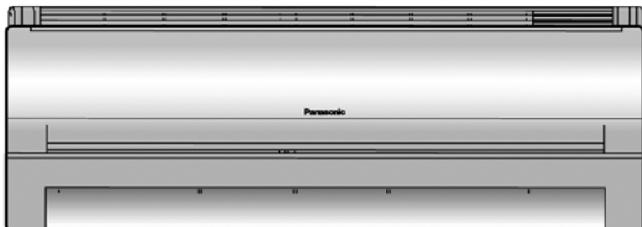
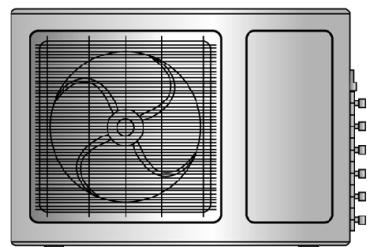
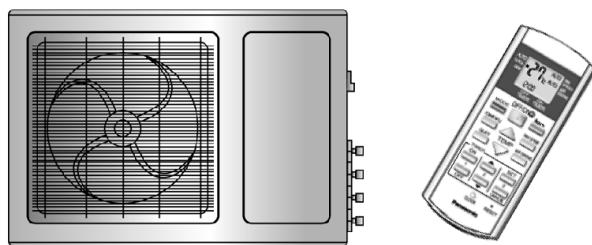


# Service Manual

Air Conditioner



**CS-C9DKZW CU-2C18DKH  
CS-C9DKZW CU-3C20DKH**



## ⚠ 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.

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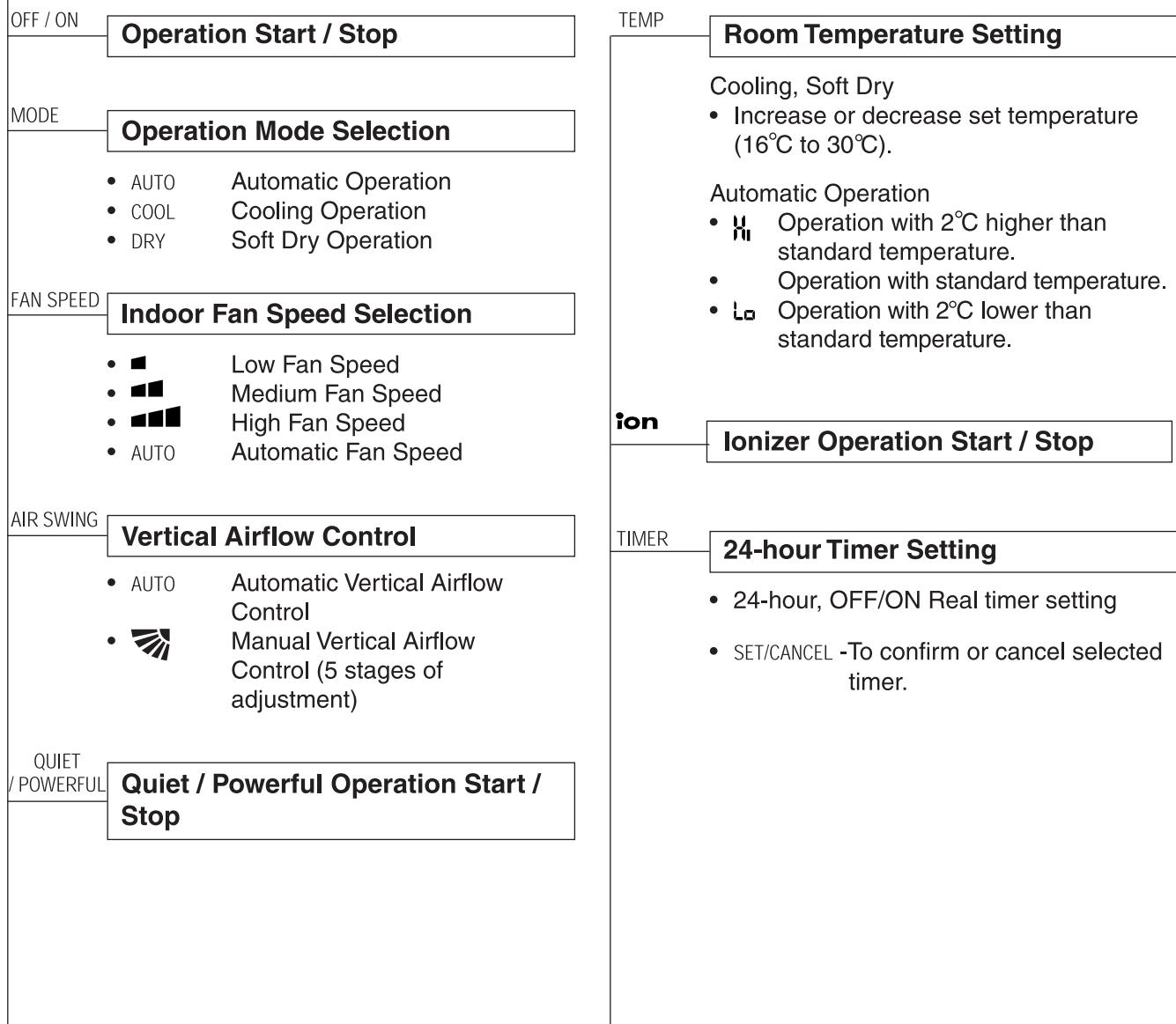
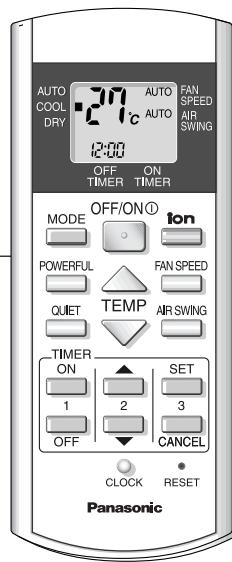
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# 1 Features

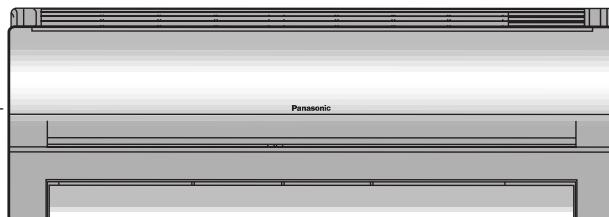
- **High Efficiency**
- **Compact Design**
- **Comfort Environment**
  - Ionizer control for generating negative ion in discharge air
  - Air filter with function to reduce dust and smoke
  - Wider range of horizontal discharge air
- **Auto Restart**
  - Random auto restart after power failure for safety restart operation
- **Removable and Washable Front Panel**
- **Remote Control Illuminable Button**
- **Catechin Air Purifying Filter**
  - Trap dust, tobacco smoke and tiny particles
  - Prevent the growth of bacteria and viruses trapped
- **Triple Deodorizing Filter**
  - Absorb odours produced by wall paper, construction material and living environment
- **Quality Improvement**
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - 2-stage OLP to protect compressor
  - Noise prevention during soft dry operation.
  - Blue Coated Condenser
  - High resistance to corrosion.
- **Operation Improvement**
  - Quiet mode to provide extra quiet operation
  - Powerful mode to reach the desired room temperature quickly
- **Long Installation Piping**
  - Long piping up to 15 meter
- **12-hour Timer Setting**

## 2 Functions

### Remote Control



## Indoor Unit



### Auto Operation Button

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

### Operation Indication Lamps (LED)

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

### Operation Mode

- Cooling, Soft Dry and Automatic Operation.

### Timer

- OFF/ON.

### Powerful Operation

- Reaches the desired room temperature quickly.

### Quiet Operation

- To provide quiet operation.

### Random Auto Restart Control

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

### Anti-Freezing Control

- To prevent indoor heat exchanger from freezing.

### Ionizer Operation

- Generate and discharge negative ion.

### Indoor Fan Speed Control

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

### Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

### Time Delay Safety Control

- Restarting is inhibited for approximately 3 minutes.

### 7 Minutes Time Save Control

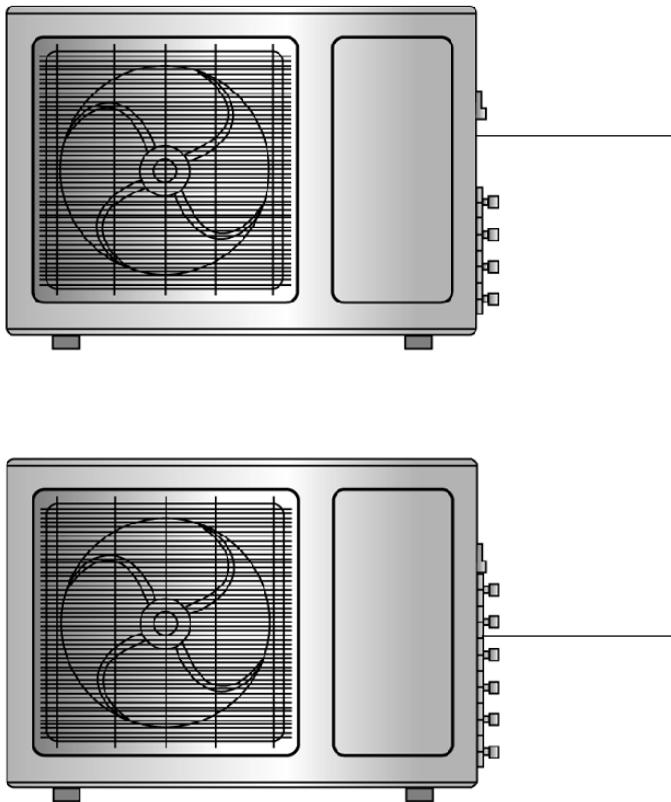
- To reduce the built up humidity inside the room.

### Anti-Dew Formation Control

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

## Outdoor Unit

### CU-2C18DKH & CU-3C20DKH



#### Compressor Reverse Rotation Protection Control

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

#### Overload Protector

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

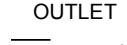
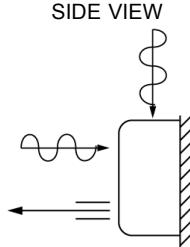
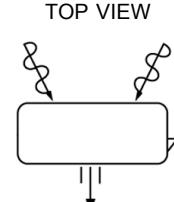
#### 60 Sec. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 sec. However, it stops immediately when received stop signal from remote control.

#### Outdoor Fan Operation Control

### 3 Product Specifications

#### 3.1. CS-C9DKZW CU-2C18DKH

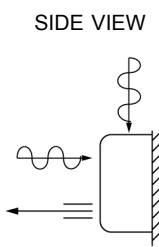
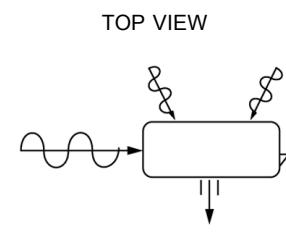
	Unit	Indoor unit	Outdoor unit
Power Source (Phase, Voltage, Cycle)	ø, V, Hz	Single 240 - 220 50	
Cooling Capacity	kW (BTU/h)	(1 unit) 2.44 - 2.40 (8,320 - 8,180)	(2 units) 4.88 - 4.80 (16,600 - 16,400)
	kJ/h	(1 unit) 8,640	(2 units) 8,780
Moisture Removal	l/h (Pint/h)	(1 unit) 1.5 (3.2)	(2 units) 2.6 (5.5)
Airflow Method	OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Lo	m³/min (cfm)	5.6 (200) - 5.6 (200)
	Me	m³/min (cfm)	6.8 (240) - 6.8 (240)
	Hi	m³/min (cfm)	8.6 (300) - 8.6 (300)
	SHi	m³/min (cfm)	9.3 (330) - 9.3 (330)
Noise Level	dB (A)	High 36 - 36, Low 26 - 26	High 55 - 53
	Power level dB	High 49 - 49	High 70 - 68
Electrical Data	Input Power	kW	(1 unit) 770 - 730 (2 units) 1,540 - 1,460
	Running Current	A	(1 unit) 3.3 - 3.5 (2 units) 6.6 - 7.0
	EER	W/W (BTU/hW)	(1 unit) 3.17 - 3.29 (10.8 - 11.2) (2 units) 3.17 - 3.29 (10.8 - 11.2)
	Starting Current	A	15.0
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 3/8" L ; Half Union 1/4"
Pipe Size (Flare piping)		inch inch	G (gas side) ; 3/8" L (liquid side) ; 1/4"
Drain Hose	Inner diameter	mm	12
	Length	m	0.7
Dimensions	Height	inch (mm)	11 - 1/32 (280)
	Width	inch (mm)	31 - 15/32 (799)
	Depth	inch (mm)	7 - 7/32 (183)
Net Weight		lb (kg)	20 (9.0)
Compressor	Description		—
	Motor Type		Rotary (1 cylinder) rolling piston type
	Rated Output	W	Induction (2-poles) 650

		Unit	Indoor unit	Outdoor unit
Fan Motor	Description		Cross-flow Fan	Propeller Fan
	Material		AS + Glass Fiber 20%	AS + Glass Fiber 20%
	Type		Induction (4-poles)	Induction (6-poles)
	Input	W	29.3 - 26.3	134.6 - 118.8
	Rated Output	W	15	50
	Fan Speed	Low rpm	750 - 750	—
		Medium rpm	920 - 920	—
		High rpm	1,160 - 1,160	760 - 720
		SuperHigh rpm	1,250 - 1,250	—
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium	Aluminium (Blue Coat)
	Fin Type		Slit Fin	Louver Fin
	Row / Stage		(Plate fin configuration, forced draft) 2 × 15	2 × 24
	FPI		19	16
	Size (W × H × L)	mm	610 × 315 × 25.4	560 × 609.6 × 44
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(c.c)	—	SUNISO 4G DID or ATMOS M60 or ATMOS 56M
Refrigerant (R-22)		g (oz)	—	700 × 2 (24.7 × 2)
Thermostat			—	—
Protection Device			—	Overload Protector
Capillary Tube	Length	mm	—	680
	Flow Rate	l/min	—	11.5
	Inner Diameter	mm	—	1.5
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		µF, VAC	—	25 µF, 370/400 VAC
Fan Motor Capacitor		µF, VAC	1.5 µF, 440 VAC	3.0 µF, 450 VAC

## Note:

- Specifications are subjected to change without prior notice for further improvement.

### 3.2. CS-C9DKZW CU-3C20DKH

		Unit	Indoor unit	Outdoor unit					
			Single Operation (A, B1, B2)	Single Operation		Double Operation		Triple Operation	
				(A)	(B1 or B2)	(B1 + B2)	(A + B1 or B2)	(A + B1 + B2)	
Power Source (Phase, Voltage, Cycle)		Ø, V, Hz			Single 240 - 220		50		
Cooling Capacity Per Unit	kW (BTU/h)	—	2.40-2.34 (8,180-7,980)	2.82-2.78 (9,620-9,480)	3.60-3.52 (12,300-12,000)	5.22-5.12 (17,800-17,500)	6.00-5.86 (20,500-20,000)		
Moisture Removal	l/h (Pint/h)	—	1.5 (3.2)	1.6 (3.4)	2.1 (4.4)	2.8 (5.9)	3.2 (6.8)		
Airflow Method	OUTLET 	SIDE VIEW 	TOP VIEW 						
Air Volume	Lo	m³/min (cfm)	5.6 - 5.6 (200 - 200)	—					
	Me	m³/min (cfm)	6.8 - 6.8 (240 - 240)	—					
	Hi	m³/min (cfm)	8.6 - 8.6 (300 - 300)	36.8 (1,300) - 35.1 (1,240)					
	SHi	m³/min (cfm)	9.3 - 9.3 (330 - 330)	—					
Noise Level		dB (A)	High 36 - 36, Low 26 - 26	High 56 - 54					
		Power level dB	High 49 - 49	High 71 - 69					
Electrical Data	Input Power	kW	50 - 50	820-770	1,120-1,070	1,210-1,150	1,850-1,750	1,920-1,840	
	Running Current	A	0.23 - 0.23	3.6 - 3.7	4.9 - 5.1	5.3 - 5.5	8.1 - 8.3	8.3 - 8.7	
	EER	W/W (BTU/hW)	—	2.93 - 3.04 (10.0 - 10.4)	2.52 - 2.60 (8.6 - 8.9)	2.98 - 3.06 (10.2 - 10.5)	2.82 - 2.93 (9.6 - 10.0)	3.13 - 3.18 (10.7 - 10.9)	
	Starting Current	A	(A unit) 15.0 - 15.0	(B unit) 21.0 - 21.0					
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 3/8" L ; Half Union 1/4"	G ; 3-way valve 3/8" L ; 3-way valve 1/4"					
Pipe Size (Flare piping)		inch inch	G (gas side) ; 3/8" L (liquid side) ; 1/4"	G (gas side) ; 3/8" L (liquid side) ; 1/4"					
Drain Hose	Inner diameter	mm	12	—					
	Length	m	0.7	—					
Dimensions	Height	inch (mm)	11 - 1/32 (280)	25 - 21/32 (651)					
	Width	inch (mm)	31 - 15/32 (799)	35 - 3/16 (893)					
	Depth	inch (mm)	7 - 7/32 (183)	13 - 19/32 (345)					
Net Weight		lb (kg)	20 (9.0)	146 (66)					
Compressor	Description		—	Rotary (1 cylinder) rolling piston type					
	Motor Type		—	Induction (2-poles)					
	Rated Output	W	—	(A unit) 650	(B unit) 900				

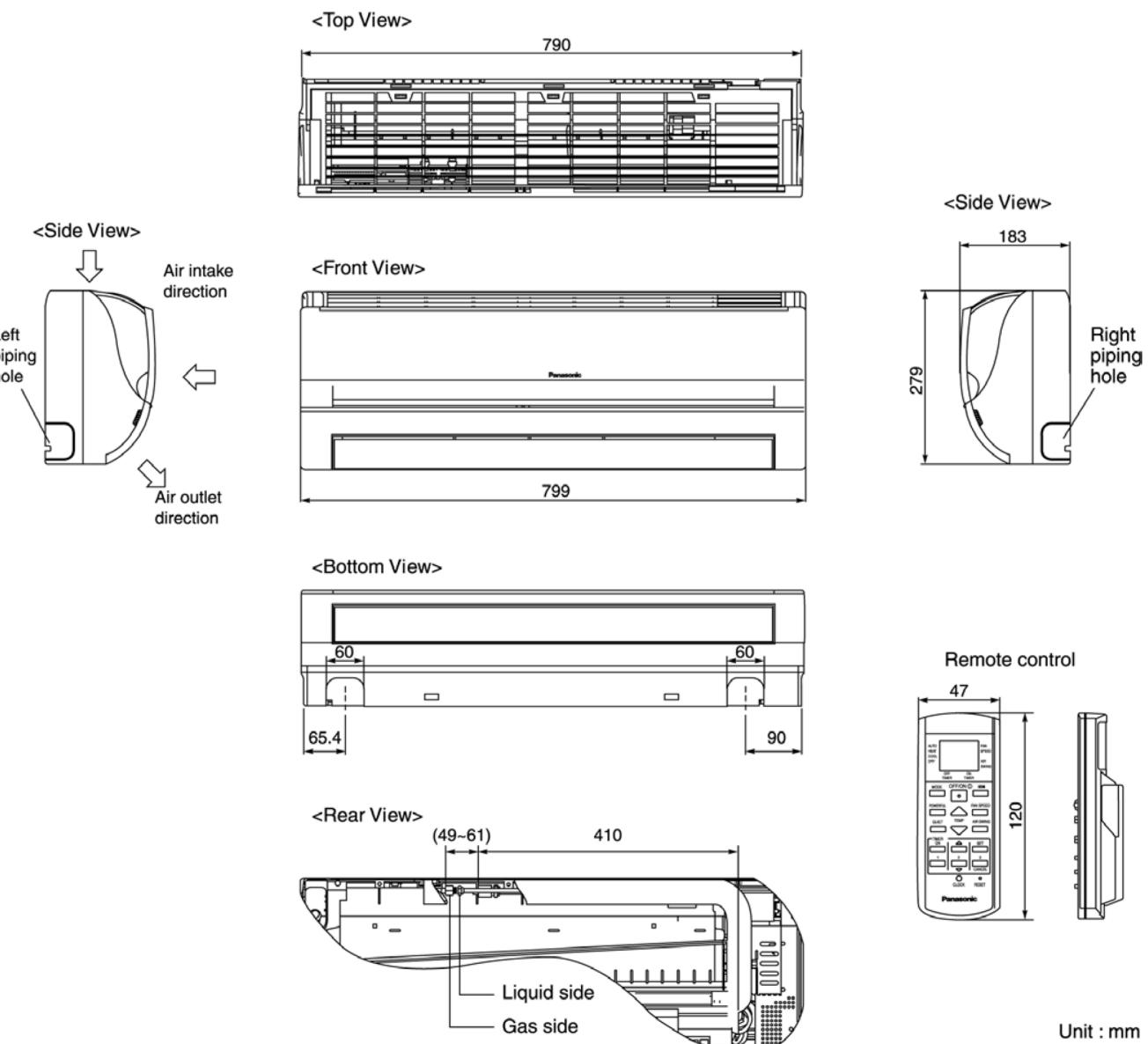
		<b>Indoor unit</b>		<b>Outdoor unit</b>
Fan Motor	Description	Cross-flow Fan		Propeller Fan
	Material	AS + Glass Fiber 20%		AS + Glass Fiber 20%
	Type	Induction (4-poles)		Induction (6-poles)
	Input	W	29.3 - 26.3	134.0 - 118.7
	Rated Output	W	15	50
	Fan Speed	Low rpm	750 - 750	—
		Medium rpm	920 - 920	—
		High rpm	1,160 - 1,160	765 - 725
Heat Exchanger	SuperHigh rpm		1,250 - 1,250	—
	Description	Evaporator		Condenser
	Tube material	Copper		Copper
	Fin material	Aluminium		Aluminium (Blue Coat)
	Fin Type	Slit Fin		Louver Fin
	Row / Stage	2 × 15		(Plate fin configuration, forced draft) 2 × 24
	FPI	19		16
Size (W × H × L)		mm	610 × 315 × 25.4	756.0 × 609.6 × 44 719.5
Refrigerant Control Device		—		Capillary Tube
Refrigeration Oil		(c.c)	—	SUNISO 4GDID or ATMOS M60 or ATMOS 56M
Refrigerant (R-22)		g (oz)	—	(A unit) 770 (27.2) (B unit) 1,070 (37.8)
Thermostat		—		—
Protection Device		—		Overload Protector
Capillary Tube	Length	mm	—	935, 920, 1,170
	Flow Rate	l/min	—	20.0, 15.5, 10.0
	Inner Diameter	mm	—	2.0, 1.8, 1.6
Air Filter	Material Style	P.P. Honeycomb		—
Capacity Control				Capillary Tube
Compressor Capacitor		μF, VAC	—	25 μF, 440 VAC
Fan Motor Capacitor		μF, VAC	1.5 μF, 440 VAC	3.0 μF, 450 VAC

**Note:**

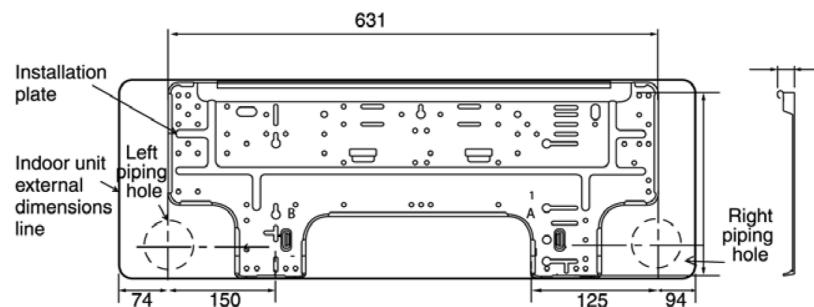
- Specifications are subjected to change without prior notice for further improvement.

## 4 Dimensions

### 4.1. Indoor Unit & Remote Control



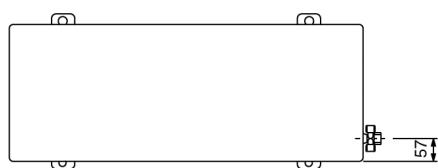
Relative position between the indoor unit and the installation plate <Front View>



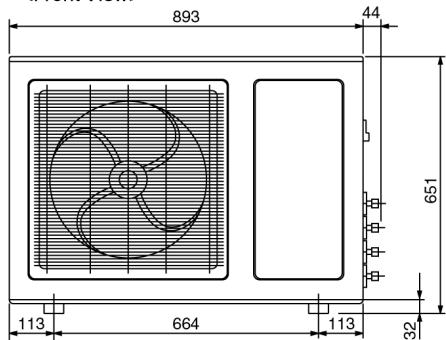
## 4.2. Outdoor Unit

### CU-2C18DKH

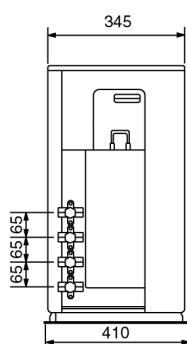
&lt;Top View&gt;



&lt;Front View&gt;

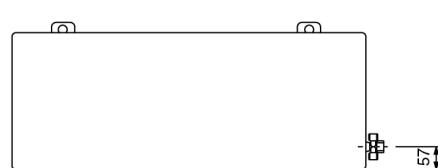


&lt;Side View&gt;

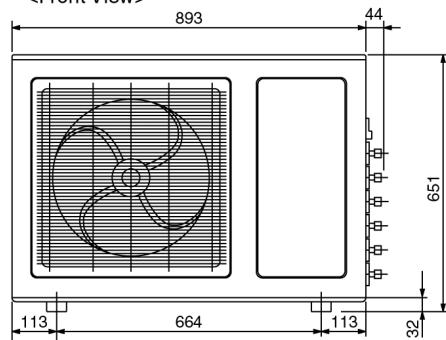


### CU-3C20DKH

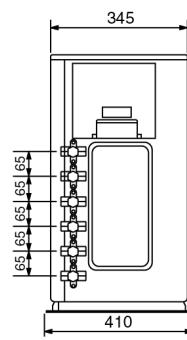
&lt;Top View&gt;



&lt;Front View&gt;



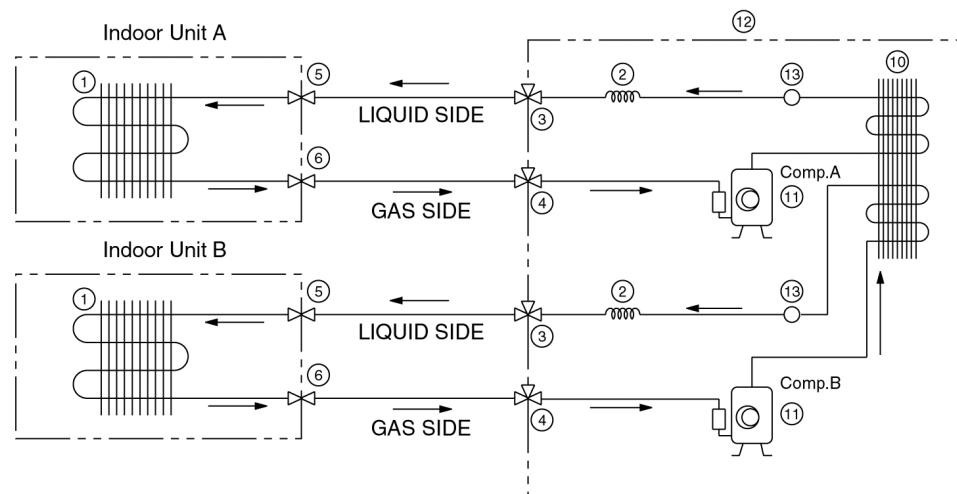
&lt;Side View&gt;



## 5 Refrigeration Cycle Diagram

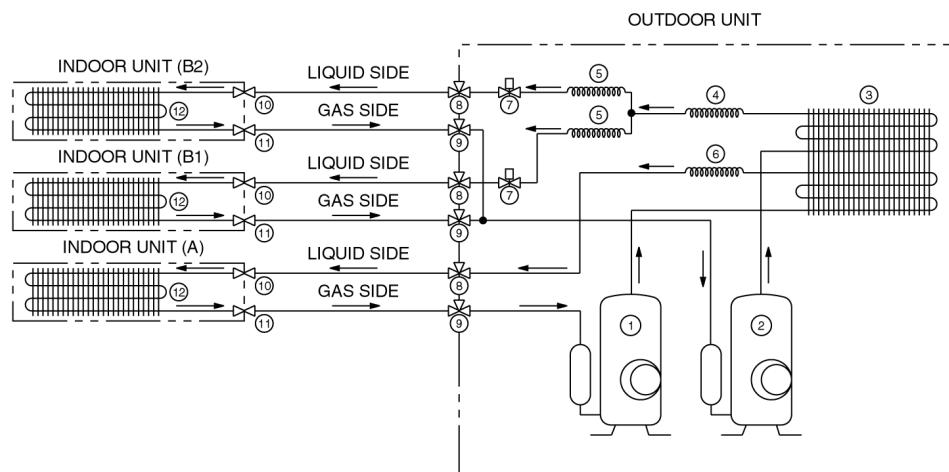
### CS-C9DKZW CU-2C18DKH

- ① Evaporator
- ② Capillary tube (2)
- ③ 3 way valve (1/4")
- ④ 3 way valve (3/8")
- ⑤ Half union (1/4")
- ⑥ Half union (3/8")
- ⑩ Condensor
- ⑪ Compressor
- ⑫ Outdoor unit
- ⑬ Strainer



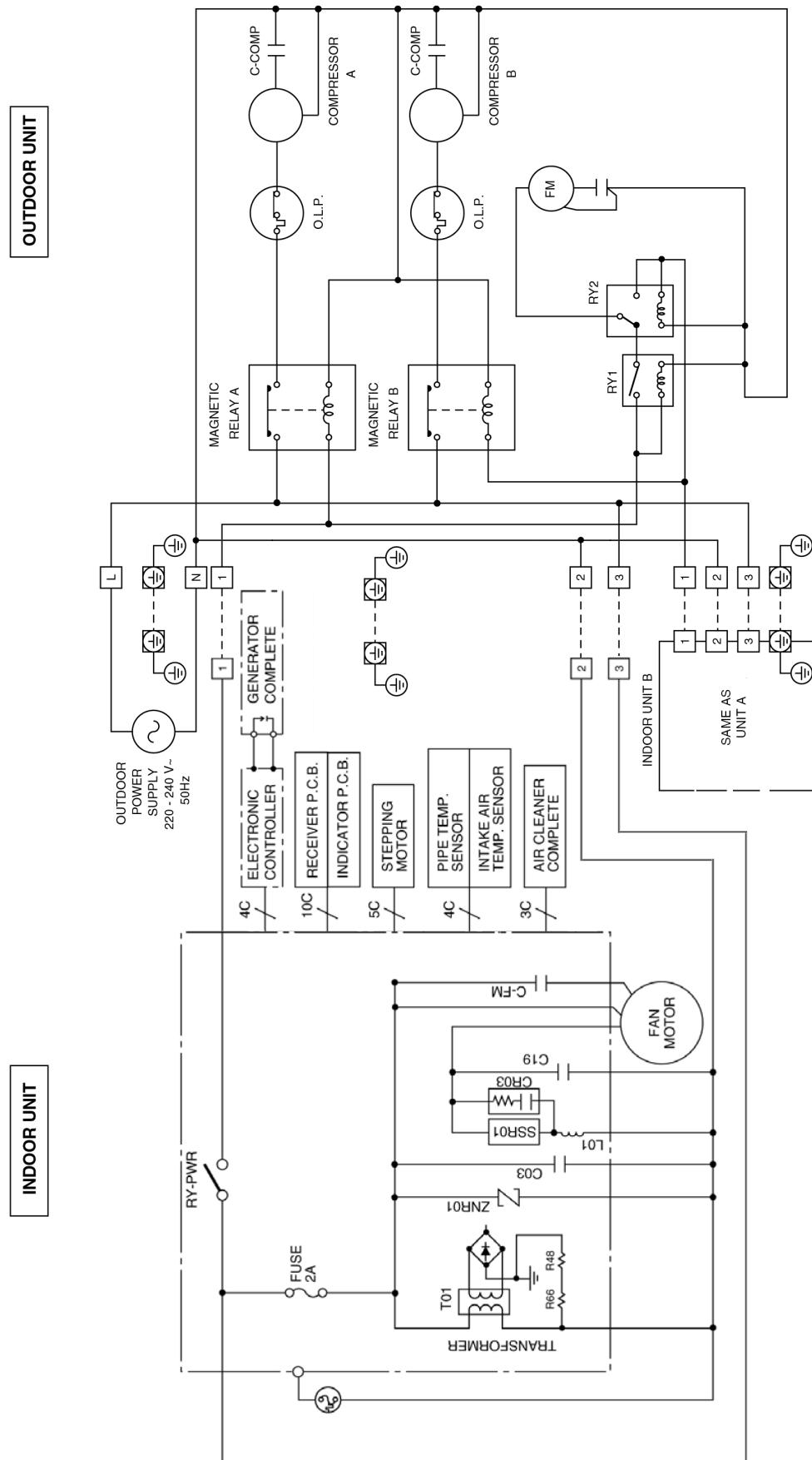
### CS-C9DKZW CU-3C20DKH

- ① Compressor (1)
- ② Compressor (2)
- ③ Condensor
- ④ Capillary tube (1)
- ⑤ Capillary tube (2)
- ⑥ Capillary tube (3)
- ⑦ Switching solenoid valve
- ⑧ 3 way valve (1/4")
- ⑨ 3 way valve (3/8")
- ⑩ Half union (1/4")
- ⑪ Half union (3/8")
- ⑫ Evaporator



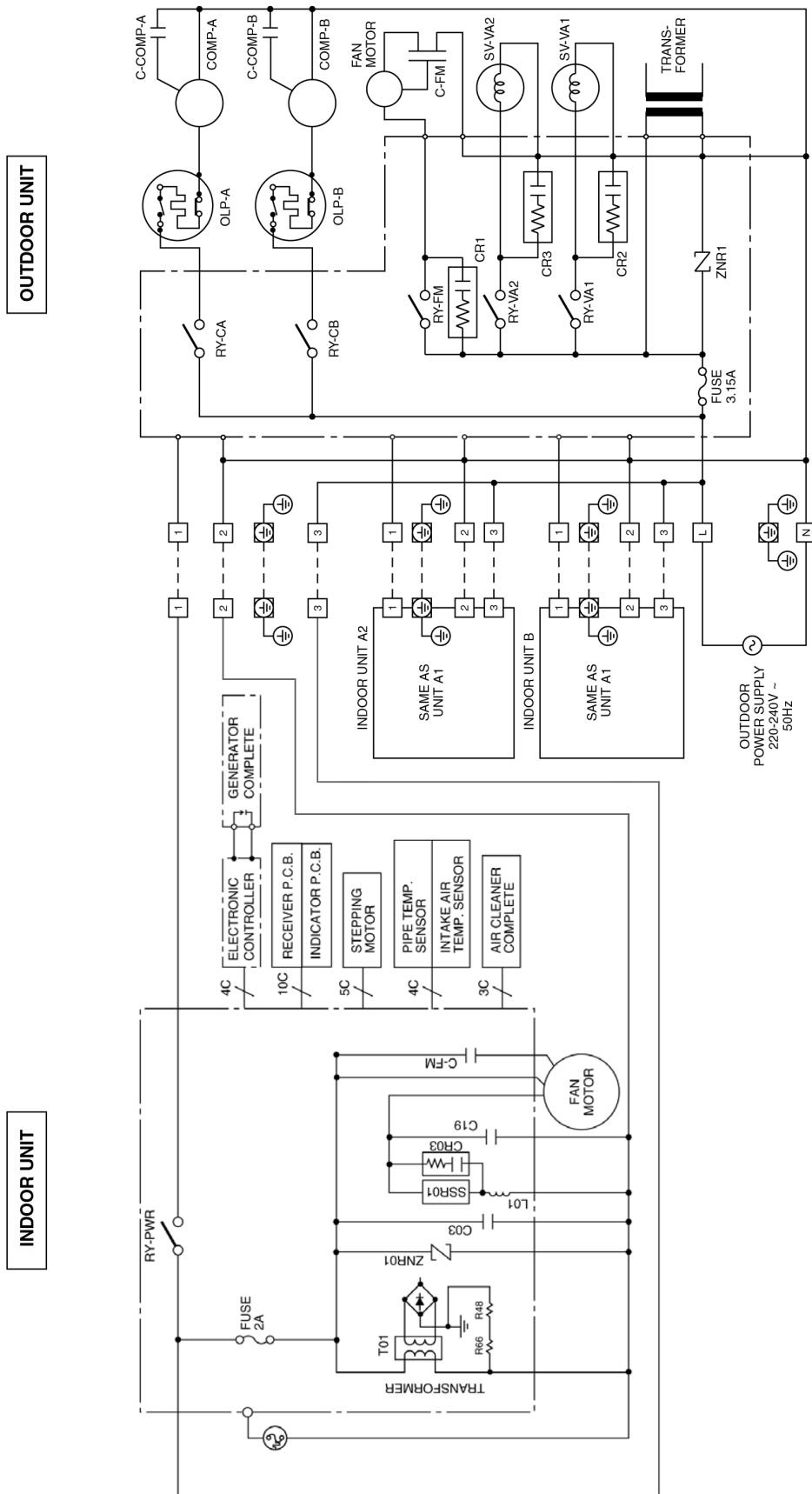
## 6 Block Diagram

CS-C9DKZW CU-2C18DKH



※ [ ] Indicates the electronic control unit.  
 ※ "C" Indicates the number of core wires. (Example: 6C=6 core wires)

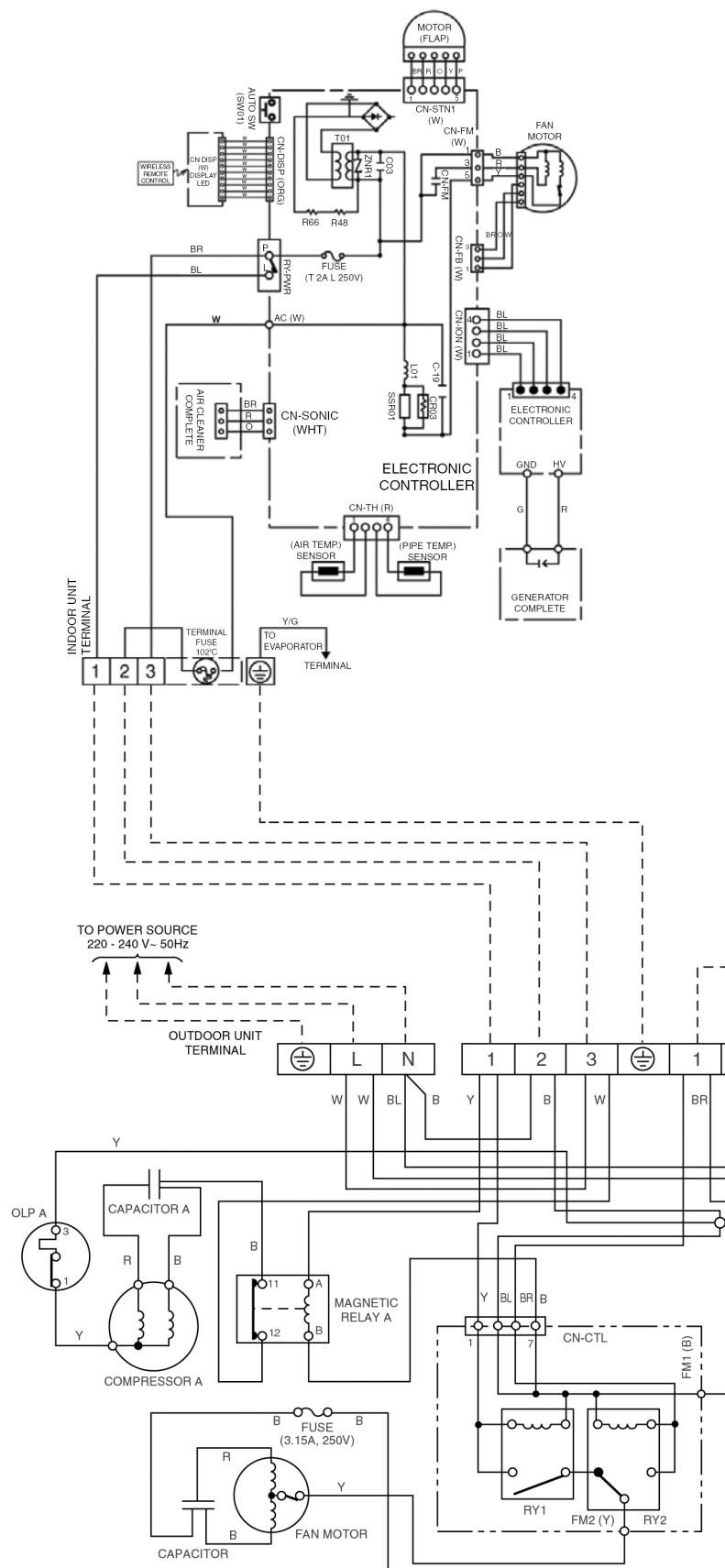
## CS-C9DKZW CU-3C20DKH



※ [ ] Indicates the electronic control unit.  
 ※ "C" Indicates the number of core wires. (Example: 6C=6 core wires)

# 7 Wiring Diagram

## CS-C9DKZW CU-2C18DKH



### Remarks:

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

### Resistance of Indoor Fan Motor Windings

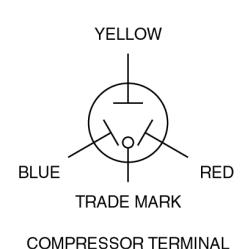
CONNECTION	CWA921181 ( $\Omega$ )
YELLOW - BLUE	390
YELLOW - RED	390

### Resistance of Outdoor Fan Motor Windings

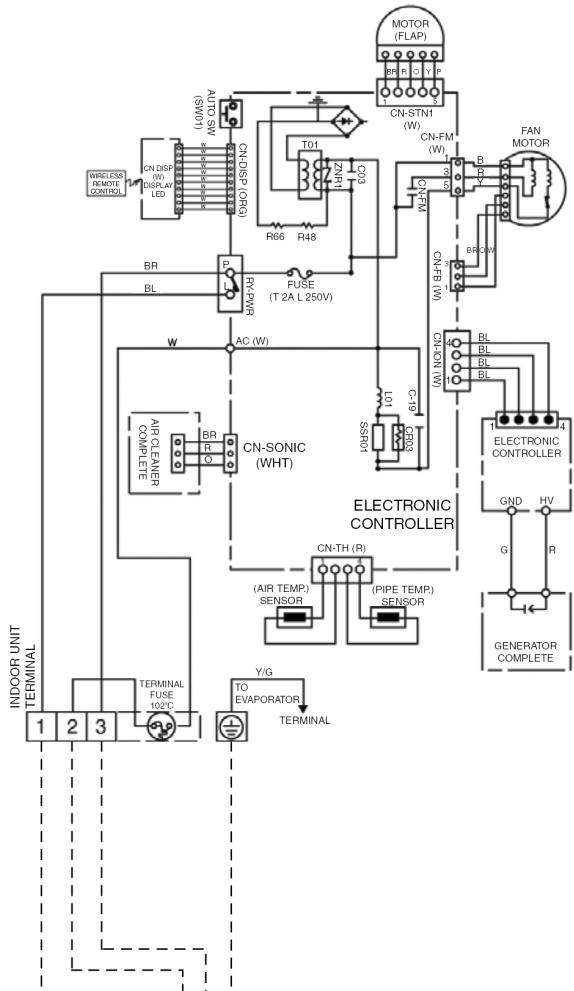
CONNECTION	CWA951322 ( $\Omega$ )
BLUE - YELLOW	71.1
YELLOW - RED	96.9

### Resistance of Compressor Windings

CONNECTION	2PS132D2AC02 ( $\Omega$ )
C - R	4.2
C - S	4.954



## CS-C9DKZW CU-3C20DKH



### Remarks:

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

### Resistance of Indoor Fan Motor Windings

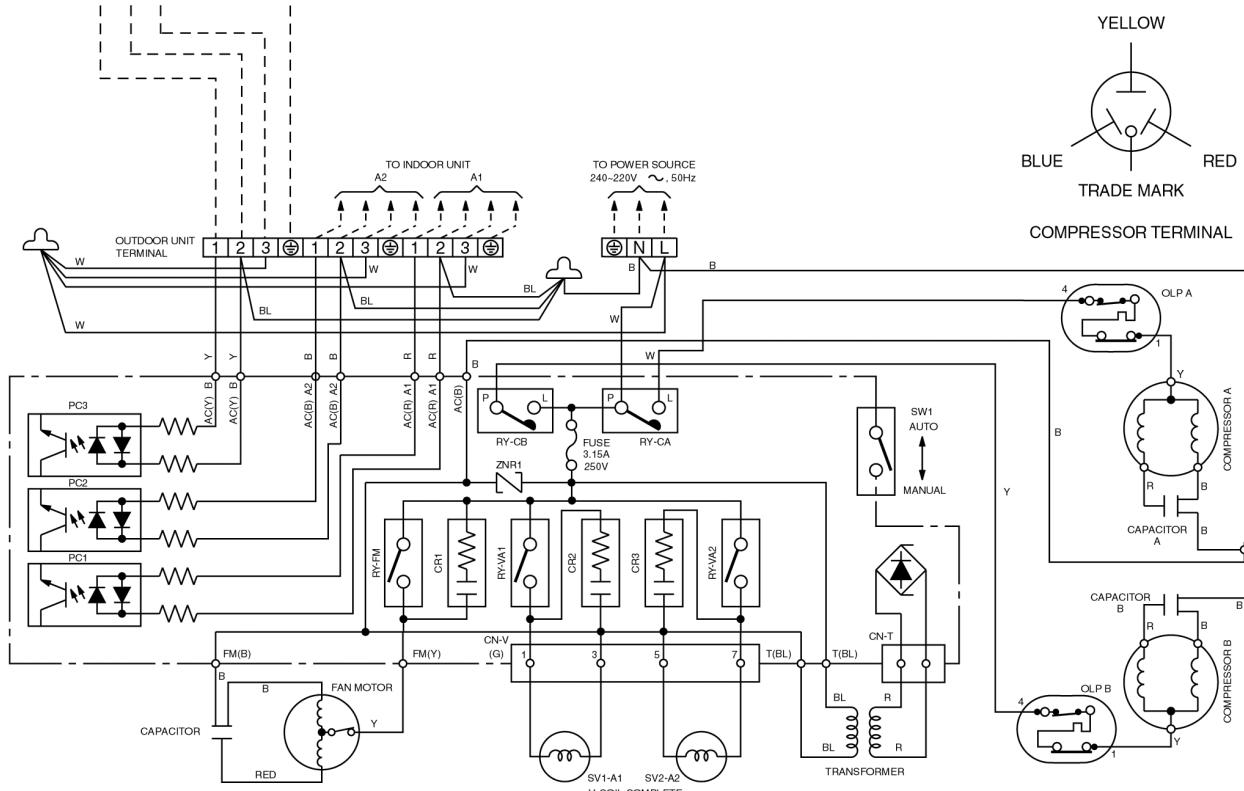
CONNECTION	CWA921181 ( $\Omega$ )
YELLOW - BLUE	390
YELLOW - RED	390

### Resistance of Outdoor Fan Motor Windings

CONNECTION	CWA951322 ( $\Omega$ )
BLUE - YELLOW	71.1
YELLOW - RED	96.9

### Resistance of Compressor Windings

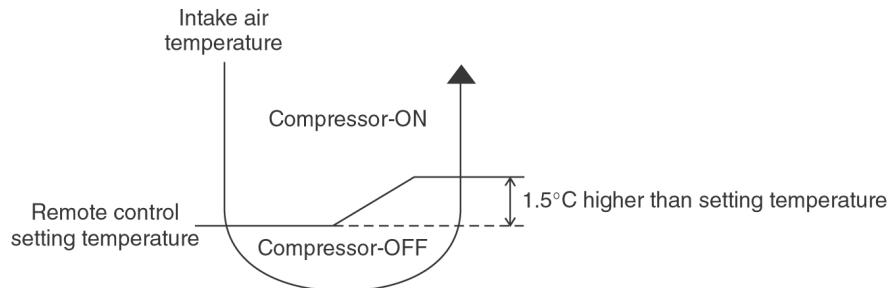
CONNECTION	2PS132D2AC02 ( $\Omega$ )
C - R	4.2
C - S	4.954
CONNECTION	2PS192D2AC02 ( $\Omega$ )
C - R	3.187
C - S	5.297



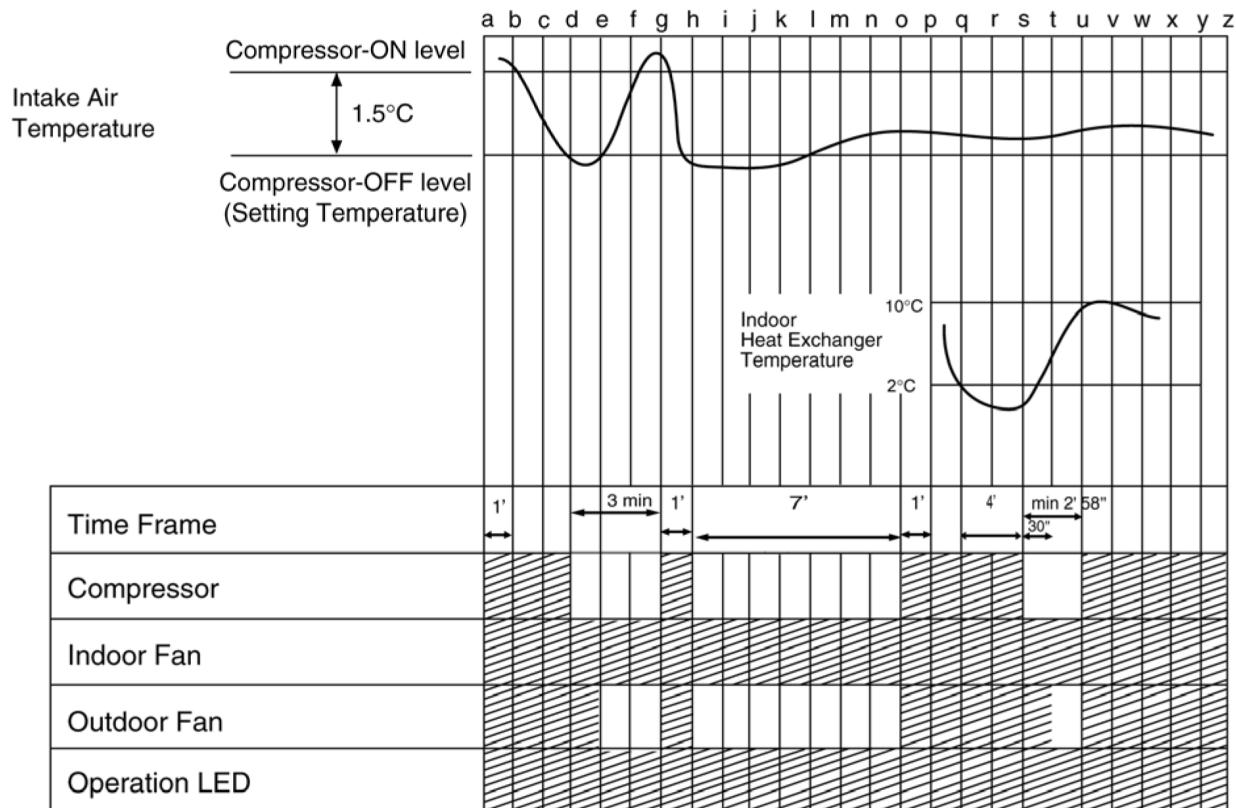
## 8 Operation Details

### 8.1. Cooling Operation

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



#### 8.1.1. Cooling Operation Time Diagram



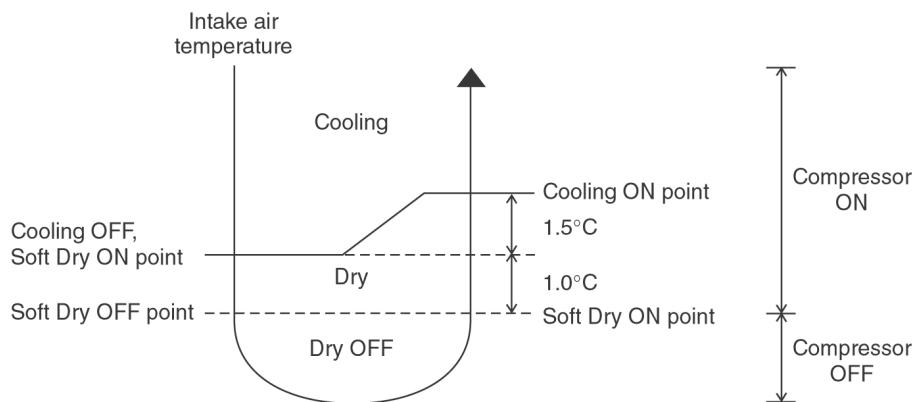
<Description of operation>

- |              |   |
|--------------|---|
| a – b, g – h | : Minimum 60 seconds forced operation                           |
| d – g, s – u | : Minimum 3 minutes restart control (Time Delay Safety Control) |
| h – o        | : Maximum 7 minutes time save control                           |
| q – u        | : Anti-Freezing Control   |

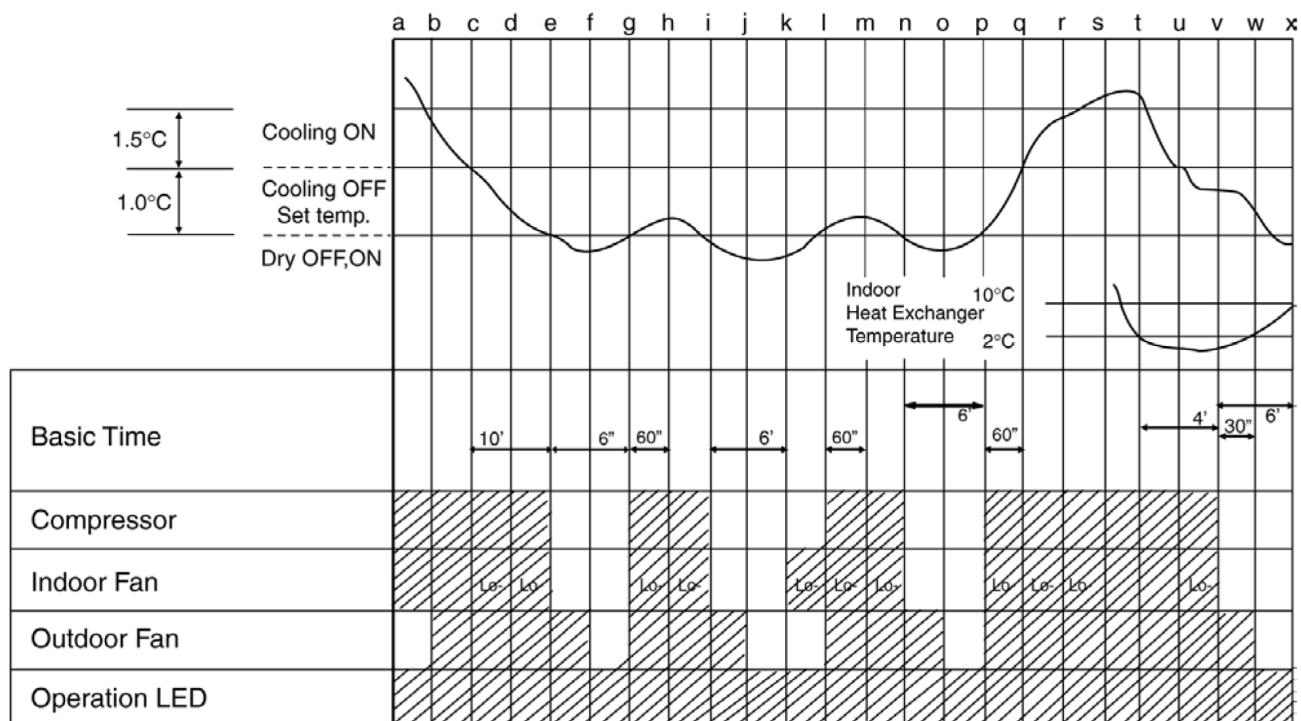


## 8.2. Soft Dry Operation

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



### 8.2.1. Soft Dry Operation Time Diagram

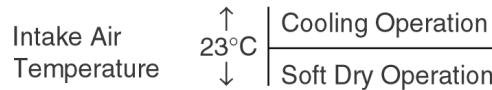


<Description of operation>

- |                      |  |           |
|----------------------|--|-----------|
| g – h, l – m, p – q, | : Minimum 60 seconds forced operation  | Operation |
| a – c                | : Minimum 3 minutes restart control (Time Delay Safety Control) - Cooling operation  | Stop      |
| e – g, n – o         | : Minimum 6 minutes restart control (Time Delay Safety Control) - Soft dry operation |           |
| t – x                | : Anti-Freezing Control  |           |

### 8.3. Automatic Operation

- Automatic operation can be set using remote control.
- This operation starts to operate with indoor fan at SLo speed for 20 seconds to judge the intake air temperature.
- After judged the temperature, the operation mode is determined by referring to the below standard.



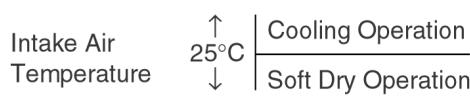
- Then, the unit start to operate at determined operation mode, until it is switched off using remote control, with the setting temperature as shown in below table.

	Setting Temperature (Standard)
Cooling Operation	$25^{\circ}\text{C}$
Soft Dry Operation	$22^{\circ}\text{C}$

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

	Cooling	Soft Dry
Higher $\rightarrow +2^{\circ}\text{C}$	$27^{\circ}\text{C}$	$24^{\circ}\text{C}$
Standard $\rightarrow \pm 0^{\circ}\text{C}$	$25^{\circ}\text{C}$	$22^{\circ}\text{C}$
Lower $\rightarrow -2^{\circ}\text{C}$	$23^{\circ}\text{C}$	$20^{\circ}\text{C}$

- The operation mode judging temperature and standard setting temperature can be increased by  $2^{\circ}\text{C}$  permanently, by open the circuit of JX1 at indoor electronic controller.



	Setting Temperature (Standard)
Cooling Operation	$27^{\circ}\text{C}$
Soft Dry Operation	$24^{\circ}\text{C}$

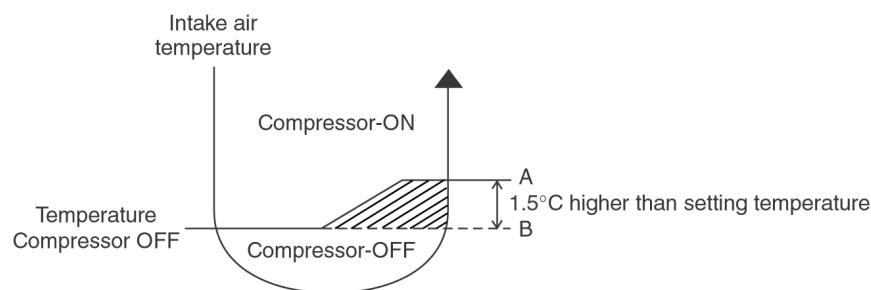
## 8.4. Operation Control

### 8.4.1. Restart Control (Time Delay Safety Control)

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

### 8.4.2. 7 Minutes Time Save Control

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



### 8.4.3. 60 Seconds Forced Operation

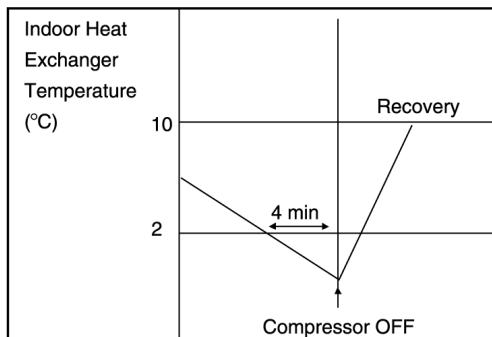
- Once the air conditioner is turned on, the compressor will not stop within 60 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, force stop by pressing the OFF/ON operation button at the remote control is permitted.
- The reason for the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

### 8.4.4. Starting Current Control

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

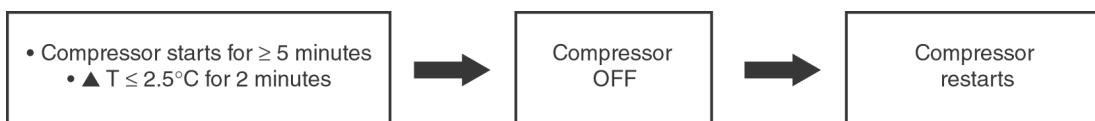
#### 8.4.5. Anti-Freezing Control

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



#### 8.4.6. Compressor Reverse Rotation Protection Control

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



s T = Intake air temperature - Indoor heat exchanger temperature

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

#### 8.4.7. Anti-Dew Formation Control

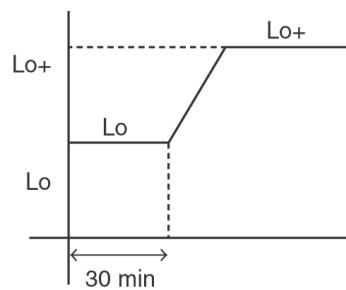
- Purpose is to prevent dew formation on indoor unit air discharge area.
- When room temperature is constant ( $\pm 1^\circ\text{C}$ ) the following condition occur for 30 minutes continuously, anti-dew formation will activate:
  - Indoor intake temperature is more than 24°C and less than 30°C.
  - Remote Control setting temperature is less than 25°C.
  - Compressor is on.
  - Cooling operation mode.
  - Indoor Fan motor operate at Low fan speed or QLo.

- Anti-Dew Formation is control by:

- Increasing Air Flow Volume

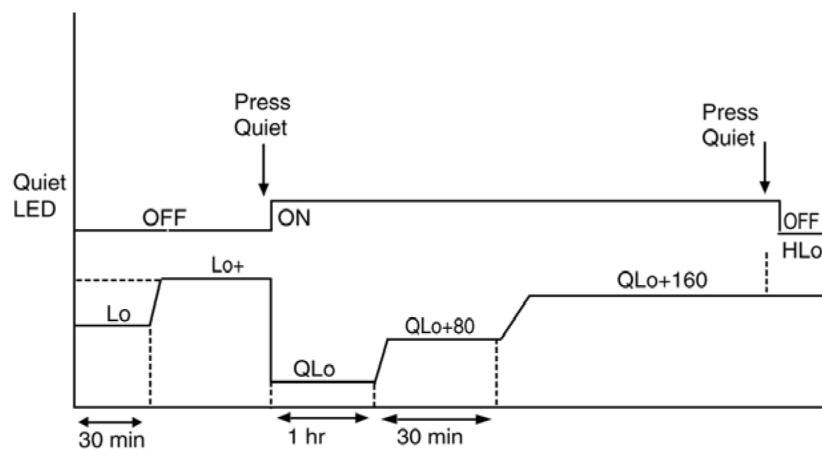
1. Lo fan speed

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



2. QLo fan speed

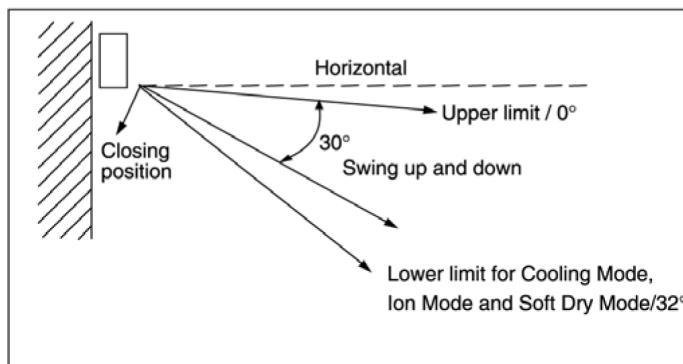
Dew formation may occurs at QLo cool, therefore QLo cool is operated only 1 hr 30 min (1 hr QLo, 30 min QLo + 80 rpm). After that, it operates at QLo +160rpm (However Quiet LED remains on).



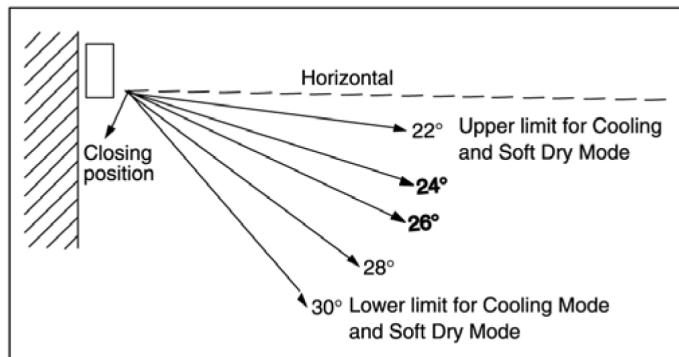
- Narrowing

1. Vertical Airflow Direction

During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from  $0^\circ$  -  $32^\circ$  to  $20^\circ$  -  $30^\circ$  under Cooling and Soft Dry operation mode.



During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 10°, 15°, 20°, 22° to 26°, 28°, 30°.



## 8.5. Indoor Fan Speed Control

- Indoor Fan Speed can be set using remote control.

### 8.5.1. Fan Speed Rotation Chart

Speed	Fan Speed (rpm)
	CS-C9DKZW
S Hi	1250
Hi	1160
Me	920
H Lo	840
C Lo	750
Lo-	750
S Lo	710
Q Hi	1060
Q Me	820
Q Lo	650

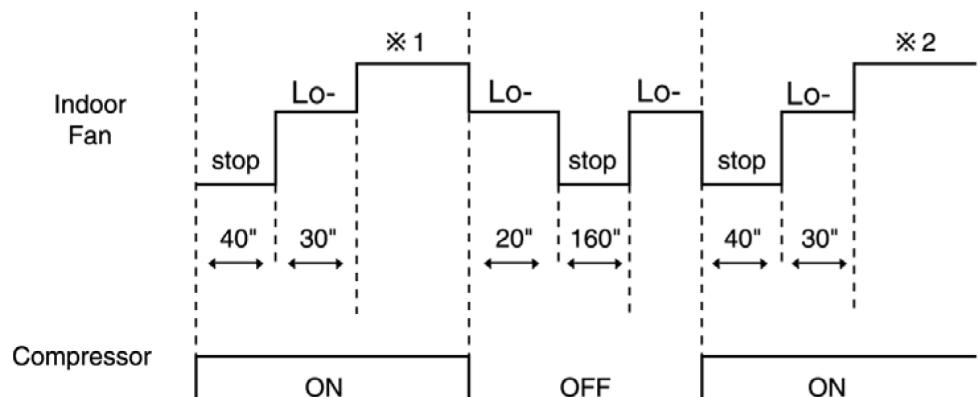
## 8.5.2. Automatic Fan Speed Control

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

Speed Mode			S Hi	Hi	Me	H Lo	C Lo	Lo-	S Lo	SSLo	Stop	
Cooling	Normal	Manual	Hi	<input type="radio"/>								
			Me		<input type="radio"/>							
			Lo				<input type="radio"/>					
	Powerful	Auto		<input type="radio"/>	<input type="radio"/>			<input type="radio"/>			<input type="radio"/>	
			Manual	<input type="radio"/>								
	Economy	Auto	<input type="radio"/>									
			Manual					<input type="radio"/>				
		Auto						<input type="radio"/>				
	Soft Dry	Manual						<input type="radio"/>		<input type="radio"/>		
			Auto					<input type="radio"/>		<input type="radio"/>		
Mode judgement									<input type="radio"/>			
Cooling	Quiet	Manual	Q Hi	Hi-100								
			Q Me		Me-100							
			Q Lo				CLo-100					
		Auto		Hi-100	Me-100			<input type="radio"/>		<input type="radio"/>		
Soft Dry	Quiet	Manual					CLo-100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
			Auto				CLo-100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
Ion only		Manual		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>			<input type="radio"/>		
			Auto			<input type="radio"/>	<input type="radio"/>			<input type="radio"/>		

- Auto Fan Speed during cooling operation:

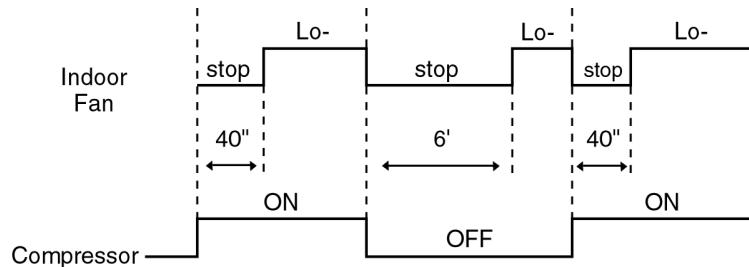
- Indoor fan will rotate alternately between off and on as shown in below diagram.
- At the beginning of each compressor start operation, indoor fan will increase fan speed gradually for deodorizing purpose.
- For the first time the compressor operate, indoor fan will be switched to Hi fan speed from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



- \* 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).
- \* 2 Fan Speed is Me after the compressor restarts.

Auto Fan Speed during Soft Dry operation:

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



### 8.5.3. Manual Fan Speed Control

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

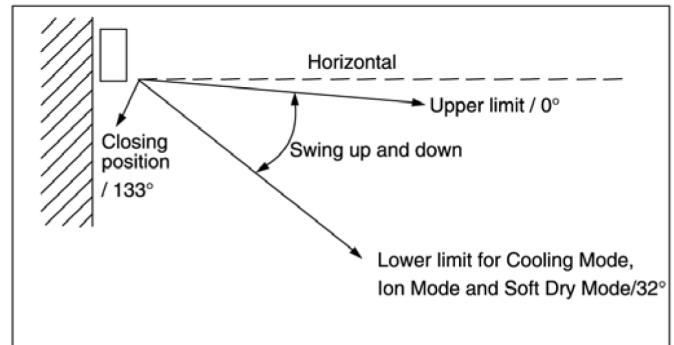
## 8.6. Outdoor Fan Speed Control

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

## 8.7. Vertical Airflow Direction Control

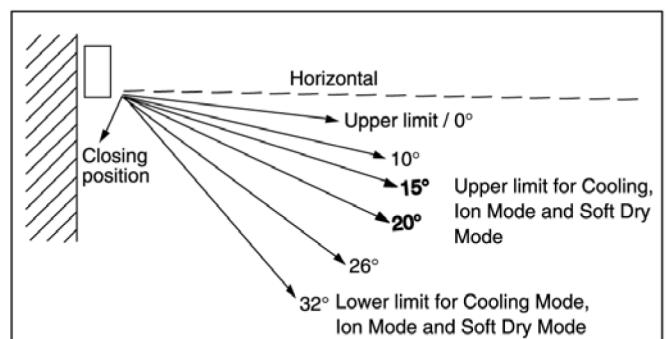
### 8.7.1. Auto Control

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



### 8.7.2. Manual Control

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



## 8.8. Horizontal Airflow Direction Control

- The horizontal airflow direction louvers can be adjusted manually by hand.

## 8.9. Powerful Operation

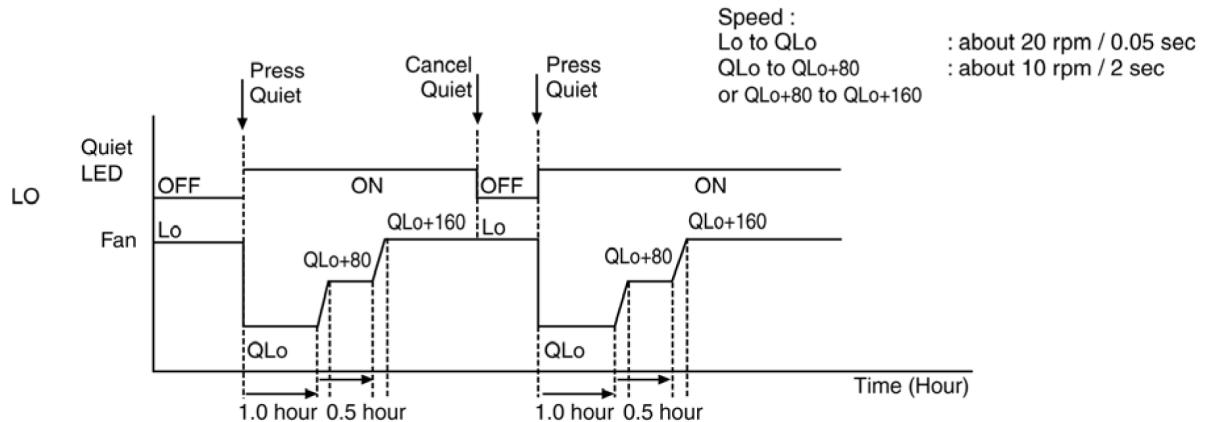
- The Powerful operation is to achieve the setting temperature quickly.
- When Powerful operation is set, the setting temperature will be automatically decreased 3°C internally against the present setting temperature (Lower temperature limit: 16°C).
- This operation automatically will be running under SHi Fan Speed (Cooling), Lo- Fan Speed (Soft Dry).
- Vertical Airflow Direction:-
  - In "Manual" setting, the vane will automatically shift down 10° lower than previous.
  - In "Auto" setting, the vane will automatically swing up and down. However the lower limit will be shifted 10° downward.
- Powerful Mode will operate for 15 minutes only and operation will shift back to previous setting mode.
- Powerful operation stops when:-
  - Powerful mode button is pressed again.
  - Stopped by OFF/ON operation button.
  - Timer OFF activates.
  - Quiet mode button is pressed.
  - Operation mode button is changed.

## 8.10. Quiet Operation

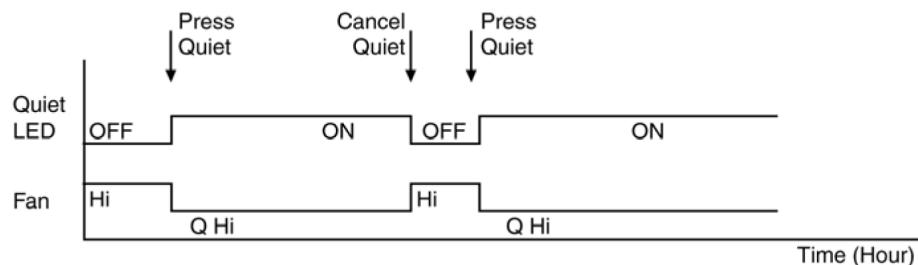
(For Cooling Operation or cooling region of Soft Dry Operation)

- The Quiet operation is to provide quiet/cooling operation condition compare to normal operation.
- Once the Quiet Mode is set at the remote control, the Quiet Mode LED illuminated. The sound level will reduce around 2 dB(A) for Lo fan speed or 3 dB(A) for Hi/Me fan speed against the present operation sound level.
- Dew formation become severe at Quiet Lo cool, therefore Quiet Lo cool is operated only 1hr 30 min (1hr QLo, 30 min QLo + 80 rpm). After that, it goes back to Lo cool (However Quiet LED remains on).
- Manual Airflow Direction:-

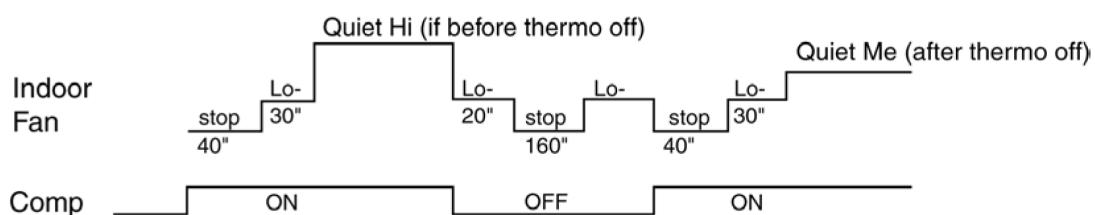
– RPM control during Lo cool



– RPM control during Hi & Me cool



- Auto Airflow Direction:-

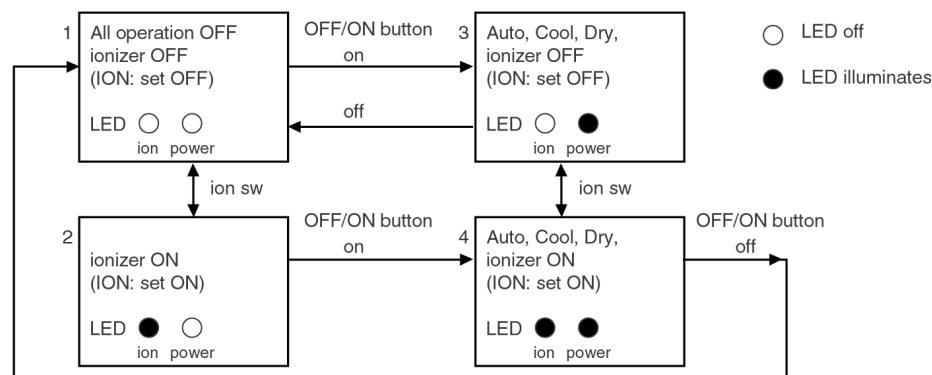


- Quiet operation stops when:-
- Quiet button is pressed again.
- Stopped by OFF/ON operation button.
- Timer OFF activates.
- Powerful button is pressed.
- Operation mode button is changed.

## 8.11. Ionizer Operation

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

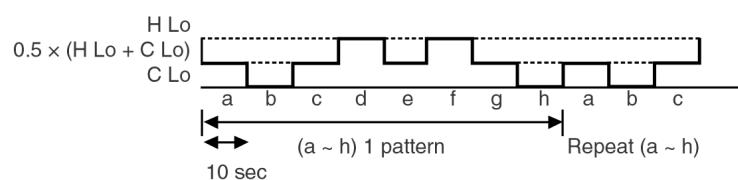
### **8.11.1. Operation Control**



## 1. Ionizer individual operation

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

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



- d. Vertical airflow direction can be adjusted using remote control during Ionizer individual operation.
  - e. During Ionizer individual operation, operated mode (Auto, Cool, Dry, Fan) can be activated by turning on the OFF/ON operation button. (2 → 4)
  - f. If power failure occur during Ionizer individual operation, after power resume, Ionizer operation will be activated immediately.
  - g. When the Ionizer circuit feedback process error occur for 24 times (about 11hr 30 min.), Ionizer operation will turn off with ION LED blinks continuously.  
(For details, please refer to Ionizer Error detection control)

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

## 2. Operation mode & Ionizer operation.

- a. When air-conditioner unit is at "ON" condition and ION operation button at the remote control is pressed, the Ionizer operation will turn on. ION & Power LED will illuminate. (3 → 4)
  - b. Ionizer operation stops when:
    - ION operation button is press again.
    - Stopped by OFF/ON operation button.
    - Timer OFF activates.
    - Ionizer circuit feedback signal shows error.
  - c. Ionizer operation status is not memorised when the air conditioner has been switched off. The air-conditioner will operate without ionizer operation when it is turned on again. However, if power failure occurs during Ionizer operation together with Cooling operation, air-conditioner will start to operate at Cooling operation with Ionizer operation when the power is resumed.

### **8.11.2. Error Detection Control**

- The error detection control is to inform user that error occurs at ionizer system and repairing job will be needed.
- There are two types of error detection control:
  - a. When Ionizer is ON
    - If ionizer feedback = Lo for 24 times within 11hr 30min, ION LED blinks continuously.
  - b. When ionizer is OFF
    - If ionizer feedback = Hi, ION LED blinks continuously.
- During ionizer at breakdown condition, if ionizer feedback voltage = Lo (become normal), ION LED will stop blinking.
- The error detection control can be reset by:
  - i) Pressing the OFF/ON operation button to switch the operation OFF.
  - ii) Pressing the Auto Operation button to force the operation OFF.
  - iii) Setting the OFF Timer to stop the operation (Not applicable when ionizer is OFF).

### **8.12. Timer Control**

- There are 2 types of timer, ON and OFF timer.
- Both ON and OFF timer can be set by pressing ON or OFF button respectively.
- By pressing ON/OFF operation button, ON Timer or OFF Timer will not be cancelled.
- To cancel the previous timer setting, press CANCEL button.
- To activate the previous timer setting, press SET button once again.
- If main power supply is switched off, the timer setting will be cancelled.

#### **8.12.1. ON Timer**

- When ON Timer is set by using the remote control, the unit will start to operate slightly before the set time, so that the room will reach nearly to the set temperature by the set time.
- For Cooling and Soft Dry operation, the operation will start 15 minutes before the set time.
- For Automatic operation, the indoor fan will operate at SLo speed for 25 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

#### **8.12.2. OFF Timer**

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

### **8.13. Random Auto Restart Control**

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

### **8.14. Remote Control Signal Receiving Sound**

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

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

## 9 Operating Instructions

Thank you for purchasing Panasonic Air Conditioner

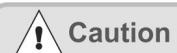
### SAFETY PRECAUTIONS

#### Installation Precautions



Do not install, remove and reinstall the unit by yourself.

- Improper installation will cause leakage, electric shock or fire. Please consult an authorized dealer or specialist for the installation work.



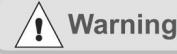
- This air conditioner must be earthed. Improper grounding will cause electric shock.

- Ensure that the drainage piping is connected properly. Otherwise, water will leak.

- Current leakage protection equipment must be installed. Otherwise, electric shock or fire may occur.

- Do not install the unit in a potentially explosive atmosphere.

#### Operation Precautions



- Do not share power outlet.

- Do not modify power cord.

- Do not use an extension cord.

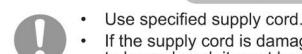
- Do not operate with wet hands.

- Do not insert finger or other objects into the indoor or outdoor unit.

- Do not attempt to repair the unit by yourself.

- Do not use rechargeable (Ni-Cd) batteries.

- Keep the remote control away from infants and small children to prevent them from accidentally swallowing the batteries.

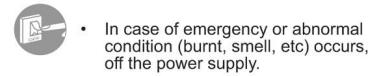


- Use specified supply cord.

- If the supply cord is damaged or needed to be replaced, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

- Remove the batteries if the unit is not going to be used for a long period of time.

- New batteries of the same type must be inserted following the polarity stated to prevent malfunction of the remote control.



- In case of emergency or abnormal condition (burnt, smell, etc) occurs, turn off the power supply.



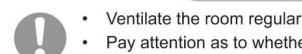
- Do not wash the unit with water, benzene, thinner or scouring powder.

- Do not use for other purposes such as preservation of food.

- Do not use any combustible equipment at airflow direction.

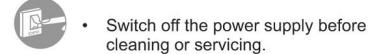
- Do not sit or place anything on the indoor or outdoor unit.

- Do not expose directly to cold air for a long period.



- Ventilate the room regularly.

- Pay attention as to whether the installation rack is damaged after long period of usage.



- Switch off the power supply before cleaning or servicing.

- Turn off the power supply if the unit is not used for a long period of time.

#### Safety Regulation

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

#### Operation Condition (°C)

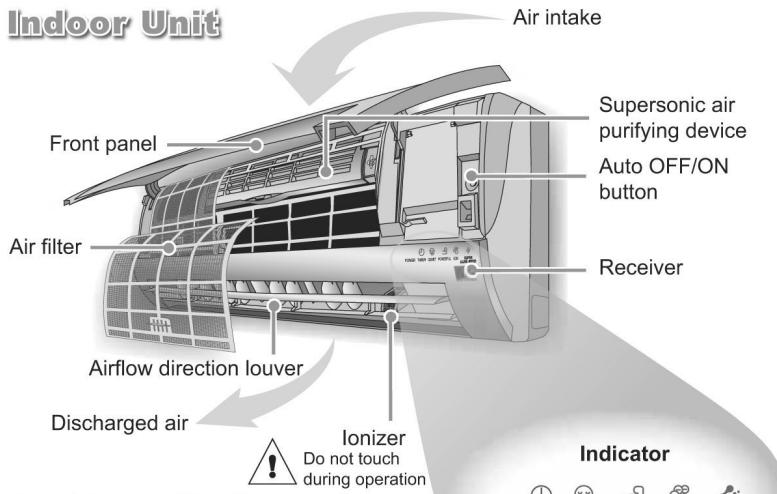
Use this air conditioner under the following temperature range.

DBT: Dry Bulb Temperature WBT: Wet Bulb Temperature	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26
Minimum Temperature	16	11	16	11

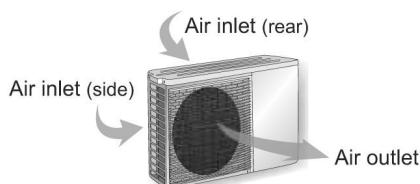
Note: The illustrations in this manual are for explanation purposes only and may differ from the actual unit. It is subjected to change without notice for future improvement.

# PRODUCT OVERVIEW

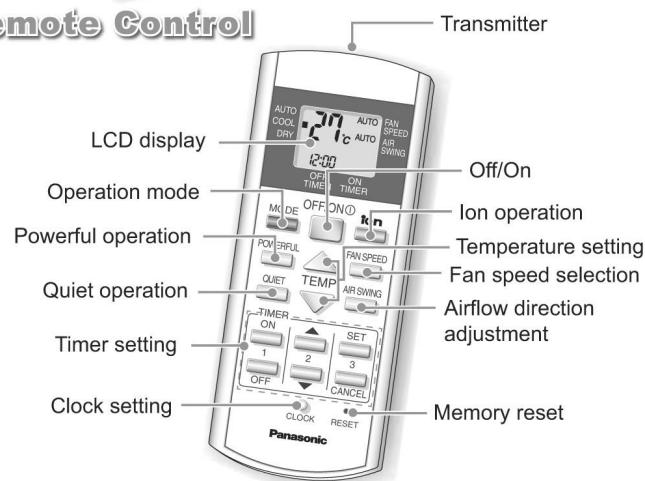
## Indoor Unit



## Outdoor Unit



## Remote Control



### Troubleshooting

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

## About

### Remote Control Preparation

1. Pull out
- 
2. Insert batteries (AAA or R03)

3. Press CLOCK button
- 
4. Set current time

5. Press again to confirm

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



### Remote Control Signal

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

### Auto OFF/ON Button

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

Action	Operation mode
Press once	Automatic Operation
Press until "beep" sound	Cooling Operation

- To OFF, press again the Auto OFF/ON button.
- To switch the remote control signal receiving sound off or on.
  1. Press until "beep" sound and release.
  2. Press again until "beep-beep" sound and release.
  3. Press to switch the sound off or on.

(Long "beep"- OFF; short "beep" - ON)

# HOW TO OPERATE

## Auto, Cool, Dry

### ■ Operation Details

#### AUTO - Automatic Operation

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

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

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

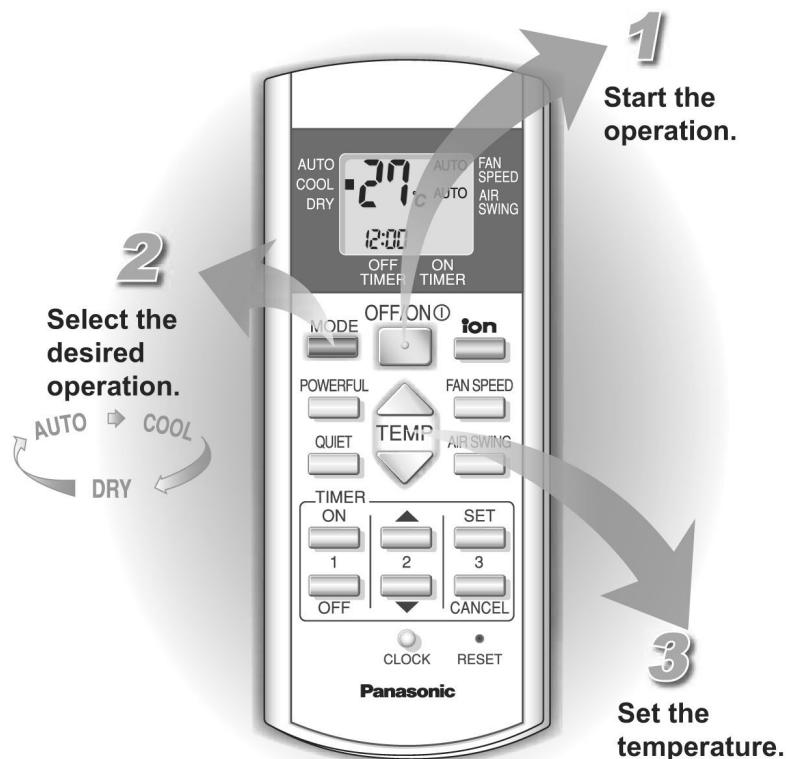
Operation mode	HI	LO
Cool	27°C	23°C
Dry	24°C	20°C

#### COOL - Cooling Operation

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

#### DRY - Soft Dry Operation

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



- Supersonic air purifying device (super alleru-buster) operates automatically while the air conditioner is switched on.
- Powerful, Quiet and Ion operations could be activated in all operation modes.
- Press again to stop the operation.



### Hint

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



### Troubleshooting

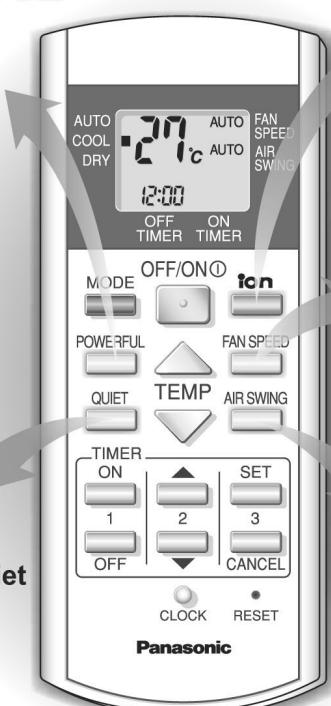
- |  |   |
|--|---|
| ● The room has a peculiar odour.             | ➤ This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.  |
| ● Air conditioner does not cool efficiently. | ➤ Ensure the temperature has been set correctly.<br>➤ Ensure windows and doors have been closed properly.<br>➤ Ensure filters are cleaned or replaced when necessary.<br>➤ Ensure inlet and outlet vents of the units have not been obstructed. |

# HOW TO OPERATE

## Powerful, Quiet, Ion, Fan Speed, Air Swing

### POWERFUL

Enables powerful operation.



### QUIET

Enables quiet operation.

### ION

Enables ion operation.

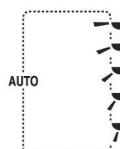
### FAN SPEED

Select fan speed.



### AIR SWING

Adjust the vertical airflow direction louver.



### Operations Details

#### POWERFUL

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

#### QUIET

- To provide a quiet environment.

#### ION

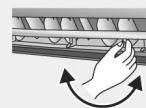
- To provide fresh air effect by producing negative ions.

#### FAN SPEED

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

#### AIR SWING

- To ventilate air in the room.
- There are 5 selections in addition to automatic vertical airflow direction.
- If automatic vertical airflow direction has been set, the louver swings up and down automatically.
- Please do not adjust the vertical airflow direction louver manually.
- Horizontal airflow direction louver could be adjusted manually.



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

### Hints



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

### Troubleshooting



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

# HOW TO OPERATE

## ■ Operation Details

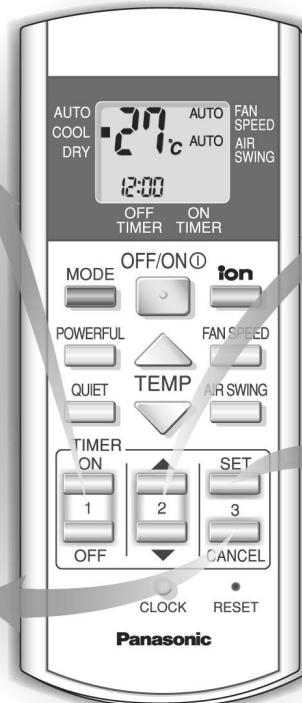
### TIMER

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

### Timer

**1**

Select ON or OFF timer.



**2**

Set the desired time.

**3**

Confirm the setting.

### CANCEL

Cancel the selected timer.

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



### Hints

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



### Troubleshooting

- |  |   |
|--|---|
| ● TIMER indicator always on.   | ► Timer is activated and the setting will repeat itself daily.  |
| ● POWER indicator is blinking 15 minutes before ON timer is activated. | ► The unit is determining the operation mode by sensing the room temperature. This happens when it has been set to AUTO operation mode. |

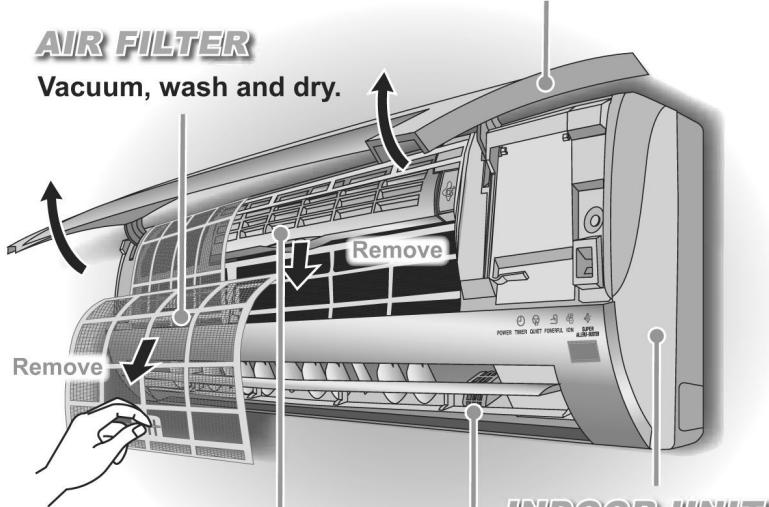
# CARE & CLEANING



**Switch off the power supply  
before cleaning**

## AIR FILTER

Vacuum, wash and dry.

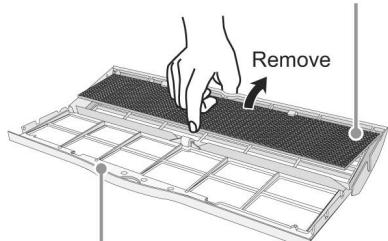


## FRONT PANEL

Raise and pull to remove.  
Wash and dry.

## SUPersonic AIR PURIFYING DEVICE

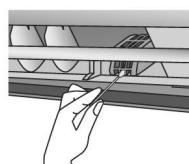
Vacuum the super  
alleru-buster filter.



Vacuum, wash and  
dry the frame.

## IONIZER

Clean with cotton  
bud.



## INDOOR UNIT

Wipe gently.

### ■ Washing Instructions

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

### INDOOR UNIT

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

### AIR FILTER

- It is recommended to clean the air filters once every 2 weeks.
- Purchase the replacement filter if it is damaged.

Part no.: CWD001144

### SUPER ALLERU-BUSTER

- It is recommended to clean the filter every 6 months.
- Replace the filter every 3 years or purchase the replacement filter if it is damaged.

Part no.: CZ-SA13P

### IONIZER

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

### ■ Preparation for extended Non-operation

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

### ■ Pre-season Inspection

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

Operation	Temperature
Cooling	$\geq 8^{\circ}\text{C}$

### Hints



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

# 10 Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m) 55 N.m (5.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

## 10.1. Safety Precautions

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

 <b>WARNING</b>	This indication shows the possibility of causing death or serious injury.
 <b>CAUTION</b>	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by the symbols:

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

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

 <b>WARNING</b>	
1. Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.	
2. Install according to this installation instruction strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
3. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
4. Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.	
5. For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.	
6. Use the specified cable (1.5 mm <sup>2</sup> ) and connect tightly for indoor/outdoor connection. Connect tightly and clamp the cable so that no external force will be acted on the terminal. If connection or fixing is not perfect, it will cause heat-up or fire at the connection.	
7. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrical shock.	
8. When carrying out piping connection, take care not to let air substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.	
9. Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.	
10. Do not use extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.	



## CAUTION

1. The equipment must be earthed. It may cause electrical shock if grounding is not perfect.
2. Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire. 
3. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.

## ATTENTION

1. Selection of the installation location.  
Select a installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.
2. Power supply connection to the room air conditioner.  
Connect the power supply cord of the room air conditioner to the mains using one of the following method.  
Power supply point shall be the place where there is ease for access for the power disconnection in case of emergency.  
In some countries, permanent connection of this room air conditioner to the power supply is prohibited.
  1. Power supply connection to the receptacle using a power plug.  
Use an approved 15A/16A power plug with earth pin for the connection to the socket.
  2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.5 mm contact gap.
3. Do not release refrigerant.  
Do not release refrigerant during piping work for installation, reinstallation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. Installation work.  
It may need two people to carry out the installation work.
5. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.

## 10.2. Attached accessories

No.	Accessories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	5	Super alleru-buster filter	1
2	Installation plate fixing screw	6	6	Remote control holder	1
3	Remote control	1		Remote control holder fixing screw	2
4	Battery	2	7		

Applicable piping kit

CZ-3F5, 7AEN (CS-C9DKZW)

## 10.3. Select the best location

### INDOOR UNIT

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

### OUTDOOR UNIT

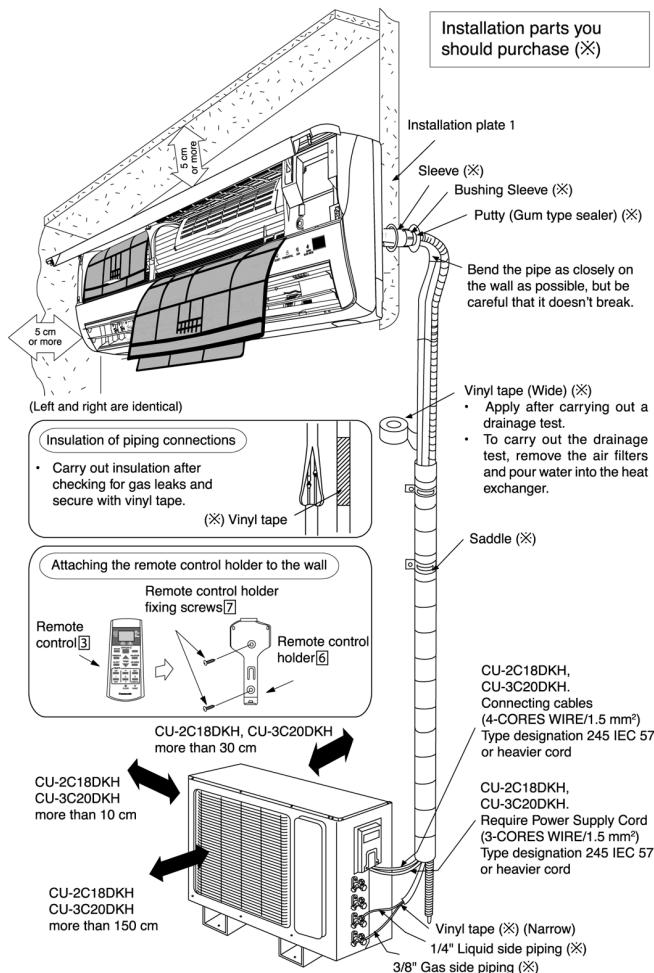
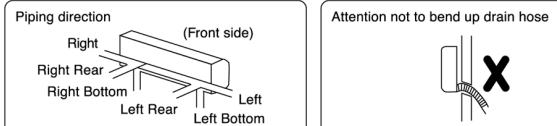
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other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

Model	Piping size		Common Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
CS-C9DKZW x 2 CU-2C18DKH	3/8"	1/4"	7.5	5	15	10
CS-C9DKZW x 3 CU-3C20DKH	3/8"	1/4"	7.5	5	15	10

- The above models will be installed at a 15 m (max) distance.  
The refrigerant should be added 75 g. (15-7.5) × 10 g = 75 g

## 10.4. Indoor/Outdoor Unit Installation Diagram

Indoor/Outdoor Unit Installation Diagram



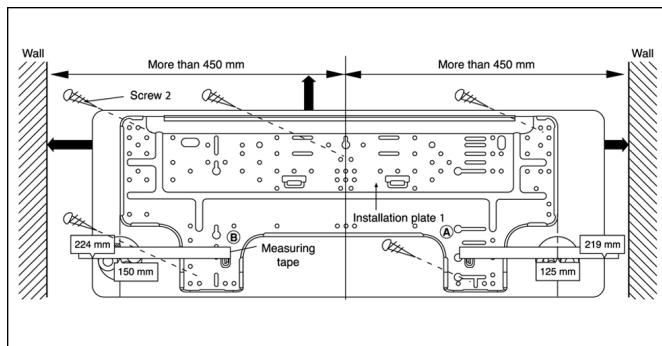
- This illustration is for explanation purposes only.  
The indoor unit will actually face a different way.

## 10.5. Indoor unit

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

### 10.5.2. HOW TO FIX INSTALLATION PLATE

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



The centre of installation plate should be at more than 450 mm at right and left of the wall.

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

From installation plate left edge to unit's left side is 74 mm.

From installation plate right edge to unit's right is 94 mm.

- Ⓐ : For left side piping, piping connection for liquid should be about 15 mm from this line.
- : For left side piping, piping connection for gas should be about 45 mm from this line.
- : For left side piping, piping connecting cable should be about 800 mm from this line.

1. Mount the installation plate on the wall with 5 screws or more.

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

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

2. Drill the piping plate hole with ø70 mm hole-core drill.

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

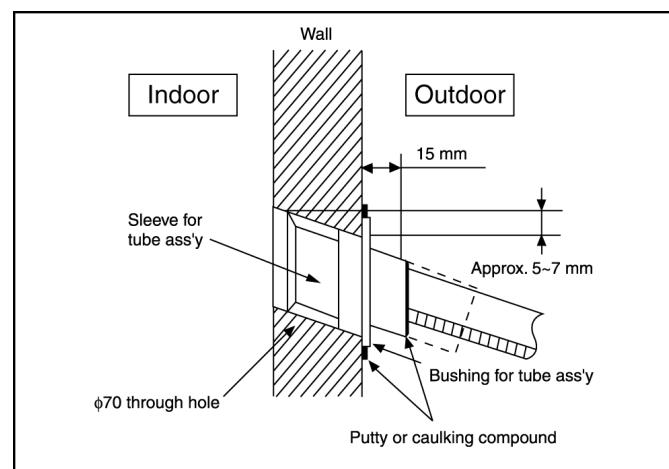
### 10.5.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

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

#### Caution

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

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



### 10.5.4. INDOOR UNIT INSTALLATION

#### 1. For the right rear piping

- ```

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

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

- ```

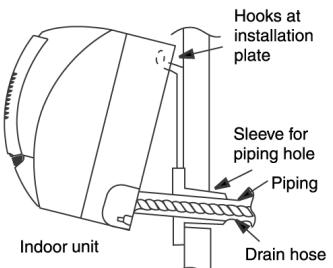
    Pull out the Indoor piping
    ↓
    Install the Indoor Unit
    ↓
    Insert the connecting cable
    ↓
    Secure the Indoor Unit
  
```

### 3. For the embedded piping

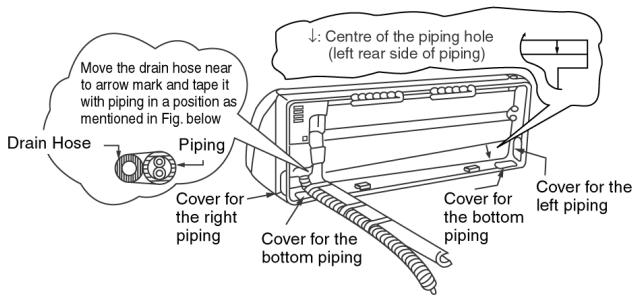
- Replace the drain hose
- Bend the embedded piping
  - Use a spring bender or equivalent to bend the piping so that the piping is not crushed.
- Install the Indoor Unit
- Cut and flare the embedded piping
  - When determining the dimension of the piping, slide the unit all the way to the left on the installation plate.  
Refer to the section "Cutting and flaring the piping".
- Pull the connecting cable into Indoor Unit
  - The inside and outside connecting cable can be connected without removing the front grille.
- Connect the piping
  - Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)
- Insulate and finish the piping
  - Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/Outdoor Unit Installation.
- Secure the Indoor Unit

### Install the Indoor Unit

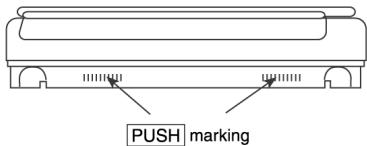
Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.



### Pull out the piping and drain hose



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

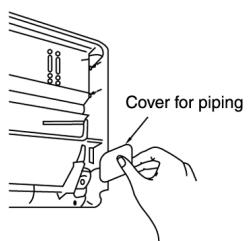


(This can be used for left rear piping & left bottom piping also.)

### How to keep the cover

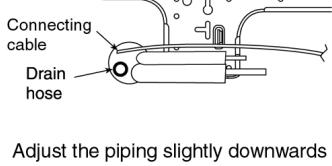
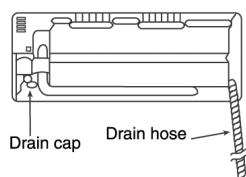
In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)



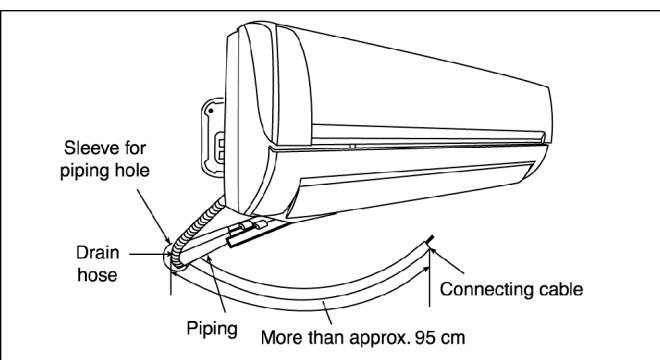
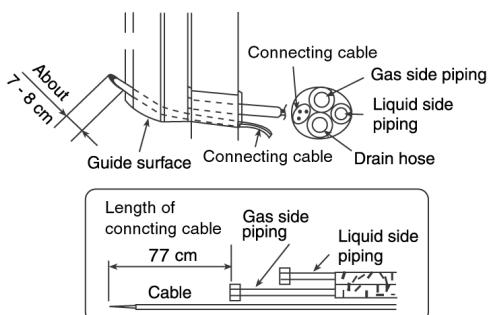
### Exchange the drain hose and the cap

Refer view for left piping installation

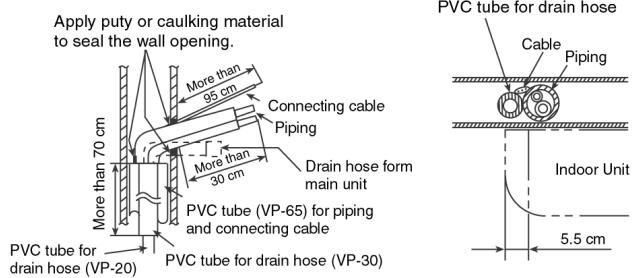


Adjust the piping slightly downwards

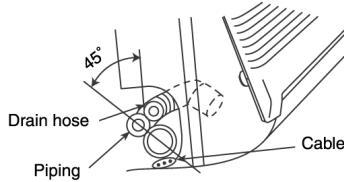
### Insert the connecting cable



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



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

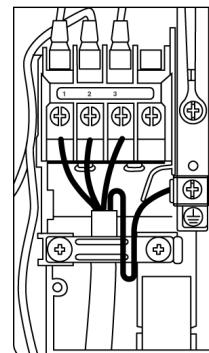


(For the right piping, follow the same procedure)

### 10.5.5. CONNECT THE CABLE TO THE INDOOR UNIT

1. The inside and outside connecting cable can be connected without removing the front grille.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed  $4 \times 1.5 \text{ mm}^2$  flexible cord, type designation 245 IEC 57 or heavier cord.
  - 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.

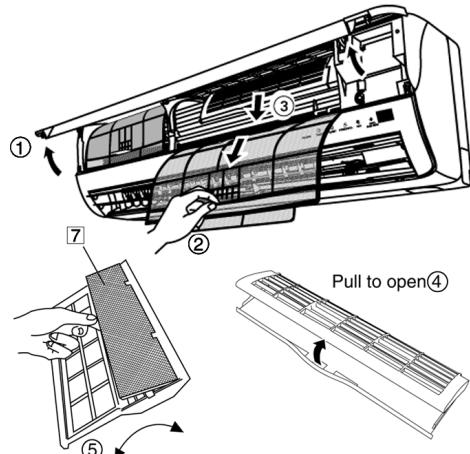
Terminals on the indoor unit	1	2	3	
Color of wires				
Terminals on the outdoor unit	1	2	3	



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

#### INSTALLATION OF SUPER ALLERU-BUSTER FILTER

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

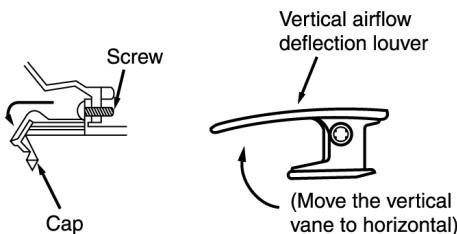


## HOW TO TAKE OUT FRONT GRILLE

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

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

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



## AUTO SWITCH OPERATION

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

### 1. AUTO OPERATION MODE

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

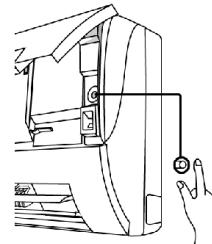
### 2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. A "peep" 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 change over by the following steps:

- a. Release the Auto Switch after Test Run operation is activated.
- b. Then, within 20 sec. after (a), press Auto Switch for more than 5 sec.  
A "beep" "beep" sound will occur at the fifth sec., then release the Auto switch.
- c. Within 20 sec. after (b), press Auto Switch again. Everytime Auto Switch is pressed (within 20 sec. interval), remote controller receiving sound status will be reversed between ON and OFF.  
Long "beep" sound indicates that remote controller receiving sound is OFF.  
Short "beep" sound indicates that remote controller receiving sound is ON.



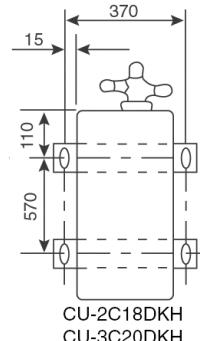
## 10.6. Outdoor unit

### 10.6.1. SELECT THE BEST LOCATION

(Refer to “Select the best location” section)

### 10.6.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.
- 1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. ( $\varnothing 10$  mm).
- 2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.



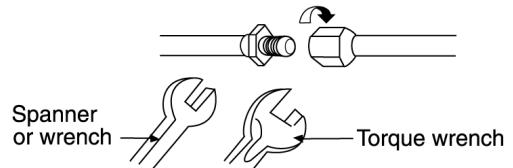
### 10.6.3. CONNECTING THE PIPING

#### Connecting The Piping To Indoor Unit

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

Connect the piping

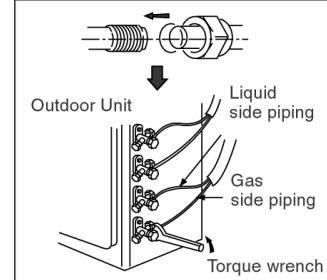
- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.



MODEL	Piping size (Torque)	
	Gas	Liquid
CS-C9DKZW	3/8" (42 N.m)	1/4" (18 N.m)

#### Connecting the Piping to Outdoor Unit

1. Align the center 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 on the wrench.



#### Caution

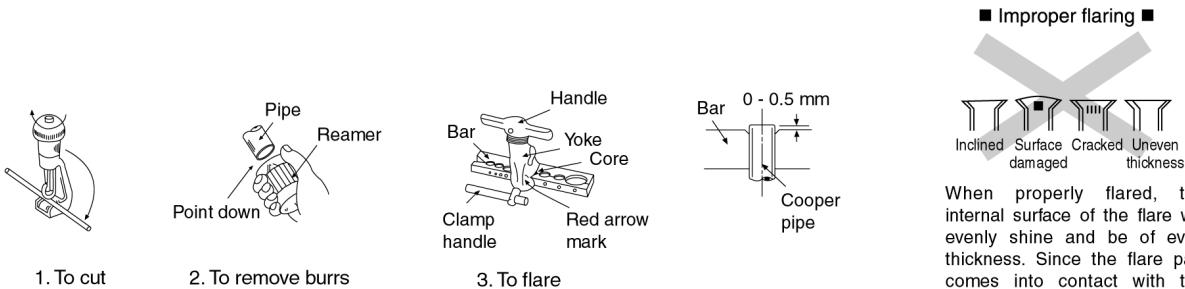
The CU-3C20DKH/C9DKZW have different cooling capacities depending on the connection to A<sub>1</sub>, A<sub>2</sub> and/or B on CU-3C20DKH individually.

(Refer to SPECIFICATIONS on CATALOG)

1. The Cooling Capacity of Indoor Unit connecting “B” on CU-3C20DKH (Called B unit) is different from that of A<sub>1</sub> and A<sub>2</sub> Units.
2. A<sub>1</sub> and A<sub>2</sub> Units share the same compressor, their cooling capacities thus change depending on whether one, the other, or both of the units is in use.
3. Reflect the B or A (A<sub>1</sub> and/or A<sub>2</sub>) on the Indoor Unit for later reference.

## CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.  
Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.

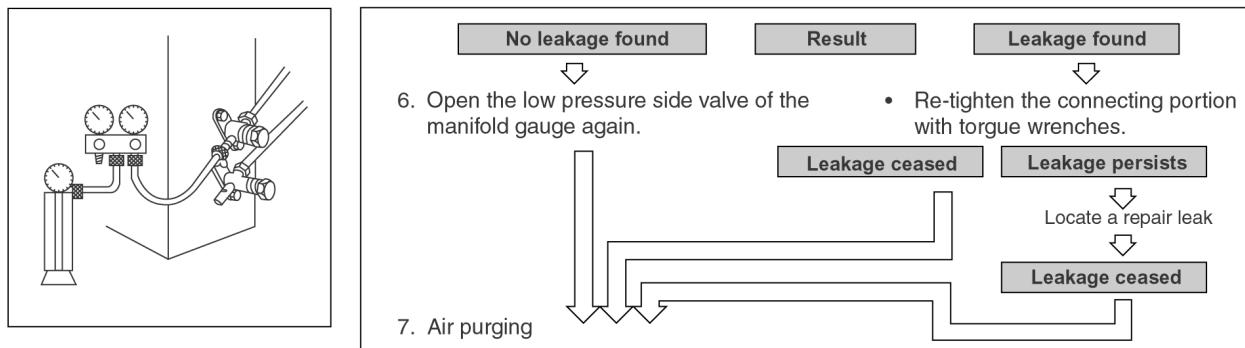


When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish

## 10.6.4. AIR PURGING OF THE PIPING AND INDOOR UNIT

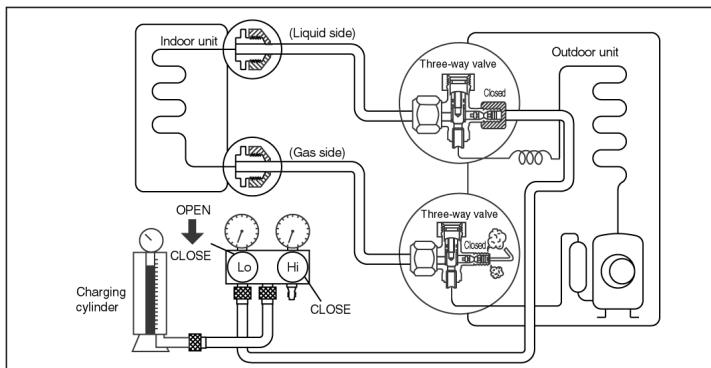
### 1) Checking gas leakage

1. Remove the service-port cap from both 3-way valves.
2. Connect the manifold gauge set to the service port of Liquid side 3-way valve.
3. Connect the charging cylinder to the manifold gauge set and open the valve of the cylinder.
4. Open the low pressure side valve of the manifold gauge of approx. 10 seconds and then close.
5. Check a gas leakage of the connecting portion of pipings with the gas-leak detector.



<For the left pipings>

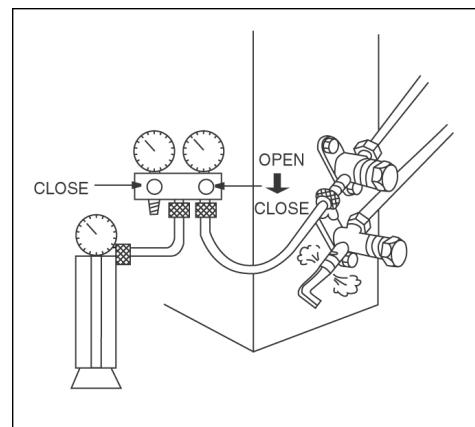
1. Measure the pressure.
2. Keep it for 5-10 minutes.
  - Ensure if the pressure indicated on the gauge is as same as that measured at first time.



## 2) Air purging

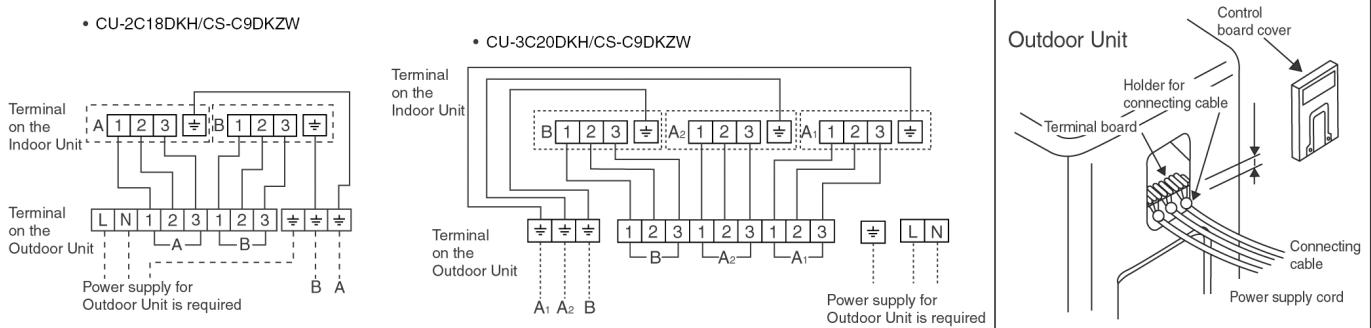
The air which contains remaining moisture in the refrigeration cycle may cause a malfunction on the compressor.

1. To purge the air, push the pin on the gas side 3-way valve for three seconds using with a hexagonal wrench and set it free for one minute.
  - Repeat this three times.
2. To balance the refrigerant, close the low pressure side valve on the manifold gauge and release a refrigerant from the piping through service port until the gauge indicates 0.49 ~ 0.294 MPa.
3. Set the both 3-way valves to open position with the hexagonal wrench for the unit operation.



## 10.6.5. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the control board cover from the unit by loosening the screw.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed flexible cord, type designation 245 IEC 57 or heavier cord ( $4 \times 1.5 \text{ mm}^2$ ).
- Power supply cord cable use  $3 \times 1.5 \text{ mm}^2$  flexible cord, type designation 245 IEC 57 or heavier cord.



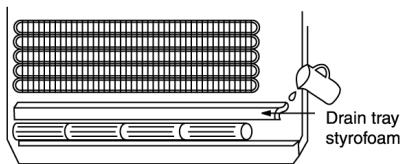
3. Secure the cable onto the control board with the holder (clamper).
4. Confirm the SW1 Switch at AUTO position. (CU-3C20DKH)
5. Attach the control board cover back to the original position with the screw.

## 10.6.6. PIPE INSULATION

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

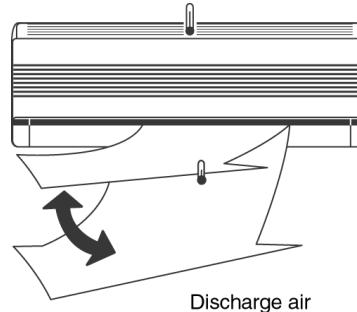
### CHECK THE DRAINAGE

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



### EVALUATION OF THE PERFORMANCE

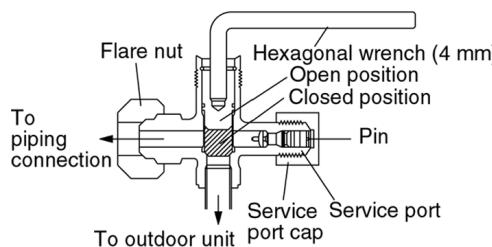
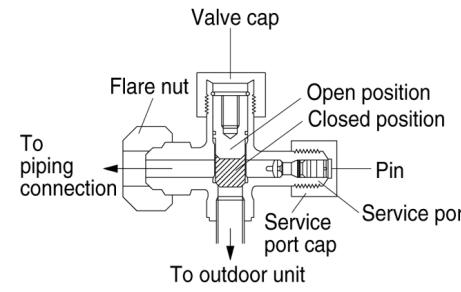
- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



### CHECK ITEMS

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

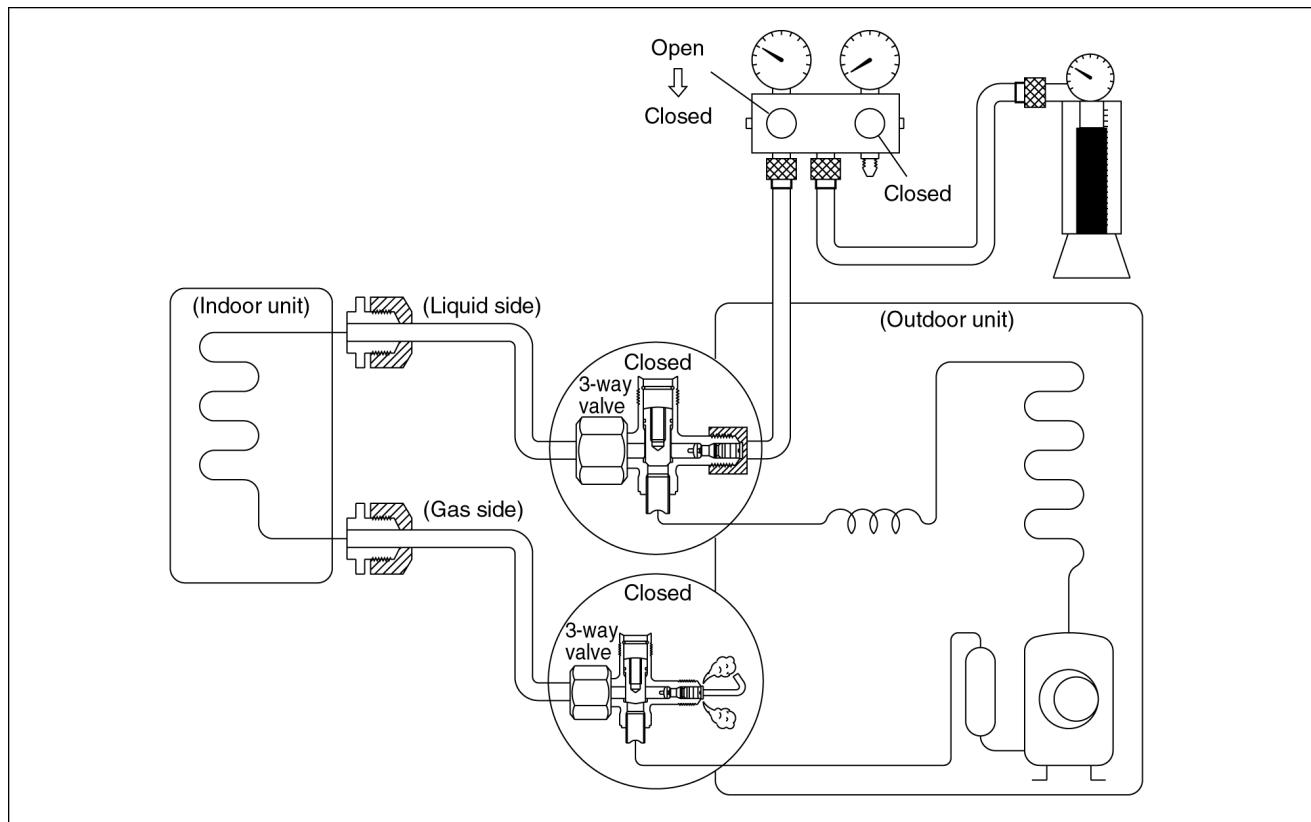
# 11 3-way Valve

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

## 11.1. Air purging

Required tools: Hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, and charging set.

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



### Service port cap

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

### Procedure:

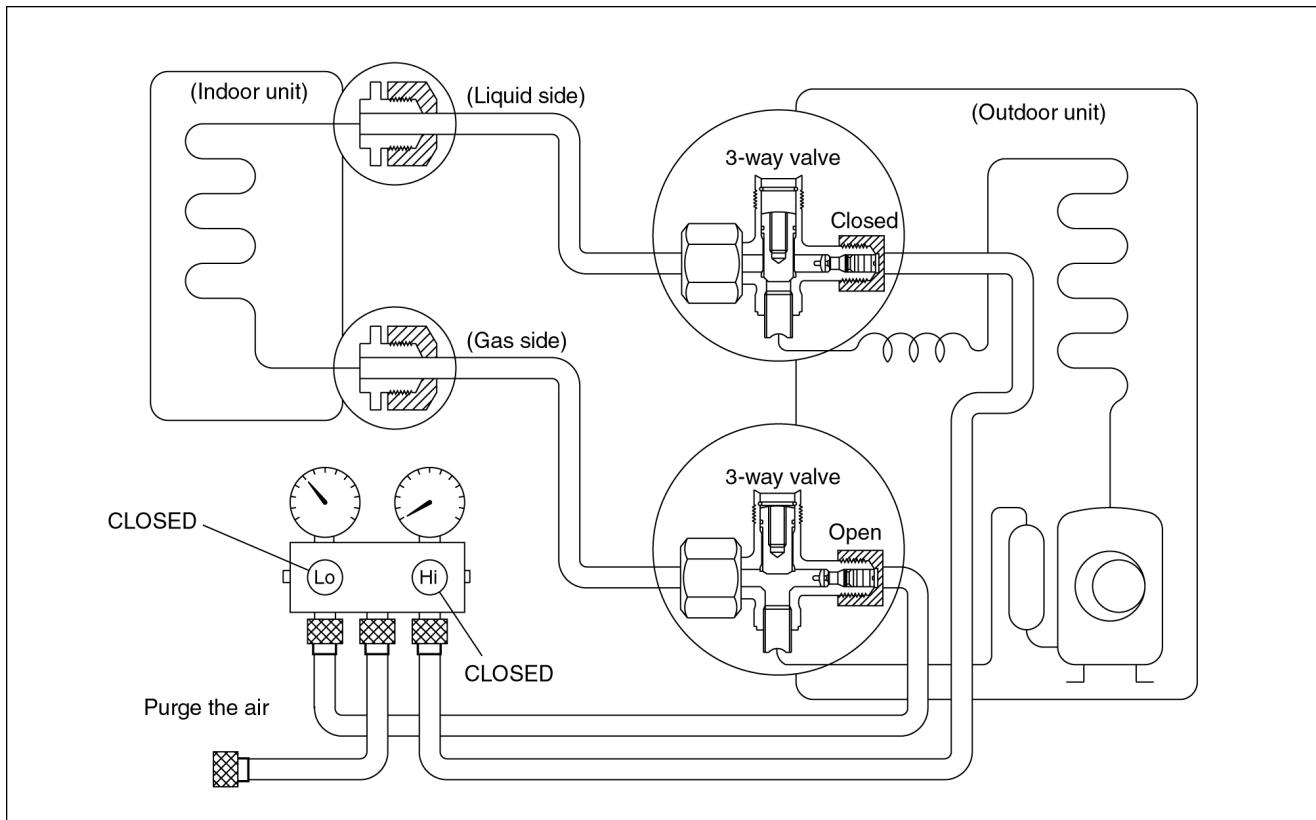
1. **Recheck the piping connections.**
2. **Open the valve of the low pressure side of Manifold gauge counter-clockwise for 10 seconds, and then close it.**
3. **Check for gas leakage.**
  - Check the flare connections for gas leakage.
4. **Purge the air from the system.**
  - Open the Low pressure side valve of the manifold gauge.
  - Press the valve core pin with the hexagonal wrench to purge the air for three seconds and then wait for one minute.
  - Repeat this three times or more.
5. **Balance the refrigerant in the pipings and the indoor unit.**
  - Close the Low pressure side valve of the manifold gauge.
  - Press the valve core pin with the hexagonal wrench to release the refrigerant until the gauge indicates.
6. Use torque wrench CWHAD-9211 to tighten the service port nut to a torque of 1.8 kg.cm.
7. **Set both the 3-way valves to the open position.**
8. **Mount the valve stem nuts to the 3-way valves.**
9. **Check for gas leakage.**
  - At this time, especially check for gas leakage from both the 3-way valve's stem nuts, and from the service port caps.

### Caution

If gas leakage is discovered in step 3 above, take the following procedures:

1. Re-tighten the connecting portion with torque wrenches.
- If the leakage ceases, continue the works from step 4.
2. Locate and repair the leak. (Gas leak detector)
- Repeat the works from step 1.

## 11.2. Pumping down

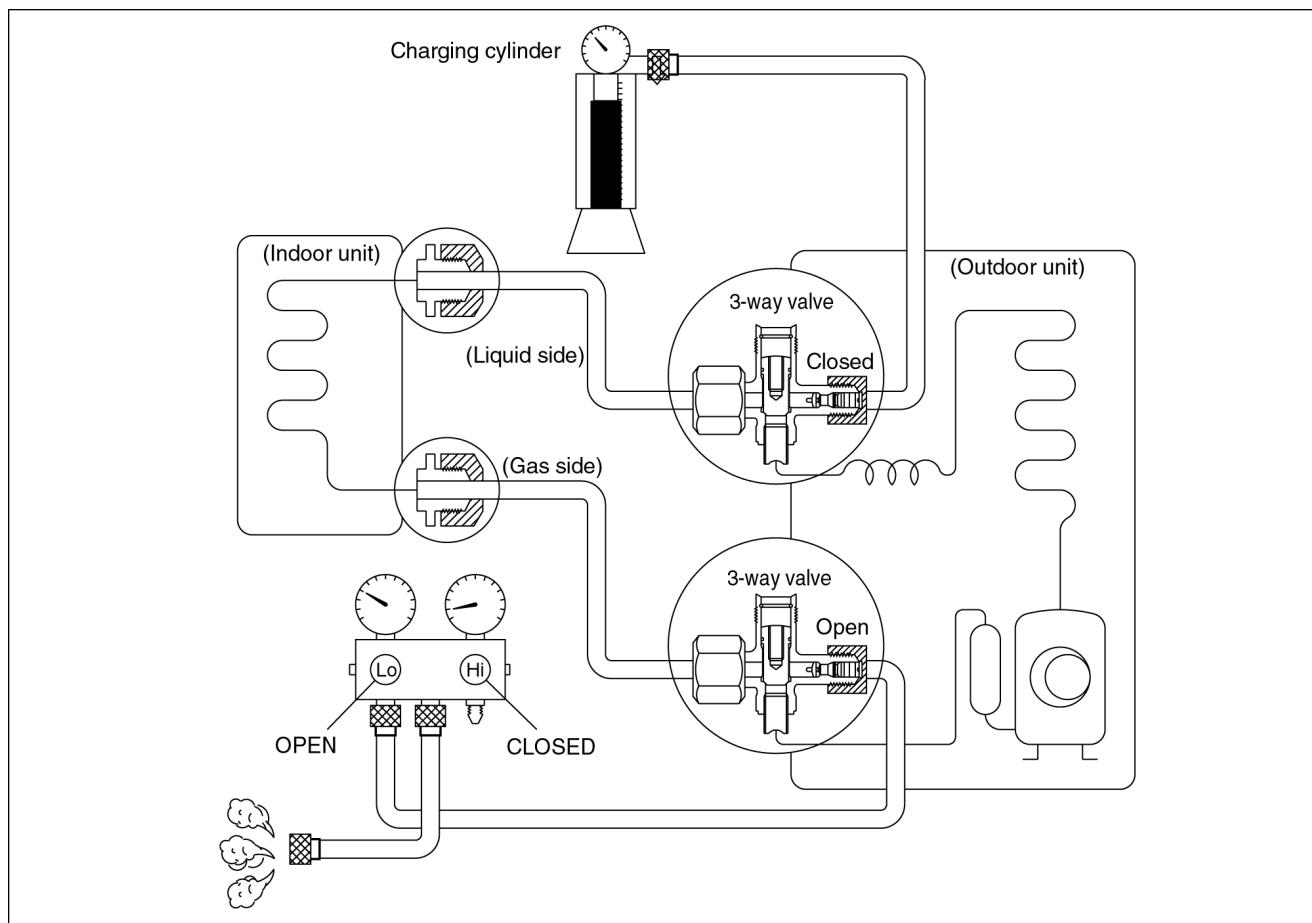


### Procedure:

1. Confirm that both the 3-way valves are set to the open position.
  - Remove the valve stem caps and confirm that the valve stems are in the raised position.
  - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valves.
  - Connect the charge hose with the push pin to the gas side service port.
4. Air purging of the charge hose.
  - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. Set the Liquid side 3-way valve to the closed position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 kg/cm<sup>2</sup>G.
  - If the unit cannot be operated at the cooling (weather is rather cool), press the Pump Down switch on the Indoor unit.
  - So that the unit can be operated.
7. Immediately set the 3-way valve to the closed position.
  - Do this quickly so that the gauge ends up indicating 1 to 3 kg/cm<sup>2</sup>G.
8. Disconnect the charge set, and mount both the 3-way valve's stem nuts and the service port caps.
  - Use torque wrench CWHAD-9211 to tighten the service port nut to a torque of 1.8 N.m.
  - Be sure to check for gas leakage.

## 11.2.1. Re-air purging

(Re-installation)



### Procedure:

#### 1. Remove the cap nut from 3-way valves.

- Remove the cap nut from 3-way valves after carefully checked whether the piping connection was properly and certainly done.

#### 2. Confirm that the valve in both 3-way valves are set to the CLOSED position.

#### 3. Connect the gas cylinder to the liquid-side (high-pressure) 3-way valve and the charge set to the gas side (low-pressure) 3-way valve.

- Remove the flare nut from the service port to connect the charge set and gas cylinder.
- Close the valves on the gas cylinder and charge set.

#### 4. Air purging.

- Open the valve on the gas cylinder.
- Open the valve on the charge set, discharge for three seconds and wait for one minute. Repeat this three times.

#### 5. Check for gas leakage.

- Check the flare connections for gas leakage.

#### 6. Discharge the refrigerant.

- Close the valve on the gas cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm<sup>2</sup>G.

#### 7. Disconnect the charge set and the gas cylinder.

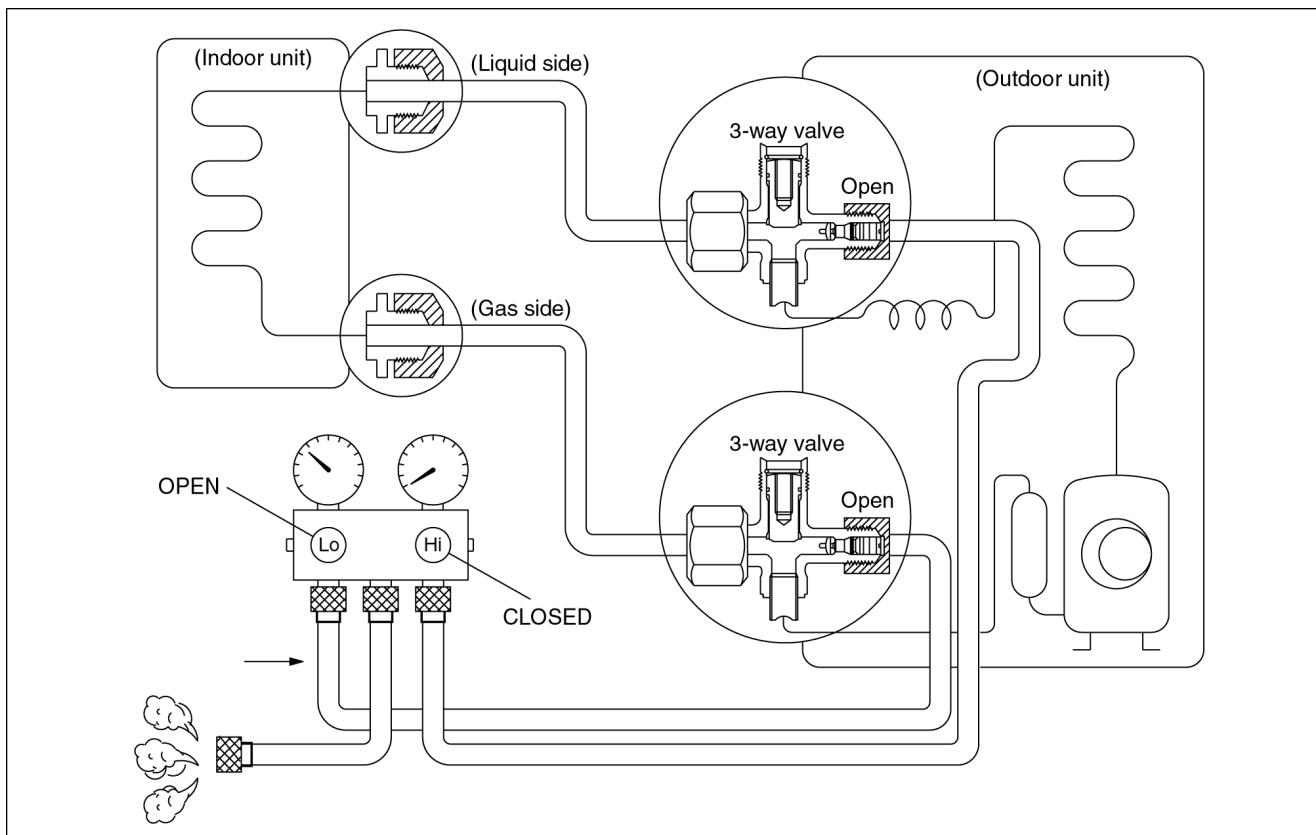
#### 8. Mount the valve stem cap nuts and the flare nuts for service port onto the 3-way valves.

#### 9. Mount the cap nut and service port nut onto the 3-way valves.

- Be sure to use a torque wrench (CWHAD-9211) to tighten the service port nut.
- Be sure to check for gas leakage.

## 11.2.2. Balance refrigerant of the 3-way valves

(Gas leakage)

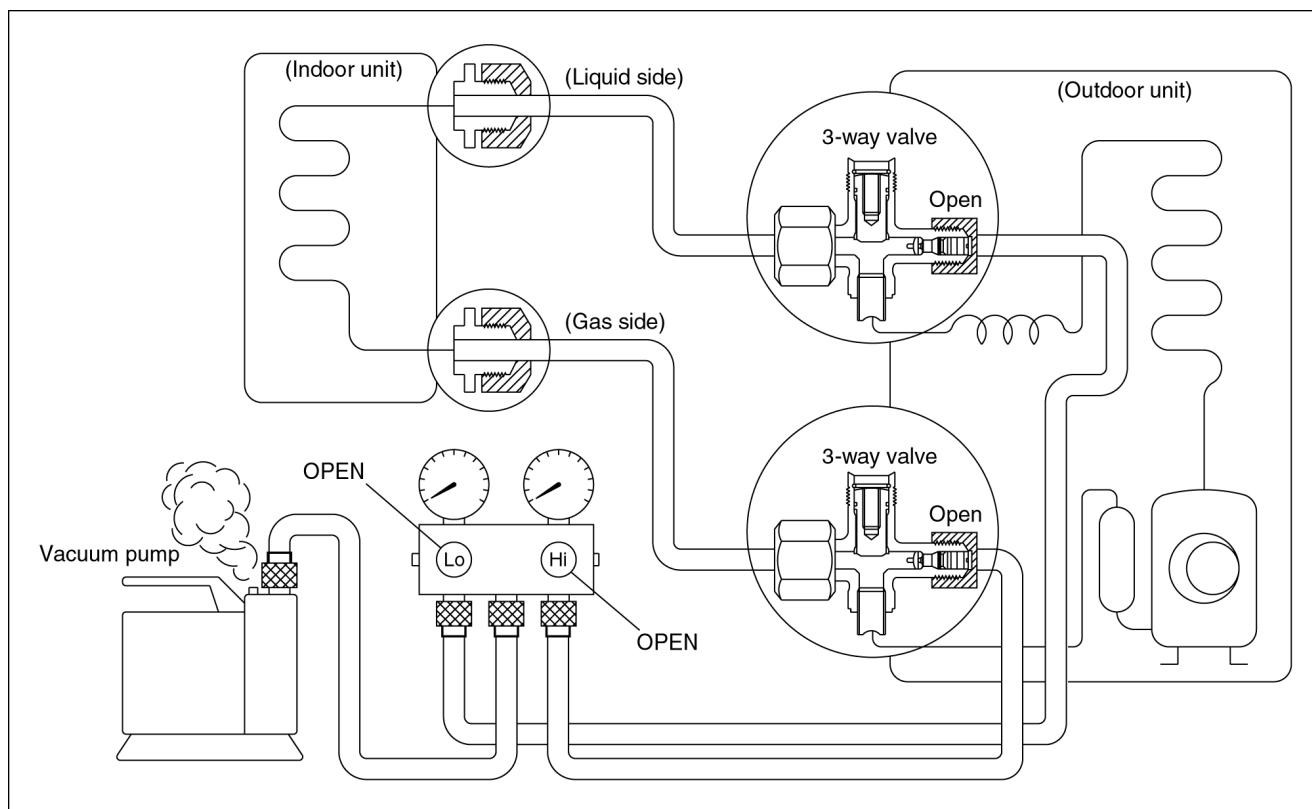


### Procedure:

1. Confirm that both the 3-way valves are set to the open position.
2. Connect the charge set to the Gas side 3-way valve's port.
  - Leave the valve on the charge set closed.
  - Connect the charge hose with the push pin to the service port.
3. Open the valves (Lo side) on the charge set and discharge the refrigerant until the gauge indicates 0 kg/cm<sup>2</sup>G.
  - If there is no air the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1 kg/cm<sup>2</sup>G], discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm<sup>2</sup>G. If this is the case, it will not be necessary to apply an evacuation.
  - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

## 11.3. Evacuation

(No refrigerant in the refrigeration cycle)



### Procedure:

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

2. Evacuation for approximately one hour.

- Confirm that the gauge needle has moved toward -76 cmHg [vacuum of 4 mmHg or less].

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

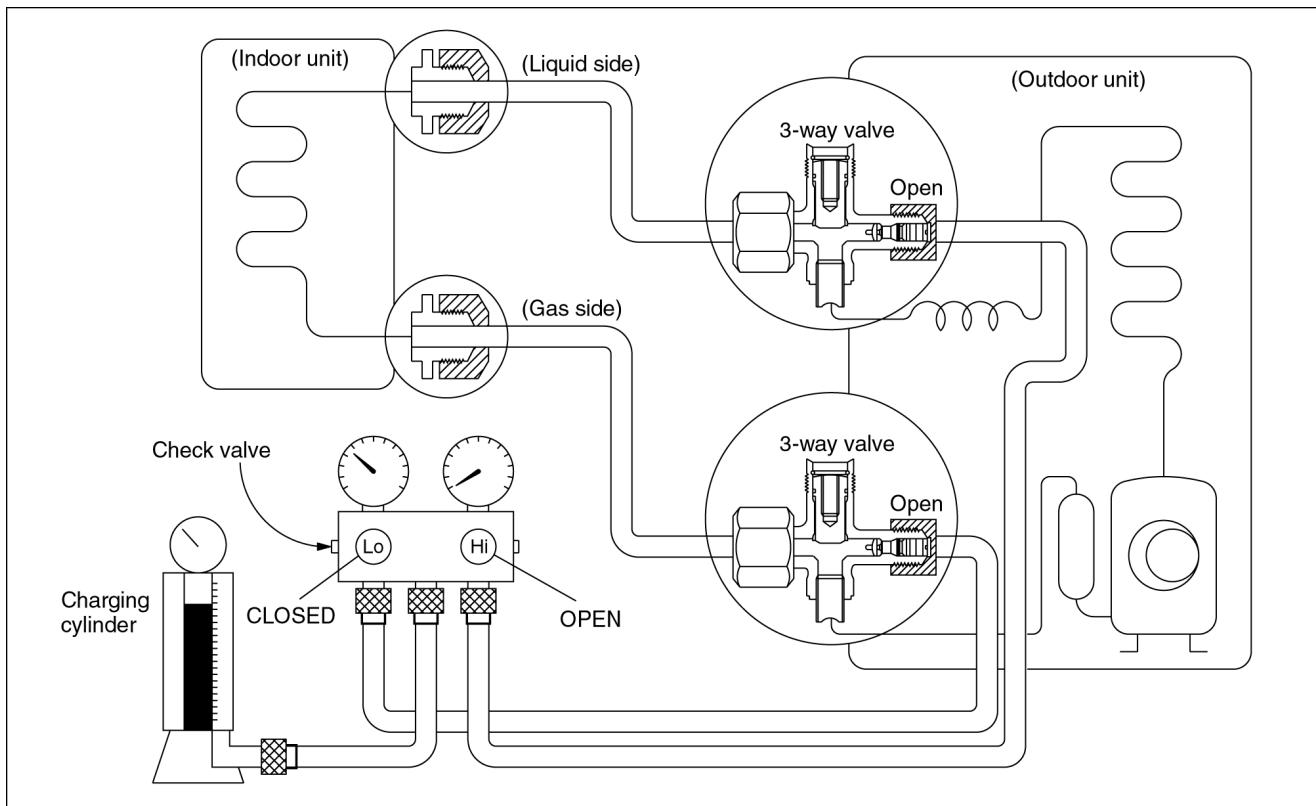
4. Disconnect the charge hose from the vacuum pump.

- Vacuum pump oil.

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

## 11.4. Gas charging

(After Evacuation)



### Procedure:

#### 1. Connect the charge hose to the charging cylinder.

- Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.
- 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 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 (Lo side) on the charge set and charge the system with liquid refrigerant.

- If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

#### 4. Immediately disconnect the charge hose from both the 3-way valve's service ports.

- Stopping partway will allow the refrigerant to be discharged.
- If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

#### 5. Mount the valve stem nuts and the service port caps.

- Use a torque wrench CWHAD-9211 to tighten the service port nut to a torque of 1.8 N.m.
- Be sure to check for gas leakage.

## 12 Servicing Information

### 12.1. Distinction of Lead Free (PbF) Printed Circuit Board

Printed circuit boards (manufactured) using lead free solder will have a PbF stamp on the Printed Circuit board.

#### CAUTION

- Pb free solder has a higher melting point than standard solder; typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature solder iron and set it to  $700 \pm 20^{\circ}\text{F}$  ( $370 \pm 10^{\circ}\text{C}$ ).
- Pb free solder will tend to splash when heated too high (about  $1100^{\circ}\text{ F}/600^{\circ}\text{C}$ ).
- If you must use Pb solder, please completely remove all of the Pb free solder on the pin or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.

### 12.2. Indoor Electronic Controllers Removal Procedures

- Electronic Controller and Display Complete unit can be seen by following the below removal procedures



Fig. 1

- Remove the 2 caps and 2 screws at the bottom of the Front Grille. (Fig. 1)



Fig. 2

- Remove the Front Grille Complete. (Fig. 2)

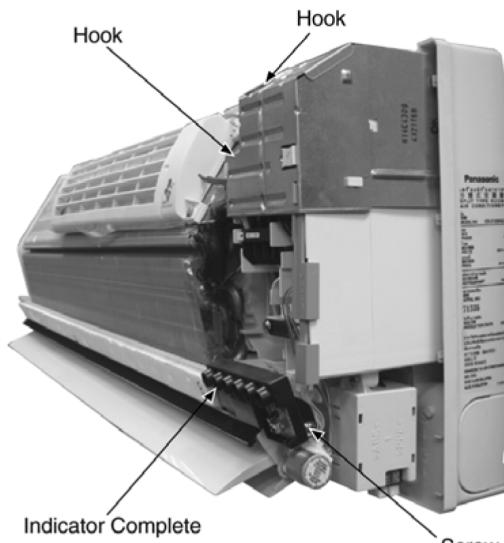


Fig. 3

- Release the tabs on top and on the right side of metal plate cover. (Fig. 3)
- Then remove the metal plate cover. (Fig. 3)
- Remove the indicator complete screw, and then remove the indicator complete. (Fig. 3)

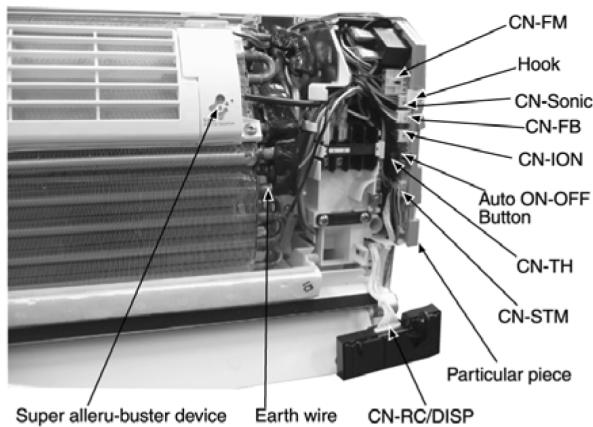


Fig. 4

- To remove the electronic controller.
- Remove the particular piece (Fig. 4)
- Release CN-FM connector (Fig. 4)
- Release CN-Sonic connector (Fig. 4)
- Release CN-FB connector (Fig. 4)
- Release CN-ION connector (Fig. 4)

- Release CN-TH connector (Fig. 4)
- Release CN-STM connector (Fig. 4)
- Release CN-REC/DISP connector (Fig. 4)

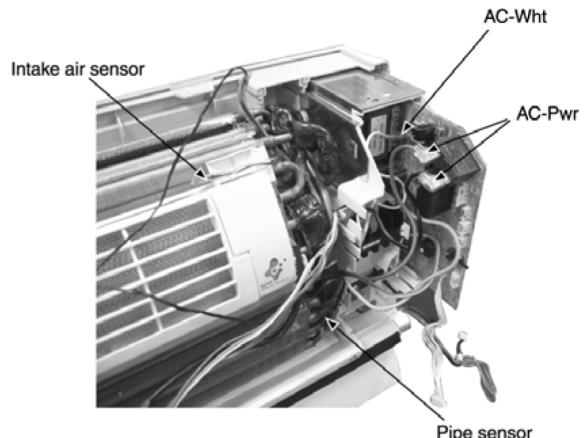


Fig. 5

- Press the hook to the right then take out the PCB(Fig. 5)
- Remove Ry-Pwr connector (black and brown) and Ac-Wht connector from the PCB. (Fig. 5)

### 12.3. Indoor Fan Motor and Cross Flow Fan Removal Procedures

- Remove Control Board cover

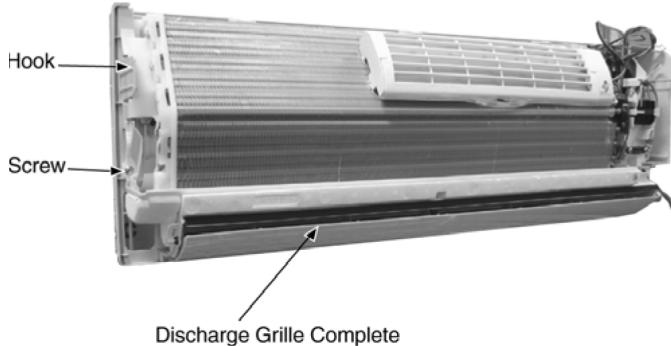


Fig. 6

- Remove the screw on the left side of the unit. (Fig. 6)
- Pull the hook to the left and lift up the evaporator. (Fig. 6)
- Pull down the Discharge Grille Complete. (Fig. 6)

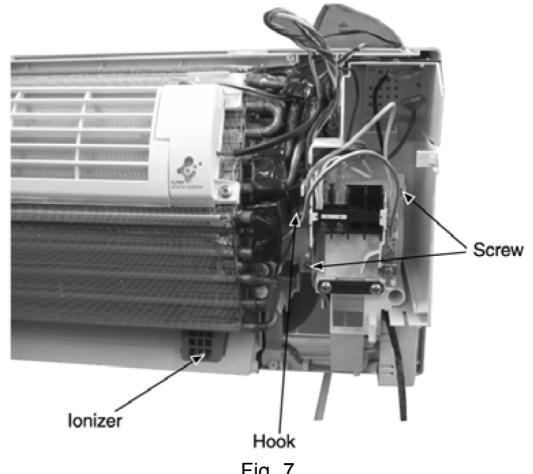


Fig. 7

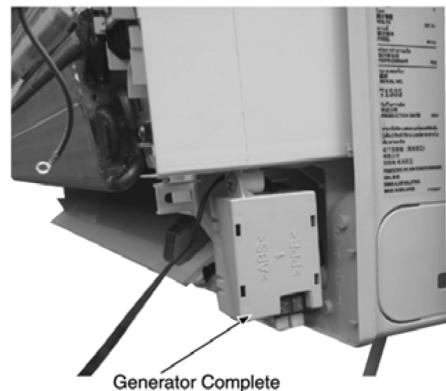


Fig. 8

- Remove indoor pipe sensor and air intake sensor from the evaporator. (Fig. 7)

- Remove the earth wire from the evaporator (Fig. 7)
- Release the generator complete wire (green and red). (Fig. 8)
- Remove 2 screws on the right and 1 screw at the left side of the control board. (Fig. 7)
- Press down the hook on the left side of control board. (Fig. 7)
- Then pull out the Control Board Complete from the unit. (Fig. 7)

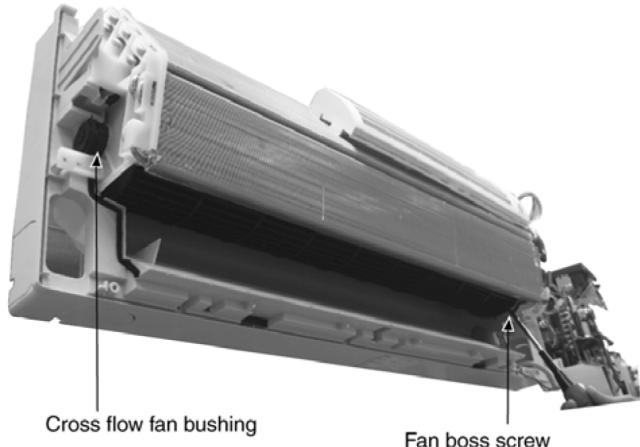


Fig. 9

- Remove the cross flow fan bushing from the chassis. (Fig. 9)
- Loosen the fan boss screw at the cross flow fan. (Fig. 9)

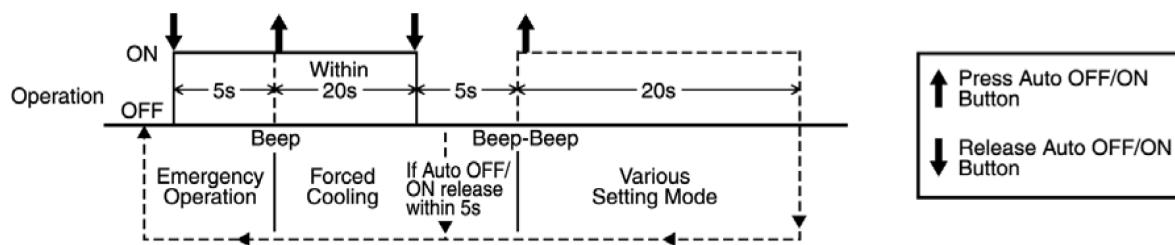


Fig. 10

- Push up the evaporator and remove cross flow fan by pulling both cross flow fan and fan motor. (Fig. 10)

## 12.4. Auto OFF/ON Button

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

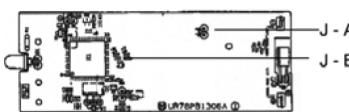


### 12.4.1. Toggle Remote Control Signal Receiving Sound

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

## 12.4.2. Remote Control Transmission Code

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

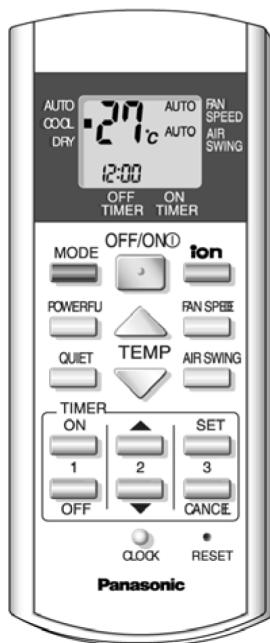
Remote Control Printed Circuit Board	Transmission Code Combination		
	J - A	J - B	Remote Control No.
	Short	Open	A (Default)
	Open	Open	B
	Short	Short	C
	Open	Short	D

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

## 12.5. Remote Control Reset

- When the batteries are inserted for the first time or the batteries are replaced, you may notice the indications at remote control's display screen blink continuously and not functional. If this condition happens, try to reset the remote control by pushing the reset terminal with a pointing device.

- You may also do the reset to erase the setting at remote control and restore back the default setting.



# 13 Troubleshooting Guide

## 13.1. Refrigeration cycle system

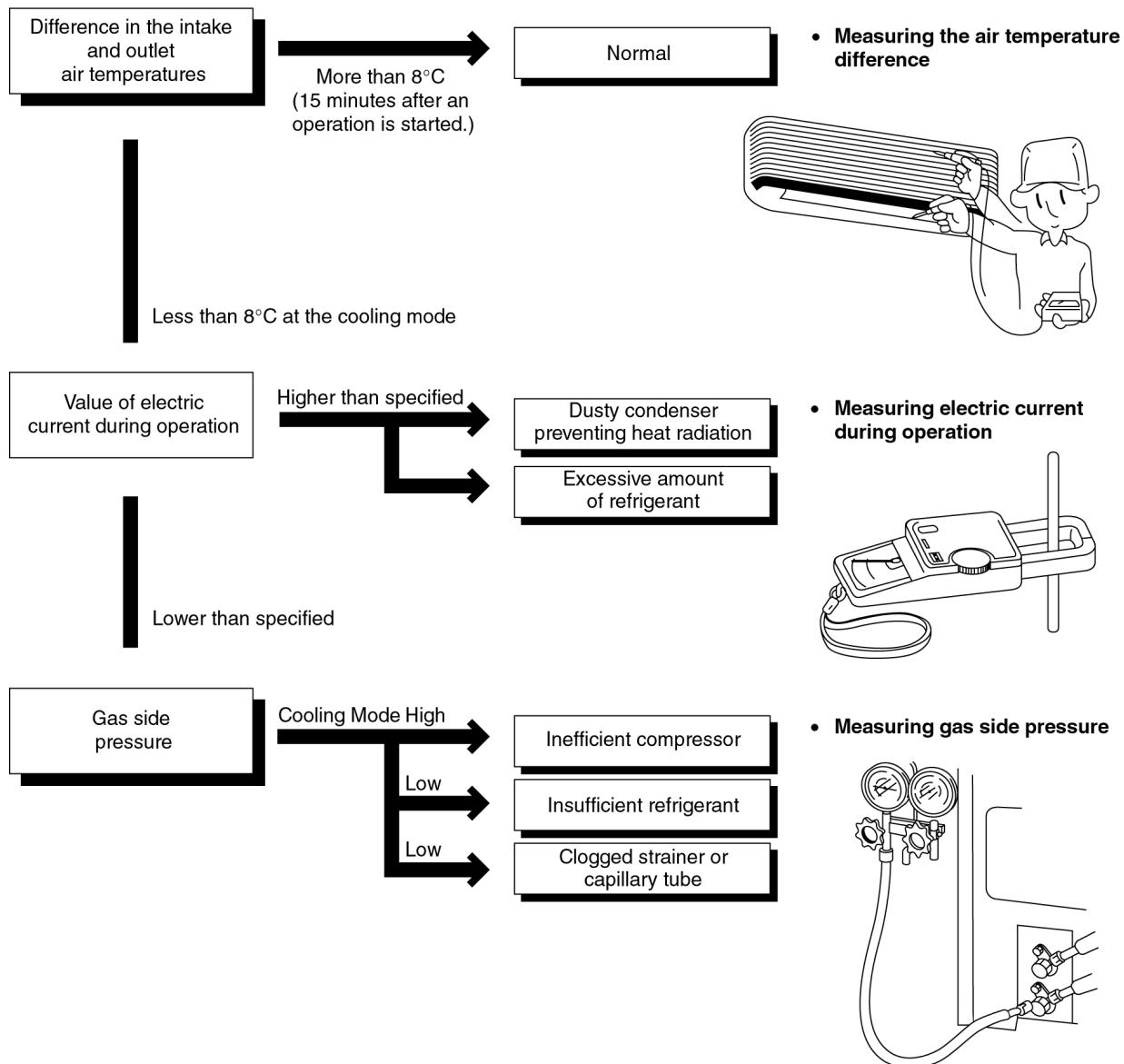
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

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

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm <sup>2</sup> G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16

\* Condition: Indoor fan speed; High  
Outdoor temperature: 35°C



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

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

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

## 13.3. Diagnosis methods of a malfunction of a compressor

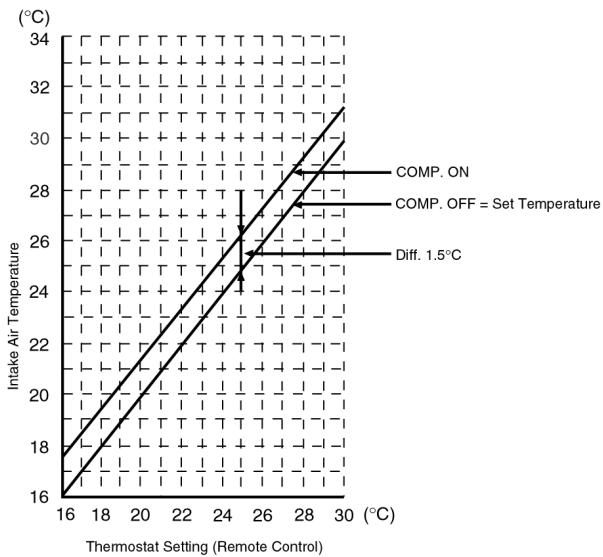
Nature of fault	Symptom
Insufficient compressing of a compressor	<ul style="list-style-type: none"> <li>• Electric current during operation becomes approximately 20% lower than the normal value.</li> <li>• The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C).</li> <li>• The difference between high pressure and low pressure becomes almost zero.</li> </ul>
Locked compressor	<ul style="list-style-type: none"> <li>• Electric current reaches a high level abnormally, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off.</li> <li>• The compressor has a humming sound.</li> </ul>

## 14 Technical Data

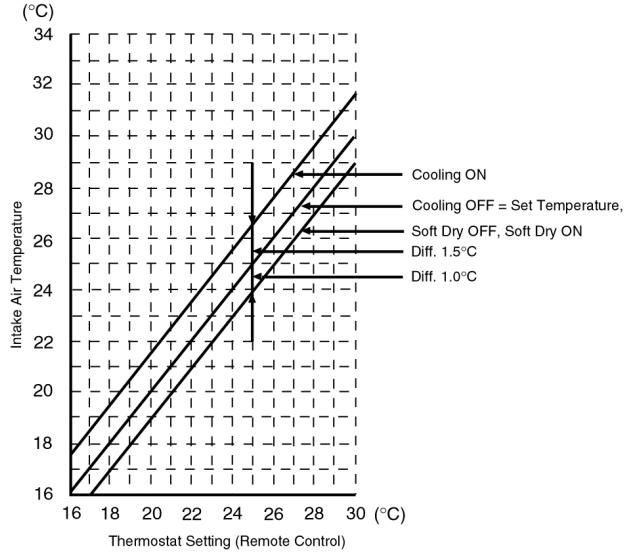
### 14.1. Thermostat characteristics

#### CS-C9DKZW

- Cooling



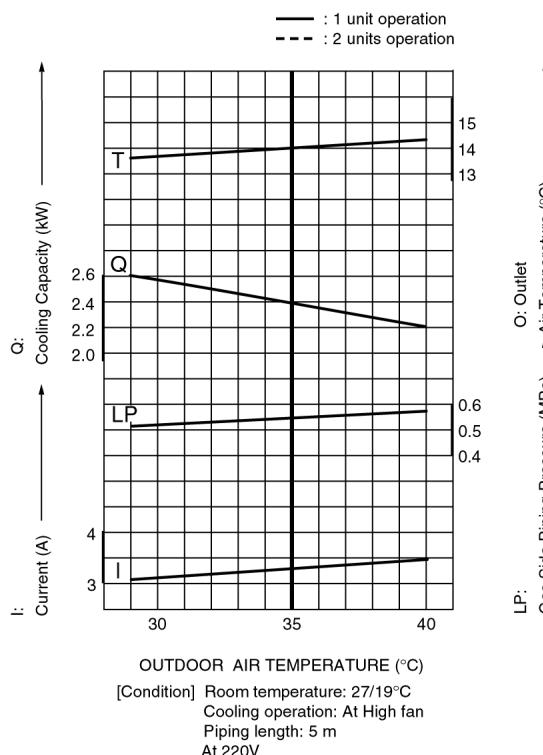
- Soft Dry



### 14.2. Operation characteristics

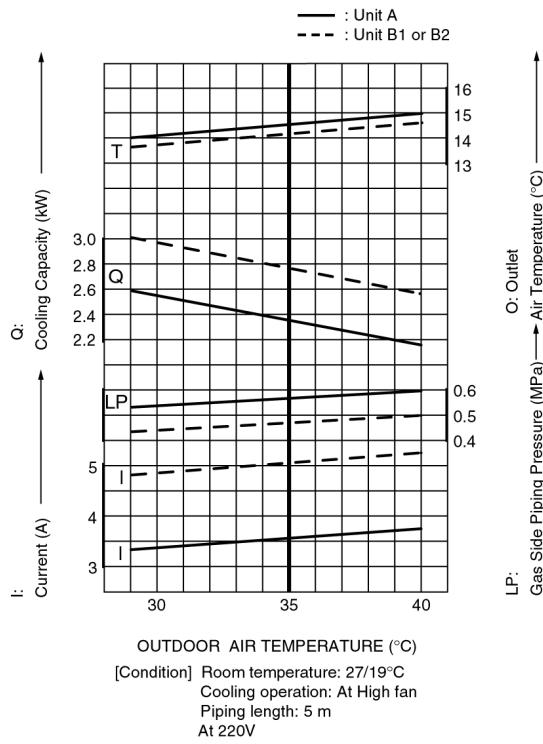
#### 14.2.1. CS-C9DKZW CU-2C18DKH

The capability value shown is the value for one unit.  
For a total for two units, multiply by 2.

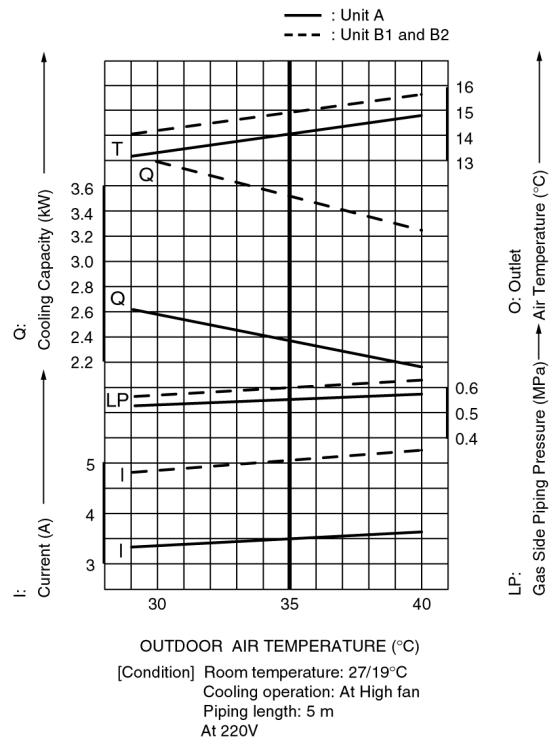


## 14.2.2. CS-C9DKZW CU-3C20DKH

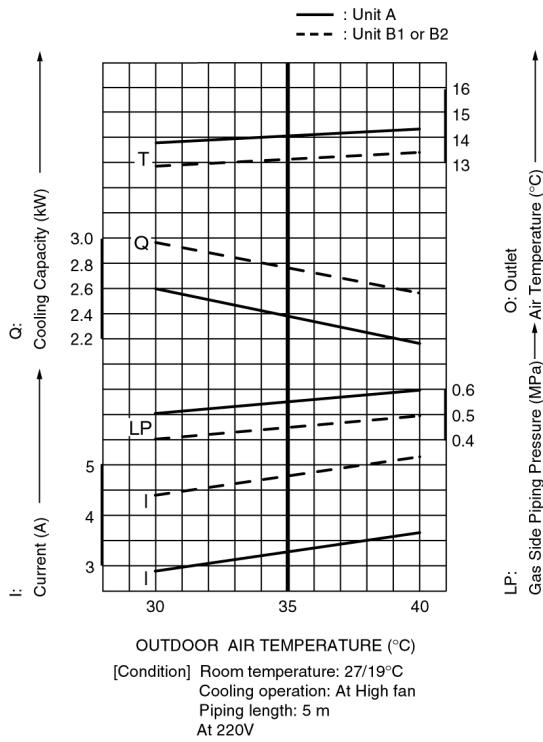
### • 1 Unit Operation



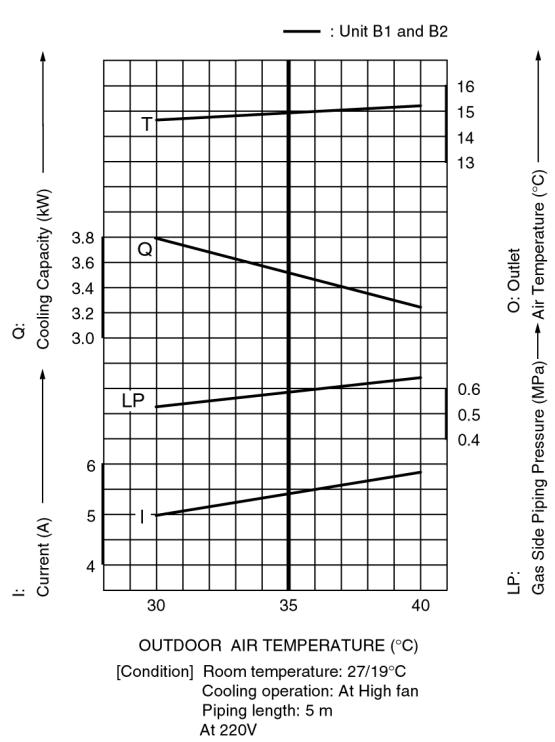
### • 3 Units Operation



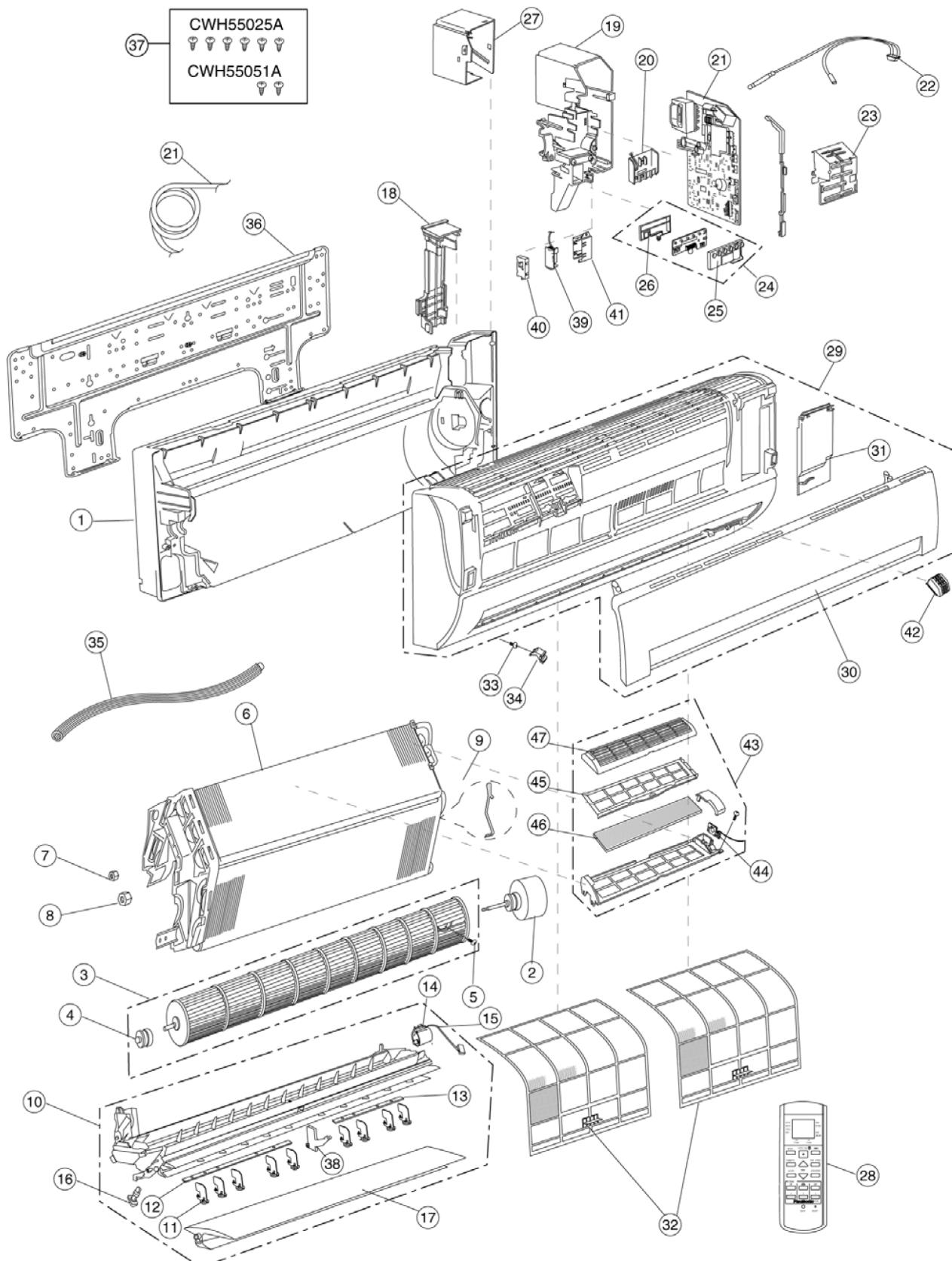
### • 2 Units Operation (A + B1 or B2)



### • 2 Units Operation (B1 + B2)



## 15 Exploded View (Indoor Unit)



Note:

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

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

# 16 Replacement Parts List (Indoor Unit)

## 16.1. CS-C9DKZW

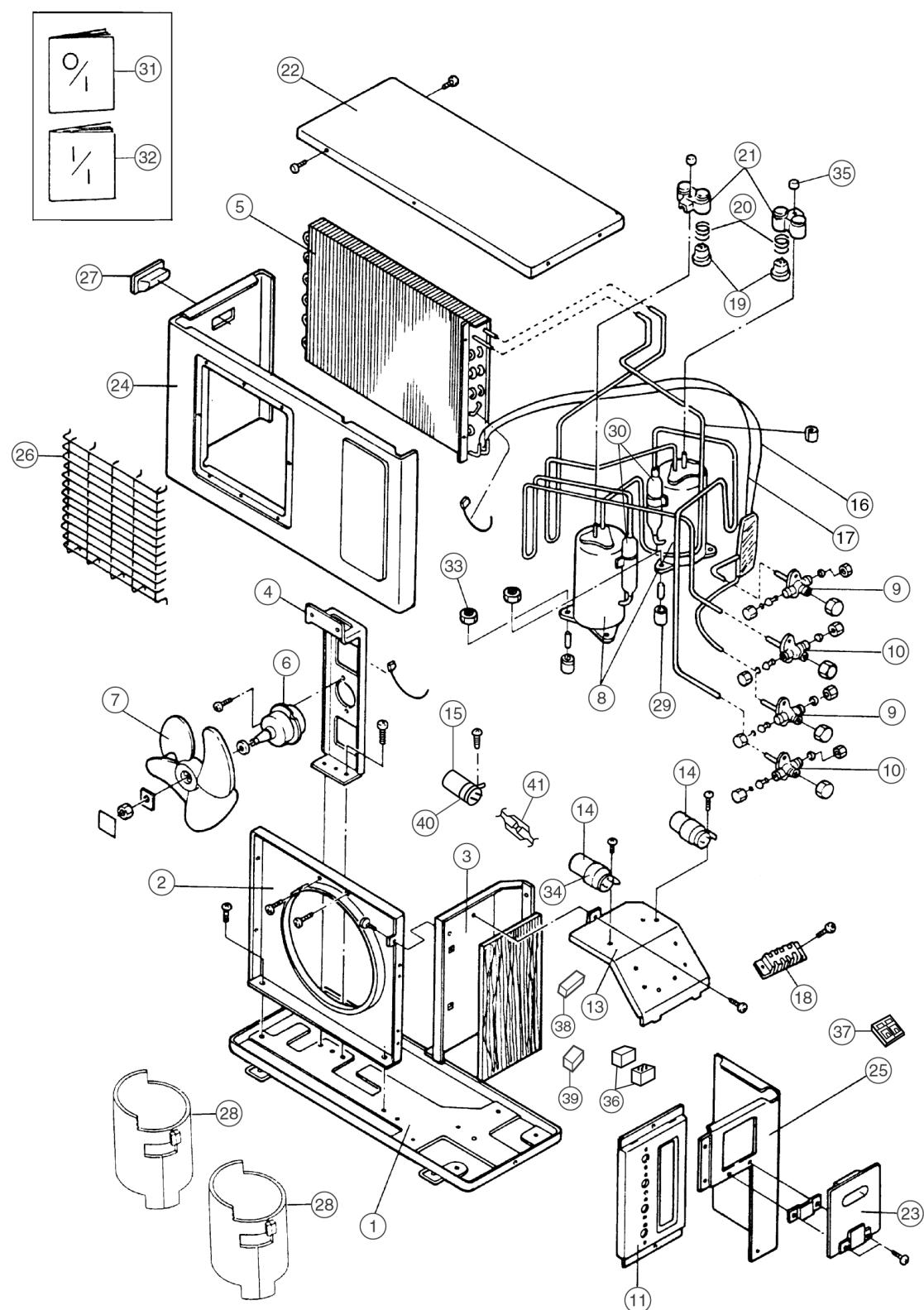
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-C9DKZW	REMARKS
1	CHASSY COMPLETE	1	CWD50C1377	
2	FAN MOTOR, AC 15W SINGLE	1	CWA921181	0
3	CROSS FLOW FAN COMPLETE	1	CWH02C1031	
4	BEARING ASS'Y	1	CWH64K007	
5	SCREW - CROSS FLOW FAN	1	CWH4580304	
6	EVAPORATOR	1	CWB30C1720	
7	FLARE NUT (1/4")	1	CWT25078	
8	FLARE NUT (3/8") (1/2")	1	CWT25005	
9	HOLDER SENSOR	1	CWH32143	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2316	
11	VERTICAL VANE	9	CWE241150	
12	CONNECTING BAR	1	CWE261066	
13	CONNECTING BAR	1	CWE261070	
14	A.S.MOTOR, DC SINGLE 12V 300OHM	1	CWA98260	0
15	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3977	
16	CAP - DRAIN TRAY	1	CWH521096	
17	HORIZONTAL VANE	1	CWE241158	
18	BACK COVER CHASSIS	1	CWD932454	
19	CONTROL BOARD CASING	1	CWH102259	
20	TERMINAL BOARD COMPLETE	1	CWA28C2082	0
21	ELECTRONIC CONTROLLER - MAIN	1	CWA743637	0
22	SENSOR COMPLETE	1	CWA50C2122	0
23	CONTROL BOARD FRONT COVER	1	CWH131207	
24	INDICATOR COMPLETE	1	CWE39C1115	0
25	INDICATOR HOLDER	1	CWD932429	
26	INDICATOR HOLDER	1	CWD932430	
27	CONTROL BOARD TOP COVER	1	CWH13C1120	
28	REMOTE CONTROL COMPLETE	1	CWA75C2600	0
29	FRONT GRILLE COMPLETE	1	CWE11C3077	
30	INTAKE GRILLE COMPLETE	1	CWE22C1154	
31	GRILLE DOOR	1	CWE141073	
32	AIR FILTER	2	CWD001144	
33	SCREW - FRONT GRILLE	2	XTT4+16C	
34	CAP - FRONT GRILLE	2	CWH521109	
35	DRAIN HOSE	1	CWH851063	
36	INSTALLATION PLATE	1	CWH361067	
37	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	
38	FULCRUM	1	CWH621046	
39	ELECTRONIC CONTROLLER - IONIZER	1	CWA743675	
40	CASING - IONIZER	1	CWD932464	
41	CASING - IONIZER	1	CWD932431	
42	ION GENERATOR	1	CWH94C0001	
43	SUPersonic AIRPURIFYING DEVICE	1	CWH91C1013	
44	ELEC. CONTROLLER - SUPersonic	1	CWA743874	
45	SUPER ALLERU BUSTER FILTER	1	CWD00C1133	
46	FRAME FR AIR FILTER SUPersonic	1	CWD011026	
47f	FRAME FR AIR FILTER SUPersonic	1	CWD011027	

(Note)

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

# 17 Exploded View (Outdoor Unit)

## 17.1. CU-2C18DKH



Note:

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

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

# 18 Replacement Parts List (Outdoor Unit)

## 18.1. CU-2C18DKH

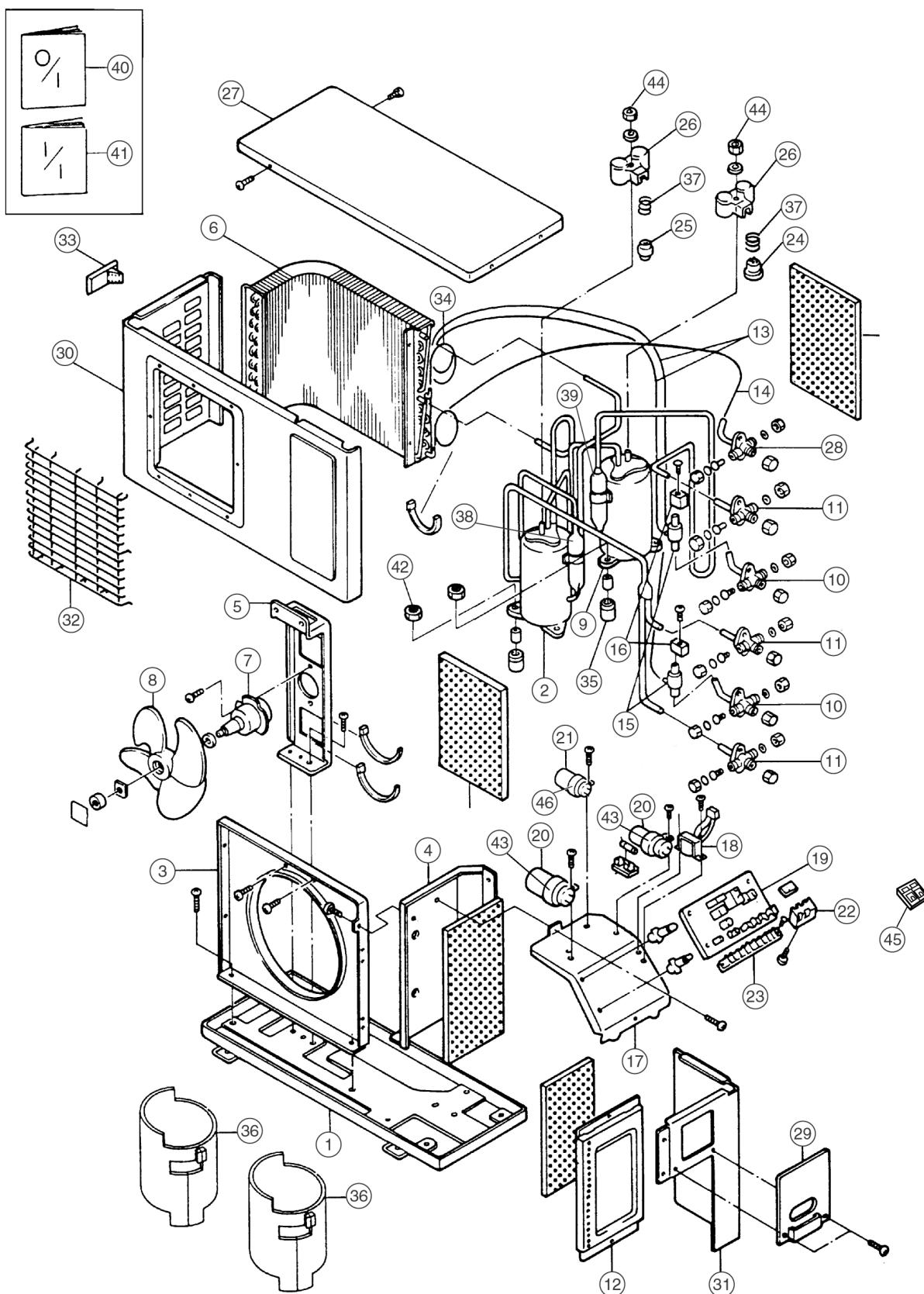
NO.	DESCRIPTION & NAME	Q'TY	CU-2C18DKH	REMARKS
1	CHASSY ASS'Y	1	CWD50K664A	
2	AIR GUIDER FOR PROPELLER FAN	1	CWD31094A	
3	SOUND PROOF BOARD	1	CWH15071	
4	FAN MOTOR BRACKET	1	CWD54179	
5	CONDENSER	1	CWB32C1028R	
6	FAN MOTOR	1	CWA951322	0
7	PROPELLER FAN	1	CWH00023	
8	COMPRESSOR	2	2PS132D2AC02	0
9	3-WAY VALVE (LIQUID SIDE)	2	CWB011194 CWB011178 (Malaysia Only)	0
10	3-WAY VALVE (GAS SIDE)	2	CWB011195 CWB011179 (Malaysia Only)	0
11	HOLDER COUPLING	1	CWH35083A	
13	CONTROL BOARD	1	CWH102151	
14	CAPACITOR - COMPRESSOR (25μF, 370VAC)	2	DS371256CPNA	0
15	CAPACITOR - FAN MOTOR (3μF, 450VAC)	1	F0GAH305A002	0
16	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT01C2188	
17	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT01C2189	
18	TERMINAL BOARD	1	CWA281006	0
19	OVERLOAD PROTECTOR	2	CWA121178	0
20	HOLDER - OVERLOAD PROTECTOR	2	CWH7041200	
21	TERMINAL COVER - COMPRESSOR	2	CWH7070220U	
22	CABINET TOP PLATE	1	CWE03C026	
23	CONTROL BOARD COVER	1	CWH13244	
24	CABINET FRONT PLATE	1	CWE06C110A	
25	CABINET SIDE PLATE	1	CWE04069A	
26	WIRE NET. RESIN NET	1	CWD04186A	
27	HANDLE	1	CWE16000E	
28	SOUND - PROOF MATERIAL	2	CWG30267	
29	ANTI - VIBRATION BUSHING	6	CWH50049	
30	STRAINER	2	CWB11002	
31	OPERATING INSTRUCTION	1	CWF564506	
32	INSTALLATION INSTRUCTION	1	CWF612678	
33	NUT - COMPRESSOR	6	CWH56000	
34	HOLDER CAPACITOR	2	CWH30078	
35	NUT TERMINAL COVER	2	CWH7080300	
36	MAGNETIC RELAY	2	CWA4000088	
37	TERMINAL BOARD ASS'Y	1	CWA28K1035	
38	TERMINAL BOARD ASS'Y	1	CWA4711012	
39	ELECTRONIC CONTROLLER	1	CWA742811	
40	HOLDER CAPACITOR - FAN	1	CWH301005	
41	FUSE	1	XBA2C31TR0	

(Note)

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

# 19 Exploded View (Outdoor Unit)

## 19.1. CU-3C20DKH



Note:

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

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

# 20 Replacement Parts List (Outdoor Unit)

## 20.1. CU-3C20DKH

NO.	DESCRIPTION & NAME	Q'TY	CU-3C20DKH	REMARKS
1	CHASSY ASS'Y	1	CWD50K664A	
2	COMPRESSOR	1	2PS192D2AC02	0
3	AIR GUIDER	1	CWD31094A	
4	SOUND PROOF BOARD	1	CWH15071	
5	FAN MOTOR BRACKET	1	CWD54179	
6	CONDENSER	1	CWB32C1029R	
7	FAN MOTOR	1	CWA951322	
8	PROPELLER FAN	1	CWH00023	
9	COMPRESSOR	1	2PS132D2AC02	
10	3-WAY VALVE (LIQUID SIDE)	2	CWB011196	0
11	3-WAY VALVE (GAS SIDE)	3	CWB011195 CWB011179 (Malaysia Only)	0
12	HOLDER COUPLING	1	CWH35127A	
13	CAPILLARY TUBE	2	CWB15315	
14	CAPILLARY TUBE	1	CWB15199	
15	2-WAY VALVE	2	CWB02306	
16	V - COIL COMPLETE	1	CWA43C680	0
17	CONTROL BOARD	1	CWH102151	0
18	TRANSFORMER - COMPLETE	1	CWA40C192	0
19	ELECTRONIC CONTROLLER	1	CWA741165	0
20	CAPACITOR - COMPRESSOR (25μF, 440VAC)	2	DS441256CPNA	0
21	CAPACITOR - FAN MOTOR (3.0μF, 450VAC)	1	FOGAH305A002	0
22	TERMINAL BOARD	1	CWA4711012	
23	TERMINAL BOARD	1	CWA28064	
24	OVERLOAD PROTECTOR	1	CWA121099	0
25	OVERLOAD PROTECTOR	1	CWA12345	0
26	TERMINAL COVER - COMPRESSOR	2	CWH171011	
27	CABINET TOP PLATE COMP.	1	CWE03C026	
28	3-WAY VALVE (LIQUID SIDE)	1	CWB011194 CWB011178 (Malaysia Only)	0
29	CONTROL BOARD COVER	1	CWH13322	
30	CABINET FRONT PANEL	1	CWE06C111A	
31	CABINET SIDE PLATE	1	CWE04131A	
32	WIRE NET. RESIN NET	1	CWD04186A	
33	HANDLE	1	CWE16037C	
34	CAPILLARY TUBE	1	CWB15474	
35	ANTI - VIBRATION BUSHING	6	CWH50049	
36	SOUND PROOF MATERIAL	2	CWG30267	
37	HOLDER - O.L.P	2	CWH7041200	
38	STRAINER	1	CWB11002	
39	STRAINER	1	CWB11004	
40	OPERATING INSTRUCTION	1	CWF564506	
41	INSTALLATION INSTRUCTION	1	CWF612678	
42	NUT - COMPRESSOR	6	CWH56000	
43	HOLDER CAPACITOR	2	CWH30078	
44	NUT - TERMINAL COVER	2	CWH7080300	
45	TERMINAL BOARD ASS'Y	1	CWA28K1035	
46	HOLDER CAPACITOR - FAN	1	CWH301005	

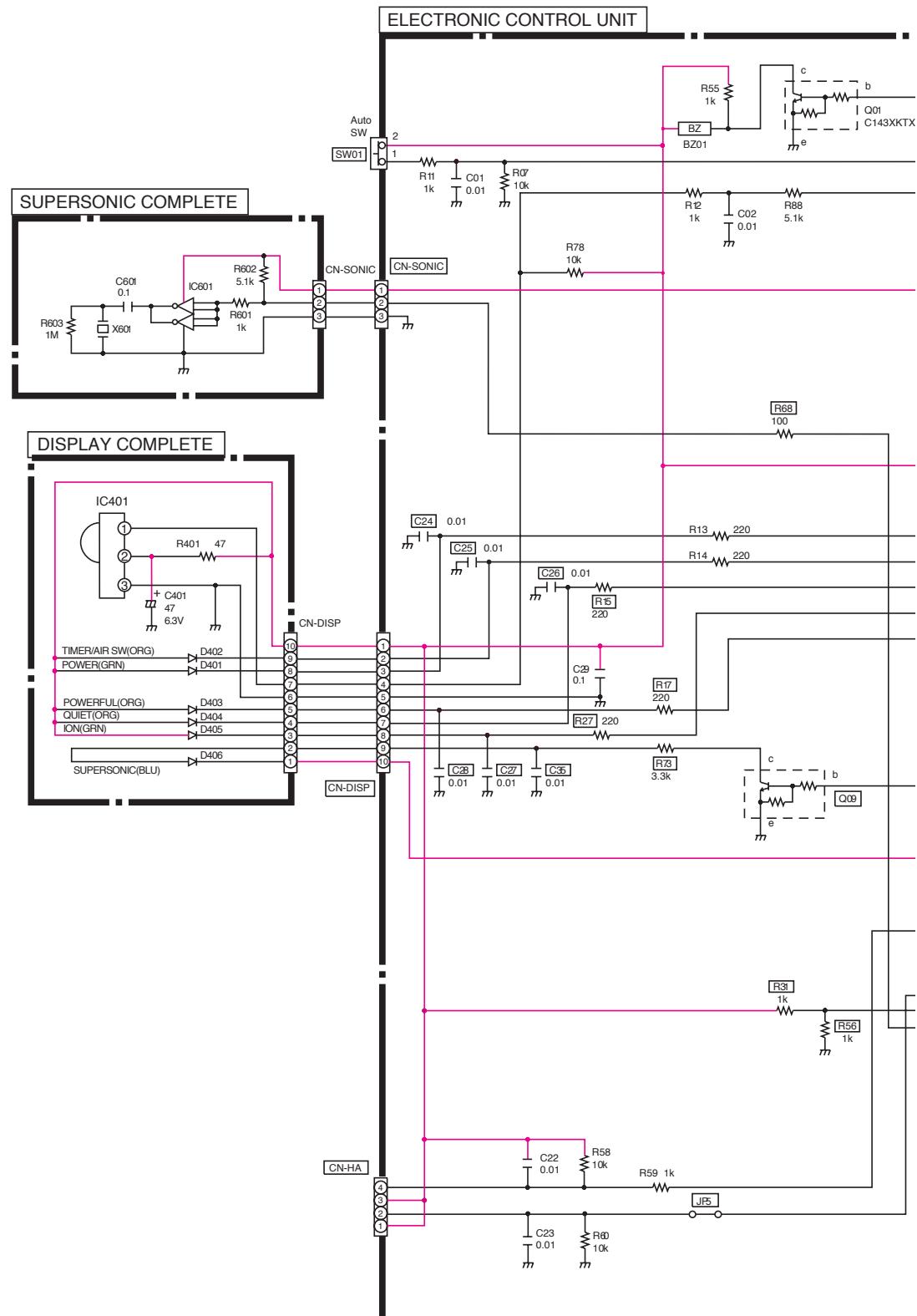
(Note)

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

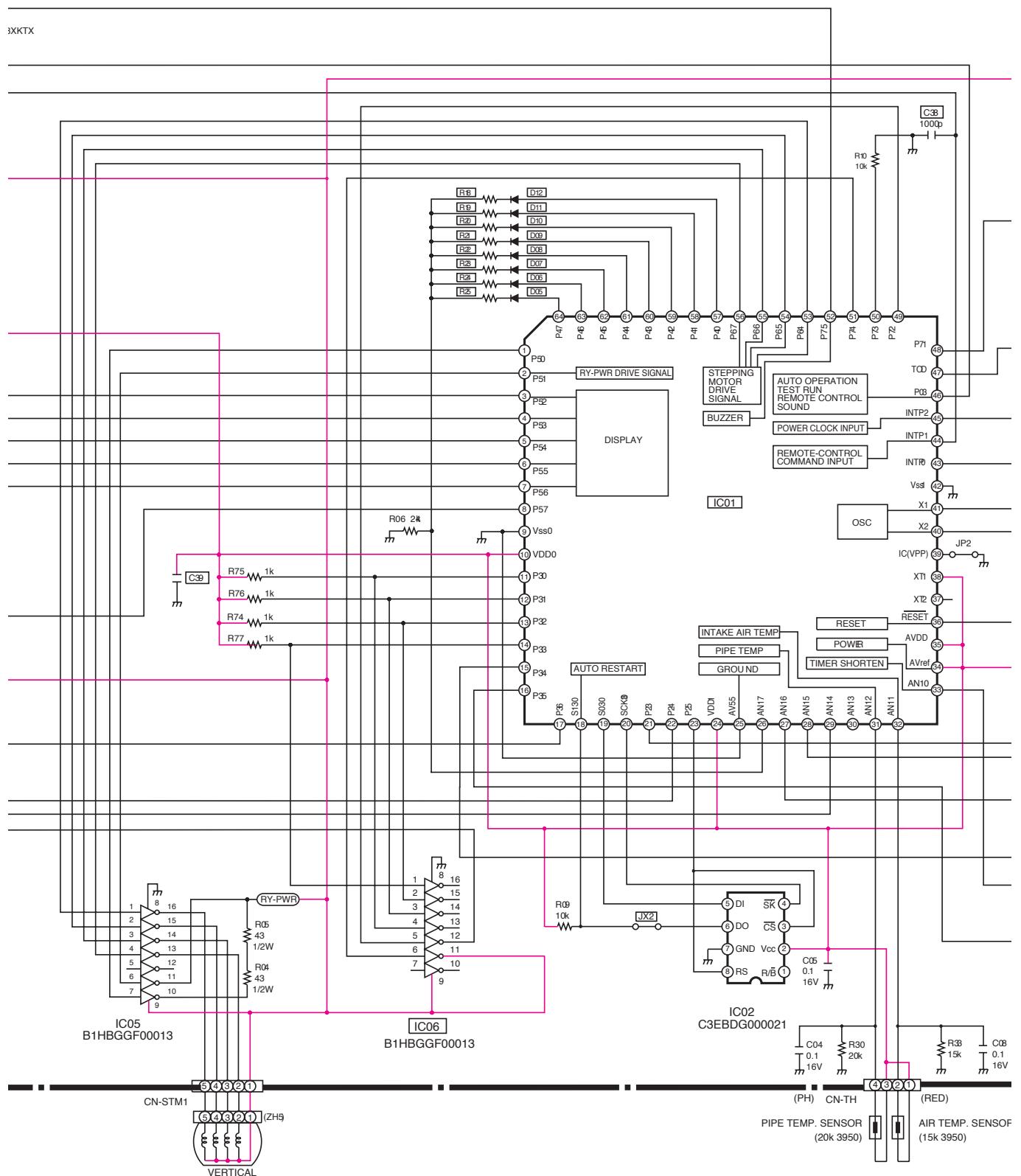
# 21 Electronic Circuit Diagram

- CS-C9DKZW CU-2C18DKH
- CS-C9DKZW CU-3C20DKH

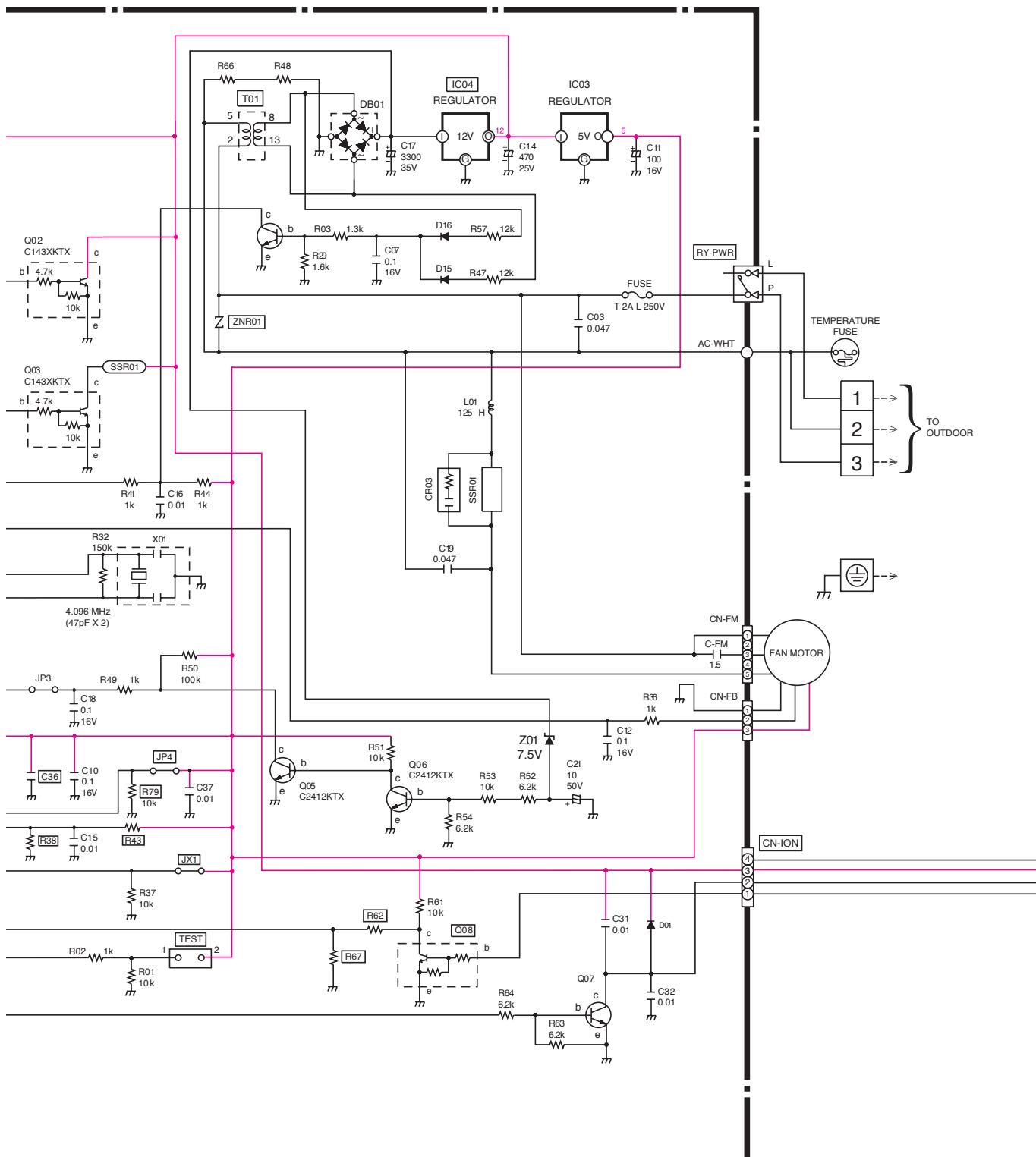
SCHEMATIC DIAGRAM 1/6



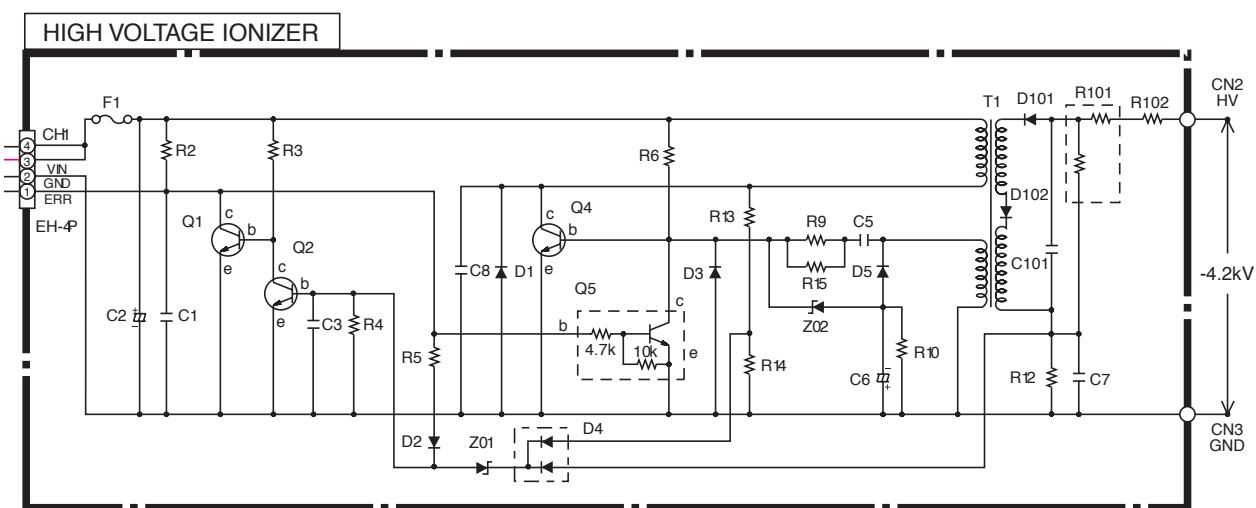
SCHEMATIC DIAGRAM 2/6



## SCHEMATIC DIAGRAM 3/6

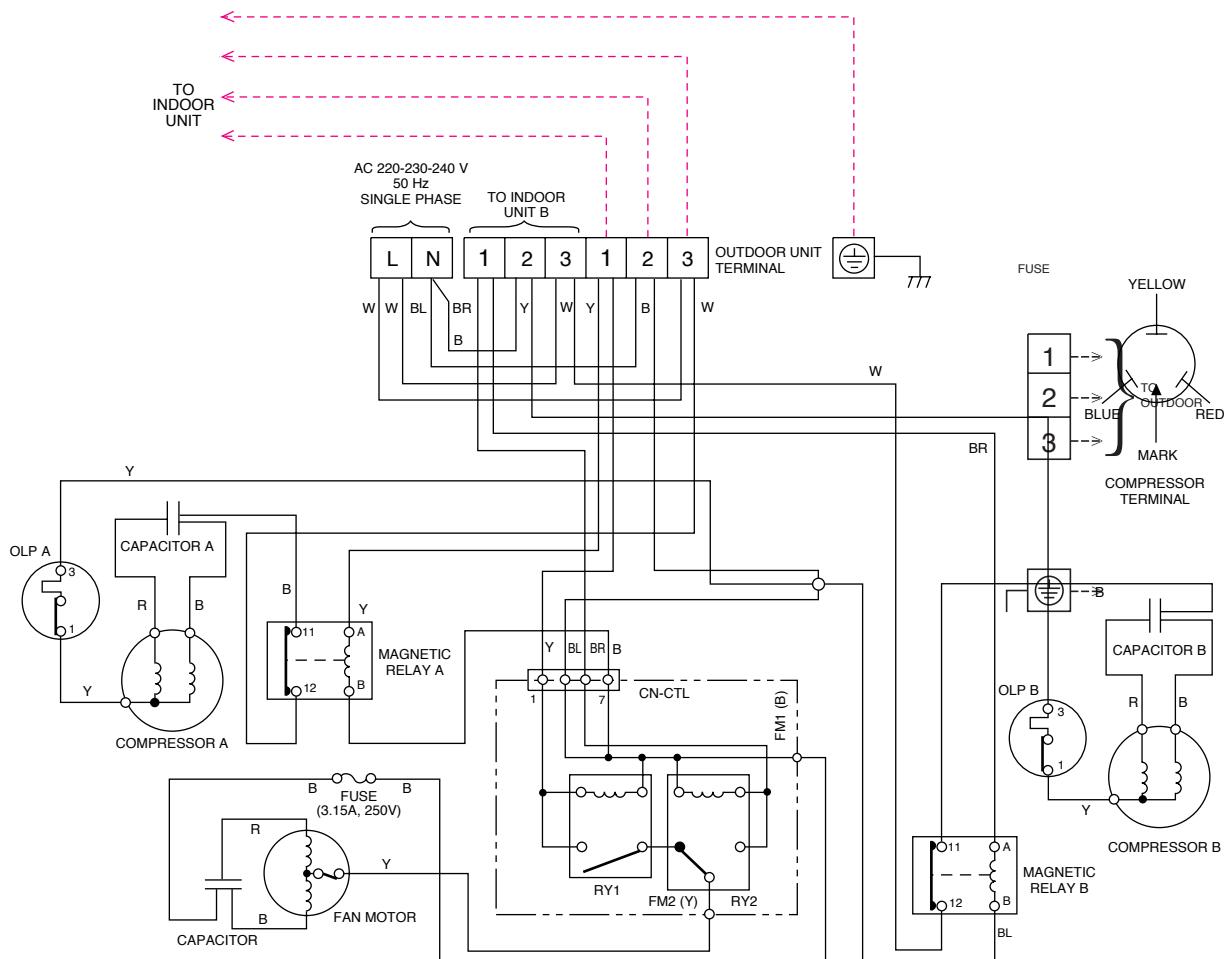


SCHEMATIC DIAGRAM 4/6



•CU-2C18DKH

## SCHEMATIC DIAGRAM 5/6



•CU-3C20DKH

SCHEMATIC DIAGRAM 6/6

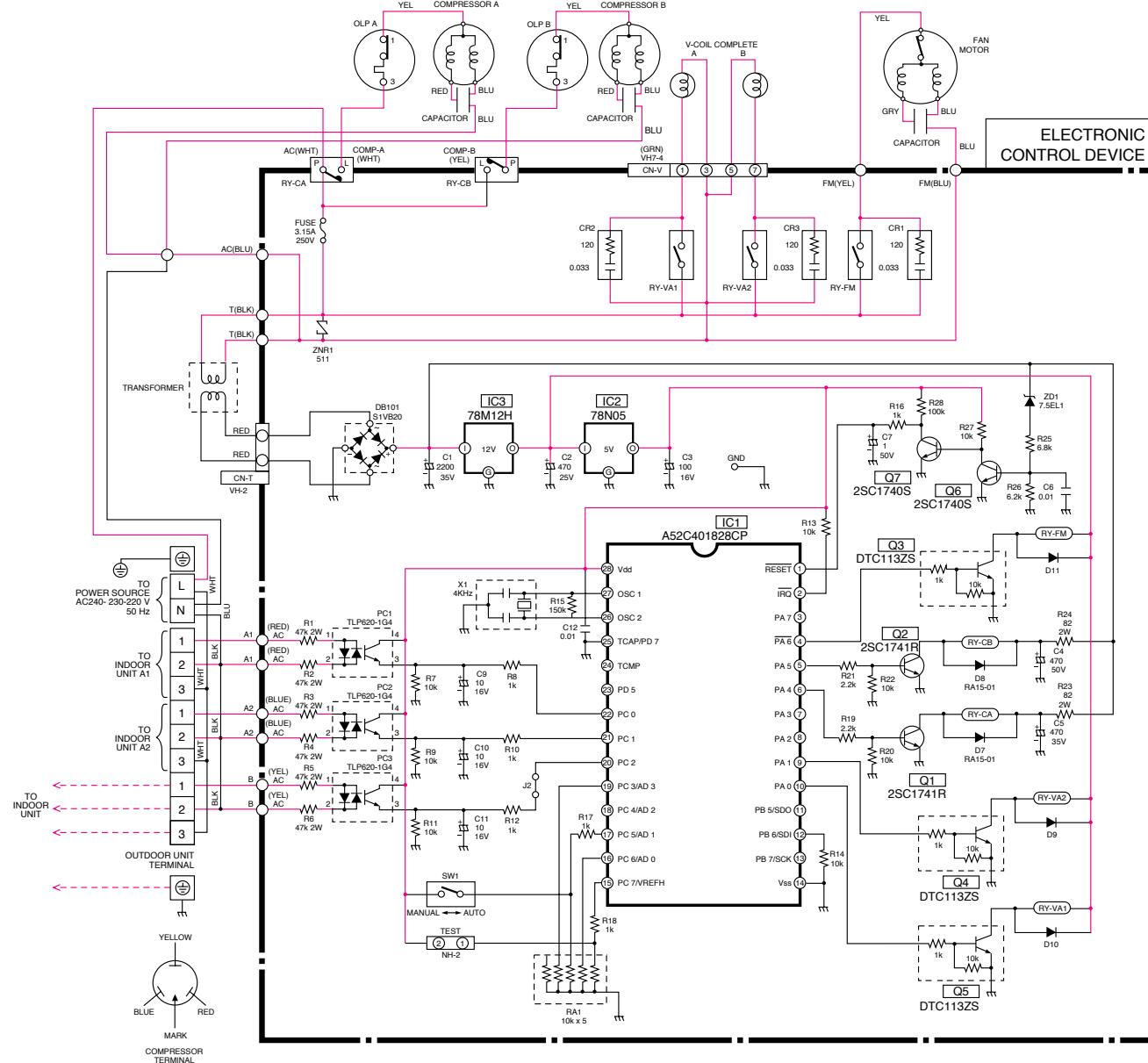


Fig. 1

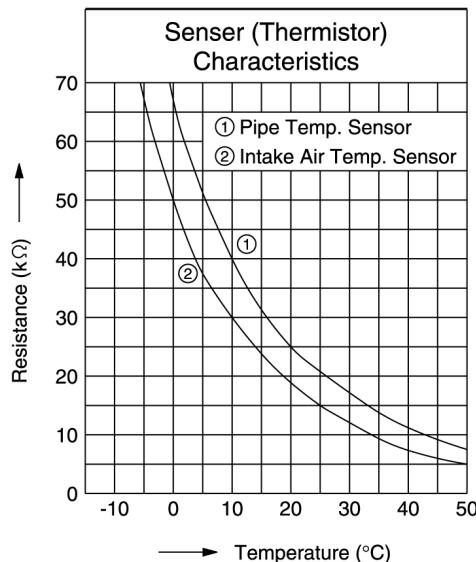


Fig. 2

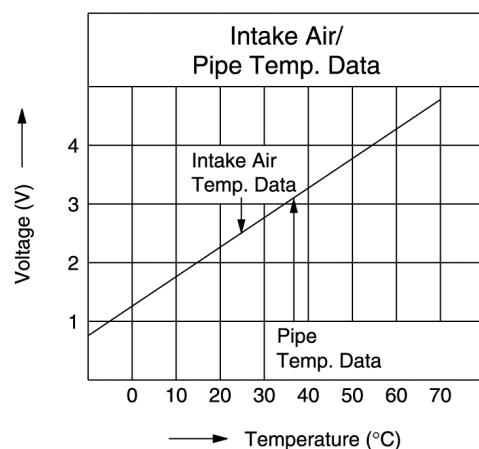
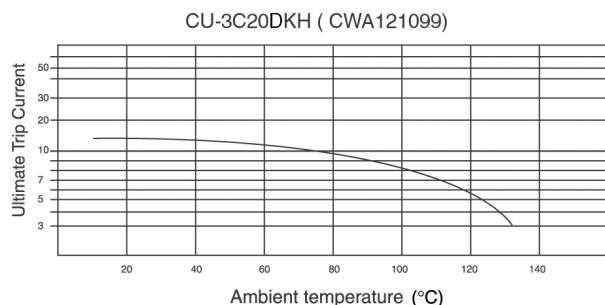
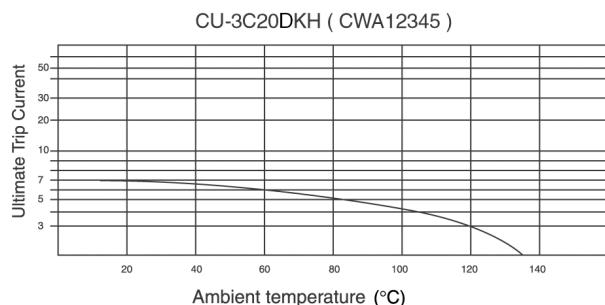
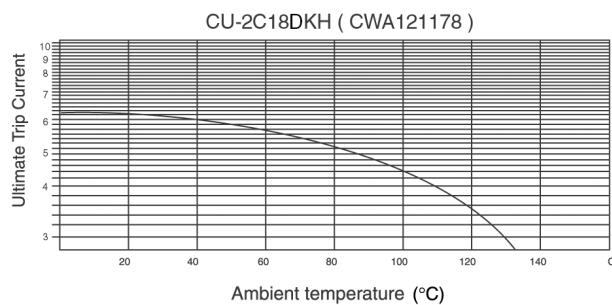


Fig. 3 OLP Characteristics (Compressor)



## How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

\* Voltage measurement

Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.

Use them for servicing.

Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C

\* Indications for resistance

a. K....kΩ                    M....MΩ  
W...watt                    Not indicated....1/4W

b. Type  
Not indicated.....carbon resister  
Tolerance±5%  
 .....metal oxide resister  
Tolerance±1%

\* Indications for capacitor

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

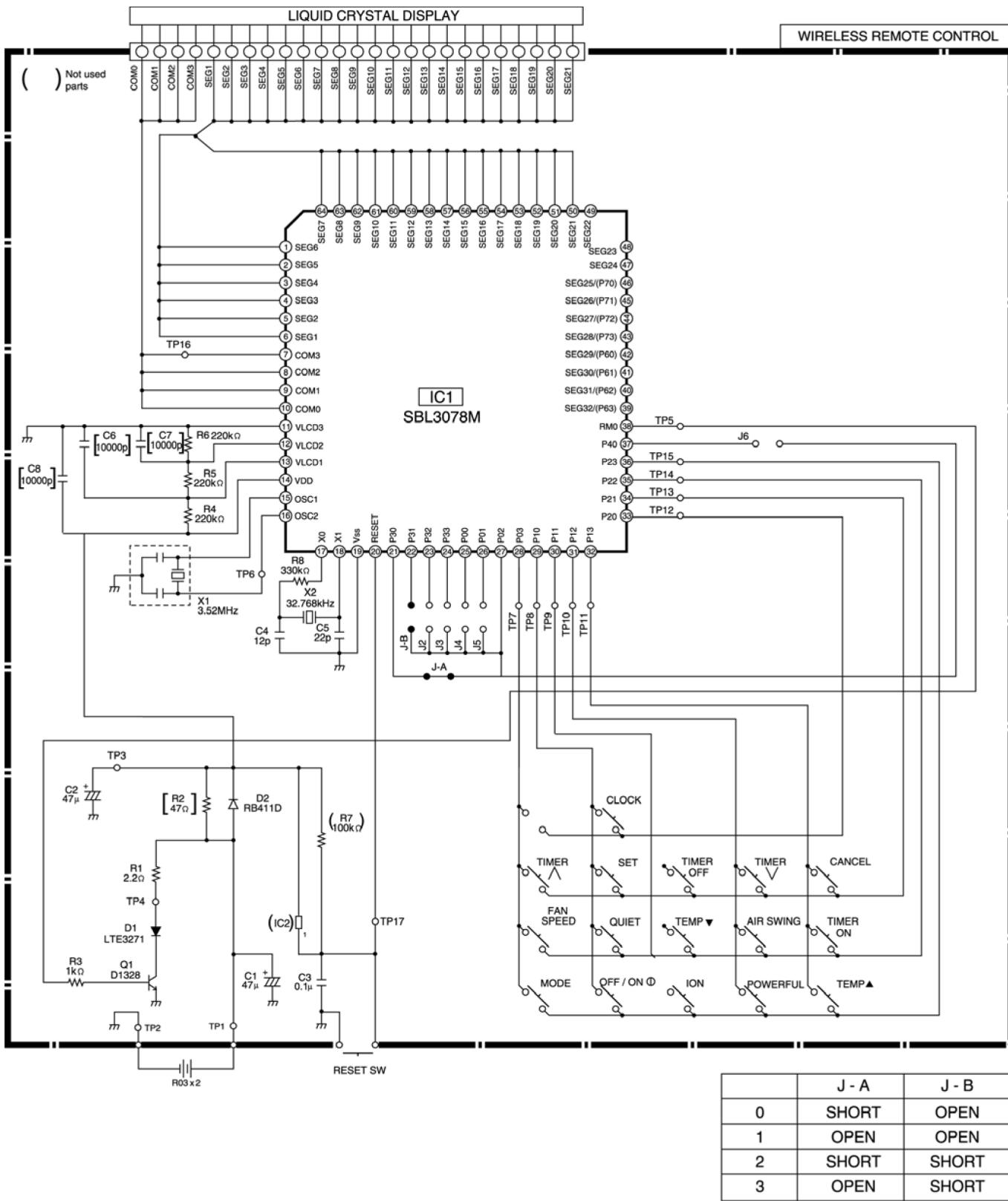
\* Diode without indication.....MA165

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

## TIMER TABLE

Name	Time	Test Mode (When test point Short-circuited)	Remarks
Real Timer	1 hr.	1 min.	
	10 min.	10 sec.	
	1 min.	1 sec.	
Time Delay Safety Control	2 min. 58 sec.	0 sec.	
Forced Operation	60 sec.	0 sec.	
Time Save Control	7 min.	4.2 sec.	
Anti-Freezing	4 min.	0 sec.	
Auto Mode Judgement	20 sec.	0 sec.	
Soft Dry	OFF	6 min.	36 sec.
	ON	10 min.	60 sec.      Soft Dry: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.
		70 sec.	7 sec.
		20 sec.	2 sec.
		180 sec.	18 sec.
	Soft Dry	40 sec.	4 sec.
		360 sec.	36 sec.
Comp. Reverse Rotation Detection	5 min.	30 sec.	Comp. ON 5 min. and above
	2 min.	0 sec.	
Comp./ Fan Motor Delay Timer	1.6 sec.	0 sec.	
Powerful Mode Operation	15 min.	15 sec.	
Random Auto Restart Control	0 ~ 62 sec.	0 ~ 6.2 sec.	
Ion OFF Timer	10 min.	10 sec.	
Random FM Timer (Economy Mode)	5 sec.	5 sec.	

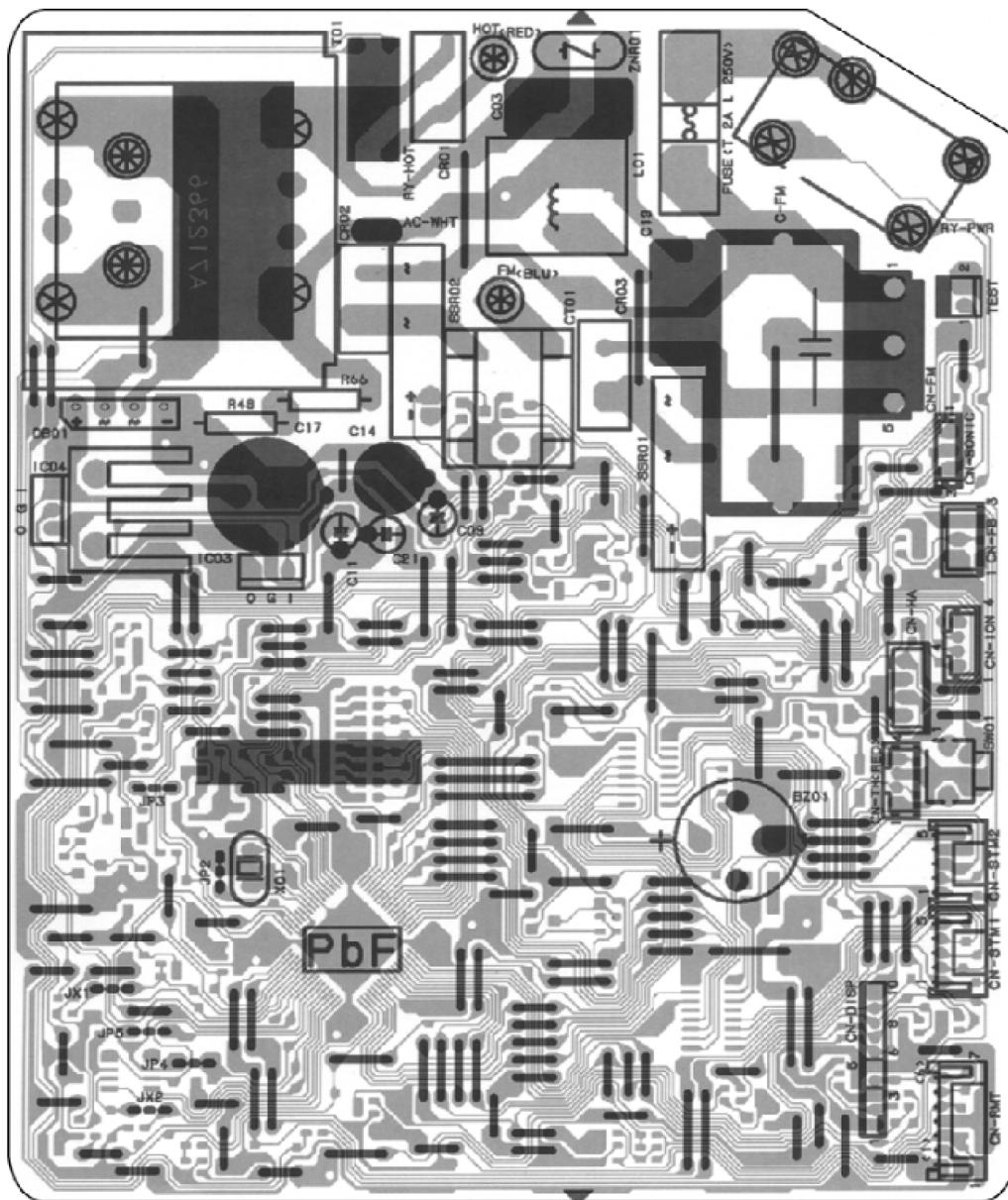
## 21.1. Remote Control



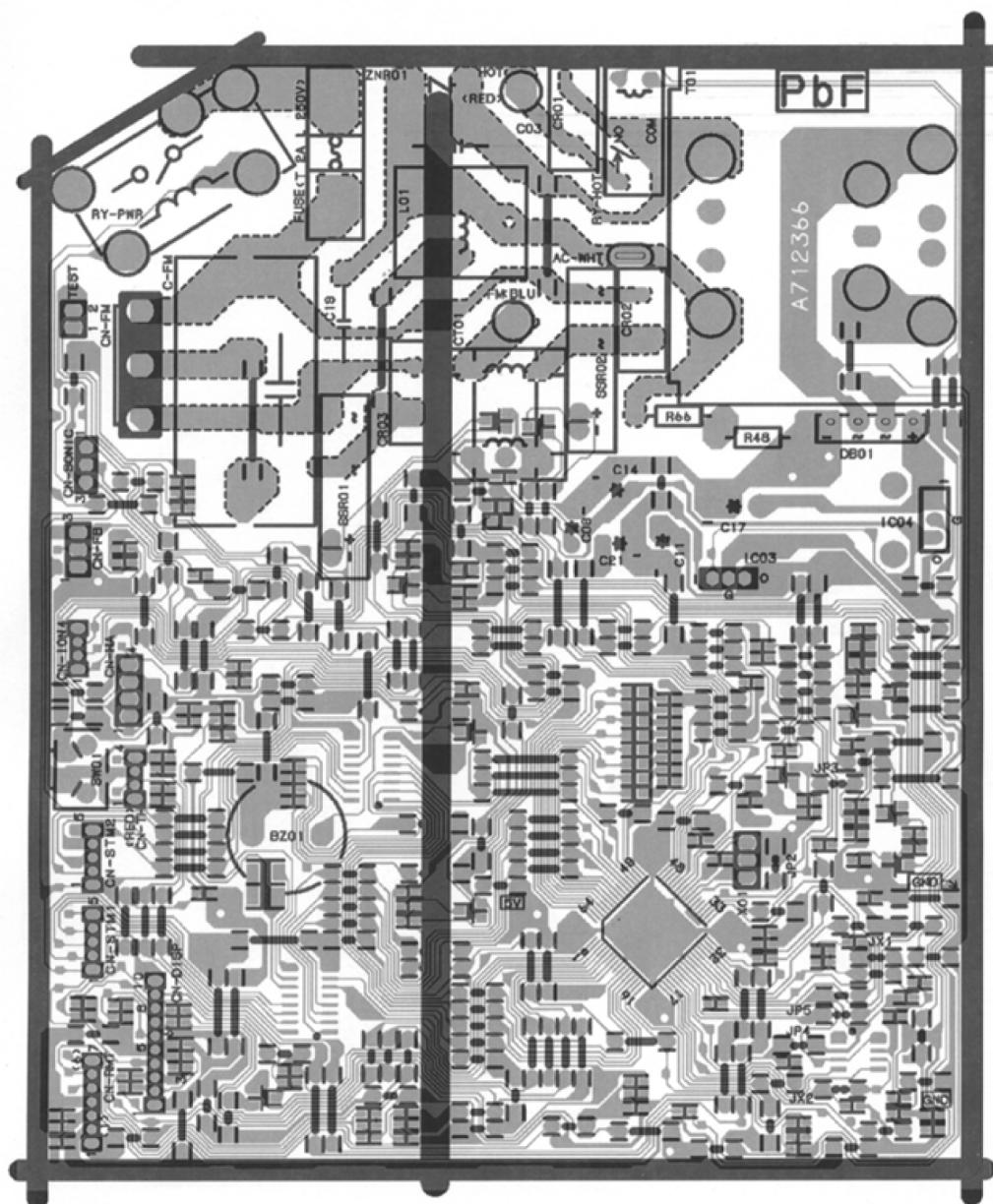
	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

## **21.2. Print Pattern Indoor Unit Printed Circuit Board**

TOP VIEW

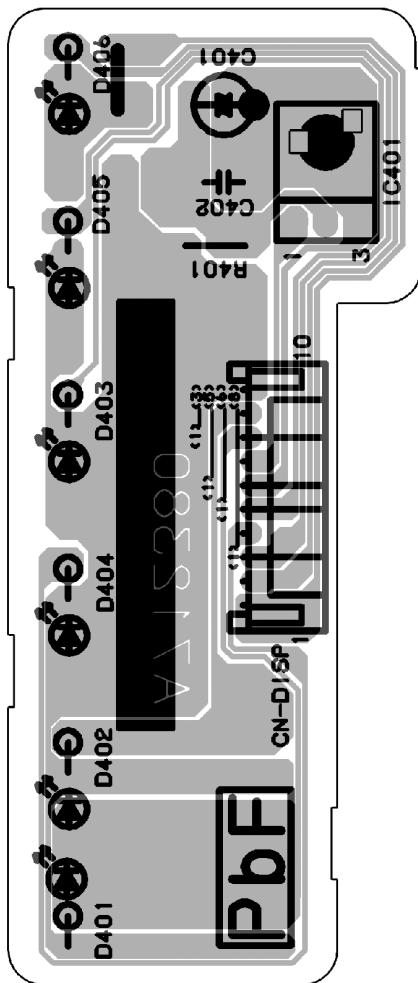


## BOTTOM VIEW

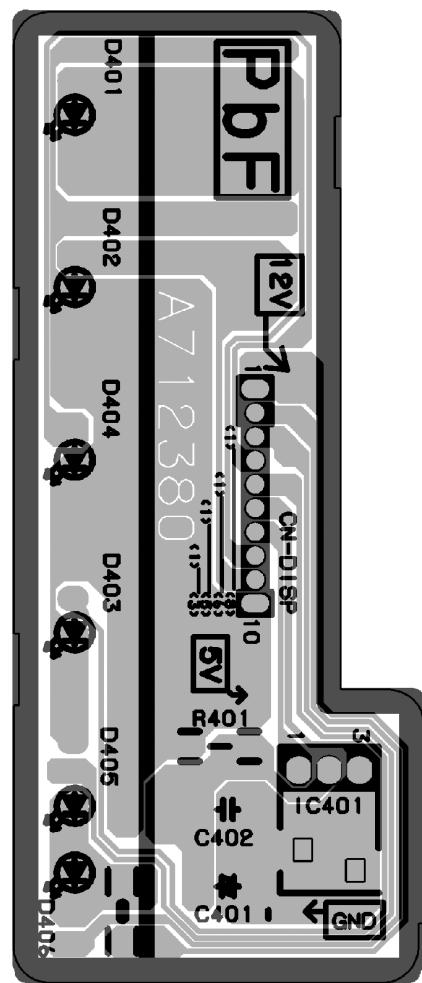


### **21.3. Print Pattern Indicator Printed Circuit Board**

## TOP VIEW



BOTTOM VIEW



## 21.4. Print Pattern

### Outdoor Unit Printed Circuit Board

CU-3C20DKH

