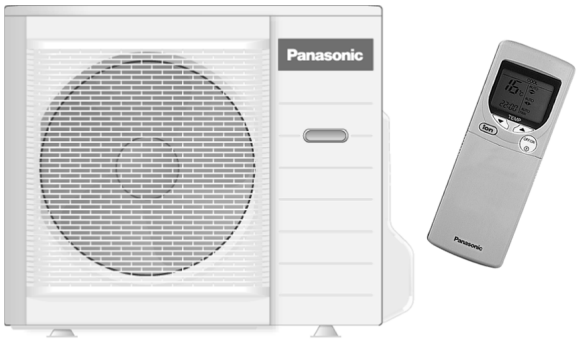
Order No. MAC0310028C3

Service Manual

Air Conditioner



CS-A18CKH CU-A18CKH
CS-A24CKH CU-A24CKH

⚠ WARNING

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

CONTENTS

Panasonic

1 Features

- **High Efficiency**

- **Compact Design**

- **Comfort Environment**
  - – Ionizer control for generate negative ion in discharge air
  - – Air filter with function to reduce dust and smoke
  - – Wider range of horizontal discharge air
  - – New Automatic air swing and manual adjusted by remote control for horizontal airflow

- **Auto Restart**
  - – Random auto restart after power failure for safety restart operation

- **Removable and Washable Front Panel**

- **Remote Control Self-illuminating 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
  - – Inner protector
  - – Noise prevention during soft dry operation.
  - – Anti-dew Formation Control (Cooling & Soft Dry)
  - – Overload Protection Control (Heating)
    - – Outdoor Fan Control
    - – Compressor High Pressure Control

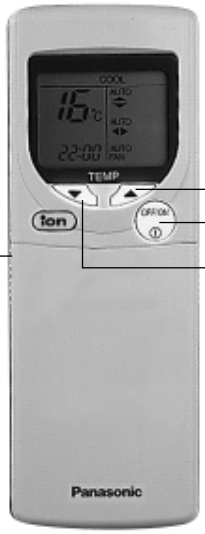
- **Operation Improvement**
  - – Quiet mode to provide quiet operation
  - – Powerful mode to reach the desired room temperature quickly

- **Long Installation Piping**
  - – Long piping up to 25 meter

- **24-hour Timer Setting**

2 Functions

Remote Control



Self illuminating button

OFF / ON ⏻ **Operation OFF / ON**

MODE **Operation Mode Selection**

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

FAN SPEED **Indoor Fan Speed Selection**

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

AIR SWING **Vertical Airflow Direction Control**

- ⬍ Vertical Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).
- ⬌ Horizontal Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).

POWERFUL **Powerful Mode Operation OFF/ON**

QUIET **Quiet Mode Operation OFF/ON**

TEMP. **Room Temperature Setting**

Heating, Cooling, Soft Dry Operation.
- Temperature Setting (16°C to 30°C)

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

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

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

TIME **Time / Timer Setting**

- Hours and minutes setting.

SET
CANCEL **Timer Operation Set / Cancel**

- ON Timer and OFF Timer setting and cancellation.

CLOCK **Clock Setting**

- Current time setting.

ion **Ionizer Operation OFF / ON**

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. “Beep” sound will be heard at the 5th second.
  (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. “Beep, beep” sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green)..... Lights up in operation, blinks in Automatic Operation Mode judging and Hot Start operation.
- QUIET (Orange) ..... Lights up in Quiet Mode Operation.
- TIMER (Orange) ..... Lights up in Timer Setting.
- POWERFUL (Orange) ... Lights up in Powerful Mode Operation.
- ion (Green) ..... Lights up in Ionizer Mode Operation.

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Quiet Operation

- To provide quiet operation.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Ionizer Control

- Ionizer control for generate negative ion in discharge air.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Heating : Fan speed varies from Me → SSLo in accordance with indoor heat exchanger.
  - Cooling : Fan rotates at Hi, Me and Lo- speed. Deodorizing control is available.
  - Soft Dry : Fan rotates at Lo- speed. Deodorizing control is available.

Airflow Direction Control

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

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Anti-Dew Formation Control

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

Hot-Start Control

- At Heating Operation the indoor fan will operate at SLo speed when indoor heat exchanger temperature reaches 30°C.

Anti Cold Draft Control

- The indoor fan operates at Lo^{-} (30 sec.) after that SSLo when the indoor heat exchanger temperature is low.
  (During Heating mode thermal off)

Outdoor Unit

Compressor Reverse Rotation Protection Control

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

Overload Protector

- Inner protector.

60 Secs. Forced Operation Control

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

Outdoor Fan Operation Control

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

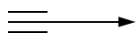
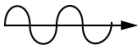
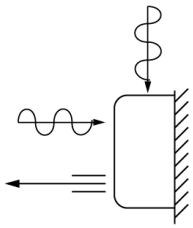
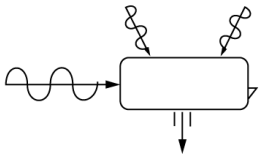
Deice Control

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

4-Way Valve Control

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

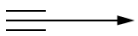
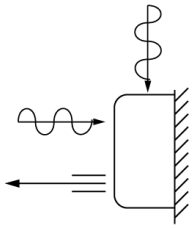
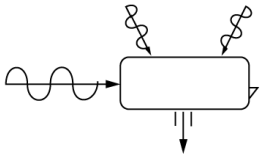
3 Product Specifications

			Unit	CS-A18CKH	CU-A18CKH
Power Source			Phase, Voltage, Cycle	Single, 220 - 240, 50 Hz	
Cooling Capacity			kW (BTU/h)	5.40 (18,400) - 5.40 (18,400)	
Heating Capacity			kW (BTU/h)	5.90 (20,100) - 6.00 (20,500)	
Moisture Removal			l/h (Pint/h)	2.9 (6.1)	
Airflow Method			OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)		m^3/min (cfm)	Cooling; 13.1 (460) - 13.1 (460) Heating; 14.0 (500) - 14.0 (500)	28.6 (1,010) - 32.4 (1,140)
	Indoor Air (Me)		m^3/min (cfm)	Cooling; 14.6 (520) - 14.6 (520) Heating; 14.6 (520) - 14.6 (520)	—
	Indoor Air (Hi)		m^3/min (cfm)	Cooling; 15.4 (544) - 15.4 (544) Heating; 15.9 (561) - 15.9 (561)	50.7 (1,790) - 52.7 (1,860)
	Indoor Air (SHi)		m^3/min (cfm)	Cooling; 15.9 (560) - 15.9 (560)	—
Noise Level			dB (A)	Cooling; High 43 - 43, Low 38 - 38 Heating; High 42 - 42, Low 38 - 38	Cooling; High 53 - 54 Heating; High 54 - 55
Electrical Data	Input Power		kW	Cooling; 1.68 - 1.73 Heating; 1.63 - 1.70	
	Running Current		A	Cooling; 7.8 - 7.5 Heating; 7.6 - 7.5	
	EER		W/W (BTU/hW)	Cooling; 3.21 - 3.12 (10.95 - 10.64)	
	COP		W/W (BTU/hW)	Heating; 3.62 - 3.53 (12.33 - 12.06)	
	Starting Current		A	47.0	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way valve 1/2” L ; 3-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas side) 1/2” L ; (liquid side) 1/4”
Drain Hose	Inner diameter		mm	12	—
	Length		mm	650	—
Power Cord	Length		m	1.9	—
	Number of core-wire			3 (1.5 mm^2)	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)	29 - 17/32 (750)
	Width		inch (mm)	39 - 9/32 (998)	34 - 7/16 (875)
	Depth		inch (mm)	8 - 9/32 (210)	13 - 19/32 (345)
Net Weight			lb (kg)	24 (11.0)	132 (60.0)
Compressor	Type			—	Rotary (1 cylinder) rolling piston type
	Motor	Type		—	Induction (2-poles)
	Rated	Output	kW	—	1.5
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		ASHT-18	PP
	Motor	Type		Transistor (8-poles)	Induction (6-poles)
		Input	W	44.8 - 53.5	135.7 - 151.2
	Rated	Output	W	30	80
	Fan Speed	Low	rpm	Cooling; 1,160 - 1,160 Heating; 1,240 - 1,240	460 - 520
		Medium	rpm	Cooling; 1,290 - 1,290 Heating; 1,290 - 1,290	—
		High	rpm	Cooling; 1,360 - 1,360 Heating; 1,400 - 1,400	815 - 845
		SuperHigh	rpm	Cooling; 1,400 - 1,400	—

		Unit	CS-A18CKH	CU-A18CKH
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium (Pre Coat)	Aluminium
	Fin Type		Slit Fin	Corrugated Fin
	Row / Stage		(Plate fin configuration, forced draft)	
			2 × 15	2 × 28
	FPI		21	16
	Size (W × H × L)	mm	810 × 315 × 25.4	833.2 × 711.2 × 44 867.8
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(cm^3)	—	SUNISO 4GDID or ATMOS M60 (700)
Refrigerant (R-22)		g (oz)	—	1,710 (60.4)
Thermostat			Electronic Control	Electronic Control
Protection Device			—	Inner Protector
Capillary Tube	Length	mm	—	Cooling; 970, Heating; 820
	Flow Rate	l/min	—	Cooling; 11.0, Heating; 27.0
	Inner Diameter	mm	—	Cooling; 1.6, Heating; 2.2
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		µF, VAC	—	45 µF, 400VAC
Fan Motor Capacitor		µF, VAC	—	3.5 µF, 440VAC

Note:

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

			Unit	CS-A24CKH	CU-A24CKH
Power Source			Phase, Voltage, Cycle	Single, 220 - 240, 50 Hz	
Cooling Capacity			kW (BTU/h)	7.03 - 7.03 (24,000 - 24,000)	
Heating Capacity			kW (BTU/h)	7.80 - 7.80 (26,600 - 26,600)	
Moisture Removal			l/h (Pint/h)	4.0 (8.5)	
Airflow Method			OUTLET  INTAKE 	SIDE VIEW 	TOP VIEW 
Air Volume	Indoor Air (Lo)		m^3/min (cfm)	Cooling; 13.5 (480) - 13.5 (480) Heating; 14.6 (520) - 14.6 (520)	28.1 (990) - 31.7 (1,120)
	Indoor Air (Me)		m^3/min (cfm)	Cooling; 15.3 (540) - 15.3 (540) Heating; 15.3 (540) - 15.3 (540)	—
	Indoor Air (Hi)		m^3/min (cfm)	Cooling; 16.4 (580) - 16.4 (580) Heating; 17.4 (610) - 17.4 (610)	49.7 (1,750) - 51.7 (1,830)
	Indoor Air (SHi)		m^3/min (cfm)	Cooling; 17.4 (610) - 17.4 (610)	—
Noise Level			dB (A)	Cooling; High 47 - 47, Low 41 - 41 Heating; High 46 - 46, Low 41 - 41	Cooling; High 53 - 54 Heating; High 54 - 55
Electrical Data	Input Power		kW	Cooling; 2.54 - 2.58 Heating; 2.53 - 2.56	
	Running Current		A	Cooling; 12.3 - 12.2 Heating; 12.2 - 12.1	
	EER		W/W (BTU/hW)	Cooling; 2.77 - 2.72 (9.45 - 9.30)	
	COP		W/W (BTU/hW)	Heating; 3.08 - 3.05 (10.51 - 10.39)	
	Starting Current		A	67.0	
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 5/8” L ; Half Union 1/4”	G ; 3-way valve 5/8” L ; 3-way valve 1/4”
Pipe Size (Flare piping)			inch inch	G ; (gas side) 5/8” L ; (liquid side) 1/4”	G ; (gas side) 5/8” L ; (liquid side) 1/4”
Drain Hose	Inner diameter		mm	12	—
	Length		mm	650	—
Power Cord	Length		m	1.9	—
	Number of core-wire			3 (2.5 mm^2)	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)	29 - 17/32 (750)
	Width		inch (mm)	39 - 9/32 (998)	34 - 7/16 (875)
	Depth		inch (mm)	8 - 9/32 (210)	13 - 19/32 (345)
Net Weight			lb (kg)	26 (12.0)	139 (63.0)
Compressor		Type		—	Rotary (1 cylinder) rolling piston type
	Motor	Type		—	Induction (2-poles)
	Rated	Output	kW	—	2.0
Air Circulation		Type		Cross-flow Fan	Propeller Fan
		Material		ASHT-18	PP
	Motor	Type		Transistor (8-poles)	Induction (6-poles)
		Input	W	44.8 - 53.5	171.3 - 190.0
	Rated	Output	W	30	108
	Fan Speed	Low	rpm	Cooling; 1,260 - 1,260 Heating; 1,360 - 1,360	460 - 520
		Medium	rpm	Cooling; 1,430 - 1,430 Heating; 1,430 - 1,430	—
		High	rpm	Cooling; 1,530 - 1,530 Heating; 1,610 - 1,610	815 - 845
		SuperHigh	rpm	Cooling; 1,610 - 1,610	—

		Unit	CS-A24CKH	CU-A24CKH
Heat Exchanger	Description		Evaporator	Condenser
	Tube material		Copper	Copper
	Fin material		Aluminium (Pre Coat)	Aluminium
	Fin Type		Slit Fin	Corrugated Fin
	Row / Stage		(Plate fin configuration, forced draft)	
			2 × 15	2 × 28
	FPI		21	18
	Size (W × H × L)	mm	810 × 315 × 25.4	833.2 × 711.2 × 44.0 867.8
Refrigerant Control Device			—	Capillary Tube
Refrigeration Oil		(cm^3)	—	SUNISO 4GDID or ATMOS M60 (1,130)
Refrigerant (R-22)		g (oz)	—	2,050 (72.4)
Thermostat			Electronic Control	Electronic Control
Protection Device			—	Inner Protector
Capillary Tube	Length	mm	—	Cooling; 730, Heating; 340
	Flow Rate	l/min	—	Cooling; 12.5, Heating; 21.0
	Inner Diameter	mm	—	Cooling; 1.6 Heating; 2.0
Air Filter	Material Style		P.P. Honeycomb	—
Capacity Control			Capillary Tube	
Compressor Capacitor		µF, VAC	—	45 µF, 400VAC
Fan Motor Capacitor		µF, VAC	—	3.5 µF, 440VAC

Note:

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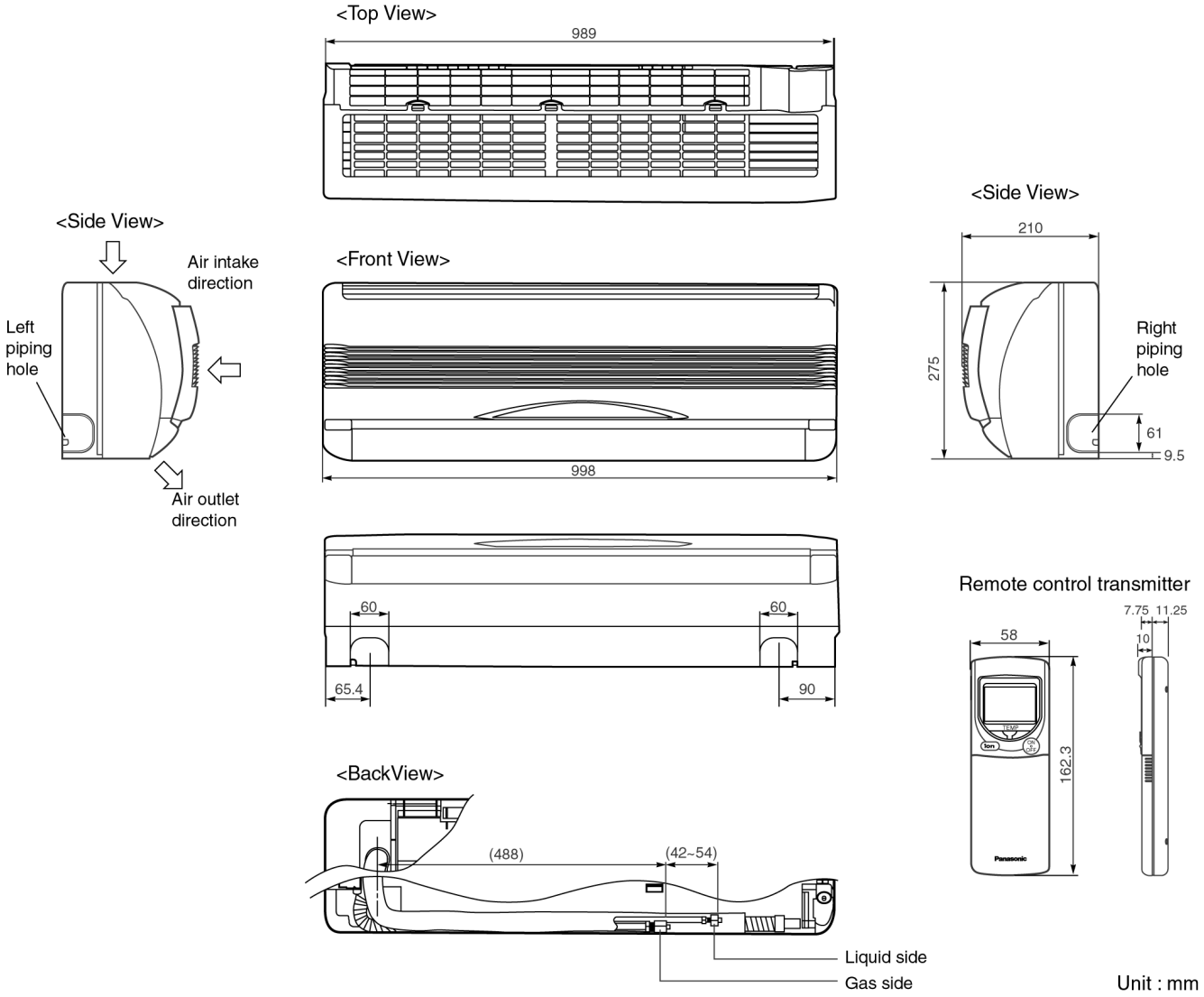
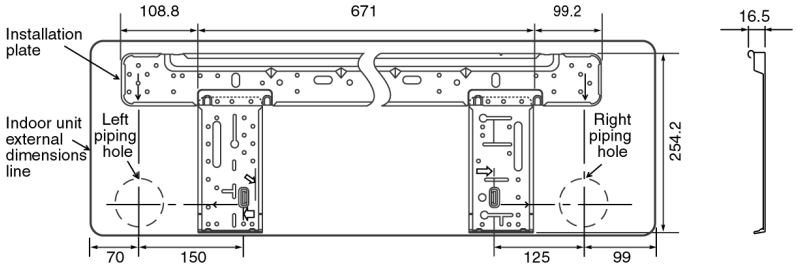
4 Dimensions

CS-A18CKH CS-A24CKH (Indoor Unit)

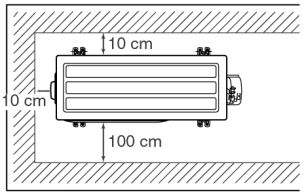


Relative position between the indoor unit and the installation plate <Front View>



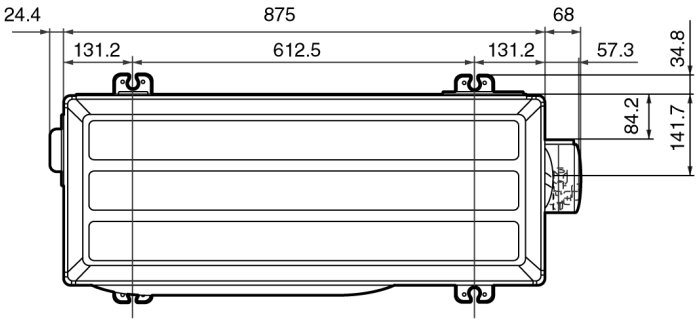
CU-A18CKH
CU-A24CKH
(Outdoor Unit)

Space necessary for installation

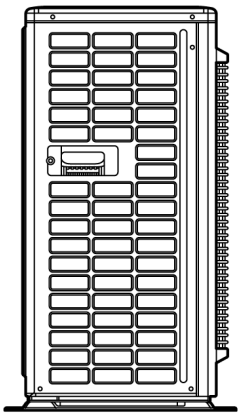


Anchor Bolt Pitch
383 x 612.5

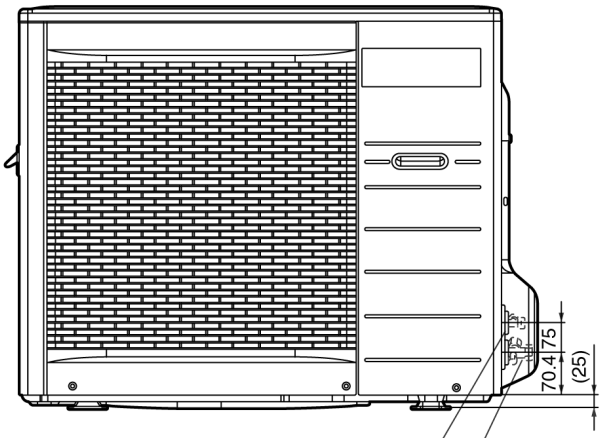
<Top View>



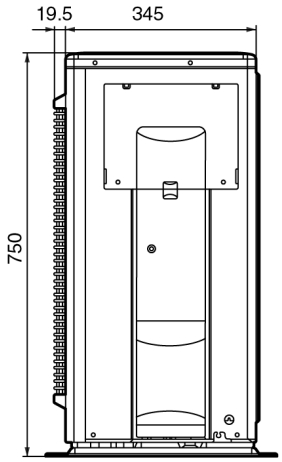
<Side View>



<Front View>



<Side View>



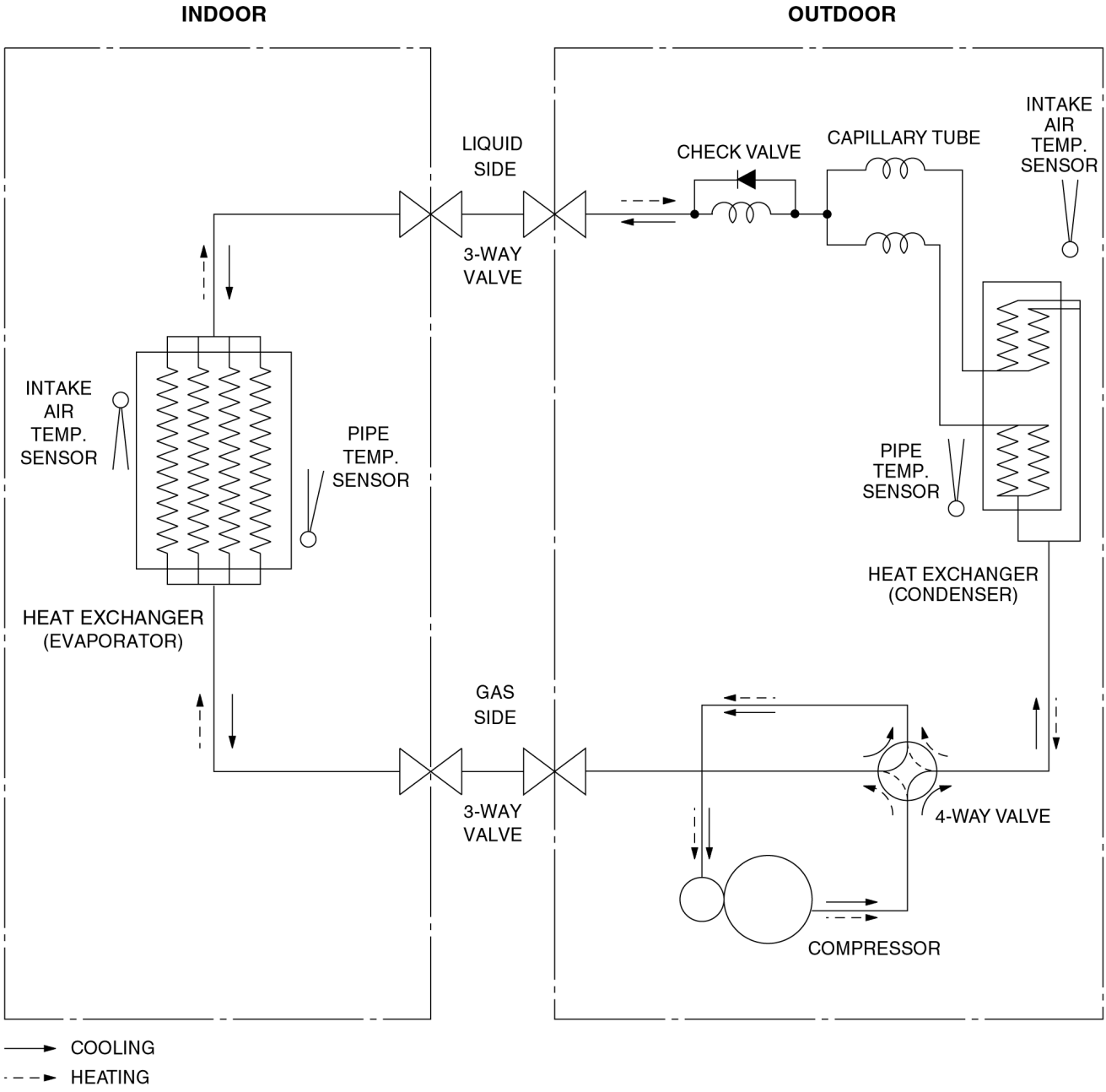
3-way valve at Gas side
(Low Pressure)

3-way valve at Liquid side
(High Pressure)

Unit: mm

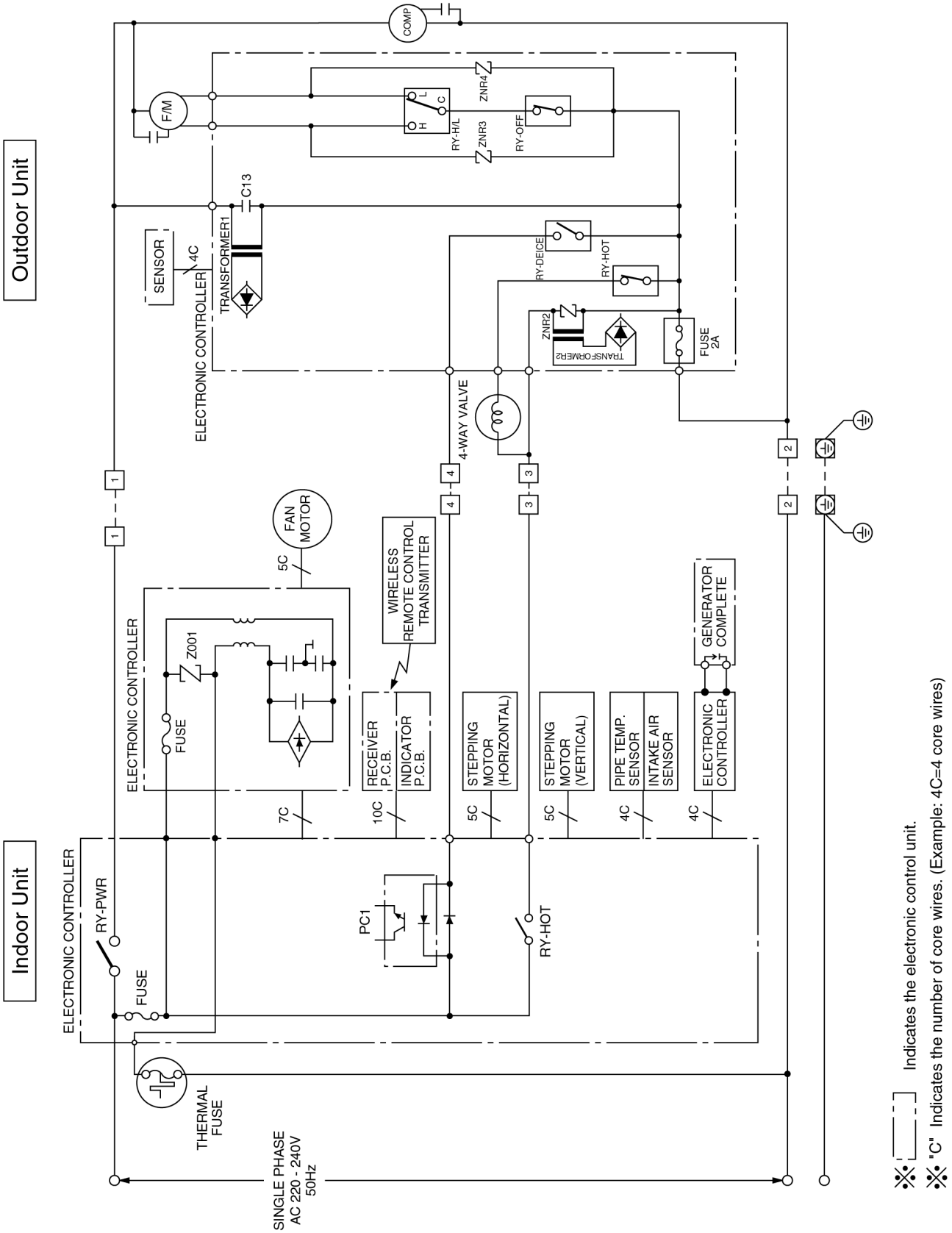
5 Refrigeration Cycle Diagram

CS-A18CKH CU-A18CKH
CS-A24CKH CU-A24CKH



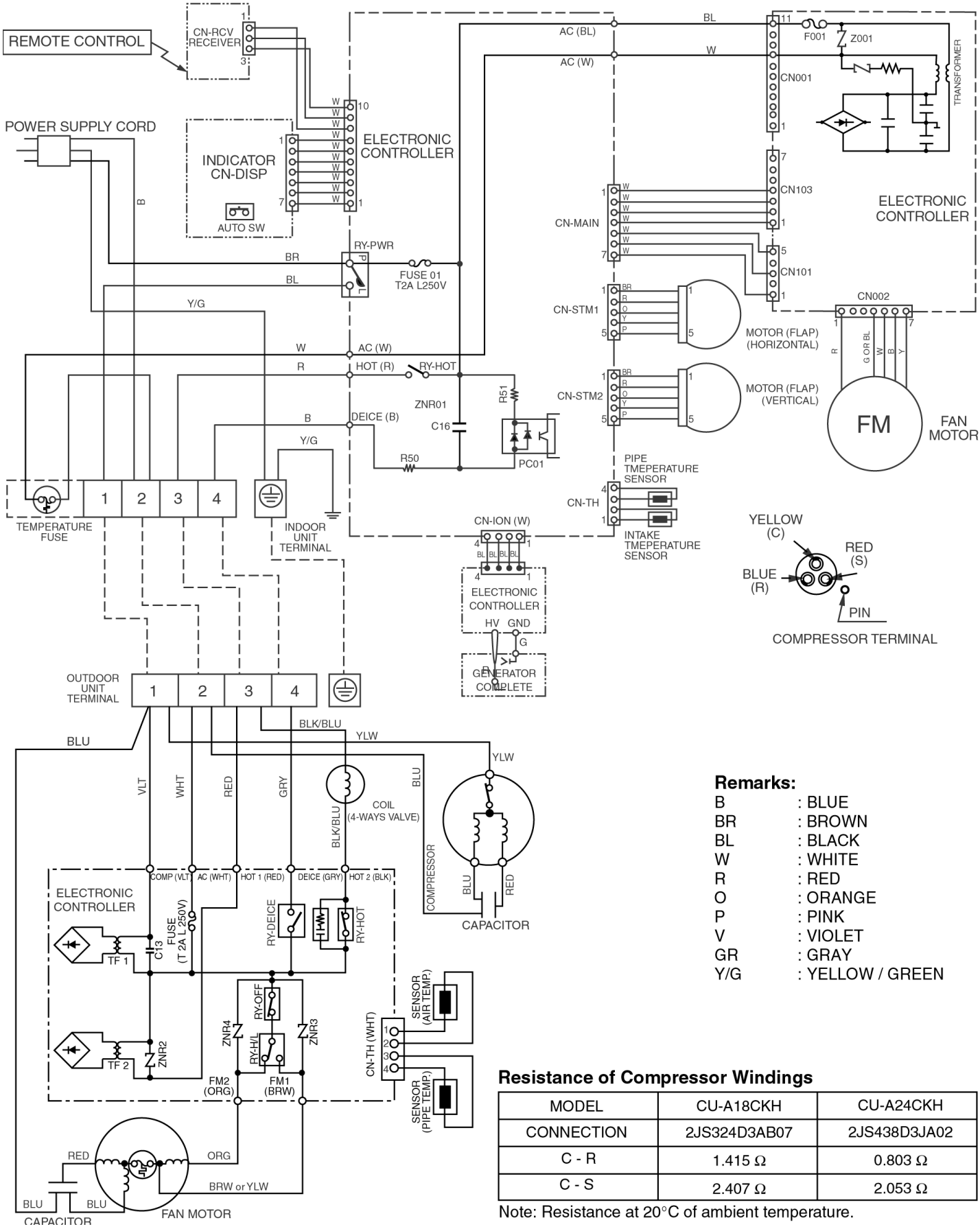
6 Block Diagram

CS-A18CKH CU-A18CKH
CS-A24CKH CU-A24CKH



7 Wiring Diagram

CS-A18CKH CU-A18CKH
CS-A24CKH CU-A24CKH



Remarks:

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

Resistance of Compressor Windings

MODEL	CU-A18CKH	CU-A24CKH
CONNECTION	2JS324D3AB07	2JS438D3JA02
C - R	1.415 Ω	0.803 Ω
C - S	2.407 Ω	2.053 Ω

Note: Resistance at 20°C of ambient temperature.

8 Operation Details

8.1. Indoor Fan Speed Control

- Auto Fan Speed Control

  When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.

- Manual Fan Speed Control

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

Tap				S Hi	Hi	Me	HLo	CLo	Lo-	SLo	SSLo	Stop
Cooling	Normal	Manual	Hi		○							
			Me			○						
			Lo					○				
		Auto			○	○			○			○
	Powerful	Manual		○								
		Auto		○								
Soft Dry		Manual							○			○
		Auto							○			○
Heating	Normal	Manual	Hi	○					○	○	○	○
			Me			○			○	○	○	○
			Lo				○		○	○	○	○
		Auto				○	○		○	○	○	○
	Powerful	Manual		○		○	○		○	○	○	○
		Auto				○	○		○	○	○	○
Auto Mode judgement										○		
Cooling	Quiet	Manual	QHi		Hi-100							
			QMe			Me-100		CLo-100				
			QLo									
		Auto			Hi-100	Me-100			○			○
Soft Dry	Quiet	Manual							○			○
		Auto							○			○
Heating	Quiet	Manual	QHi	SHi-100					○	○	○	○
			QMe			Me-100			○	○	○	○
			QLo				HLo-100		○	○	○	○
		Auto				Me-100	HLo-100		○	○	○	○
Ion		Manual			○	○		○				
		Auto					○	○				

Speed COOL, DRY	Heat	CS-A24CKH	CS-A18CKH
S Hi	Hi	1610	1400
Hi		1530	1360
Me	Me	1430	1290
Lo+	Lo	1360	1240
Lo		1260	1160
Lo-	Lo-	1070	980
S Lo	S Lo	830	760
SS Lo	SS Lo	300	300
Q SHi	Q Hi	1510	1300
Q Hi		1430	1260
Q Me	Q Me	1330	1190
	Q Lo	1260	1140
Q Lo		1160	1060

8.2. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

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

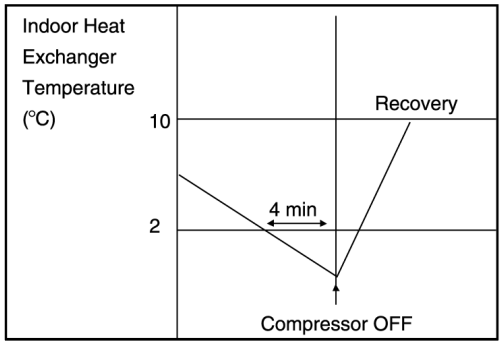
7 minutes Time Save Control

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

Anti-Freezing Control

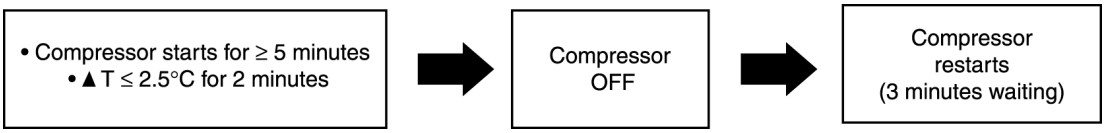
- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

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

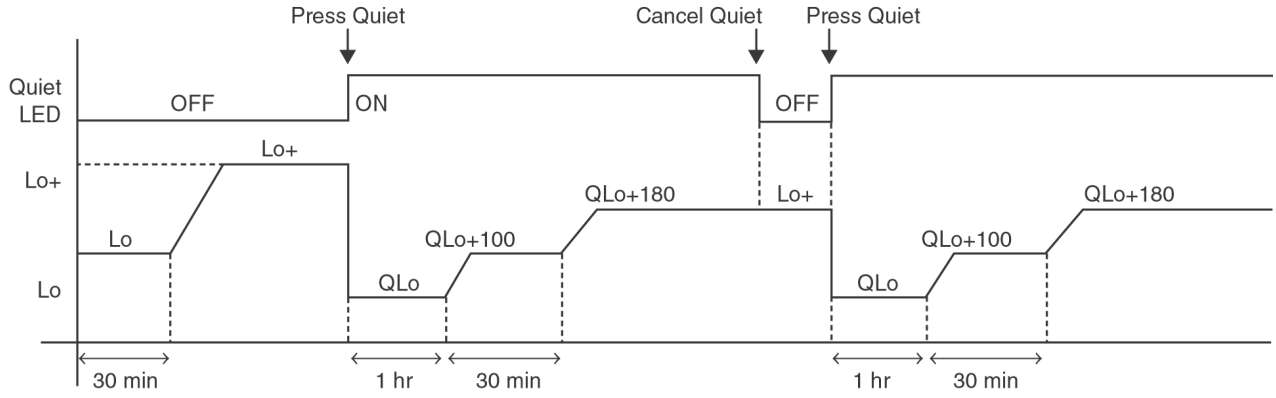


▲ T = Intake air temperature - Indoor heat exchanger temperature
This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

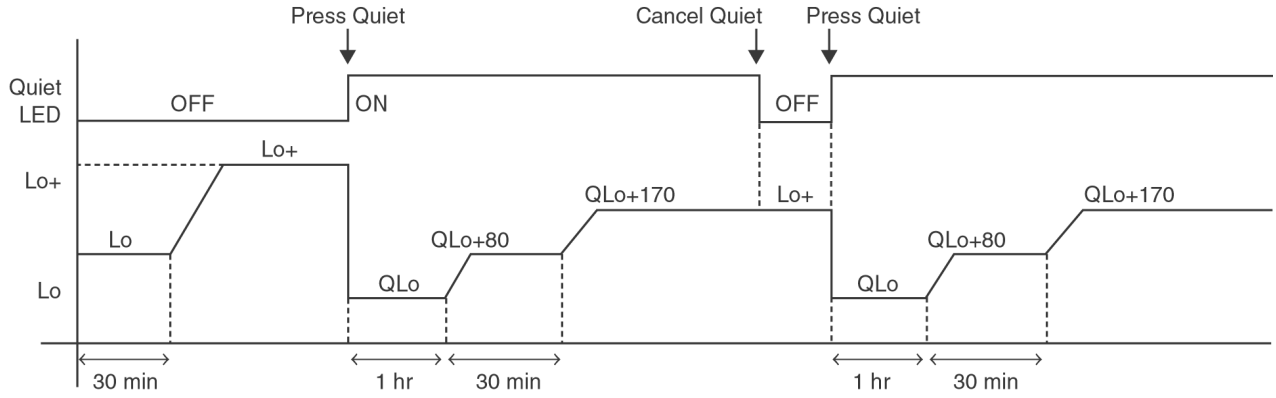
Anti-Dew Formation Control

- Purpose is to prevent dew formation on indoor unit air discharge area.
- When room temperature is constant (±1°C) the following conditions occur for 30 minutes continuously, anti-dew formation will activate:
  - Indoor intake air 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.
- This control is cancelled immediately when above condition is changed.
- Anti-Dew formation is control by:
  1. Lo fan speed
     Lo fan is changed to Lo+ fan

2. QLo fan speed (Transistor Motor)



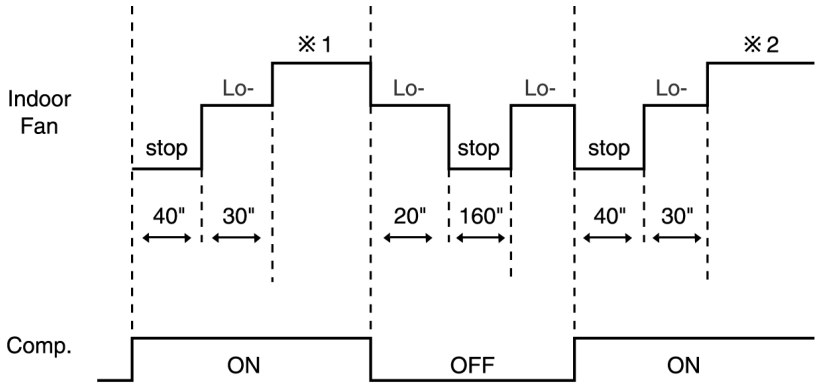
3. QLo fan speed (Induction Motor)



Automatic Fan Speed Mode

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

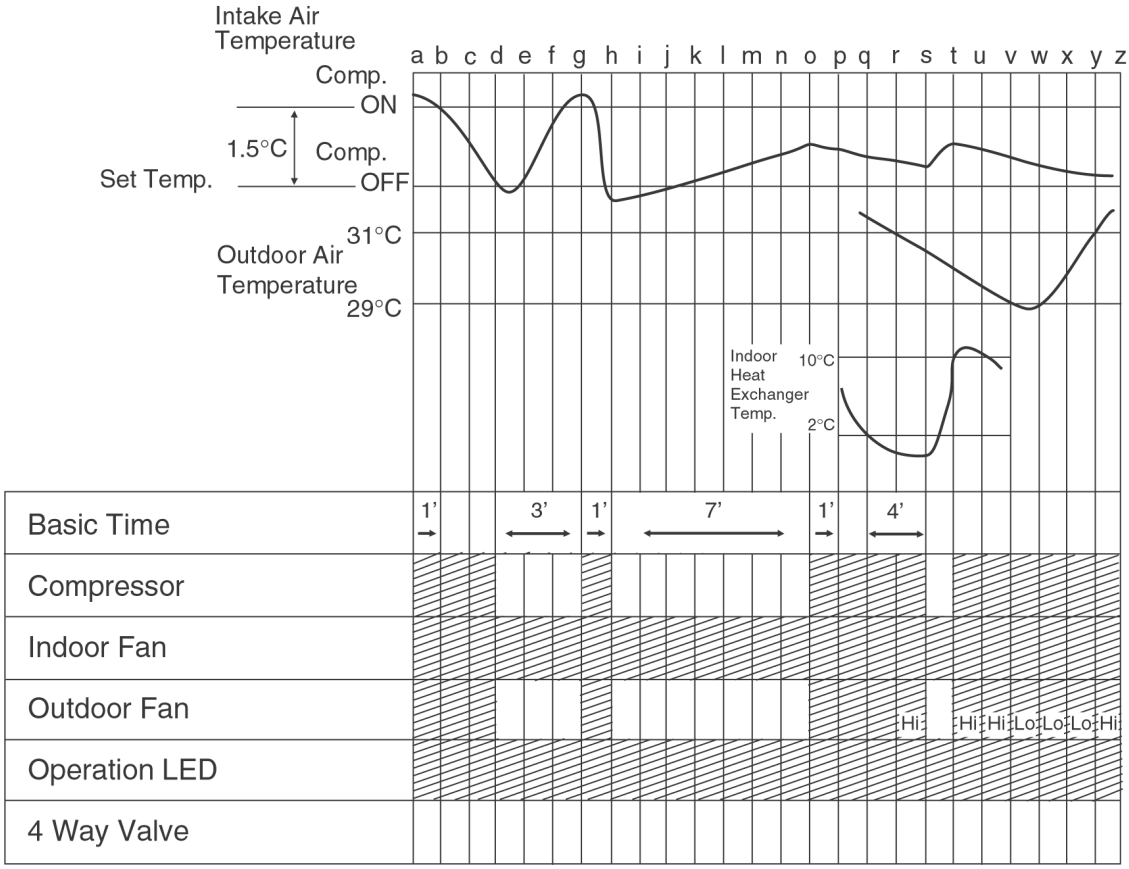
- Fan speed rotates in the range of Hi to Me.
- Deodorizing Control.



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

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram



<Description of operation>
d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – t : Anti Freezing Control
v – y : Outdoor Fan Control

Operation

Stop

Quiet Operation Control

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

- Purpose of this operation is to provide quite cooling operation compare to normal operation.
- When the Quiet Mode is set at the remote control, Quiet Mode LED illuminates, the sound level will be automatically decreased 3 dB, against the present sound level operation.
- Quiet setting of fan speed rpm refer to Indoor Fan Speed Control.
- Dew formation become severe at Quiet Lo cool, therefore:

  i) For Transistor Motor

  Quiet Lo Cool is operated only 1h 30 minute (1h QLo, 30 min QLo+100). After that, it goes back to QLo+180 rpm. (However quiet LED remains on).

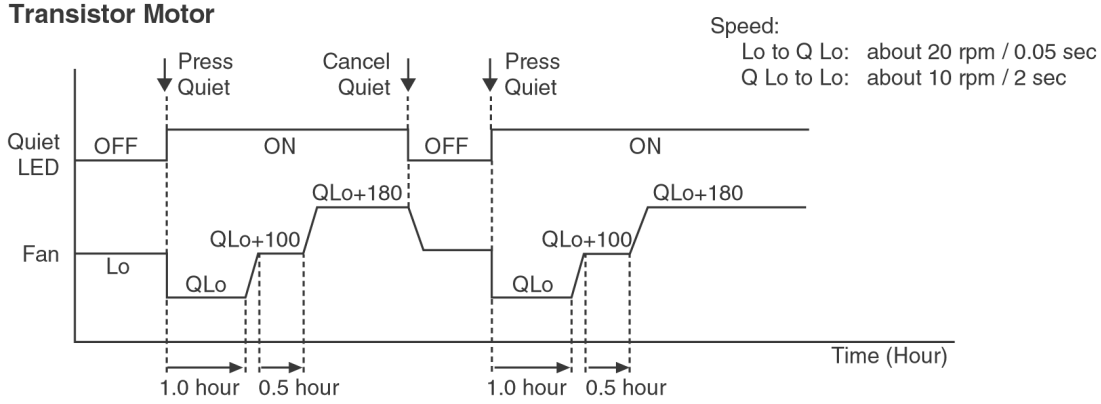
  ii) For Induction Motor

  Quiet Lo Cool is operated only 1h 30 minute (1h QLo, 30 min QLo+80). After that, it goes back to QLo+170 rpm. (However quiet LED remains on).

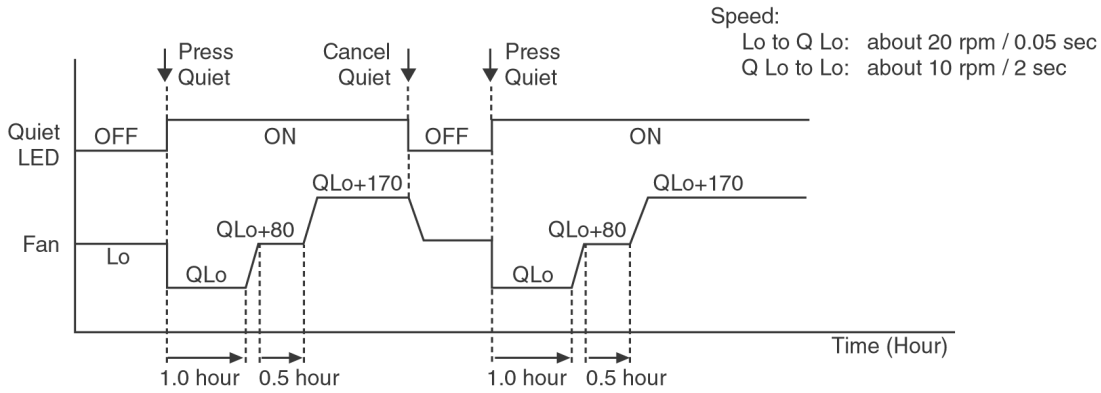
• Manual Fan Speed:-

– RPM control during Lo cool

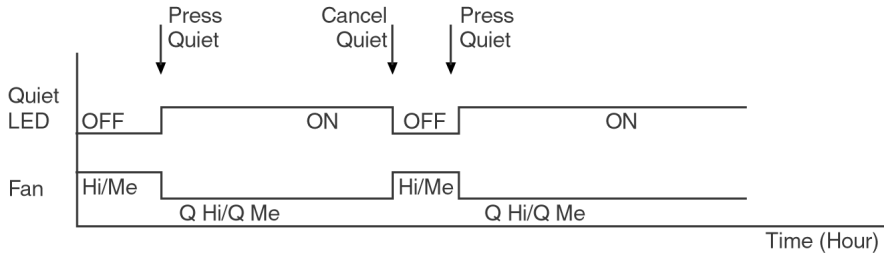
Transistor Motor



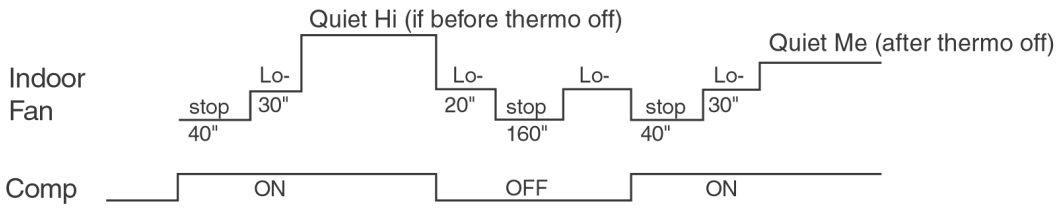
Induction Motor



– RPM control during Hi & Me cool



• Auto Fan Speed:-



• Quiet Mode Operation will stop if:-

– Quiet mode button is pressed again.

– Stopped by ON/OFF switch.

– Timer OFF activates.

– Powerful mode button is pressed.

8.3. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.
- During Soft Dry operation, the Indoor Fan will operate at Lo- speed.
- Once room temperature reaches below Soft Dry OFF temperature. Indoor Fan, Compressor and Outdoor Fan stop for 6 minutes.

Time Delay Safety Control

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

Anti-Freezing Control

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

Compressor Reverse Rotation Protection Control

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

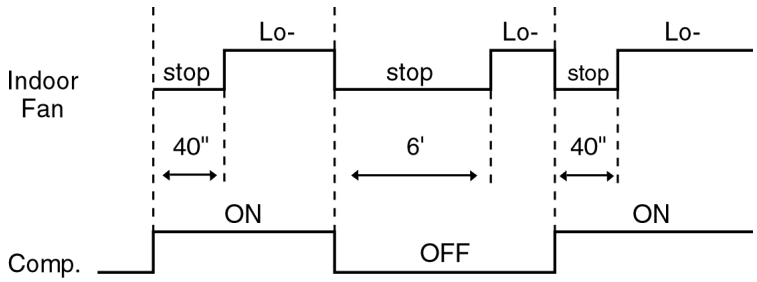
Anti-Dew Formation Control

- Same as Anti-Dew Formation Control for Cooling Mode operation.

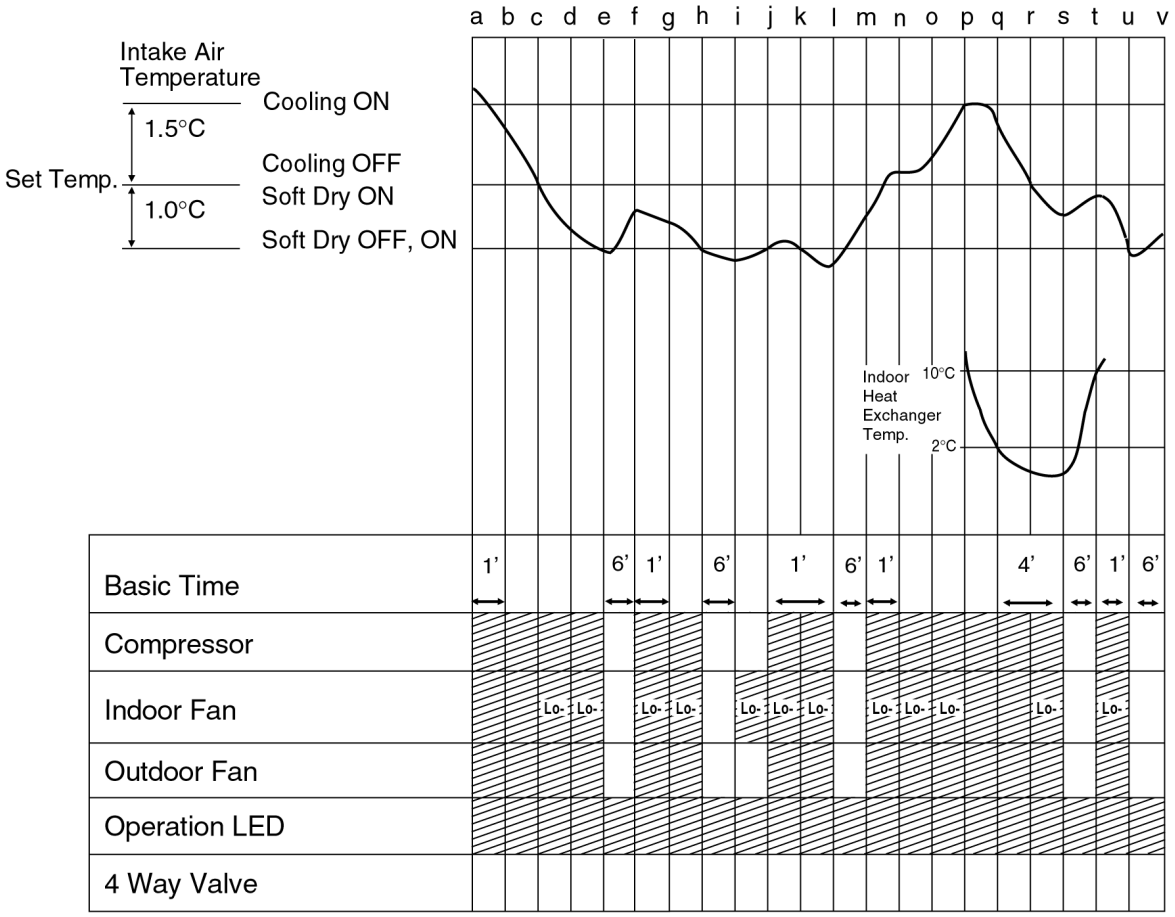
Automatic Fan Speed Mode

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

- Fan speed off and on at Lo- speed.
- Deodorizing Control.



Soft Dry Operation Time Diagram



<Description of operation>

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

Operation

Stop

Quiet Operation Control

- Same as Quiet Operation Control for Cooling Mode operation.

8.4. Heating Mode Operation

- Heating in operation according to Remote Control setting.

Time Delay Safety Control

- When the compressor is stopped by Power Switch, Remote Control or there is a power failure, it restarts after 3 minutes when the Power Switch, Remote Control is turned ON or the power supply is resumed.
- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes.

Overload Protection Control

(a) Outdoor Fan Control

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

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

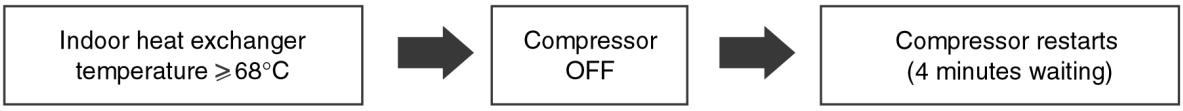
Outdoor Air Temperature	<10°C	⩾10°C ~ <15°C	⩾15°C ~ <20°C	⩾20°C ~ <25°C	⩾25°C	Outdoor Fan OFF
T_b	⩾5°C	⩾4°C	⩾3°C	⩾2°C	⩾1°C	

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

(b) Compressor High Pressure Control

- If the indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.

  (Time Delay Safety Control - 4 minutes waiting).

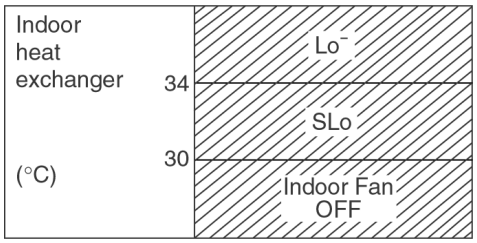


4-way Valve Control

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

Hot Start Control

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



Hot Start is completed when indoor heat exchanger reaches 42°C.

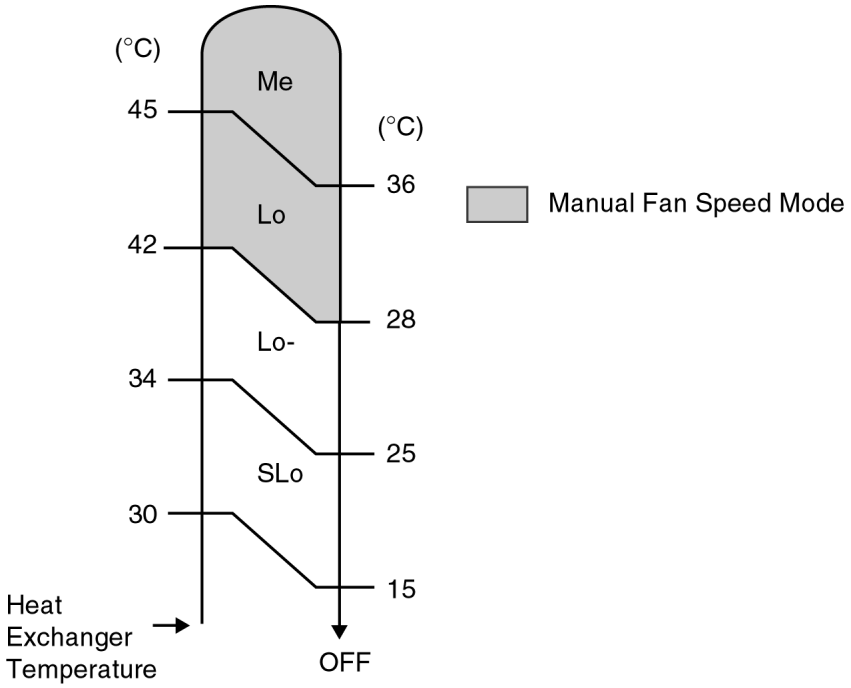
Maximum Hot start duration = 4 minutes. After 4 minutes,

Hot start operation will be shifted to normal Heating operation.

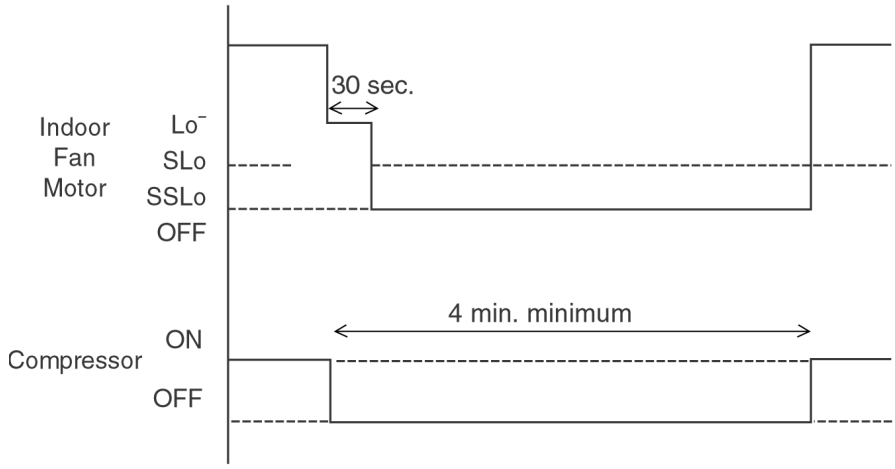
Automatic Fan Speed Mode

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

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



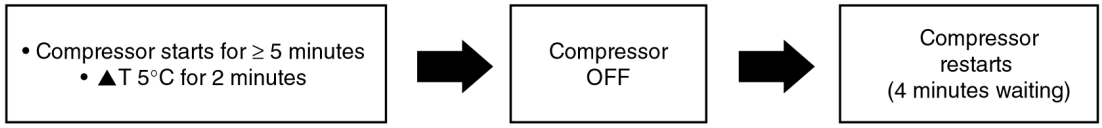
Anti Cold Draft Control



When COMP = Thermal OFF, indoor fan speed immediately changed to Lo⁻ for 30 sec., follow by SSLo speed until COMP = ON.

Compressor Reverse Rotation Protection Control

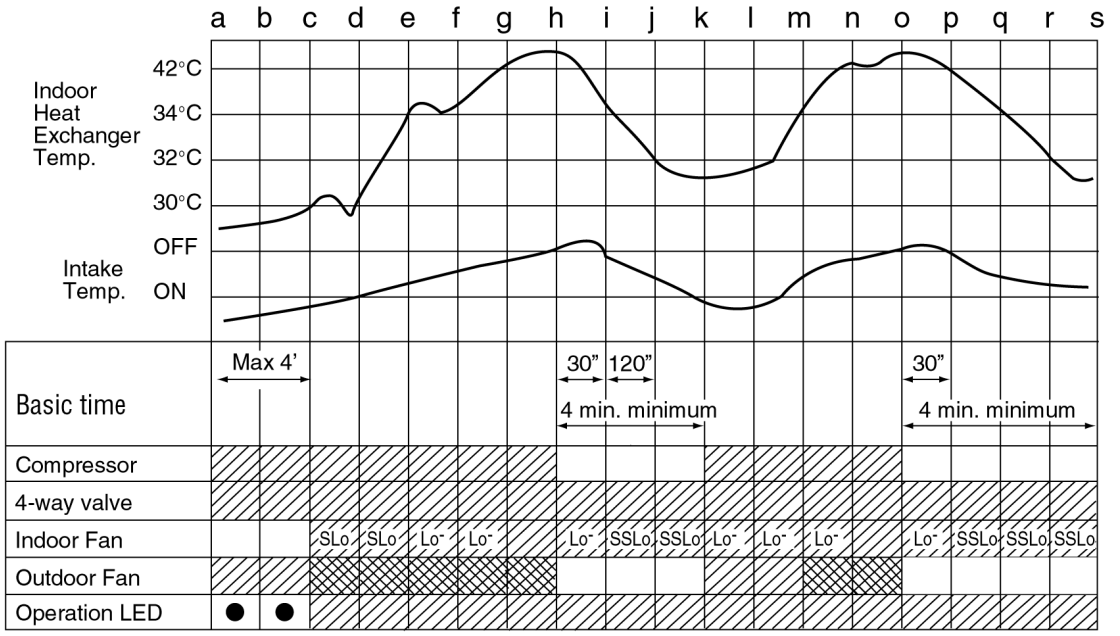
- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between indoor heat exchanger and intake air is 5°C or less for 2 minutes, compressor will stop and restart automatically.
  (Time Delay Safety Control is valid)



▲ T = Indoor heat exchanger temperature - Intake air temperature

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

Heating Operation Time Diagram



<Description of operation>

a – c : Hot start (Indoor Fan = OFF)

c – d : Hot start (Indoor Fan = SLo)

h – k, o – s : Anti Cold Draft Control

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

  Deice operation detection commences in Heating operation starts or 60 minutes after previous deice operation. If the outdoor piping temperature drops to -4°C for 50 sec. continuously during compressor is in operation, deice will start.

  (There is no detection during Outdoor Fan stops.)

- Overload Deicing

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

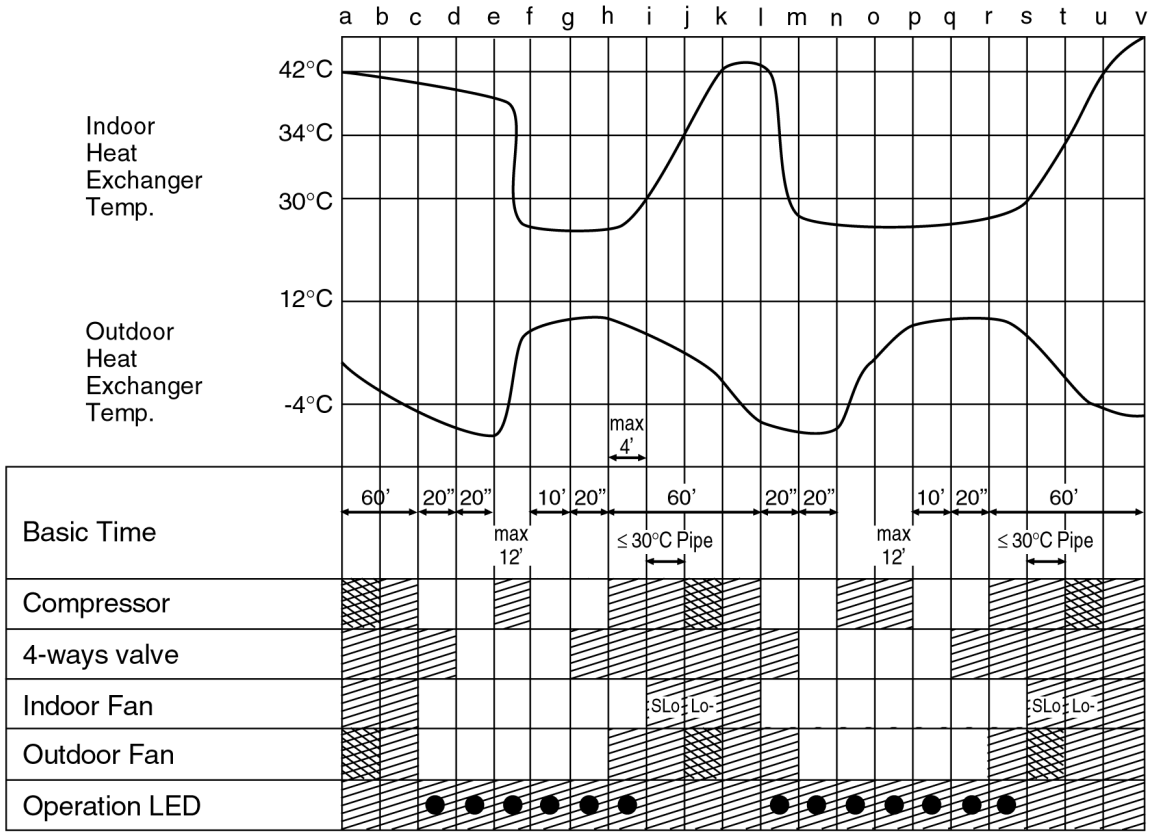
- Deicing ends when

  (a) 12 minutes after deicing operation starts;

  (b) The outdoor piping temperature rises to about 12°C.

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

a) Normal Deicing Time Diagram

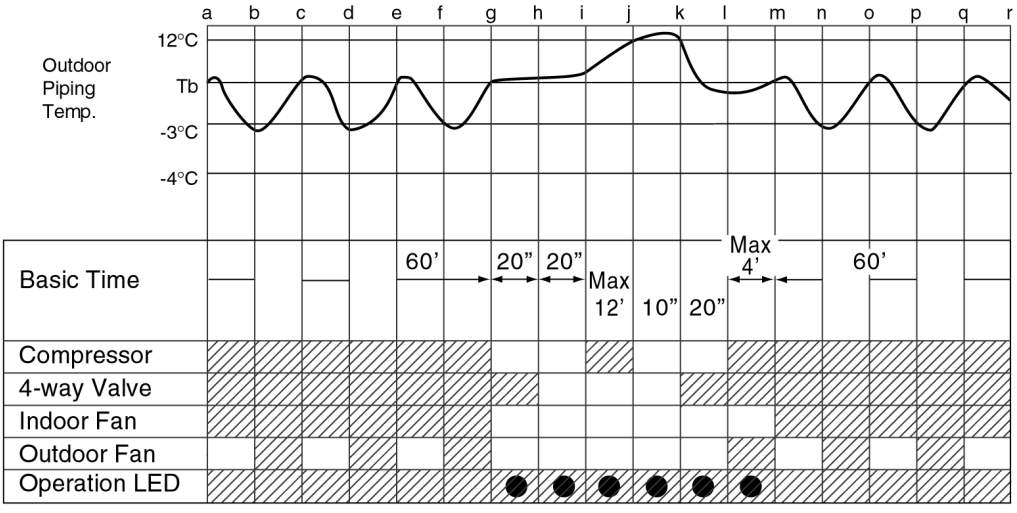


<Description of operation>

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

● : Blinking
Operation
Stop
Operation or stop

(b) Overload Deicing Time Diagram



<Description of operation>

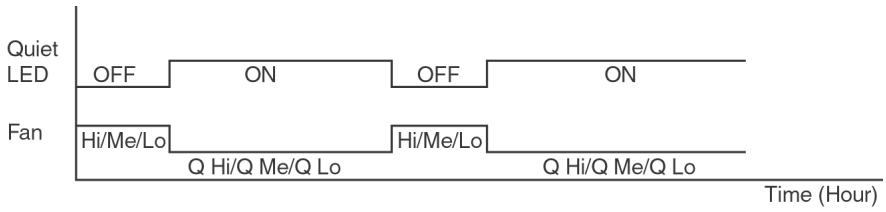
a – i : Overload control
i – l : Overload deicing
l – m : Hot start
m – r : Overload control
g – i : Preparation for overload deicing (For normal R22 control, operation for g – i is not included, applicable only for new refrigerant model).

● : Blinking
Operation
Stop

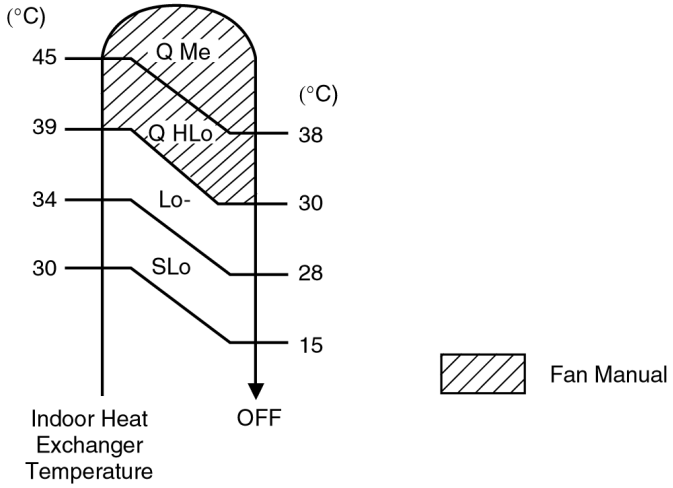
Quiet Operation Control

(For Heating Mode)

- Purpose of this operation is to provide quite heating operation compare to normal operation.
- When the Quiet Mode is set at the remote control, Quiet Mode LED illuminates, the sound level will be automatically decreased 3 dB, against the present sound level operation.
- Quiet setting of fan speed rpm refer to Indoor Fan Speed Control.
- Manual Fan Speed:-
  – Rpm control during Lo, Me & Hi Cool



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

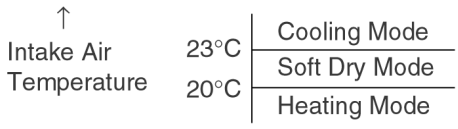


- Quiet Mode Operation will stop if:-
  – Quiet mode button is pressed again.
  – Stopped by ON/OFF switch.
  – Timer OFF activates.
  – Powerful mode button is pressed.

8.5. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at SLo fan speed for 25 seconds to sense intake air temperature and determine the 1st operation mode. If indoor intake air temperature is less than 16°C, Heating mode will immediate operate.

Standard for Determining Operation Mode
1st Judgement



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

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

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

Standard for Determining Operation Mode
2nd Judgement onwards

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

※ Automatic Set Temperature
Refer 3. as below.

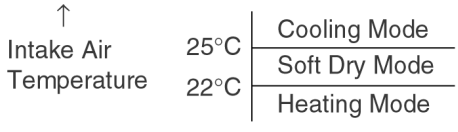
3. Automatic Set Temperature

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

However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

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

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



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

8.6. Random Auto Restart Control

- If there is a power failure during air conditioner operation, operation will be automatically restarted after 3 to 4 minutes when the power is resumed.

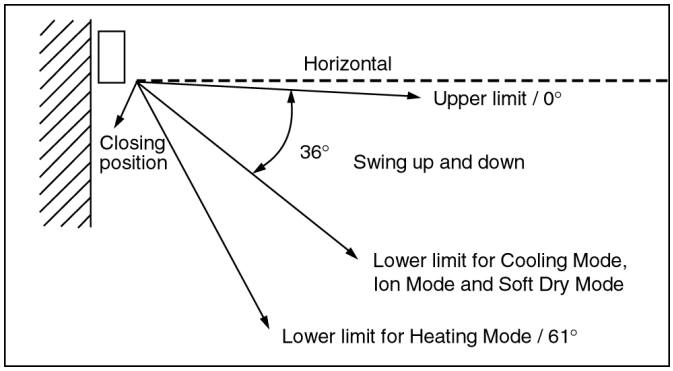
  It will start with previous operation mode and airflow direction.
- Restart time is decided randomly using 4 parameter:-

  Intake air temperature, setting temperature, fan speed and Air Swing Blade position.
- Auto Restart Control is not available when Timer is set.
- This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram)

8.7. Airflow Direction Control

Vertical Airflow Direction Auto-Control

- When set a Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.
- The louver does not swing when the Indoor Fan Motor stops during operation at the upper limit.
- When stopped with remote control, the discharge vent is reset, and stopped at the closing position.
- During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from 0° - 36° to 12° - 28° under Cooling and Soft Dry operation mode.

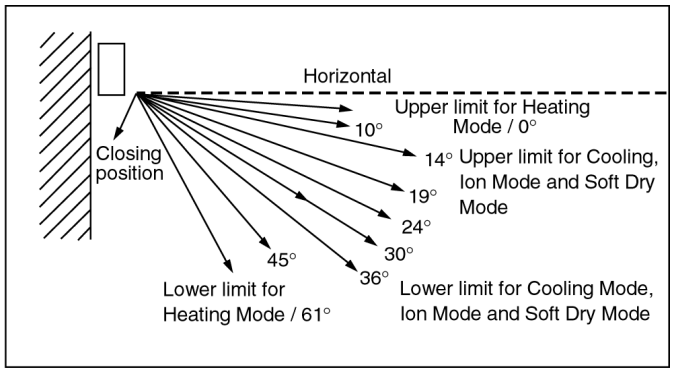


※ 1. There is no swinging while indoor fan motor is stopped during Cooling, Ion and Soft Dry operation.
※ 2. In Heating operation, when the piping air temperature reaches 38°C, the louver is changed from upper to lower limit position. When the piping air temperature falls to 35°C, the louver is changed from lower to upper limit position.

Vertical Airflow Direction manual Control

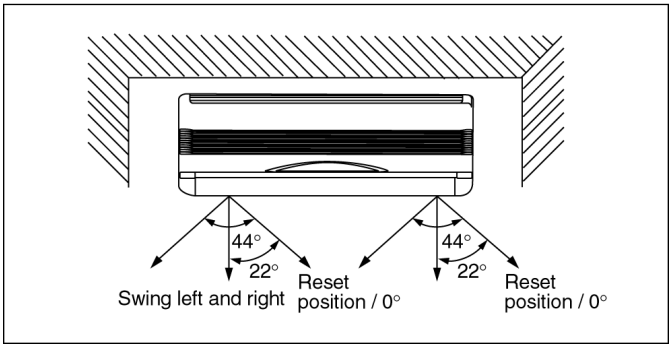
- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired louver position.
- When the remote control is used to stop the operation, the discharge vent is reset, and stopped at the closing position.
- During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 14°, 19°, 24°, 30°, 36° to 16°, 18°, 20°, 22°, 24° under Cooling and Soft Dry operation mode.



Horizontal Airflow Direction Auto-Control

- When set a Airflow Direction Auto-Control with remote control, the vanes swings left and right as shown in the diagram.
- The vanes does not swing when the Indoor Fan Motor stops during operation at 22° angle.
- When stopped with remote control, the discharge vent is reset, and stopped at the reset position.
- During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from 0° - 44° to 14° - 30° under Cooling and Soft Dry operation mode.

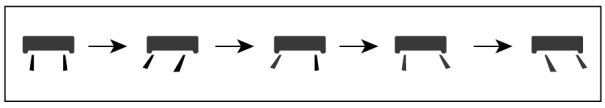


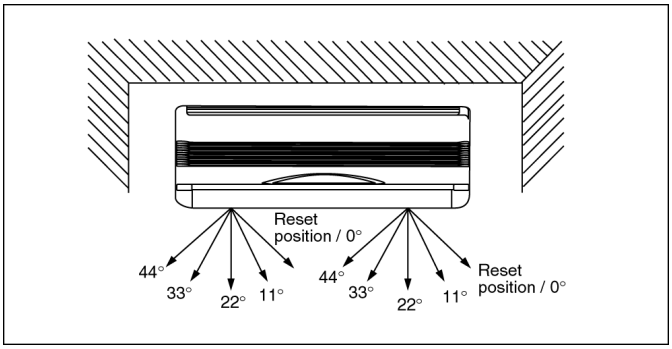
※ 1. There is no swinging while indoor fan motor is stopped during Cooling, Ion and Soft Dry operation.
※ 2. In Heating operation, when the piping air temperature reaches 38°C, the airflow direction is Auto Swing left and right (8°-36°). When the piping air temperature falls to 35°C, the airflow direction is stop at 22° angle.

Horizontal Airflow Direction manual Control

- When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction vane move left and right in the range shown in the diagram.

  The louver can be adjusted by pressing the button to the desired vane position.





- When the remote control is used to stop the operation, the vanes is reset, and stopped at reset position.
- During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 0°, 11°, 22°, 33°, 44° to 14°, 18°, 22°, 26°, 30° under Cooling and Soft Dry operation mode.

8.8. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at 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.

8.9. 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.
- To switch off the beep sound:-

  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second).

  Repeat the above if you want to switch ON the beep sound.

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

8.10. Powerful Mode Operation

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

1. **Cooling and Soft Dry Mode**
   - When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature (Lower temperature: 16°C). This operation automatically will be running under SHi Fan Speed (Cooling), Lo-Fan Speed (Soft Dry).

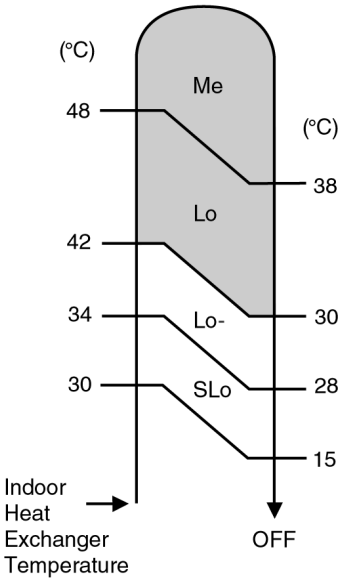
   - Vertical Airflow Direction:-

     In “Manual” setting, the vane will automatically shift down 10° lower than previous setting.

     In “Auto” setting, the vane will automatically swing up and down. However the upper and lower limit will be shifted 10° downward.

2. **Heating Mode**
   - When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature (Higher temperature: 30°C).

   - The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically set to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

Set Fan Speed

   - Vertical Airflow Direction:-

     In “Manual” setting, the vane will automatically shift down 5° lower than previous setting.

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

3. **Powerful mode will operate for 15 minutes only.**

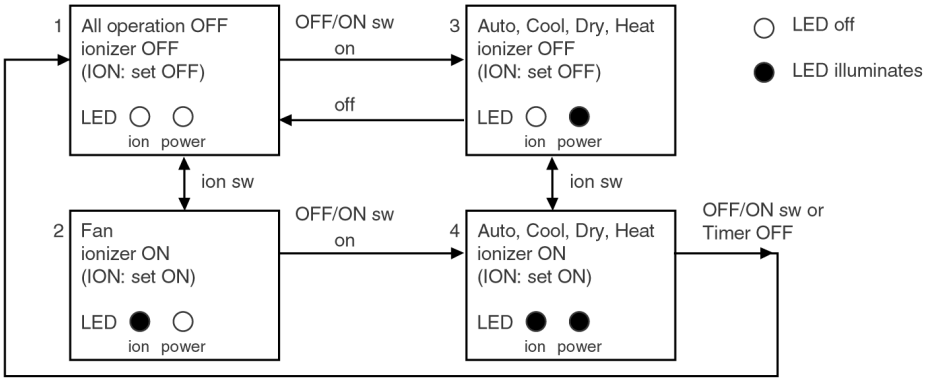
4. **Powerful Mode will stop if:**
   - Powerful mode button is pressed again.
   - Stopped by ON / OFF switch.
   - Timer-off activates.
   - Quiet mode button is pressed.
   - Operating mode button is changed.

8.11. Ionizer Operation

Purpose

To provide fresh air effect to user by discharging minus Ion to air.

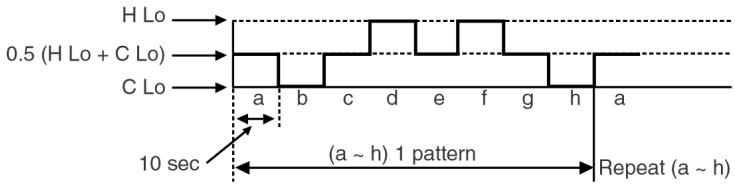
Control Condition



a. Ionizer Only Operation.

1. When air-conditioner unit is at “OFF” condition (standby) and ION operation button at remote control is pressed.
   Fan & ionizer on, ION LED illuminates, but power LED maintain off. (1 → 2)
   However, fan speed can be adjusted later by customer during this operation.

Fan speed	
manual	Remote control set fan tap
Auto	between H Lo & C Lo at the pattern shown below



   Airflow direction (Horizontal Vane) control:
   Follow vane direction control at cooling mode.
   Horizontal vane can be changed by customer during ion only operation.
2. Ion only operation can be off by pressed ION button again. (2 → 1)
3. It can be changed to previous operated mode (Auto, Cool, Dry, Heat) + ion operation by OFF/ON switch. (2 → 4)
4. During ion only operation, if power failure occur, after power resume, ionizer & air-conditioner resumes immediately.
5. After error = 24 times, (about 11h 30 min.), ion & fan off with Ion LED blinks continuously.
   (Detail refer to Ionizer Error detection control.)

b. Operation Mode + Ionizer Operation.

1. Ionising Operation Start Condition
   When air-conditioner unit is in “ON” condition (Cool, Dry, Heat, Auto mode) and ION operation button at remote control is pressed. Ionizer on & ION LED illuminates. (3 → 4)
   Power LED also illuminates.
2. Ionising Operation Stop Condition
   When one of the following condition is satisfied, ION operation stops.
   a. Stopped by ON/OFF switch.
   b. Timer OFF activates.
   c. ION operation button is pressed again.
   d. ION feedback signal shows error.

3. Ionizer operation status is not memorised by Micon. After OFF, when operation is “ON” again, air-conditioner operates without ionizer operation.

   However, during Cool mode etc + ionizer operation, if there is a power failure & then power resume, air conditioner shall on at that mode + ionizer operation.

c. Timer during ionizer operation

Refer to case study in next for detail.

8.11.1. Ionizer Operation case study

Current Operation \ Timer		24 hours Timer	
		Set to ON	Set to OFF
ION	ON	Continue ON	Stop
	OFF	Not Applicable (*2)	Continue OFF
Operation Any Mode (*1)	ON	Continue ON	Stop
	OFF	Start	Stop

*1. Cool, Dry, Heat and Auto.
*2. You may ON by pressing Ion button.

8.11.2. Ionizer Error Detection Control

A. Purpose

To inform user that error occurs at ionizer system so that repairing job can be carried out.

B. Two type of error detection control:

(a) When Ionizer is ON (example case: Ionizer shorted, ionizer over current protection)

- During ionizer ON operation, when feed back voltage = Lo (micon input) is detected, Ion is OFF. If feedback = Lo for 11 hrs 30 min, ION LED blinks continuously.
- To cancel ion LED blinking, press ion button at remote control (or Auto operation switch at air conditioner unit). If ion button is pressed again, ion LED blinks again.
- The error can be reset by:

  i) Operation ON/OFF button press to operation OFF.

  ii) Auto operation switch press to operation OFF.

  iii) Operation OFF due to Timer OFF reach.

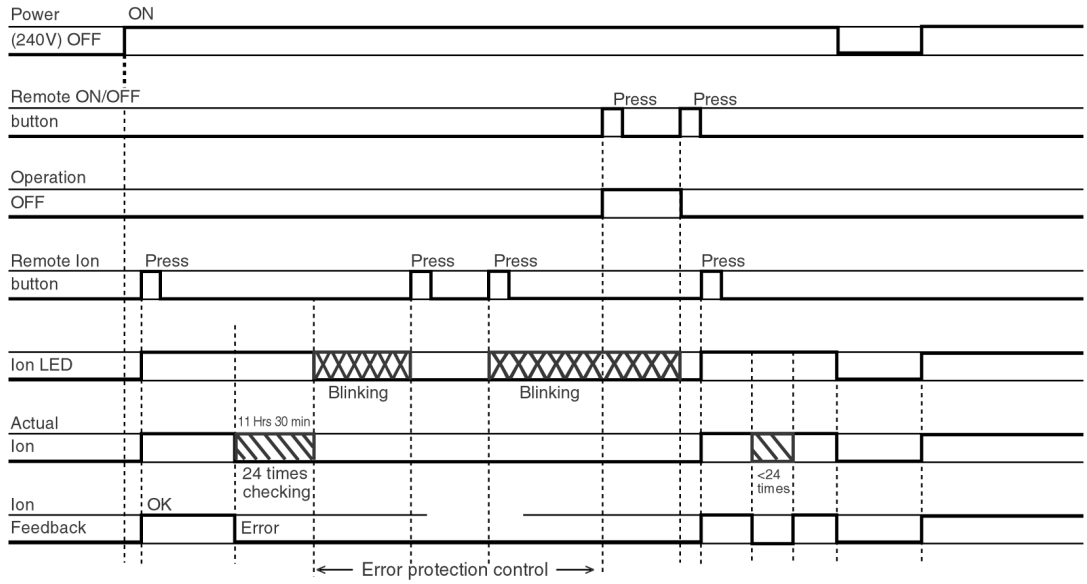
  iv) Timer set ON & operation from ON to OFF.

(b) When Ionizer is OFF (example case: ionizer connecting wire loose)

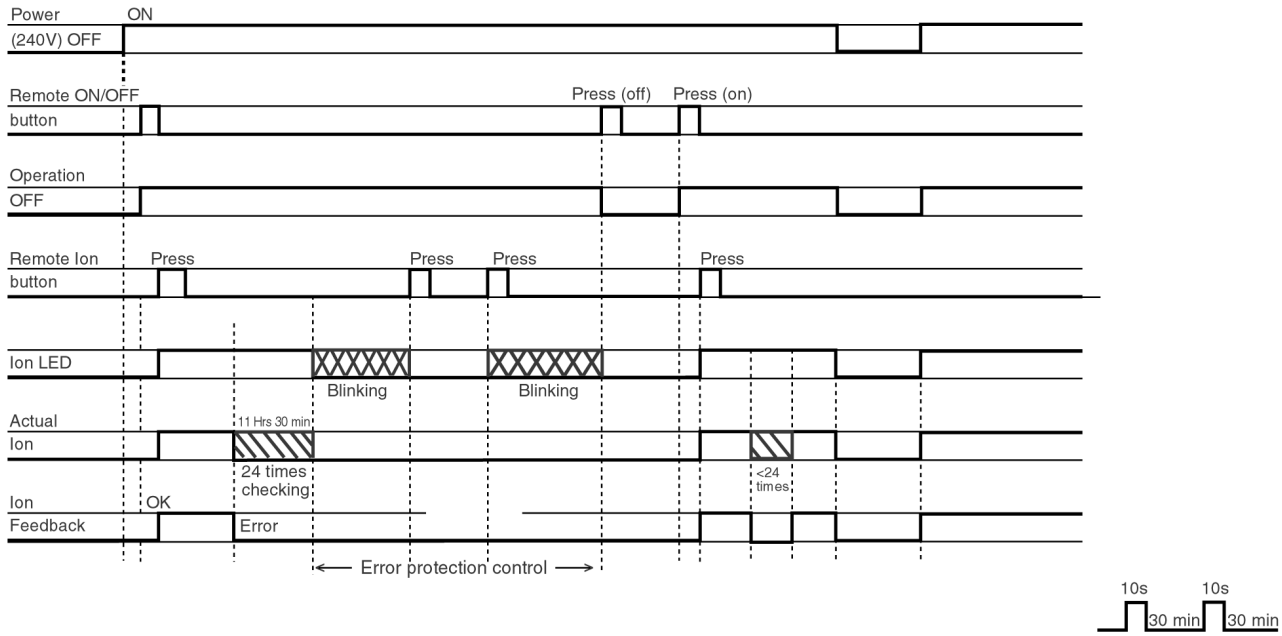
- During air conditioner is at standby or ON operation and ionizer at OFF condition, if ionizer feed back voltage = Hi (micon input) is detected, Ionizer breakdown detection control is activated and ion LED immediately blinks.
- To cancel Ion LED blinking, press ion button at remote control (or Auto operation switch at air conditioner unit). If ion button is pressed again, ion LED blinks again.
- During ionizer at breakdown condition, if ionizer feedback voltage = Lo (become OK), ion LED will stop blinking.

OUTPUT

Ionizer stand alone ON/OFF & protection control



Ionizer + mode ON/OFF & protection control:



Note:

1. 24 times checking: Actual Ion ON for 10s & OFF for 30 min continuously for 24 times.
2. 24 times count will be cleared when either one of the following conditions happen.

   a) 24 times count over, b) Ionizer cancel if press Ion button or power reset, c) Ion feedback signal is OK.
3. Error protection will be cleared when one of the following conditions happen.

   a) Power reset, b) Remote control operation ON/OFF button press, c) Auto operation switch press, d) Operation OFF due to Timer OFF
4. Ion auto restart: Ion will auto restart if actual Ion was ON with no error protection control during power shutdown. Otherwise Ion will not auto restart.
5. Ion LED blinking can ON/OFF during error protection by following conditions:

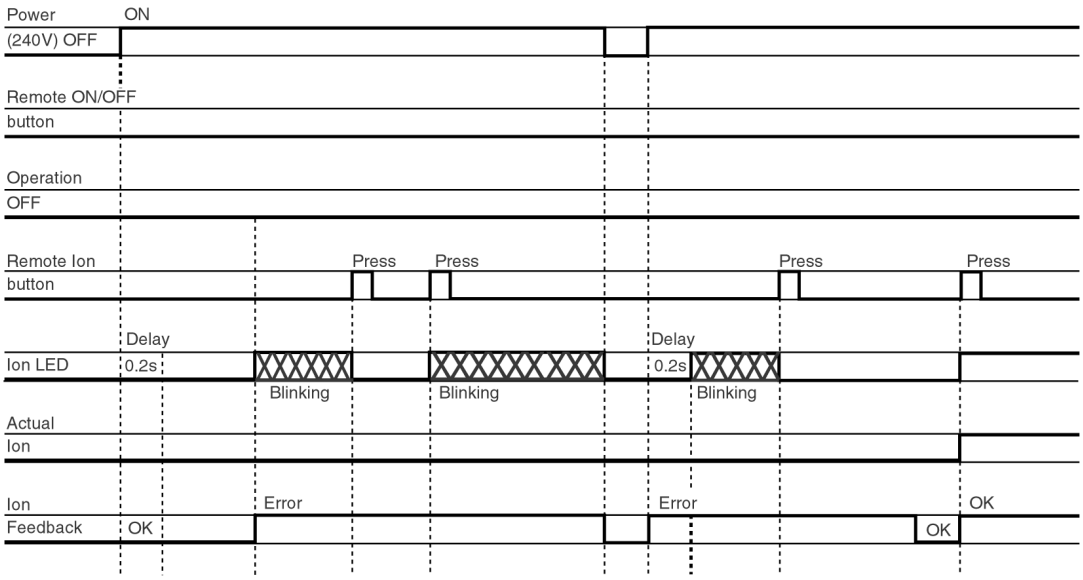
   a) Press remote control ion button

   b) Press Auto operation switch to OFF blinking.

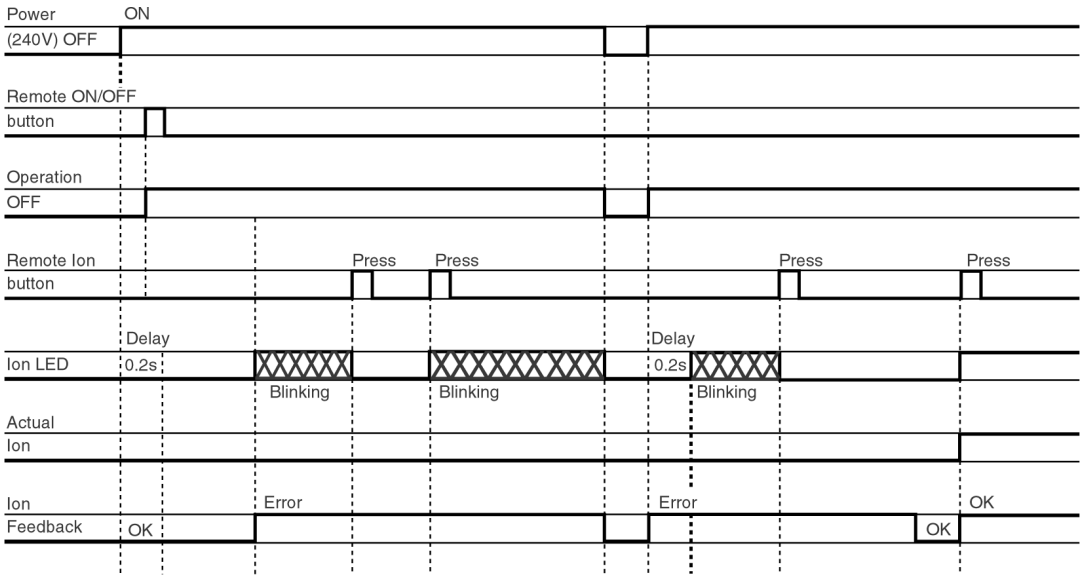
OUTPUT

Ion breakdown protection control: (Only during Actual Ion OFF)

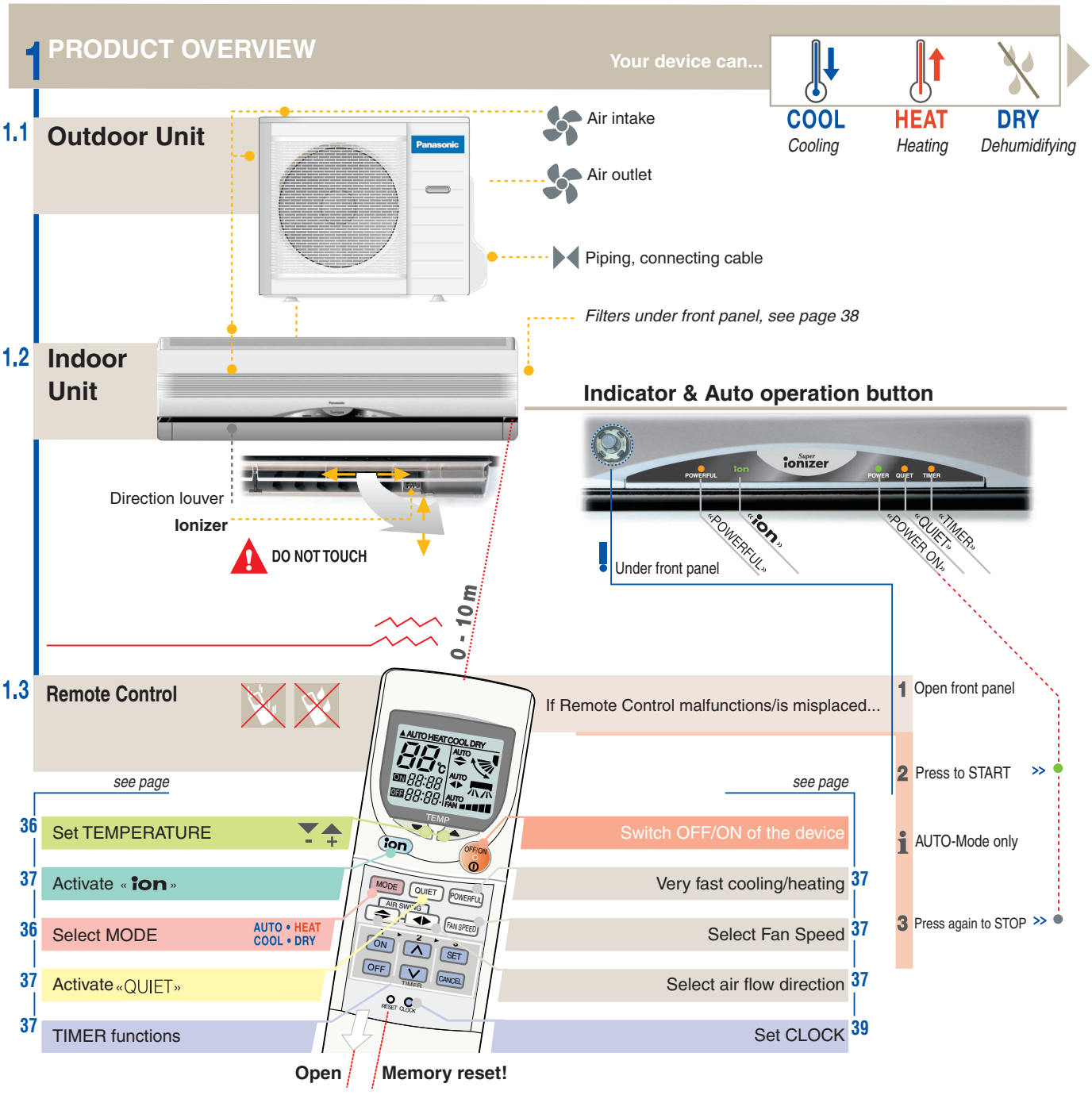
Case 1: Operation OFF & Ionizer OFF



Case 2: Operation ON & Ionizer OFF



9 Operating Instructions



Find on page

39 PREPARATIONS

40 TROUBLE-SHOOTING

41 SAFETY PRECAUTIONS

38 HELPFUL INFORMATION

OPERATION

Press button

START

Switch on OFF/ON

AUTO

Automatic

Select... MODE

Hi = +2°C
Lo = -2°C
= standard

Lo-...-Hi

According to the room temperature the system automatically chooses

COOL	25°C
DRY	22°C
HEAT	21°C

HEAT

Heating

Select... MODE

min. 16°C
max. 30°C

Choose the right temperature to be comfortably warm!

Recommended: ~20...24 °C

COOL

Cooling

Select... MODE

min. 16°C
max. 30°C

Choose the right temperature to be comfortably cool!

Recommended: ~26...28 °C

DRY

Dehumidifying

Select... MODE

min. 16°C
max. 30°C

Very gentle cooling and dehumidifying operation.

Recommended: Room temperature -(1~2)°C

Switch off OFF/ON

STOP

Automatic Internal Function

Room temperature

°C
COOL (25°C)
23°C DRY (22°C)
20°C HEAT (21°C)

Set temperature

30 °C HEAT
16 °C

Set temperature

30 °C COOL
16 °C

Set temperature

COOL
DRY -(1°C)
FAN

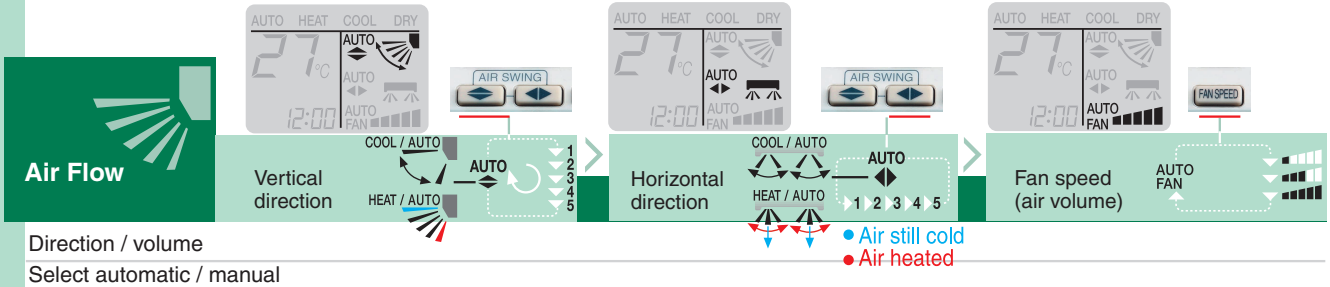
*FAN low speed

*automatic during dehumidifying (DRY)

Additional comfort

Press button

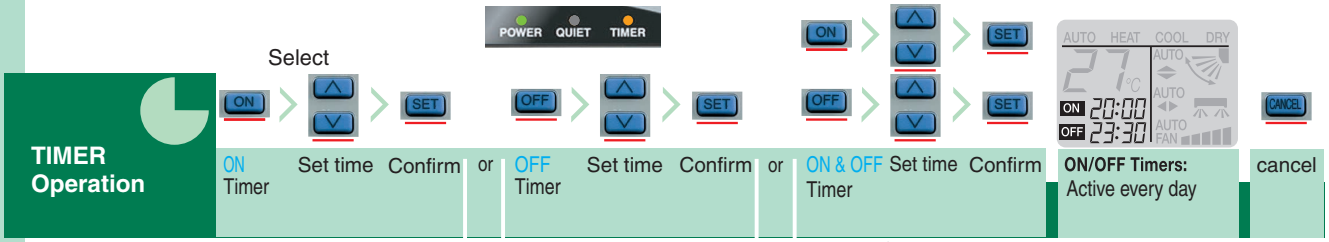
Air Flow



Direction / volume

Select automatic / manual

TIMER Operation

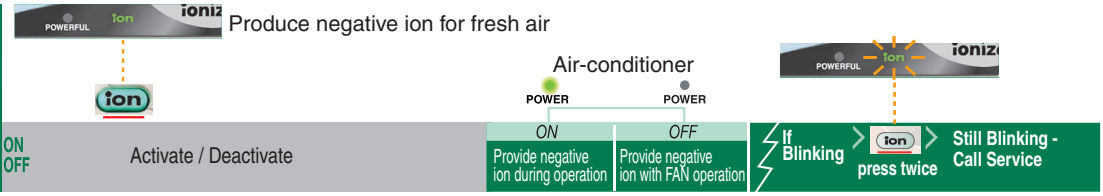


Current time OK? —> Setting : page 39

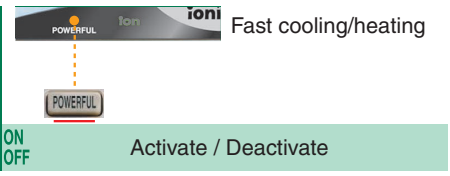
Start before "ON" time ▶ COOL/DRY : 15 min.
AUTO/HEAT : 30 min.

QUIET Operation

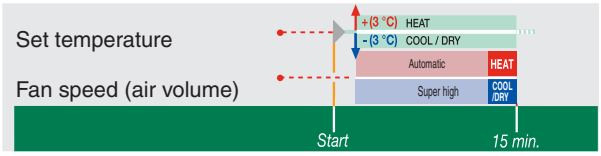
IONIZER



POWERFUL



Automatic Internal Function



CARE & CLEANING

Soaps — Neutral household detergents (≃pH7) — Benzine / Thinner — Scouring powder

Indoor Unit

40°C max — Wipe gently

Filters

* **

Filter cleaning see below

Front Panel

Remove — 40°C max. Wash gently.. + dry — Reinstall

Ionizer

every 6 months — Open manually — Clean with cotton bud

Purifying filters

* **

every 6 months — Remove — Vacuum refresh — 6 hrs

Part No
CZ-SF70P
CZ-SFD72P

REPLACE every 3 years! — Expose to direct sunlight

Damaged –> replace! — Reinstall

Air filters

every 2 weeks — Remove — Vacuum — 40°C max. Wash — Dry — Damaged –> replace! — «FRONT» — ? Part No. **CWD 001049** — Reinstall

* Catechin

** Triple Deodorizing Filter

DIRTY FILTERS cause: unpurified air, low cooling/heating capacity, more unpleasant smells, higher energy consumption!

HELPFUL INFORMATION

Automatic Operation

AUTO

If remote control malfunctions / is misplaced see page 34

Save cost

≃-10%

TEMP — COOL + (1°C) — HEAT - (2°C)

* Close — * Vacuum

QUIET

Use... — QUIET! — TIMER!

* Better performance!

see page 36

Thunder / Lightning

Built-in surge protection, BUT UNPLUG in case of very strong lightning!

Power Failure

When power resume

3-4 Min. — Random restart automatically

MODE — Restored

TIMER — Deleted –> set again!

PREPARATIONS

Press button

Plug/breaker

Installation: see enclosed installation instruction!

Indoor Unit

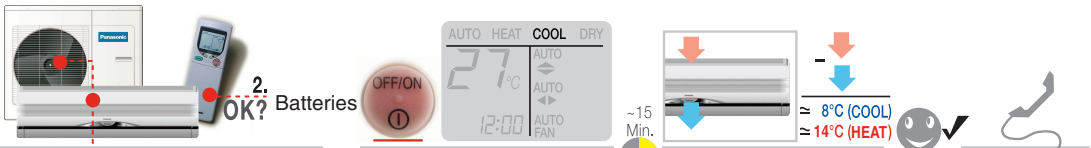
refer page 42

OPEN front panel | Remove AIR filters | Place PURIFYING filters | Place AIR filters | CLOSE front Panel | Plug in

Insert batteries Set Clock

Same type! | Rechargeable | Open / remove | Insert batteries / close | Press Set time | Set current time immediately | Confirm

Pre-season inspection



1. Fans obstructed? check | START cooling/heating | Check performance | Call Service

For extended non-operation

START dry internal parts | OFF | Unplug | Remove batteries

Recommended Inspections

- After several seasons and due to operational conditions, performance may be reduced by dust or there may be unpleasant smells.
- **Consult an authorized distributor for inspection!**

TROUBLESHOOTING

✓ No problem

OK?

1	Operation delayed for 3 minutes after successful restart	Self protection procedure ✓
2	It sounds like water flowing...	Caused by refrigerant flow inside ✓
3	Mist seems to emerge from the indoor unit	Condensation effect due to cooling ✓
4	With setting «FAN AUTO» indoor fan sometimes stops	Smell elimination procedure ✓
5	Outdoor unit emits water / steam	Condensed moisture due to cooling ✓
6	«POWER»flashes, no warm air discharge	Defrosting at outdoor unit, max. 12 min. ✓

In case of...

- Abnormal noise during operation
- Water / foreign particles have entered the Remote Control
- Water leak from Indoor Unit
- Switches / buttons do not operate properly
- Circuit breaker switches off frequently
- Power plug / cord become unnaturally warm

TURN OFF/UNPLUG

CALL authorized distributor

1	No Operation	Circuit breaker tripped?	Power plug OK?	TIMER used correctly?
2	Remote control / display doesn't work	Batteries empty?	Batteries correctly inserted? See page 39	
3	Noise too loud	Installation work slanted?	Front grille / panel closed properly?	
4	Cooling/heating efficiency low	Temperature set correctly?	Windows / doors closed?	Filters cleaned / replaced?
		Outdoor unit obstructed?	Intake / outlet ventilators obstructed?	

SAFETY PRECAUTIONS

Before operating, read the safety precautions thoroughly

EMERGENCY!

SOS Immediately isolate from the mains supply (e.g. if there is a smell of burning)

Use only for...

COOL Cooling

HEAT Heating

DRY Dehumidifying

NEVER use this unit for purposes other than those listed in these Operating Instructions. In particular, do not use it for the preservation of food.

Installation

NEVER install, remove or reinstall yourself

Engage dealer / specialist

NOT in potentially explosive atmosphere

Connect drain hose properly

Mains connection

Engage dealer / specialist for mains connection including...

Used connectors / breakers easy reachable!

NEVER shared

Connect protective earth!

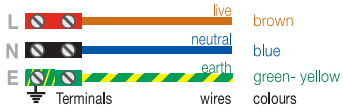
Plug in properly

Australia (AS) Standard

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.

United Kingdom (GB) Standard

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



Operation

NEVER use the plug to switch on/off

Do NOT stay long in the stream of cold air

Do NOT operate with wet hands

Ventilate the room periodically

NEVER modify / damage mains cables / connectors

Do NOT pull out the plug by the cable

Place nothing on the unit --> covered openings may cause overheating

Do NOT insert finger or other objects into the unit! --> especially dangerous for children!

Unused for a long time? --> OFF / unplug

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.

SAFETY PRECAUTIONS & FEATURES

Defects

Defect / suspicion of defect? —> Attend defects before use!

Do NOT repair yourself

Engage dealer / specialist

Cleaning

OFF and unplug (connector or breaker)

Do NOT wash!

Waste disposal

Uninstalling and disposal of the unit ONLY by dealer / specialist

Packaging recyclable

Indoor Unit — Outdoor Unit

Wet Bulb ◀ *Temperature* ▶ *Dry Bulb*

Operational Condition

		min	max		min	max
[°C]	Indoor Unit	11	23	Cooling	16	32
	Outdoor Unit	11	26		16	43
[°C]	Indoor Unit	-	-	Heating	16	30
	Outdoor Unit	-6	18		-5	24

TSM SUCCESS MANUAL® - safe to use - easy to understand due to TSM® - Total Security Management and ergonomic communication® -***060203 by SEV-ASE***

TSM® TOTAL SECURITY MANAGEMENT

Manufactured by:

MATSUSHITA INDUSTRIAL CORP. SDN.BHD.
Lot 2, Persiaran Tengku Ampuan, Section 21, Shah Alam
Industrial Site Selangor, Malaysia

MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
web site: http://www.panasonic.co.jp/global/

This TSM SUCCESS MANUAL® has been examined by SEV for conformity with the safety relevant standards, and has been analysed by an applicationoriented risk analysis for the completeness and correctness of the indications for a safe use of the appliance. Thereby we assume a use with which can be reckoned based on commonsense.

10 Installation Instructions

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

10.1. Safety Precautions

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

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

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

The items to be followed are classified by the symbols:

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

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

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

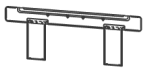
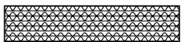
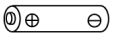
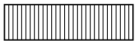
⚠ CAUTION

1. 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 16A power plug with earth pin for 2.0HP (C18CK, A18CK, RS-C18CK) and 20A for 2.5HP (C24CK, A24CK, RS-C24CK) for the connection to the receptacle.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker 2.0HP (C18CK, A18CK, RS-C18CK) and 20A for 2.5HP (C24CK, A24CK, RS-C24CK) for the permanent connection. It must be a double pole switch with a minimum 3 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.

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate 	1	6	Triple Deodorizing filter 	1
2	Installation plate fixing screw 	6	7	Remote Control holder 	1
3	Remote control 	1	8	Remote Control holder fixing screw 	2
4	Battery 	2	9	Drain elbow (A18CK, A24CK) 	1
5	Air purifying filter 	1			

Applicable piping kit

CZ-4F5, 7, 10AN (C18CK, A18CK, RS-C18CK)

CZ-52F5, 7, 10AN (C24CK, A24CK, RS-C24CK)

SELECT THE BEST LOCATION

INDOOR UNIT

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

OUTDOOR UNIT

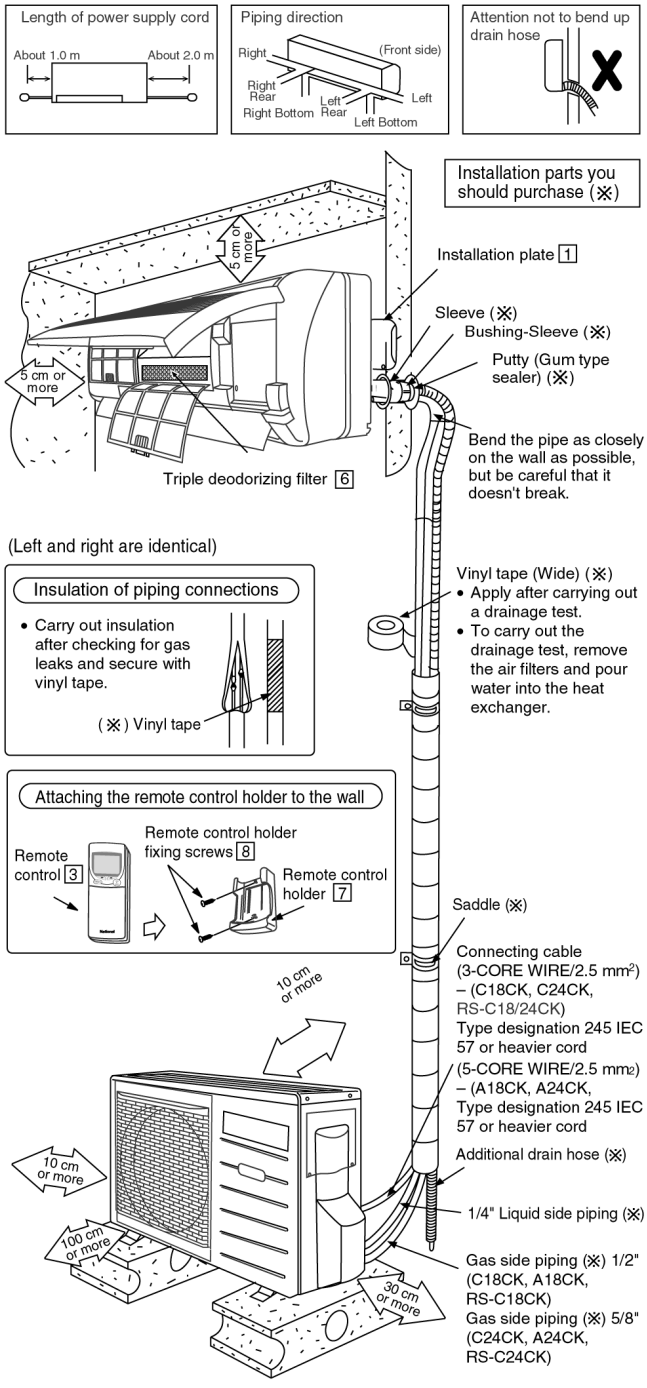
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other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

Model	Piping size		Rated Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
C18CK, RS-C18CK	1/2"	1/4"	5	20	25	20
C24CK, RS-C24CK	5/8"	1/4"	5	20	25	30
A18CK	1/2"	1/4"	5	20	25	20
A24CK	5/8"	1/4"	5	20	25	30

Example: For A24CK

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

Indoor/Outdoor Unit Installation Diagram



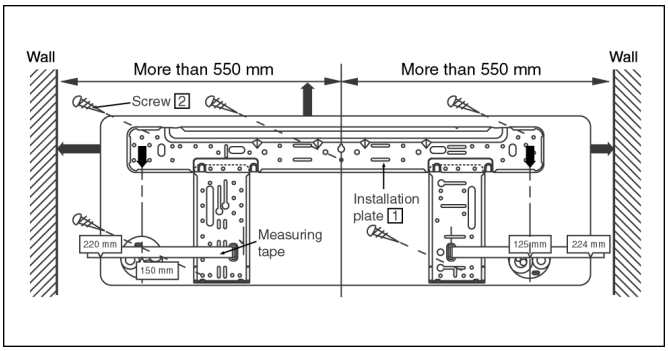
- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

10.2. INDOOR UNIT

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

10.2.2. HOW TO FIX INSTALLATION PLATE

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



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

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

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

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

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

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

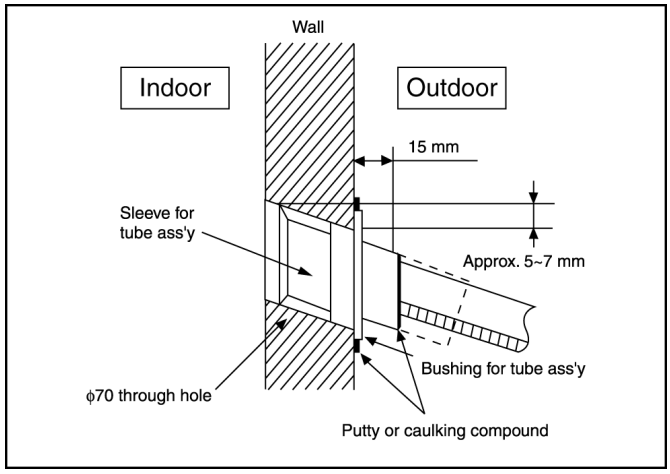
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram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

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

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

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

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



10.2.4. INDOOR UNIT INSTALLATION

1. **For the right rear piping**

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

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

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

3. **For the embedded piping**

Replace the drain hose

↓

Bend the embedded piping

↓

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

Install the Indoor Unit

↓

Cut and flare the embedded piping

↓

- When determing 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.)

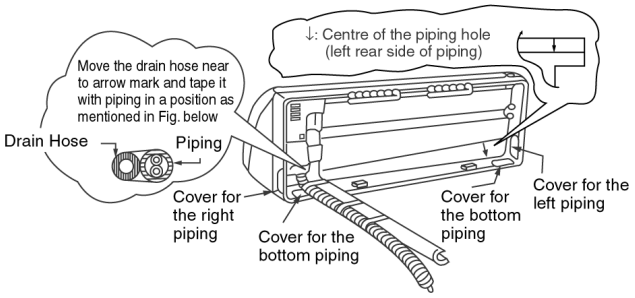
Insulate and finish the piping

↓

- 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

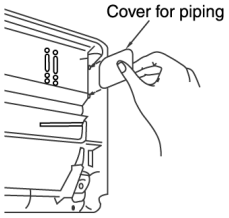
Pull out the piping and drain hose



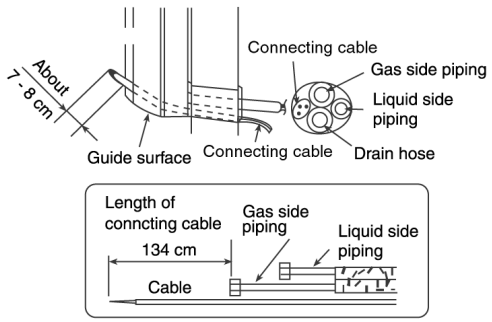
How to keep the cover

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

(Left, right and 2 bottom covers for piping)

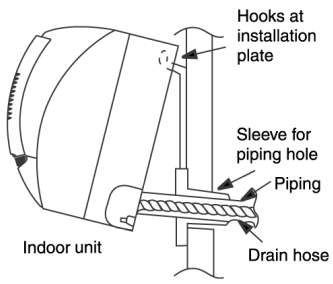


Insert the connecting cable



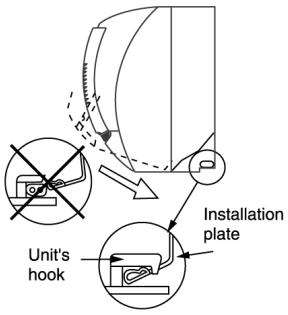
Install the Indoor Unit

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.

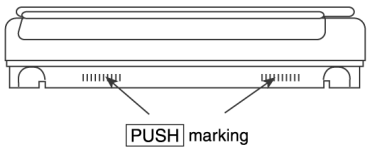


Secure the Indoor Unit

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



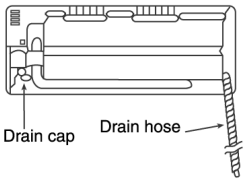
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

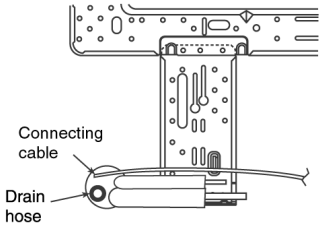


(This can be used for left rear piping & left bottom piping also.)

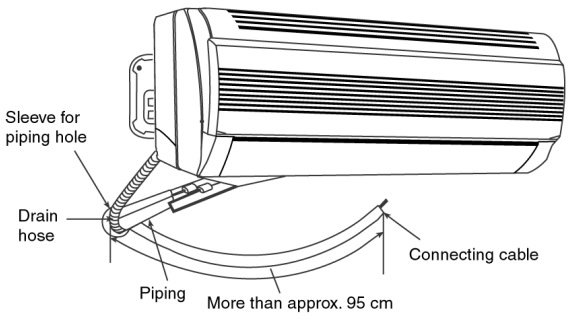
Exchange the drain hose and the cap

Refer view for left piping installation

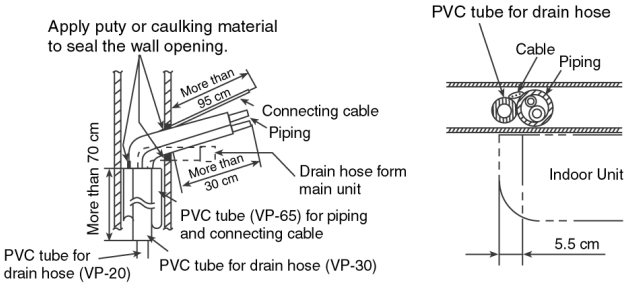




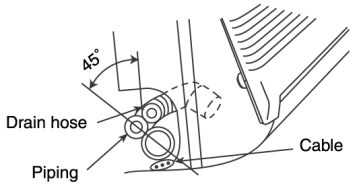
Adjust the piping slightly downwards



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



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



(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

1. The inside and outside connecting cable can be connected without removing the front grille.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 2.5 mm^2 (C18CK, C24CK, RS/RU-C18/24CK) or 5 × 2.5 mm^2 (A18CK, A24CK) 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.

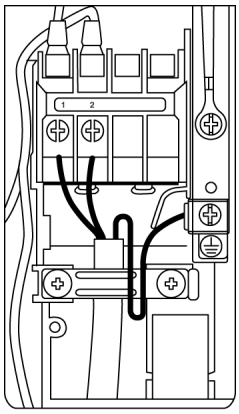
CS/CU-C18CK, C24CK, RS-C18/24CK

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

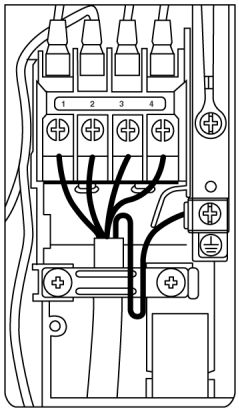
CS/CU-A18CK, A24CK

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

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



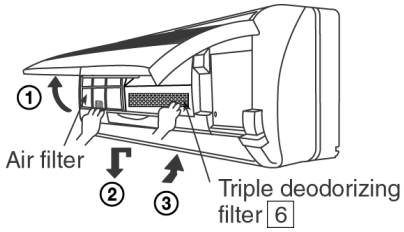
C18CK, C24CK, RS-C18/24CK



A18CK, A24CK

INSTALLATION OF AIR PURIFYING FILTERS

1. Open the front panel.
2. Remove the air filters.
3. Put air purifying filters (left) and triple refreshing deodorizing filter (right) into place as shown in illustration below.

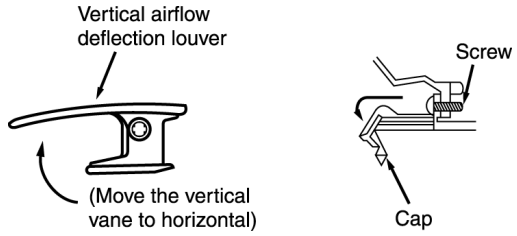


HOW TO TAKE OUT FRONT GRILLE

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 3 caps on the front grille as shown in the illustration below, and then remove the 3 mounting screws.
4. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction 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

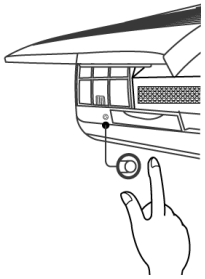
   The Auto operation will be activated immediately once the Auto Switch is pressed.

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. to below 10 sec.. A "beep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

   The ON/OFF of Remote Controller receiving sound can be change over by pressing the "AUTO" Switch continuously for 10 sec. and above. A "beep", "beep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" change over of remote control receiving sound.



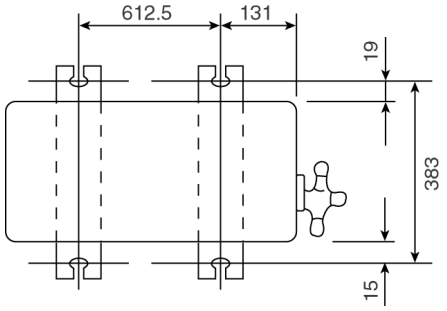
10.3. OUTDOOR UNIT

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

10.3.2. INSTALL THE OUTDOOR UNIT

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

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



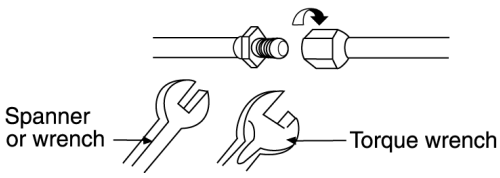
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

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

Connect the piping

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



MODEL	Piping size (Torque)	
	Gas	Liquid
C18CK, A18CK, RS-C18CK	1/2" (55 N●m)	1/4" (18 N●m)
C24CK, A24CK, RS-C24CK	5/8" (65 N●m)	1/4" (18 N●m)

Connecting The Piping To Outdoor Unit

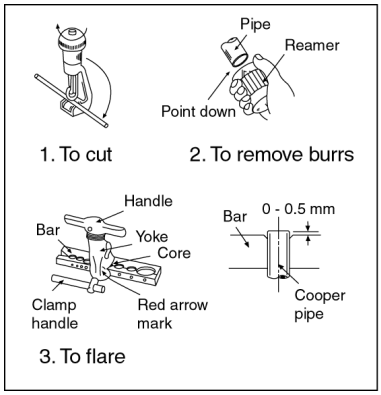
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

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

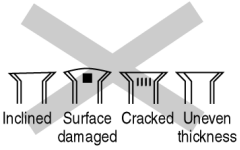
CUTTING AND FLARING THE PIPING

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

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



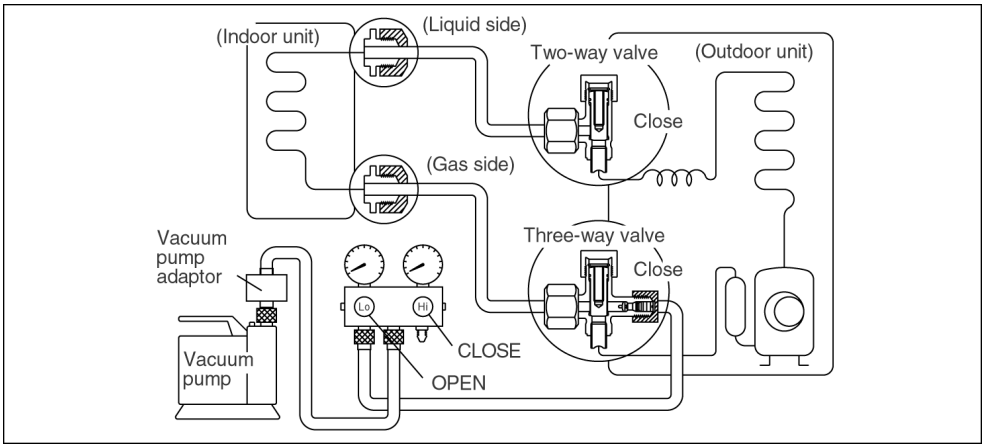
■ Improper flaring ■



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

10.3.4. EVACUATION OF THE EQUIPMENT (FOR EUROPE & OCEANIA DESTINATION)

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



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

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

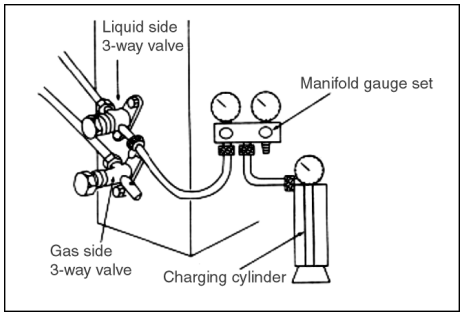
CAUTION

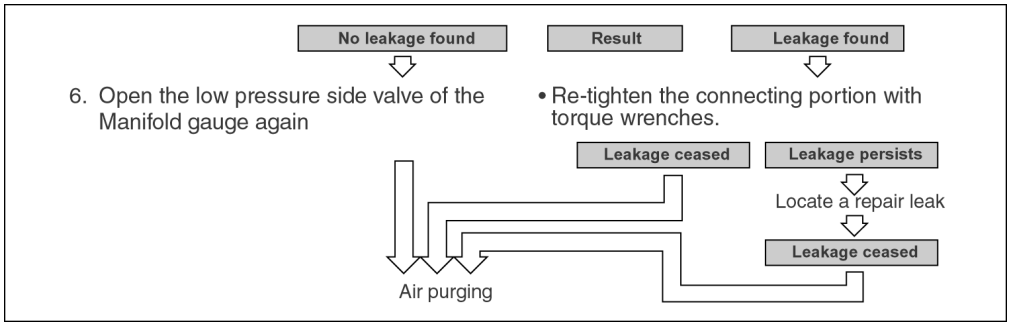
- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step 3.
- If the leak does not stop when the connections are retightened, repair the location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

10.3.5. AIR PURGING OF THE PIPING AND INDOOR UNIT

1) Checking a gas leakage

1. Remove the service-port cap from the 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 for approx. 10 seconds and then close.
5. Check gas-leakage of the connecting portion of pipings with the gas-leak detector.





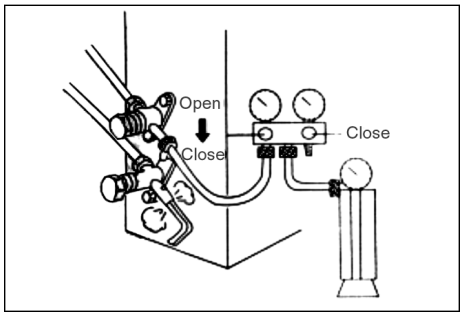
<For the left pipings>

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

2) Air purging

The air remaining in the Refrigeration cycle which contains moisture may cause malfunction on the Compressor.

1. To purge the air, push the pin on the Gas side 3-way valve for three seconds with a Hexagonal wrench and set it free for one minute.
   - Repeat this for three times.
2. To balance the refrigerant, close the low pressure side valve on the Manifold gauge and release refrigerant from the piping through service port until the gauge indicates 0.5 - 0.3 MPa.
3. Set both 3-way valves to open position with the Hexagonal wrench for the unit operation.



10.3.6. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the control board cover from the unit by loosening the screw.
2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 × 2.5 mm^2 (C18CK, C24CK, RS/RU-C18/24CK) or 5 × 2.5 mm^2 (A18CK, A24CK) flexible cord, type designation 245 IEC 57 or heavier cord.

CS/CU-C18CK, C24CK, RS/RU-C18/24CK

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

CS/CU-A18CK, A24CK

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

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

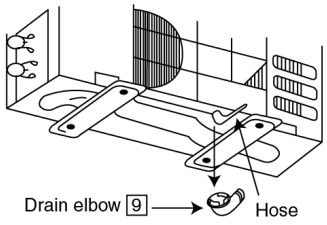
10.3.7. PIPE INSULATION

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

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

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

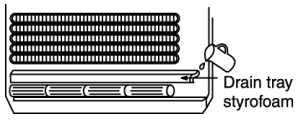
CU-A18CK, A24CK



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

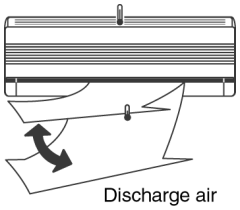
CHECK THE DRAINAGE

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



EVALUATION OF THE PERFORMANCE

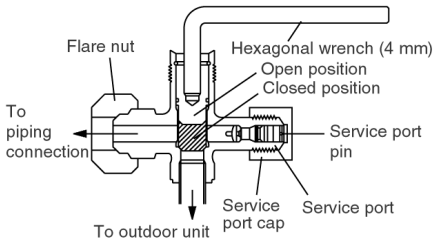
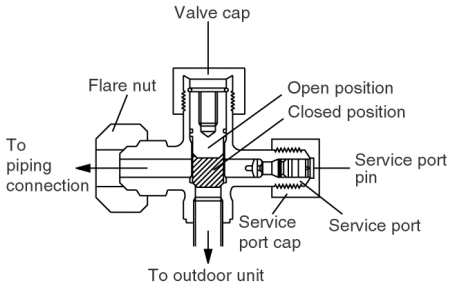
- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



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 air purifying filter installed?

11 3-way Valve

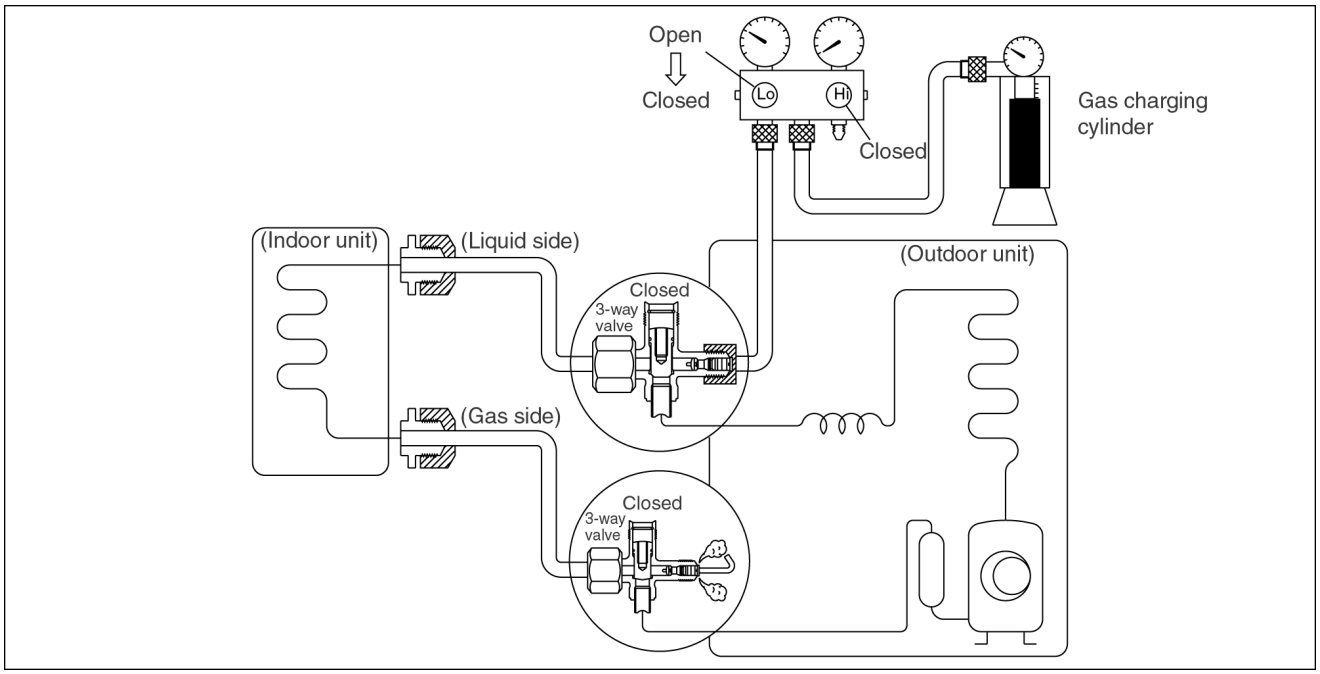
	3-way Valve (Liquid Side)		3-way Valve (Gas Side)	
				
Works	Shaft Position	Service Port	Shaft Position	Service Port
Shipping	Closed (With valve cap)	Closed (With cap)	Closed (With valve cap)	Close (With cap)
(Installation and Re-installation)	Closed (Clockwise)	Open (Connected manifold gauge w/charging 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)	Closed (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 of the Piping and Indoor Unit

11.1.1. 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 caps and service port caps for both 3-way valves.**
3. **Connect the charging cylinder to the manifold gauge as shown above.**
4. **Open the valve of the low pressure side of manifold gauge counterclockwise for 10 seconds, and then close it.**
5. **Check for gas leakage.**
   - Check the flare connections for gas leakage.
6. **Purge the air from the system.**
   - Open the Low pressure side valve of the manifold gauge.
   - Press the service port pin with the hexagonal wrench to purge the air for three seconds and then wait for one minute.
     Repeat this three times or more.
7. **Balance the refrigerant in the pipings and the indoor unit.**
   - Close the Low pressure side valve of the manifold gauge.
   - Press the service port pin with the hexagonal wrench to release the refrigerant until the gauge indicates 0.1 to 0.3 MPa.
8. **Use torque wrench to tighten the service port cap to a torque of 18 N.m.**
9. **Set the both 3-way valves to the open position.**
10. **Mount the valve caps to the 3-way valves.**
11. **Check for gas leakage.**
    - At this time, especially check for gas leakage from the both 3-way valve's caps, and from the service port caps.

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

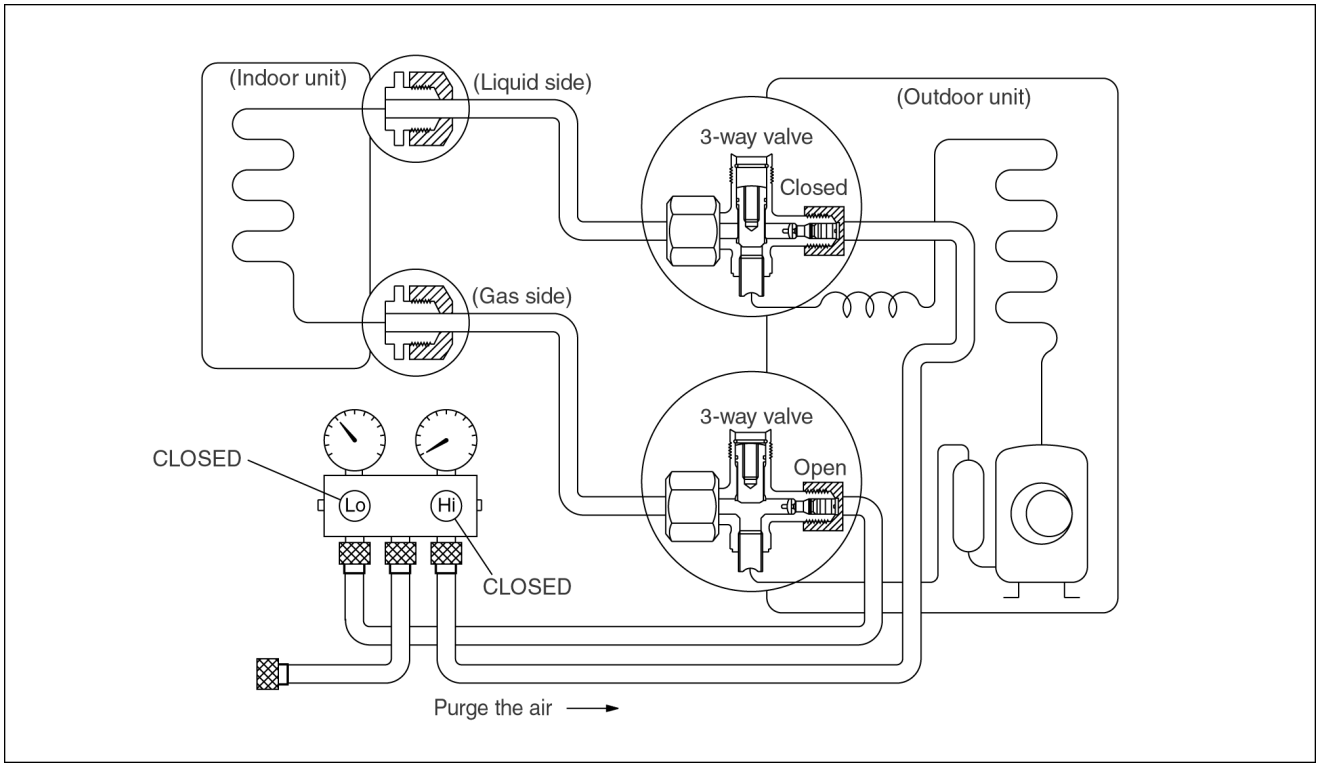
a. Re-tighten the connecting portion with torque wrenches.

If the leakage ceases, continue the works from step (4).

b. Locate and repair the leak. (Gas leak detector)

Repeat the works from step (1).

11.1.2. Pumping down



Procedure:

1. **Confirm that both the 3-way valves are set to the open position.**
   - Remove the valve caps and confirm that the valve caps 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 manifold gauge to the service port of the 3-way valve as shown above.**
   - Connect the manifold gauge to the gas side service port.

4. **Air purging of the charge hose.**
   - Open the Low pressure side valve of manifold gauge slightly to purge air from the charge hose.

5. **Set the liquid side (High side) 3-way valve to the close position.**

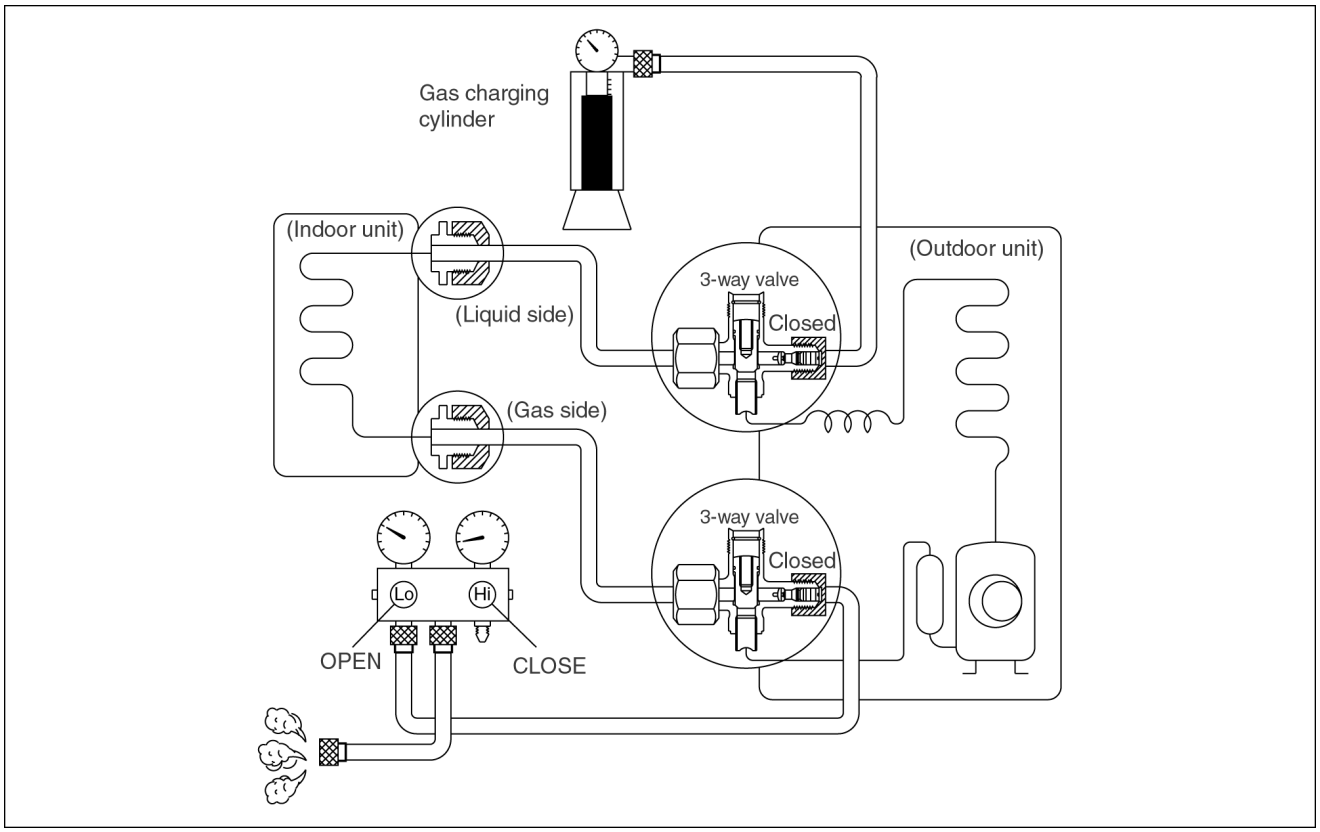
6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1 MPa.**
   - If the unit cannot be operated at the cooling (weather is rather cool), press the Pump Down switch on the Indoor unit.
   - So that the unit can be operated.

7. **Immediately set the gas side (Low side) 3-way valve to the close position.**
   - Do this quickly so that the gauge ends up indicating 0.1 0.3 MPa.

8. **Disconnect the manifold gauge, and mount both the 3-way valve's caps and the service port caps.**
   - Use torque wrench to tighten the service port nut to a torque of 18 N.m.
   - Be sure to check for gas leakage.

11.1.3. 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 valve in both 3-way valves are set to the CLOSE.**

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 ports to connect the manifold gauge and gas cylinder.
   - Close the valves on the gas cylinder and manifold gauge.

4. **Air purging.**
   - Open the valve on the gas cylinder.
   - Open the valve on the manifold gauge, discharge for three seconds and wait for one minute. Repeat this three times.

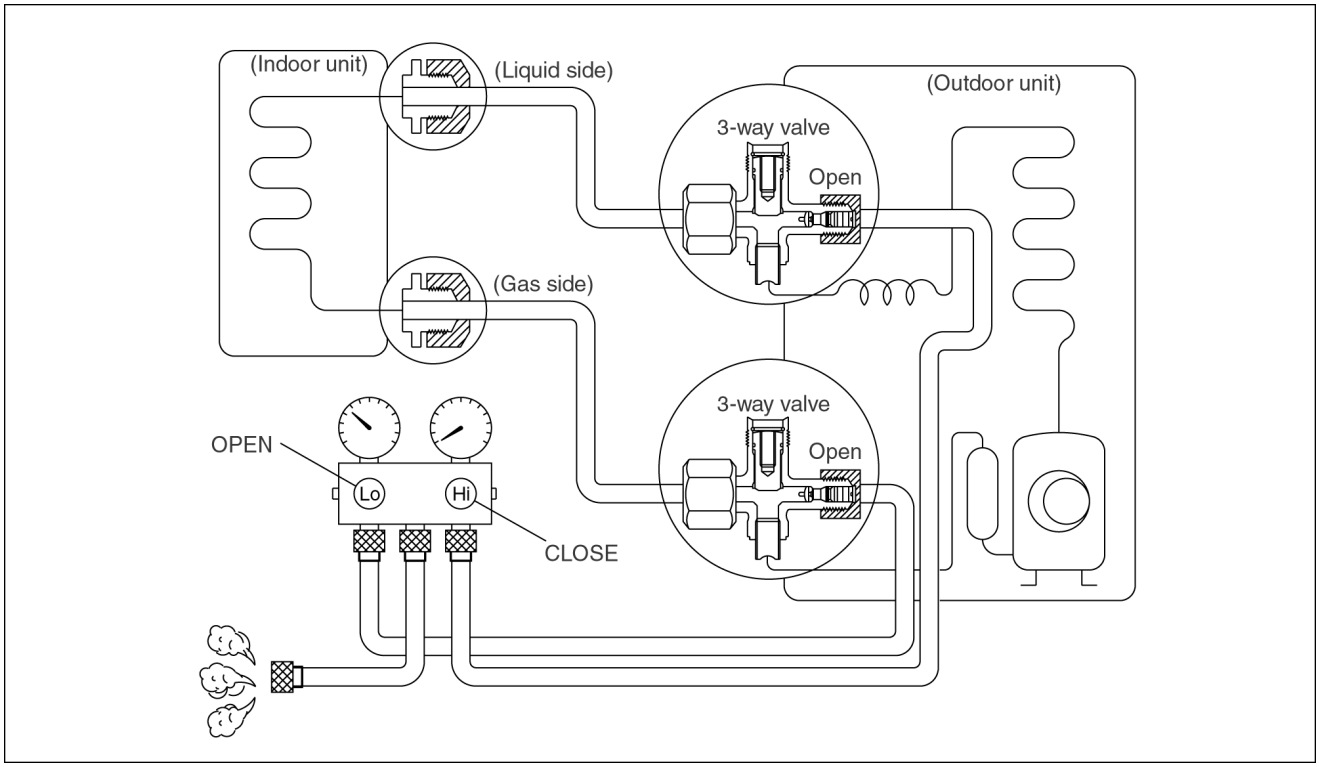
5. **Check for gas leakage.**
   - Check the flare connections for gas leakage.

6. **Discharge the refrigerant.**
   - Close the valve on the gas cylinder and discharge the refrigerant until the gauge indicates 0.1 to 0.3 MPa.

7. **Disconnect the manifold gauge and gas cylinder.**

8. **Mount the valve caps and the service port caps onto the 3-way valves.**
   - Be sure to use a torque wrench to tighten the service port nut.
   - Be sure to check for gas leakage.

11.1.4. Balance refrigerant of the 3-way valves



Procedure:

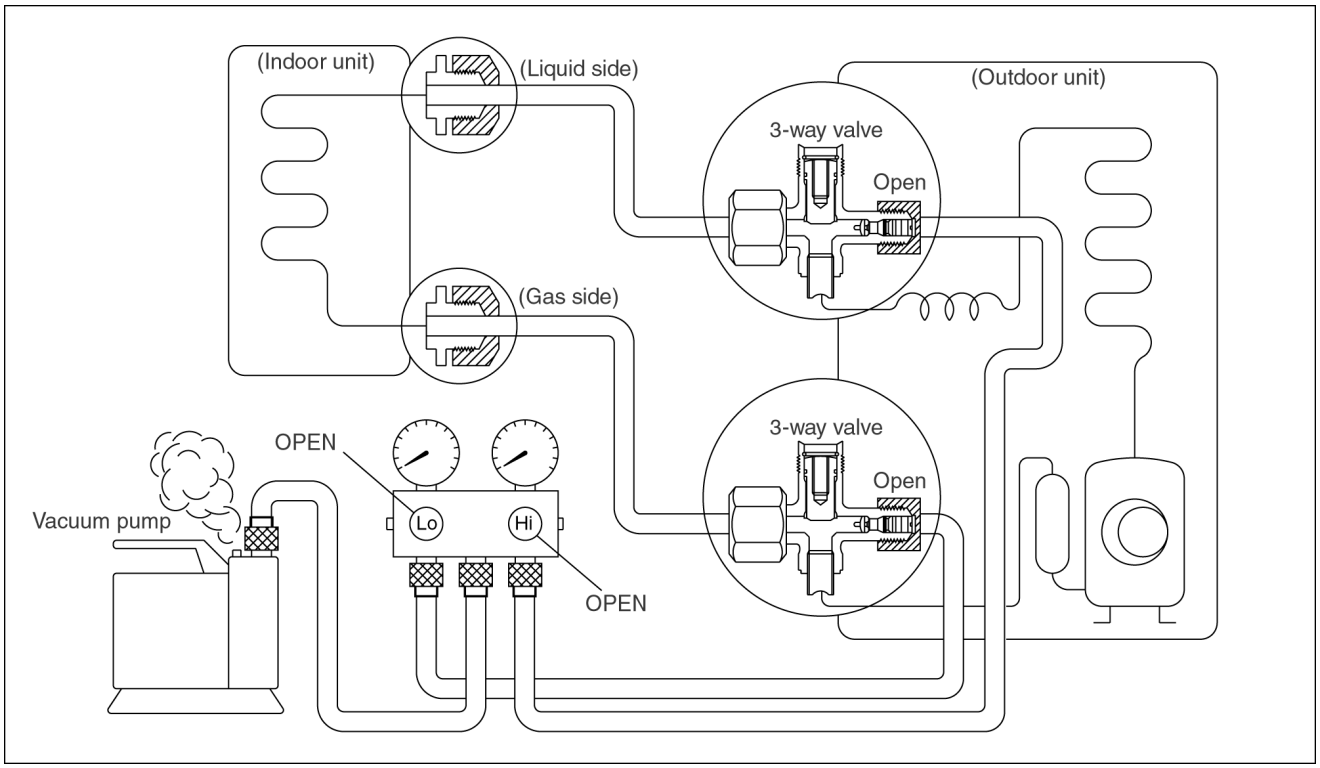
1. **Confirm that both the 3-way valves are set to the open position.**

2. **Connect the manifold gauge to the gas side (Low side) 3-way valve's port.**
   - Leave the valve on the manifold gauge closed.
   - Connect the manifold gauge to the service port.

3. **Open the valves (Low side) on the manifold gauge and discharge the refrigerant until the gauge indicates 0.1 MPa .**
   - If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than **0.1 MPa**]. If this is the case, it will not be necessary to apply a evacuation.
   - Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

11.1.5. Evacuation

(No refrigerant in the refrigeration cycle)



Procedure:

1. **Connect the vacuum pump to the manifold gauge's centre hose.**

2. **Evacuation for approximately one hour.**
   - Confirm that the gauge needle has moved toward -0.01 MPa.

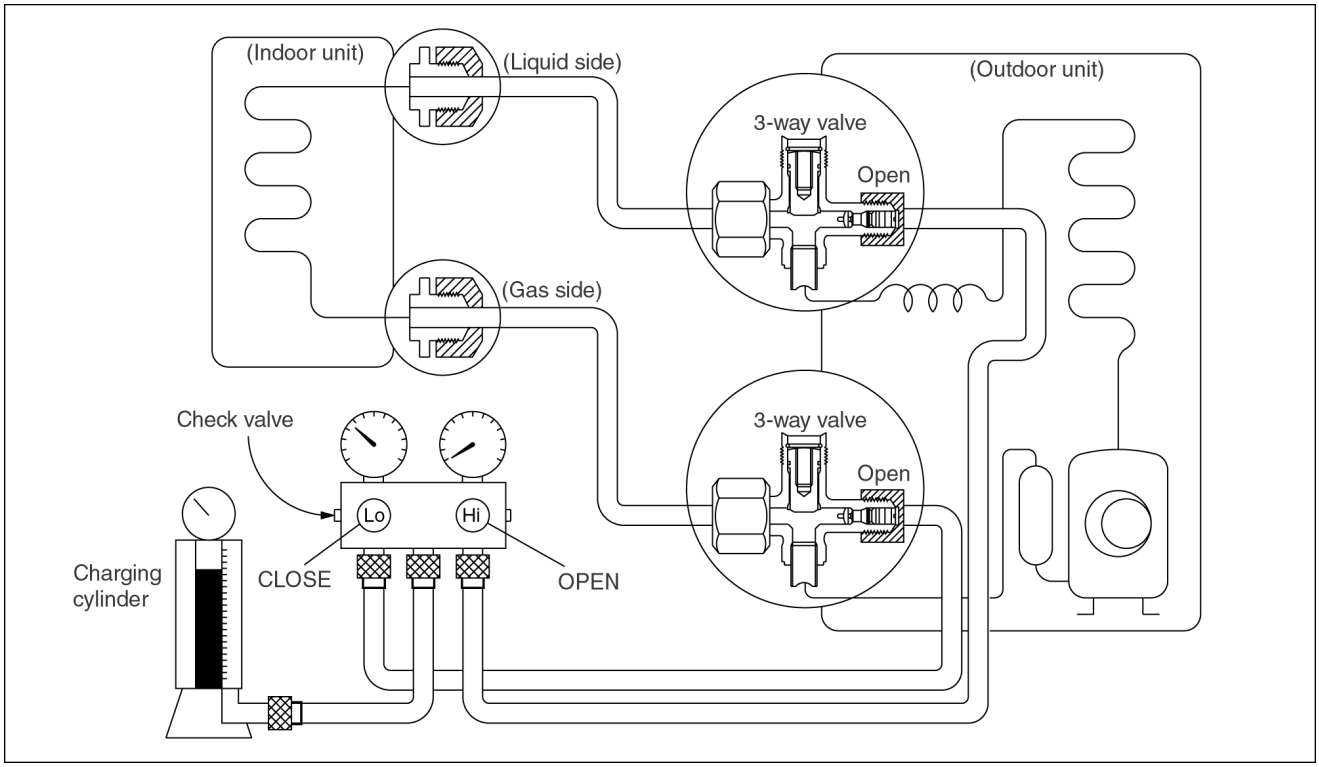
3. **Close the valve (Low side) on the manifold gauge, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**

4. **Disconnect the manifold gauge from the vacuum pump.**
   - Vacuum pump oil.

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

11.1.6. Gas charging

(After Evacuation)



Procedure:

1. **Connect the charge hose to the gas charging cylinder.**
   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. **Purge the air from the charge hose.**
   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant). The procedure is the same if using a gas cylinder.

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

4. **Immediately disconnect the charge hose from the 3-way valve's service port.**
   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

5. **Mount the valve caps and the service port caps.**
   - Use a torque wrench to tighten the service port nut.
   - Be sure to check for gas leakage.

12 Servicing Information

Caution:

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

12.1. Indoor Electronic Controllers Removal Procedures

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

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

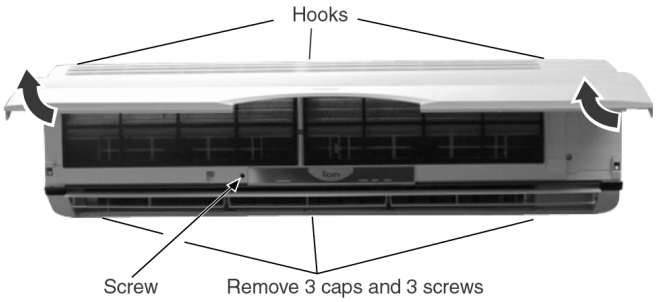


Fig. 1

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

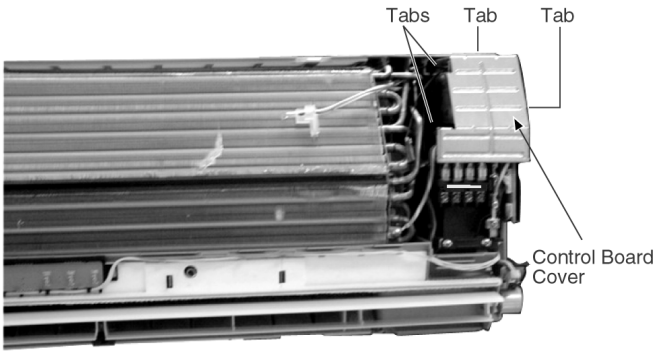


Fig. 2

2. To remove the Electronic Controllers:
   - Release the 2 Particular Piece. (Fig. 3)
   - Release the CN-REC/DISP connectors. (Fig. 4)
   - Release the CN-TH connector. (Fig. 4)
   - Release the CN-MAIN connector. (Fig. 4)
   - Release the CN-001 connector. (Fig. 4)
   - Release the CN-002 connector. (Fig. 4)
   - Release the CN-STM1 connector. (Fig. 4)
   - Release the CN-STM2 connector. (Fig. 4)
   - Release the CN-ION connector. (Fig. 4)
   - Release the hooks that hold the Electronic Controller. (Fig. 3)

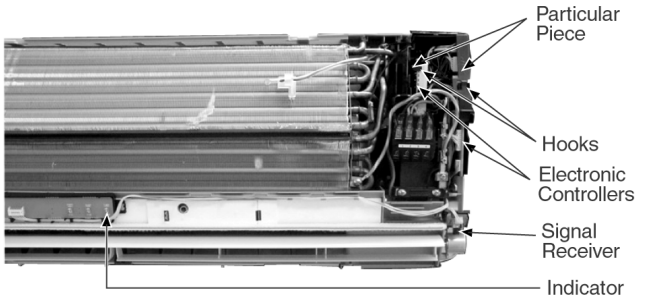


Fig. 3

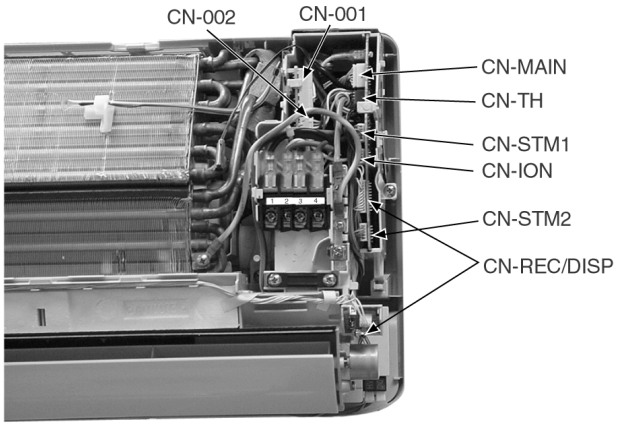


Fig. 4

12.2. Cross Flow Fan Indoor and Fan Motor Removal Procedures

1. In order to remove the Cross Flow Fan and Indoor Fan Motor, Control Board need to be taken out by releasing all the connectors as indicated below.
   a. Release the Earth Wire screw. (Fig. 5)
   b. Release the Intake Air Sensor. (Fig. 5)
   c. Release the Piping Sensor. (Fig. 5)
   d. Release the CN-REC/DISP connectors. (Fig. 5)
   e. Release the CN-STM1 connector. (Fig. 5)
   f. Release the CN-ION connector. (Fig. 5)

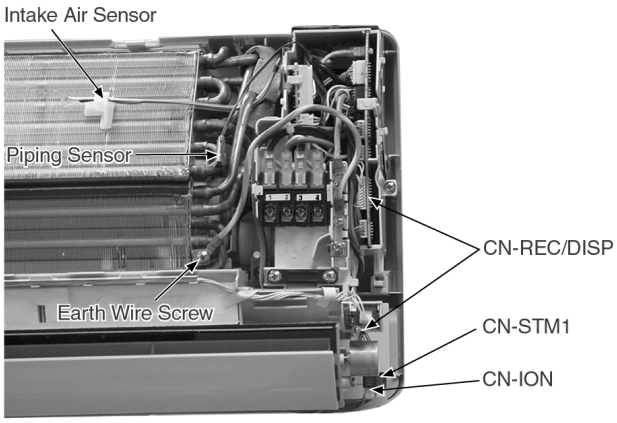


Fig. 5

2. Pull out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 6)

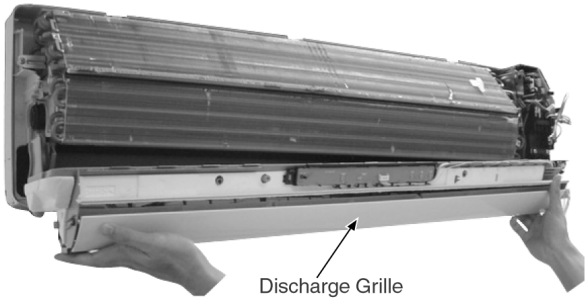


Fig. 6

3. Removing the right and left screws. (Fig. 7)

4. By pressing down the hook at the left and pushing up the hook at the right, you will be able to remove the Control Board. (Fig. 7)

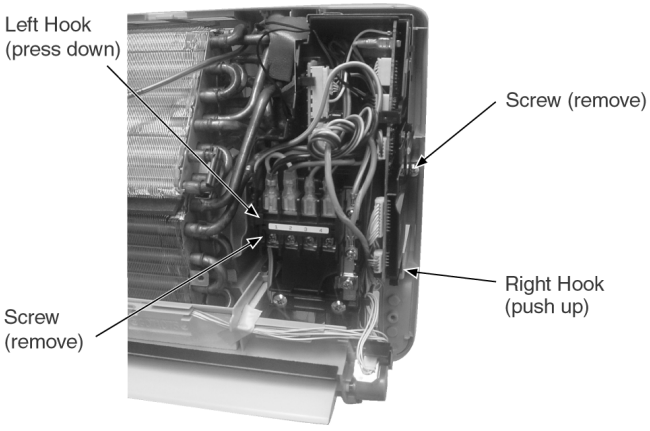


Fig. 7

5. Remove the screw at the Cross Flow Fan. (Fig. 8)

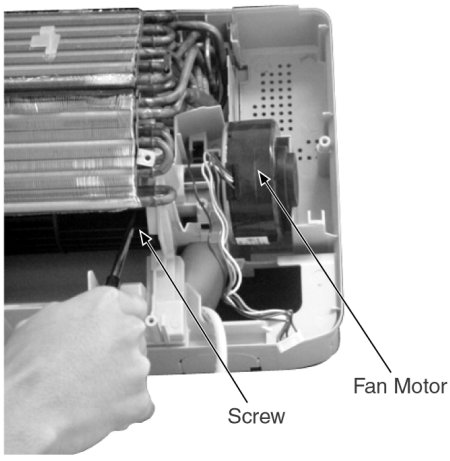


Fig. 8

6. Remove the Bearing. (Fig. 9)

7. Remove the screws at the left of the Evaporator. (Fig. 9)

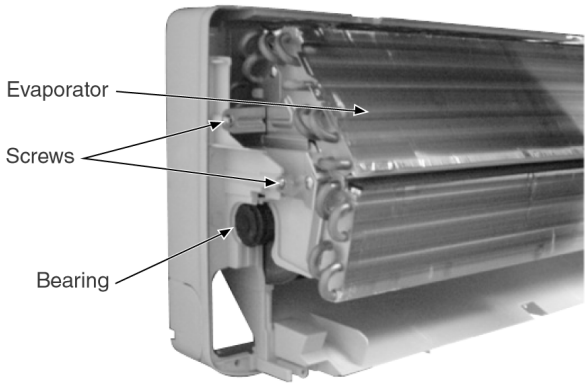


Fig. 9

8. Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 10).

REMINDER - To reinstall the Fan Motor, put it back in place, adjust the position of the Fan Motor's leadwire appropriately as shown in the Fig. 8 before installing the Cross Flow Fan.

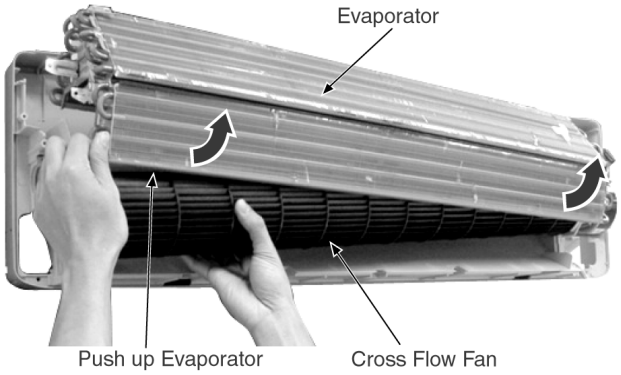


Fig. 10

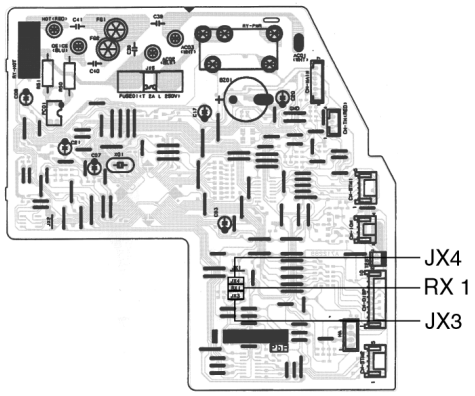
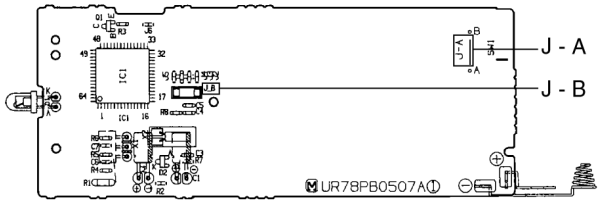
- **Remote Control Reset**

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

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

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

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (J - A) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).

Indoor printed circuit board	Remote control printed circuit board
	

	Remote control printed circuit board		Indoor printed circuit board			Note
	J - A	J - B	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13 Troubleshooting Guide

13.1. Refrigeration cycle system

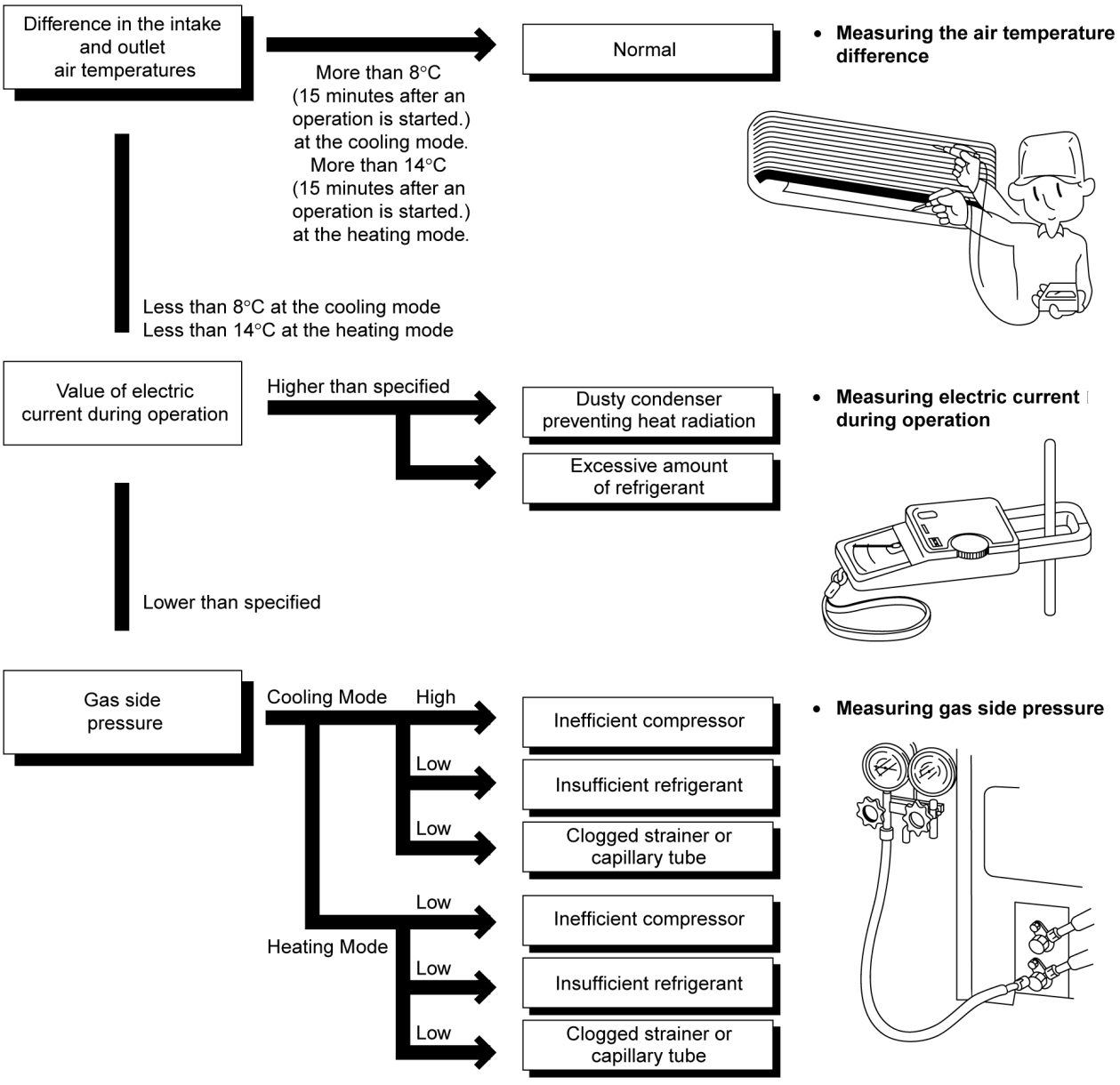
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

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

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

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



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

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

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

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

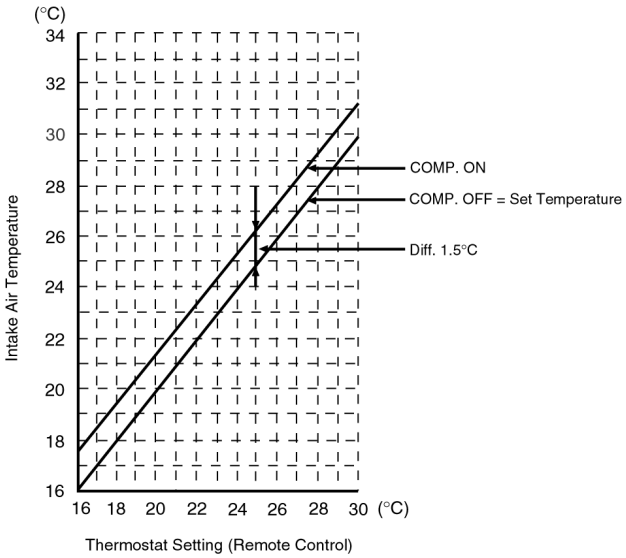
Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). • The difference between high pressure and low pressure becomes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

14 Technical Data

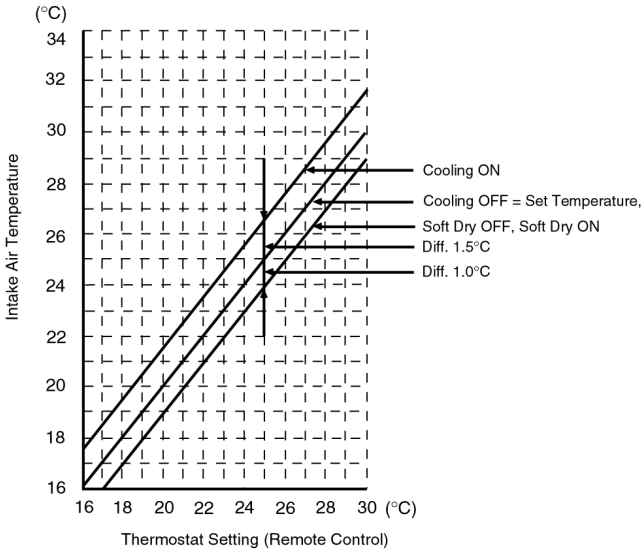
■ Thermostat characteristics

CS-A18CKH CS-A24CKH

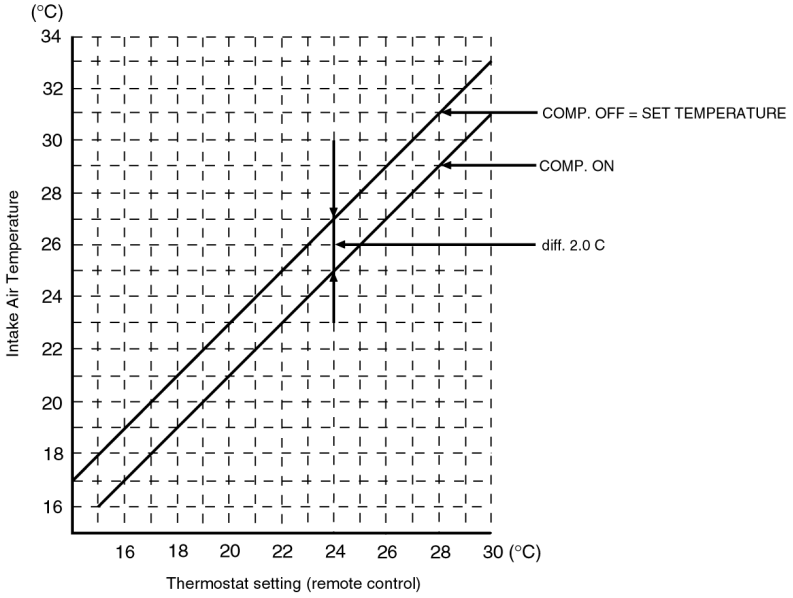
- **Cooling**



- **Soft Dry**



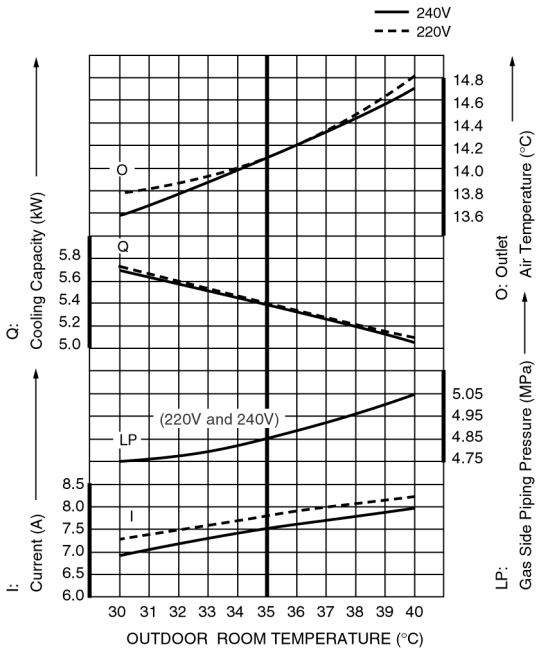
- **Heating**



■ Operation characteristics

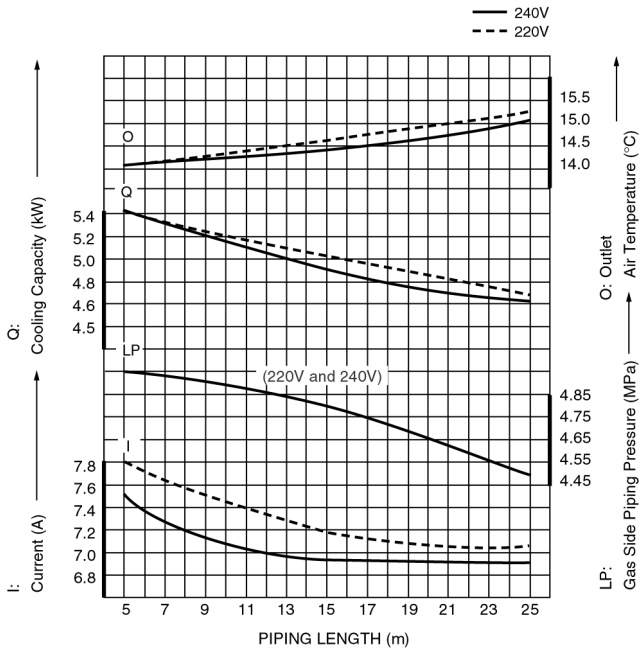
CS-A18CKH CU-A18CKH

• Cooling Characteristic



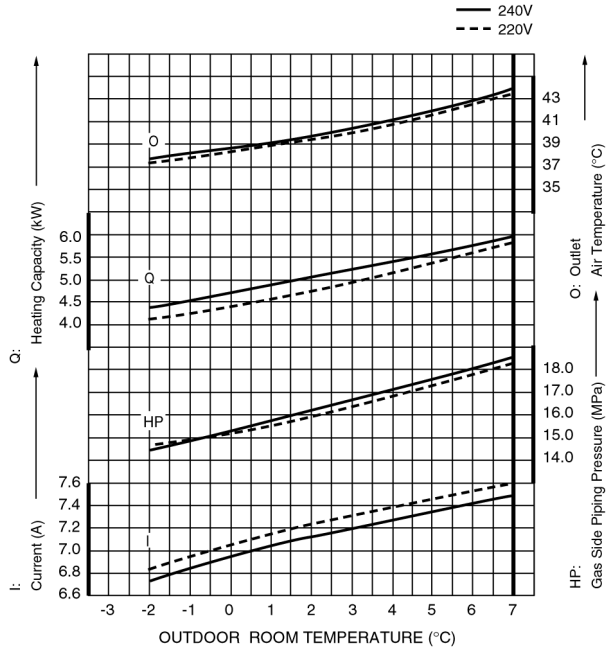
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Cooling)



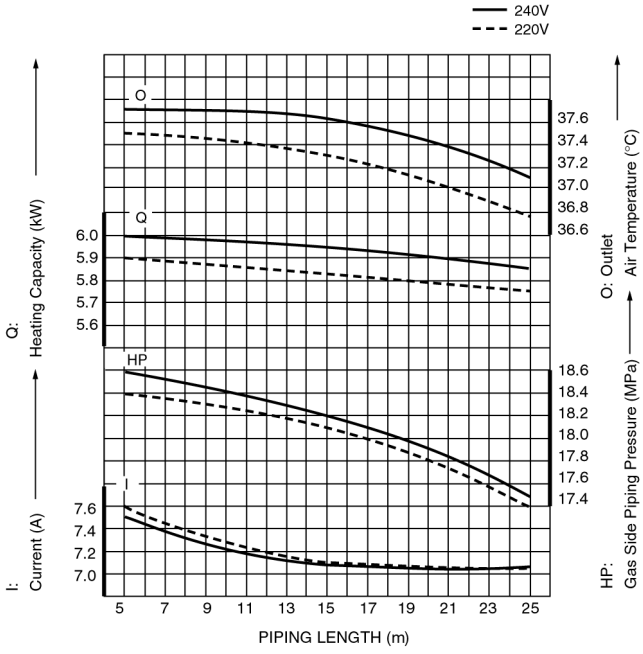
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

• Heating Characteristic



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

• Piping Length Characteristic (Heating)

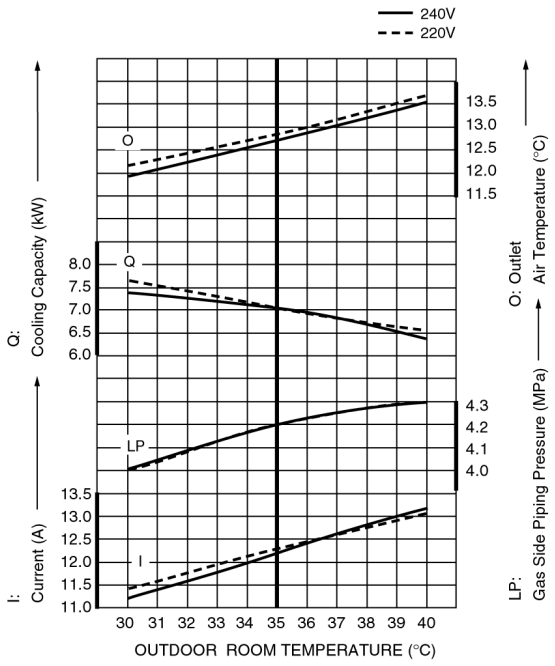


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

■ Operation characteristics

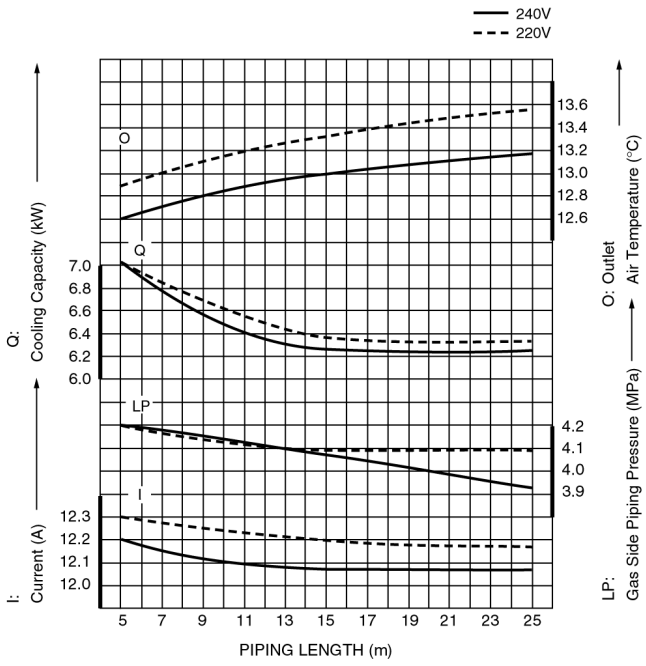
CS-A24CKH CU-A24CKH

• Cooling Characteristic



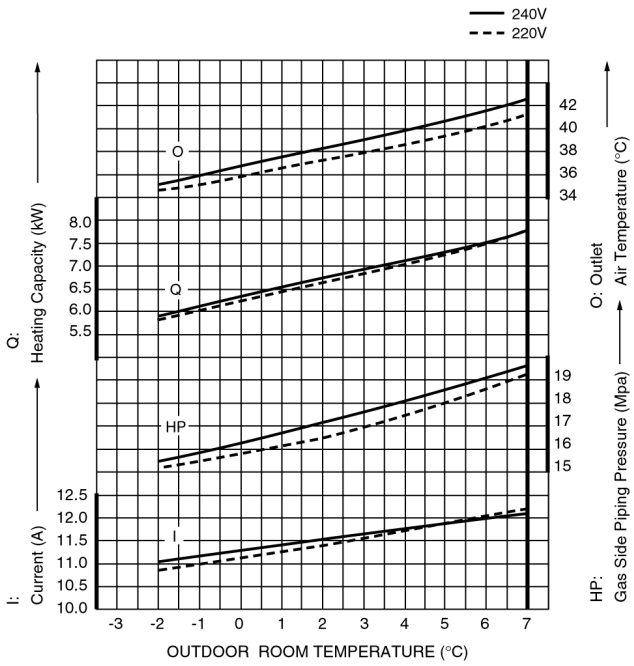
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Cooling)



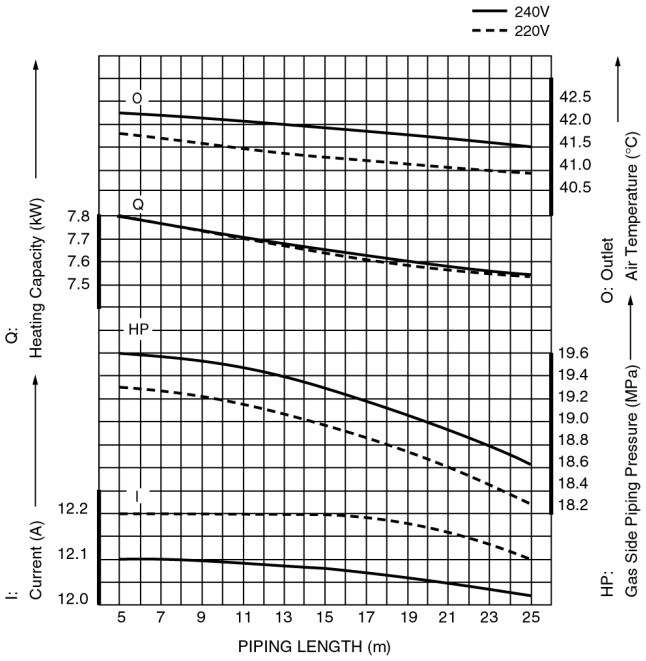
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

• Heating Characteristic



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

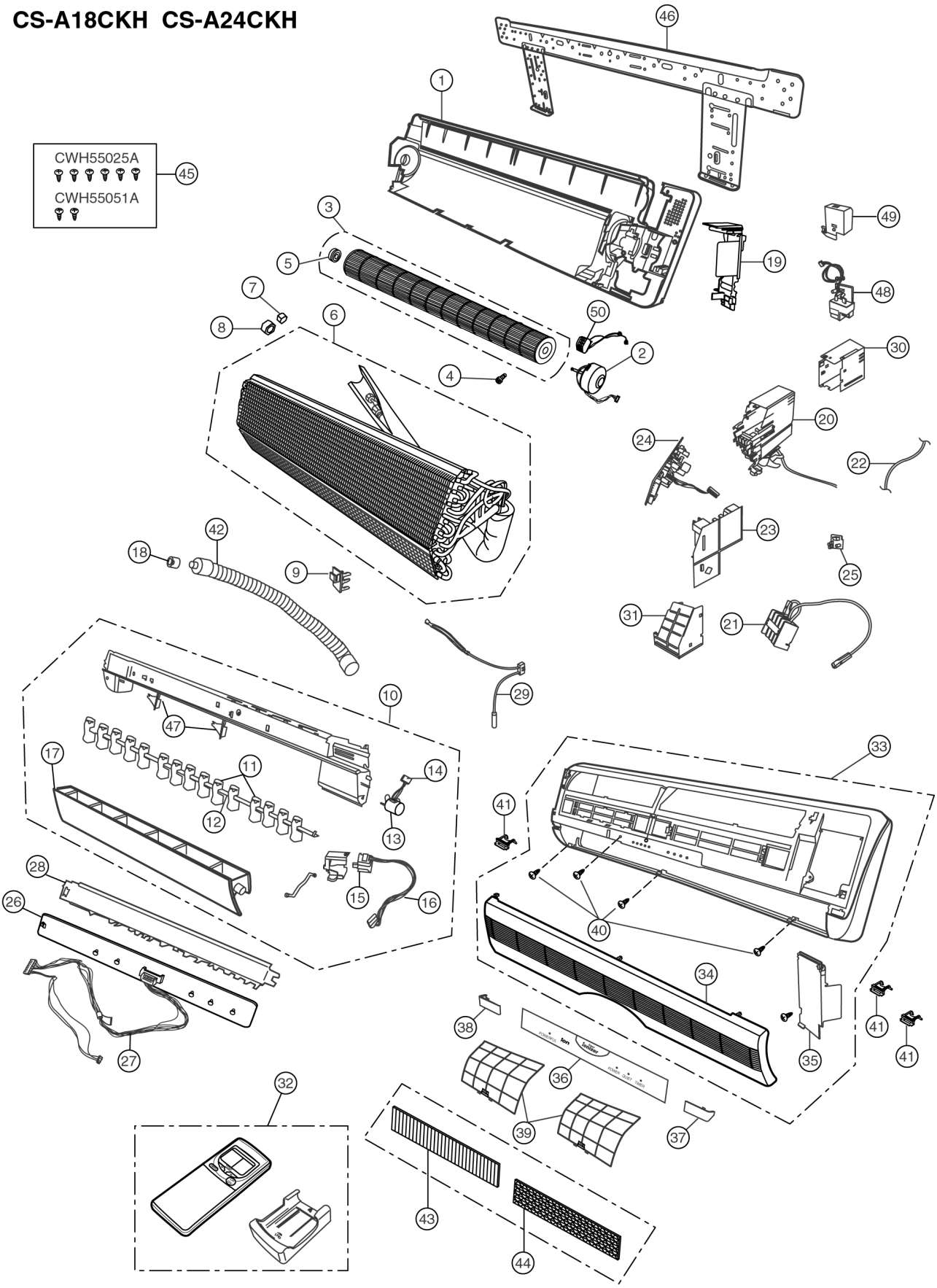
• Piping Length Characteristic (Heating)



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

15 Exploded View

CS-A18CKH CS-A24CKH



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

<Model: CS-A18CKH / CS-A24CKH>

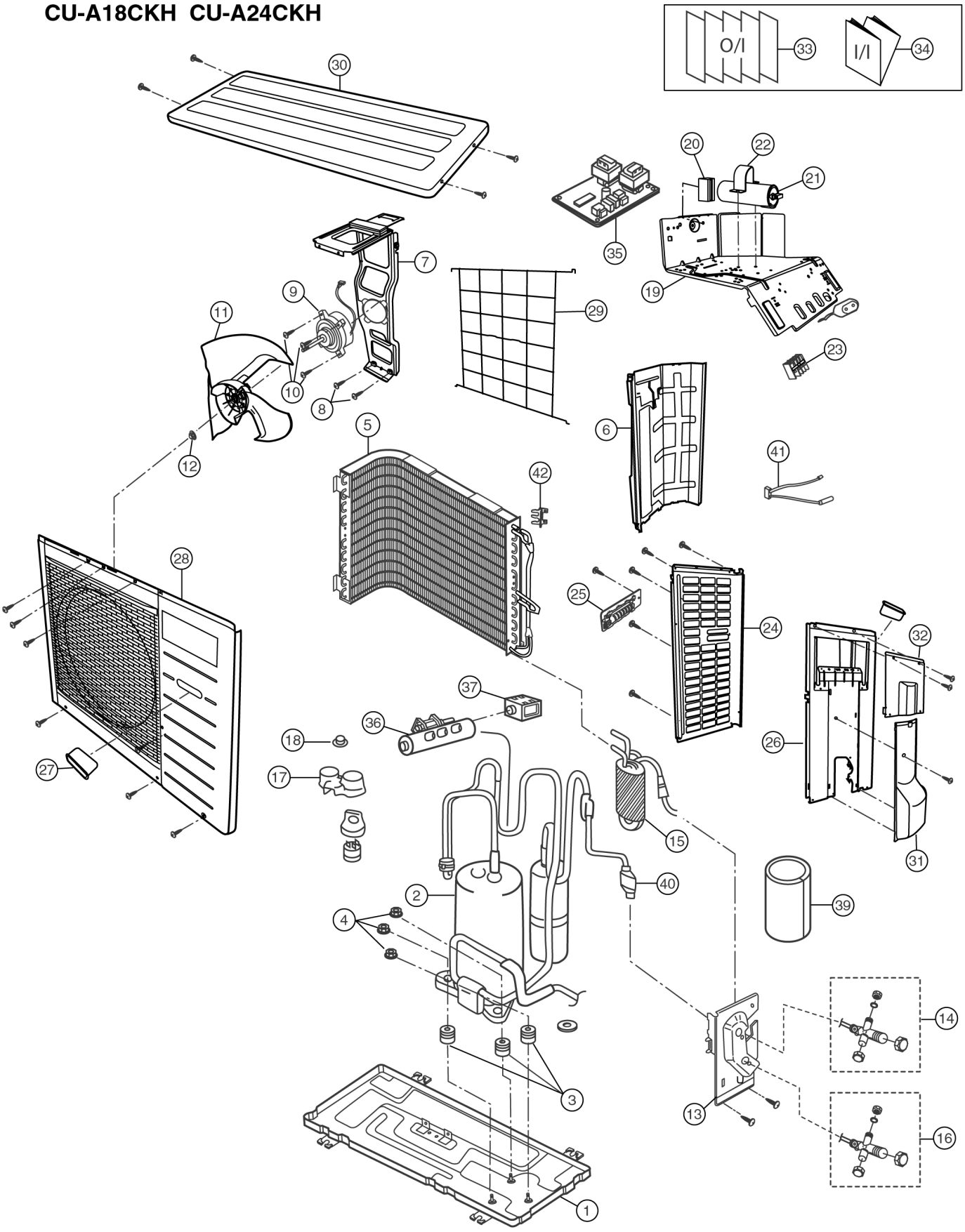
REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-A18CKH	CS-A24CKH	REMARKS
1	CHASSY COMPLETE	1	CWD50C1293	CWD50C1343	
2	FAN MOTOR	1	CWA981056	←	0
3	CROSS FLOW FAN COMPLETE	1	CWH02C1010	←	
4	SCREW - CROSS FLOW FAN	1	CWH4580304	←	
5	BEARING ASS'Y	1	CWH64K007	←	
6	EVAPORATOR	1	CWB30C1391	CWB30C1451	
7	FLARE NUT	1	CWT25078 (1/4")	←	
8	FLARE NUT	1	CWT25007 (1/2")	CWT25004 (5/8")	
9	INTAKE AIR SENSOR HOLDER	1	CWH32142	←	
10	DISCHARGE GRILLE COMPLETE	1	CWE20C2254	←	
11	VERTICAL VANE	15	CWE241088	←	
12	CONNECTING BAR	1	CWE261025	←	
13	AIR SWING MOTOR	1	CWA98260	←	0
14	LEAD WIRE - AIR SWING MOTOR	1	CWA67C3731	←	
15	AIR SWING MOTOR	1	CWA981041	←	0
16	LEAD WIRE - FAN MOTOR	1	CWA67C3731	←	
17	HORIZONTAL VANE	1	CWE241136	←	
18	CAP - DRAIN TRAY	1	CWH52C1001	←	
19	BACK COVER CHASSIS	1	CWD932162	←	
20	CONTROL BOARD	1	CWH102103	←	
21	TERMINAL BOARD COMPLETE	1	CWA28C2095	CWA28C2096	0
22	POWER SUPPLY CORD	1	CWA20C2348	CWA20C2349	
23	ELECTRONIC CONTROLLER - MAIN	1	CWA743140	CWA743138	0
24	ELECTRONIC CONTROLLER - POWER	1	CWA743348	←	0
25	P.C.B. RECEIVER	1	CWA742724	←	
26	ELECTRONIC CONTROLLER - INDICATOR	1	CWE39C1089	←	0
27	LEAD WIRE - INDICATOR	1	CWA67C4947	←	
28	INDICATOR HOLDER	1	CWD932163	←	
29	SENSOR COMPLETE	1	CWA50C2122	←	0
30	CONTROL BOARD TOP COVER	1	CWH131091	←	
31	CONTROL BOARD FRONT COVER	1	CWH131090	←	
32	REMOTE CONTROL COMPLETE	1	CWA75C2424	←	0
33	FRONT GRILLE COMPLETE	1	CWE11C2967	CWE11C2842	
34	INTAKE GRILLE COMPLETE	1	CWE22C1105	←	
35	GRILLE DOOR	1	CWE141033	←	
36	CONTROL PANEL	1	CWE312273	←	
37	DECORATION BASE (R)	1	CWE351067	←	
38	DECORATION BASE (L)	1	CWE351068	←	
39	AIR FILTER	2	CWD001049	←	
40	SCREW - FRONT GRILLE	4	XTT4+16C	←	
41	CAP - FRONT GRILLE	3	CWH521062	←	
42	DRAIN HOSE	1	CWH851044	←	
43	AIR PURIFYING FILTER	1	CWMD00C0001	←	0
44	TRIPLE DEODORIZING FILTER	1	CWMD00C0004	←	0
45	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C067	←	
46	INSTALLATION PLATE	1	CWH36K1007	←	
47	FULCRUM	2	CWH621013	←	
48	ELECTRONIC CONTROLLER - IONIZER	1	CWA743099	←	0
49	CASING - IONIZER	1	CWD932228	←	
50	ION - GENERATOR	1	CWH94C0001	←	

(Note)

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

17 Exploded View

CU-A18CKH CU-A24CKH



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

<Model: CU-A18CKH / CU-A24CKH>

REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-A18CKH	CU-A24CKH	REMARKS
1	CHASSY ASS'Y	1	CWD50K2087	←	
2	COMPRESSOR	1	2JS324D3AB07	2JS438D3JA02	0
3	ANTI - VIBRATION BUSHING	3	CWH50055	←	
4	NUT - COMPRESSOR MOUNT	3	CWH4582065	←	
5	CONDENSER	1	CWB32C1376	CWB32C1377	
6	SOUND PROOF BOARD	1	CWH151051	←	
7	FAN MOTOR BRACKET	1	CWD541055	←	
8	SCREW - FAN MOTOR BRACKET	2	CWH551060	←	
9	FAN MOTOR	1	CWA951287	←	0
10	SCREW - FAN MOTOR MOUNT	3	CWH55252	←	
11	PROPELLER FAN ASS'Y	1	CWH03K1017	←	
12	NUT - PROPELLER FAN	1	CWH561038	←	
13	HOLDER COUPLING ASS'Y	1	CWH351036	←	
14	3-WAY VALVE (LIQUID)	1	CWB011160	←	0
15	TUBE ASS'Y (CAPILLARY TUBE & CHECK VALVE)	1	CWT01C2933	CWT01C2865	
16	3-WAY VALVE (GAS)	1	CWB011212	CWB011213	0
17	TERMINAL COVER	1	CWH171012	←	
18	NUT - TERMINAL COVER	1	CWH7080300	←	
19	CONTROL BOARD	1	CWH102206	←	
20	CAPACITOR - FAN MOTOR	1	DS441355NPQA	←	0
21	CAPACITOR - COMPRESSOR	1	CWA312079	←	0
22	HOLDER CAPACITOR	1	CWH30060	←	
23	TERMINAL BOARD ASS'Y	1	CWA28K1021	←	
24	CABINET SIDE PLATE (L)	1	CWE041082A	←	
25	HANDLE	1	CWE161010	←	
26	CABINET SIDE PLATE (R)	1	CWE041083A	←	
27	HANDLE	2	CWE16000E	←	
28	CABINET FRONT PLATE	1	CWE06K1043	←	
29	WIRE NET	1	CWD041041A	←	
30	CABINET TOP PLATE ASS'Y	1	CWE03K1009A	←	
31	CONTROL BOARD COVER	1	CWH131168	←	
32	CONTROL BOARD COVER	1	CWH131169A	←	
33	OPERATION INSTRUCTIONS	1	CWF564152	←	
34	INSTALLATION INSTRUCTIONS	1	CWF612458	←	
35	ELECTRONIC CONTROLLER	1	CWA743367	←	
36	4-WAY VALVE ASS'Y	1	CWB00K1025	CWB00K1026	0
37	V-COIL COMPLETE	1	CWA43C2121	←	
39	SOUND PROOF MATERIAL	1	CWG302110	←	
40	STRAINER	1	CWB11025	←	
41	SENSOR COMPLETE	1	CWA50C618	←	
42	HOLDER - SENSOR	1	CWH32089	←	

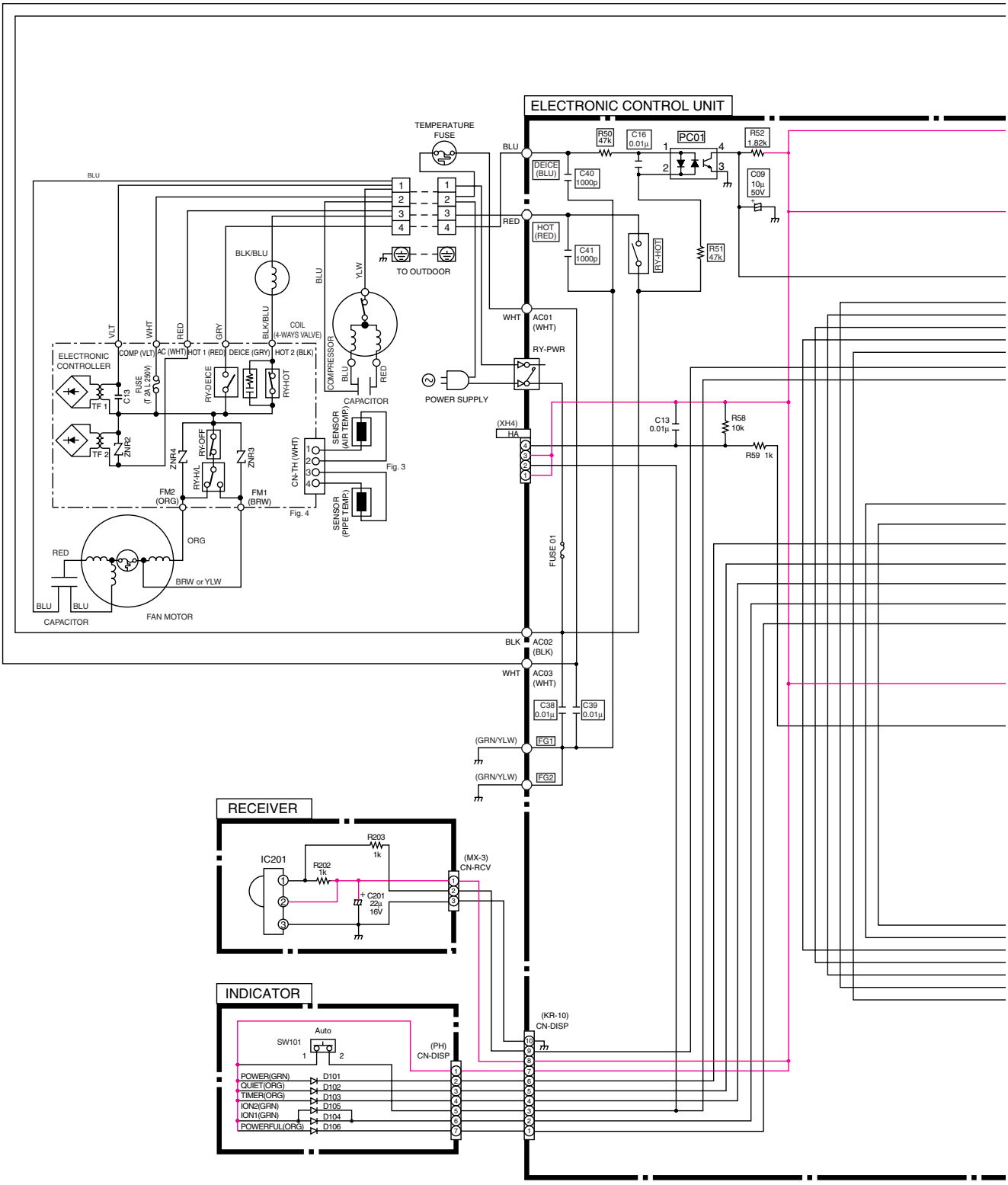
(Note)

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

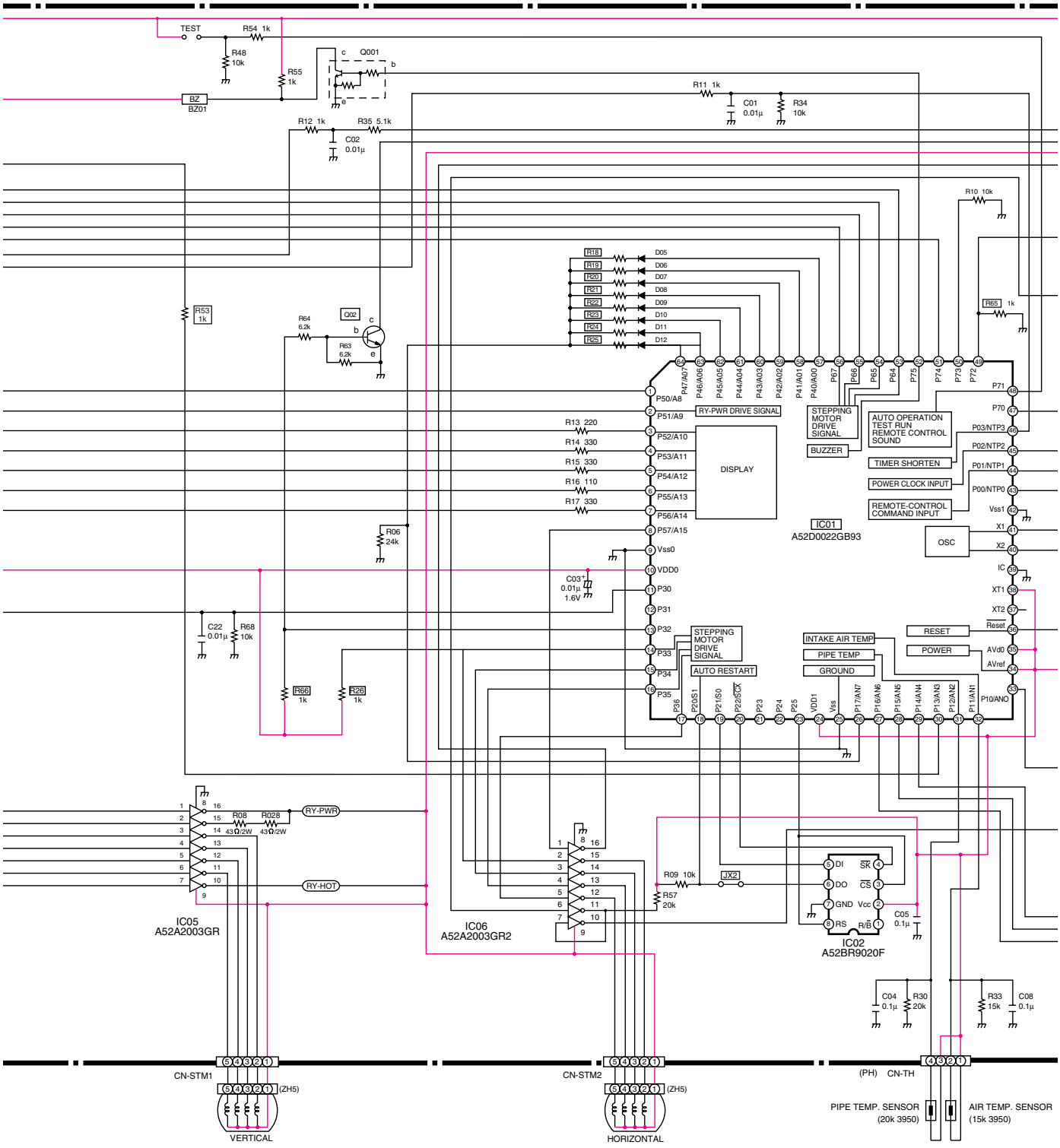
19 Electronic Circuit Diagram

- **CS-A18CKH CU-A18CKH**
- **CS-A24CKH CU-A24CKH**

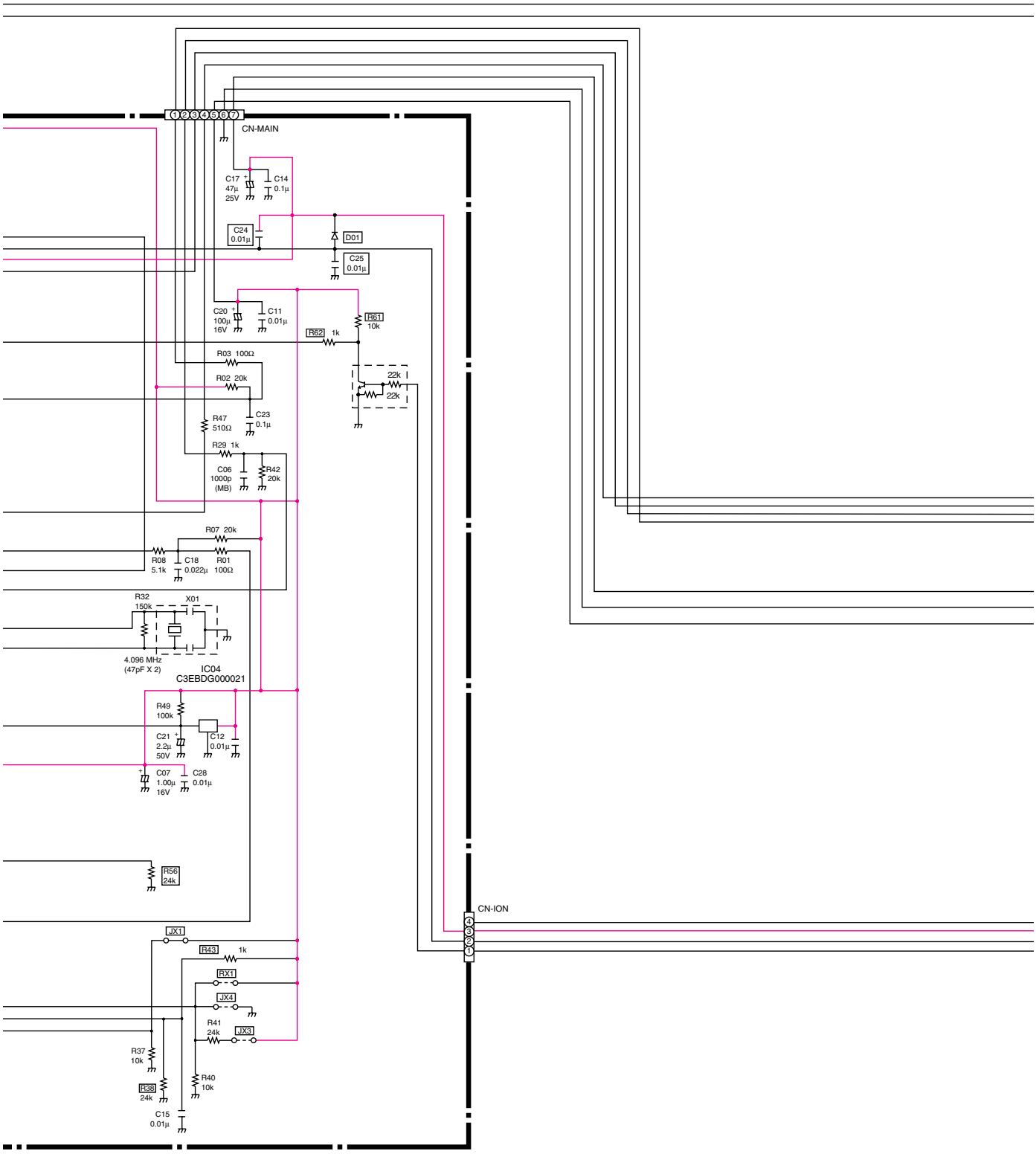
SCHEMATIC DIAGRAM 1/5



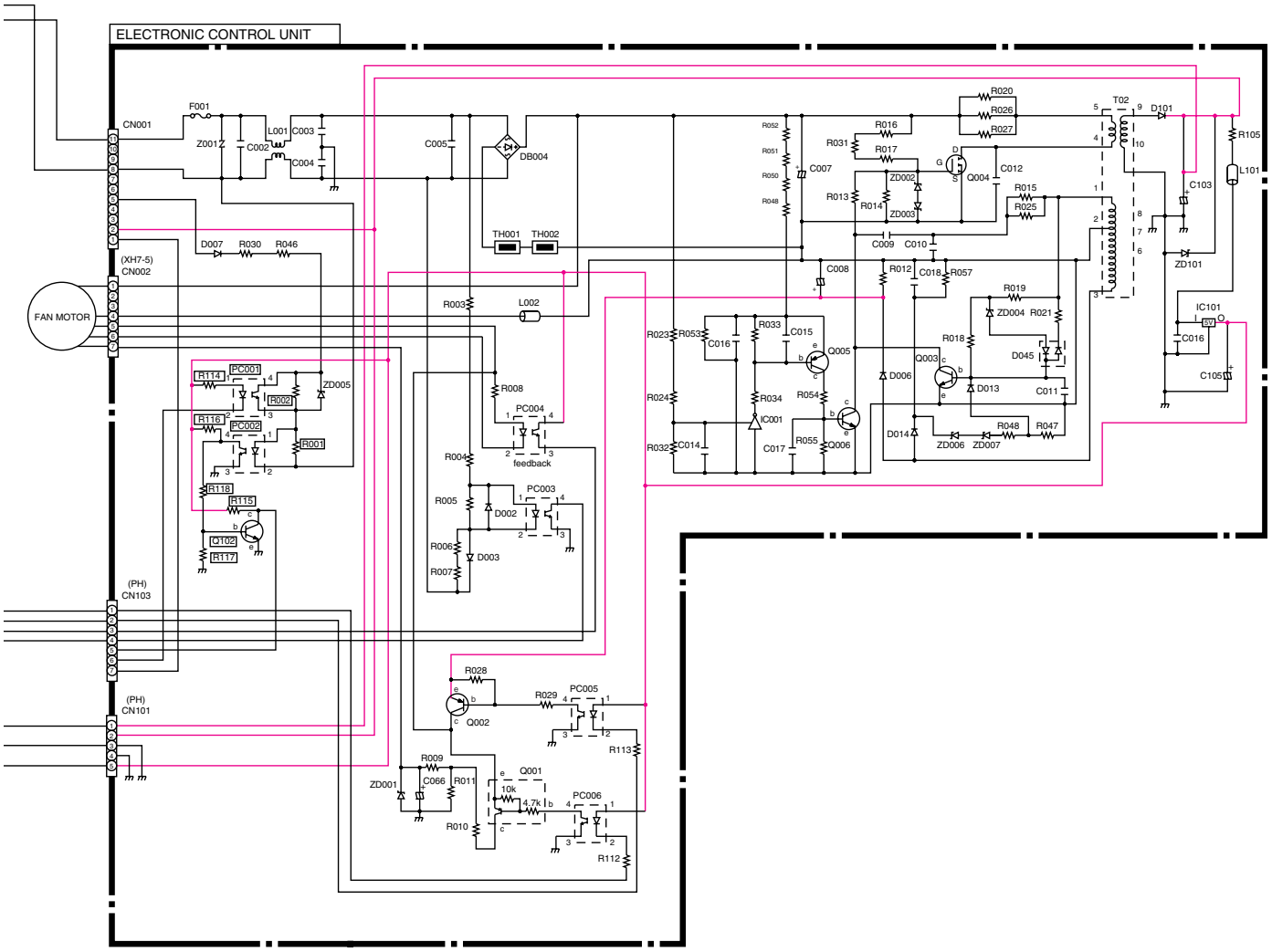
SCHEMATIC DIAGRAM 2/5

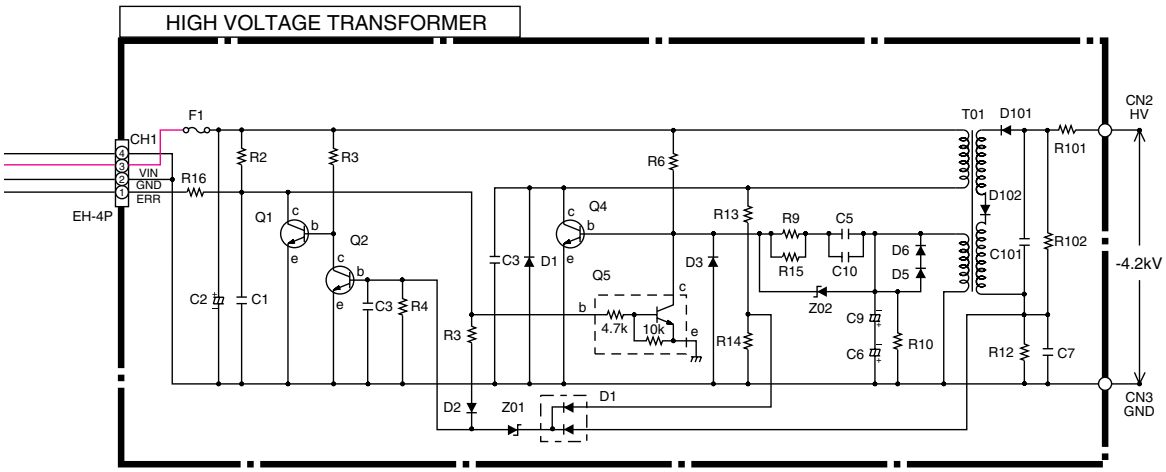


SCHEMATIC DIAGRAM 3/5



SCHEMATIC DIAGRAM 4/5





SCHEMATIC DIAGRAM 5/5

Fig. 1

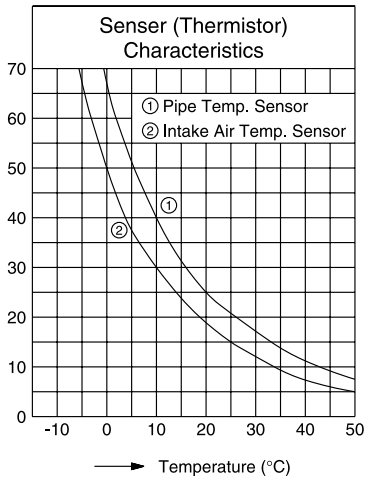


Fig. 2

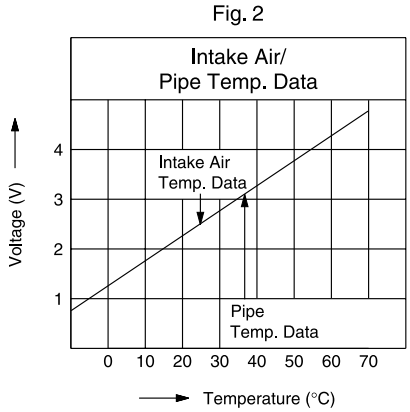


Fig. 3

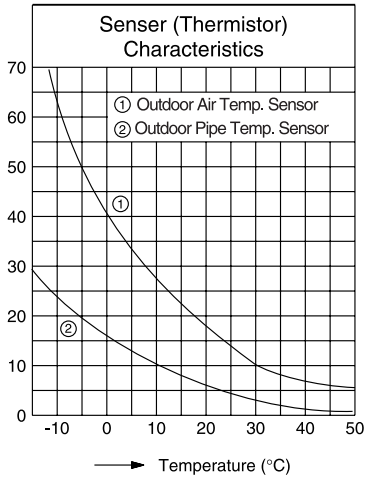
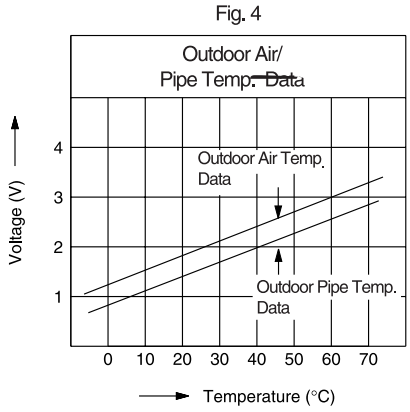


Fig. 4



How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

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

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

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

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

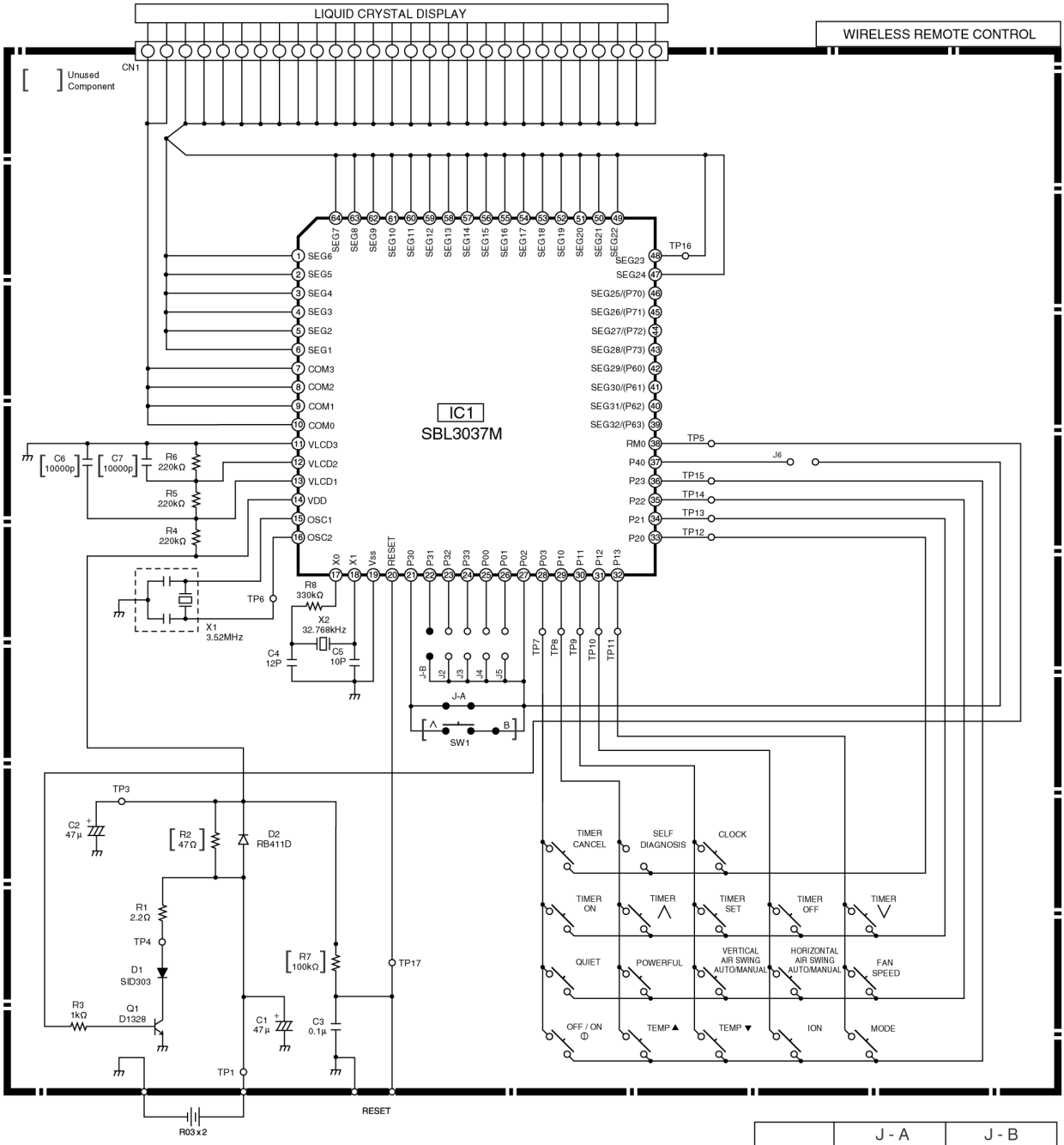
* Diode without indication.....MA165

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

TIMER TABLE

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

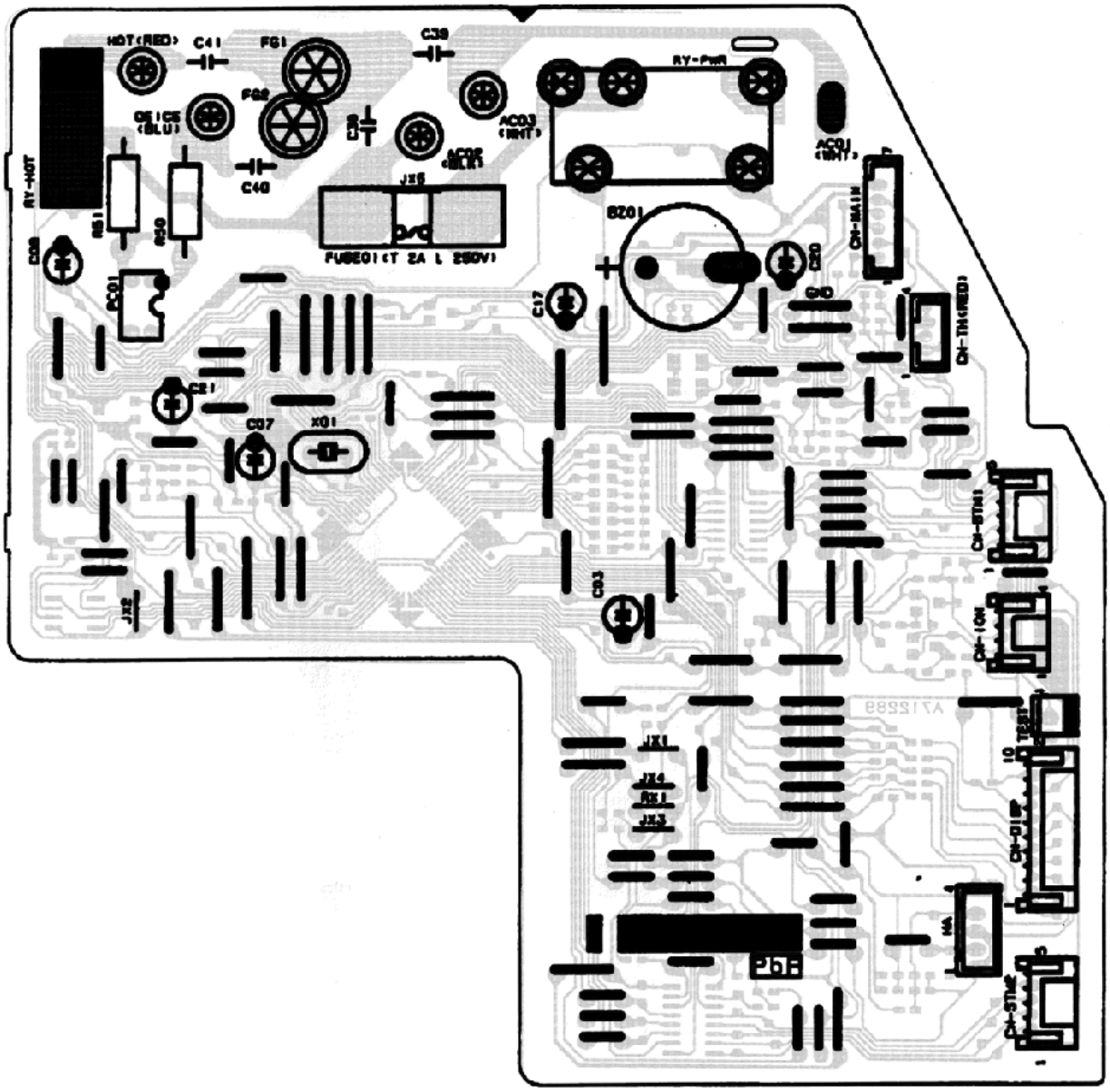
19.1. REMOTE CONTROL



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

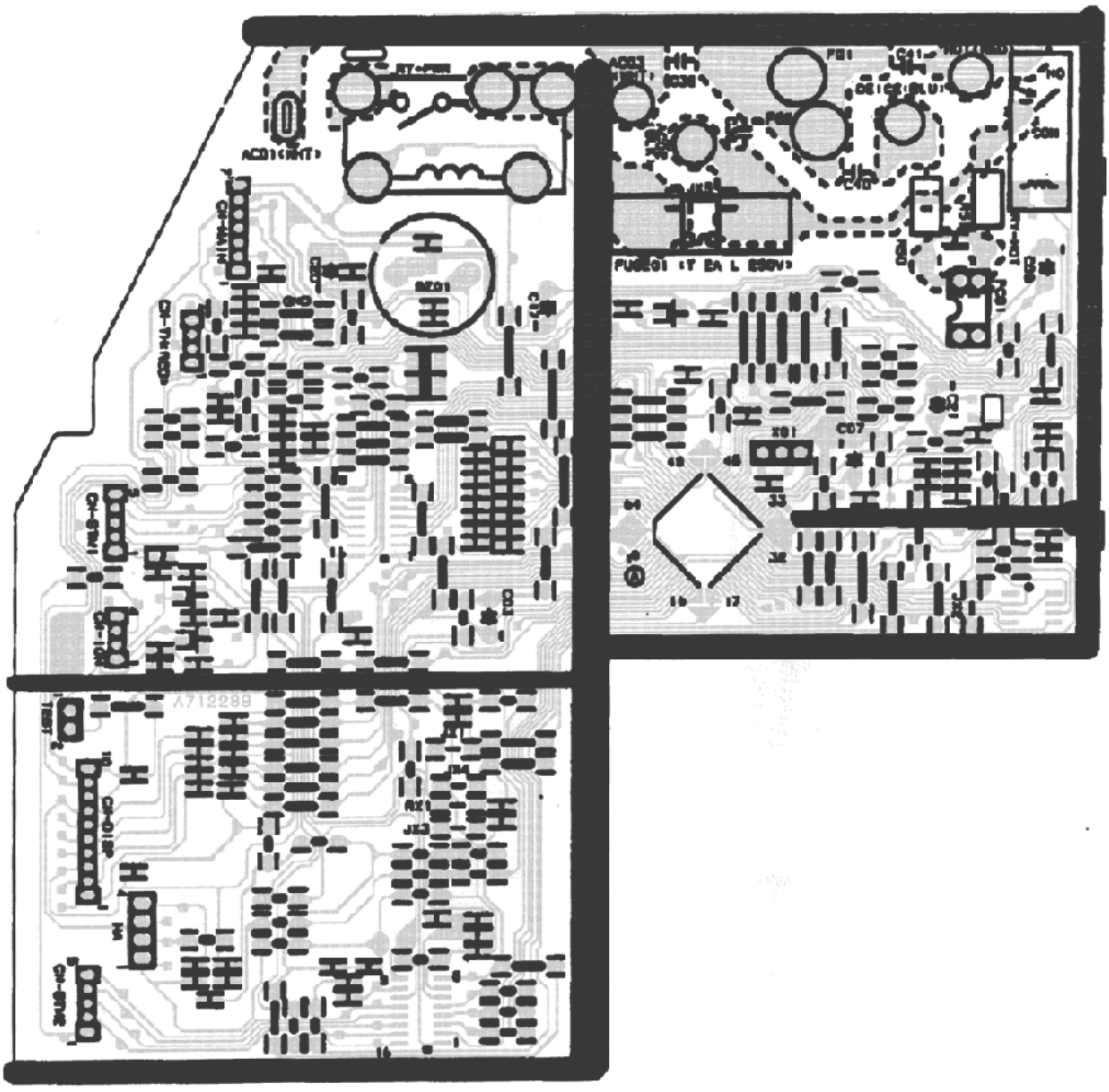
19.2. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

TOP VIEW



19.3. PRINT PATTERN
INDOOR UNIT PRINTED CIRCUIT BOARD

BOTTOM VIEW



19.4. PRINT PATTERN
OUTDOOR UNIT PRINTED CIRCUIT BOARD