can be carried out by using the Fan Speed Selection button at the remote control.

Tap			SHi	Hi	Me	Lo	RLo	Lo ⁻⁻	SLo	Stop
COOLING	Normal	Manual	Hi	O						
			Me		O					
			Lo			O				
		Auto Fan Speed		O	O					
		Sleep Shift				O				
	Powerful	Manual	O							
		Auto Fan Speed	O							
		Sleep Shift				O				
	Economy	Manual					O			
		Auto Fan Speed					O			
		Sleep Shift				O				
SOFT DRY	Normal	Manual							O	O
		Auto Fan Speed							O	O
		Sleep Shift				O				
	HEATING (A73K)	Manual	Hi	O			O		O	O
			Me	O			O		O	O
			Lo		O	O			O	O
		Lo ⁻⁻				O				
		SLo						O		
		Auto Fan Speed		O	O	O			O	O
		Sleep Shift				O				O
HEATING (93K & A123K)	Normal	Manual	Manual	O	O	O			O	O
			Auto Fan Speed		O	O			O	O
			Sleep Shift			O				O
		Lo ⁻⁻				O				
		SLo						O		
	Powerful	Manual	O	O	O				O	O
		Auto Fan Speed		O	O				O	O
		Sleep Shift				O				O
	Economy	Manual	O	O	O				O	O
		Auto Fan Speed		O	O				O	O
		Sleep Shift				O				O
MODE JUDGEMENT								O		

Operation Details

※Lo-- : Indoor Fan rotates at 6 seconds ON and 4 seconds OFF

※SLo : Indoor Fan rotates at 4 second intervals at Low speed.

※RLo : Random Low Speed.

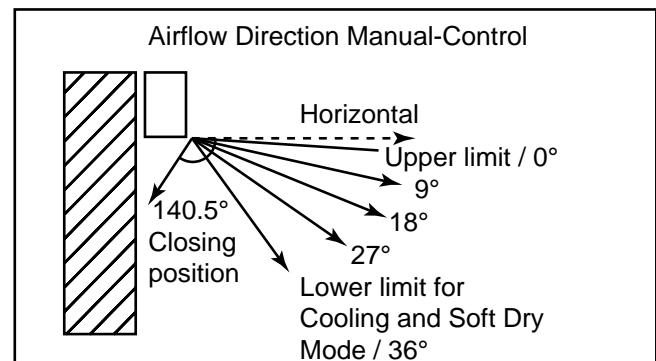
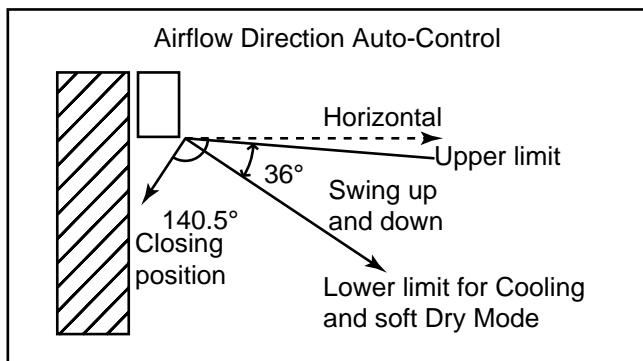
Lo, RLo⁻, RLo⁻⁻, Fan Speed is operates randomly.

Random Low Speed

Fan Speed	Lo	RLo ⁻				RLo ⁻⁻			
Time	10"	4.5"	0.5"	4.5"	0.5"	4"	1"	4"	1"
Fan Motor	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON

10) Airflow Direction Control

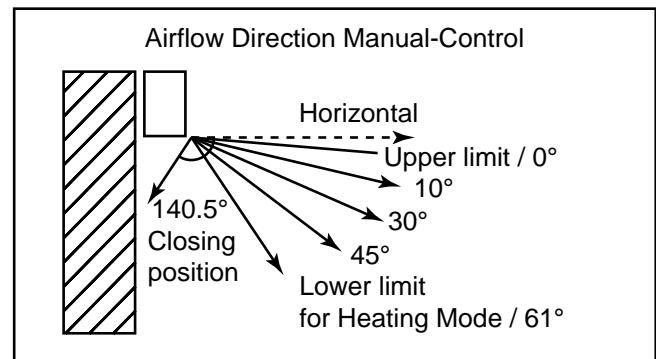
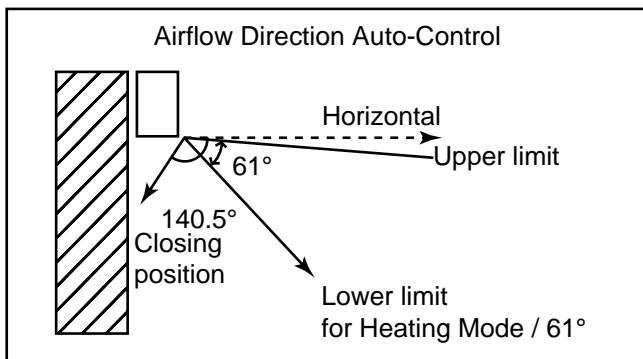
a) Vertical Airflow Direction Cooling and Soft Dry Mode.



- The louver swings up and down as shown above.
- The louver does not swing when the Indoor Fan stops during operation.

- The louver can be selected between 0°–36° (as shown above) when pressing Manual Airflow Direction Selection Button.

b) Vertical Airflow Direction Heating Mode



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

- The louver can be selected between 0° – 61° (as shown above) when pressing Manual airflow Direction Selection Button.

C) Horizontal Airflow Direction

- The left and right airflow direction louvers can be adjusted manually.

Operation Details

11) Economy Mode Operation

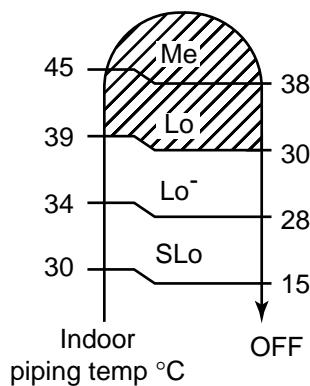
Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner. However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

a) Cooling and Soft Dry Mode

- When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running under Random Low Fan Speed.
- Vertical Airflow Direction :–
In "manual" or "Auto" setting, the vane will automatically change to Auto Air Swing.

b) Heating Mode

- When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.
- 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 piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change from SLo to Lo⁻, then follows set fan speed when the Indoor piping temperature reaches 39°C



- Vertical Airflow Direction:–
In "manual" or "Auto" setting, the vane will automatically change to Auto Air Swing.

c) Economy Mode will stop if:-

- Economy mode button is pressed again.
- Stopped by ON/OFF switch.
- Timer-off activates.
- Powerful mode button is pressed.
- Fan Speed control button is pressed.
- Sleep mode button is pressed ON
- Operating mode is changed.

Operation Details

12) Powerful Mode Operation

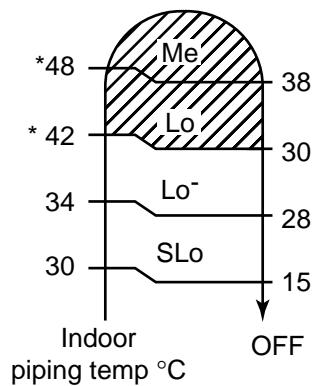
Purpose of this operation is to obtain the setting temperature quickly.

a) Cooling and Soft Dry Mode

- When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running under Super High Fan Speed.
- Vertical Airflow Direction :–
In "manual" setting, the vane will automatically shift down 10° lower than previous setting.
In "Auto" setting, the vane will automatically swing up and down. However the upper and lower limit will be shifted 10° downward.

b) Heating Mode

- When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.
- 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 piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change from SLo to Lo⁻, then follows set fan speed when the Indoor piping temperature reaches 42°C.
- Set Fan Speed
- * shows different temperature than normal heating. This higher temperature is to provide warmer air.

- 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.

c) Powerful mode will operate for 15 minutes only.

d) Powerful Mode will stop if:-

- Power mode button is pressed again.
- Stopped by ON/OFF switch.
- Timer-off activates.
- Economy mode button is pressed.
- Sleep mode button is presssed.
- Operating mode is changed.

Installation Information

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	6	Band	2
			7	Vinyl tape	3
2	Installation plate fixing screw	4	8	Vinyl tape	1
					
3	Remote control	1	9	Drain elbow	1
4	Battery	2			
5	Air purifying filter	2			

Accessories: Flaring piping kit

CZ-3F5, 7AEN (CS/CU-A73KE, A93KE)

CZ-4F5, 7, 10AN (CS/CU-A123KE)

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.
- Indoor unit of this room air conditioner shall be installed on the wall in a height of at least 2.3 m.

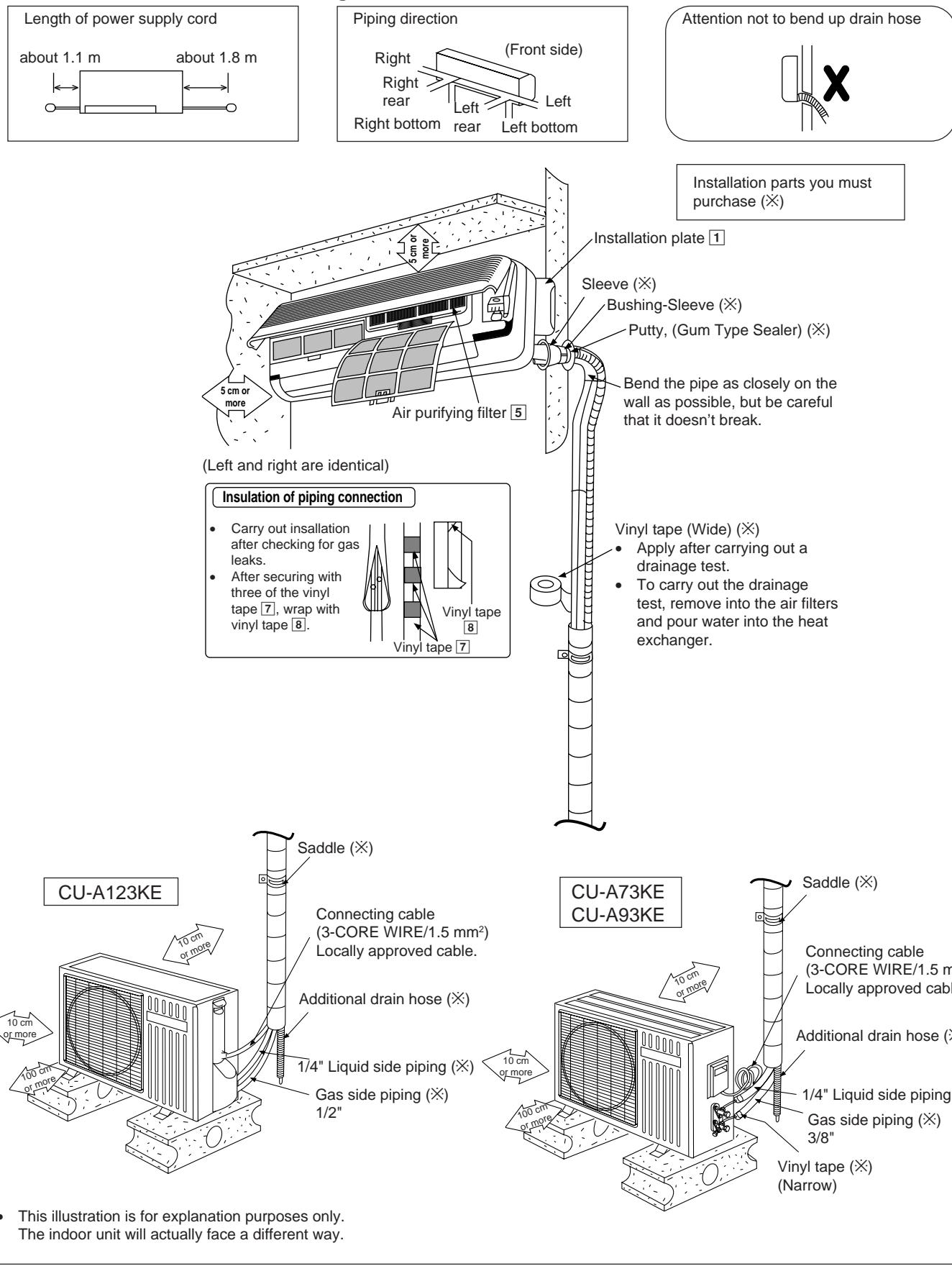
OUTDOOR UNIT

- 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 the rated length, additional refrigerant should be added as shown in the table.

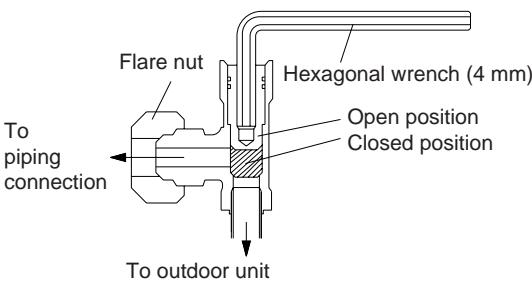
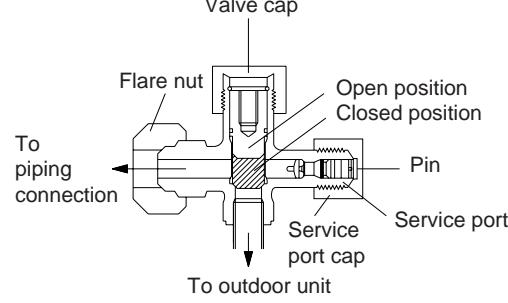
MODEL	Piping size		Common Length	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
A73KE/A93KE	3/8"	1/4"	7.5	5	10	20
A123KE	1/2"	1/4"	7.5	5	15	20

Installation Information

Indoor / Outdoor unit installation diagram



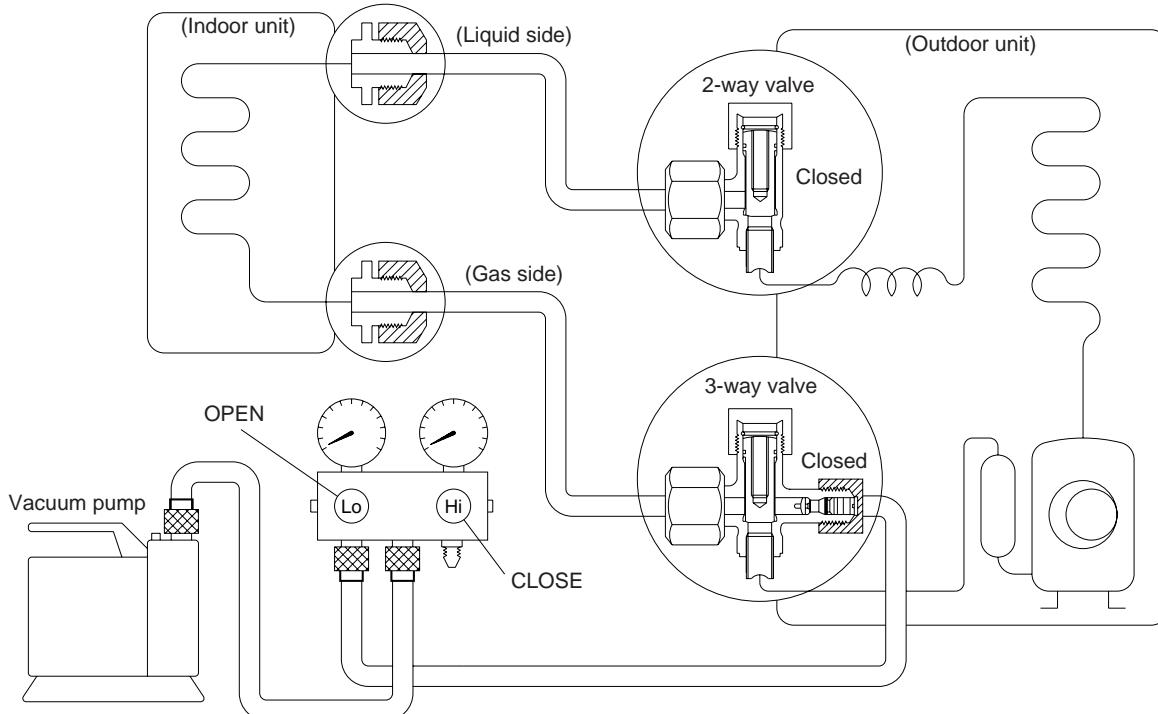
2-way • 3-way Valve

	2-way Valve (Liquid Side)	3-way Valve (Gas Side)	
			
Works	Shaft Position	Shaft Position	Service Port
Shipping	Close (With valve cap)	Closed (With valve cap)	Closed (With cap)
Evacuation (Installation and Re-installation)	Closed (Counter-Clockwise)	Closed (Clockwise)	Open (Push-pin)
Operation	Open (With valve cap)	Open (With valve cap)	Closed (With cap)
Pumping down (Transferring)	Closed (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)

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.**

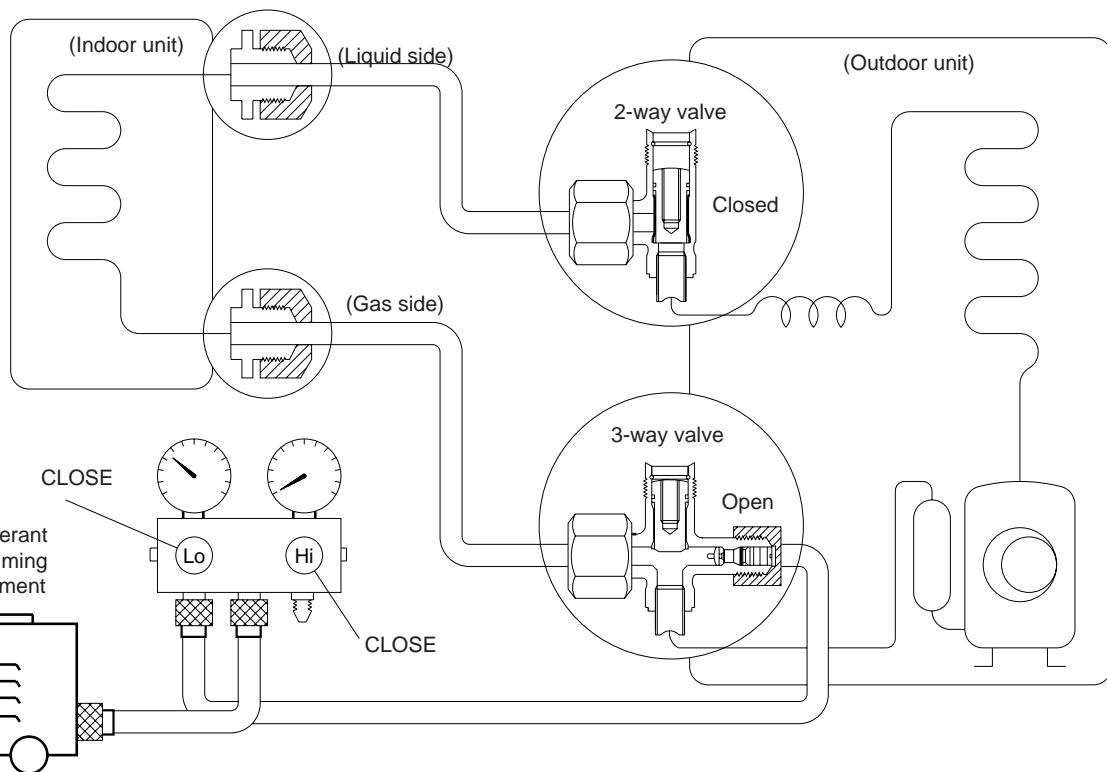
- (5) Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
- (6) Tighten the service port cap at a torque of 18 N·m with a torque wrench.
- (7) Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to "open" using a hexagonal 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.

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/cm²G).**

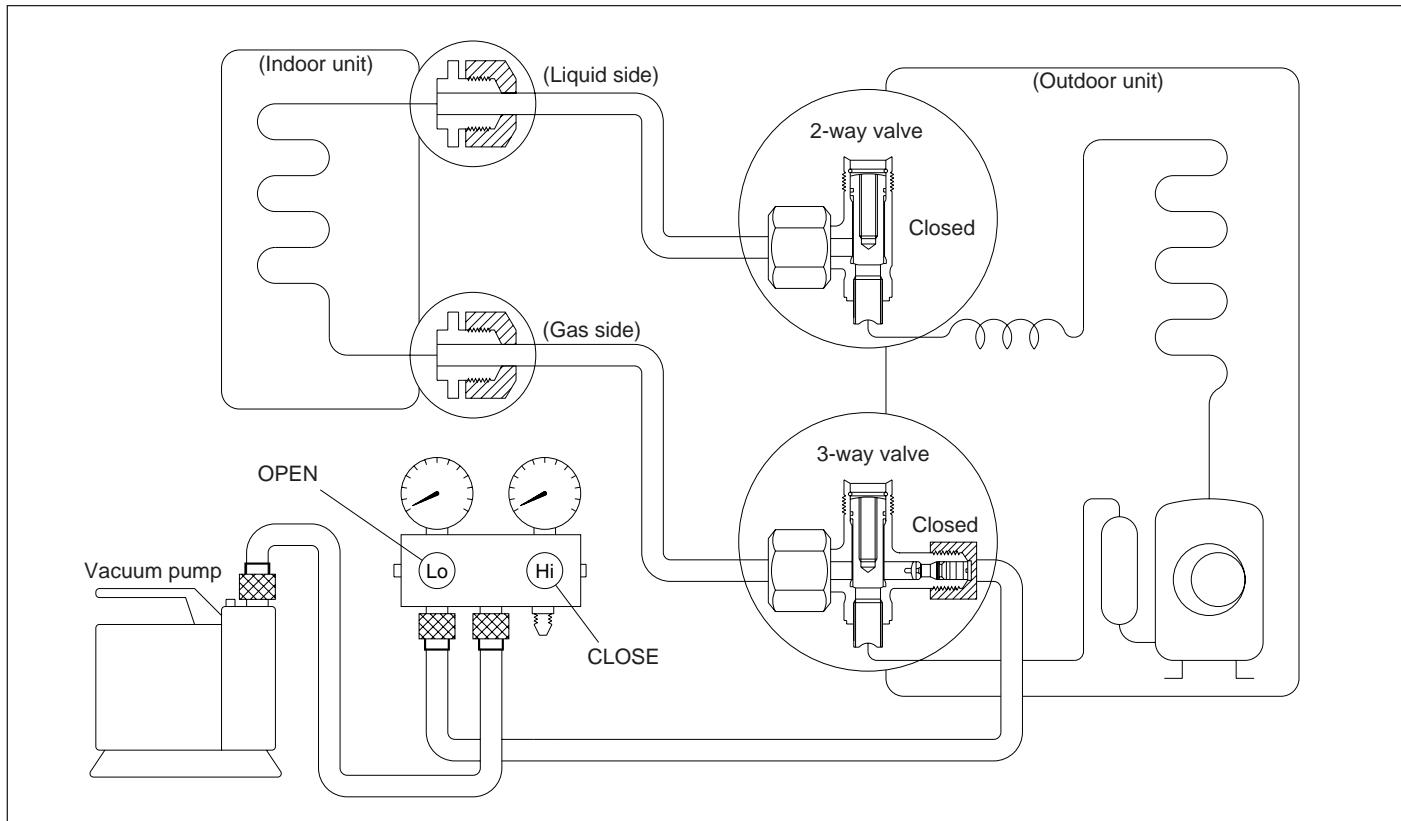
If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control P.C.B. (Simply press the pumping down button if it is equipped.)

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/cm²G) to 0.3 MPa (3 kg/cm²G)
- (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.**

3 Evacuation of Re-installation

WHEN RE-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 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.
- (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/cm²)

- (7) Tighten the service port cap at a torque of 18N·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 valve caps onto the 2-way and 3-way valves.
 - BE SURE TO USE REFRIGERANT RECLAMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.
 - Purge the air from charge set's centre hose.
 - Be sure to check for gas leakage.

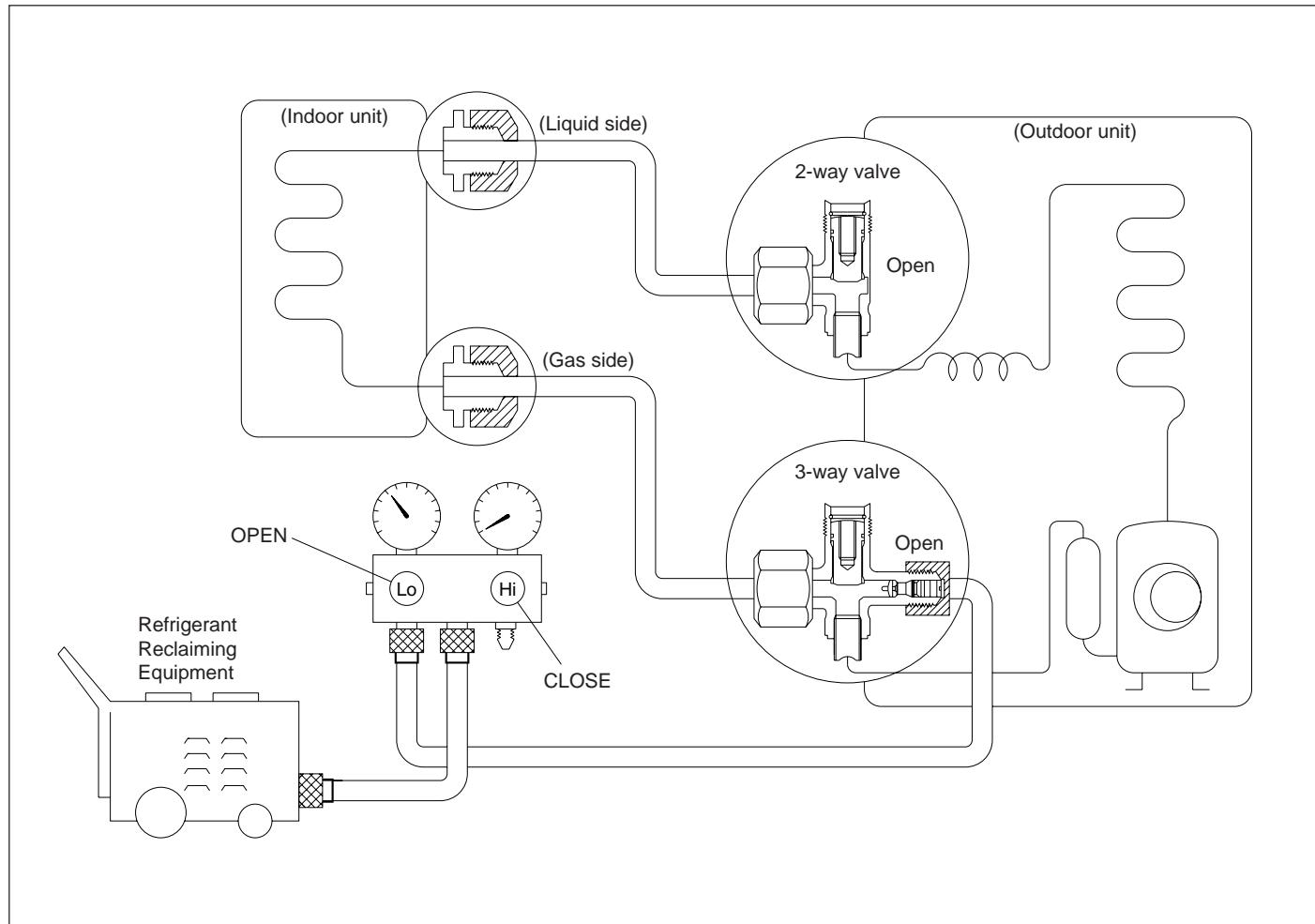
Caution

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.

4 Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)

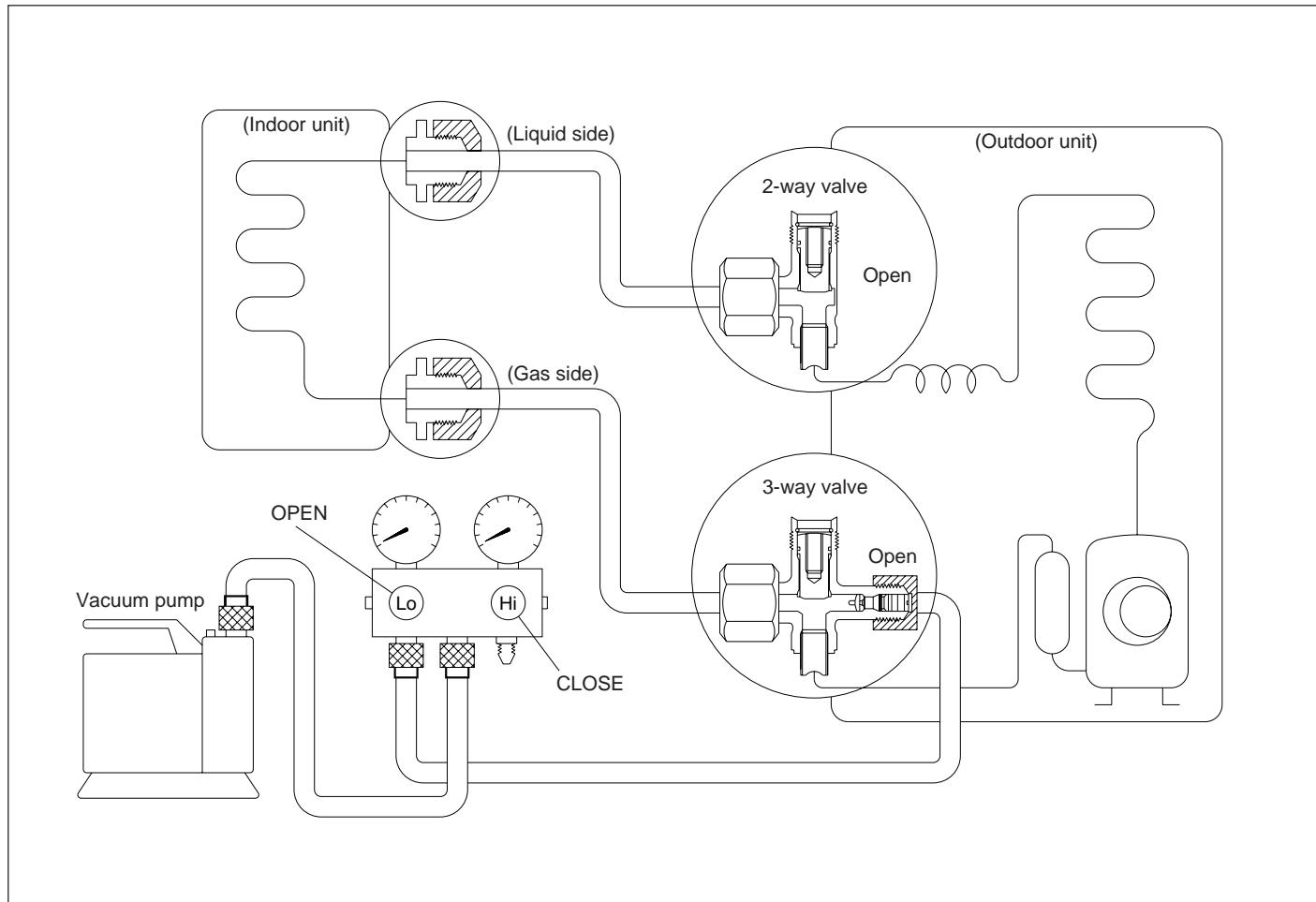


Procedure:

- (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/cm²G) to 0.1 MPa (1 kg/cm²G).
 - 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/cm²G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm²G) to 0.1 MPa (1 kg/cm²G). 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 .

5 Evacuation

(No refrigerant in the refrigeration cycle)

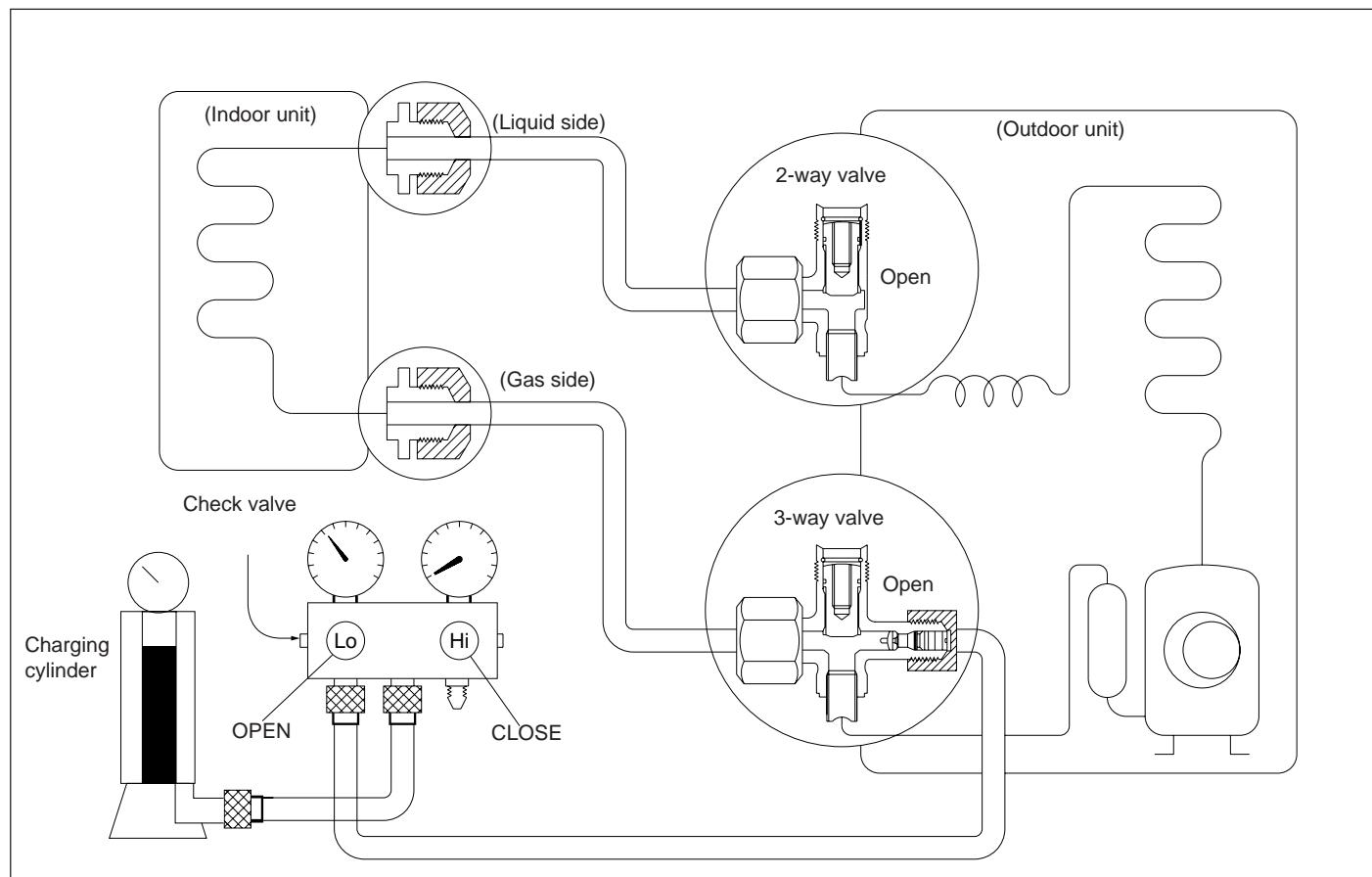


Procedure:

- (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.

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 not 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.

Servicing Information

● Inspection points for the Indoor Electronic Controller

1. The Electronic Controller, a signal Receiver and an Indicator (Fig. 2) can be seen by the below steps:

- Remove the 2 caps and 2 screws at the bottom of the front grille. (Fig. 1)
- Remove the front grille by releasing the 2 hooks at the top of the front grille. (Fig. 1)
- Remove the control board cover by releasing the 2 tabs at left, 1 tab on top and 2 more tabs at right side of the control board cover. (Fig. 1)

2. To remove the Electronic Controller, release the hook that holding the electronic controller. (Fig. 2)

● Indoor Fan Motor removal procedure :-

1. Remove the control board by:-

- Releasing CN-C (GRN) connector
- Releasing CN-FM (GRN) connector
- Releasing CN-STM connector
- Remove the earth wire screw
- Release the intake air sensor
- Release the piping sensor

} (Fig. 2)

- Unhook and release the terminal board.(Fig. 3)
- Remove the right and left screws.(Fig. 3)
- Then remove the control board by pressing down the hook at the left and press up the right hook. (Fig. 3)

2. Remove the Fan Motor by :-

- Release the fan motor leadwire by pressing the hook at the center of the connector. (Fig. 4)
- Then remove the particular piece that holding the fan motor by pressing the tab. (Fig. 4)
- Remove the discharge grille and then the drain hose. (Fig. 4)

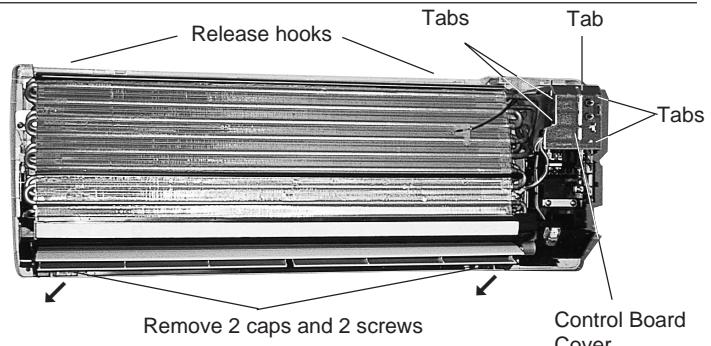


Fig. 1

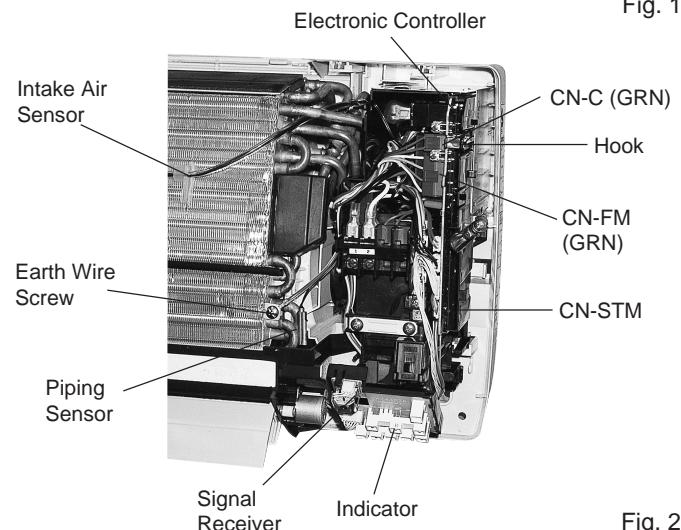


Fig. 2

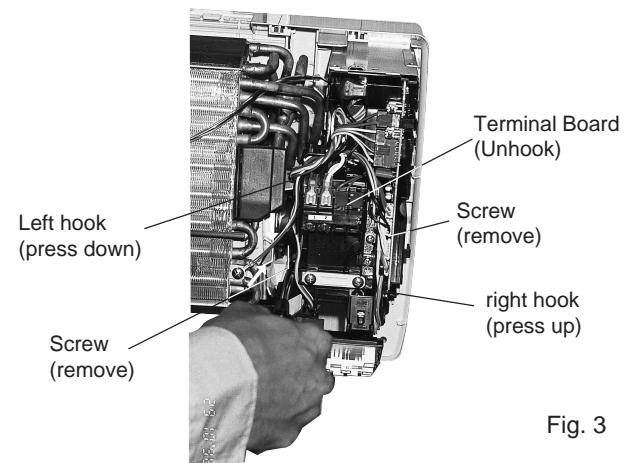


Fig. 3

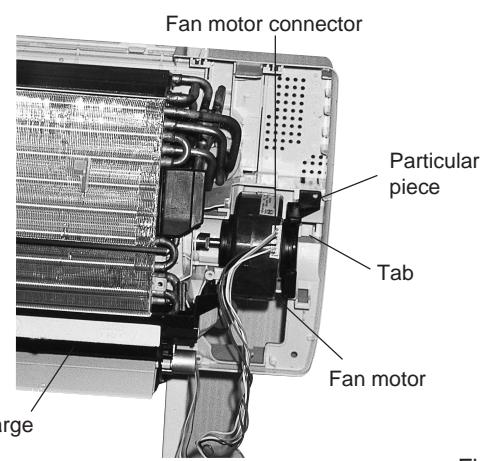


Fig. 4

Servicing Information

- Finally remove the fan motor by removing the screw. (Fig. 5)
- REMINDER - To reinstall the fan motor, adjust the connector of the fan motor as Figure 5.

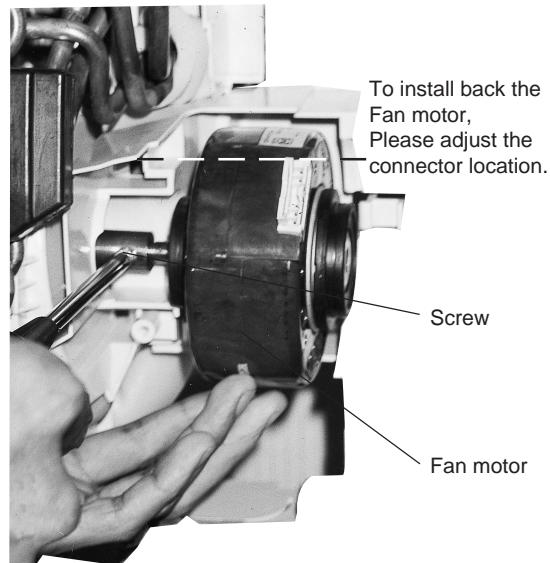


Fig. 5

• Cross Flow Fan Removal Procedure.

- Remove the control board and the fan motor by referring to the "Indoor Fan Motor Removal Procedure".
- Remove the evaporator screw (Fig. 6)

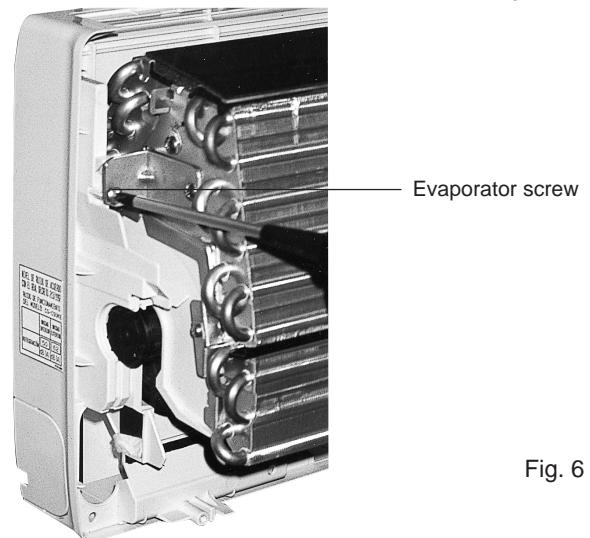


Fig. 6

- Press the particular piece to loosen the evaporator. (Fig. 7)
- Remove the bearing. (Fig. 7)
- Push up the evaporator and take out the cross flow fan. (Fig. 7)

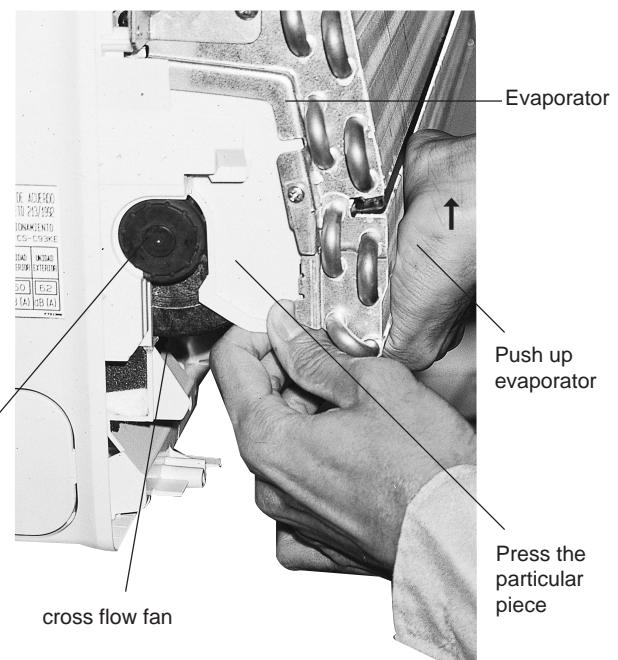


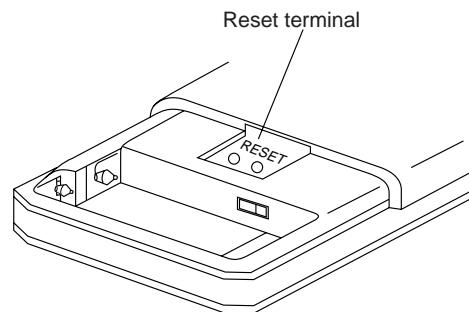
Fig. 7

Servicing Information

- **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.

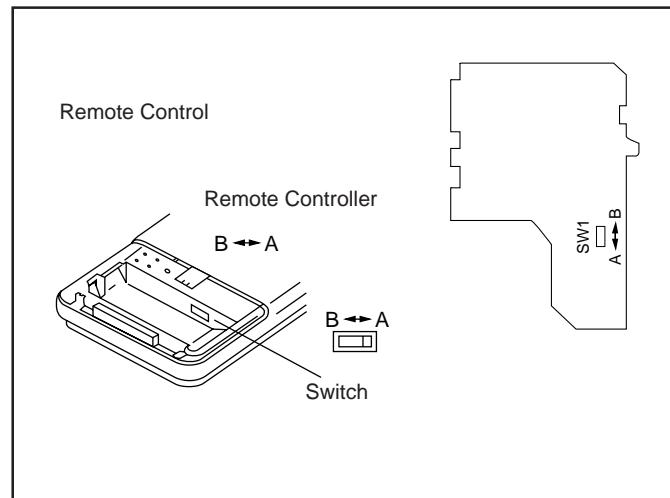
If this happens, remove the back cover of the remote control and you will find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.



- **Changing the wireless remote control transmission code**

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, set up the remote control [B ↔ A] switch (SW1).

The unit is set to A when it is shipped.



- By adding a jumper wire to the remote control side and a carbon resistor (1/4 W, 10 kΩ) to the indoor printed circuit board, it is possible to select from 4 types of transmission codes including the condition at time of delivery condition (1).

	Remote control		Indoor printed circuit board		Note
	Switch SW B ↔ A	J – B	Switch SW1	RX1	
1	A	—	A	—	At product delivery
2	B	—	B	—	
3	A	Jumper wire	A	10kΩ	
4	B	Jumper wire	B	10kΩ	

Troubleshooting Guide

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 to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure MPa (kg/cm ² G)	Outlet air temperature (°C)
Cooling mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

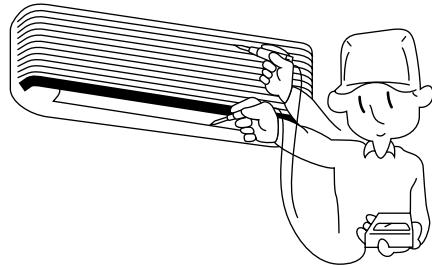
★ Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode
and 7°C at the heating mode

Difference in the intake
and outlet
air temperatures

More than 8°C
(15 minutes after an
operation is started.)
at the cooling mode
More than 14°C
(15 minutes after an
operation is started.)
at the heating mode

Normal

- Measuring the air temperature difference



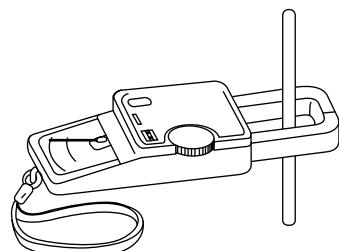
Value of electric
current during operation

Higher than specified

Dusty condenser
preventing heat radiation

Excessive amount
of refrigerant

- Measuring electric current during operation



Gas side
pressure

Cooling Mode

High

Inefficient compressor

Low

Insufficient refrigerant

Low

Clogged strainer or
capillary tube

Heating Mode

Low

Inefficient compressor

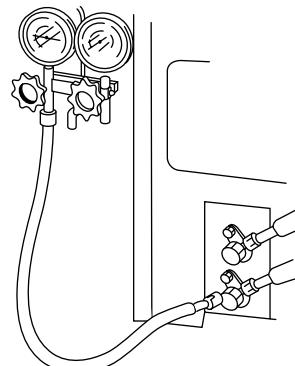
Low

Insufficient refrigerant

Low

Clogged strainer or
capillary tube

- Measuring gas side pressure



Troubleshooting Guide

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.

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

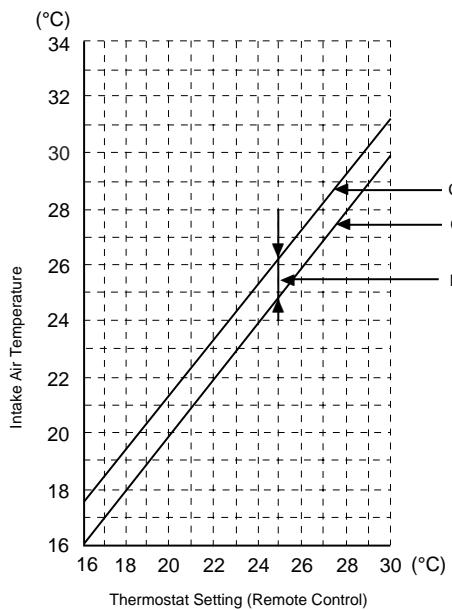
Nature of fault	Symptom
Insufficient compressing of a compressor	<ul style="list-style-type: none"> • Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). • The difference between high pressure and low pressure becomes almost zero.
Locked compressor	<ul style="list-style-type: none"> • 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 is a humming sound.
Inefficient switches of the 4-way valve	<ul style="list-style-type: none"> • Electric current during operation becomes approximately 80% lower than the normal value. • The temperature difference between from the discharge tube to the 4-way valve and from suction tube to the 4-way valve becomes almost zero.

Technical Data

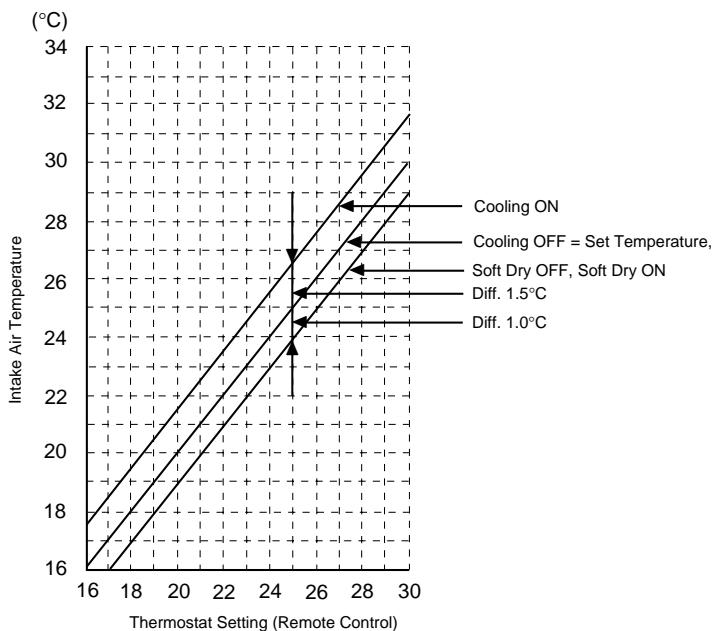
■ Thermostat characteristics

CS-A73KE / CS-A93KE / CS-A123KE

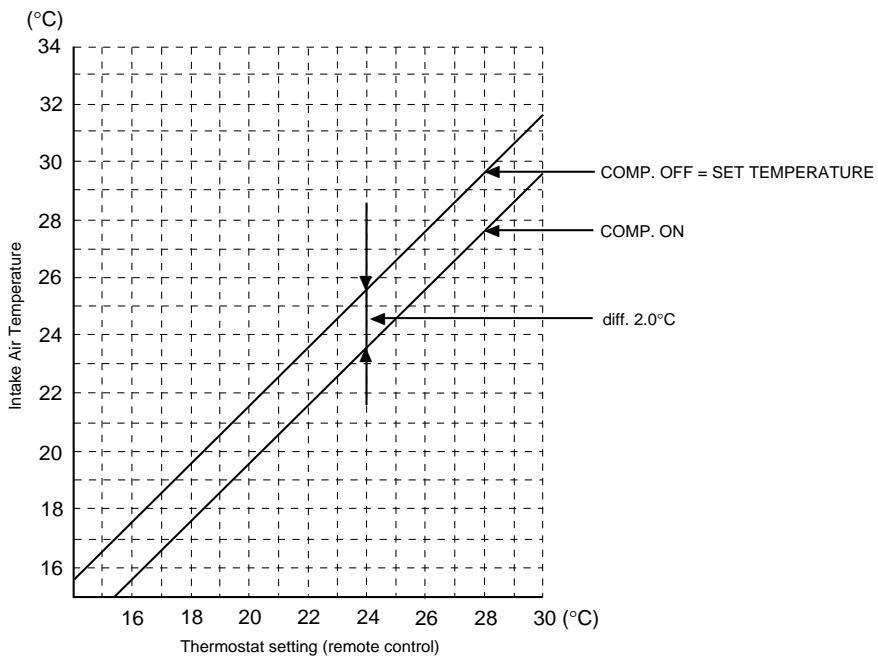
• Cooling



• Soft Dry



• Heating

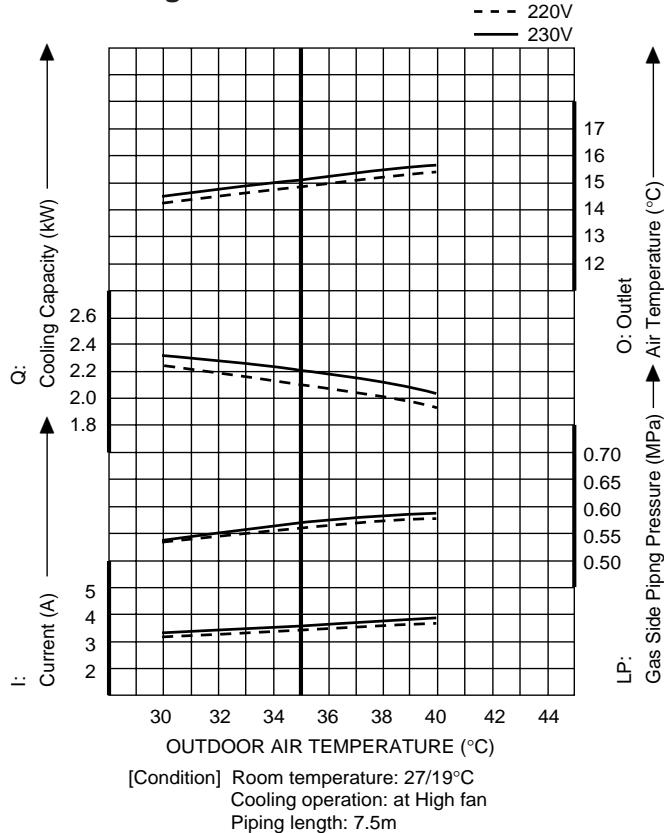


Technical Data

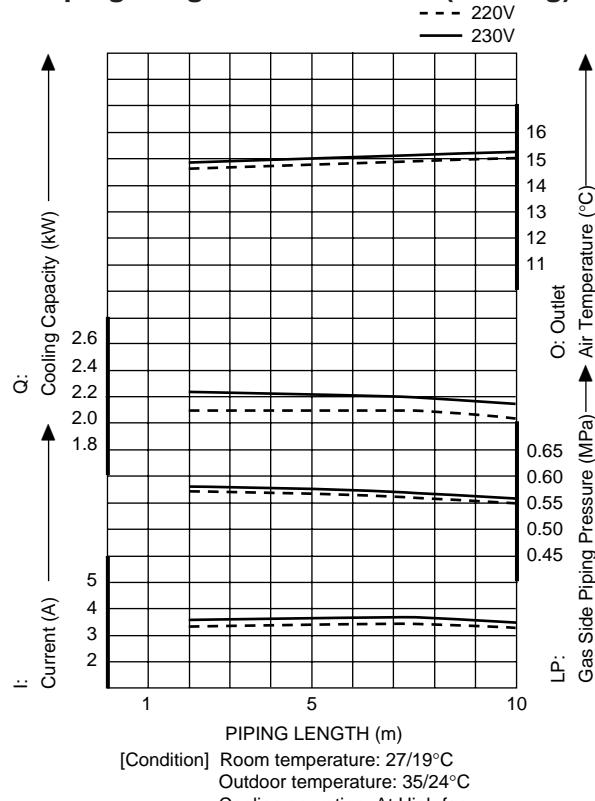
■ Operation characteristics

CS-A73KE / CU-A73KE

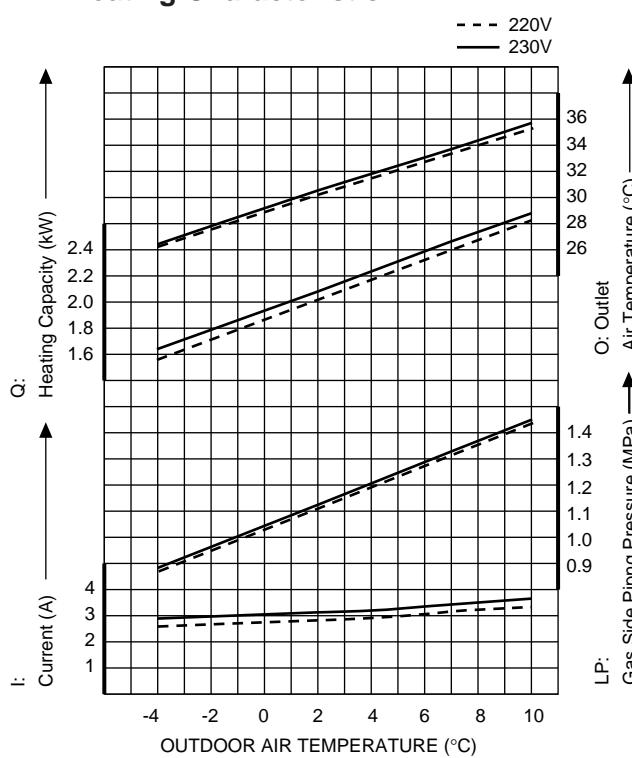
- Cooling Characteristic**



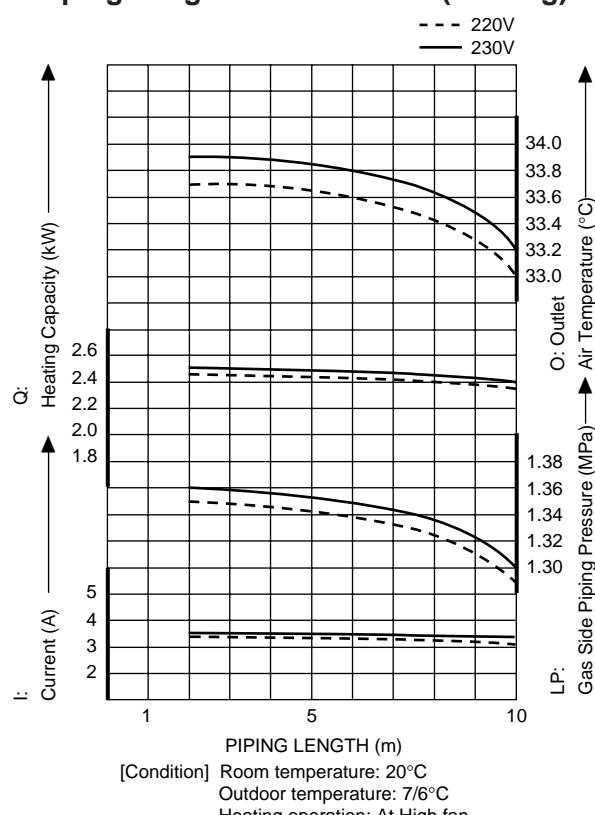
- Piping Length Characteristic (Cooling)**



- Heating Characteristic**



- Piping Length Characteristic (Heating)**

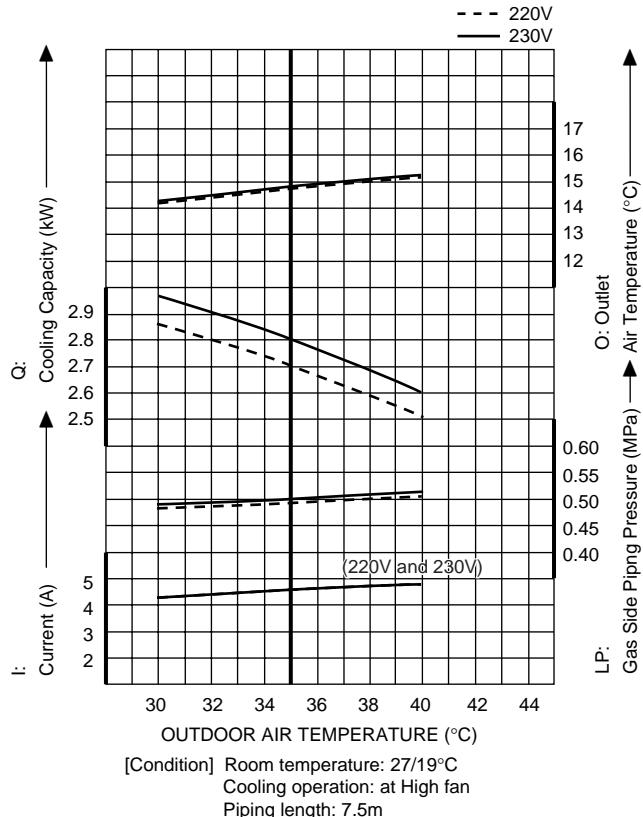


Technical Data

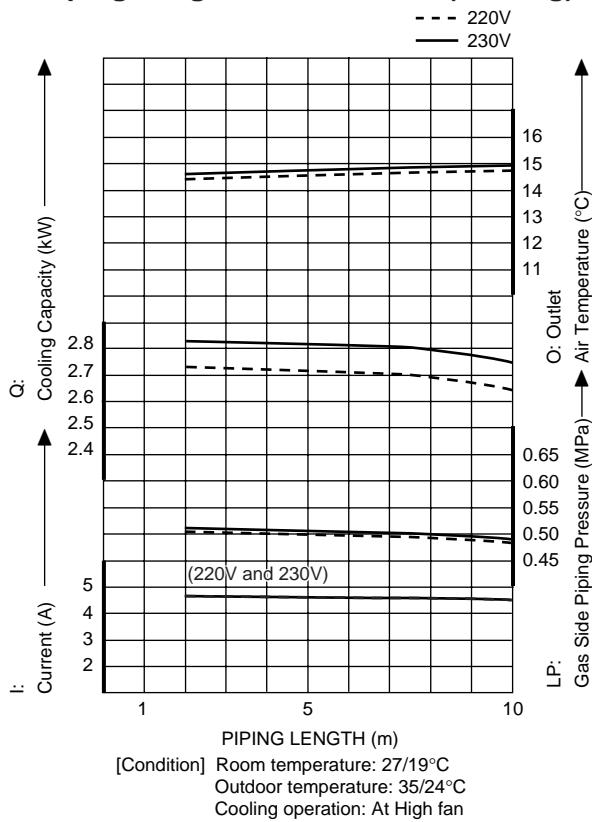
■ Operation characteristics

CS-A93KE / CU-A93KE

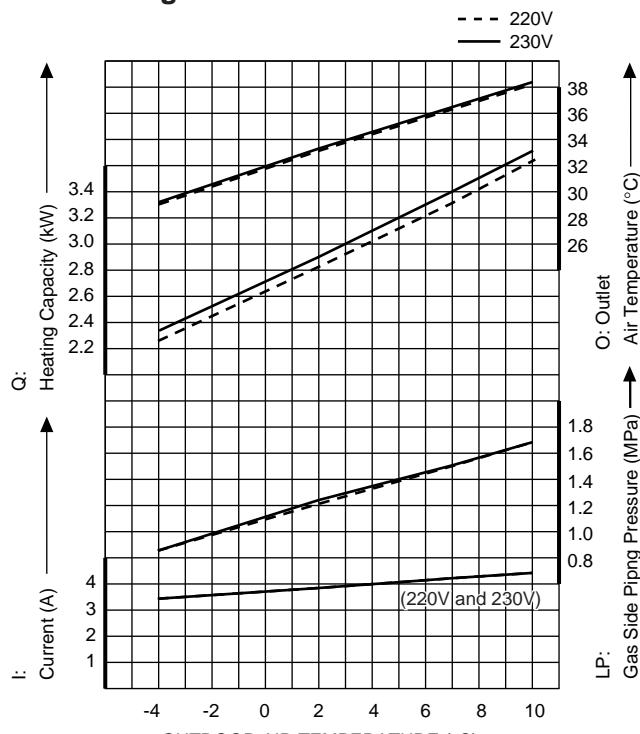
- Cooling Characteristic



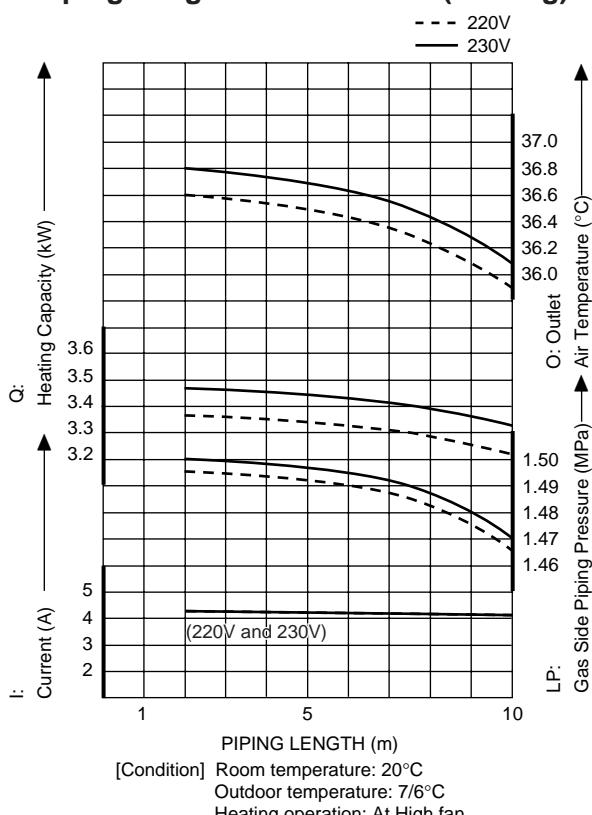
- Piping Length Characteristic (Cooling)



- Heating Characteristic



- Piping Length Characteristic (Heating)

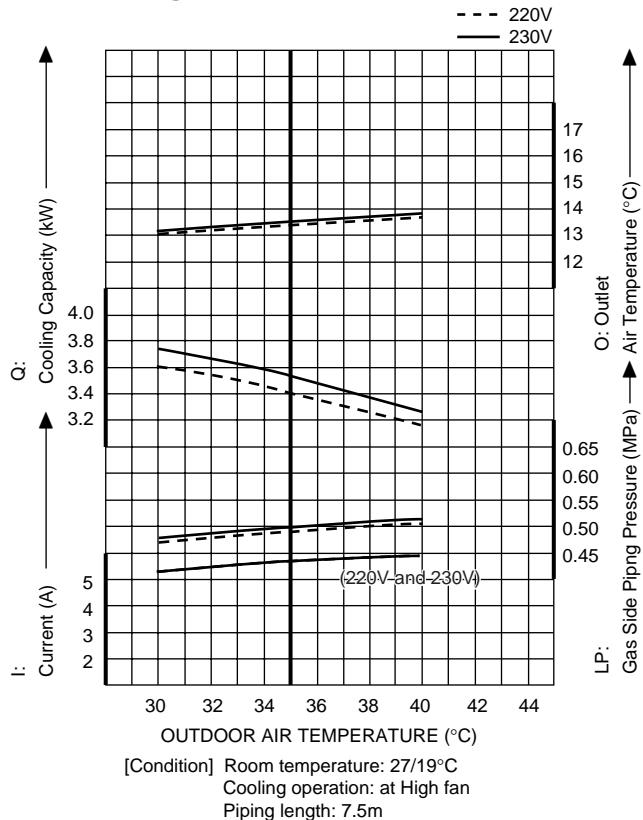


Technical Data

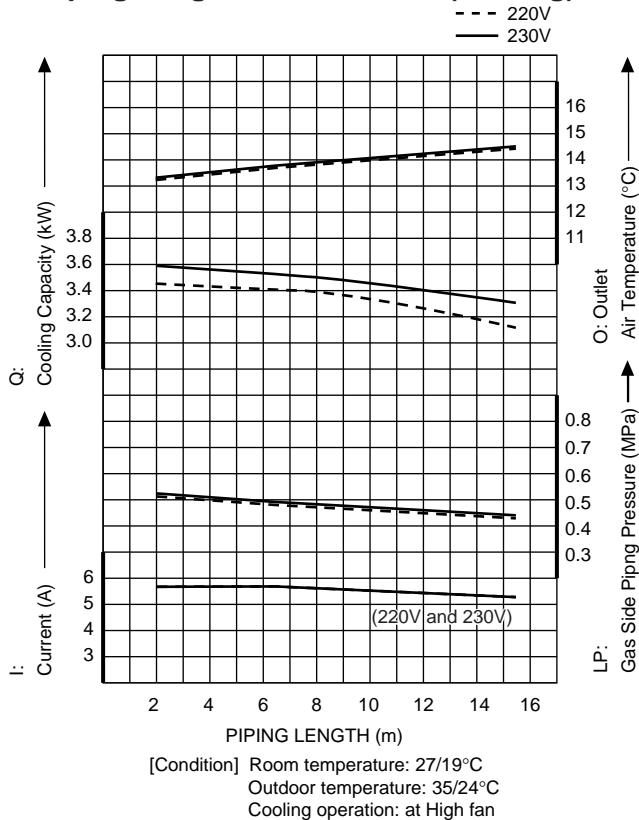
■ Operation characteristics

CS-A123KE / CU-A123KE

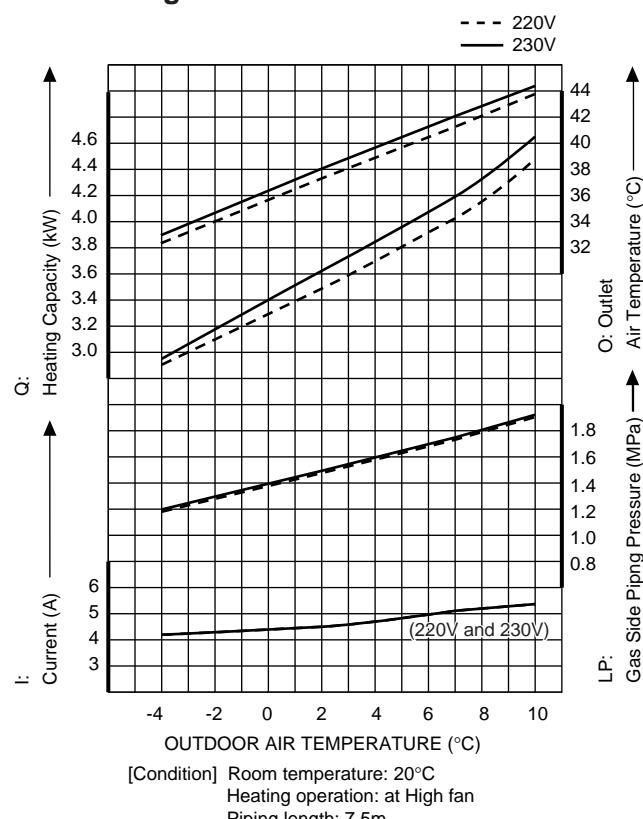
• Cooling Characteristic



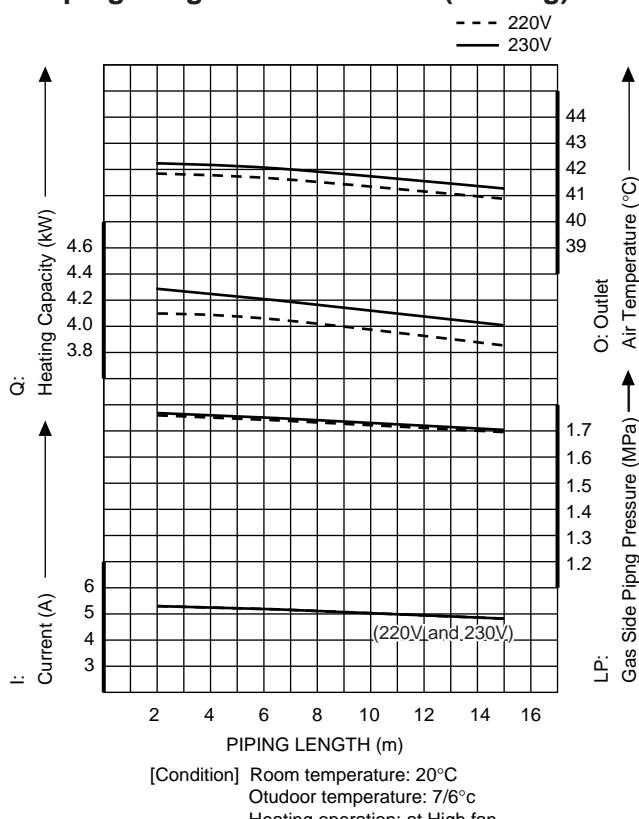
• Piping Length Characteristic (Cooling)



• Heating Characteristic

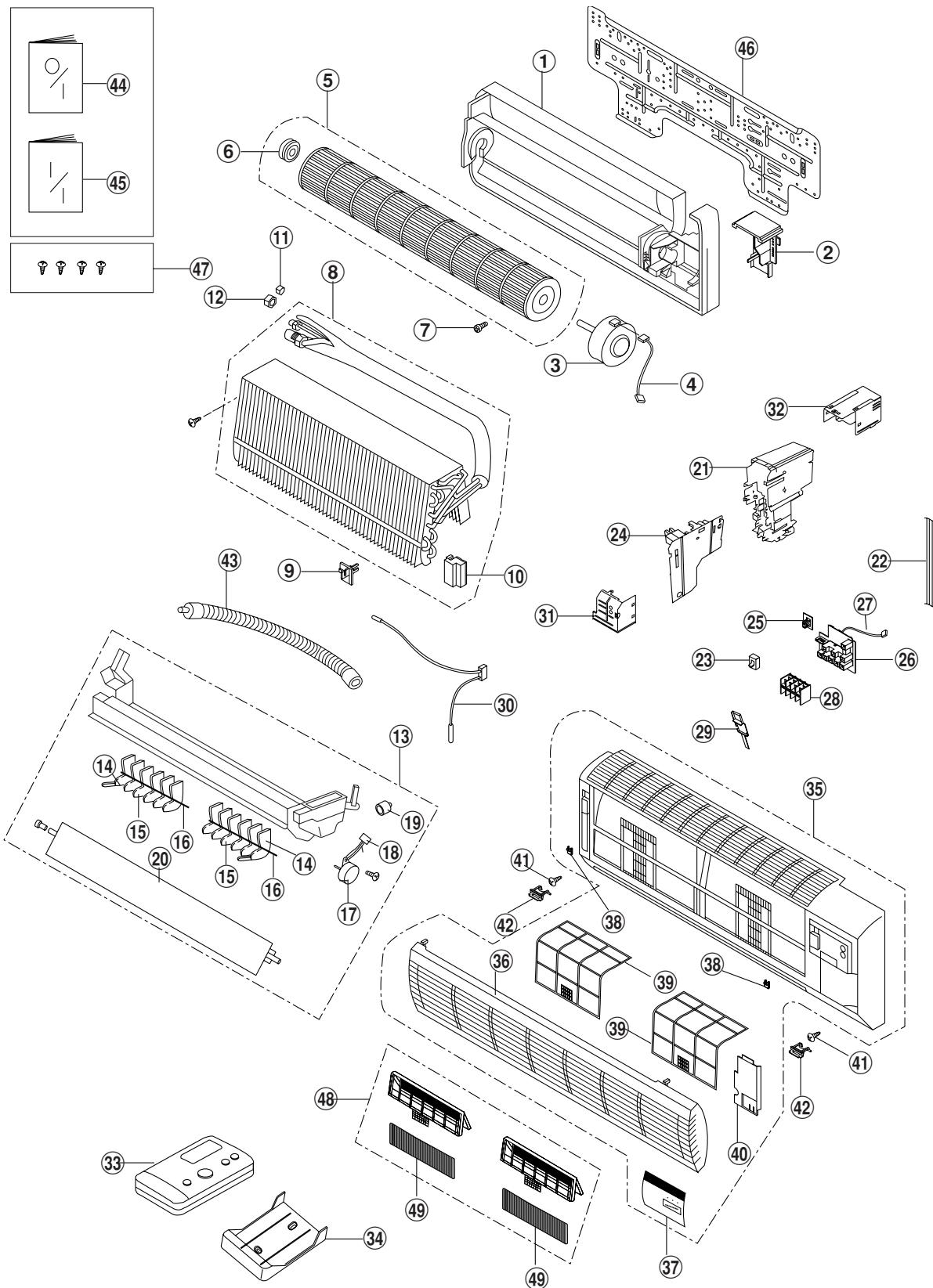


• Piping Length Characteristic (Heating)



Exploded View

CS-A73KE / CS-A93KE / CS-A123KE



(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.

Replacement Parts List

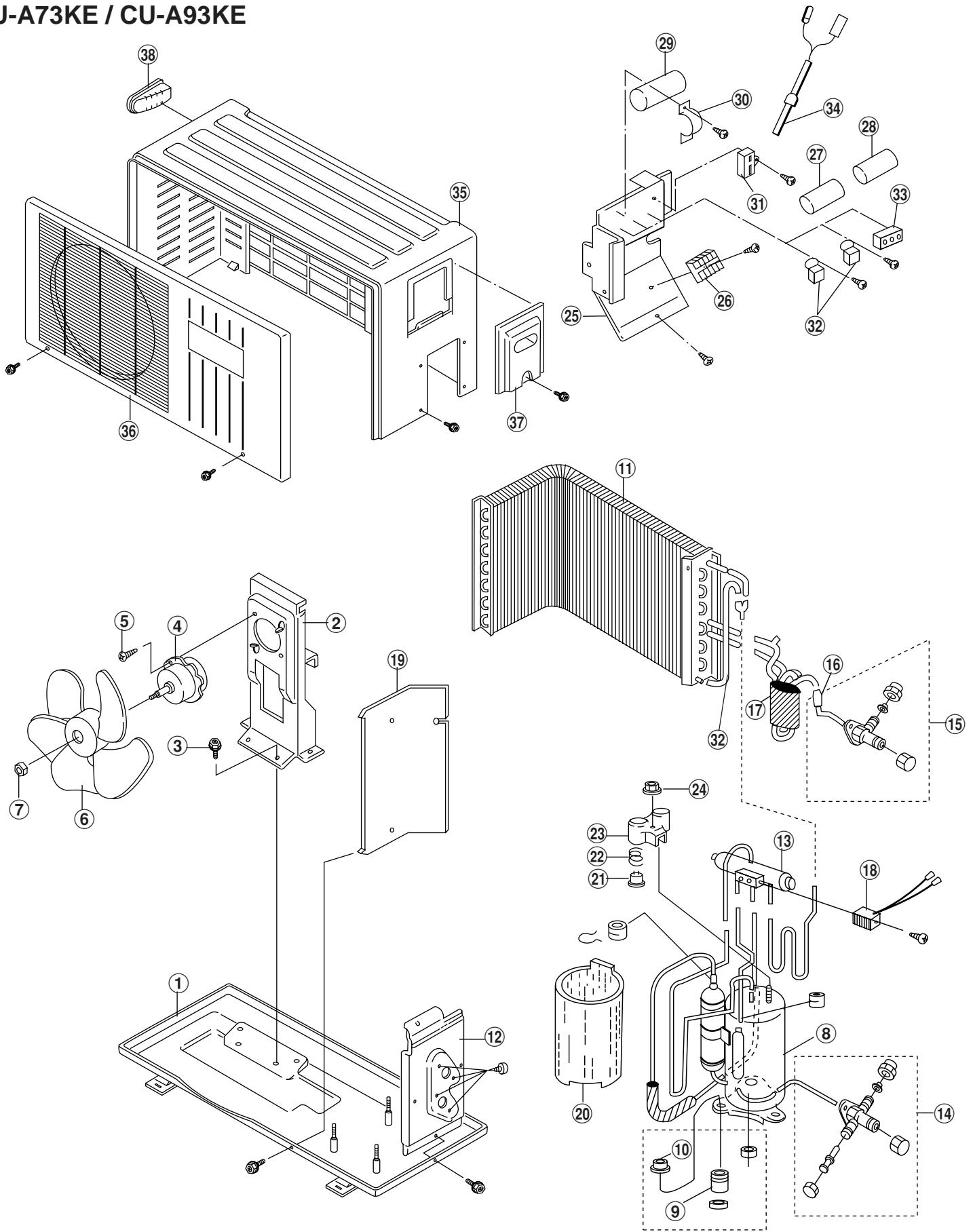
<Model: CS-A73KE / CS-A93KE / CS-A123KE>

NO.	DESCRIPTION & NAME	Q'TY	CS-A73KE	CS-A93KE	CS-A123KE	REMARKS
1	CHASSY COMPLETE	1	CWD50C338	←	←	
2	PARTICULAR PIECE	1	CWD931019	←	←	
3	FAN MOTOR	1	CWA92288	CWA92286	CWA92290	○
4	LEAD WIRE – FAN MOTOR	1	CWA67C2097	←	←	
5	CROSS FLOW FAN	1	CWH02C060	←	←	
6	BEARING	1	CWH64K007	←	←	
7	SCREW – CROSS FLOW FAN	1	CWH4580304	←	←	
8	EVAPORATOR & TUBE ASS'Y COMPLETE	1	CWB30C259	←	CWB30C260	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	←	←	
10	ANTI VIBRATION BUSHING	1	CWH50211	←	←	
11	FLARE NUT (1/4")	1	CWH6002140	←	←	
12	FLARE NUT (1/2") OR (3/8")	1	CWT25005 (3/8")	←	CWT25007 (1/2")	
13	DISCHARGE GRILLE COMPLETE	1	CWE20C610	CWE20C624	←	
14	VERTICAL VANE WITH TAB	2	CWE24458	←	←	
15	VERTICAL VANE	10	CWE24457	←	←	
16	CONNECTING BAR	2	CWE26194	←	←	
17	AIR SWING MOTOR	1	CWA98260	CWA98C033	←	○
18	LEAD WIRE – AIR SWING MOTOR	1	CWA67C2106	←	←	
19	CAP FOR DRAIN TRAY	1	CWH52C003	←	←	
20	HORIZONTAL VANE	1	CWE24462	←	←	
21	CONTROL BOARD	1	CWH10965	←	←	
22	POWER SUPPLY CORD	1	CWA20C751	←	←	
23	SLIDE SWITCH	1	CWA04088	←	←	○
24	ELECTRONIC CONTROLLER	1	CWA741388	CWA741491	←	○
25	RECEIVER	1	CWA74919	←	←	○
26	INDICATOR COMPLETE	1	CWA741376`	←	←	○
27	LEAD WIRE – INDICATOR	1	CWA67C2105	←	←	
28	TERMINAL BOARD	1	CWA28C575	←	CWA28C576	○
29	INDICATOR HOLDER	1	CWD931018	←	←	
30	SENSOR COMPLETE	1	CWA50C608	←	←	○
31	CONTROL BOARD FRONT COVER	1	CWH13456	←	←	
32	CONTROL BOARD TOP COVER	1	CWH13457	←	←	
33	REMOTE CONTROL COMPLETE	1	CWA75C723	←	←	○
34	REMOTE CONTROL HOLDER*	1	CWH36161	←	←	
35	FRONT GRILLE COMPLETE	1	CWE11C978	←	←	
36	INTAKE GRILLE COMPLETE	1	CWE22C333	←	←	
37	DECORATION BASE COMPLETE	1	CWE35C023	←	←	
38	TAB	2	CWD931020	←	←	
39	AIR FILTER	2	CWD00240	←	←	
40	GRILLE DOOR	1	CWE14236	←	←	
41	SCREW FOR FRONT GRILLE	2	XTN4+16C	←	←	
42	CAP FOR FRONT GRILLE	2	CWH52267	←	←	
43	DRAIN HOSE	1	CWH5880580	←	←	
44	OPERATING INSTRUCTIONS (ENG/SPA/GER/FRA/NED/ITA)	1	CWF561595	←	←	
44a	OPERATING INSTRUCTIONS (POR/GRK)	1	CWF56195A	←	←	
44b	OPERATING INSTRUCTIONS (RUSSIAN)	1	CWF56195B	←	←	
45	INSTALLATION INSTRUCTIONS	1	CWF61674	←	CWF61685	
46	INSTALLATION PLATE	1	CWH36157	←	←	
47	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C144	←	←	
48	AIR PURIFYING FILTER COMPLETE	1	CWD00C111	←	←	
49	AIR PURIFYING FILTER	2	CWD00220	←	←	○

- (Note) • All parts are supplied from MACC, Malaysia (Vendor Code: 086).
 • ○ marked parts are recommended to be kept in stock.
 • * Is an optional parts

Exploded View

CU-A73KE / CU-A93KE



(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.

Replacement Parts List

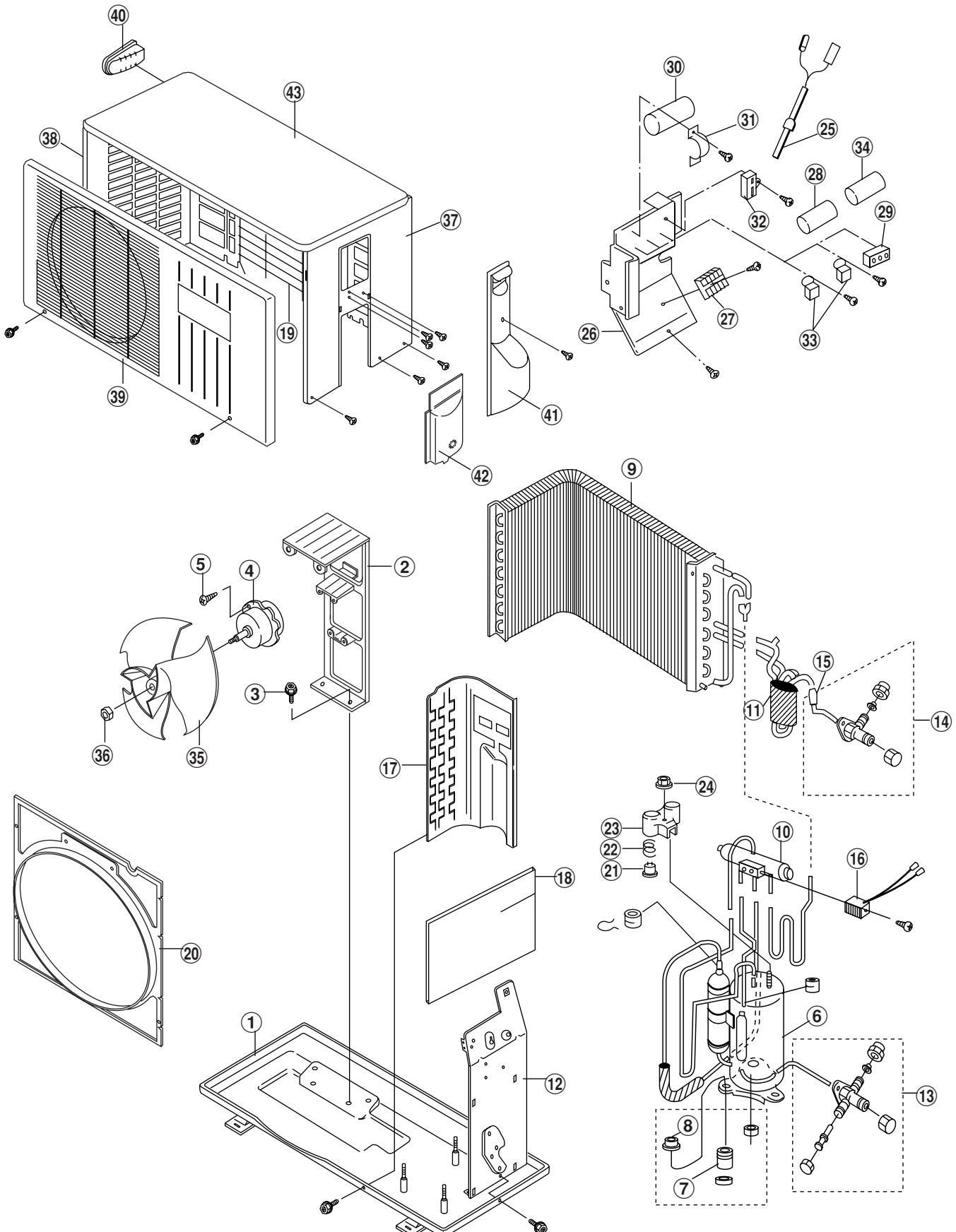
<Model: CU-A73KE / CU-A93KE>

NO.	DESCRIPTION & NAME	Q'TY	CS-A73KE	CS-A93KE	REMARKS
1	CHASSY ASS'Y	1	CWD50K438F	CWD50K456D	
2	FAN MOTOR BRACKET	1	CWD54113	◀	
3	SCREW – FAN MOTOR BRACKET	4	CWH4580399	◀	
4	FAN MOTOR	1	CWA95245	◀	○
5	SCREW – FAN MOTOR MOUNT	3	CWH55027	◀	
6	PROPELLER FAN	1	CWH00K052	◀	
7	NUT – PROPELLER FAN	1	CWH56032	◀	
8	COMPRESSOR	1	2RS127D3CA04	2PS174D3AA02	○
9	ANTI – VIBRATION BUSHING	3	CWH50077	◀	
10	NUT – COMPRESSOR MOUNT	3	CWH56000	◀	
11	CONDENSER	1	CWB32C043	◀	
12	HOLDER COUPLING ASS'Y	1	CWH35K017A	◀	
13	4-WAY VALVE	1	CWB00002	◀	○
14	3-WAY VALVE	1	CWB01479	◀	○
15	2-WAY VALVE	1	CWB02307	◀	○
16	STRAINER	1	CWB11025	◀	
17	TUBE ASS'Y (CHECK VALVE/CAPILARY)	1	CWT01C638	CWT01C639	
18	V – COIL COMPLETE	1	CWA43C424	◀	○
19	SOUND PROOF BOARD	1	CWH15266	◀	
20	SOUND PROOF MATERIAL (FOR COMPRESSOR)	1	CWG30786	◀	
21	OVERLOAD PROTECTOR	1	CWA67C2073	CWA67C2074	○
22	HOLDER – O.L.P	1	CWH7041200	◀	
23	TERMINAL COVER	1	CWH17006	◀	
24	NUT – TERMINAL COVER	1	CWH7080300	◀	
25	CONTROL BOARD	1	CWH10881	◀	
26	TERMINAL BOARD ASS'Y	1	CWA28C500	◀	
27	ELECTROLYTIC CAPACITOR	1	CWA32C045	◀	○
28	ELECTROLYTIC CAPACITOR	1	CWA32C067	◀	○
29	CAPACITOR-COMPRESSOR	1	CWA31653 (15μF,440V)	CWA31646 (25μF,370V)	○
30	HOLDER CAPACITOR	1	CWH30057	◀	
31	CAPACITOR – FAN MOTOR	1	CWA31342 (1.2μF,400V)	◀	○
32	ELECTROMAGNETIC SWITCH	2	CWA00059	◀	○
33	TERMINAL BOARD ASS'Y	1	CWA4711012	◀	
34	TEMPERATURE RELAY	1	CWA14C000	◀	○
35	CABINET ASS'Y	1	CWE00K330A	◀	
36	CABINET FRONT PLATE	1	CWE06C117A	◀	
37	CONTROL BOARD COVER	1	CWH13C286	◀	
38	HANDLE	1	CWE16037C	◀	

(Note) • All parts are supplied from MACC, Malaysia (Vendor Code: 086).
 • ○ marked parts are recommended to be kept in stock.

Exploded View

CU-A123KE



(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.

Replacement Parts List

<Model: CU-A123KE>

NO.	DESCRIPTION & NAME	Q'TY	CU-A123KE	REMARKS
1	CHASSY ASS'Y	1	CWD50K659A	
2	FAN MOTOR BRACKET	1	CWD54254	
3	SCREW – FAN MOTOR BRACKET	6	CWH55413	
4	FAN MOTOR	1	CWA95381	○
5	SCREW – FAN MOTOR MOUNT	4	CWH55252	
6	COMPRESSOR	1	2KS224D5CA02	○
7	ANTI – VIBRATION BUSHING	3	CWH50055	
8	NUT – COMPRESSOR MOUNT	3	CWH4582065	
9	CONDENSER	1	CWB32C336	
10	4-WAY VALVE	1	CWB00003	○
11	TUBE ASS'Y (CHECK VALVE / CAPILLARY)	1	CWT01C652	
12	HOLDER COUPLING ASS'Y	1	CWH35K063	
13	3-WAY VALVE	1	CWB01480	○
14	2-WAY VALVE	1	CWB02308	○
15	STRAINER	1	CWB11025	
16	V – COIL COMPLETE	1	CWA43C689	○
17	SOUND PROOF BOARD	1	CWH15288	
18	SOUND PROOF MATERIAL	1	CWG30911	
19	WIRE NET	1	CWD04197A	
20	AIR GUIDER PROPELLER FAN	1	CWD31138	
21	OVERLOAD PROTECTOR	1	CWA12360	○
22	HOLDER – O.L.P.	1	CWH7041200	
23	TERMINAL COVER	1	CWH17006	
24	NUT – TERMINAL COVER	1	CWH7080300	
25	TEMPERATURE RELAY	1	CWA14C000	○
26	CONTROL BOARD	1	CWH10972	
27	TERMINAL BOARD ASS'Y	1	CWA28C583	
28	ELECTROLYTIC CAPACITOR	1	CWA32C045	○
29	TERMINAL BOARD ASS'Y	1	CWA4711012	
30	CAPACITOR-COMPRESSOR	1	CWA31647 (30μF, 370 V)	○
31	HOLDER CAPACITOR	1	CWH30057	
32	CAPACITOR – FAN MOTOR	1	CWA31227 (1.5μF, 400 V)	○
33	ELECTROMAGNETIC SWITCH	2	CWA00059	○
34	ELECTROLYTIC CAPACITOR	1	CWA32C067	○
35	PROPELLER FAN ASS'Y	1	CWH00K087	
36	NUT-PROPELLER FAN	1	CWH56053	
37	CABINET SIDE PLATE (RIGHT)	1	CWE04217A	
38	CABINET SIDE PLATE (LEFT)	1	CWE04220A	
39	CABINET FRONT PLATE	1	CWE06K104A	
40	HANDLE	1	CWE16037C	
41	CONTROL BOARD COVER	1	CWH13461	
42	PLATE FOR CONTROL BOARD COVER	1	CWD91258	
43	CABINET TOP PLATE	1	CWE03K035A	

(Note) • All parts are supplied from MACC, Malaysia (Vendor Code: 086).
 • ○ marked parts are recommended to be kept in stock.

Electronic Parts List

<Electronic Controller Part No. : CWA741388, CWA741491>

SYMBOL	DESCRIPTION & NAME	PART NO.
BZ1	SOUND GENERATOR	A48040
CT1	TRANSFORMER	A40322
D1	DIODE	A541SR154-4
D2	DIODE	A54RB501V-40
D3	DIODE	A541SS355T
DB1	DOIDE	A54CS1VB20E
FUSE	FUSE	XBA2C20TR0
FUSE HOLDER	FUSE HOLDER	XCSCW032
IC1	INTERGRATED CIRCUIT	A52D0022G503
IC2	INTERGRATED CIRCUIT	A52BR9020F
IC3	INTERGRATED CIRCUIT	A52A2003GR2
IC4	INTERGRATED CIRCUIT	A52C040
IC5	INTERGRATED CIRCUIT	A52C114
Q1	TRANSISTOR	A55DC114EKTX
Q2, Q3	TRANSISTOR	A55C2412KTX
Q4	TRANSISTOR	A55D1484K
Q5 – Q8	TRANSISTOR	A55DC143XKTX
RY-HOT	ELECTRO MAGNETIC RELAY	A00161
RY-PWR	ELECTRO MAGNETIC RELAY	A00106
RY-SHi , RY-Hi , RY-M	ELECTRO MAGNETIC RELAY	A00160
SSR1 , SSR2	TYRISTOR	A56W2DEH1-5
SW1	SLIDE SWITCH	A04085
SW2 , SW3	PUSH SWITCH	A01059
T1	TRANSFORMER	A40366
X1	RESONATOR	A45CST4.09MG
ZD1	DIODE	A54D7.5MT1B
ZNR1 , ZNR2 , ZNR3	DIODE	ERZVEAV511
C-FM	SH CAPACITOR	A31698
TEMP FUSE	TEMPERATURE FUSE	A16C204
HOT (RED)	CURRENT TRANSFORMER	A28069T
CR1, CR2, CR3, CR4, CR5	SURGE ABSORBER	A59014

(Note) • All parts are supplied from MACC, Malaysia (Vendor Code: 086).

ELECTRONIC CIRCUIT DIAGRAM

- CS-A73KE / CU-A73KE
- CS-A93KE / CU-A93KE
- CS-A123KE / CU-A123KE

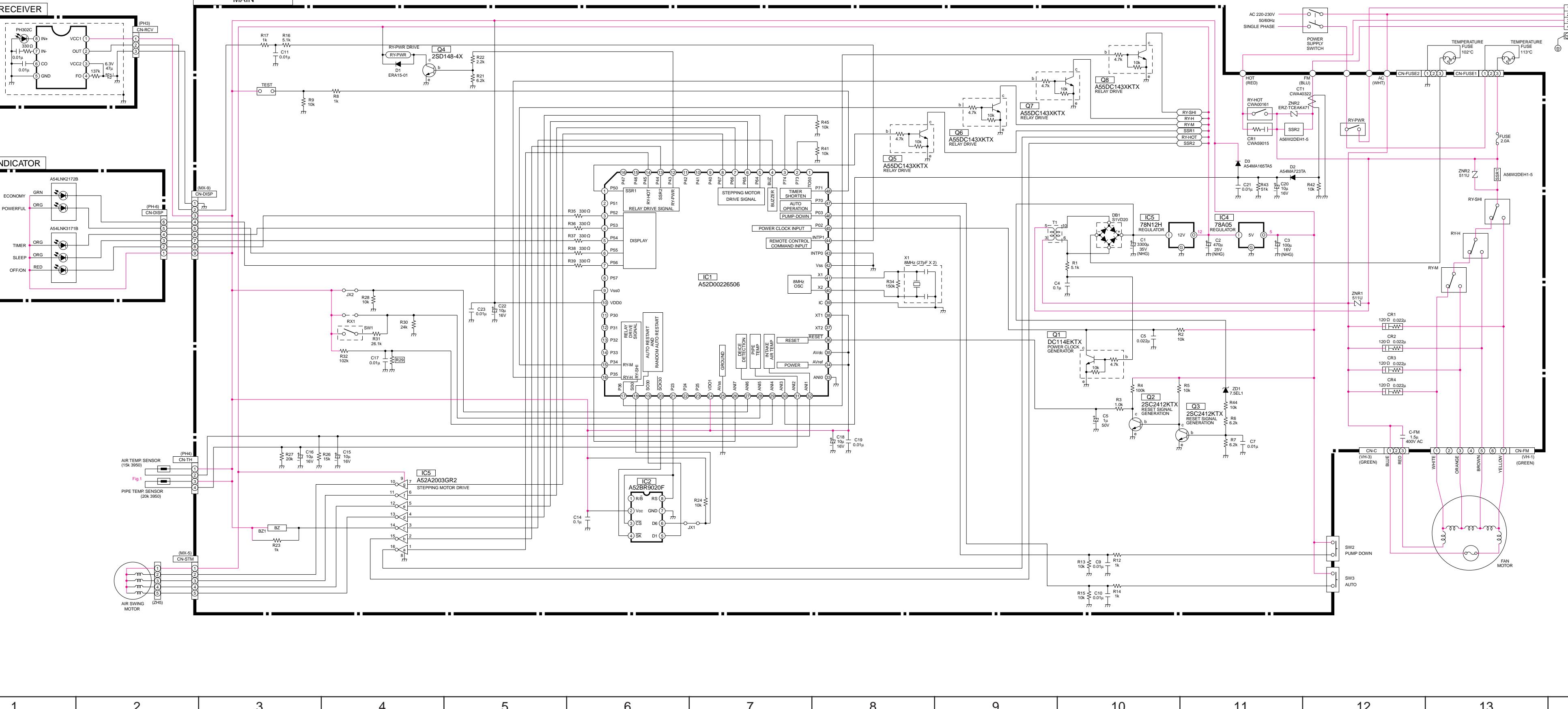


Fig. 1

Senser (Thermistor) Characteristics

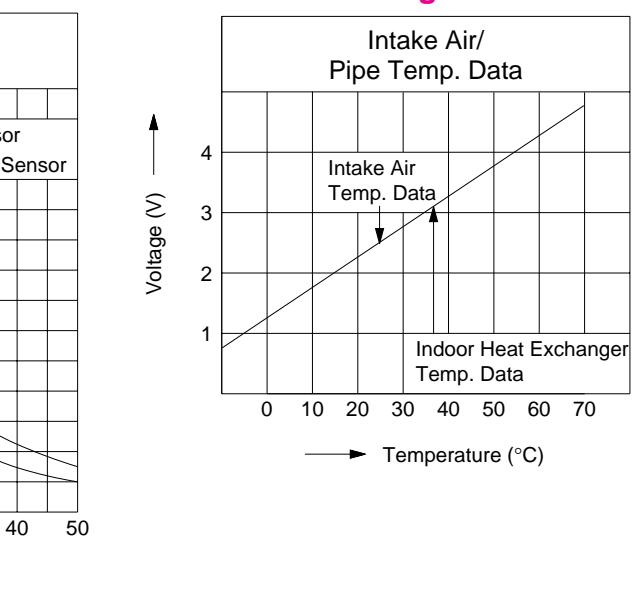


Fig. 2

Intake Air/ Pipe Temp. Data

Indoor Heat Exchanger Temp. Data

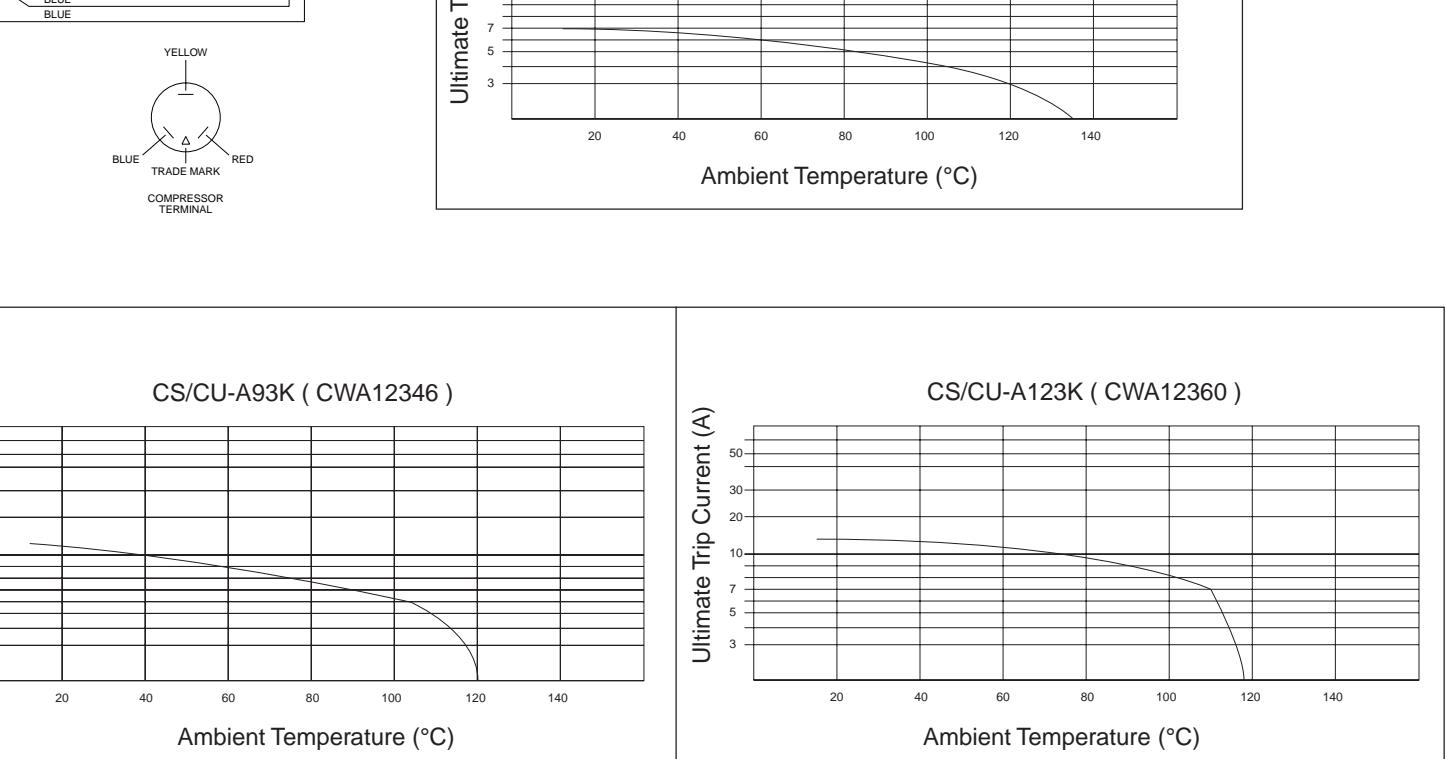
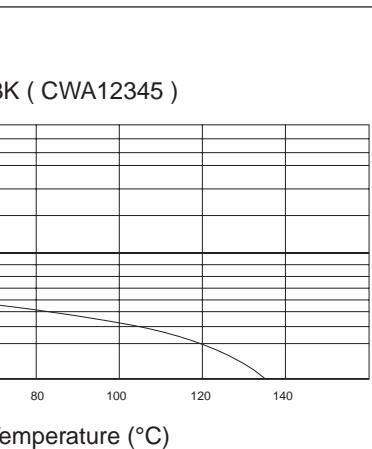
Voltage (V)

Resistance (kΩ)

Temperature (°C)

Temperature (°C)

Fig. 3 OLP Characteristics (Compressor)



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.
 - * Indication
a. Unit
b. Type

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

- * Indications for resistance
 - a. K.... k M ... M
 - W... watt Not indicated 1/4W

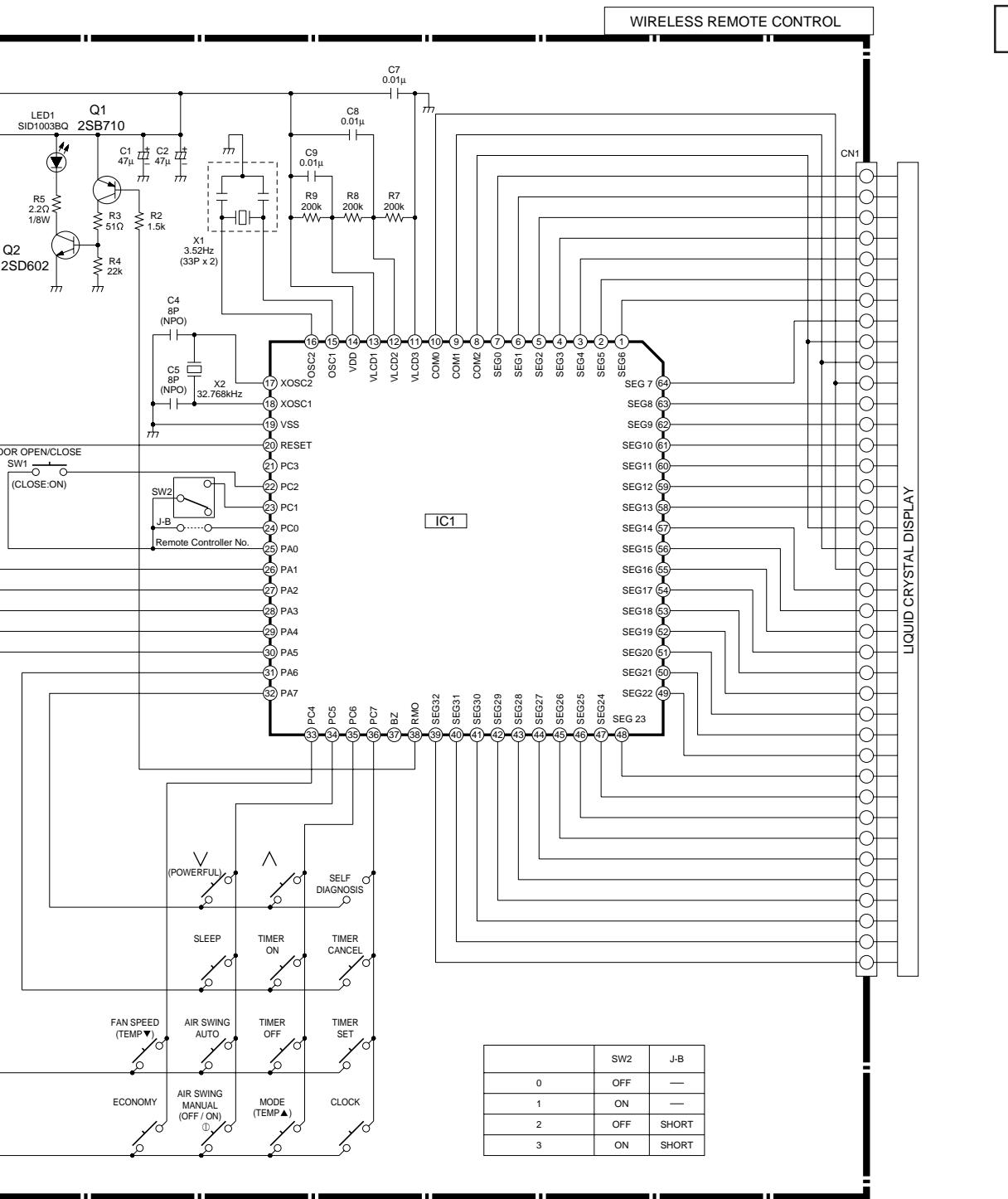


TABLE

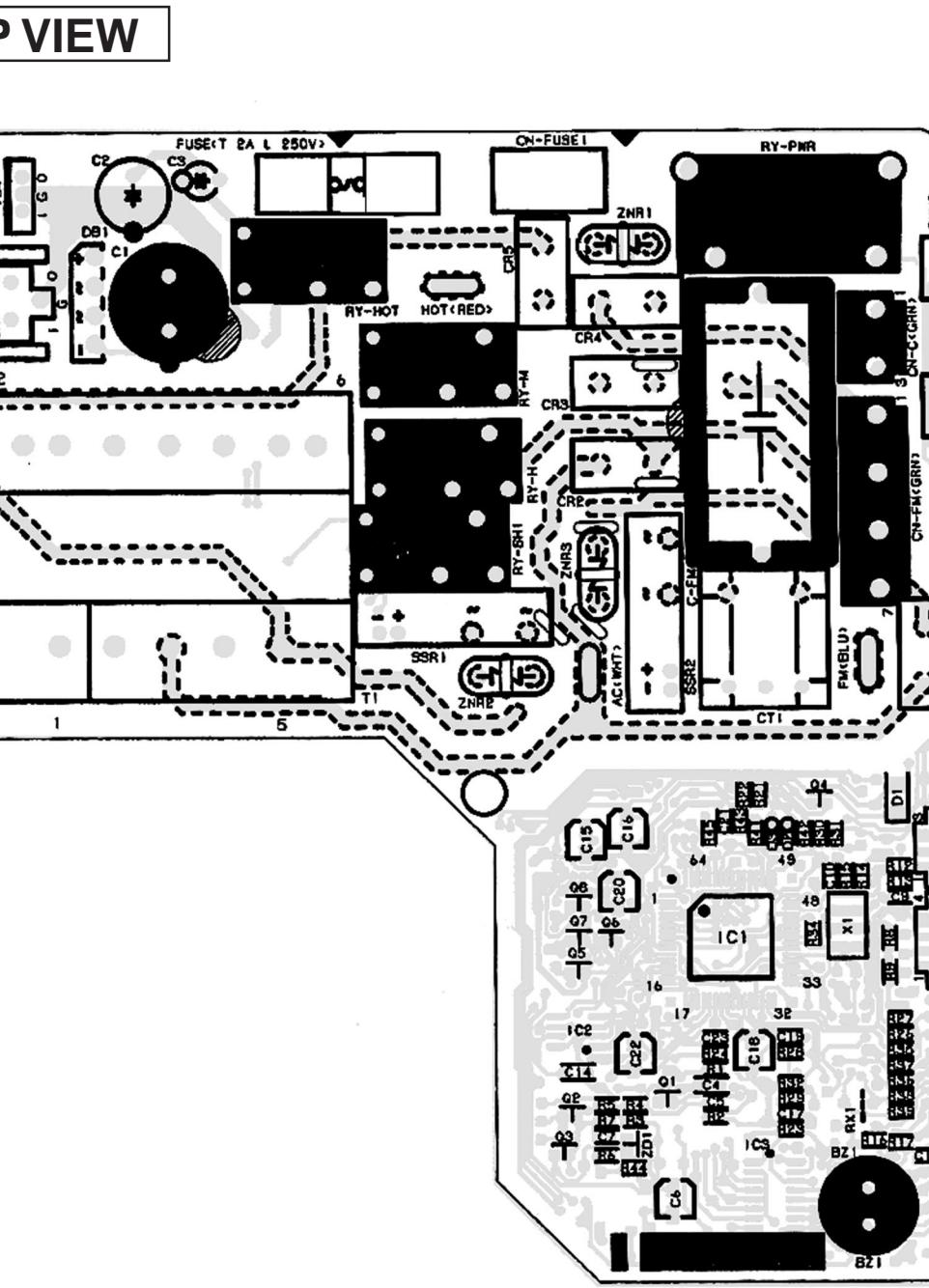
Name	Time	Test mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting	1 hr.	6 sec.	
Sleep Mode Operation	8 hrs.	48 sec.	
Real Timer	1 hr.	1 min.	
	10 min.	10 sec.	
	1 min.	1 sec.	
Time Delay Safety Control	2 min. 58 sec.	0 sec.	
Forced Operation	60 sec.	0 sec.	
Time Save Control	7 min.	42 sec.	
Anti-Freezing Control	4 min.	0 sec.	
Mode Jugdement	20 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.
	Soft Dry	180 sec.	18 sec.
		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.	
BL0 Timer	8 sec.	8 sec.	
Intake Air Anti-Freezing Prevention	16 min.	96 sec.	
POWERFUL MODE	15 min.	15 sec.	
Random FM Timer (ECONOMY Mode)	5 sec.	5 sec.	
Random Auto Restart Control	0 ~ 150 sec.	0 sec	

NIC CIRCUIT DIAGRAM

CONTROL



ST PATTERN FOR UNIT PRINTED CIRCUIT B



PRINT PATTERN INDOOR UNIT PRINTED CIRCUIT BOARD

