Order No: GMAC0312013C2

Service Manual

Room Air Conditioners

CS-PA7CKE
CU-PA7CKE
CS-PC7CKE
CU-PC7CKE
CS-PA9CKE CU-PA9CKE
CS-PC9CKE CU-PC9CKE
CS-PA12CKE CU-PA12CKE
CS-PC12CKE CU-PC12CKE

⚠ 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

1 Functions

Operation START/ST OP

Operation Mode Selection

- Automatic Mode Operation
- Heating Mode Operation(PA7CKE/PA9CKE/PA12CKE)
- Soft Dry Mode Operation
- Air Circulation Operation(PC7CKE/PC9CKE /PC12CKE)

Indoor Fan Speed Selection

- Low Speed
- Medium Speed
- High Speed
- Automatic Speed

Airflow Direction Control

- Auto Airflow Direction
- Airflow Direction Manual Control

Room Temperature Setting

- Temperature Setting(16°C to 30°C)
- Auto Operation

Timer Operation Selection

- Stop/Start Operation Control (set the ON/OFF Timer hourly later)

Set /Cancel Timer Operation

- Set timer/Cancel the set timer

Indoor Unit

Power Switch ON/OFF

Auto Mode Operation Selection Button

- When the remote control cannot be used, please use this button.

Signal Receiving Sound Control

- Keep pressing this button for 10sec to turn on or turn off the signal receiving sound.

Test Run

- Used when testing or repairing

Operation Indication Lamps

- Operation (green) ..... lights up in operation
  Blinks during Test Run operation and determining Auto Operation mode
- Timer(orange) ..... Timer in operation

Operation Mode

- Heating/Cooling/Soft Dry/Air Circulation/ Auto Operation

Time Delay Safety Control

- The unit will restart operation after 3-4 minutes after each pause.

Automatic Restarting Control

- 7-minutes automatic restarting at Cooling Operation

Anti-freezing Control for the Evaporator

- Cooling or Soft Dry Operation

Warm Booting Control

- Indoor fan starts running when temperature of evaporator reaches 3°C or above.
- When temperature of evaporator is between 30°C and 40°C,indoor fan will run at Super Low or Low speed.
- When temperature of evaporator reaches 34°C, Warm Booting Operation ends.
  (For CS-PA7CKE/CS-PA9CKE/ CS-PA12CKE only)

Indoor Fan Speed Control

- High,Med,Low
- Auto Fan Speed

Airflow Direction Control

- Automatic Airflow Direction Control
  The louver automatically swings up and down
- Airflow Direction Manual Control

Delayed On-timer Control

- For cooling or soft dry mode, the unit starts 15 minutes before the set time with the remote control, but for heating mode 30 minutes before the set time.

Outdoor Unit

CU-PA7CKE
CU-PC7CKE
CU-PC9CKE

CU-PA9CKE
CU-PC12CKE

CU-PA12CKE

Anti-reverse Protection

- To protect the compressor from reverse rotation when power off suddenly.

Overload Protector

- The 2-step Overload Protector is to protect the compressor when
  1/ temperature of compressor reaches 120°C
  2/ high temperature or current enters into the compressor. (for PA7CKE, PC7CKE, PA9CKE, PC9CKE only)

60-seconds Test Operation Control

- Once the compressor is activated,it does not stop for 60 seconds.It stops immediately with remote controller ON/OFF button.

Deicing Control

- Anti-freezing operation for outdoor unit(during Heating Mode Operation only)
- Temperature of the condenser is tested by TRS. (For CS-PA7CKE/CS-PA9CKE/CS-PA12CKE only)

Overload Protection Control

- When the temperature of evaporator reaches 51°C,outdoor fan stops,and will restart when the temperature of evaporator declines to 49°C.
- When the temperature of evaporator reaches 65 °C,compressor will stop. (For PA7CKE/PA9CKE/PA12CKE only)

Compressor Protection Control

- If the outdoor fan does not run after the compressor is activated for 50sec,the compressor will stop. (Only for CS-PA7CKE/CU-PA7CKE/ CS-PA9CKE/CU-PA9CKE/ CS-PA12CKE/CU-PA12CKE)

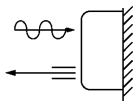
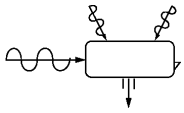
4-way Valve Control

- If the unit is stopped during Heating Operation,the 4-way valve will remain in heating mode operation for 5 minutes. (PA7CKE/PA9CKE/PA12CKE only)

Outdoor Fan Operation Control

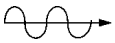
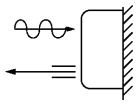
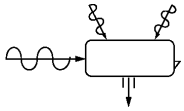
- Controlled by the indoor unit. (PA7CKE/PA9CKE/PA12CKE only)

2 Product Specifications

		Unit	CS-PA7CKE	CU-PA7CKE
Cooling Capacity		kW	2.10	
Heating Capacity		kW	2.30	
Moisture Removal		L/h	1.2	
Power Source		Phase V Cycle	Single 220 50	
Airflow Method		OUTLET INTAKE	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	Cooling: 6.7 Heating: 6.7	—
	Indoor Air (medium)	m^3/min	Cooling: 7.6 Heating: 7.6	—
	Indoor Air (high)	m^3/min	Cooling: 8.6 Heating: 8.6	—
	Outdoor Air	m^3/min	—	—
Noise Level		dB(A)	Cooling: High37, Low29 Heating: High37, Low29	Cooling: High48 Heating: High48
Electrical Data	Input	W	Cooling: 695 Heating: 620	
	Running Current	A	Cooling: 3.50 Heating: 3.10	
	EER/COP	W/W	Cooling: 3.02 Heating: 3.71	
	Starting Current	A	15	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.0mm^2	— —
Dimensions	Height	mm	275	534
	Width	mm	799	590
	Depth	mm	210	255
Net Weight		kg	9.0	23
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	600

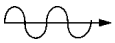
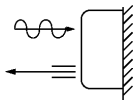
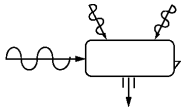
			Unit	CS-PA7CKE	CU-PA7CKE
Air Circulation	Type			Cross-flow fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (6 pole)
	Rated	Input	W	38.4	58.3
		Output	W	13	15
	Fan Speed	Low	rpm	960±60	—
		Medium	rpm	1100±60	—
		High	rpm	1240±60	880±60
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			Copper	Copper
	Fin Material			Slot Type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 10	1 × 20
	FPI			18	16
	Dimensions		mm	610 × 210 × 25.4	568.8 × 508 × 22
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	620
Thermostat				Electronic Control	—
Protection Device				—	OLP(30A/230V)
Capillary	Length		mm	—	Cooling: 645, Heating: 1160
	Circulation		L/min	—	Cooling: 8.0, Heating: 4.5
	Inner Diameter		mm	—	Cooling: 1.3, Heating: 1.2
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			μFV	—	20μF, 370V
Fan Motor Capacitor			μFV	1.5μF, 400V	1.2μF, 400V

- Specifications are subject to change without notice for further improvement

		Unit	CS-PA9CKE	CU-PA9CKE
Cooling Capacity		kW	2.70-2.75	
Heating Capacity		kW	3.10-3.15	
Moisture Removal		L/h	1.6	
Power Source		Phase V Cycle	Single 220-230 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	Cool: 6.79 Heating: 6.75	—
	Indoor Air (medium)	m^3/min	Cool: 7.84 Heating: 7.8	—
	Indoor Air (high)	m^3/min	Cool: 8.9 Heating: 8.0	—
	Outdoor Air	m^3/min	—	22.0
Noise Level		dB(A)	Cooling: High38, Low29 Heating: High38, Low29	Cooling: High47 Heating: High47
Electrical Data	Input	W	Cooling: 930-975 Heating: 800-830	
	Running Current	A	Cooling: 4.35-4.30 Heating: 3.75-3.70	
	EER	W/W	Cooling: 2.9-2.82 Heating: 3.88-3.8	
	Starting Current	A	20	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.0mm^2	— —
Dimensions	Height	mm	275	505
	Width	mm	799	780
	Depth	mm	210	245
Net Weight		kg	9.0	31
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	750

			Unit	CS-PA9CKE	CU-PA9CKE
Air Circulation	Type			Cross-flow Fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (4 pole)
	Rated	Input	W	38.4	55.3
		Output	W	13	20
	Fan Speed	Low	rpm	900±60	—
		Medium	rpm	1040±60	—
		High	rpm	1180/1200±60	740±60
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			copper	copper
	Fin Type			slot type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 15	1 × 19
	FPI			18	18
	Dimensions		mm	610 × 315 × 25.4	706.2 × 482.6 × 22
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	840
Thermostat				Electronic Control	—
Protection Device				—	OLP(30A/230V)
Capillary	Length		mm	—	Cooling: 470 Heating: 1160
	Circulation		L/min	—	Cooling: 13.4 Heating: 4.5
	Inner Diameter		mm	—	Cooling: 1.5 Heating: 1.2
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			μFV	—	25μF, 370V
Fan Motor Capacitor			μFV	1.5μF, 400V	1.2μF, 400V

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

		Unit	CS-PA12CKE	CU-PA12CKE
Cooling Capacity		kW	3.35-3.40	
Heating Capacity		kW	4.00-4.05	
Moisture Removal		L/h	1.8	
Power Source		Phase V Cycle	Single 220-230 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	Cool: 7.43 Heating: 7.48	—
	Indoor Air (medium)	m^3/min	Cool: 8.27 Heating: 8.33	—
	Indoor Air (high)	m^3/min	Cool: 9.1 Heating: 9.7	—
	Outdoor Air	m^3/min	—	—
Noise Level		dB(A)	Cooling: High39, Low32 Heating: High39, Low32	Cooling: High48 Heating: High48
Electrical Data	Input	W	Cooling: 1220-1240 Heating: 1100-1130	
	Running Current	A	Cooling: 5.70-5.55 Heating: 5.15-5.05	
	EER	W/W	Cooling: 2.75-2.74 Heating: 3.64-3.58	
	Starting Current	A	25	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.0mm^2	— —
Dimensions	Height	mm	275	540
	Width	mm	799	780
	Depth	mm	210	289
Net Weight		kg	9.0	38
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	900

			Unit	CS-PA12CKE	CU-PA12CKE
Air Circulation	Type			Cross-flow Fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (4 pole)
	Input		W	38.4	54.8
	Rated Output		W	13	20
	Fan Speed	Low	rpm	980±60	—
		Medium	rpm	1090±60	—
		High	rpm	1200/1270±60	760±60
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			copper	copper
	Fin Type			slot type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 15	1 × 20
	FPI			18	18
	Dimensions		mm	610 × 315 × 25.4	838.9 × 508 × 22
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	1000
Thermostat				Electronic Control	—
Protection Device				—	OLP(30A/230V)
Capillary	Length		mm	—	Cooling: 690 Heating: 665
	Circulation		L/min	—	Cooling: 60 Heating: 16.1
	Inner Diameter		mm	—	Cooling: 1.2 Heating: 1.7
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			μFV	—	30μF, 370V
Fan Motor Capacitor			μFV	1.5μF, 400V	1.8μF, 440V

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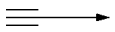
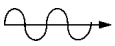
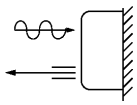
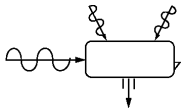
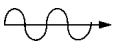
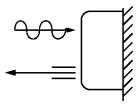
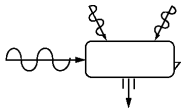
		Unit	CS-PC7CKE	CU-PC7CKE
Cooling Capacity		kW	2.10	
Moisture Removal		L/h	1.20	
Power Source		Phase V Cycle	Single 220 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	6.0	—
	Indoor Air (medium)	m^3/min	6.96	—
	Indoor Air (high)	m^3/min	8.0	—
	Outdoor Air	m^3/min	—	—
Noise Level		dB(A)	High35, Low28	High48
Electrical Data	Input	W	735	
	Running Current	A	3.60	
	EER	W/W	2.86	
	Starting Current	A	15	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.0mm^2	— —
Dimensions	Height	mm	250	534
	Width	mm	770	590
	Depth	mm	205	255
Net Weight		kg	7.5	22
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	600

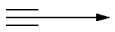
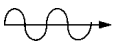
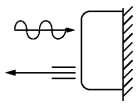
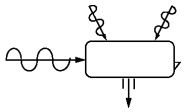
			Unit	CS-PC7CKE	CU-PC7CKE
Air Circulation	Type			Cross-flow Fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (4 pole)
	Input		W	38.4	59.6
	Rated Output		W	13	15
	Fan Speed	Low	rpm	810±60	—
		Medium	rpm	940±60	—
		High	rpm	1080±60	910±60
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			copper	copper
	Fin Type			slot type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 8	1 × 20
	FPI			18	16
	Dimensions		mm	610 × 168 × 25.4	568.8 × 508 × 22
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	450
Thermostat				Electronic Control	O.L.P.(25A/230V)
Protection Device				—	
Capillary	Length		mm	—	645
	Circulation		L/min	—	8.0
	Inner Diameter		mm	—	1.3
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			μFV	—	20μF, 370V
Fan Motor Capacitor			μFV	1.5μF, 400V	1.2μF, 400V

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

		Unit	CS-PC9CKE	CU-PC9CKE
Cooling Capacity		kW	2.50-2.55	
Moisture Removal		L/h	1.40	
Power Source		Phase V Cycle	Single 220-230 50	
Airflow Method		OUTLET INTAKE 	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	7.36	—
	Indoor Air (medium)	m^3/min	8.29	—
	Indoor Air (high)	m^3/min	9.3	—
	Outdoor Air	m^3/min	—	—
Noise Level		dB(A)	High36, Low30	High48
Electrical Data	Input	W	840-860	
	Running Current	A	4.00-3.95	
	EER	W/W	2.98-2.97	
	Starting Current	A	21	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.5mm^2	— —
Dimensions	Height	mm	250	534
	Width	mm	770	590
	Depth	mm	205	255
Net Weight		kg	8.0	24
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	750

			Unit	CS-PC9CKE	CU-PC9CKE
Air Circulation	Type			Cross-flow Fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (4 pole)
	Input		W	38.4	59.6
	Rated Output		W	13	15
	Fan Speed	Low	rpm	870±60	—
		Medium	rpm	980±60	—
		High	rpm	1100±60	880±50
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			copper	copper
	Fin Type			slot type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 12	1 × 20
	FPI			18	18
	Dimensions		mm	610 × 252 × 25.4	568.8 × 508 × 22
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	530
Thermostat				Electronic Control	—
Protection Device				—	O.L.P.(25A/230V)
Capillary	Length		mm	—	815
	Circulation		L/min	—	10.4
	Inner Diameter		mm	—	1.5
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			µFV	—	25µF, 370V
Fan Motor Capacitor			µFV	1.5µF, 400V	1.2µF, 400V

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

		Unit	CS-PC12CKE	CU-PC12CKE
Cooling Capacity		kW	3.50-3.55	
Moisture Removal		L/h	2.1	
Power Source		Phase V Cycle	Single 220-230 50	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Circulation	Indoor Air (low)	m^3/min	7.1	—
	Indoor Air (medium)	m^3/min	8.0	—
	Indoor Air (high)	m^3/min	8.8	—
	Outdoor Air	m^3/min	—	—
Noise Level		dB(A)	High39, Low33	High47
Electrical Data	Input	W	1240-1270	
	Running Current	A	5.80-5.70	
	EER	W/W	2.82-2.80	
	Starting Current	A	25	
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"
Piping 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	0.6	—
Power Supply Cord Length (Number of core-wire)		m	2.2 3 core-wire/1.5mm^2	— —
Dimensions	Height	mm	275	505
	Width	mm	799	780
	Depth	mm	210	245
Net Weight		kg	9.0	34
Compressor	Type		—	Rotary(1 cylinder) Rolling piston type
	Motor Type		—	Induction(2 pole)
	Rated Output	W	—	1100

			Unit	CS-PC12CKE	CU-PC12CKE
Air Circulation	Type			Cross-flow Fan	Propeller fan
	Motor Type			Induction (4 pole)	Induction (4 pole)
	Input		W	38.4	45.9
	Rated Output		W	13	20
	Fan Speed	Low	rpm	980±60	—
		Medium	rpm	1110±60	—
		High	rpm	1220±60	680±50
Heat Exchanger	Description			Evaporator	Condenser
	Tube Material			copper	copper
	Fin Type			slot type	Corrugation type
	Rows / Stage			(Plate fin configuration, forced draft) 2 × 15	1 × 22
	FPI			18	19
	Dimensions		mm	610 × 315 × 25.4	718 × 462 × 12.7
Refrigerant Control Device				—	Capillary Tube
Refrigeration Oil			(c.c)	—	SUNISO 4GDID or ATMOS M60 (M56)
Refrigerant (R-22)			g	—	600
Thermostat				Electronic Control	—
Protection Device				—	O.L.P.(25A/230V)
Capillary	Length		mm	—	505
	Circulation		L/min	—	17.8
	Inner Diameter		mm	—	1.7
Air Filter				P.P Honeycomb	—
Refrigerant Circulation Control Device				Capillary	
Compressor Capacitor			μFV	—	30μF, 370V
Fan Motor Capacitor			μFV	1.5μF, 400V	1.2μF, 400V

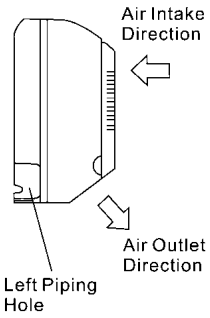
- Specifications are subject to change without notice for further improvement.

3 Dimensions

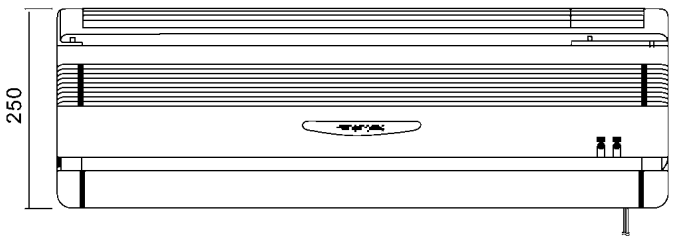
Indoor Unit

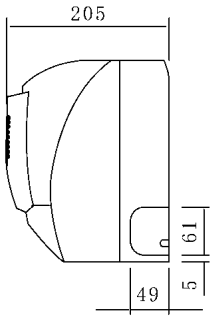
- CS-PC7CKE/PC9CKE

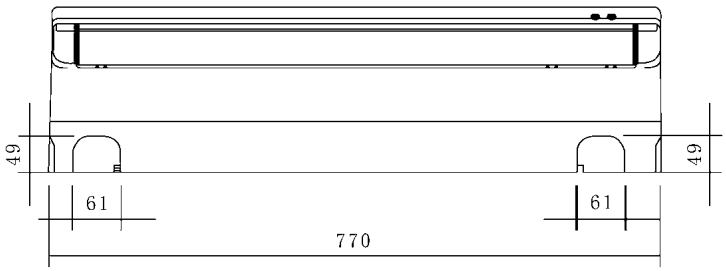
Unit:mm



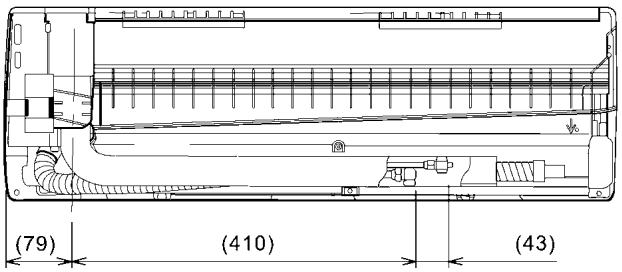
<Front View>

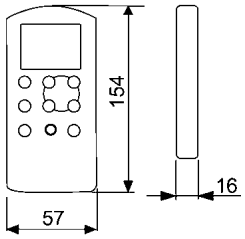




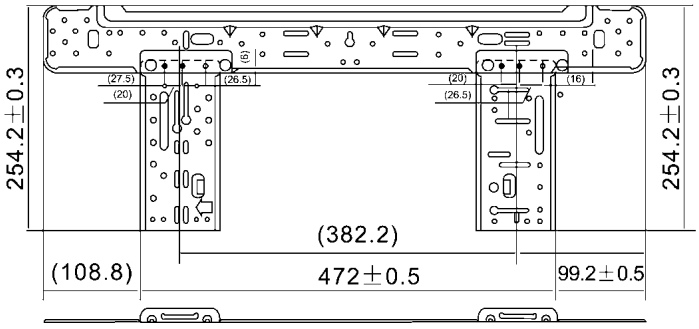


<Back View>





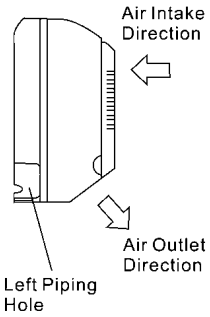
Relative position between the unit and the installation plate<Front View>

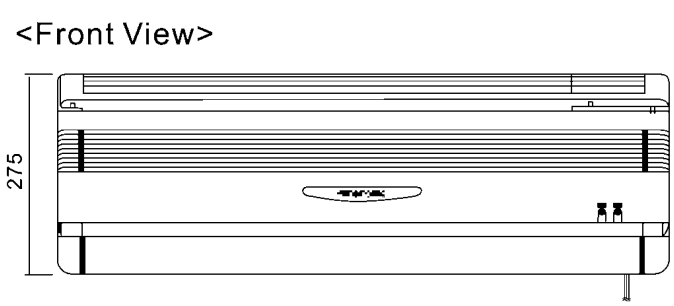


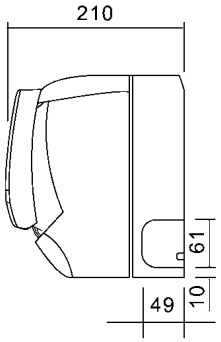
Indoor Unit

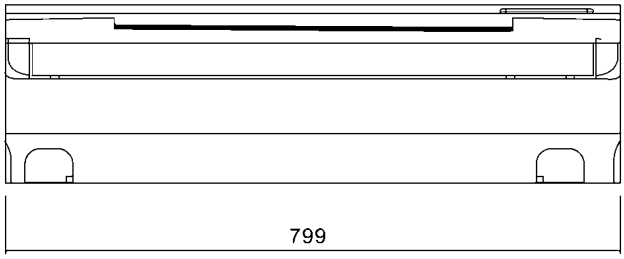
- CS-PA7CKE/CS-PA9CKE/CS-PC12CKE/CS-PA12CKE

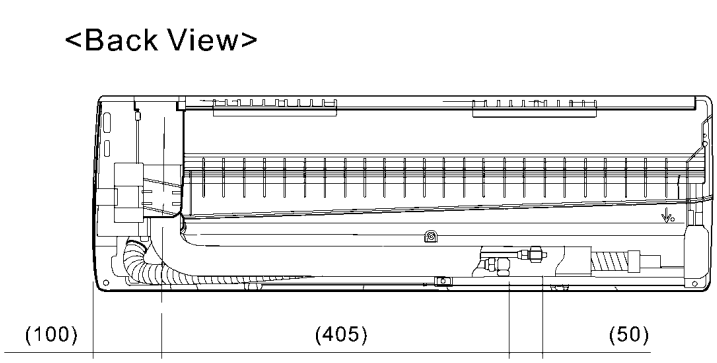
Unit:mm

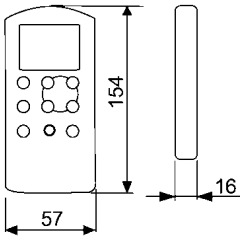




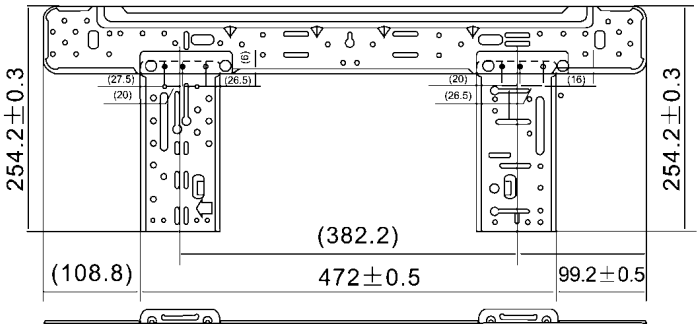






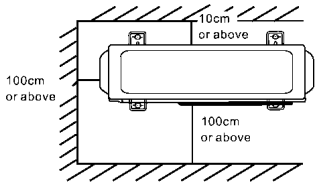


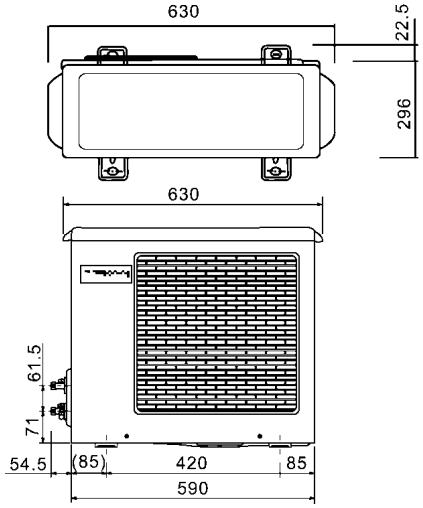
Relative position between the unit and the installation plate<Front View>

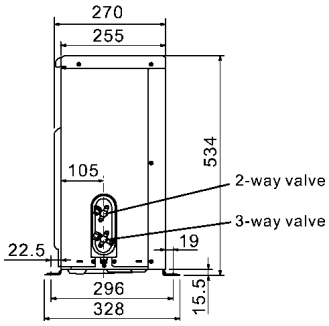


Outdoor Unit

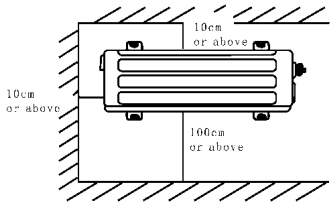
• CU-PA7CKE/CU-PC7CKE/CU-PC9CKE

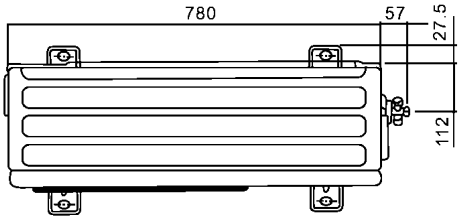


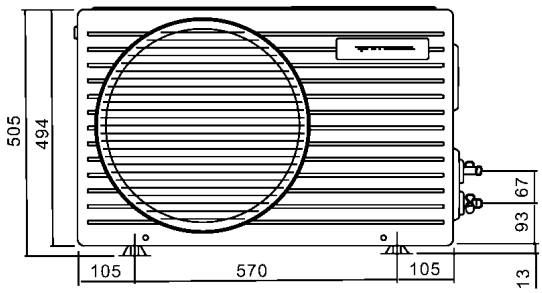


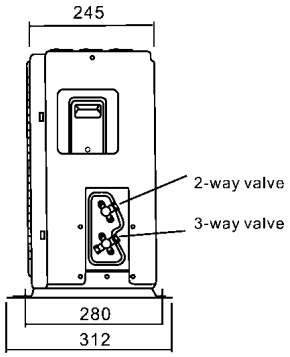


• CU-PA9CKE/CU-PC12CKE

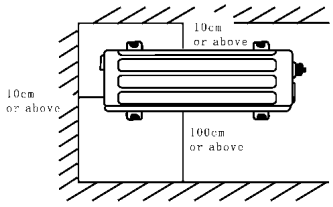


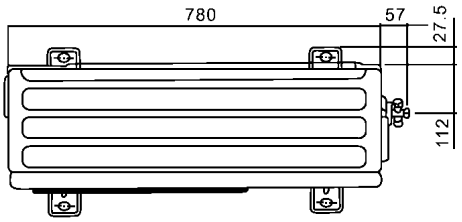


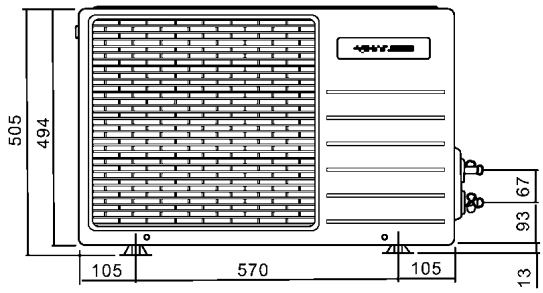


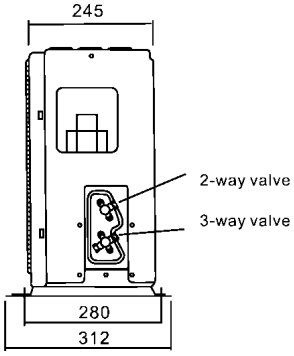


• CU-PA12CKE



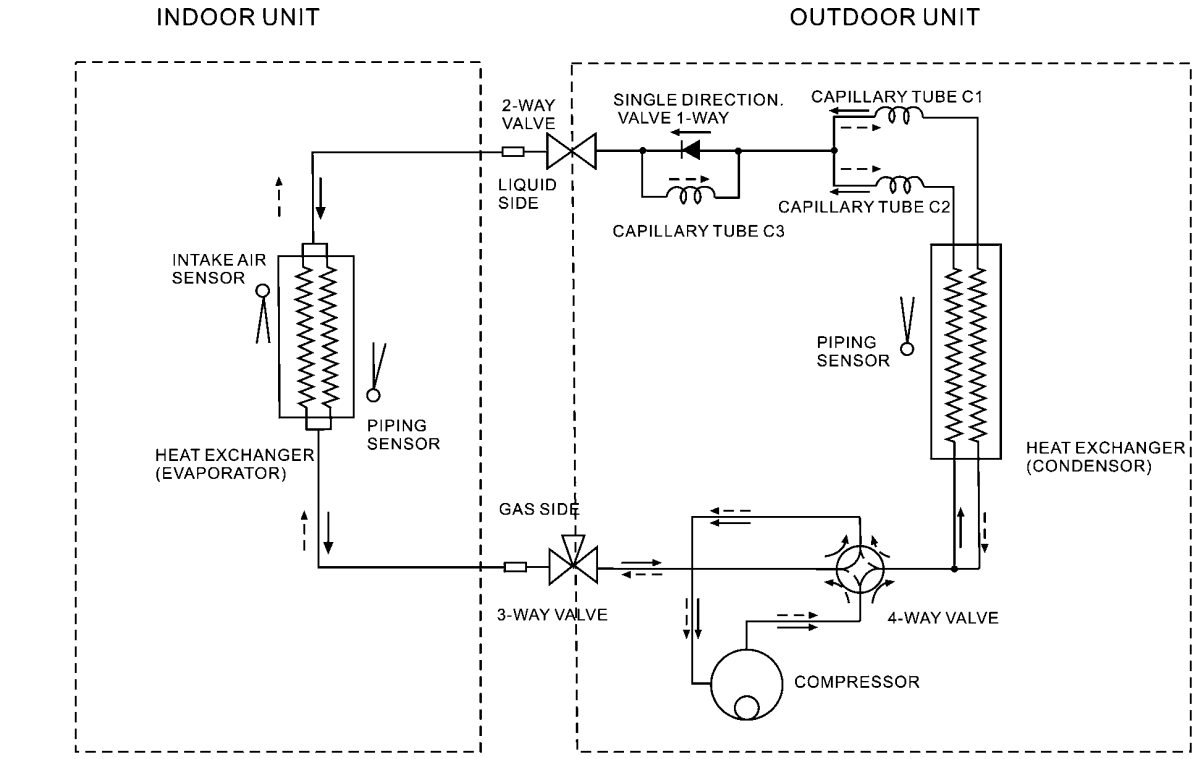




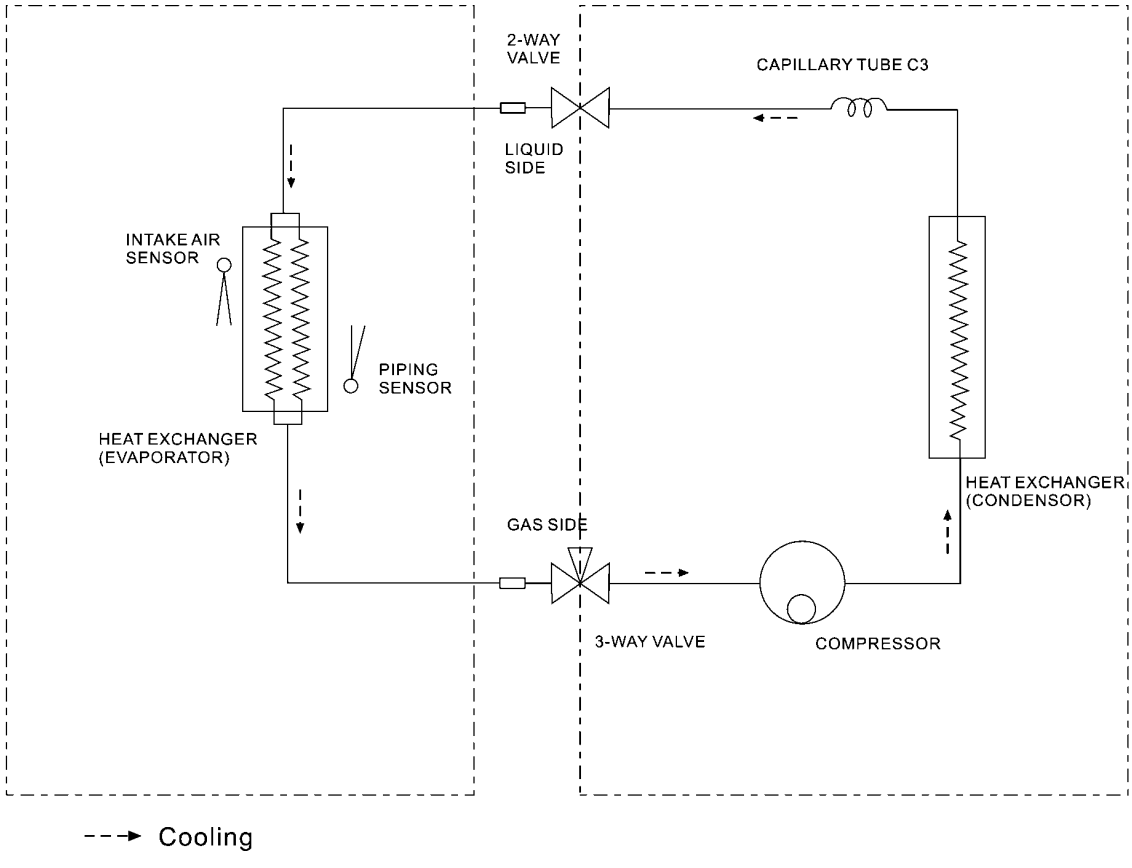


4 Refrigeration Cycle Diagram

4.1. CS/CU-PA7CKE, CS/CU-PA9CKE, CS/CU-PA12CKE

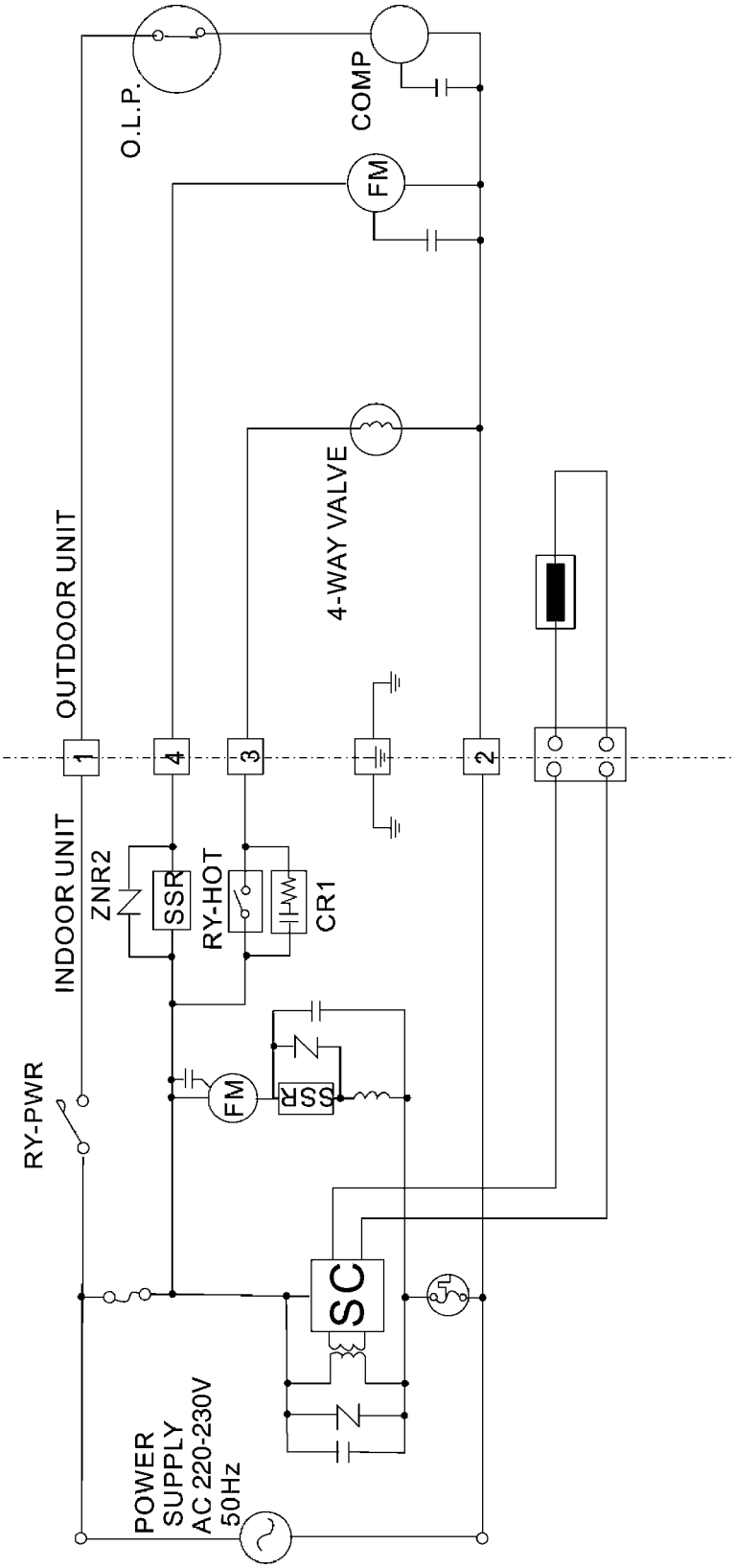


4.2. CS/CU-PC7CKE, CS/CU-PC9CKE, CS/CU-PC12CKE



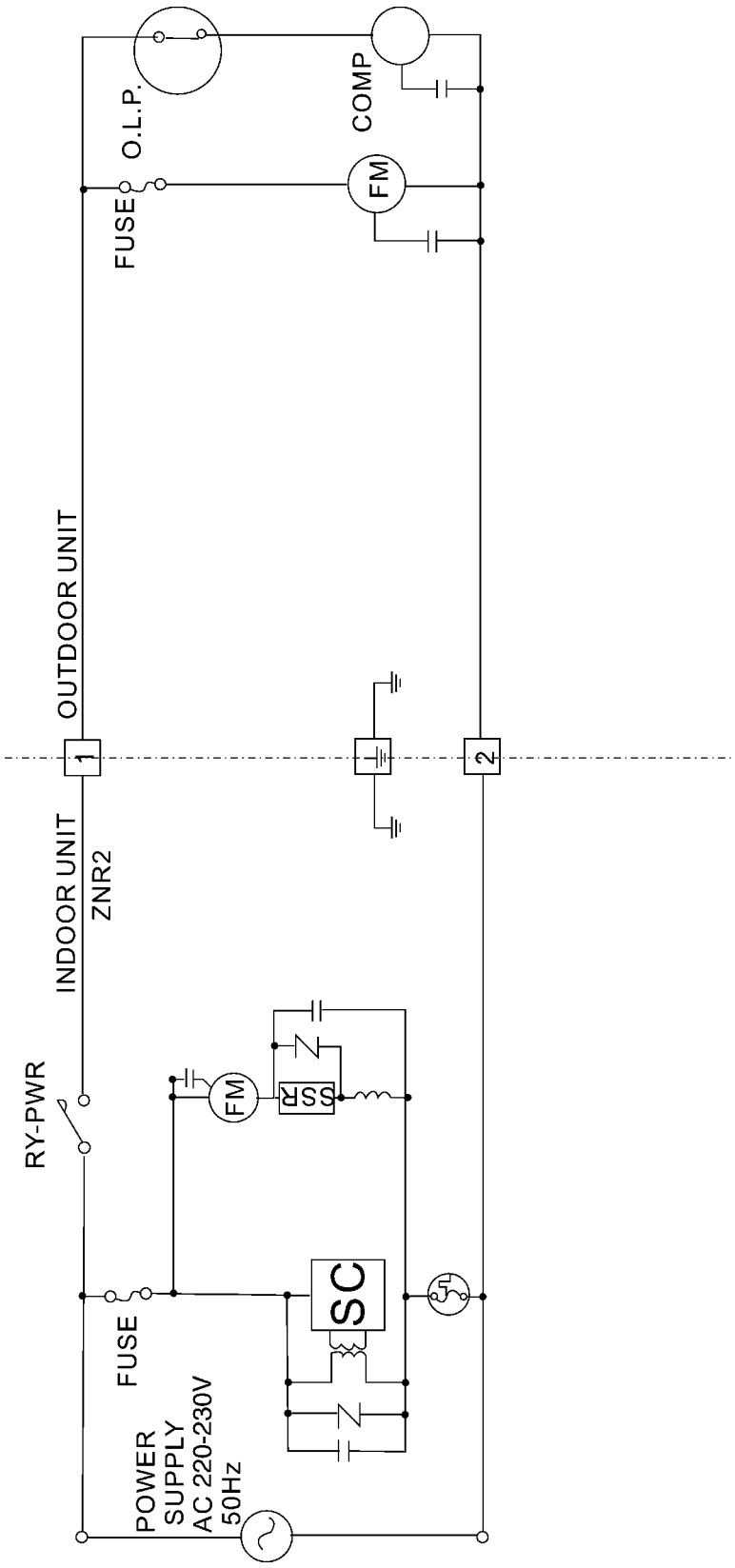
5 Block Diagram

5.1. CS/CU-PA7CKE, CS/CU-PA9CKE, CS/CU-PA12CKE



Note:For CS/CU-PA12CKE,no OLP.

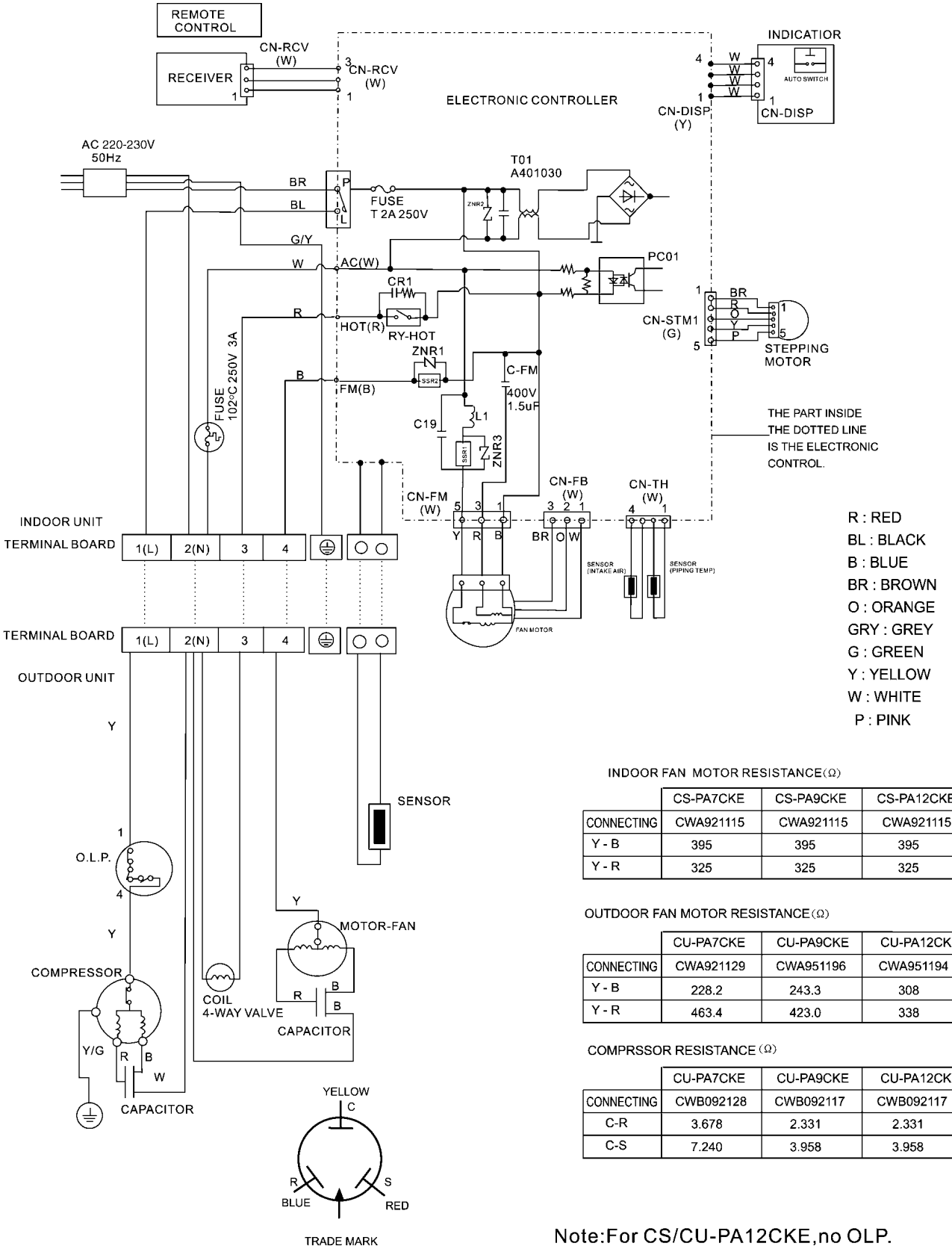
5.2. CS/CU-PC7CKE, CS/CU-PC9CKE, CS/CU-PC12CKE



Note:For CS/CU-PC12CKE,no OLP.

6 Wiring Diagram

6.1. CS/CU-PA7CKE, CS/CU-PA9CKE, CS/CU-PA12CKE



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

INDOOR FAN MOTOR RESISTANCE(Ω)

	CS-PA7CKE	CS-PA9CKE	CS-PA12CKE
CONNECTING	CWA921115	CWA921115	CWA921115
Y - B	395	395	395
Y - R	325	325	325

OUTDOOR FAN MOTOR RESISTANCE(Ω)

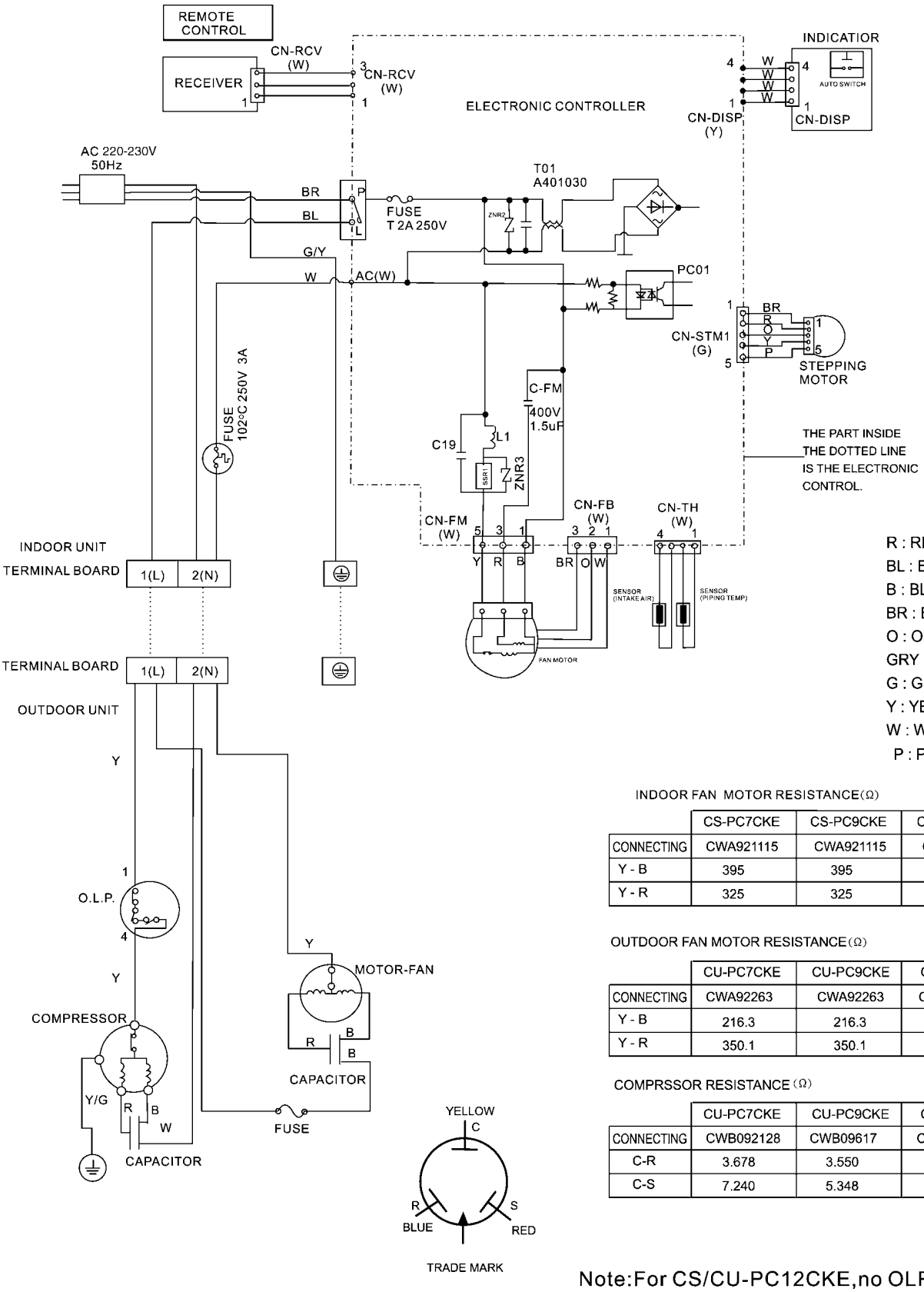
	CU-PA7CKE	CU-PA9CKE	CU-PA12CKE
CONNECTING	CWA921129	CWA951196	CWA951194
Y - B	228.2	243.3	308
Y - R	463.4	423.0	338

COMPRSSOR RESISTANCE(Ω)

	CU-PA7CKE	CU-PA9CKE	CU-PA12CKE
CONNECTING	CWB092128	CWB092117	CWB092117
C-R	3.678	2.331	2.331
C-S	7.240	3.958	3.958

Note:For CS/CU-PA12CKE,no OLP.

6.2. CS/CU-PC7CKE, CS/CU-PC9CKE, CS/CU-PC12CKE



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

INDOOR FAN MOTOR RESISTANCE(Ω)

	CS-PC7CKE	CS-PC9CKE	CS-PC12CKE
CONNECTING	CWA921115	CWA921115	CWA921115
Y - B	395	395	395
Y - R	325	325	325

OUTDOOR FAN MOTOR RESISTANCE(Ω)

	CU-PC7CKE	CU-PC9CKE	CU-PC12CKE
CONNECTING	CWA92263	CWA92263	CWA951192
Y - B	216.3	216.3	353.7
Y - R	350.1	350.1	487.9

COMPRSSOR RESISTANCE (Ω)

	CU-PC7CKE	CU-PC9CKE	CU-PC12CKE
CONNECTING	CWB092128	CWB09617	CWB092117
C-R	3.678	3.550	2.331
C-S	7.240	5.348	3.958

Note:For CS/CU-PC12CKE,no OLP.

7 Operation Details

7.1. Cooling Mode Operation

- When selecting the Cooling Mode Operation, the unit will operate according to the setting by the Remote Control and the operation is as the following.

Time Delay Safety Control

- 3 min. ---- The compressor is ceased for 3 minutes to balance the pressure in the refrigeration cycle.
- (Protection of compressor).

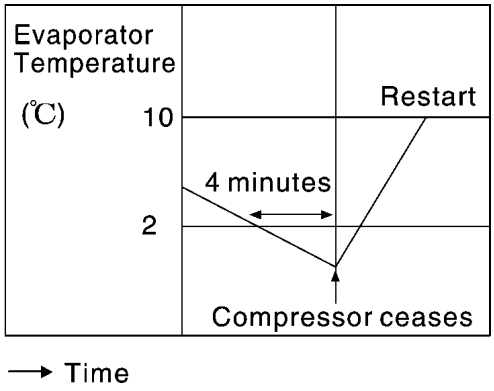
Automatic Restarting Control

- 7 min. ---- The unit will automatically operate in 7 minutes even if the room temperature is not reached.
  (Prevention of raising the humidity)

Anti-freezing Control

- If temperature of evaporator is lower than 2°C continuously for 4 minutes, the compressor will cease to prevent the evaporator from freezing. Fan speed setting will not be changed.
- When temperature of evaporator reaches 10°C, compressor will restart.

※ During Cooling Mode Operation, the Time Delay Safety Control is available.



Compressor Protection Control

- If the outdoor fan motor does not run 50 seconds after the compressor starts, the compressor will cease and restart in 3 minutes.(Time Delay Safety Control is effective.)

Compressor runs for 50 seconds but outdoor fan does not run → Compressor ceases → Compressor restarts (in 3 minutes)

- If this symptom occurs repeatedly 3 times, the compressor will stop.
- If the operation mode changed or the unit turned off by remote control, Compressor Protection Control will be reset (for PA7CKE, PA9CKE, PA12CKE only).

Anti-reversing Control

- If the compressor has been continuously running for 5 minutes, and the difference of temperature between intake air and evaporator is continuously lower than 2.5°C for 2 minutes, the compressor is ceased for 3 minutes then restarts. (Time Delay Protection Control is effective.)

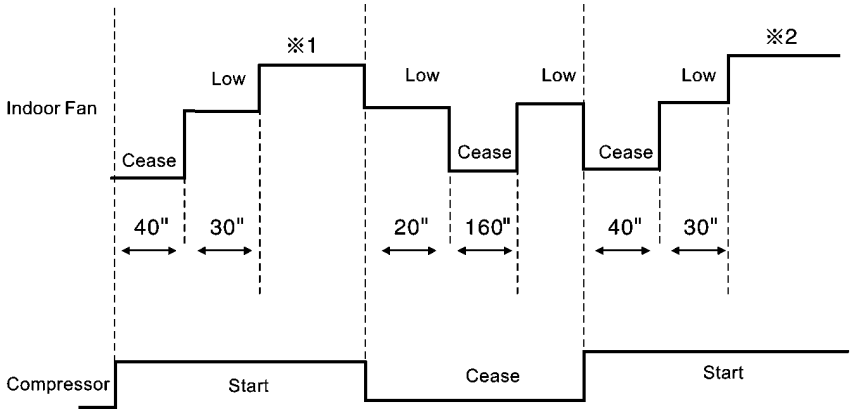
• Compress operating ≥ 5 minutes
• △T= ≤ 2.5℃,2 minutes → Compressor ceases → Compressor restarts (in 3 minutes)

△T=intake air temperature-evaporator temperature

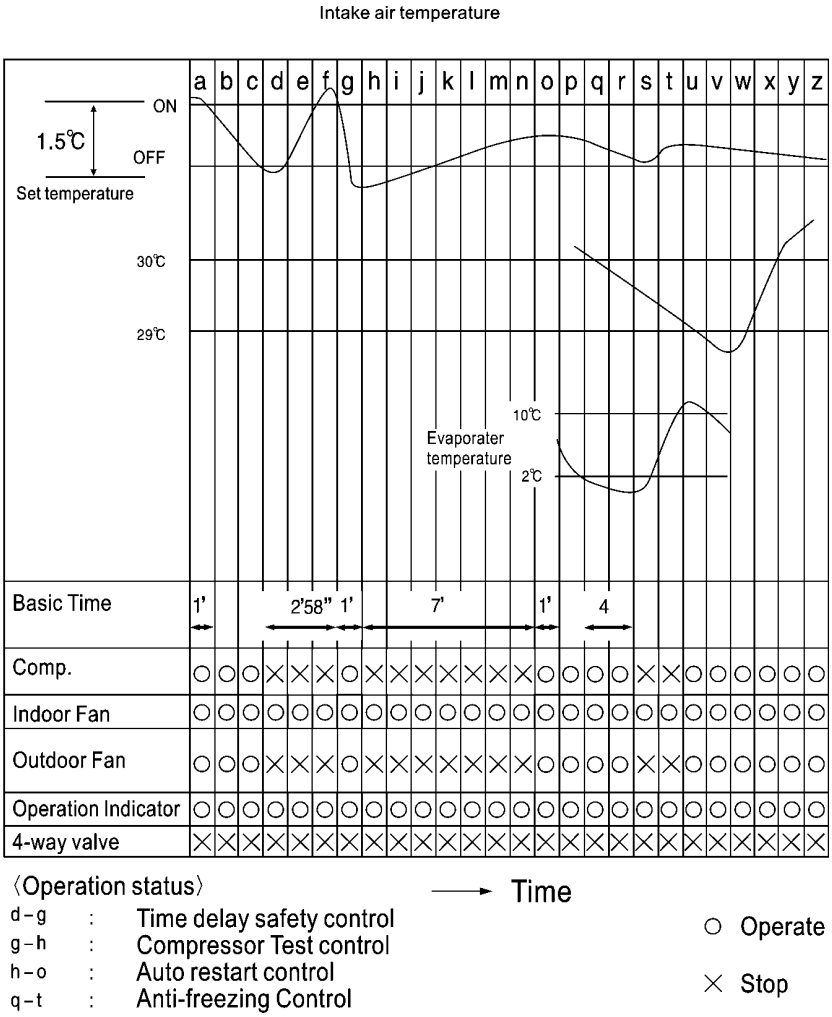
Automatic Fan Speed Mode

During Cooling Mode Operation, use remote control to select Automatic Fan Speed.

- Fan speed will be at the point between "high speed" and "medium speed".
- Deodorization control.



Time Graph for cooling Operation



7.2. Soft Dry Mode Operation

- When selecting Soft Dry mode operation, the operation will be cooling until the room temperature reaches the set temp on the remote control, and then Soft Dry will be activated. (During Soft Dry Mode the fan of indoor unit will operate at super low speed.)
- Once soft Dry mode operation is turned off, indoor fan, compressor and outdoor fan will stop for 6 minutes.

Time Delay Safety Protection

- During cooling mode operation, if the compressor ceased, it will not restart within 3 minutes.

Anti Freezing Control

- Same as the denotation in Cooling Operation. (P.25)
  (During Soft Dry Mode Operation, compressor will stop for at least 6 min.)

Compressor Protection Control

- Same as the denotation in Cooling Operation. (P.25)

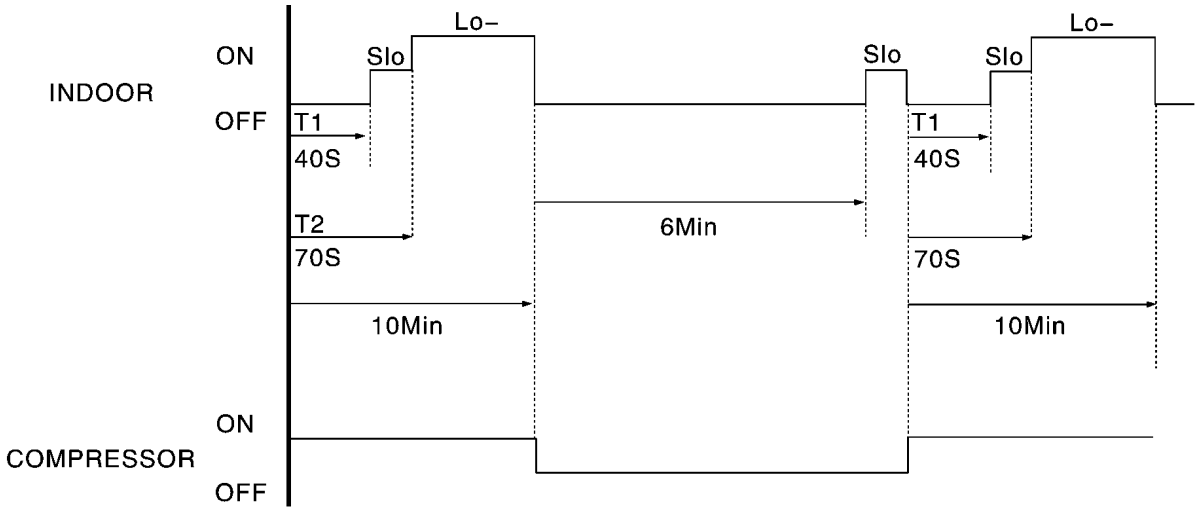
Anti-reverse Control

- Same as the denotation in Cooling Operation. (P.25)

Automatic Fan Speed

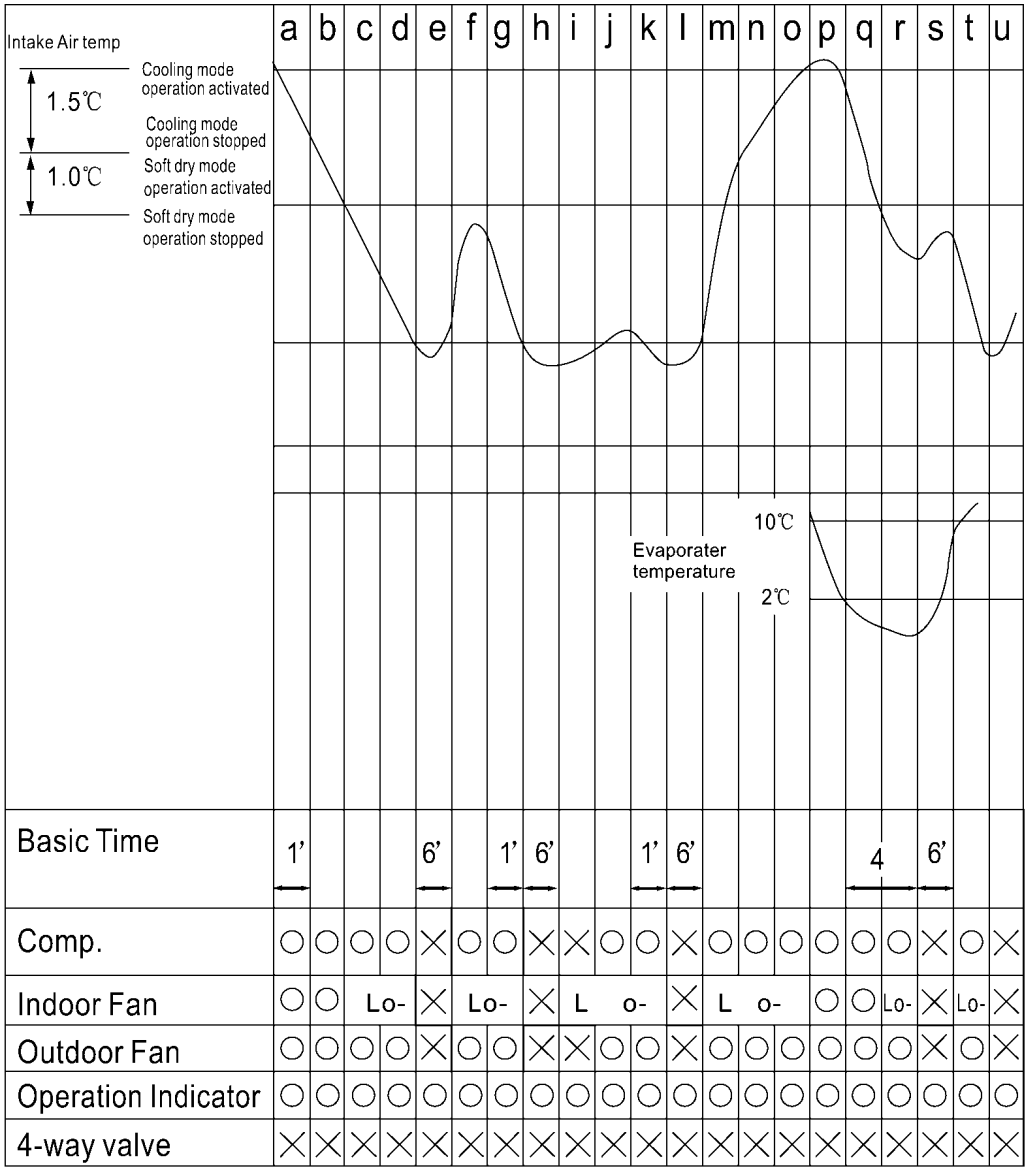
During Soft Dry Operation, use remote control to select Auto Fan Speed mode.

- Indoor Fan Speed is at super low.
- Deodorization control.



*T1, T2 COMPRESSOR=ON

Time Graph for soft dry operation



〈Operation status〉 → Time

a-c, p-r : Cooling Mode Operation
c-p, r-u : Soft Dry Mode Operation
e-f : Soft Dry Mode Operation stopped
j-l : Compressor Test operation control
q-t : Deice control

—— Cooling mode operation
····· Soft Dry Mode operation

○ Operate
× Stop

7.3. Heating Mode Operation (CS-PA7CKE / CS-PA9CKE / CS-PA12CKE)

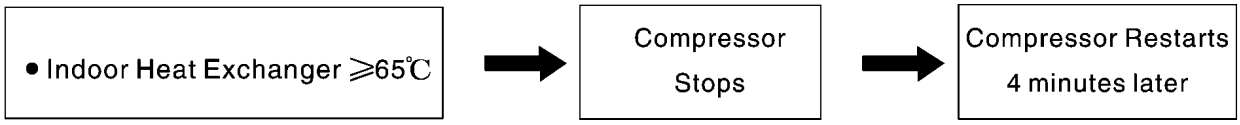
When selecting heating mode operation, the unit will operate according to the setting by the remote control.

Time Delay Safety Protection Control

- If the compressor stopped by switching off,turning off by remote control, or power off, it will not restart within 3 minutes.
- When room temperature reaches the set temperature on the remote control, compressor stops and will not restart within 4 minutes.
- 3 minutes after the compressor stopped, indoor fan will stop for 1 minute. Then indoor fan will resume operation with the speed at "super low".

Overload Protection Control

- When temperature of indoor heat exchanger rises to 51°C, outdoor fan will stop when temperature of indoor heat exchanger falls to 49°C, outdoor fan will restart.
- When temperature of indoor heat exchanger rises to 65°C or above, compressor stops, and will restart 4 minutes later.

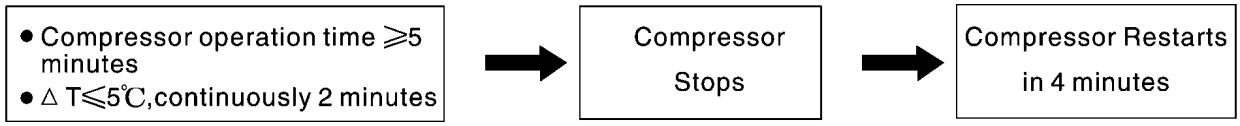


Compressor Protection Control

- Same as the denotation in Cooling Operation.(P.25)

Anti-Reversing Protection

- If the compressor has been running for 5 minutes, but the difference of temperature between intake air and indoor heat exchanger is continuously lower than 5°C for 2 minutes, compressor will stop and resume operation in 4 minutes.

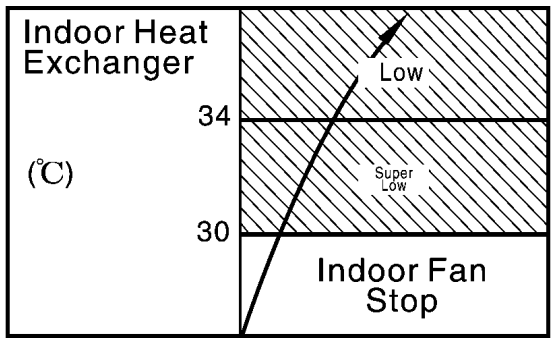


4-way Valve Control

- During heating mode operation, 4-way valve is at "open" mode.
- During heating mode operation, if the unit turned off , the 4-way valve will remain at "open" mode for 5 minutes.

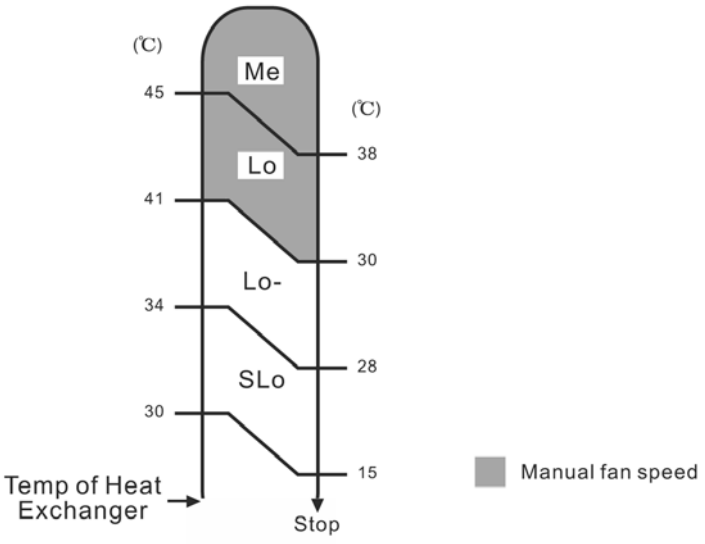
Warm booting control

- When turning on the unit by heating mode operation, indoor fan will be activated when temperature of indoor heat exchanger reaches 30°C.
- Warm booting operation ends when temperature of indoor heat exchanger reaches 34 °C.
- During warm booting or within 3 minutes after the ending the Ry-C will not turn off.

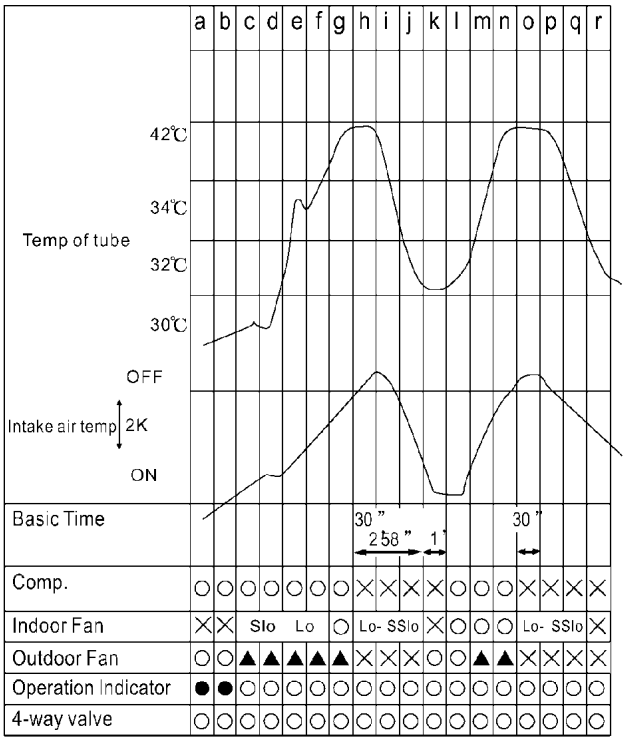


Automatic Fan mode operation

When selecting automatic fan mode by remote control during heating mode operation, the fan will operate at different speed under different conditions according to the temperature of indoor heat exchanger.



Time graph for heating mode operation



〈Operation status〉 → Time

a - b : Warm booting control(indoor fan Off)
c d : Warm booting control(indoor fan Slo)
h - k , o - r : cold airflow prevention

—— Cooling mode operation
····· Soft Dry Mode operation

○ Operate
× Stop
▲ Stop or Operate

Deice Control

Deice operation is to protect the outdoor unit from freezing.

- Normal Deice Operation

  Deicing starts 30 minutes after heating mode operation or 60 minutes after the latest deicing operation.If temperature of outdoor piping,tested by TRS,falls to -3°C (TRS OFF) or below for continuously 50 seconds,deicing operation starts.

- Overload Deicing Operation

  During heating operation, if the accumulative stopping time of outdoor fan reaches 60 minutes, deicing operation will start 1 minute after compressor starts.

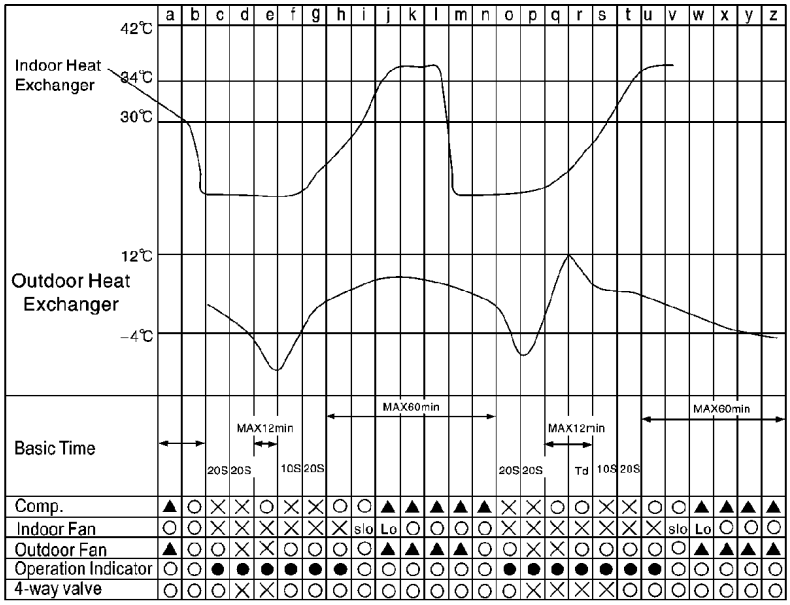
- Deicing operation ends under conditions below
  1. After 12 minutes.
  2. Temperature of outdoor unit rises to 4°C.
  3. Because of time delay (Td),deicing operation will not end immediately.

Deicing Operation Time (T)	Td (sec)
$T < 3$ min	0
3 min $\leqslant T < 6$ min	60
6 min $\leqslant T < 9$ min	120
$T \geqslant 9$ min	120

- Once deicing starts, it will not end within 60 seconds.

- When deicing operation ends, compressor will stop for 30 seconds,and 4-way valve remains at cooling mode operation for 10 seconds.

Time Graph for Normal Deicing Operation

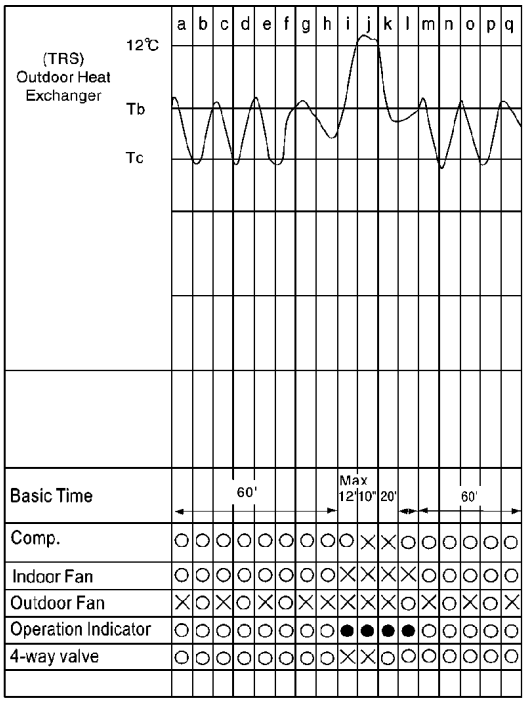


〈Operation status〉

a - b : Deicing confirmation
c - g : Deicing operation(time reset)
h - j, u - w : Warm booting operation
o - r : Deicing operation(TRS sense)

Time
● Blink
○ Operate
× Stop
▲ Stop or Operate

Time Graph for Overload Deicing



〈Operation status〉

a - i : Overload control
i - l : overload deicing
l - m : Warm booting control
m - r : Overload control

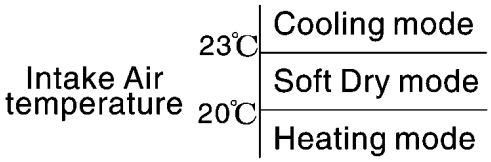
Time
● Blink
○ Operate
× Stop
▲ Stop or Operate

7.4. Automatic Mode Operation

For PC7CKE/PC9CKE/PC12CKE, Heating Mode Operation is not included.

Standard for determining operation mode

First Determination:



	Setting Temperature (standard)
Cooling mode	25℃
Soft Dry mode	22℃
Heating mode	21℃

Second Determination:

One hour after the above determination, the unit will operate according to the table below.

		Second Determination		
		Cooling	dry	heating
First Determination	Cooling	23℃ or above	———	23℃ below
	Dry	———	20℃ or above	20℃ below
	heating	25℃ or above	———	25℃ below

1. Indoor fan operates at super low speed for 20 seconds.
2. After judging indoor air temperature, the operation is determined and operation continued at the mode determined.
3. If indoor temperature is less than 16°C, heating operation will immediately operate.
4. After the operation mode has been determined, the mode does not change. However, Soft Dry mode operation includes cooling mode operation.
5. If automatic mode operation is started while the unit is operating, operation will continue.

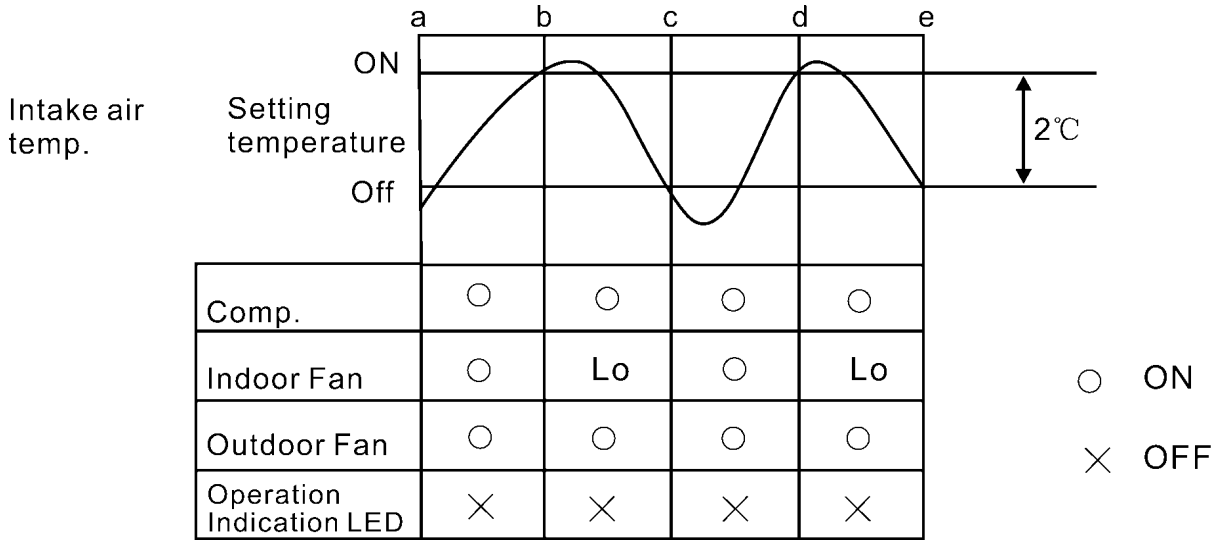
   If current operation is in cooling mode (including the cooling mode operation when is a part of Soft Dry mode operation) it will be maintained, and if current operation is not cooling mode, the appropriate operation mode is determined for 20 seconds at super slow fan speed. Then the selected mode will continue.
6. Room temperature adjustment

Higher	→	+2℃
Standard	→	±0℃
Lower	→	−2℃

7.5. Air Circulation Mode Operation (CS-PC7CKE / CS-PC9CKE / CS-PC12CKE)

1. An additional heater may make the warm air evenly covering each corner of the room.
2. When the temperature near the ceiling reaches the setting temperature, Air Circulation Mode Operation commences at low airflow volume. It stops when the temperature drops to 2°C below the setting temperature.
3. The vertical airflow direction louver will not swing.

Time graph for Air Circulation Mode Operation



7.6. Indoor Fan Motor Control

- Automatic fan speed control
  When automatic fan speed set,the available range for fan speed is from H to SLo
- Manual Fan Speed Control
- Basic fan speed can be manually adjusted (Lo, Med,Hi) by using the fan speed selection button.

Basic Fan Speed

Category		8	7	6	5	4	3	2	1
Cooling Soft dry	Auto fan speed		Hi	Me				SLo	
	Manual fan speed		Hi	Me	Lo				
Soft Dry	Auto fan speed					Lo-		SLo	
	Manual fan speed					Lo-		SLo	
Heating	Auto fan speed			Me	Lo		Lo-	SLo	SSLo
	Manual fan speed	SHi		Me	Lo		Lo-	SLo	SSLo

Rotating Speed Of Indoor Fan Motor

Category		8	7	6	5	4	3	2	1
Speed		SHi	Hi	Me	Lo	Lo-		SLo	SSLo
PA7CKE PA9CKE PA12CKE	Cooling/Soft dry		1240	1100	960			600	
	Soft Dry					930		600	
	Heating	1240		1100	960		900	600	400
PC7CKE PC9CKE PC12CKE	Cooling/Soft Dry		1170	1040	920			600	
	Soft Dry					890			

7.7. Airflow Direction Control

Airflow Direction Auto-control

- When set at airflow direction auto-control with remote control, the louver swings up and down as shown in the table below.
- The louver does not swing when the indoor fan stops during operation.
- When stop the unit with remote control,the discharge vent is closed with the louver.
- When temperature of indoor heat exchanger reaches 38°C during heating mode operation, if temperature falls to 35°C, airflow direction will change from the lower limit to horizontal.

※ The left and right airflow direction louver can be adjusted manually.

Airflow direction manual control

- When the airflow direction set button is pressed,the automatic airflow is released and the airflow direction louver moves up and down as shown in the table below. The louver can be stopped by releasing the button at the desired position.
- When the remote control is used to stop the operation,the discharge vent is closed with airflow direction louver.

Angles Of Airflow Direction Louver

Operating Mode		1	2	3	4	5
Cooling Soft dry	Manual	12°	17°	26°	32°	36°
	Auto	12°~36°				
Heating	Manual	9°	21°	29°	44°	55°
	Auto	Controlled By Piping Temperature:Upward limit 9°,Downward limit 55°				
Determining Operating Mode		9°				

Notes:

In heating mode operation

1. Airflow direction automatic control:

   The airflow direction is automatically adjusted to horizontal direction when the temperature of indoor heat exchanger is low and it will be automatically adjusted downward while the indoor temperature rises.

2. Airflow direction manual control:

   The airflow direction is automatically adjusted to horizontal direction temperature of indoor heat exchanger is low. While temperature of indoor heat exchanger rises, the airflow direction is automatically adjusted to the place set by the remote control.

In cooling or soft dry mode operation

If the compressor continues to operate for 60 minutes, and the louver direction is at No 4 or No 5,the fan speed is below Med, the intake air temperature is below 29°C and continues to change between ±2°C for 30 minutes, the louver direction will be at No 2 in order to prevent dew around the discharge vent.

8 Installation

8.1. Before Installation

WARNING

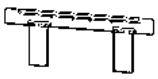
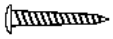
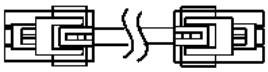
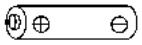
■ Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.

■ Use the specified cable(1.5mm^2) and connect tightly for indoor/outdoor connection.

■ Power supply connection to a circuit breaker for the permanent connection. Use an approved 10A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3 mm contact gap.

■ The unit must be earthed, or it will cause fire or electric shock.

Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	5	Drain elbow (only for models: CU-PA7CKE, PA9CKE, PA12CKE) 	1
2	Installation plate fixing screw 	6	6	Connecting Wire (Connector) (only for models: PA7CKE, PA9CKE, PA12CKE) 	1
3	Remote control 	1			
4	Battery 	2			

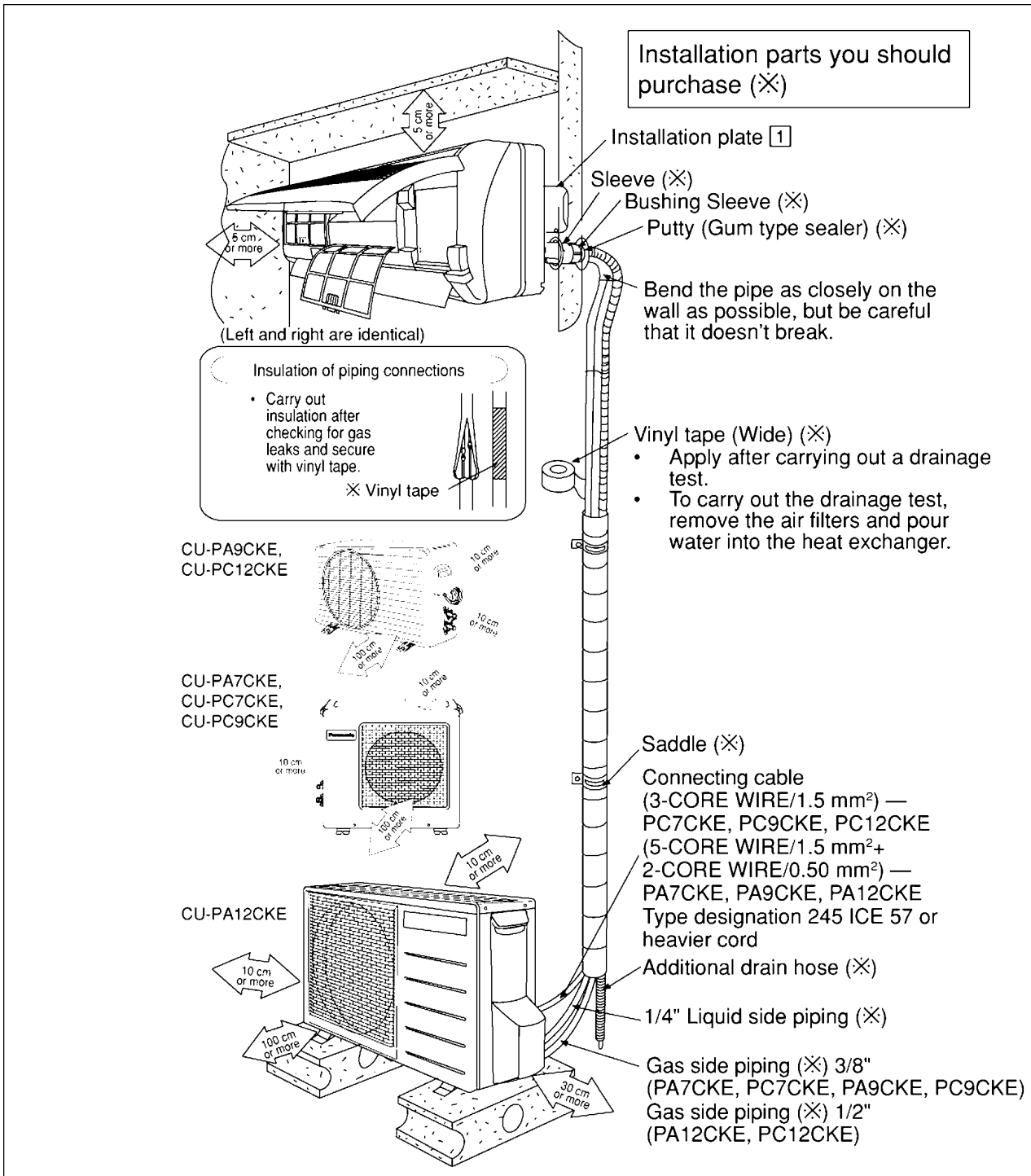
SELECT THE BEST LOCATION

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 2.3m.

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 common length, additional refrigerant should be added.



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

8.2. Outline of installation

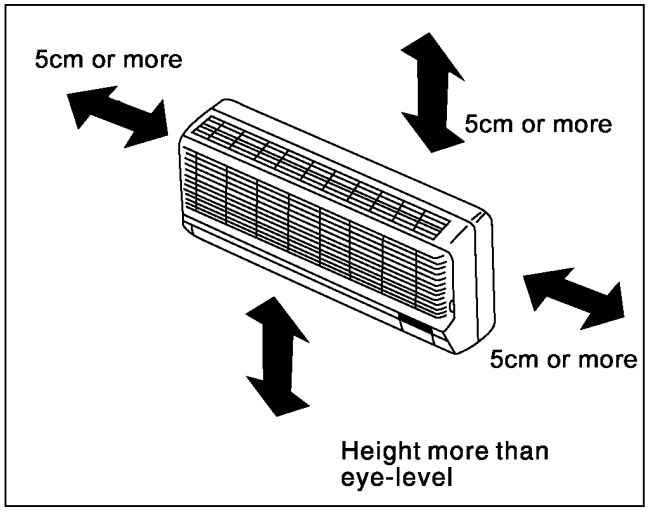
Installation works	Installation parts	Required tools
1. Installation of indoor, outdoor unit 1) Select best location.....P.40 2) Indoor unit installation.....P.41	● Installation plate ● 4 wooden screws ● 4 anchor bolts	● A level gauge ● Philips screw driver ● Electric drill hole-core drill (Ø70mm) ● Slide cutter or electrical pliers
2. **Piping and drainage of indoor unit** 1) Preparation of piping.....P.42 2) Connection of piping.....P.43 For the right piping.....P.43 For the left side piping.....P.44	● Pipes: Gas side.....3/8" Liquid side.....1/4" ● Insulated drain hose ● Insulation materials	● Flaring tools set Specified torque wrenches 18N.m.....Liquid side piping 42N.m.....Gas side piping Spanner.....Half union
3. **In case of Embedded Piping** For the embedded piping.....P.46	● Pipes: Gas side.....3/8" Liquid side.....1/4" ● Insulated drain hose ● Insulation materials	● Flaring tools set Specified torque wrenches 18N.m.....Liquid side piping 42N.m.....Gas side piping Spanner.....Half union
4. **Connecting piping and cable to the outdoor unit** 1) Connecting the piping to outdoor unit.....P.47 2) Connecting the cable to the outdoor unit.....P.47	● Additional drain hose (Outer diameter.....1.55mm) ● Connecting cable Locally approved cable	● Specified torque wrenches 18N.m.....Liquid side 42N.m.....Gas side
5. **Checking the drainage and connecting the cable to indoor unit** 1) Checking the drainage.....P.48 2) Connecting the cable to the indoor unit.....P.49	● Connecting cable ● Locally approved cable	● A glass of water ● Phillips screw driver
6. **Test Running** 1) Connect the power supply.....P.50 2) Evaluation of the performance.....P.50		● Circuit breaker or time delay fuse (consult an electrician) ● Operating instructions ● Thermometer

8.3. Installation of indoor, outdoor unit

8.3.1. Select best location

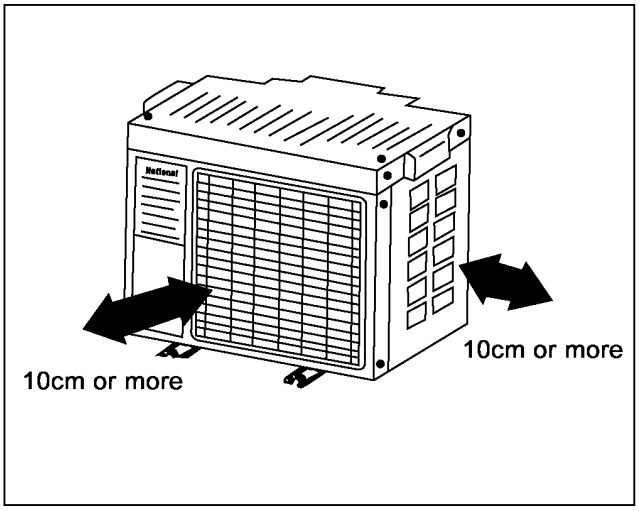
8.3.1.1. Indoor unit

- There should not be any heat source of steam near the unit.
- There should not be any obstacles to prevent the air circulation.
- A place where air circulation will be good.
- A place where drainage can be easily obtained.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the doorway.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.
- From the floor, the height should be more than eye-level.



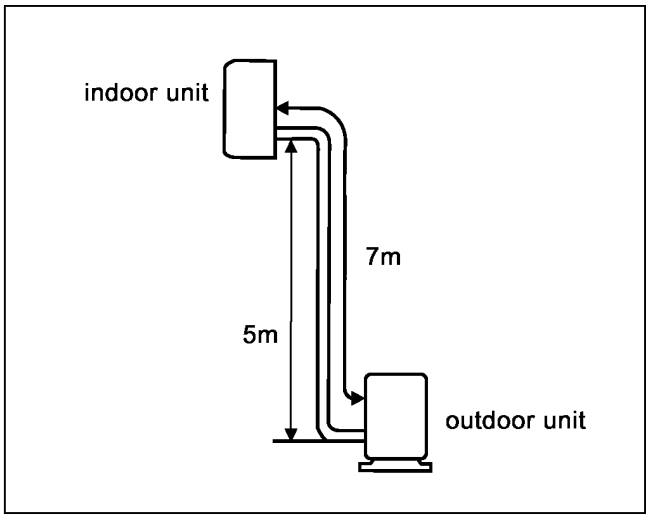
8.3.1.2. Outdoor unit

- If an awning is built over the unit to prevent direct sunlight or rain exposure, be careful that heat radiation from the condenser is not restricted.
- There should not be any animals or plants which could be affected by hot air discharged.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence, or other obstacles.



8.3.1.3. Piping length and elevation

Model	Piping size		Max piping	Max
	Gas	Liquid	length(m)	elevation(m)
PA7CKE/PC7CKE PA9CKE/PC9CKE	3/8”	1/4”	7	5
PA12CKE/PC12CKE	1/2”	1/4”	7	5



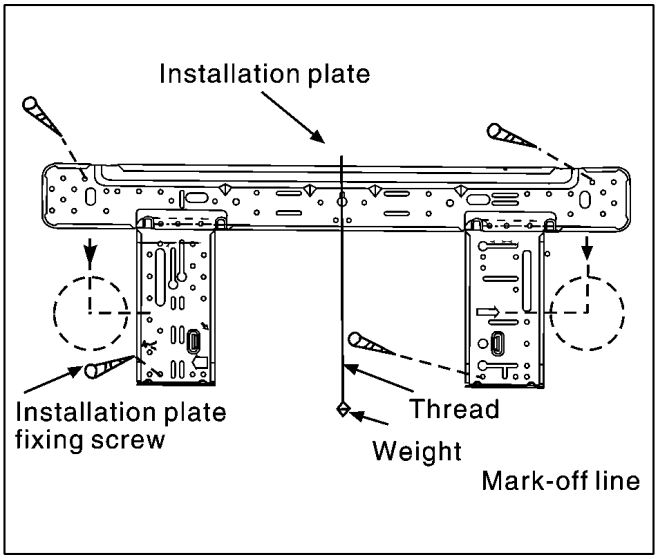
8.3.2. Indoor unit installation

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

8.3.2.1. Mount the installation plate on the wall with four installation plate fixing screws.

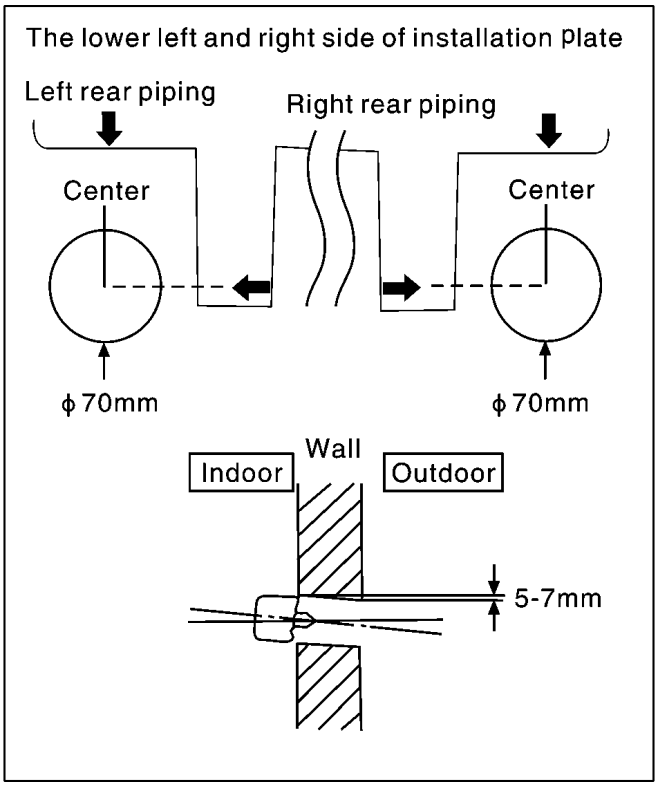
(If mounting the unit on the concrete wall, consider using anchor bolts.)

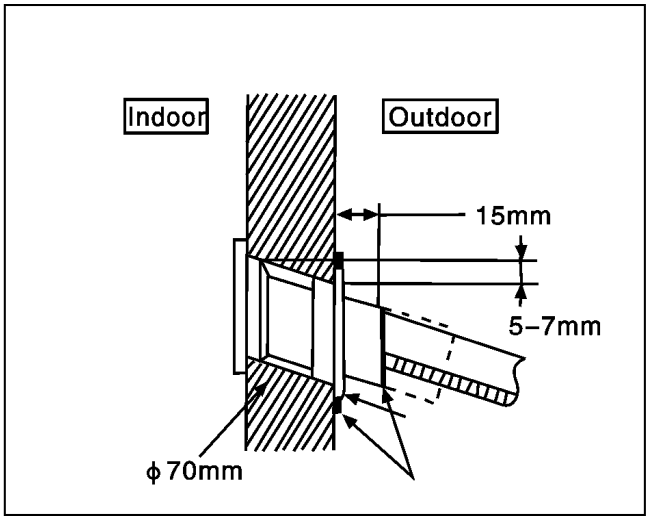
- Always mount the installation plate horizontally by aligning the mark-off line with the thread and use a level gauge.



8.3.2.2. Drill the piping hole with Ø70mm hole-core drill.

- Line according to the arrows marked on the lower left and right side of the installation plate.





To drill a hole in the wall and install a sleeve for tube ass'y

- Drill a Ø70mm hole sloping downward toward the outside of the wall.
- Insert the sleeve for tube ass'y through the hole.
- Fix the bushing to the sleeve.
- Extrude 15mm of the sleeve then cut.

Caution

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

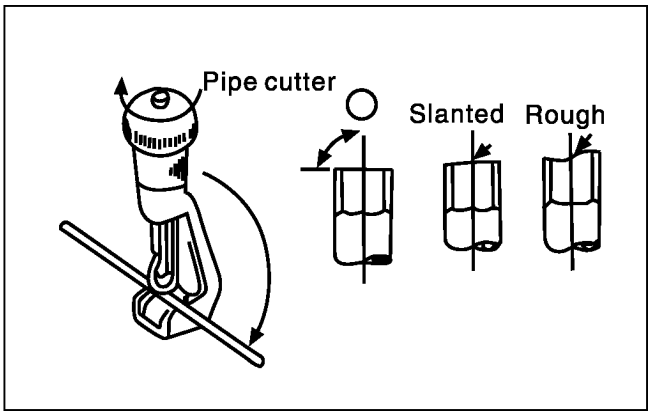
- Finish by sealing the sleeve with putty or caulking compound at the final stage.

8.4. Piping and drainage of indoor unit

8.4.1. Preparation of piping

8.4.1.1. Cut the pipes and the cable

- Use the accessory piping kit or pipes purchased locally.
- Measure the distance between the indoor and the outdoor unit.
- Cut the pipes a little longer than measured distance.
- Cut the cable a 1.5m longer than the pipe length.



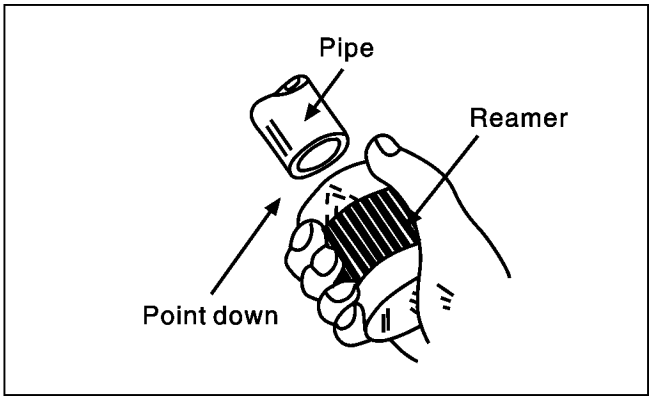
Model	Pipe size	
	Gas side	Liquid side
PA7CKE/PC7CKE PA9CKE/PC9CKE	3/8"	1/4"
PA12CKE/PC12CKE	1/2"	1/4"

8.4.1.2. Remove burrs

- Remove burrs from cut edges of pipes.
- Turn the pipe end down to avoid the metal powder entering the pipe.

Caution

If burrs are not removed, they may cause a gas leakage



8.4.1.3. Flaring the pipe

- Insert the flare nuts, mounted on the connection ports of both indoor and outdoor unit, onto the copper pipes.
- Fit the copper pipe end into the bar of flare tool about 0.5-1.5mm higher. (see Fig.A)
- Flare the pipe ends.

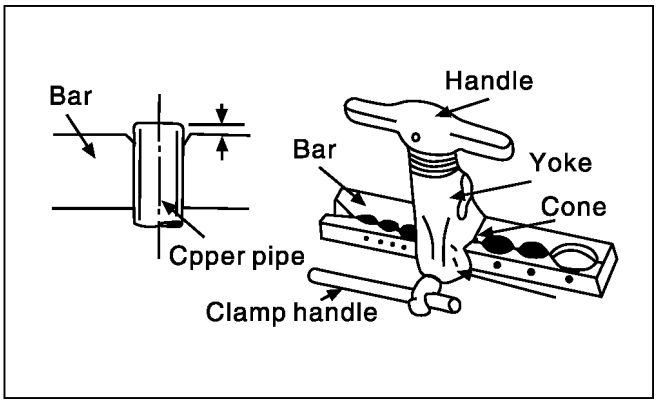
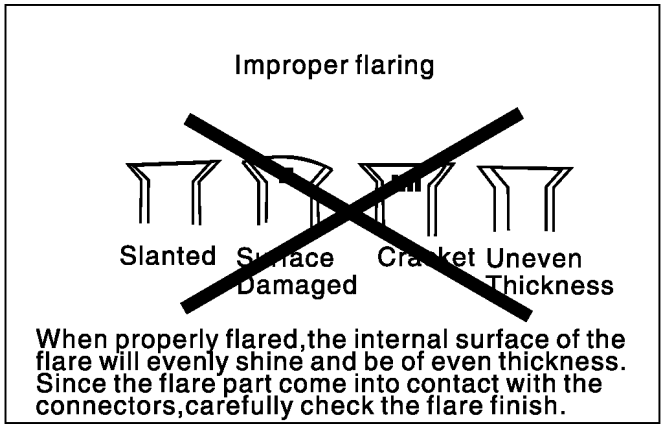


Fig.A

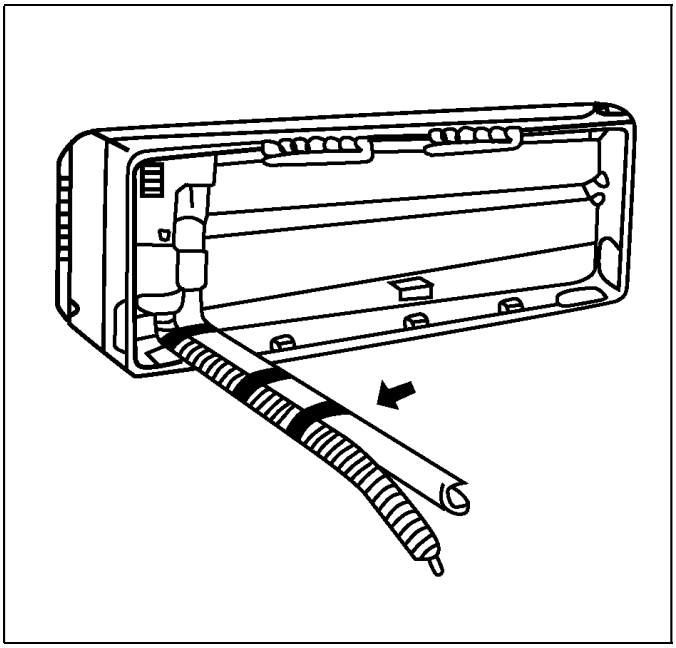
8.4.1.4. Tape the flaring portion to protect it from dust or damage.



8.4.2. Connection of piping

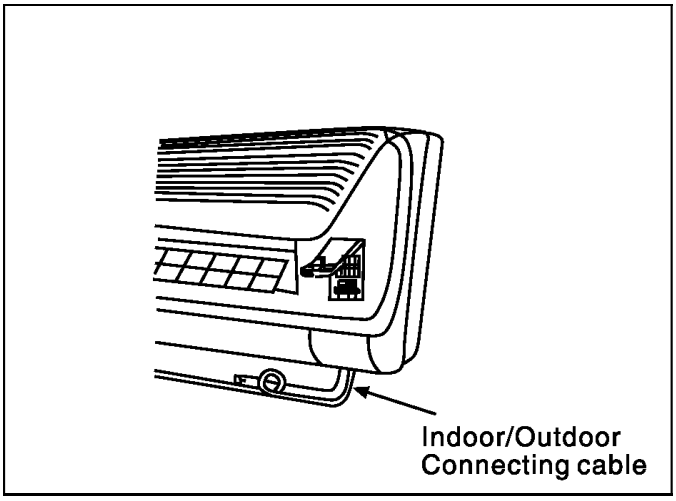
Remove the indoor piping

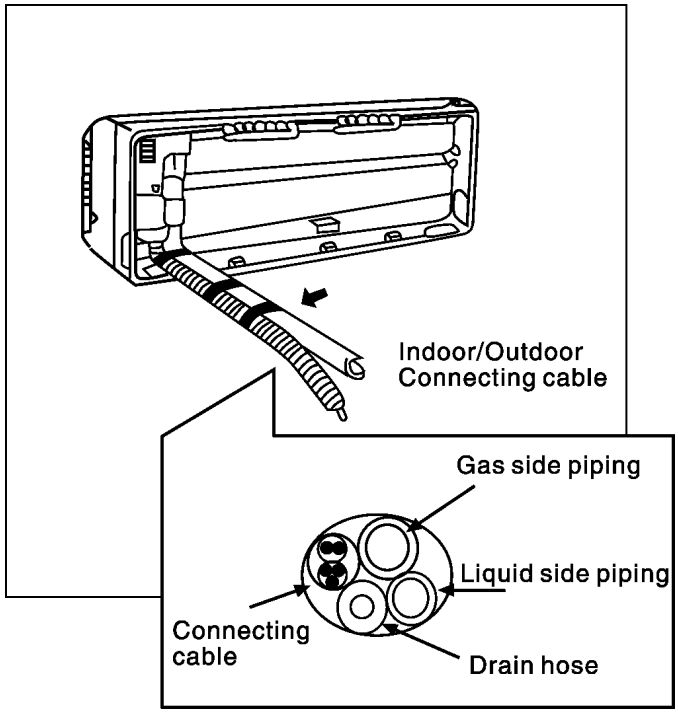
- Pull the tube out of chassis.



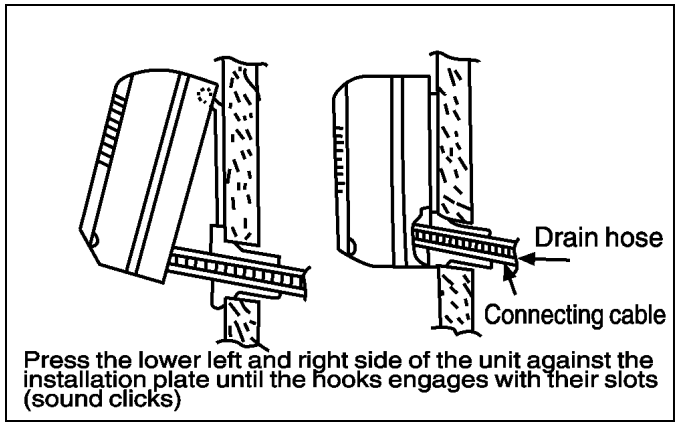
For the right piping

1. Pull the tube out of chassis.
2. Insert the tube and drain hose into the hole.
3. Insert the connecting cable into the indoor unit through the hole.
   - Do not connect the unit to power supply.
   - Make a small loop with the cable for easy connection later.
4. Tape the tube, drain hose and cable.





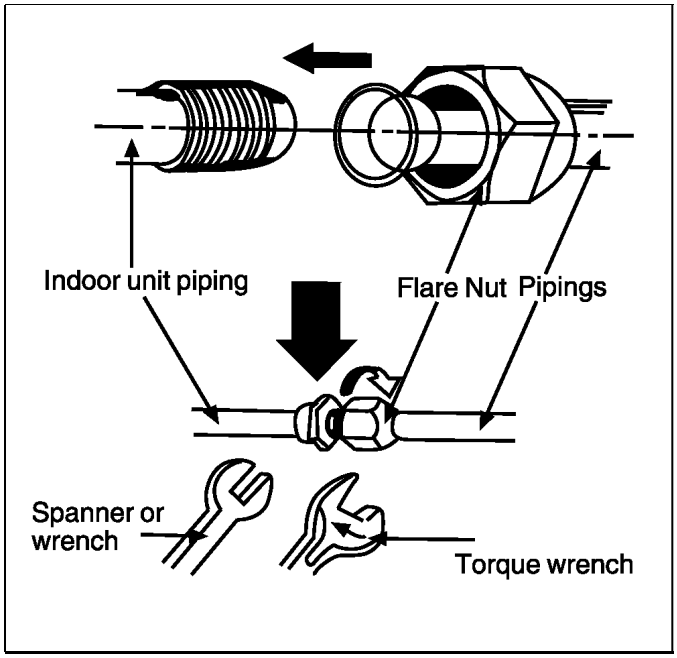
5. Indoor unit installation
   - Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.)
   - Ensure the hooks are properly seated on the installation plate by moving it left and right.



6. Connecting the piping to the indoor unit
   - Align the center of the piping and sufficiently tighten the flare nut with fingers.
   - Finally, tighten the flare nut with torque wrench until the wrench clicks.

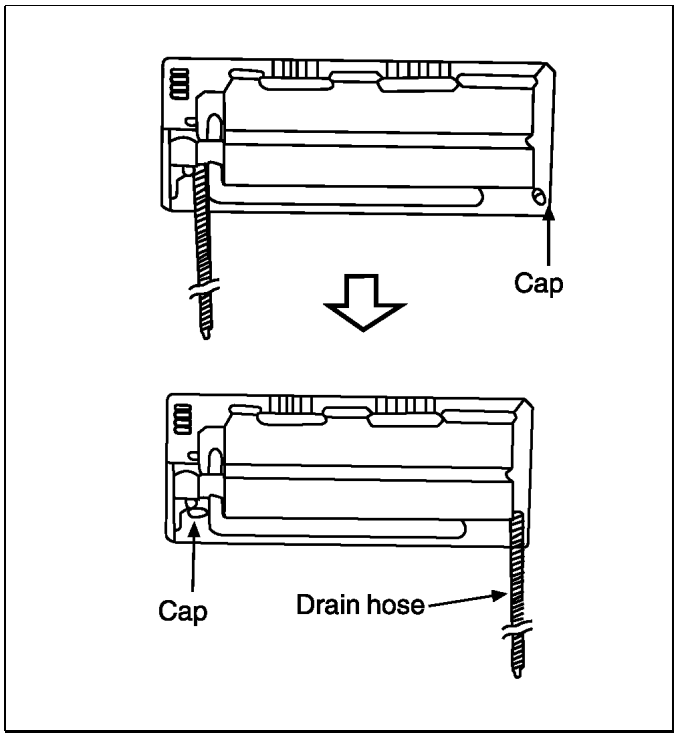
     When tightening the flare nut with torque wrench, ensure the direction for tightening follows arrow on the wrench.

Model	Piping size	Torque
PA7CKE/PC7CKE PA9CKE/PC9CKE PA12CKE/PC12CKE	Liquid side 1/4"	18N.m
PA7CKE/PC7CKE PA9CKE/PC9CKE	Gas side 3/8"	42N.m
PA12CKE/PC12CKE	Gas side 1/2"	55N.m

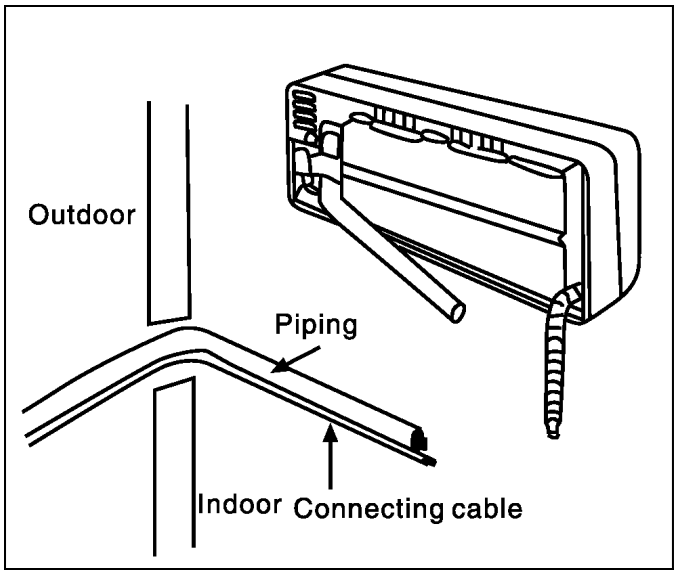


For the left side piping

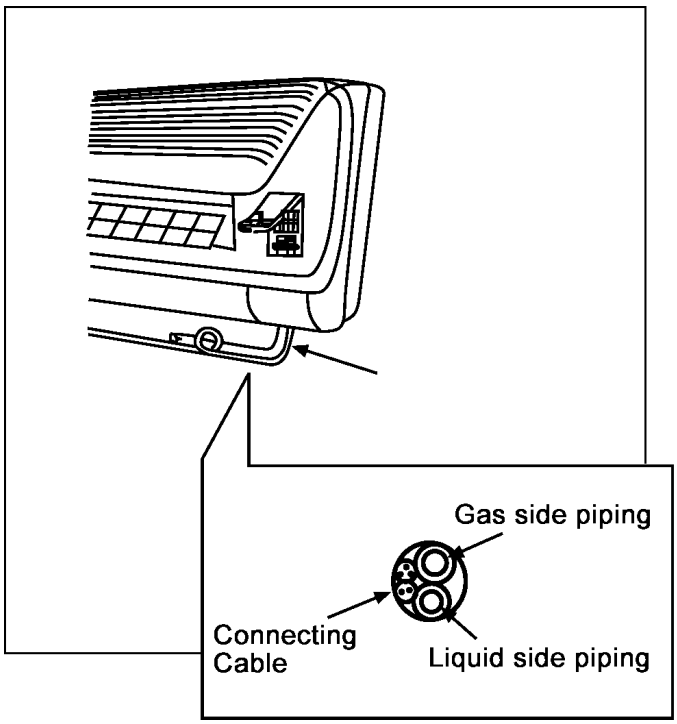
1. Route the indoor tubing with the drain hose to the hole.
   - Pull out the drain hose.
   - Exchange the hose and cap.



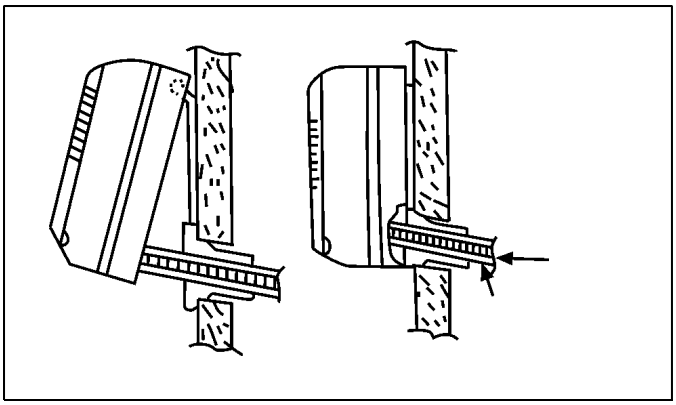
2. Insert the piping and connecting cable to indoor side through the hole.



3. Insert the connecting cable into the indoor unit
   - Do not connect the cable to the indoor unit.
   - Make a small loop with the cable for easy connection.



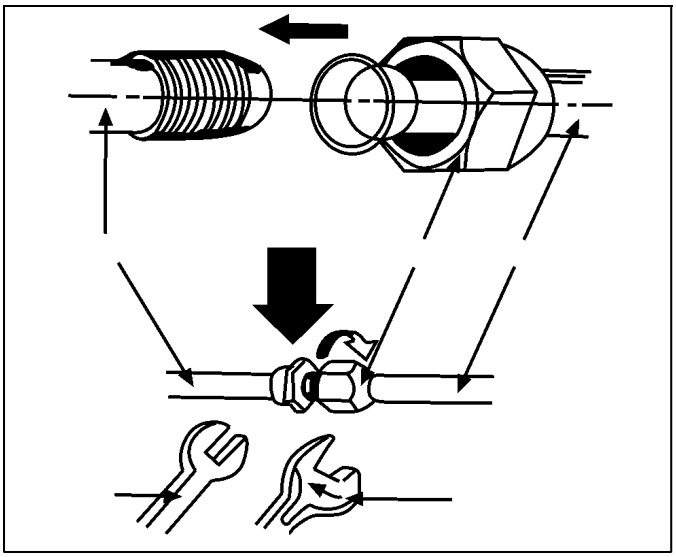
4. Indoor unit installation
   - Hook the indoor unit onto the upper portion of installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.)
   - Ensure the hooks are properly seated on the installation plate by moving it left and right.



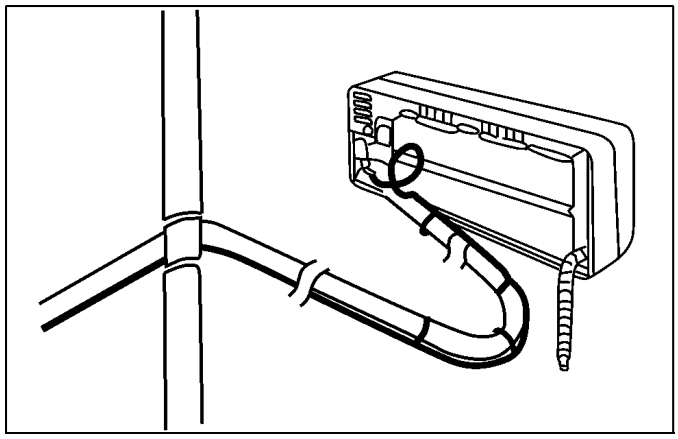
5. Connecting the piping to the indoor unit
   - Align the center of the piping and sufficiently tighten the flare nut with fingers.
   - Finally, tighten the flare nut with torque wrench until the wrench clicks.

     When tightening the flare nut with torque wrench, ensure the direction for tightening follows arrow on the wrench.

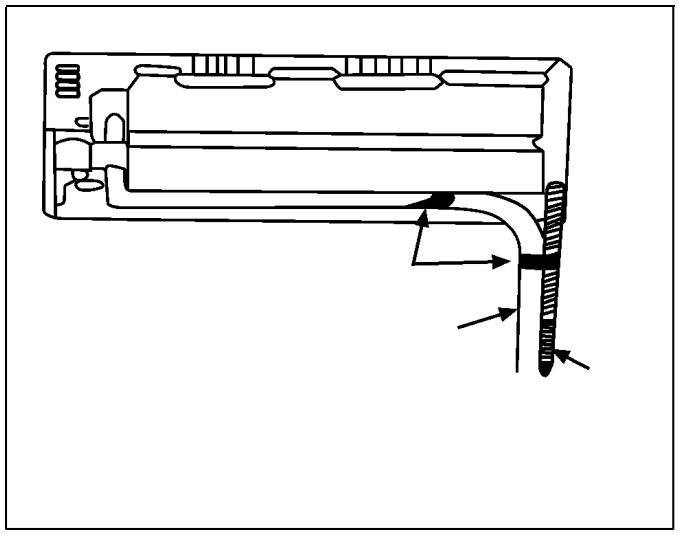
Model	Piping size	Torque
PA7CKE/PC7CKE PA9CKE/PC9CKE PA12CKE/PC12CKE	Liquid side 1/4"	18N.m
PA7CKE/PC7CKE PA9CKE/PC9CKE	Gas side 3/8"	42N.m
PA12CKE/PC12CKE	Gas side 1/2"	55N.m



6. Set the piping and the connecting cable to the back of chassis with the clamping cover.



7. Tape the piping, drain hose and connecting cable.



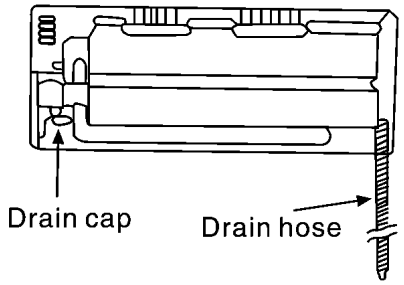
8.5. In case of embedded Piping

For the embedded piping

Follow the same procedure for left rear and left piping.

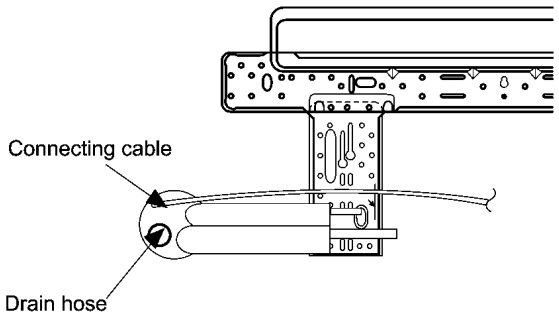
8.5.1. Replace the drain hose

Replace the drain hose and drain cap.
Figure from the back of the indoor unit after installation.
(For the left and left rear piping)



8.5.2. Bend the embedded piping

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



Adjust the piping slightly downwards.

8.5.3. Install the indoor unit.

8.5.4. Cut and flaring the embedded piping

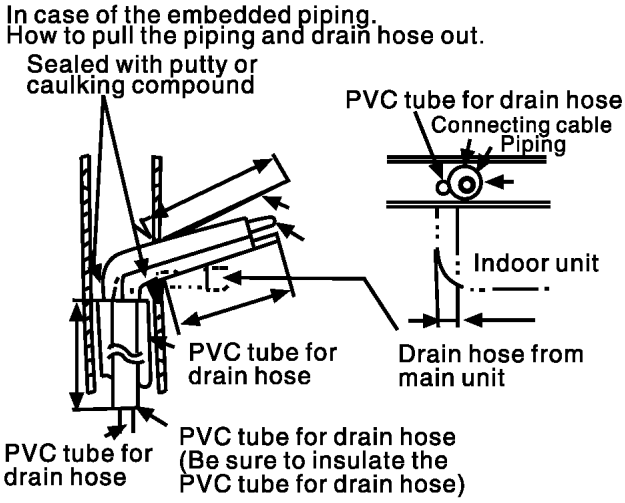
- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
- Refer to the section “cut and flaring the piping” in the directions for the outdoor unit. (see P.42)

8.5.5. Pull the connecting cable into the indoor unit.

8.5.6. Connecting the piping

- Refer to the section "connecting the piping" in the directions for the indoor unit.

  (Connecting the piping to the outdoor unit and checking the gas leakage.)



8.5.7. Connecting the cable to the indoor unit

- The cable can be connected without removing the front grille.

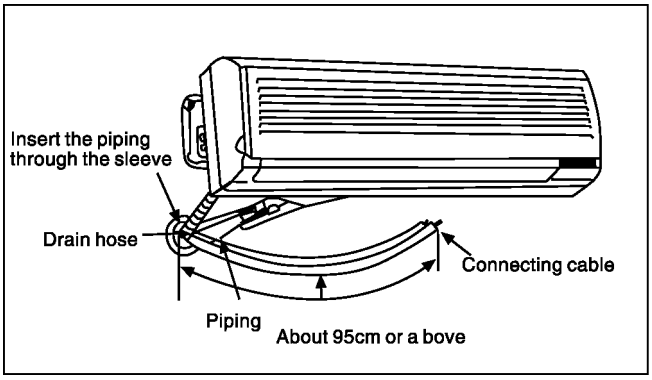


Fig.a

8.5.8. Install the indoor unit fixly. [REFERENCE Fig.a, Fig.b]

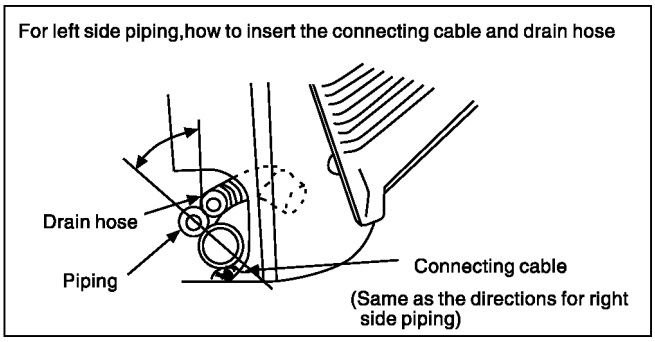


Fig.b

8.6. Connecting piping and the cable to outdoor unit

8.6.1. Connecting the piping to outdoor unit

1. Align the centre of the piping and sufficiently tighten the flare nut with fingers.
2. Finally tighten the flare nut with torque wrench until the wrench clicks.

   ● When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow of the wrench.

Model	Piping size	Torque
PA7CKE/PC7CKE PA9CKE/PC9CKE PA12CKE/PC12CKE	Liquid side 1/4"	18N.m
PA7CKE/PC7CKE PA9CKE/PC9CKE	Gas side 3/8"	42N.m
PA12CKE/PC12CKE	Gas side 1/2"	55N.m

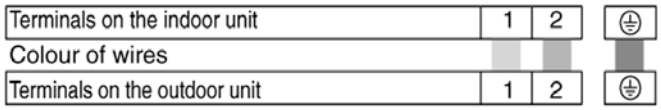
Caution

When connecting the piping,always use a torque wrench.Other tools may cause damage to the flare nut because of improper force.

8.6.2. Connecting the cable to the outdoor unit

1. Remove the control board cover or top plate of the outdoor unit (for PA7CKE, PC7CKE, PC9CKE only) from the unit by loosening the screw.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 (PC7CKE, PC9CKE, PC12CKE) or 5 (PA7CKE, PA9CKE, PA12CKE) x 1.5 mm ^{2} flexible cord, type designation 245 IEC 57 or heavier cord. For PA7CKE, PA9CKE, PA12CKE, the attached wire [6] with two connectors should be applied.

CS/CU-PC7CKE, PC9CKE, PC12CKE



CS/CU-PA7CKE, PA9CKE, PA12CKE

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

8.7. Checking the drainage and connecting the cable to indoor unit

8.7.1. Checking the drainage

1. Remove the front grille from the cabinet

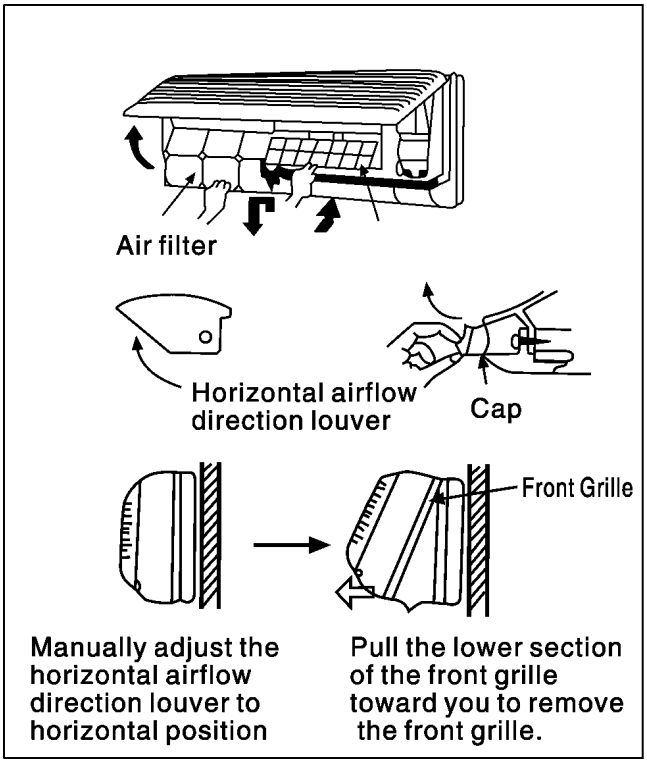
   When removing the front grille for maintenance purposes, etc, carry out by the following procedures.

   a. Set the vertical airflow direction louver (1) to the horizontal position.

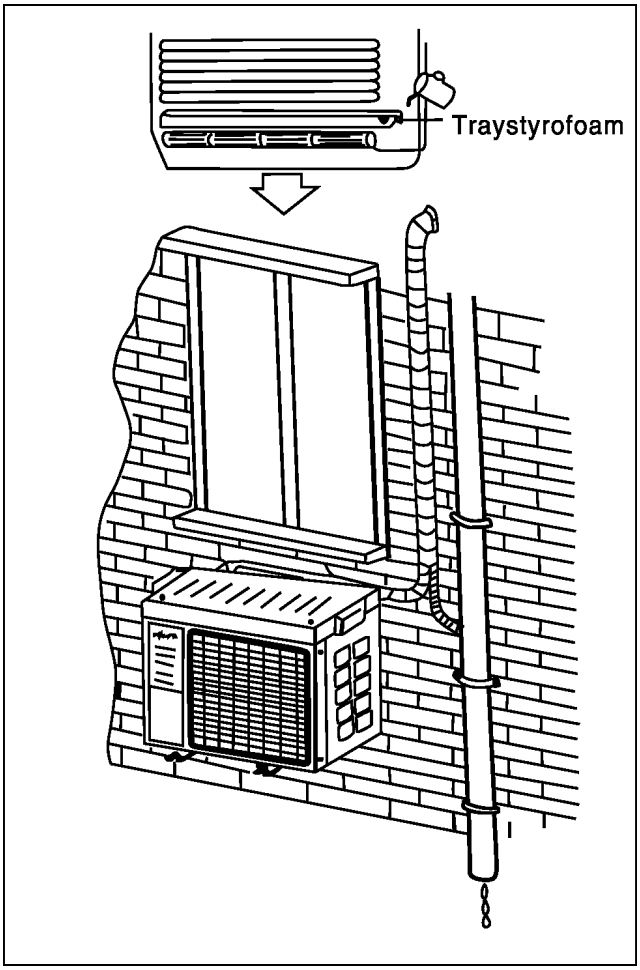
   b. Remove the two caps on the front grille as shown in the illustration at right,and then remove the two mounting screws.

   c. Pull the lower section of the front grille toward you to remove the front grille.

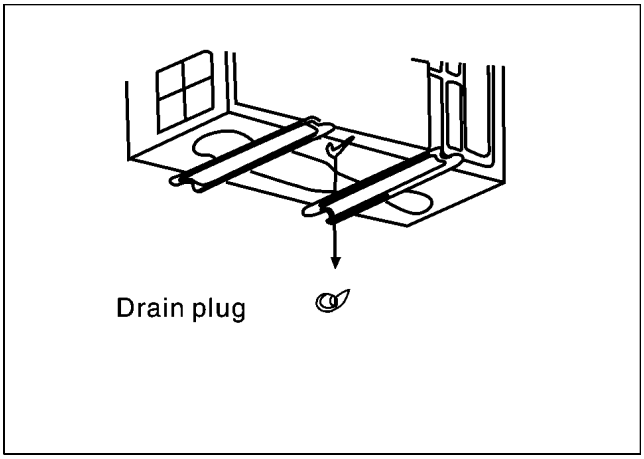
   When reinstalling the front grille,first set the vertical airflow direction louver to the horizontal position, and then carry out by steps 3 and 2 in that order. At this time check to sure that the fixing tabs on the top inside edge of the front grille are securely inserted into the respective slots.



2. Checking the drainage
   - Pour a glass of water into the drain traystyroform.
   - Ensure water flows out from drain hose of indoor unit.



3. Drainage control for outdoor unit (For CS-PA7CKE / CS-PA9CKE / CS-PA12CKE only)
   - If a drainage plug is applied,the outdoor unit should at least be 3 centimeters high from the floor.
   - If is better not to use the drainage plug if the temperature is lower than 0°C, since icing of the condensed water may block the water flow.



8.7.2. Connecting 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 (PC7CKE, PC9CKE, PC12CKE) or 5 (PA7CKE, PA9CKE, PA12CKE) x 1.5 mm ^{2} flexible cord, type designation 245 IEC 57 or heavier cord. For PA7CKE, PA9CKE, PA12CKE, the attached wire [6] with two connectors should be applied.
   - Ensure the color 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.

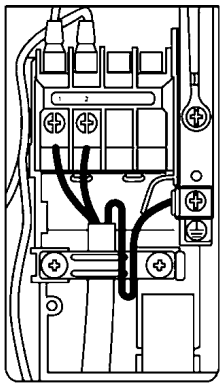
PC7CKE, PC9CKE, PC12CKE

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

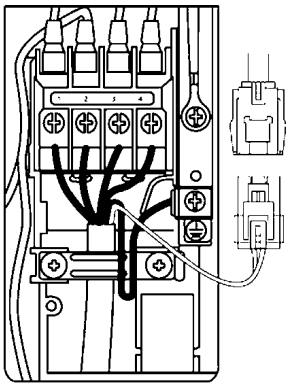
PA7CKE, PA9CKE, PA12CKE

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

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



PC7CKE, PC9CKE, PC12CKE



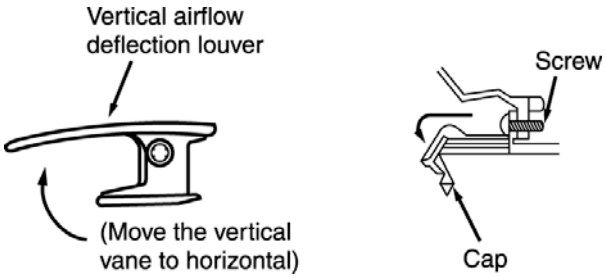
PA7CKE, PA9CKE, PA12CKE

HOW TO TAKE OUT FRONT GRILLE

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

1. Set the vertical airflow direction louver to the horizontal position.
2. Slide down the two caps on the front grille as shown in the illustration at right, and then remove the two mounting screws.
3. 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 louvre 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.

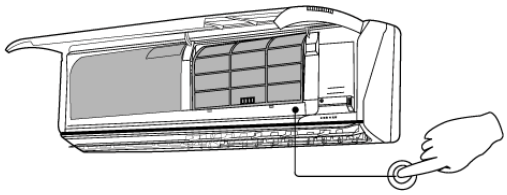
1. AUTO OPERATION MODE

   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. to below 10 sec.

   A "pep" 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 pressing the "AUTO" Switch continuously for 10 sec. and above. A "pep", "pep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" changed over of remote control receiving sound.

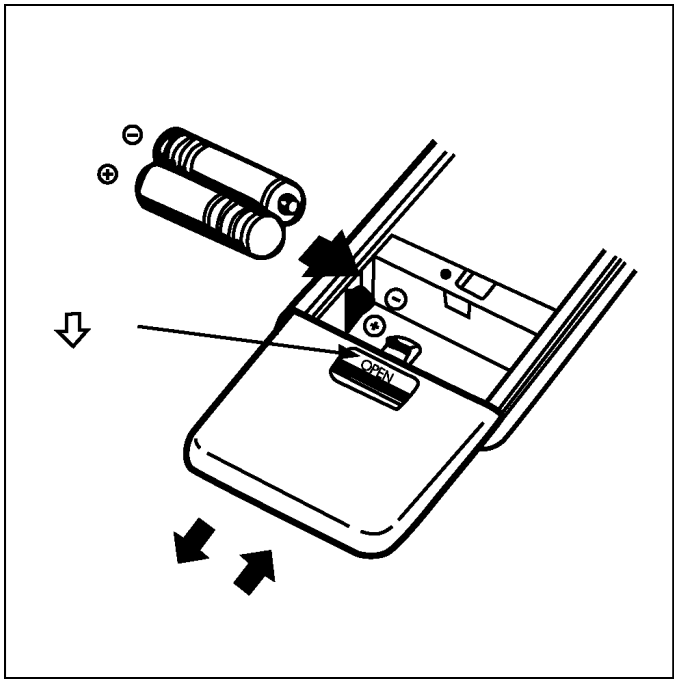


8.8. Test Running

8.8.1. Connect the power supply

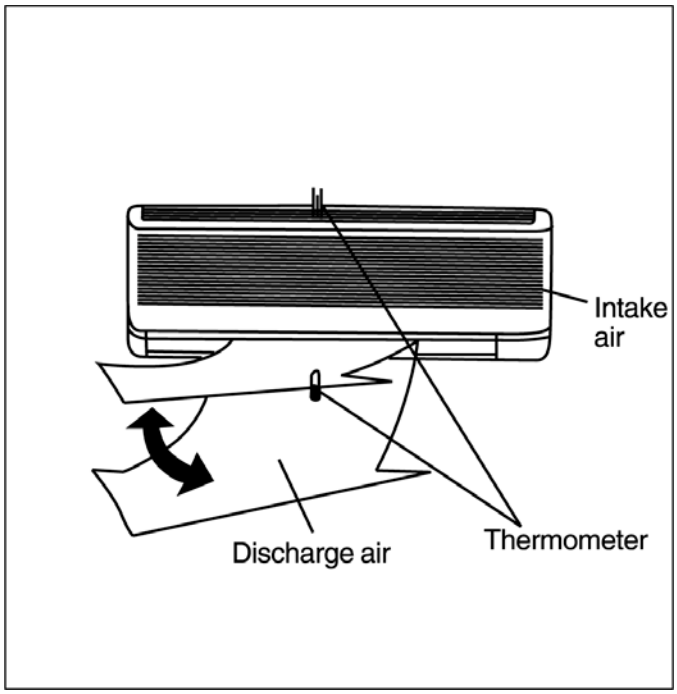
1. Connect the power supply cord to independent power supply.
   - Circuit breaker is necessary.
2. Prepare the remote control
   - Insert two batteries
   - Remove the cover from the back of the remote control.

   Insert two batteries
   - Be sure that the (+) and (-) directions are correct.
   - Be sure that both batteries are new.
   - Re-attach the cover.
   - Slide the cover back into position.
3. Operate the unit at cooling mode operation for 15 minutes or more.



8.8.2. Evaluation of the performance

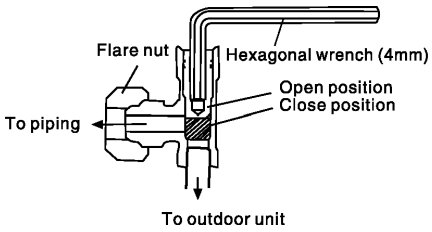
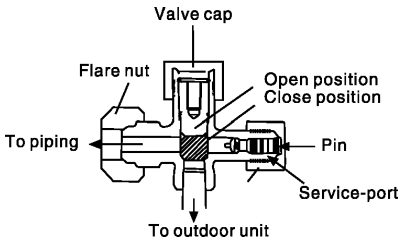
1. Operate the air conditioner for 15 minutes.
2. Measure the temperature of the intake and discharge air.
3. Ensure the difference of temperature between the intake and discharge air is more than 8°C, in cooling operation, or more than 14°C in heating operation.



CAUTION

Connecting cable between the indoor and outdoor unit shall be approved cable and the size of the conductor shall be 1.5mm^2.

9 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)
Air purging (Installation and Re-installation)	Open (Counter-clockwise)	Closed (clockwise)	Open (Push-pin)
Operation	Open (Counter-clockwise)	Open (With valve cap)	Closed (With cap)
Pumping down (transfering)	Closed (clockwise)	Open (counter-clockwise)	Open (Connected manifold gauge)
Evacuation (Servicing)	Open	Open	Open With vacuum pump
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)

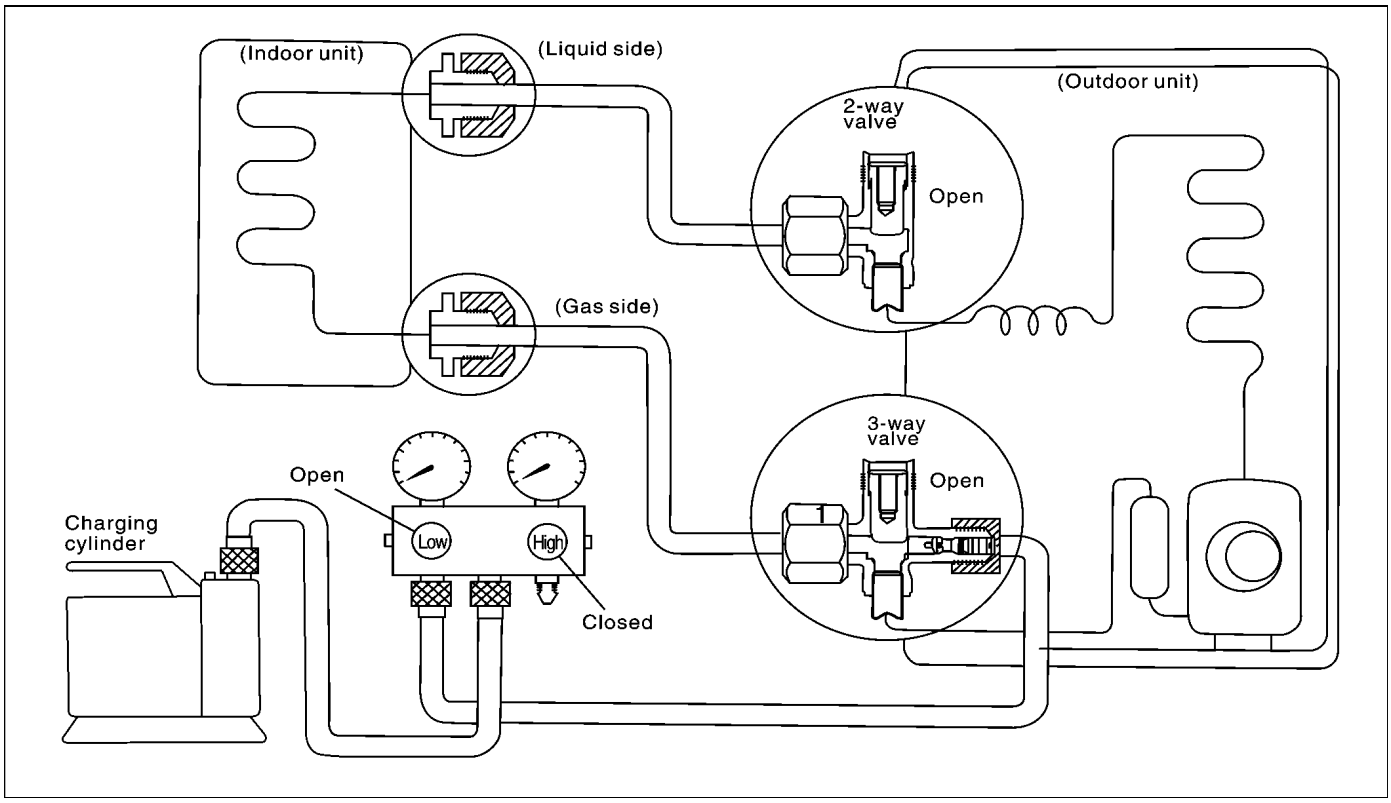
9.1. Evacuation of Installation

When installing an air conditioner, be sure to evacuate the air inside the indoor unit and pipes in the following procedutre.

Required tools:

hexagonal wrench, adjustable wrench, torque wrench, wrench to hold the joints, gas leak detector, charging set and vaccuum pump

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration piping, it will affect the compressor, reduce to 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. **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 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.**
4. **Close the valve of the Low side of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS REFRIGERANT 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 both the 3-way valve and the 2-way valve and at a torque of 18 N'm with a torque wrench.**
7. **Remove the valve caps of both the 3-way valves.**

   Position both of the valves to *open* using a hexagonal wrench (4 mm).
8. **Mount valve caps onto both of the 3-way valve and the 2-way valve.**

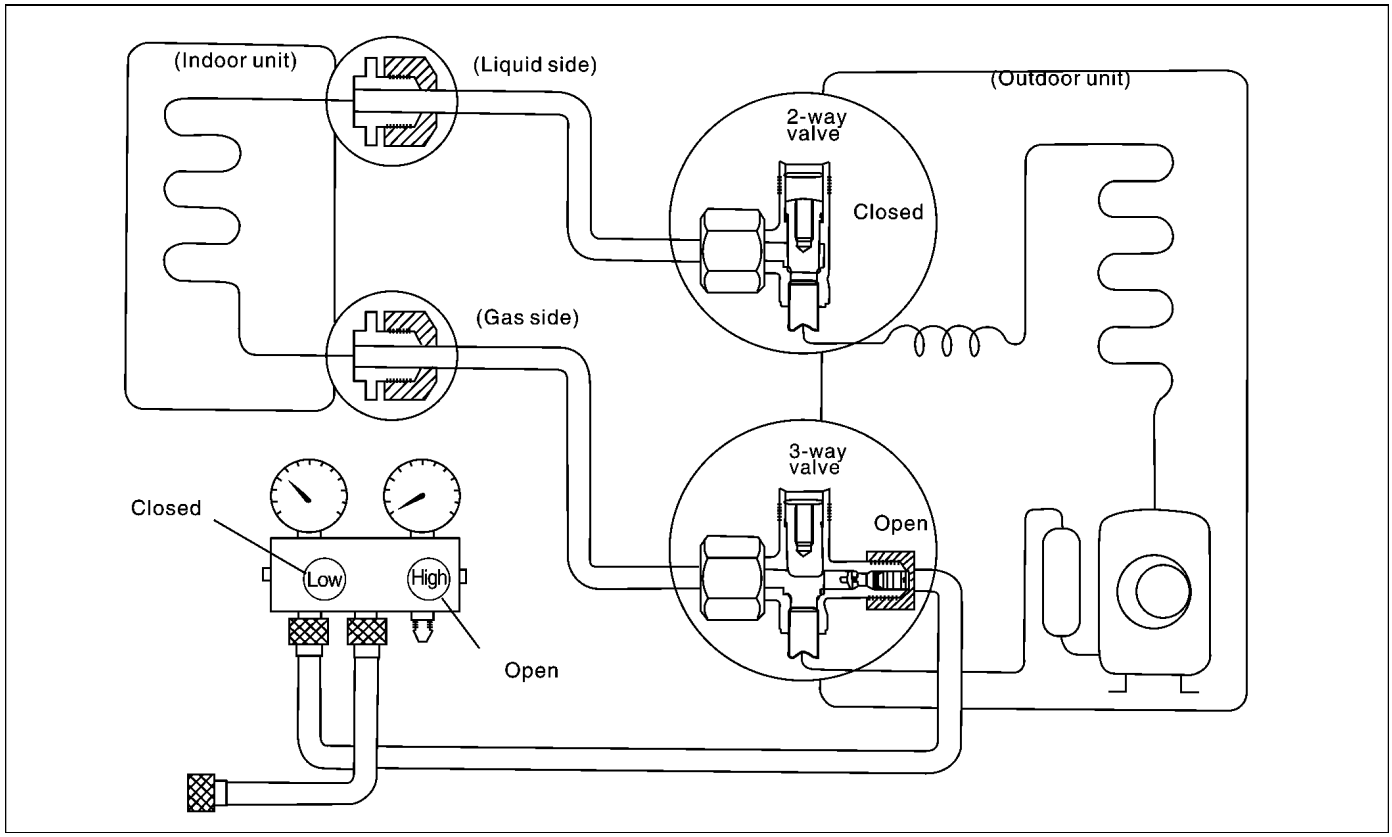
Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg (0MPa) to -76 cmHg (-0.1MPa) 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.

9.2. Pumping down

(For Re-installation)

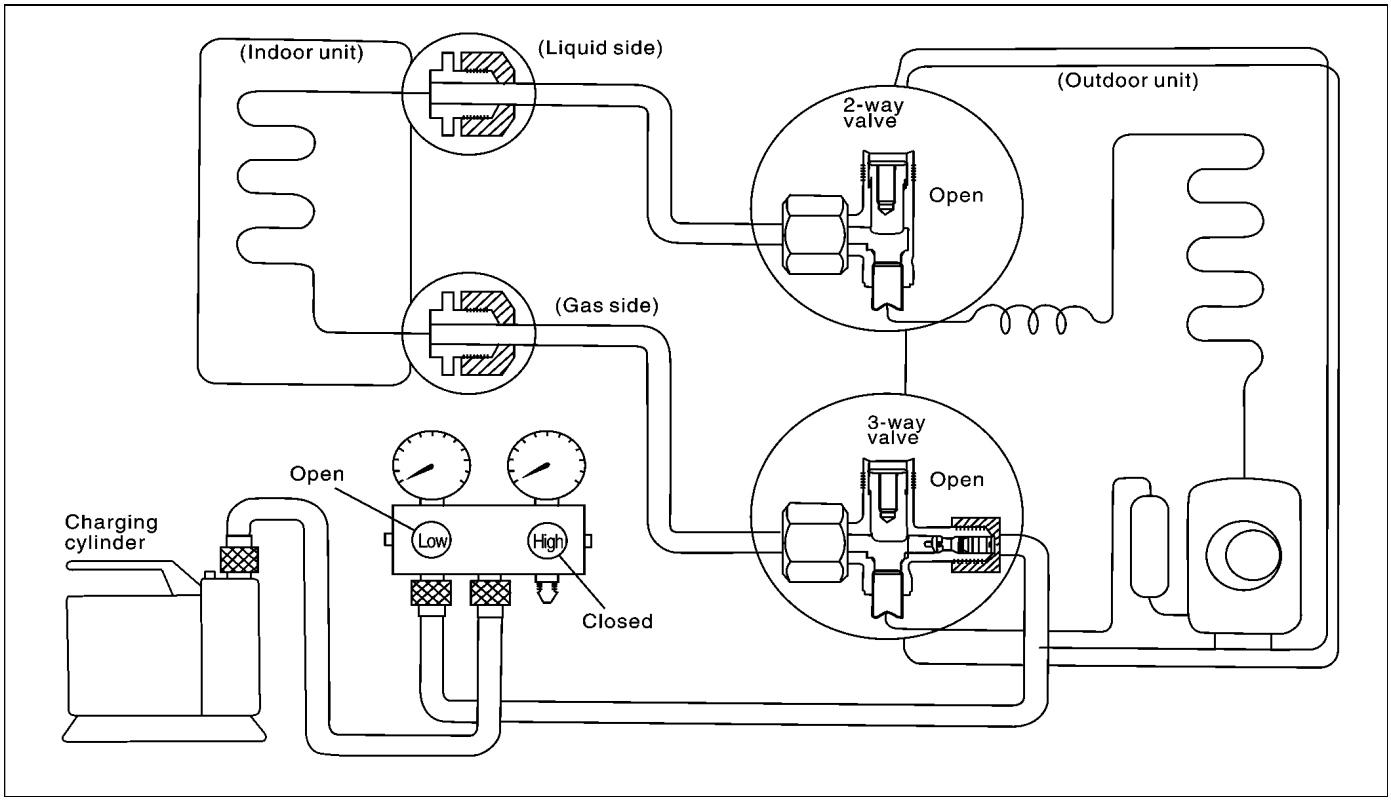


Procedure

1. Confirm that both 2-way and 3-way valves are set to open positions.
   - Remove the valve stem caps and confirm that the valve stems are in the open position.
   - Be sure using a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10-15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valves.
   - Connect the charge hose with the push pin to the service port.
4. Air purging of the charge hose
   - Open the low-pressure valve or 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 2 kg/cm^{2}G (0.1Mpa).
   - If the unit cannot be operate at the cooling mode operation (weather is rather cool), press the **FORCE OPERATION** switch on the indoor unit, so that the unit can be operated.
7. Immediately set 3-way valve to the closed position.
   - Do this quick so that the gauge ends up indicating 1 to 3 kg/cm^{2}G. (0.1 to 0.3 Mpa).
8. Disconnect the charge set, and mount the 2-way and 3-way valve stem´s nuts and service port cap.
   - Use torque wrench to tighten the service port cap to a torque 1.8kg.m (18N.m).
   - Be sure to check for gas leakage.

9.3. Re-air purging

(Re-installation)



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 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.**
4. **Close the valve of both Low side of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.**

   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**

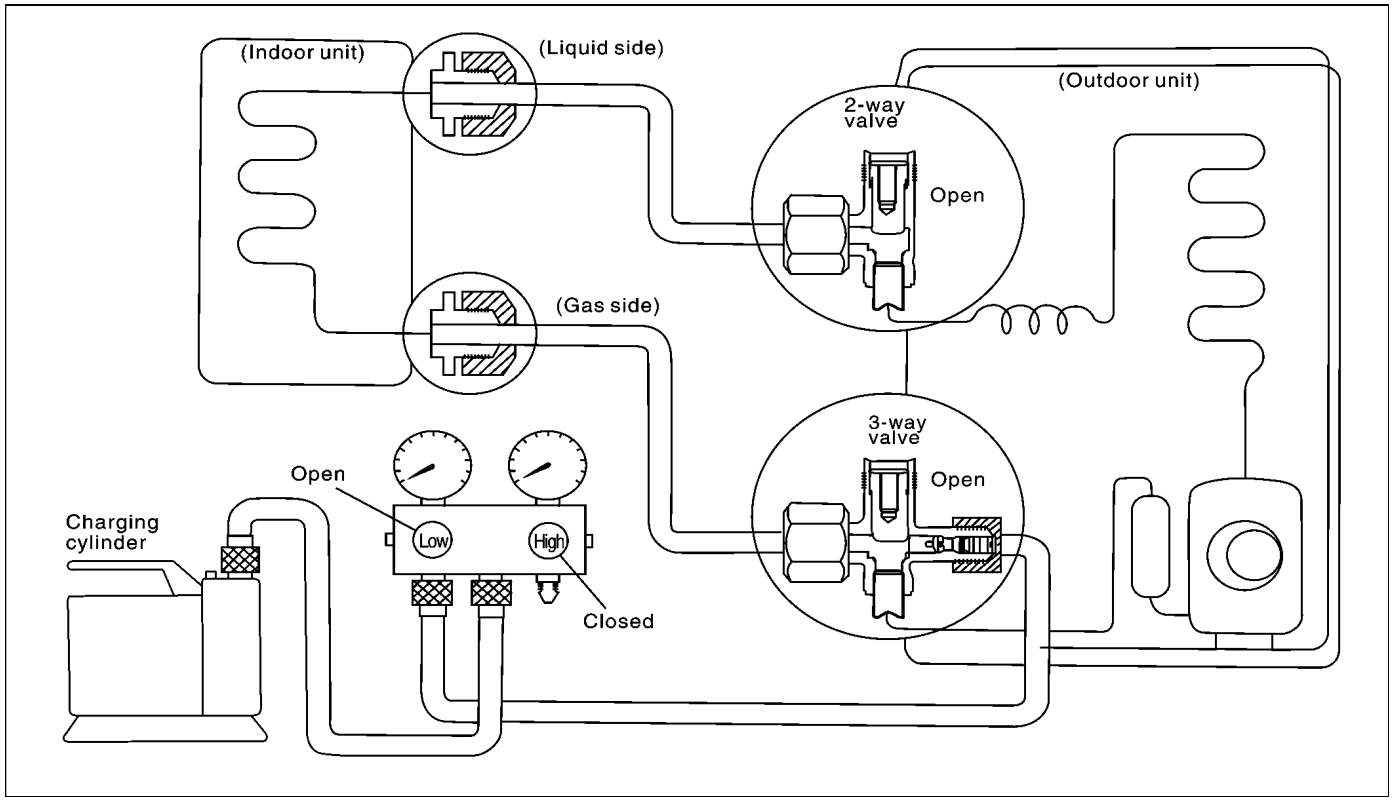
Caution

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

6. **Tighten the service port caps of both the 3-way valve and 2-way valve at a torque of 18 N'm with a torque wrench.**
7. **Remove the valve caps of both the valves. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
8. **Mount valve caps onto both the valves.**

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

(Gas leakage)

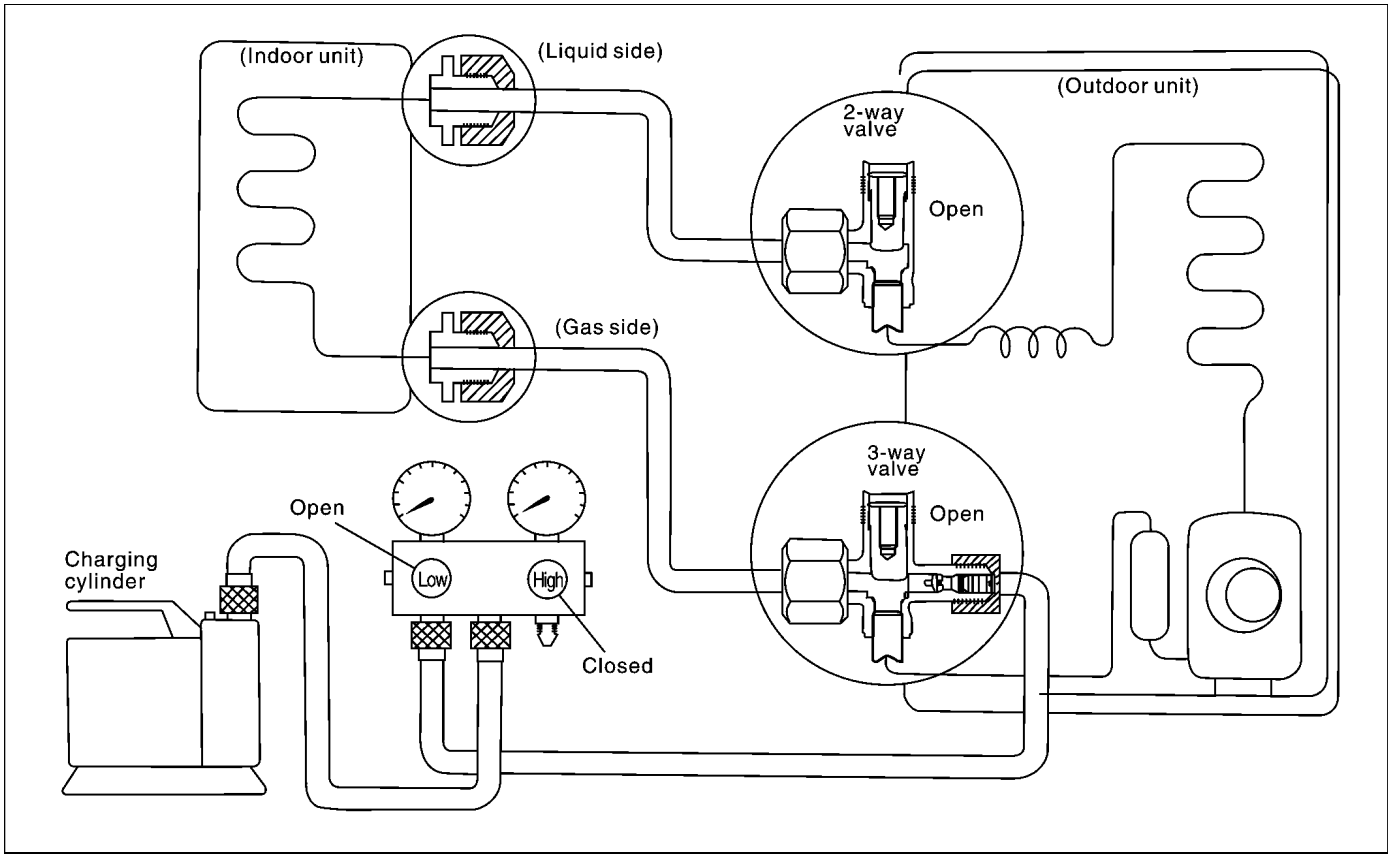


Procedure

1. Confirm that both 2-way and 3-way valves are set to the open position.
2. Connect the charge set to the service port of the 3-way valve.
   - 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 0.5-1kg/cm^{2}G (0.05-0.1Mpa).
   - If there is no air in the refrigerant cycle [the pressure when the air conditioner is not running is higher than 1kg/cm^{2}G (0.1MPa)],discharge the refrigerant until the gauge indicates 0.5 to 1kg/cm^{2}G (0.05 to 0.1MPa).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 refrigerant oil will also be discharged.

9.5. 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 1 hour.
   - Confirm that the gauge needle has moved toward-76cmHg (-0.1Mpa) [vacuum of 4 mmHg or less].

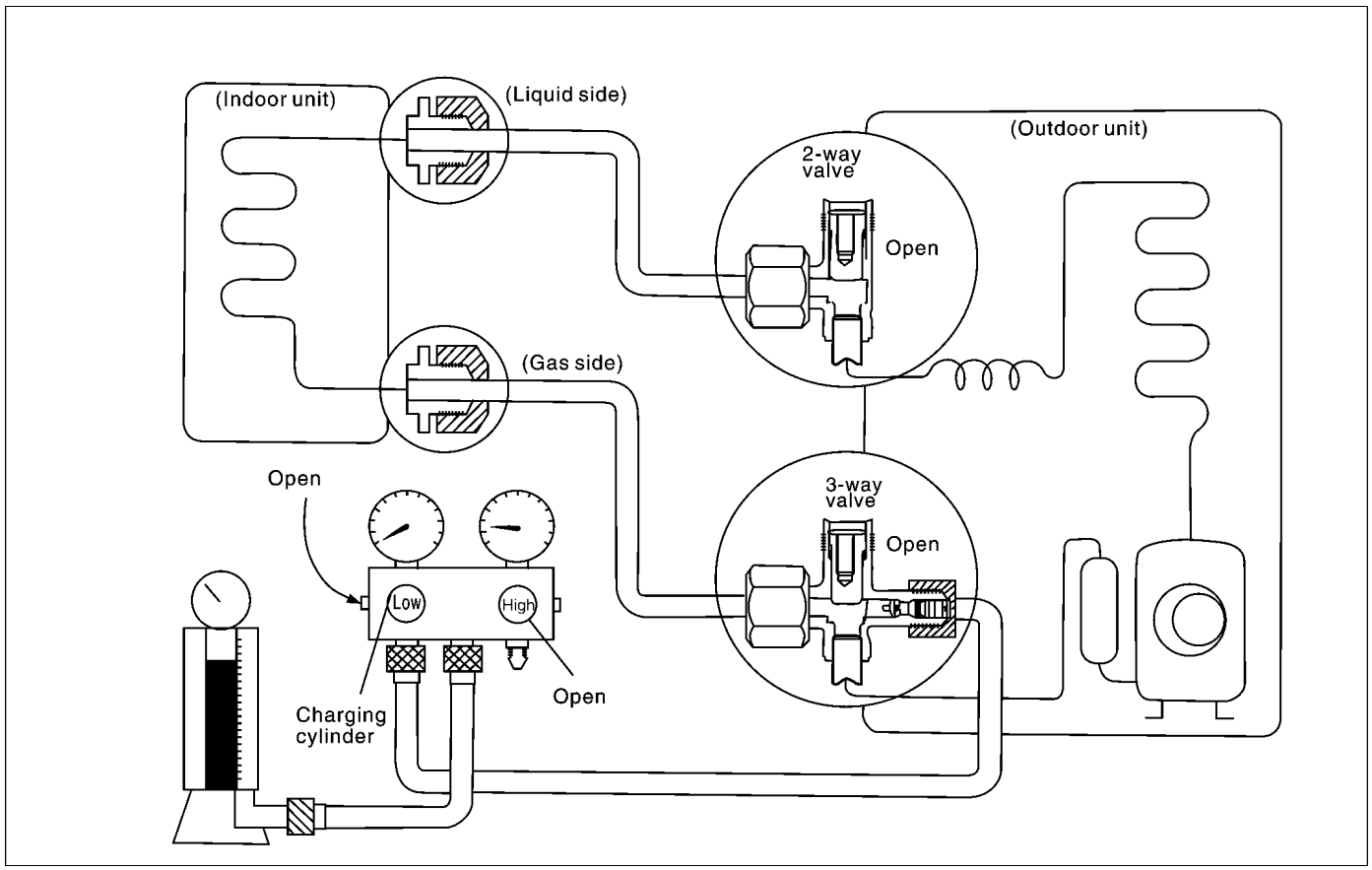
3. Close the valve (low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle dose not move (approximately 5 minutes after turning off the vacuum pump).

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

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

9.6. Gas charging

(After evacuation)



Procedure

1. Connect the charge hose to the charging cylinder
   - Connect the charge hose which was disconnected from the vacuum pump to the valve at the bottom of the cylinder.
   - If you are using a gas cylinder also use a scale and reverse the cylinder so that the system can be charged with liquid.
2. Purge the air from the charge hose
   - Open the valve at the bottom of the cylinder and use a screwdriver to press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant.)
   - The procedure is the same if using a gas cylinder.
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 charge with a little at a time (approximately 150g 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 amounts of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve´s service port.
   - Stopping part-way 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 nuts and the service port.
   - Use a torque wrench to tighten the service port cap to a torque of 1.8kg. m (18N.m).
   - Be sure to check for gas leakage.

10 Disassembly of the parts

- **Inspection Points for the indoor electronic controller**

1. Open the front grille and cover of the control board, the electronic controller, signal receiver and indicators can be seen.

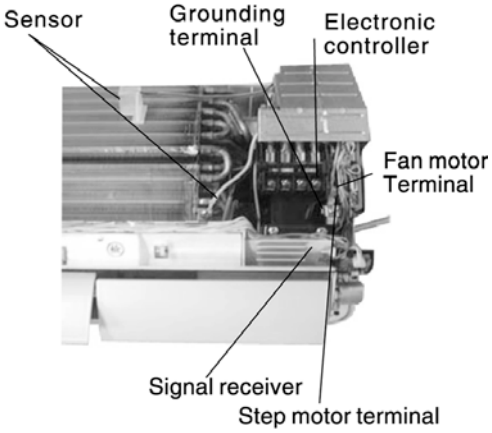


Fig 1

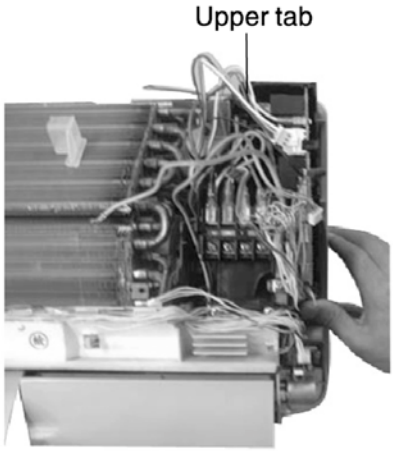


Fig 2

- **Removal procedure for the fan motor**

1. Remove the connector CN-MTR of fan motor, and connector CN-STM of step fan motor, loosen the grounding wire (yellow-green),and pull the sensor out from the socket.

   (See **Fig 1**)

2. Remove the control board. Loosen the upper, left and right tabs, and pull out the control board. (Refer to **Fig 2**, **Fig 3**, **Fig 4**).

Fig 3

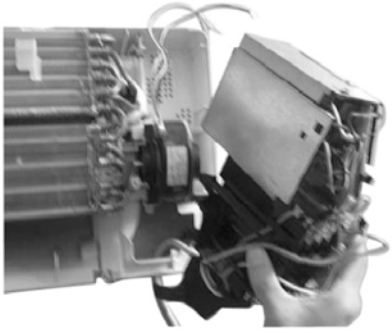


Fig 4

3. Remove the fan motor.

   Loosen the fan motor securing screw at the junction of the cross fan. (see **Fig 5**)

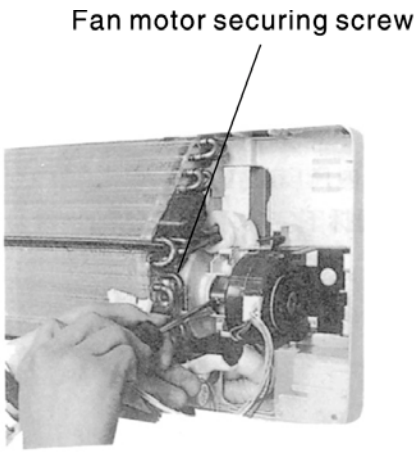


Fig 5

   Remove the special tab, and pull the fan motor out. (see **Fig 6**, **Fig 7**)

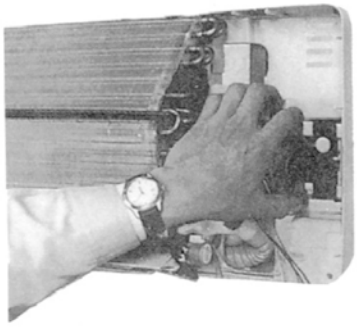


Fig 6

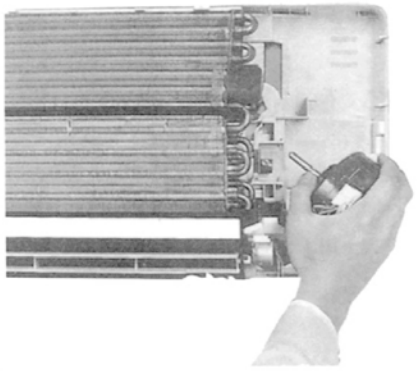


Fig 7

- **Removal procedure of the cross flow fan**

1. Remove the fan motor.
   (Refer to the removal procedure of fan motor, **Fig 8**)

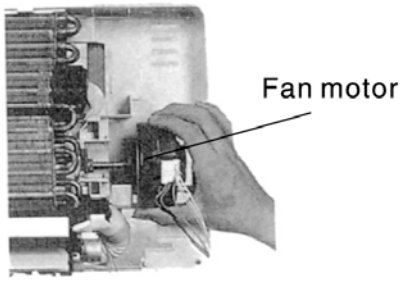


Fig 8

Remove the securing screw of the front grille, pull the front grille down towards you.

2. Loosen the bearing on the left side of the cross flow fan.(**Fig 9**)

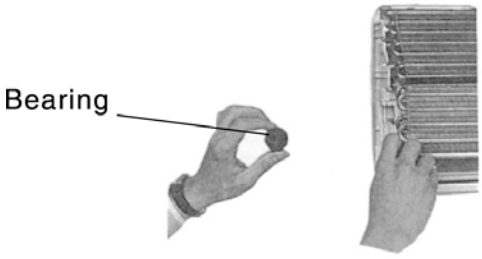


Fig 9

3. Take off the securing-tabs to the left of the heat exchanger.
   Pull the heat exchanger forward (left side). (**Fig 10**)
   The cross flow fan can be removed. (**Fig 10**)

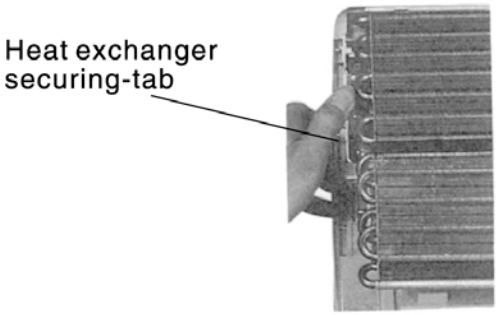


Fig 10

- **Remote control reset**

  If the display is chaotic or can not be adjusted, use a pin to gently press reset button to reset the remote control to the original set by manufacturer.(**Fig 11**)

Fig 11

11 Trouble-shooting guide

Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle.

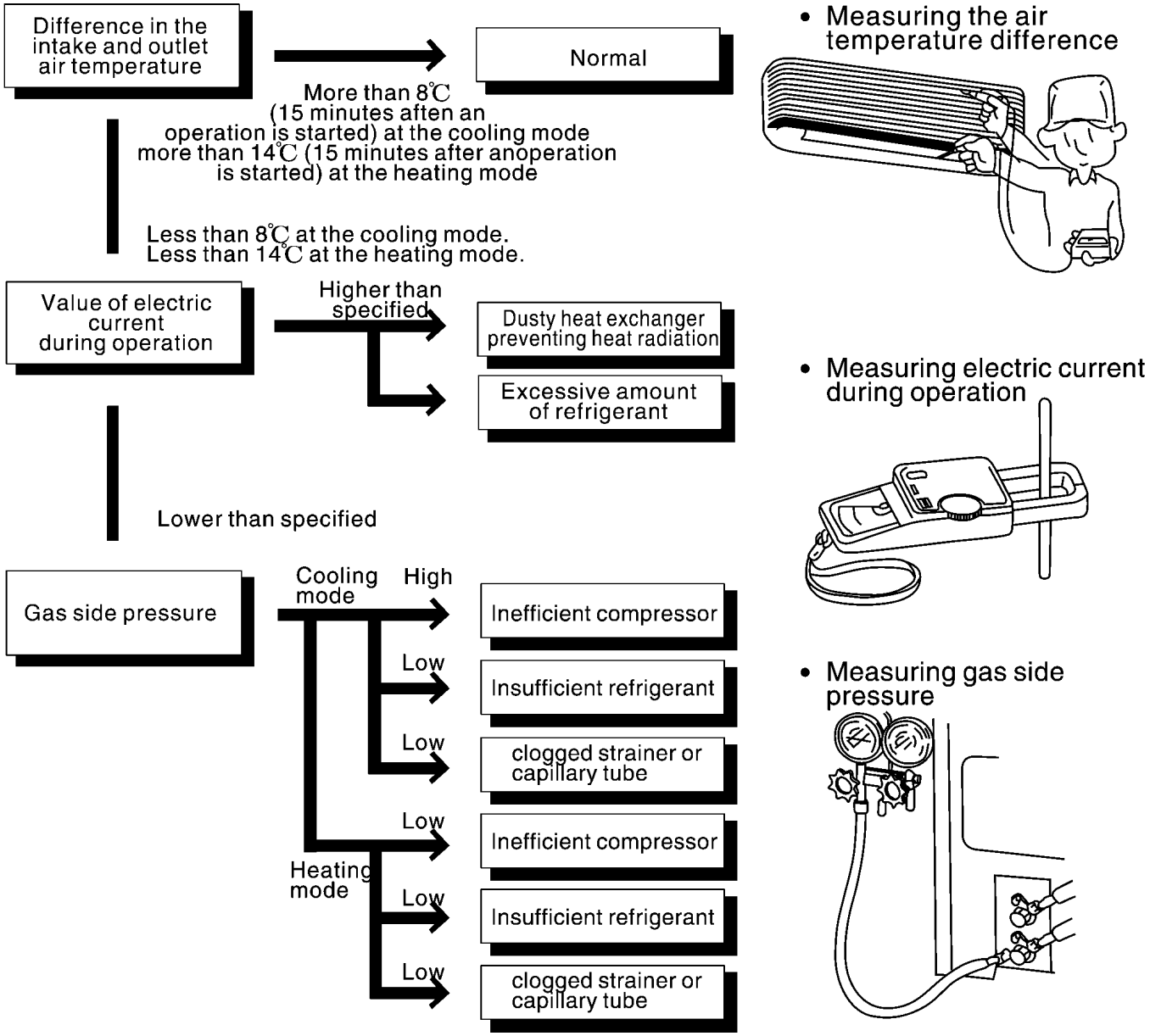
Such problems include insufficient insulation, problem with the power source, malfunction of compressor or fan.

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 side pressure Mpa (kg/cm^2G)	Outlet air tempera ture (℃)
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℃ (cooling mode)
7℃ (heating mode)



- Measuring the air temperature difference

- Measuring electric current during operation

- Measuring gas side pressure

11.1. Relationship between the condition of 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	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Insufficient compression	↗	↘	↘	↗	↘	↘

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

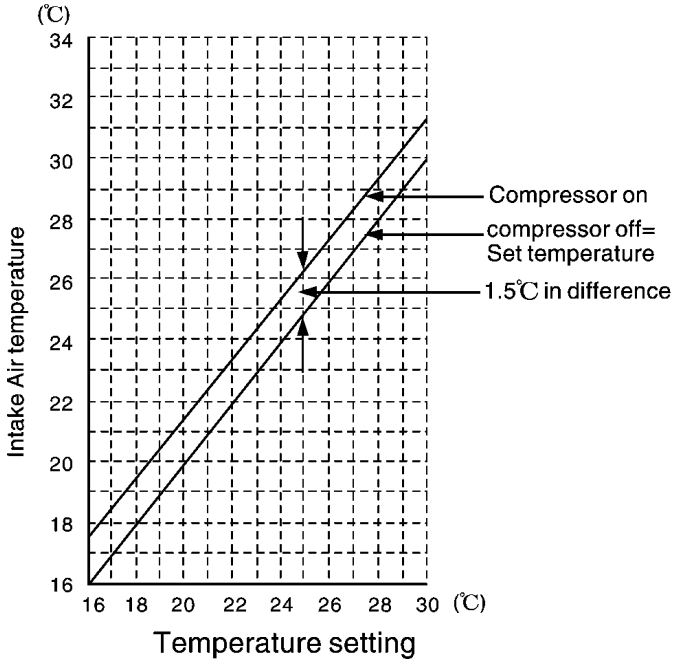
Nature of fault	Symptom
Insufficient compressing of a compressor	● Electric current during operation becomes approximately 80% lower than the normal level. ● The discharge tube of the compressor becomes abnormally hot (normally 70~90°C). ● The difference between high pressure and low pressure becomes 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.
Inefficient switches of the 4-way valves	● Electric current during operation becomes approximately 20% lower than the normal valve. ● 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.

12 Technical Data

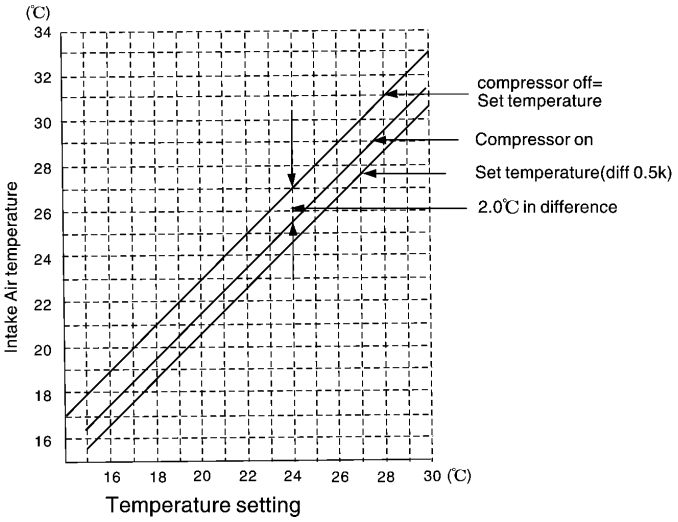
■ Thermostat characteristics

CS/CU-PA7CKE, CS/CU-PA9CKE, CS/CU-PA12CKE, CS/CU-PC7CKE, CS/CU-PC9CKE, CS/CU-PC12CKE

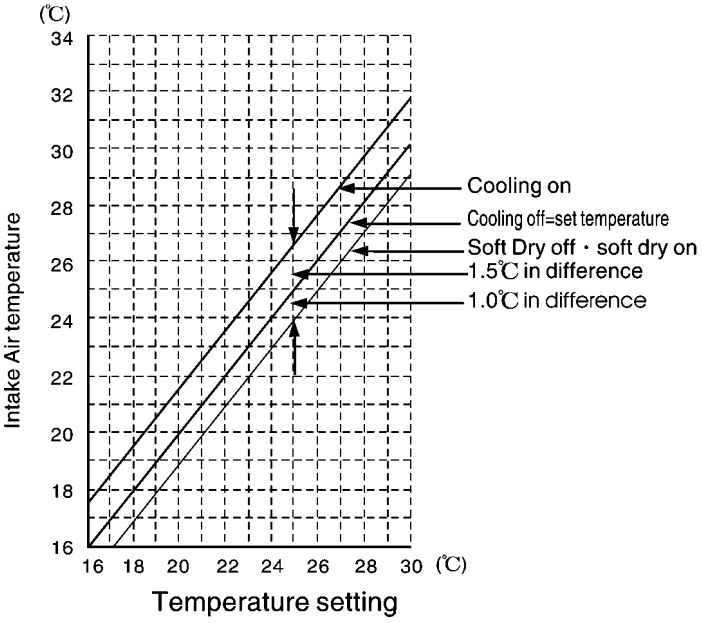
- Cooling mode



- Heating mode (For CS-PA7CKE/CS-PA9CKE/CS-PA12CKE only)

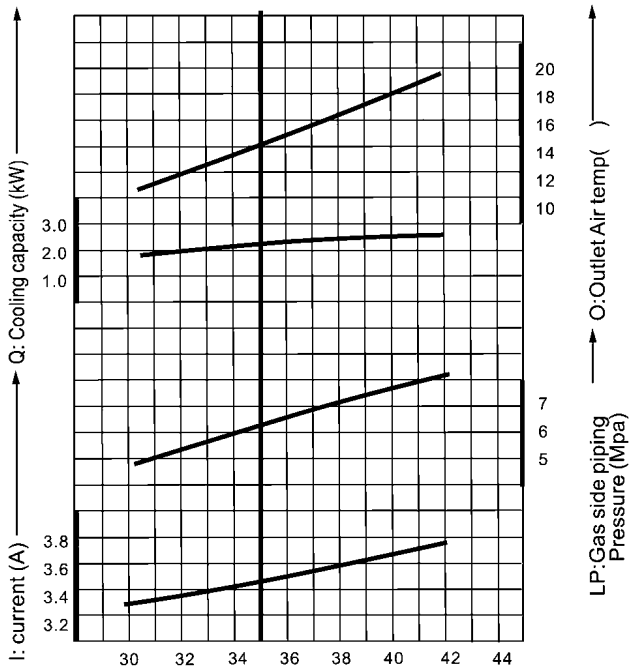


- Soft dry mode



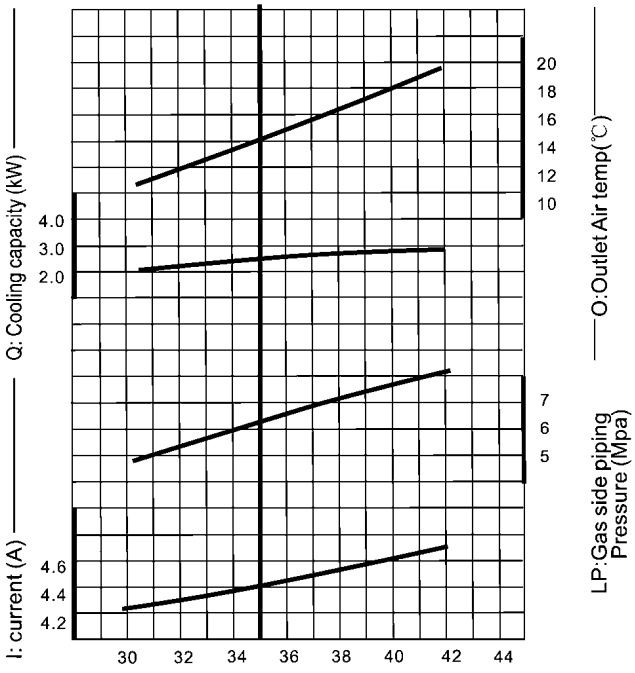
■ Cooling characteristics

CS/CU-PA7CKE CS/CU-PC7CKE



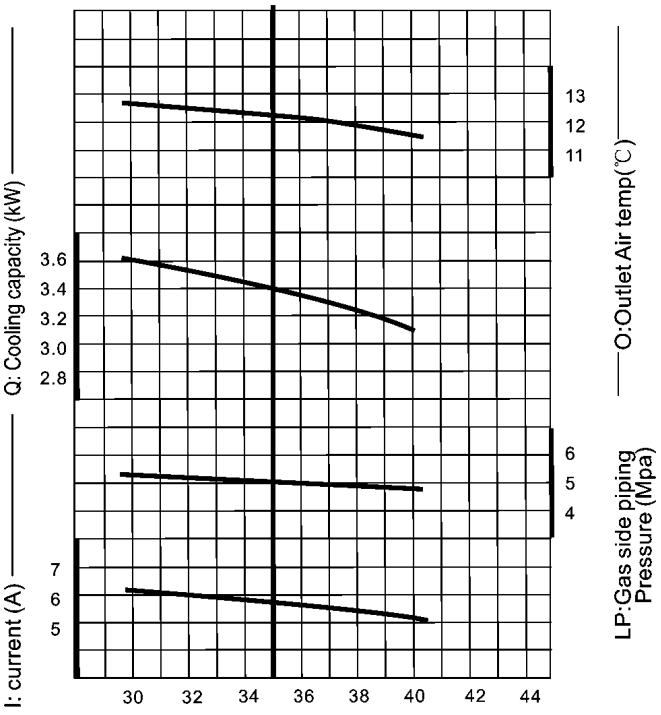
Outdoor temp(℃)
[Condition] Room temp: 27/19℃
Cooling operation:at high speed
Piping length:5m

CS/CU-PA9CKE CS/CU-PC9CKE



Outdoor temp(℃)
[Condition] Room temp: 27/19℃
Cooling operation:at high speed
Piping length:5m

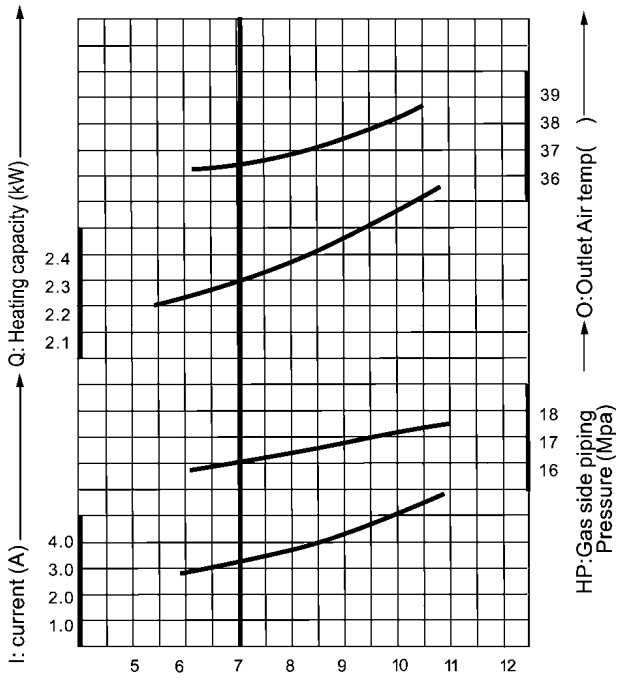
CS/CU-PA12CKE CS/CU-PC12CKE



Outdoor temp(℃)
[Condition] Room temp: 27/19℃
Cooling operation:at high speed
Piping length:5m

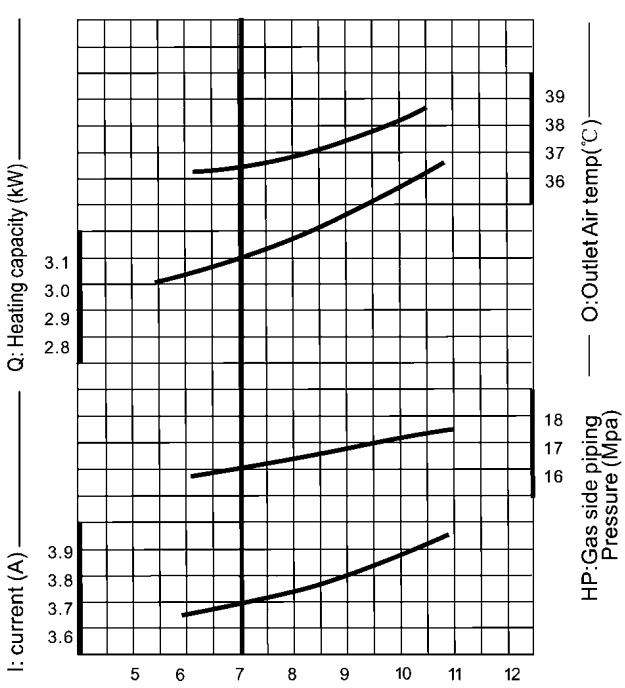
■ Heating characteristics

CS/CU-PA7CKE



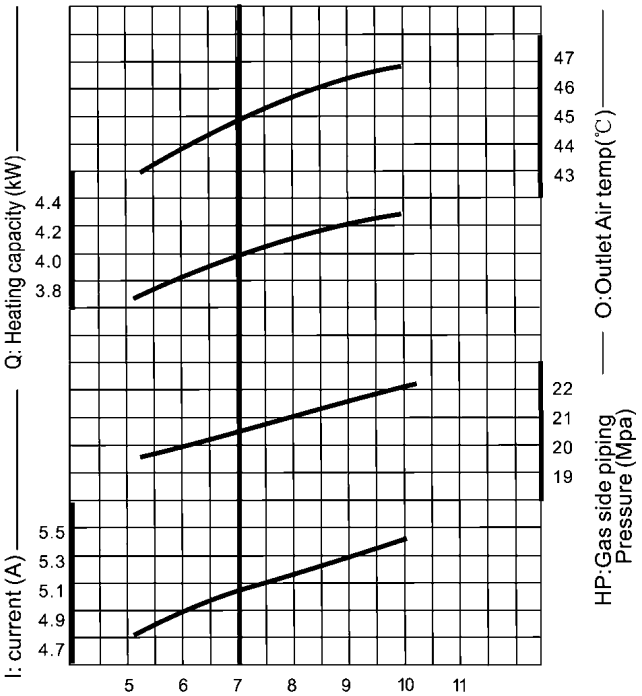
[Condition] Room temp: 27/19℃
Heating operation:at high speed
Piping length:5m

CS/CU-PA9CKE



[Condition] Room temp: 27/19℃
Heating operation:at high speed
Piping length:5m

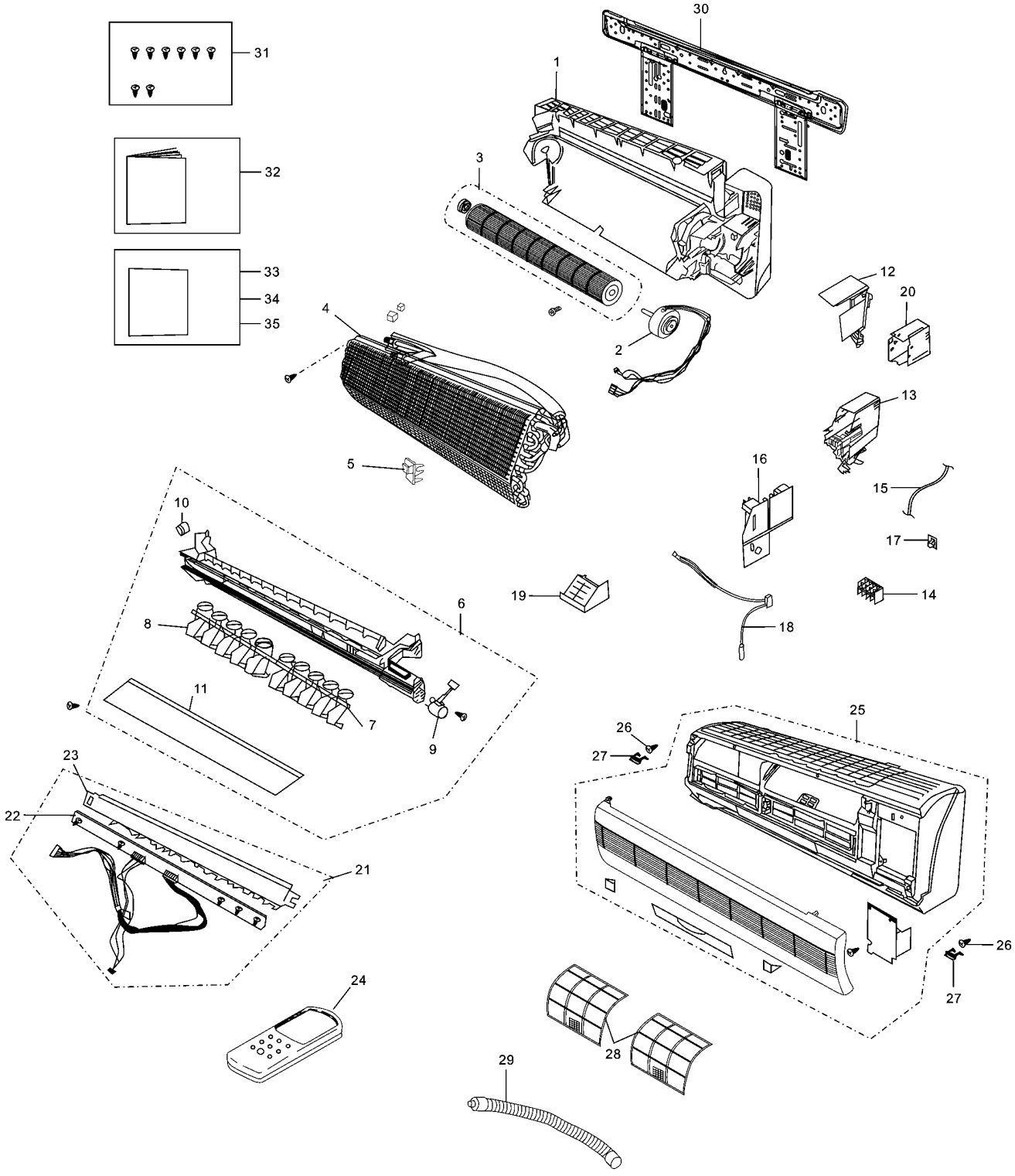
CS/CU-PA12CKE



[Condition] Room temp: 27/19℃
Heating operation:at high speed
Piping length:5m

13 Exploded View

CS-PA7CKE/CS-PC7CKE/CS-PA9CKE
CS-PC9CKE/CS-PC12CKE/CS-PA12CKE



14 Replacement Parts List

CS-PA7CKE / CS-PC7CKE / CS-PC9CKE

No.	DESCRIPTION&NAME	Q'ty	CS-PA7CKE	CS-PC7CKE	CS-PC9CKE	RE
1	CHASSIS COMPLETE	1	CWD50C1353	CWD50C1348	CWD50C1348	
2	FAN MOTOR	1	CWA921115	CWA921115	CWA921115	
3	CROSS FLOW FAN COMPLETE	1	CWH02C1025	CWH02C1025	CWH02C1025	
4	EVAPORATOR	1	CWB30C1423	CWB30C1447	CWB30C1448	
5	INTAKE AIR SENSOR HOLDER	1	CWH32137	CWH321022	CWH321025	
6	DISCHARGE GRILLE COMPLETE	1	CWE20C2288	CWE20C2285	CWE20C2285	
7	VERTICAL VANE	1	CWE24C1063	CWE24C1059	CWE24C1059	
8	VERTICAL VANE	1	CWE24C1062	CWE24C1058	CWE24C1058	
9	AIR SWING MOTOR	1	CWA98259+C	CWA98259+C	CWA98259+C	
10	CAP-DRAIN TRAY	1	CWH521096	CWH521096	CWH521096	
11	HORIZONTAL VANE	1	CWE241073A	CWE241137	CWE241137	
12	PARTICULAR PIECE	1	CWD932168C	CWD932168C	CWD932168C	
13	CONTROL BOARD	1	CWH102201	CWH102211	CWH102211	
14	TERMINAL BOARD COMPLETE	1	CWA28C2084	CWA28C2191	CWA28C2191	
15	POWER SUPPLY CORD	1	CWA20C2254	CWA20C2254	CWA20C2254	
16	MAIN PCB	1	CWA743410	CWA743359	CWA743360	
17	RECEIVER	1	CWA73C1257	CWA742941	CWA742941	
18	SENSOR COMPLETE	1	CWA50C2064	CWA50C2193	CWA50C2193	
19	CONTROL BOARD FRONT COVER	1	CWH131102	CWH131102	CWH131102	
20	CONTROL BOARD TOP COVER	1	CWH131103	CWH131176	CWH131176	
21	INDICATOR	1	CWE39C1048	CWE39C1094	CWE39C1094	
22	INDICATOR PCB	1	CWA742707	CWA743205	CWA743205	
23	INDICATOR HOLDER	1	CWD932170	CWD932332	CWD932332	
24	REMOTE CONTROL COMPLETE	1	CWA75C2285	CWA75C2261	CWA75C2261	
25	FRONT GRILLE COMPLETE	1	CWE11C3029	CWE11C2999	CWE11C2999	
26	SCREW-FRONT GRILLE	2	XTT4+14C	XTT4+14C	XTT4+14C	
27	CAP-FRONT GRILLE	2	CWH521025F	CWH521025F	CWH521025F	
28	AIR FILTER	1	CWD001050	CWD001110	CWD001110	
29	DRAIN HOSE	1	CWH851074	CWH851074	CWH851074	
30	INSTALLATION PLATE	1	CWH36K1013	CWH36K1013	CWH36K1013	
31	BAG COMPLETE	1	CWH82C264	CWH82C264	CWH82C264	
32	OPERATION INSTRUCTIONS	1	CWF564295	CWF564295	CWF564295	
33	INSTALLATION INSTRUCTIONS	1	CWF612558	CWF612558	CWF612558	
34	INSTALLATION INSTRUCTIONS	1	CWF612559	CWF612559	CWF612559	
35	INSTALLATION INSTRUCTIONS	1	CWF612560	CWF612560	CWF612560	

CS-PA9CKE / CS-PA12CK / CS-PC12CKE

No.	DESCRIPTION&NAME	Q'ty	CS-PA9CKE	CS-PA12CKE	CS-PC12CKE	RE
1	CHASSIS COMPLETE	1	CWD50C1350	CWD50C1350	CWD50C1350	
2	FAN MOTOR	1	CWA921115	CWA921115	CWA921115	*
3	CROSS FLOW FAN COMPLETE	1	CWH02C1025	CWH02C1025	CWH02C1025	
4	EVAPORATOR	1	CWB30C1402	CWB30C1402	CWB30C1403	
5	INTAKE AIR SENSOR HOLDER	1	CWH32137	CWH321022	CWH321025	
6	DISCHARGE GRILLE COMPLETE	1	CWE20C2289	CWE20C2289	CWE20C2289	
7	VERTICAL VANE	1	CWE24C1031	CWE24C1031	CWE24C1031	
8	VERTICAL VANE	1	CWE24C1032	CWE24C1032	CWE24C1032	
9	AIR SWING MOTOR	1	CWA98259+C	CWA98259+C	CWA98259+C	*
10	CAP-DRAIN TRAY	1	CWH52062	CWH52063	CWH52063	
11	HORIZONTAL VANE	1	CWE241073A	CWE241073A	CWE241073A	
12	PARTICULAR PIECE	1	CWD932168C	CWD932168	CWD932168	
13	CONTROL BOARD	1	CWH102201	CWH102201	CWH102201	
14	TERMINAL BOARD COMPLETE	1	CWA28C2084	CWA28C2086	CWA28C2087	
15	POWER SUPPLY CORD	1	CWA20C2254	CWA20C2254	CWA20C2254	
16	MAIN PCB	1	CWA743411	CWA743412	CWA743313	*
17	RECEIVER	1	CWA73C1257	CWA73C1257	CWA73C1257	*
18	SENSOR COMPLETE	1	CWA50C2064	CWA50C2064	CWA50C2064	*
19	CONTROL BOARD FRONT COVER	1	CWH131102	CWH131102	CWH131102	
20	CONTROL BOARD TOP COVER	1	CWH131103	CWH131103	CWH131103	
21	INDICATOR	1	CWE39C1048	CWE39C1048	CWE39C1048	*
22	INDICATOR PCB	1	CWA742707	CWA742707	CWA742707	
23	INDICATOR HOLDER	1	CWD932170	CWD932170	CWD932170	
24	REMOTE CONTROL COMPLETE	1	CWA75C2285	CWA75C2285	CWA75C2261	*
25	FRONT GRILLE COMPLETE	1	CWE11C3029	CWE11C3029	CWE11C3029	
26	SCREW-FRONT GRILLE	2	XTT4+14C	XTT4+14C	XTT4+14C	
27	CAP-FRONT GRILLE	2	CWH521025F	CWH521025F	CWH521025F	
28	AIR FILTER	2	CWD001050	CWD001050	CWD001050	
29	DRAIN HOSE	1	CWH851074	CWH851074	CWH851074	
30	INSTALLATION PLATE	1	CWH36K1013	CWH36K1013	CWH36K1013	
31	BAG COMPLETE	1	CWH82C264	CWH82C264	CWH82C264	
32	OPERATION INSTRUCTIONS	1	CWF564295	CWF564295	CWF564295	
33	INSTALLATION INSTRUCTIONS	1	CWF612558	CWF612558	CWF612558	
34	INSTALLATION INSTRUCTIONS	1	CWF612559	CWF612559	CWF612559	
35	INSTALLATION INSTRUCTIONS	1	CWF612560	CWF612560	CWF612560	

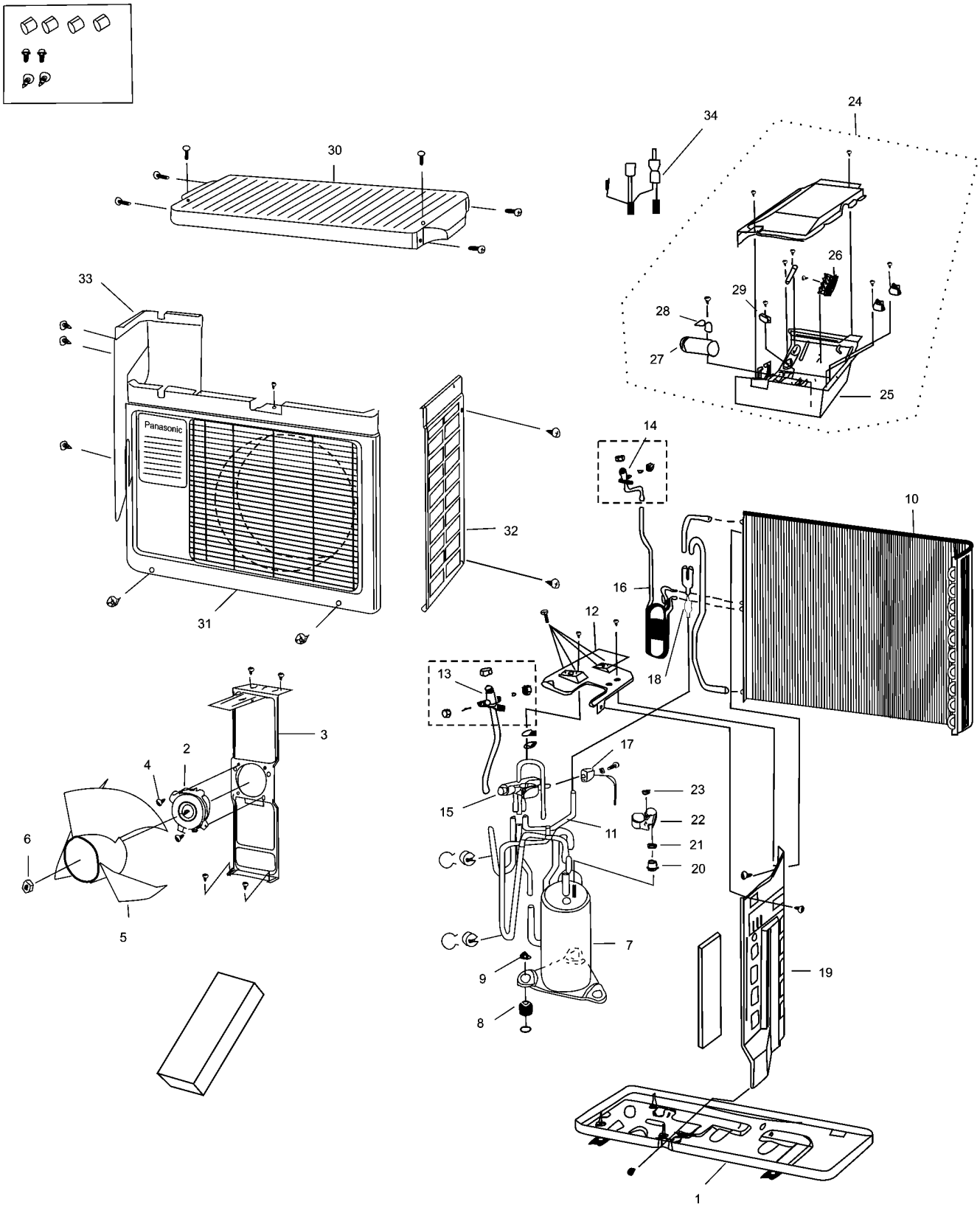
Note:

1.All parts are supplied from GMAC, P.R. China.

2."*" marked parts are recommended to be kept in stock.

15 Exploded View

CU-PA7CKE/CU-PC7CKE/CU-PC9CKE

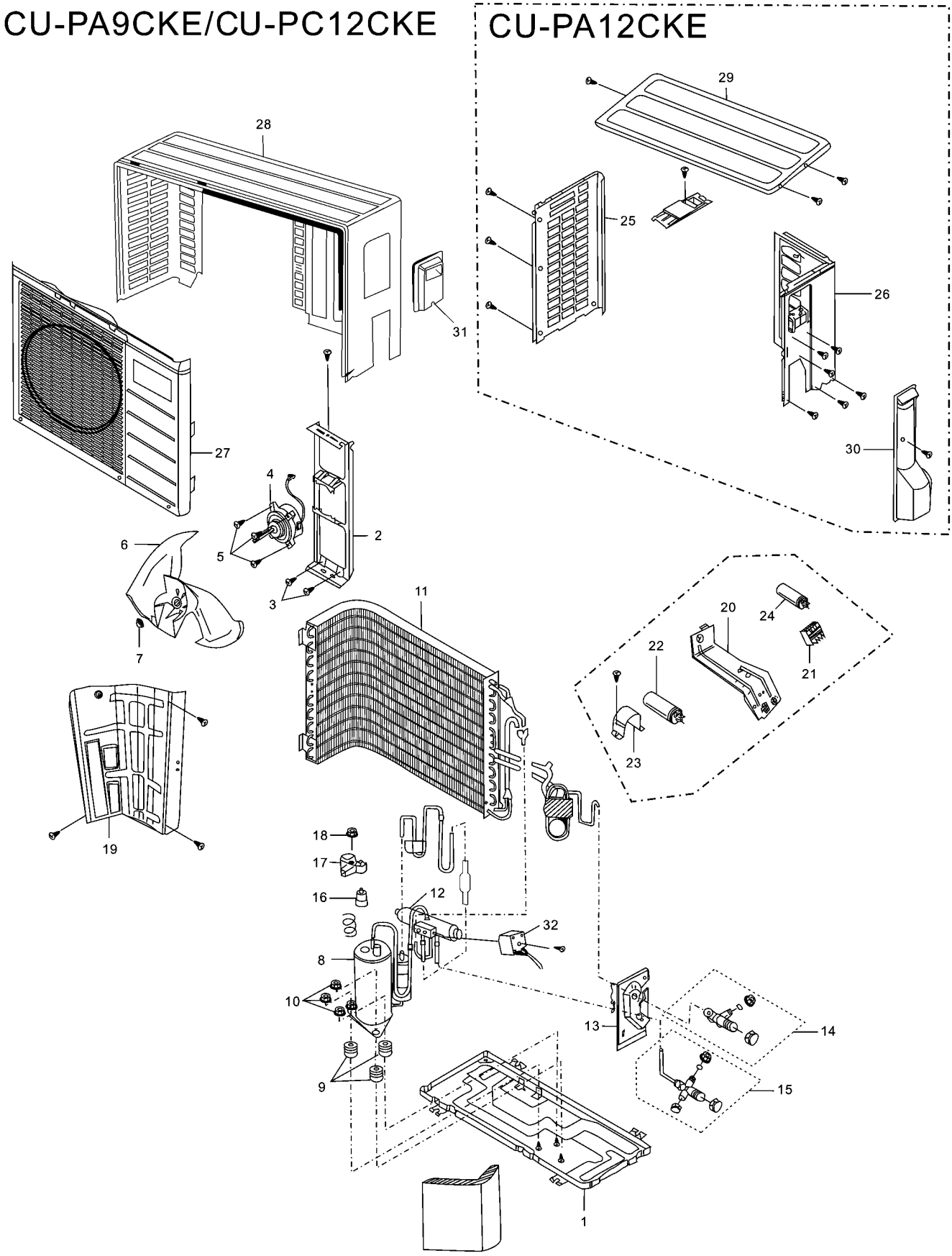


16 Replacement Parts List

CU-PA7CKE / CU-PC7CKE / CU-PC9CKE

No.	DESCRIPTION&NAME	Q'ty	CU-PA7CKE	CU-PC7CKE	CU-PC9CKE	RE
1	BASE ASS´Y	1	CWD52K1092A	CWD52K1092A	CWD52K1093A	
2	FAN MOTOR	1	CWA921129	CWA92263	CWA92263	
3	HOLDER-FAN MOTOR	1	CWD541058	CWD541058	CWD541058	
4	FIXING SCREW-FAN MOTOR	4	CWH55027	CWH55027	CWH55027	
5	PROPELLER FAN	1	CWH03K047	CWH03K047	CWH03K047	
6	NUT-P.FAN	1	CWH56053	CWH56053	CWH56053	
7	COMPRESSOR	1	CWB092128	CWB092128	CWB092218	
8	MOUNT RUBBER-COMPRESSOR	3	CWH50077	CWH50077	CWH50055	
9	NUT-COMP.MOUNT	3	CWH56000	CWH56000	4582065	
10	CONDENSER	1	CWB32C1332	CWB32C1328	CWB32C1329	
11	TUBE ASS´Y	1	CWT01C2968	\	\	
12	HOLDER-COUPLING	1	CWH351039A	CWH351039A	CWH351039A	
13	3-WAY VALVE	1	CWB011235	CWB011236	CWB011236	
14	2-WAY VALVE	1	CWB021195	CWB021194	CWB021196	
15	4-WAY VALVE	1	CWB001018	\	\	
16	TUBE ASS´Y-CAPILLARY	1	CWT01C2841	CWT01C2827	CWT01C2828	
17	VWINDING COMPLETE	1	CWA43C2161	\	\	
18	STRAINER	1	CWB11025	CWB11025	CWB11025	
19	SOUND PROOF PANEL	1	CWH151059	CWH151059	CWH151059	
20	OVER LOAD PROTECTOR	1	CWA121201	CWA121201	CWA121199	
21	HOLDER-O.L.P.	1	CWH701006	CWH701006	CWH701006	
22	TERMINAL COVER	1	CWH17006	CWH17006	CWH17006	
23	NUT FOR TERMINAL COVER	1	7080300	7080300	7080300	
24	CONTROL BOX COMPLETE	1	CWH14C3703	CWH14C3670	CWH14C3672	
25	CONTROL BOARD	1	CWH102219	CWH102219	CWH102219	
26	TERMINAL BOARD ASS´Y	1	CWA28K1051	CWA28K1015	CWA28K1015	
27	CAPACITOR-COMPRESSOR	1	DS371206CPXA	DS371206CPXA	DS371256CPXA	
28	HOLDER-CAPACITOR	1	CWH301033	CWH301033	CWH301033	
29	CAPACITOR-FAN MOTOR	1	CWA31342	CWA31342	CWA31342	
30	SURFACE COVER	1	CWE031034A	CWE031034A	CWE031034A	
31	FRONT PANEL-CABINET	1	CWE06K1044A	CWE06K1044A	CWE06K1044A	
32	RIGHT BOARD	1	CWE041090A	CWE041090A	CWE041090A	
33	LEFT BOARD	1	CWE041089A	CWE041089A	CWE041089A	
34	SENSOR	1	CWA50C2107	\	\	

17 Exploded View



18 Replacement Parts List

CU-PA9CKE / CU-PA12CKE / CU-PC12CKE

No.	DESCRIPTION&NAME	Q'ty	CU-PA9CKE	CU-PC12CKE	CU-PA12CKE	RE
1	CHASSIS ASS´Y	1	CWD50K2068A	CWD50K2067A	CWD50K2059A	
2	FAN MOTOR BRACKET	1	CWD541041	CWD541041	CWD541020	
3	SCREW-FAN MOTOR BRACKET	2	4580399	4580399	CWH551060	
4	FAN MOTOR	1	CWA951198	CWA951192	CWA951194	*
5	SCREW-FAN MOTOR MOUNT	3	CWH55027	CWH55027	CWH55406	
6	PROPELLER FAN ASS´Y	1	CWH00K052	CWH00K040	CWH03K1010	
7	NUT-PROPELLER FAN	1	CWH56032	CWH56032	CWH56053	
8	COMPRESSOR	1	CWB09617	CWB092117	CWB092117	*
9	ANTI-VIBRATION BUSHING	3	CWH50077	CWH50055	CWH50055	
10	NUT-COMPRESSOR MOUNT	3	CWH56000	4582065	4582065	
11	CONDENSER	1	CWB32C1360	CWB32C1361	CWB32C1359	
12	4-WAY VALVE	1	CWB001007	\	CWB001004	
13	HOLDER COUPLING ASS´Y	1	CWH351027	CWH351027A	\	
14	2-WAY VALVE	1	CWB021028	CWB021024	CWB021197	*
15	3-WAY VALVE	1	CWB011023	CWB011024	CWB011237	*
16	OVERLOAD PROTECTOR	1	CWA12371	\	\	*
17	TERMINAL COVER	1	CWH17006	CWH17006	CWH17006	
18	NUT-TERMINAL COVER	1	7080300	7080300	7080300	
19	SOUND PROOF BOARD	1	CWH151034	CWH151034	CWH151026	
20	CONTROL BOARD	1	CWH102152	CWH102026	CWH102146	
21	TERMINAL BOARD ASS´Y	1	CWA28K1051	CWA28K1048	CWA28K1051	
22	CAPACITOR-COMPRESSOR	1	CWA31695	CWA312076	CWA312076	*
23	HOLDER-CAPACITOR	1	CWH30165	CWH30165	CWH30165	
24	CAPACITOR-FAN MOTOR	1	CWA31342	CWA31342	DS441185XPQA	*
25	CABINET SIDE PLATE (L)	1	\	\	CWE041038A	
26	CABINET SIDE PLATE (R)	1	\	\	CWE041050A	
27	CABINET FRONT PLATE	1	CWE06C1013A	CWE06C1013A	CWE06C1041A	
28	CABINET COMPLETE	1	CWE00K051A	CWE00K051A	\	
29	TOP PLATE	1	\	\	CWE031015A	
30	CONTROL BOARD COVER	1	\	\	CWH13123	
31	CONTROL BOARD COVER	1	CWH13475	CWH13475	\	
32	V-COIL COMPLETE	1	CWA43C2010	\	CWA43C2010	

Note:

1.All parts are supplied from GMAC, P.R. China.

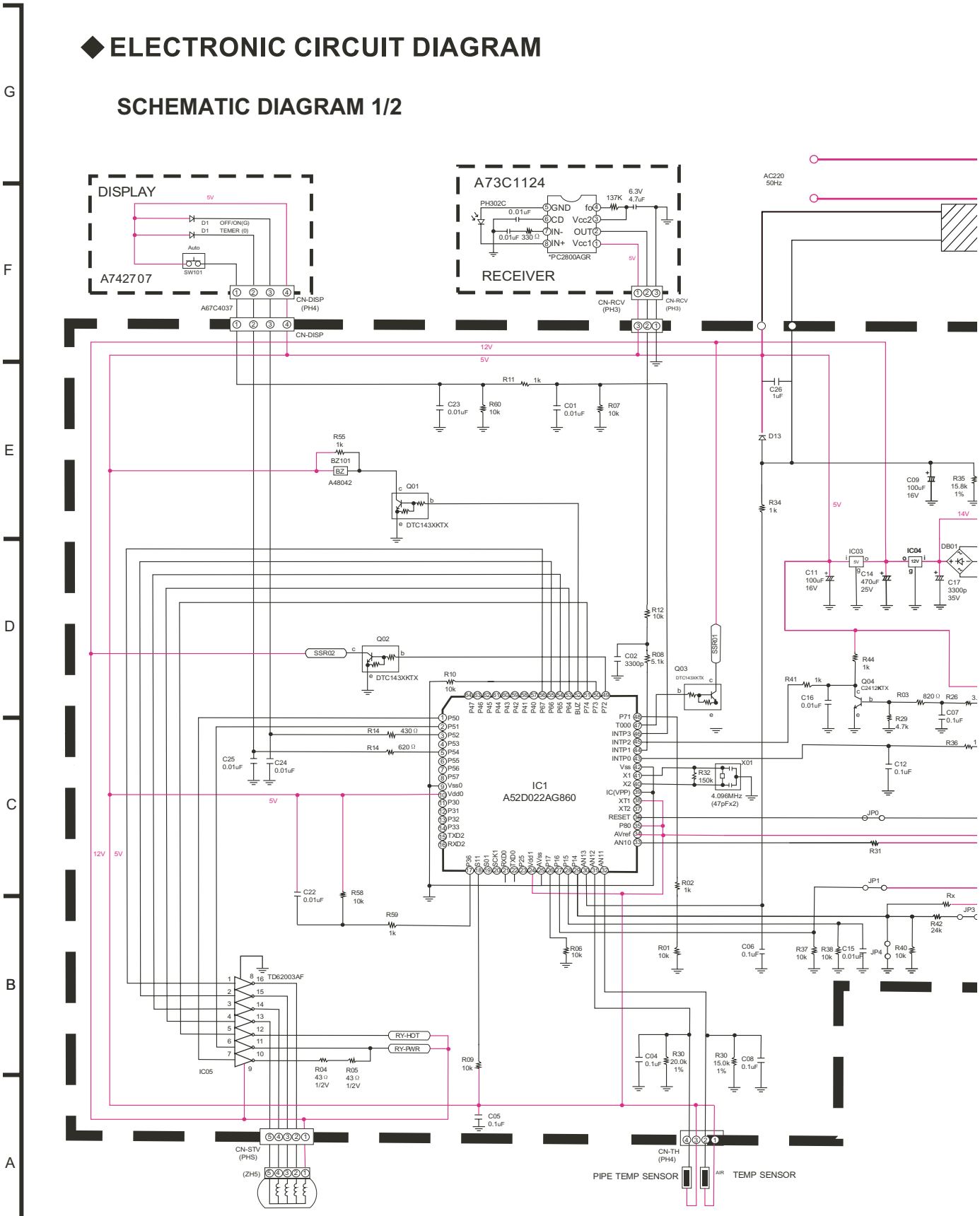
2."*" marked parts are recommended to be kept in stock.

19 ELECTRONIC CIRCUIT DIAGRAM

(CS/CU-PA7CKE CS/CU-PA9CKE CS/CU-PA12CKE)

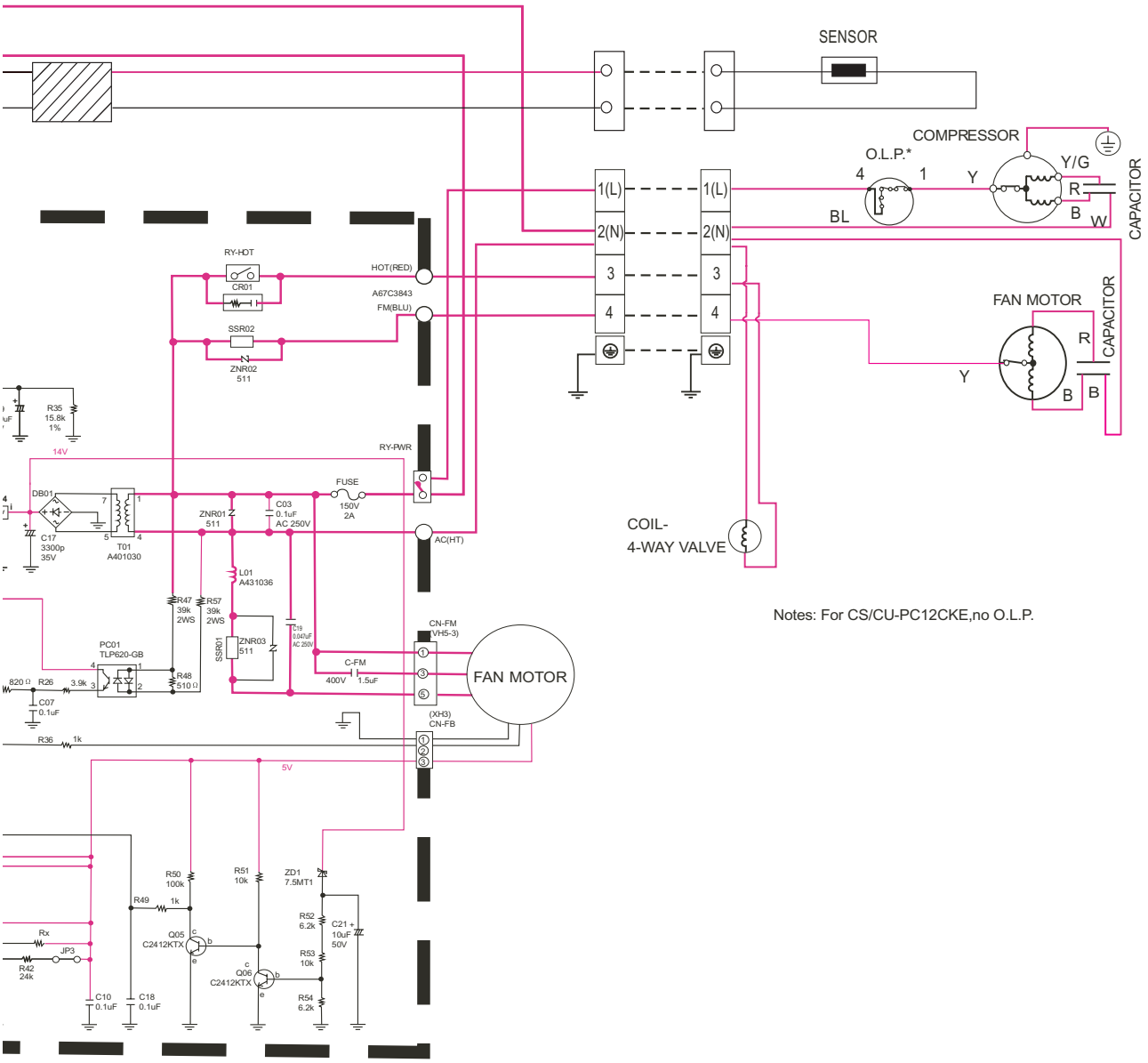
◆ELECTRONIC CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM 1/2



● CS/CU-PA7CKE CS/CU-PA9CKE CS/CU-PA12CKE

SCHEMATIC DIAGRAM 2/2



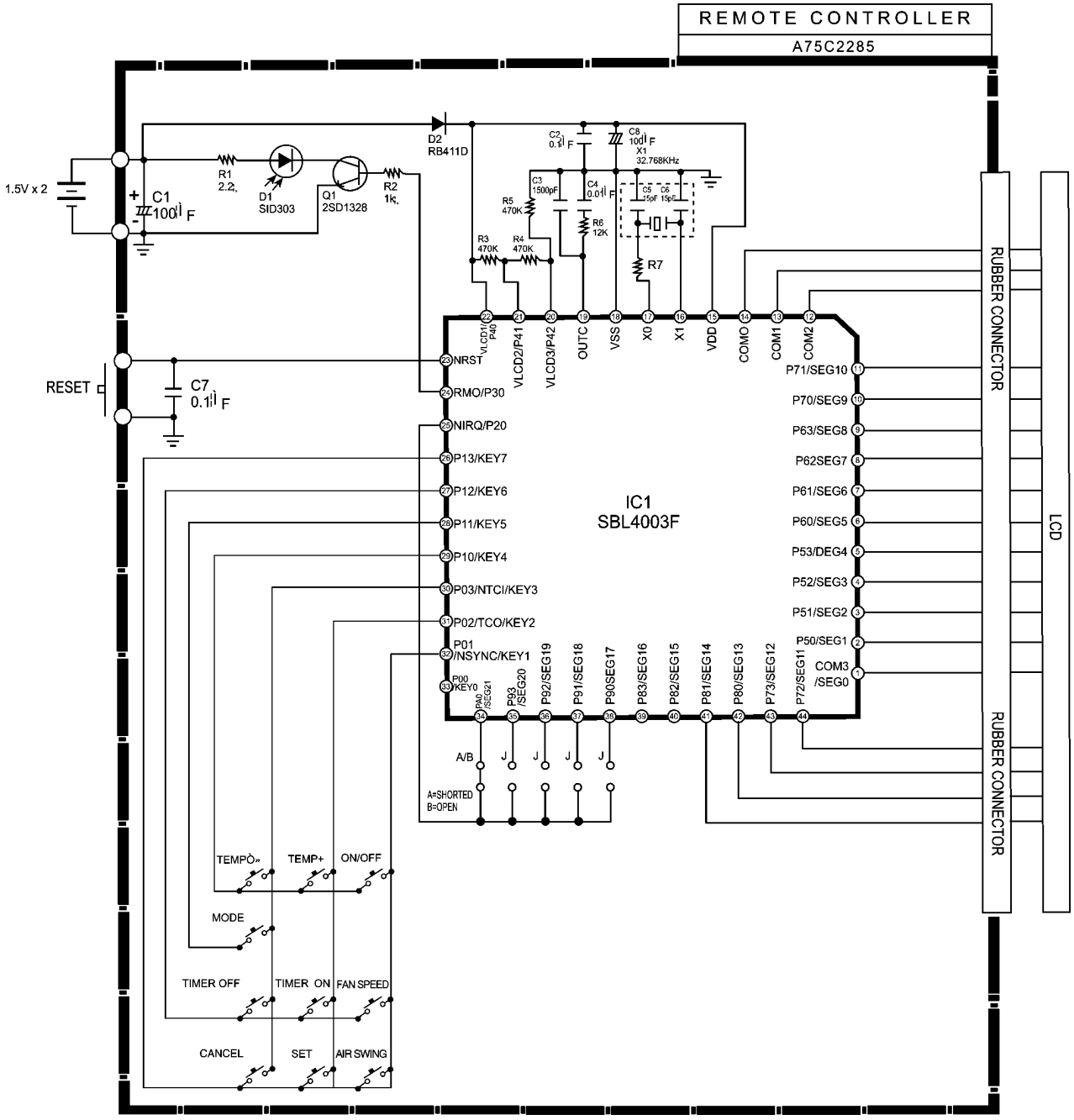
Notes: For CS/CU-PC12CKE,no O.L.P.

● **CS/CU-PA7CKE CS/CU-PA9CKE CS/CU-PA12CKE**

6 7 8 9 10

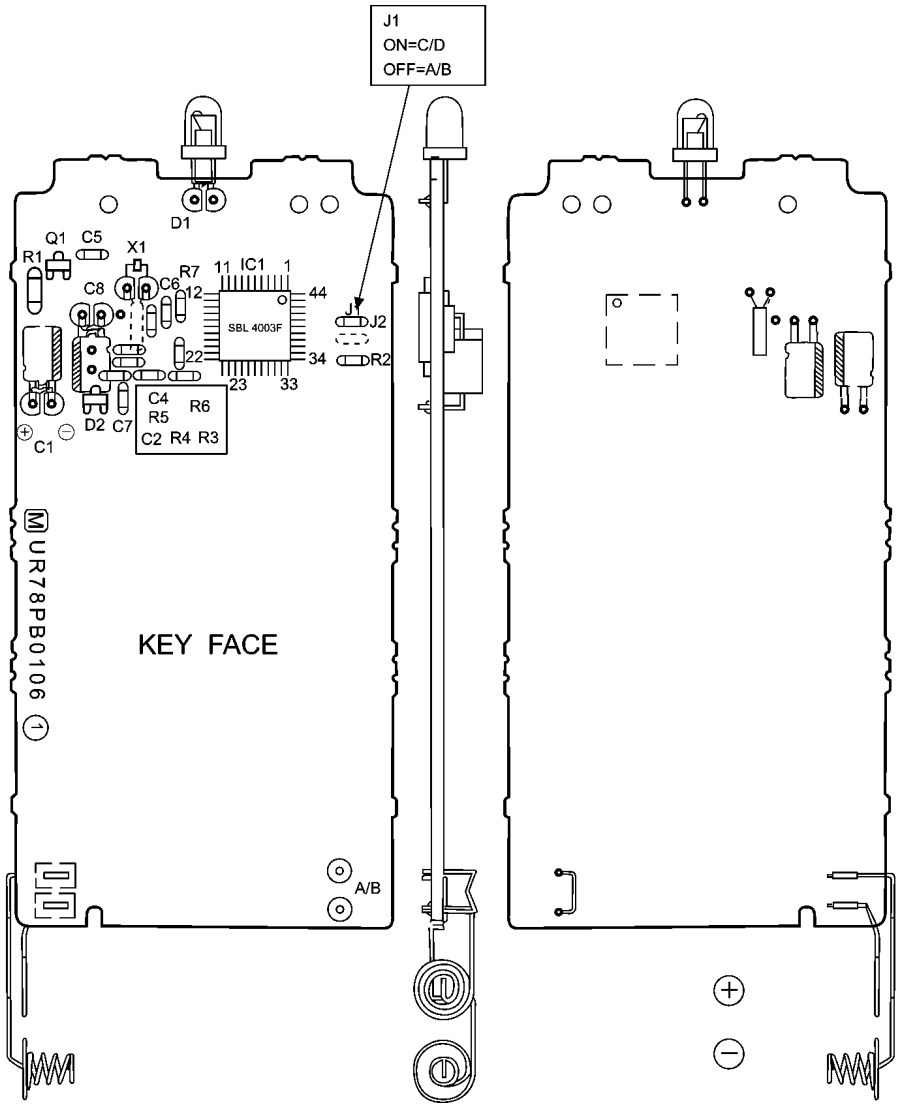
19.1. ELECTRONIC CIRCUIT DIAGRAM(REMOTE CONTROL)

CS/CU-PA7CKE CS/CU-PA9CKE CS/CU-PA12CKE



19.2. PRINTEB CIRCUIT BOARD(REMOTE CONTROL)

CS/CU-PA7CKE CS/CU-PA9CKE CS/CU-PA12CKE

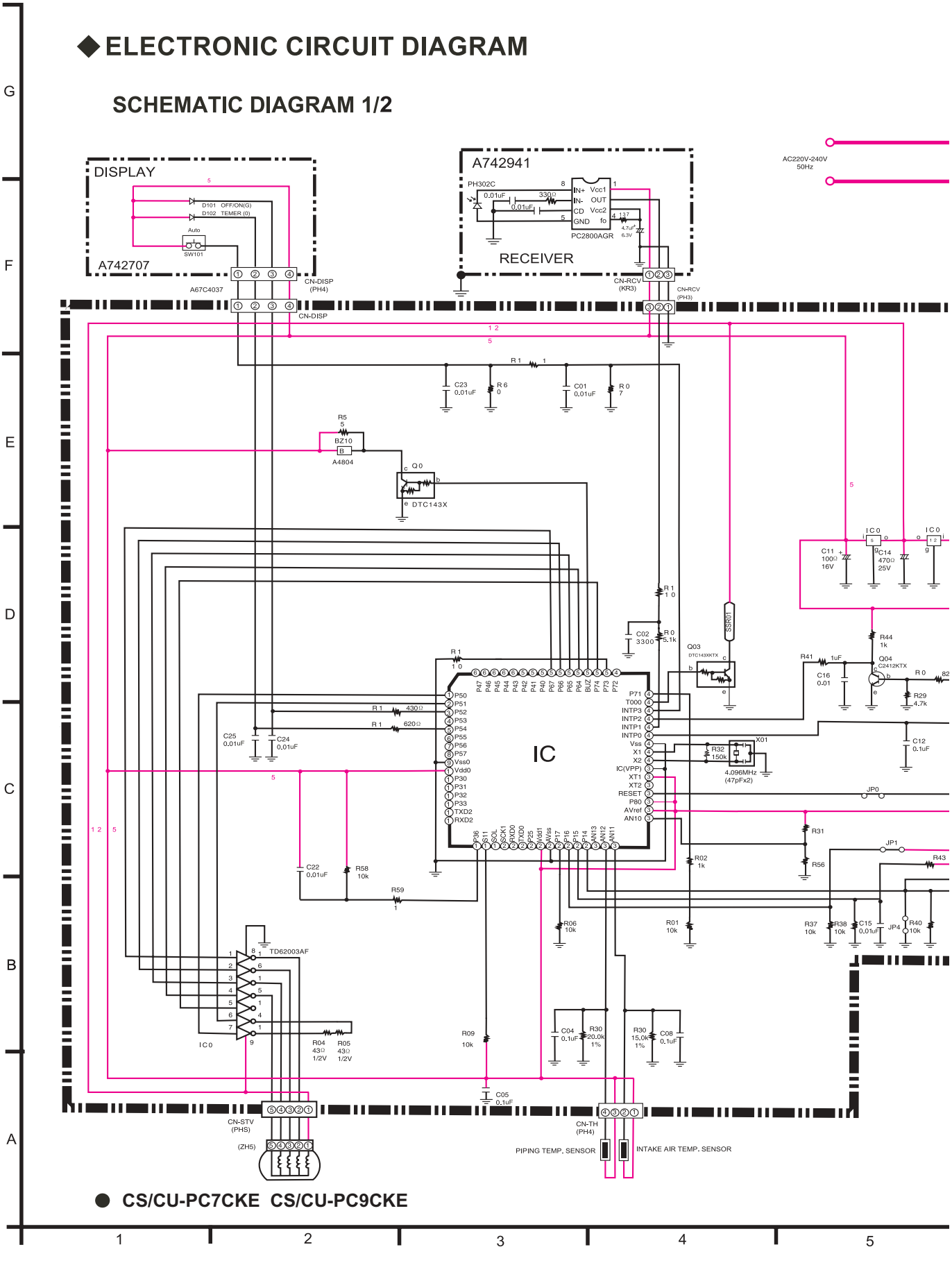


20 ELECTRONIC CIRCUIT DIAGRAM

(CS-PC7CKE / CU-PC7CKE / CS-PC9CKE / CU-PC9CKE)

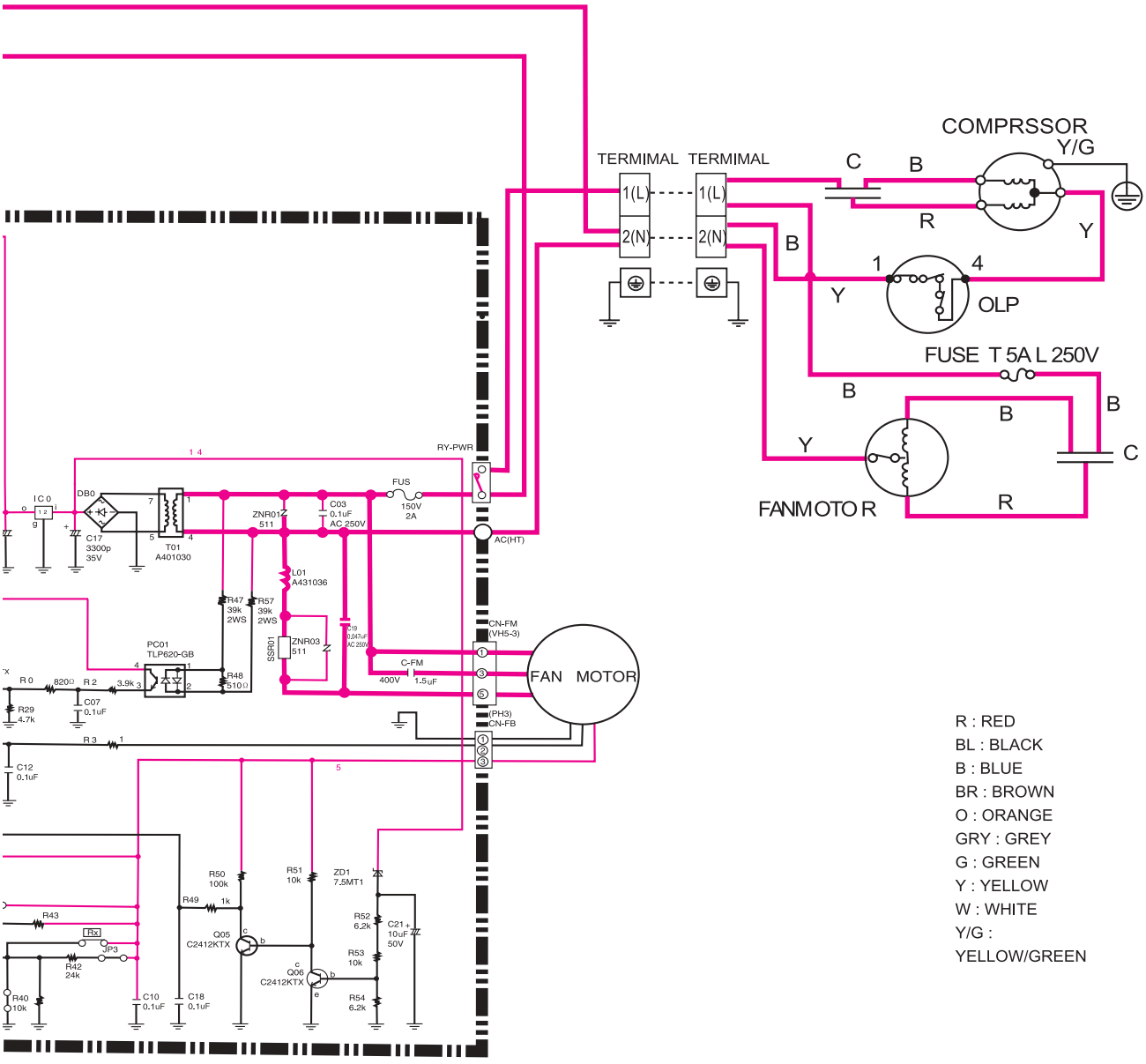
◆ ELECTRONIC CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM 1/2



● CS/CU-PC7CKE CS/CU-PC9CKE

SCHEMATIC DIAGRAM 2/2



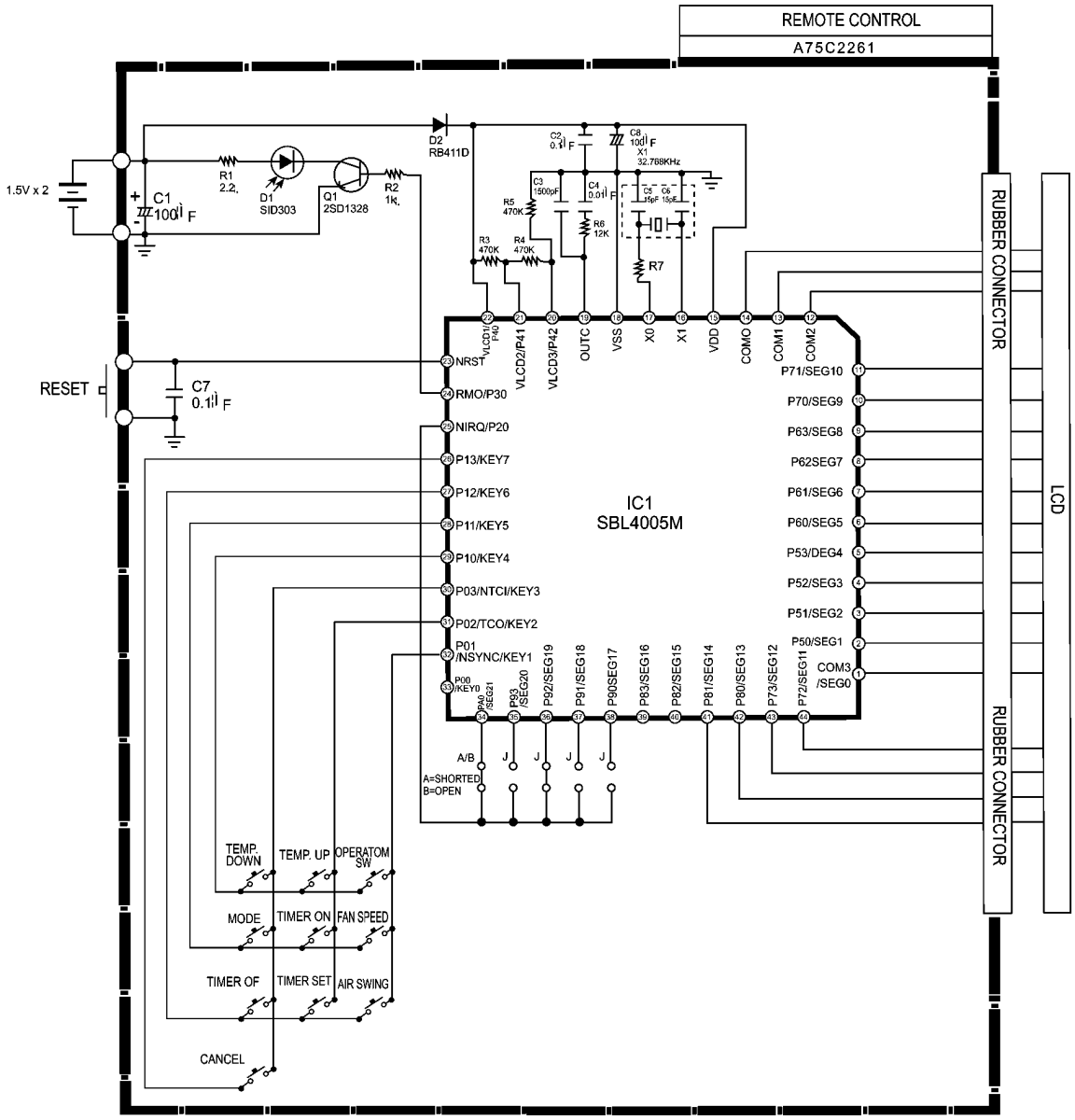
R : RED
BL : BLACK
B : BLUE
BR : BROWN
O : ORANGE
GRY : GREY
G : GREEN
Y : YELLOW
W : WHITE
Y/G :
YELLOW/GREEN

● **CS/CU-PC7CKE CS/CU-PC9CKE**

6 7 8 9 1

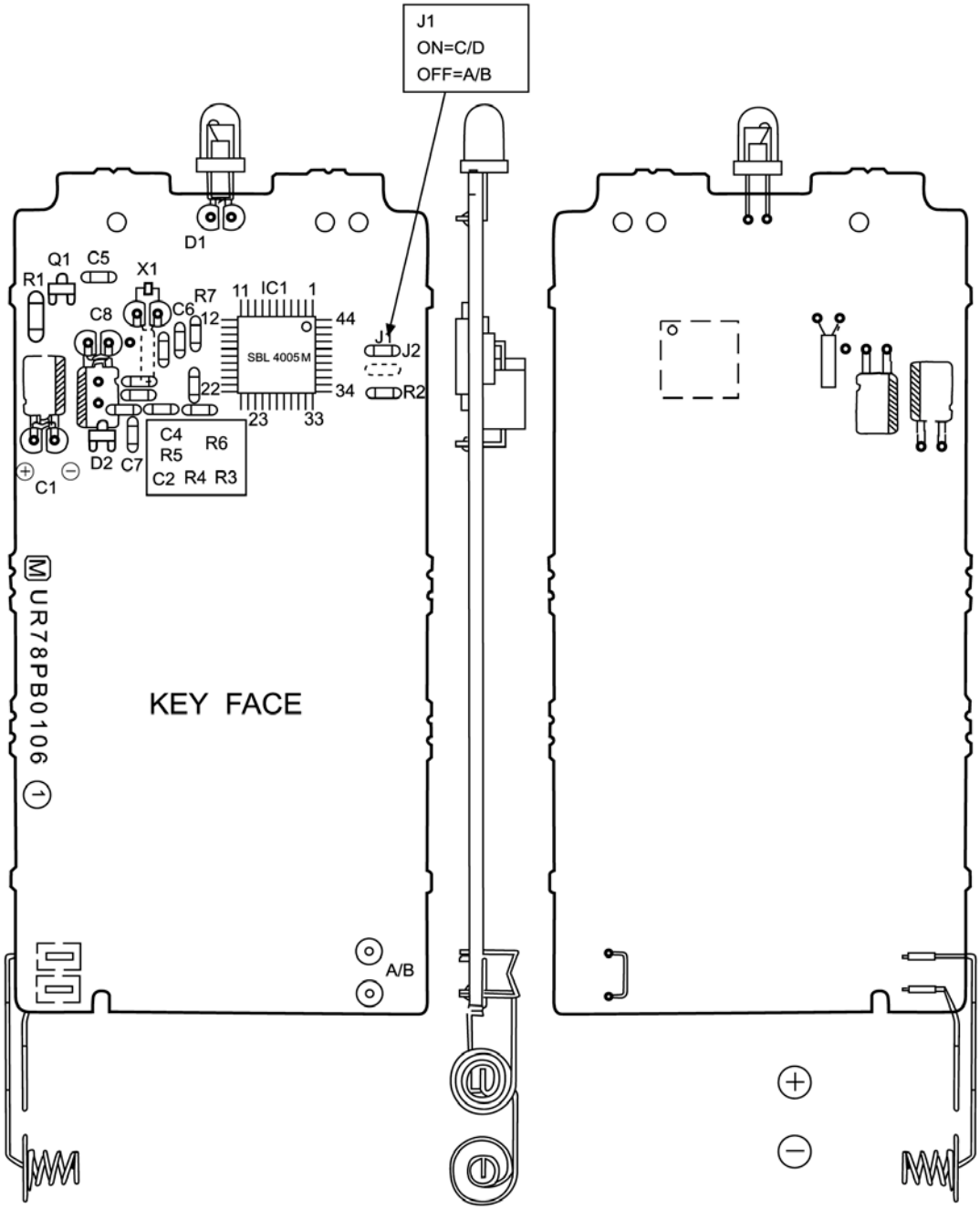
20.1. ELECTRONIC CIRCUIT DIAGRAM (REMOTE CONTROL)

CS-PC7CKE / CU-PC7CKE / CS-PC9CKE / CU-PC9CKE



20.2. PRINTEB CIRCUIT BOARD(REMOTE CONTROL)

CS-PC7CKE / CU-PC7CKE / CS-PC9CKE / CU-PC9CKE

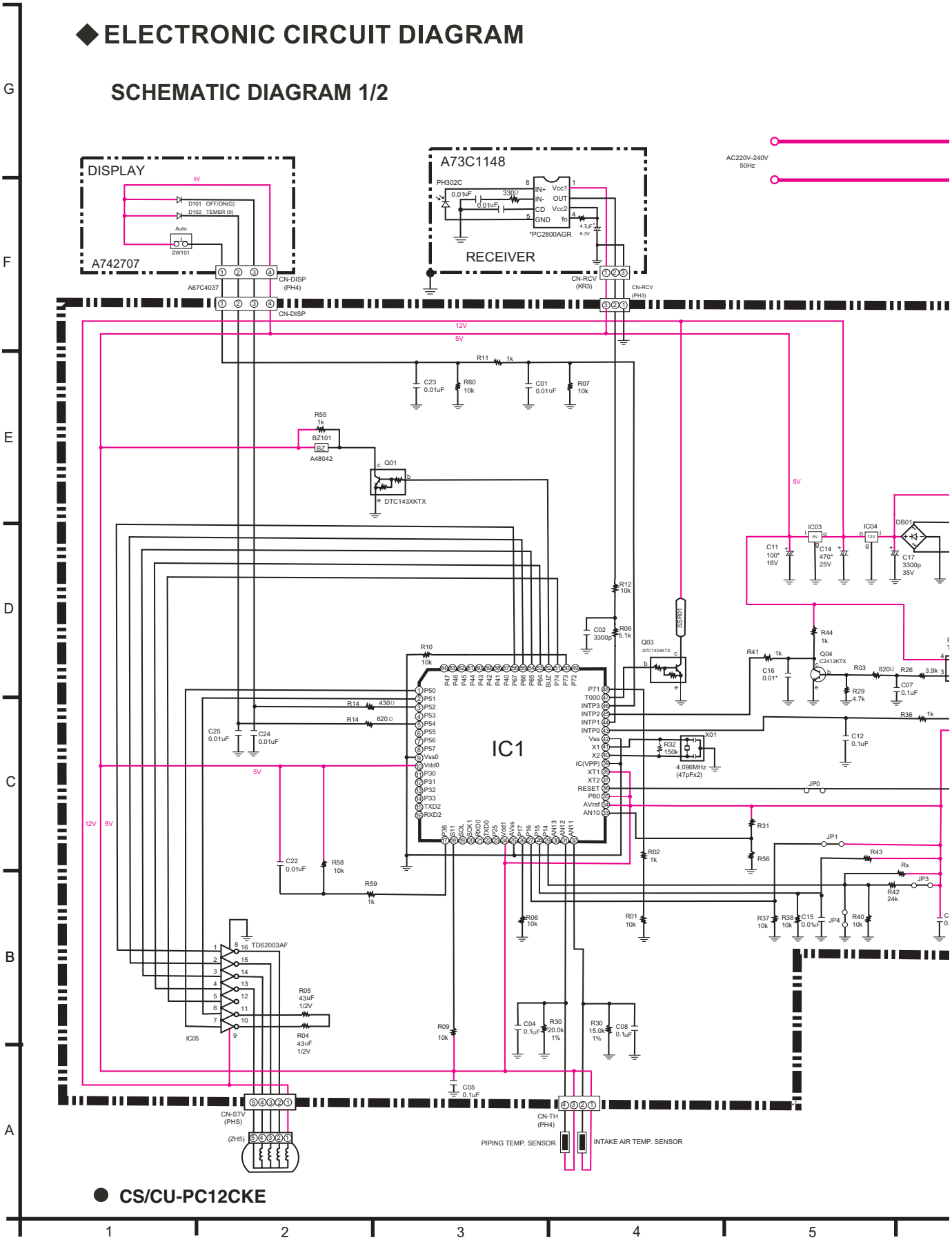


21 ELECTRONIC CIRCUIT DIAGRAM

(CS-PC12CKE / CU-PC12CKE)

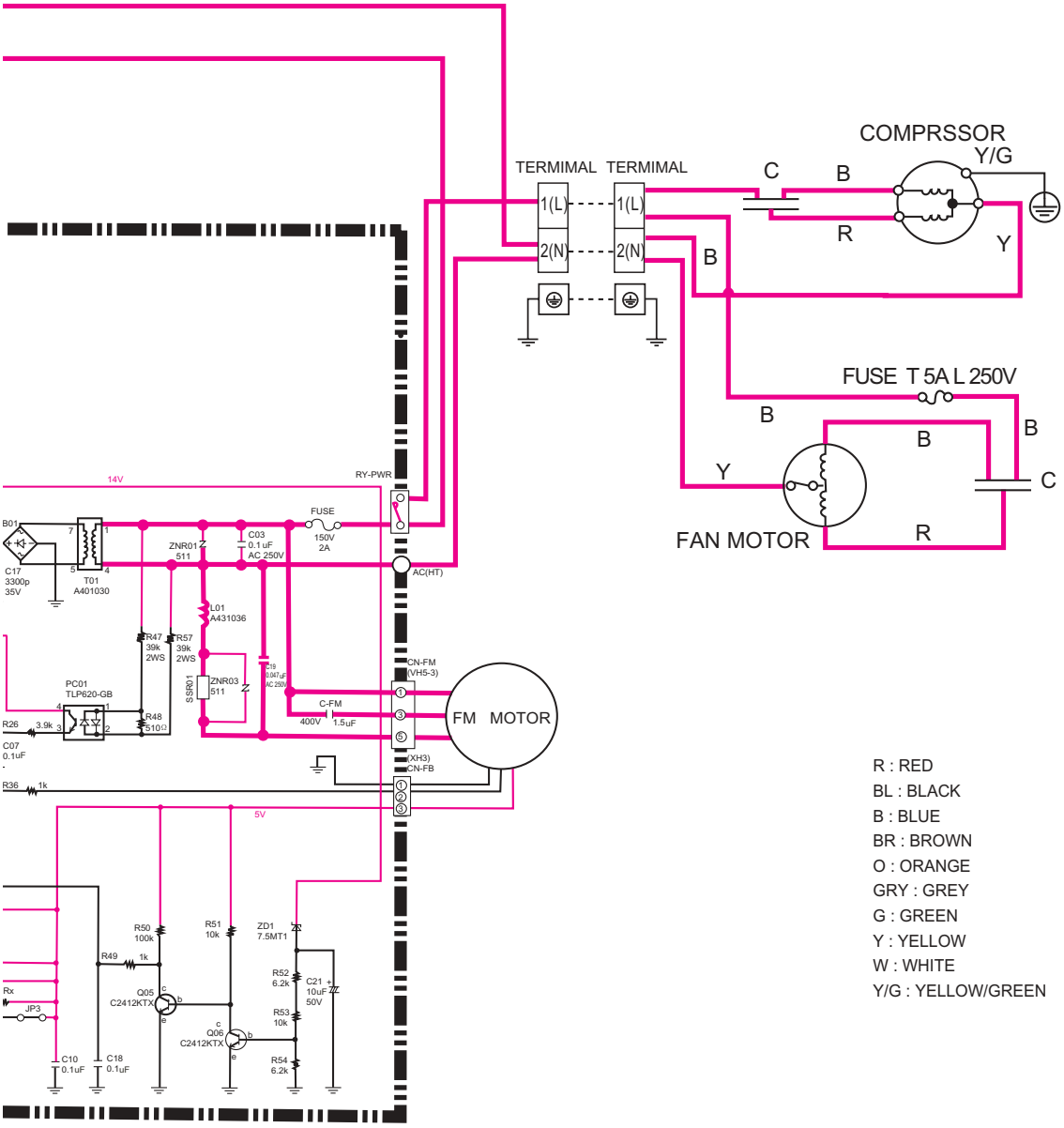
◆ELECTRONIC CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM 1/2



● CS/CU-PC12CKE

SCHEMATIC DIAGRAM 2/2



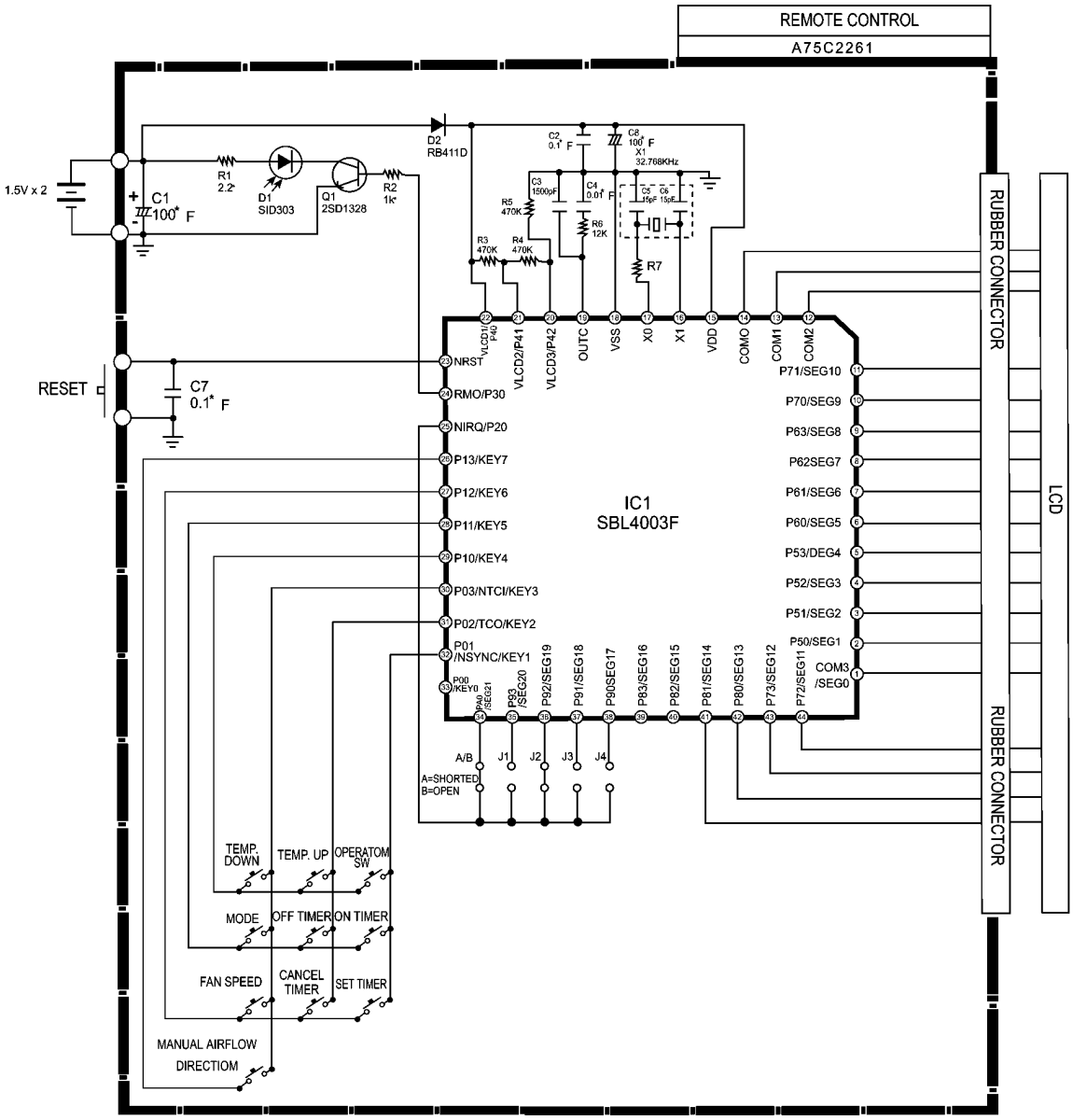
R : RED
BL : BLACK
B : BLUE
BR : BROWN
O : ORANGE
GRY : GREY
G : GREEN
Y : YELLOW
W : WHITE
Y/G : YELLOW/GREEN

● **CS/CU-PC12CKE**

6 7 8 9 10

21.1. ELECTRONIC CIRCUIT DIAGRAM (REMOTE CONTROL)

CS-PC12CKE / CU-PC12CKE



21.2. PRINTEB CIRCUIT BOARD(REMOTE CONTROL)

CS-PC12CKE / CU-PC12CKE