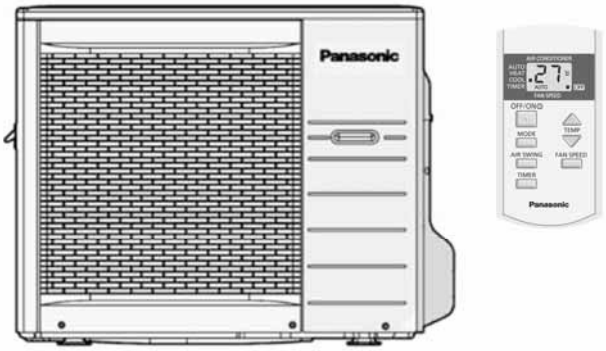
Order No: PHAAM1103113C3

Service Manual

Air Conditioner



Indoor Unit	Outdoor Unit
CS-YA18MKD	CU-YA18MKD
CS-YA24MKD	CU-YA24MKD

⚠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 products dealt with in this service information by anyone else could result in serious injury or death.

TABLE OF CONTENTS

Panasonic®

1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before perform any servicing.
- Electrical work must be installed or serviced by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model 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 or servicing 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.

- The items to be followed are classified by the symbols:

⃠	This symbol denotes item that is PROHIBITED from doing.

- Carry out test running to confirm that no abnormality occurs after the servicing. 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. Do not modify the machine, part, material during repairing service.	
2. If wiring unit is supplied as repairing part, do not repair or connect the wire even only partial wire break. Exchange the whole wiring unit.	
3. Do not wrench the fasten terminal. Pull it out or insert it straightly.	
4. Engage dealer or specialist for installation and servicing. If installation of servicing done by the user is defective, it will cause water leakage, electrical shock or fire.	
5. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electric shock or fire.	
6. Use the attached accessories parts and specified parts for installation and servicing. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
7. 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.	
8. For electrical work, follow the local national wiring standard, regulation and the 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.	
9. This equipment is strongly recommended to install with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fire in case equipment breakdown or insulation breakdown.	
10. Do not use joint cable for indoor / outdoor connection cable. Use the specified Indoor/Outdoor connection cable, refer to installation instruction CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor / outdoor connection. Clamp the cable so that no external force will be acted on the terminal. If connecting or fixing is not perfect, it will cause heat up or fire at the connection.	
11. 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 or fire at the connection point of terminal, fire or electrical shock.	
12. When install or relocate air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). (Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.).	
13. Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit at veranda of high rise building, child may climb up to outdoor unit and cross over the handrail and causing accident.	
14. This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electric shock in case equipment breakdown or insulation breakdown.	⃠
15. Keep away from small children, the thin film may cling to nose and mouth and prevent breathing.	⃠
16. Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.	⃠
17. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.	⃠
18. During pump down operation, stop the compressor before remove the refrigeration piping. (Removal of compressor while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.)	⃠

⚠ WARNING
20. After completion of installation or service, confirm there is no leakage or refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
21. Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when refrigerant contacts with fire.
22. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
23. Must not use other parts except original parts described in catalog and manual.

⚠ CAUTION
1. 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.
2. Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
3. Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
4. Do not touch outdoor unit air inlet and aluminium fin. It may cause injury.
5. Select an installation location which is easy for maintenance.
6. Pb free solder has a higher melting point than standard solder; typically the melting point is 50°F – 70°F (30°C – 40°C) higher. Please use a high temperature solder 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).
7. Power supply connection to the air conditioner. Connect the power supply cord of the air conditioner to the mains using one of the following methods. 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. i. Power supply connection to the receptacle using a power plug. Use an approved 15/16A (3/4~1.5HP) or 16A (2.0HP) or 20A (2.5HP) or 25A (3.0HP) power plug with earth pin for the connection to the socket. ii. Power supply connection to a circuit breaker for the permanent component. Use an approved 16A (3/4~2.0HP) or 20A (2.5HP) or 25A (3.0HP) circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.
8. Do not release refrigerant during piping work for installation, servicing, reinstallation and during repairing a refrigerant parts. Take care of the liquid refrigerant, it may cause frostbite.
9. Installation or servicing work: It may need two people to carry out the installation or servicing work.
10. Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
11. Do not sit or step on the unit, you may fall down accidentally.
12. Do not touch the sharp aluminium fin, sharp parts may cause injury. If you are required to handle sharp parts during installation or servicing, please wear hand glove. Sharp parts may cause injury.

2. Specification

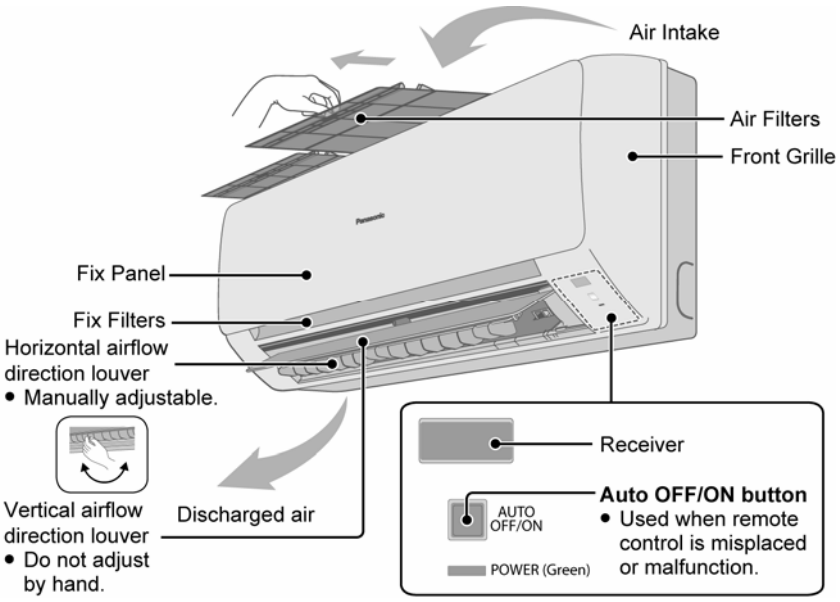
Model		Indoor	CS-YA18MKD		CS-YA24MKD	
		Outdoor	CU-YA18MKD		CU-YA24MKD	
Performance Test Condition			NEW JIS		NEW JIS	
Power Supply		Phase, Hz	Single, 50		Single, 50	
		V	220	230	220	230
Cooling	Capacity	kW	5.20	5.20	6.70	6.70
		BTU/h	17700	17700	22900	22900
		kJ/h	18720	18720	24120	24120
	Running Current	A	8.5	8.3	12.5	12.4
	Input Power	W	1.85k	1.89k	2.69k	2.73k
	EER	W/W	2.81	2.75	2.49	2.45
		BTU/hW	9.57	9.37	8.51	8.39
	Power Factor	%	99	99	98	96
	Indoor Noise (H / L)	dB-A	44 / 39	44 / 39	48 / 42	48 / 42
		Power Level dB	60 / -	60 / -	64 / -	64 / -
	Outdoor Noise (H / L)	dB-A	55 / -	56 / -	55 / -	56 / -
		Power Level dB	71 / -	72 / -	71 / -	72 / -
Heating	Capacity	kW	5.55	5.60	7.50	7.50
		BTU/h	18900	19100	25600	25600
		kJ/h	19980	20160	27000	27000
	Running Current	A	8.2	8.1	12.3	12.0
	Input Power	W	1.78k	1.84k	2.68k	2.71k
	COP	W/W	3.12	3.04	2.80	2.77
		BTU/hW	10.62	10.38	9.55	9.45
	Power Factor	%	99	99	99	98
	Indoor Noise (H / L)	dB-A	43 / 39	43 / 39	47 / 42	47 / 42
		Power Level dB	59 / -	59 / -	63 / -	63 / -
	Outdoor Noise (H / L)	dB-A	56 / -	57 / -	56 / -	57 / -
		Power Level dB	72 / -	73 / -	72 / -	73 / -
Max Current (A) / Max Input Power (W)			10.2 / 2.20k		14.6 / 3.25k	
Starting Current (A)			40.0		60.0	
Compressor	Type		Rotary (1 cylinder) rolling piston type		Rotary (1 cylinder) rolling piston type	
	Motor Type		Induction (2 poles)		Induction (2 poles)	
	Output Power	W	1.5k		2.0k	
Indoor Fan	Type		Cross-Flow Fan		Cross-Flow Fan	
	Material		ASG30K1		ASG30K1	
	Motor Type		Transistor (8 poles)		Transistor (8 poles)	
	Input Power	W	94.8 - 94.8		94.8 - 94.8	
	Output Power	W	40		40	
	Speed Lo	rpm	Cooling: 1040 Heating: 1100		Cooling: 1150 Heating: 1230	
	Speed Me	rpm	Cooling: 1140 Heating: 1140		Cooling: 1270 Heating: 1270	
	Speed Hi	rpm	Cooling: 1240 Heating: 1310		Cooling: 1390 Heating: 1530	
Outdoor Fan	Type		Propeller Fan		Propeller Fan	
	Material		PP Resin		PP Resin	
	Motor Type		Induction (6 poles)		Induction (6 poles)	
	Input Power	W	158.3 - 158.3		158.3 - 158.3	
	Output Power	W	80		80	
	Speed Lo	rpm	460 - 490		460 - 490	

		Hi	rpm	815 - 830		815 - 830	
Moisture Removal			L/h (Pt/h)	2.8 (5.9)		3.6 (7.6)	
Indoor Airflow		Lo	m^3/min (ft^3/min)	Cooling: 13.00 (459) Heating: 14.00 (494)		Cooling: 14.30 (505) Heating: 15.60 (551)	
		Me	m^3/min (ft^3/min)	Cooling: 14.60 (515) Heating: 14.60 (515)		Cooling: 16.20 (572) Heating: 16.20 (572)	
		Hi	m^3/min (ft^3/min)	Cooling: 16.40 (579) Heating: 17.10 (604)		Cooling: 18.60 (657) Heating: 20.00 (706)	
Outdoor Airflow		Hi	m^3/min (ft^3/min)	50.7 (1790)	51.7 (1830)	50.7 (1790)	51.7 (1830)
Refrigeration Cycle		Control Device		Capillary Tube		Capillary Tube	
		Refrigerant Oil	cm^3	ATMOS M60 or Suniso 4GDID (700)		ATMOS M60 or Suniso 4GDID (1130)	
		Refrigerant Type	g (oz)	R22, 1.71k (60.4)		R22, 2.05k (72.4)	
Dimension		Height(I/D / O/D)	mm (inch)	290 (11-7/16)	750 (29-17/32)	290 (11-7/16)	750 (29-17/32)
		Width (I/D / O/D)	mm (inch)	1070 (42-5/32)	875 (34-15/32)	1070 (42-5/32)	875 (34-15/32)
		Depth (I/D / O/D)	mm (inch)	220 (8-11/16)	345 (13-19/32)	220 (8-11/16)	345 (13-19/32)
Weight		Net (I/D / O/D)	kg (lb)	12 (26)	57 (126)	12 (26)	60 (132)
Piping	Pipe Diameter (Liquid / Gas)		mm (inch)	6.35 (1/4") / 12.70 (1/2")		6.35 (1/4") / 15.88 (5/8")	
	Standard length		m (ft)	5.0 (16.4)		5.0 (16.4)	
	Length range (min – max)		m (ft)	3 ~ 15 (9.8 ~ 49.2)		3 ~ 15 (9.8 ~ 49.2)	
	I/D & O/D Height different		m (ft)	10.0 (32.8)		10.0 (32.8)	
	Additional Gas Amount		g/m (oz/ft)	20 (0.2)		30 (0.3)	
	Length for Additional Gas		m (ft)	7.5 (24.6)		7.5 (24.6)	
Drain Hose		Inner Diameter	mm	12		12	
		Length	mm	650		650	
Indoor Heat Exchanger		Fin Material		Aluminium (Pre coated)		Aluminium (Pre coated)	
		Fin Type		Slit Fin		Slit Fin	
		Row x Stage x FPI		2 x 15 x 21		2 x 15 x 21	
		Size (W x H x L)	mm	810 x 315 x 25.4		810 x 315 x 25.4	
Outdoor Heat Exchanger		Fin Material		Aluminium (Blue coated)		Aluminium (Blue coated)	
		Fin Type		Corrugated Fin		Corrugated Fin	
		Row x Stage x FPI		2 x 28 x 17		2 x 28 x 17	
		Size (W x H x L)	mm	44.0 x 711.2 x 782.4:816.9		44.0 x 711.2 x 782.4:816.9	
Air Filter		Material		Polypropelene		Polypropelene	
		Type		One-touch		One-touch	
Power Supply				Indoor Power Supply		Indoor Power Supply	
Power Supply Cord			A	16		20	
Thermostat				-		-	
Protection Device				-		-	
				DRY BULB	WET BULB	DRY BULB	WET BULB
Indoor Operation Range		Cooling	Maximum	32	23	32	23
			Minimum	16	11	16	11
		Heating	Maximum	30	-	30	-
			Minimum	16	-	16	-
Outdoor Operation Range		Cooling	Maximum	43	26	43	26
			Minimum	16	11	16	11
		Heating	Maximum	24	18	24	18
			Minimum	-5	-6	-5	-6

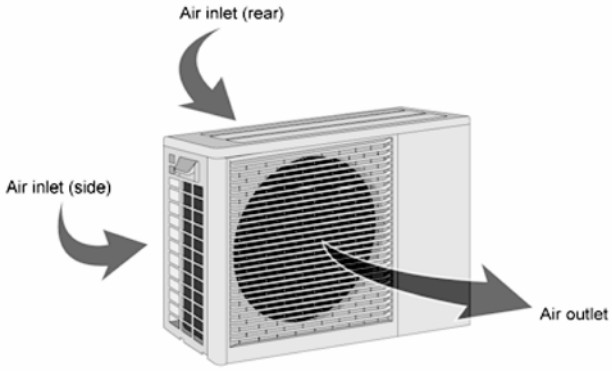
1. Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb)
2. Heating capacities are based on indoor temperature of 20°C Dry Bulb (68°F Dry Bulb) and outdoor air temperature of 7°C Dry Bulb (44.6°F Dry Bulb), 6°C Wet Bulb (42.8°F Wet Bulb)
3. Specifications are subjected to change without prior notice for further improvement.

3. Location of Controls and Components

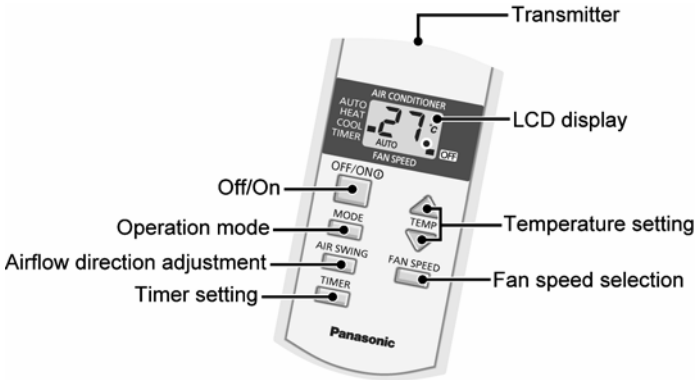
3.1 Indoor Unit



3.2 Outdoor Unit

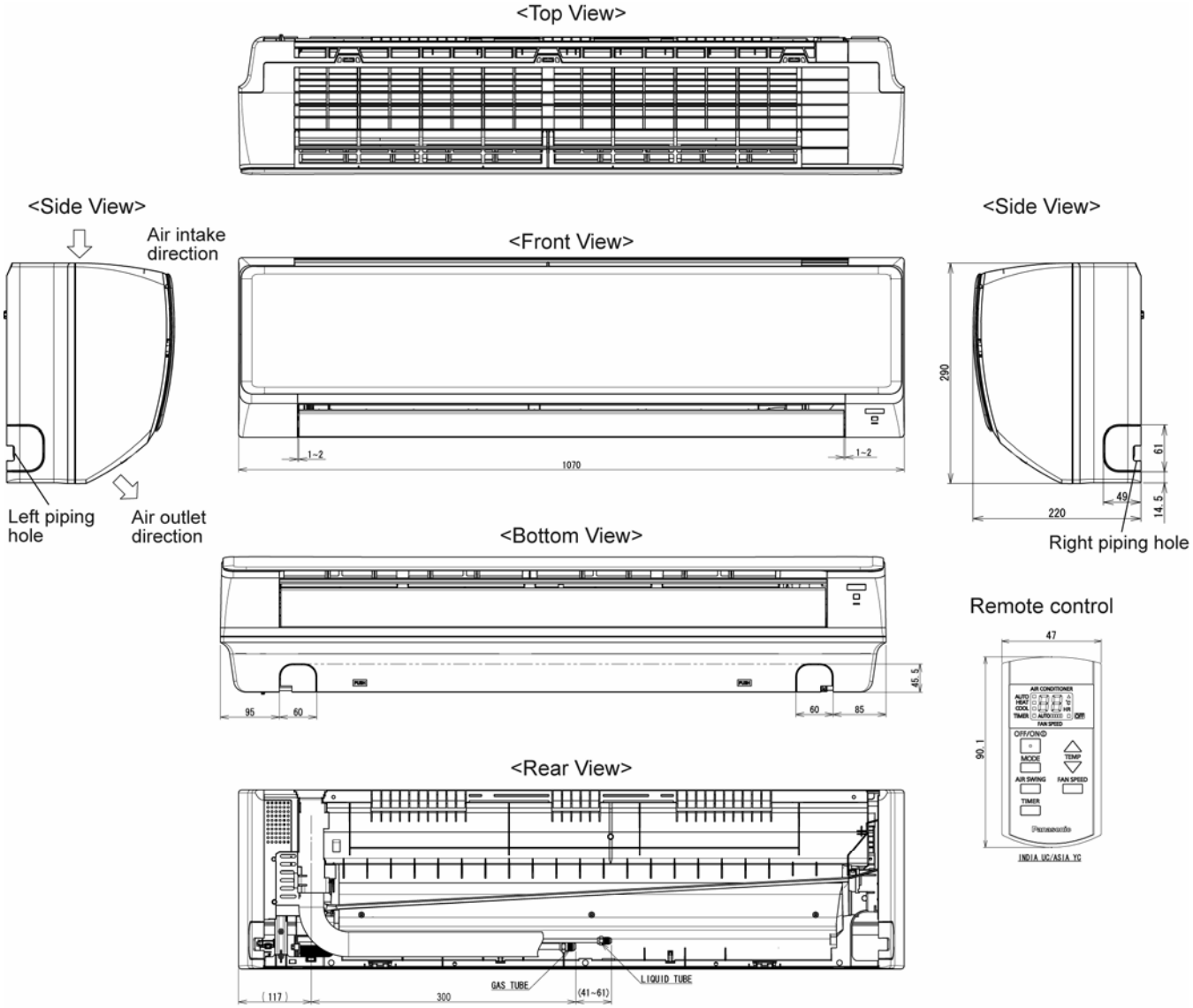


3.3 Remote Control

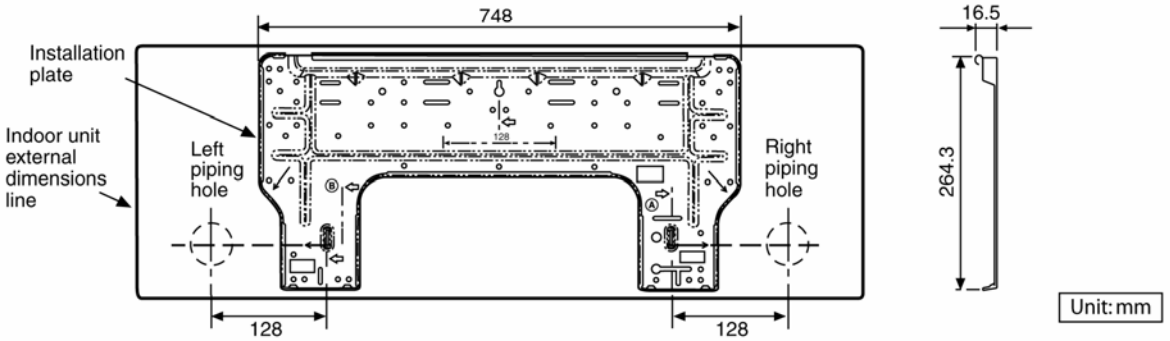


4. Dimensions

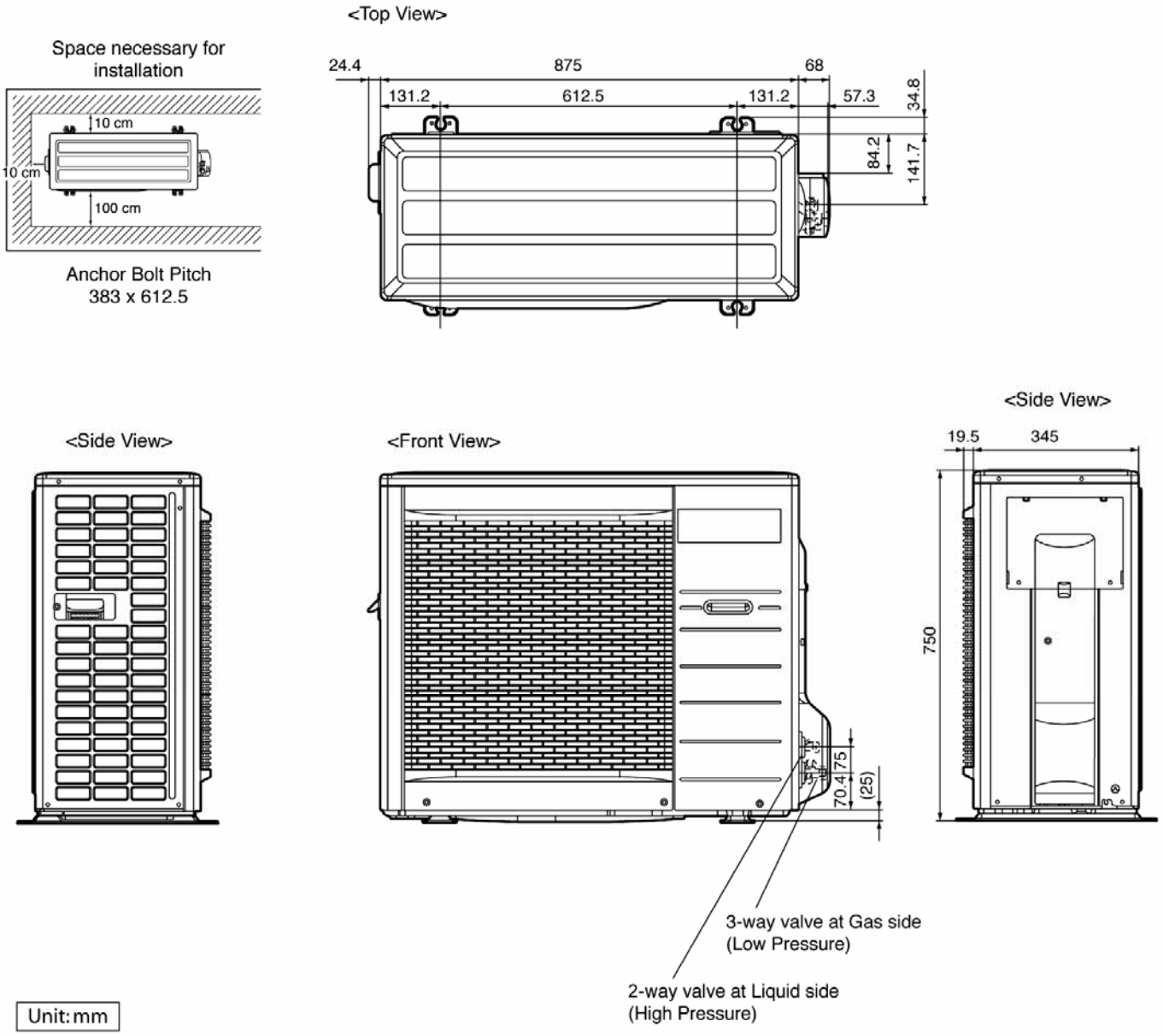
4.1 Indoor Unit



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

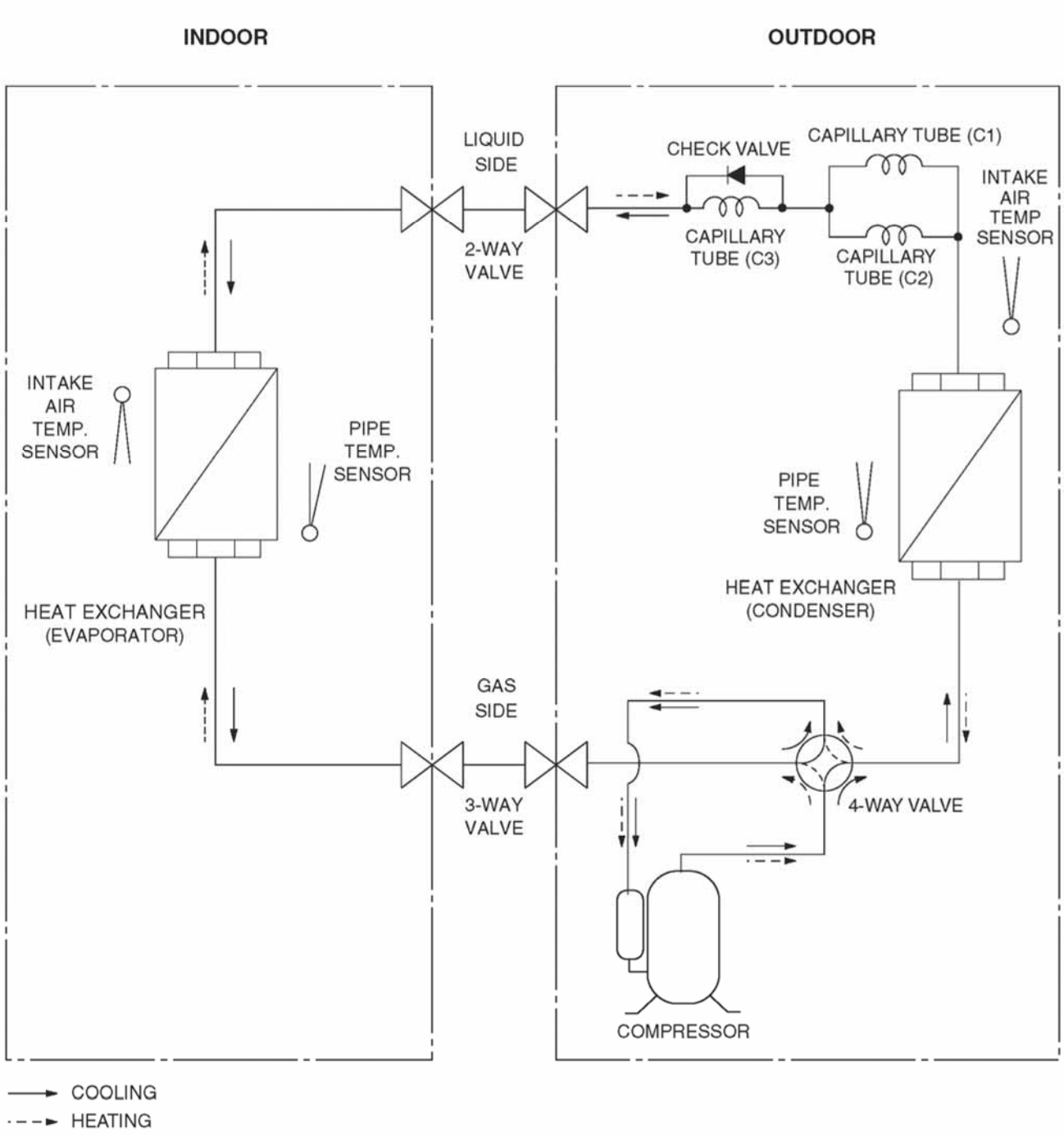


4.2 Outdoor Unit

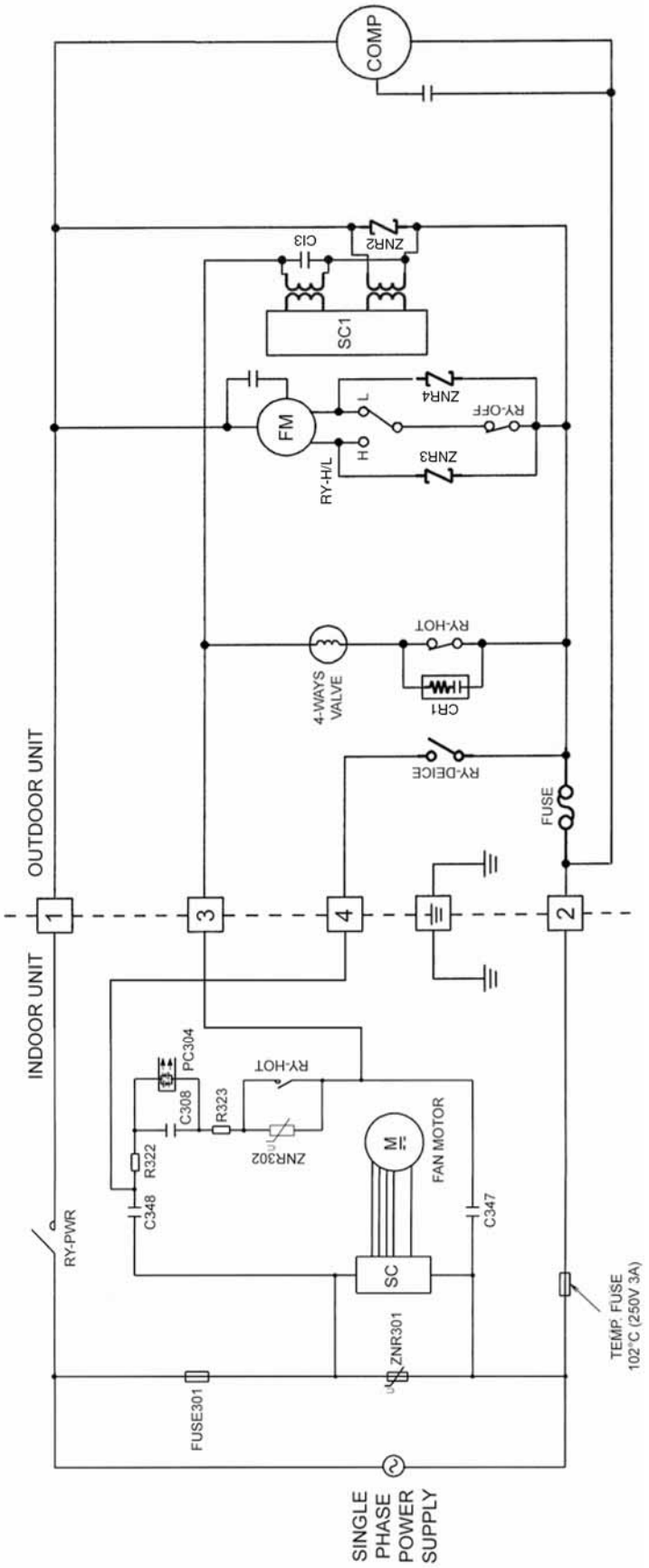


Unit: mm

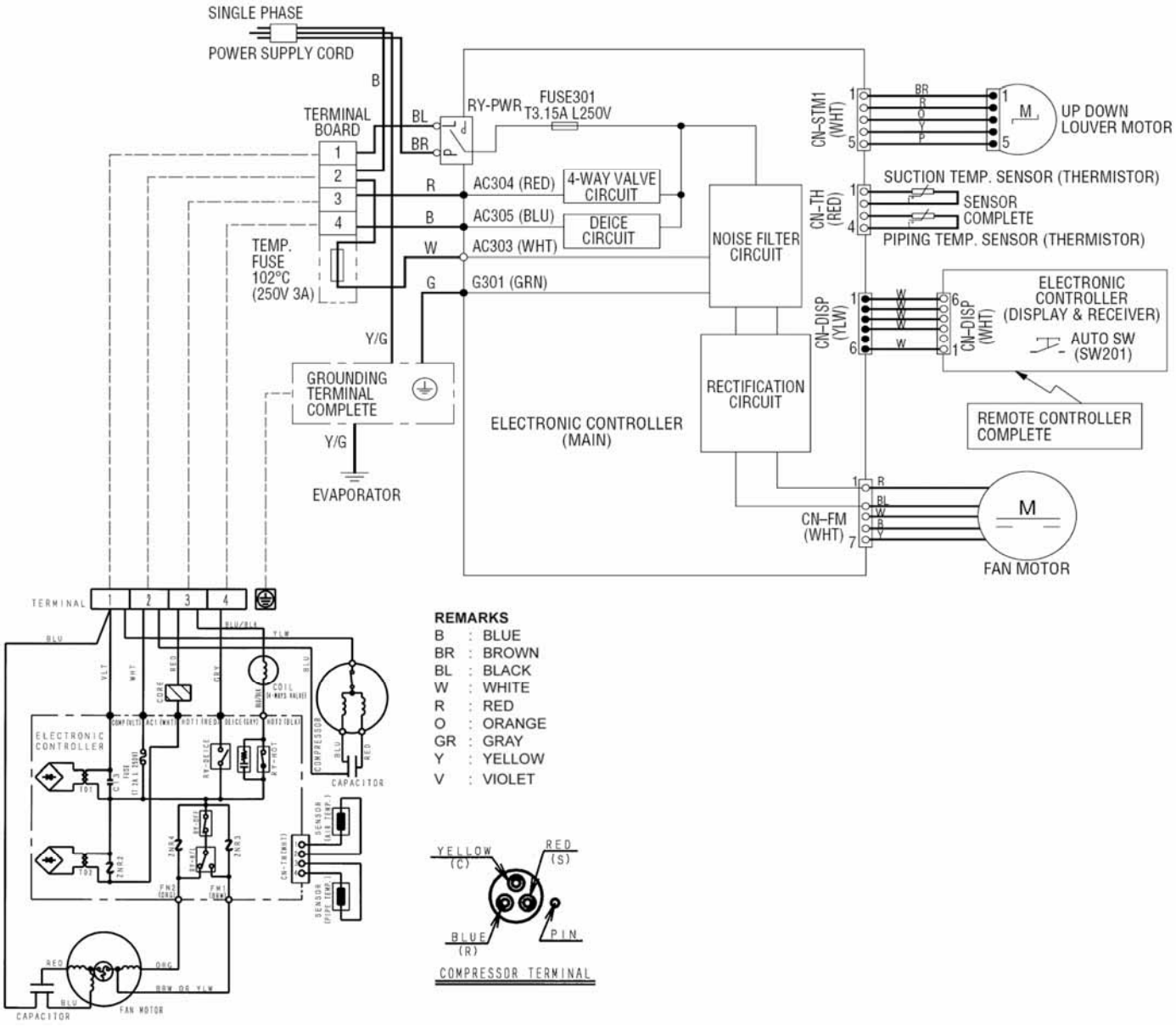
5. Refrigeration Cycle Diagram



6. Block Diagram



7. Wiring Connection Diagram



Resistance of Outdoor Fan Motor Windings

MODEL	CU-YA18MKD
CONNECTION	CWA951353J
YELLOW-BLUE	74.60Ω
YELLOW-ORANGE	122.20Ω
YELLOW-RED	83.40Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-YA18MKD
CONNECTION	2JS318D3AA04
C-R	1.618Ω
C-S	3.718Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Outdoor Fan Motor Windings

MODEL	CU-YA24MKD
CONNECTION	CWA951353J
YELLOW-BLUE	74.60Ω
YELLOW-ORANGE	122.20Ω
YELLOW-RED	83.40Ω

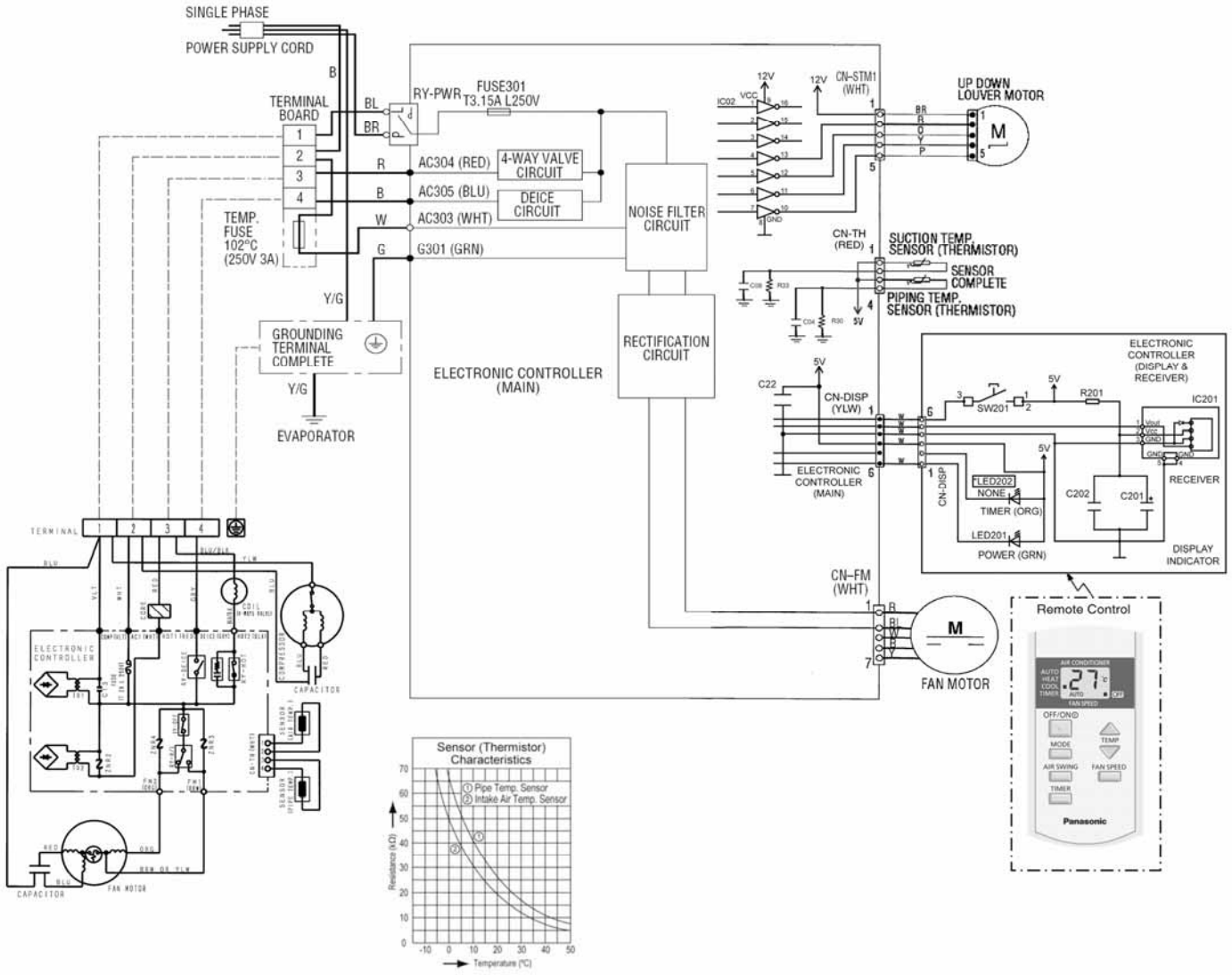
Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-YA24MKD
CONNECTION	2JS438D3CC04
C-R	1.121Ω
C-S	2.535Ω

Note: Resistance at 20°C of ambient temperature.

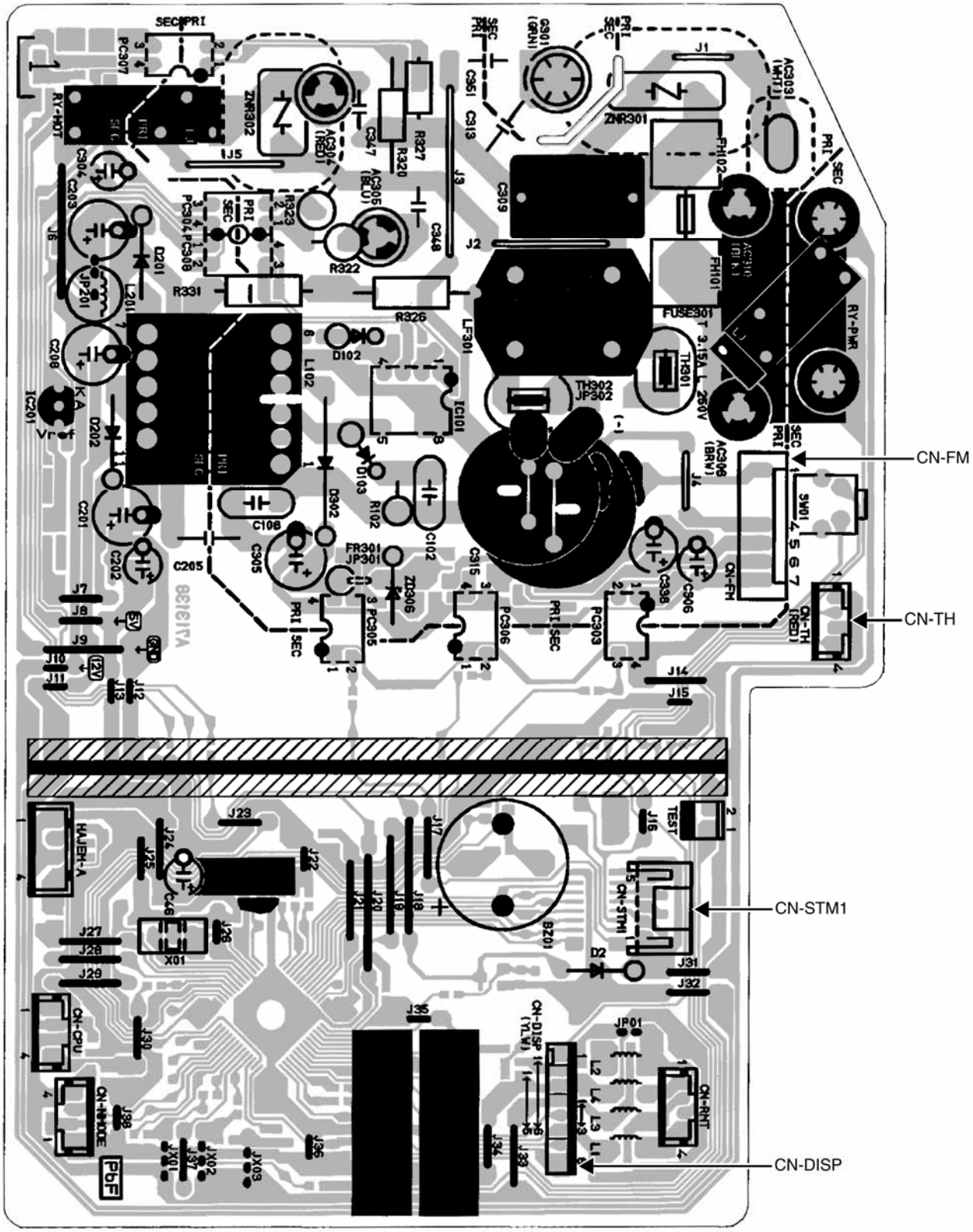
8. Electronic Circuit Diagram



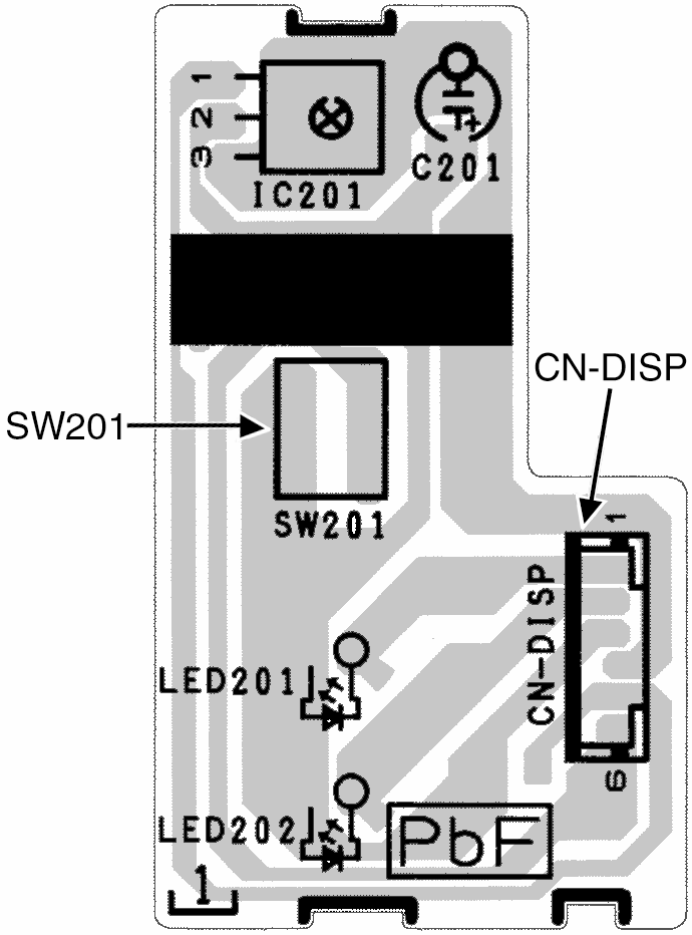
9. Printed Circuit Board

9.1 Indoor Unit

9.1.1 Main Printed Circuit Board

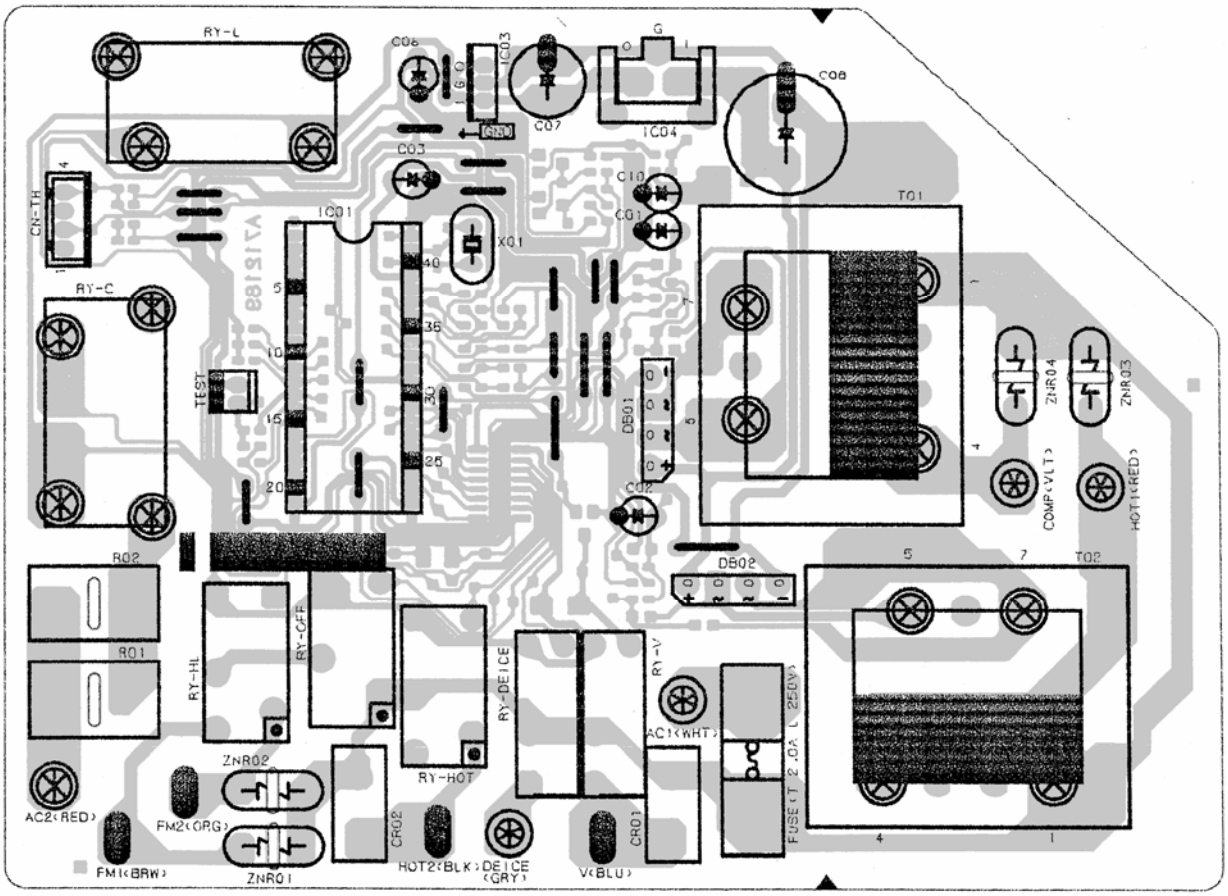


9.1.2 Indicator Printed Circuit Board



9.2 Outdoor Unit

9.2.1 Main Printed Circuit Board



10. Installation Instruction

10.1 Select the Best Location

10.1.1 Indoor Unit

- Do not install the unit in excessive oil fume area such as kitchen, workshop and etc.
- 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 2.5 m.

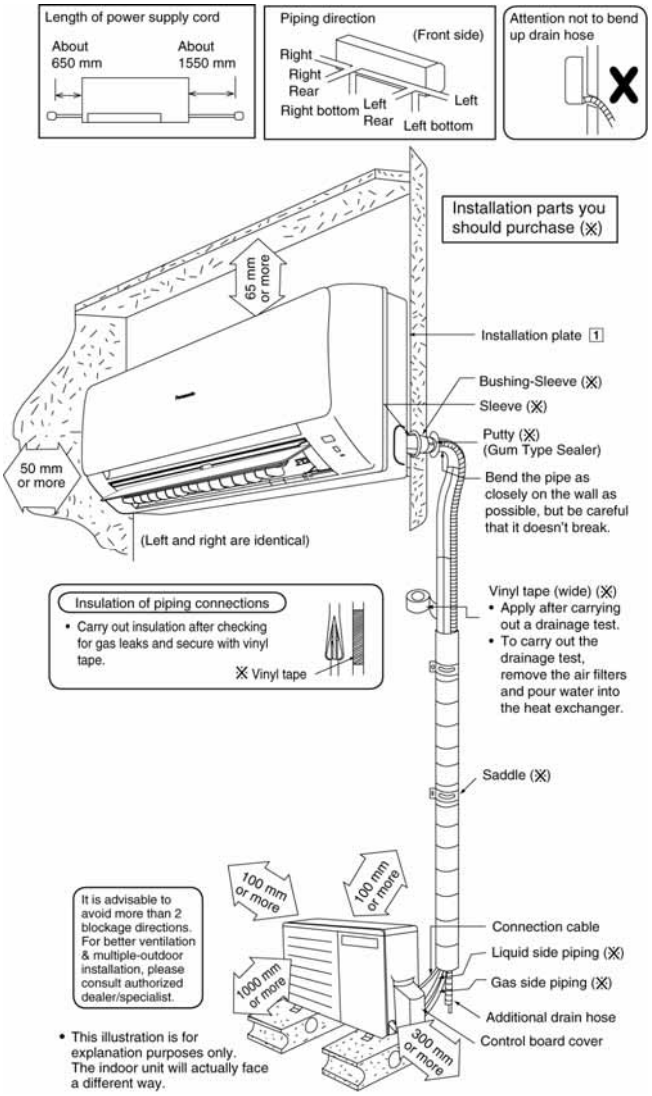
10.1.2 Outdoor Unit

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

Model	Horse Power (HP)	Piping size		Std. Length (m)	Max. Elevation (m)	Min. Piping Length (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)	Piping Length for add. gas (m)
		Gas	Liquid						
YA18***	2.0HP	12.7 mm (1/2")	6.35 mm (1/4")	5	10	3	15	20	7.5
YA24***	2.5HP	15.88 mm (5/8")			10	3	15	30	7.5

Example: For YA18***
If the unit is installed at 10 m distance, the quantity of additional refrigerant should be 50 g….(10-7.5) m x 20 g/m = 50 g.

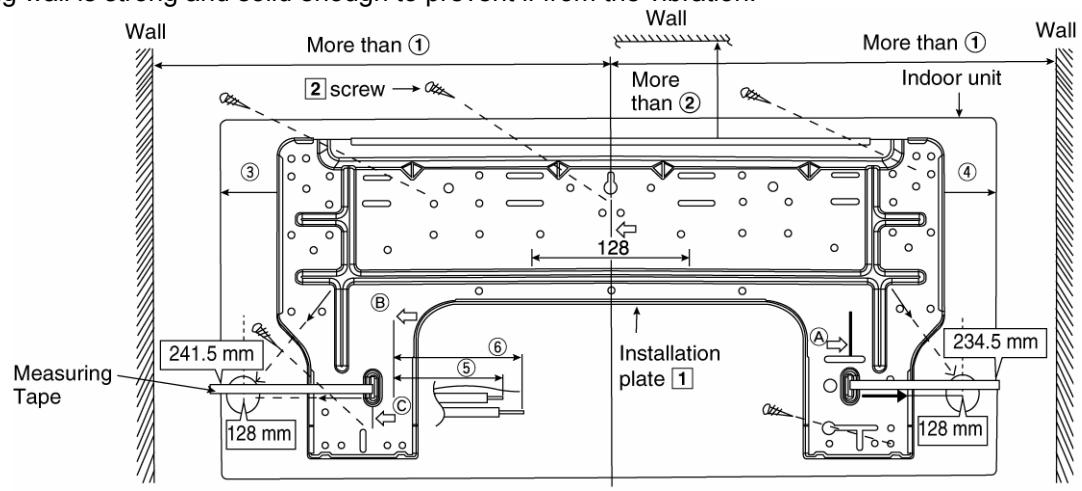
10.1.3 Indoor/Outdoor Unit Installation Diagram



10.2 Indoor Unit

10.2.1 How to Fix Installation Plate

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



Model	Dimension					
	①	②	③	④	⑤	⑥
YA18***, YA24***	585mm	83mm	165mm	158mm	169mm	219mm

The centre of installation plate should be at more than ① at right and left of the wall.
The distance from installation plate edge to ceiling should more than ②.
From installation plate left edge to unit's left side is ③.
From installation plate right edge to unit's right side is ④.

Ⓑ : For left side piping, piping connection for liquid should be about ⑤ from this line.
: For left side piping, piping connection for gas should be about ⑥ from this line.

1 Mount the installation plate on the wall with 5 screws or more (at least 5 screws).
(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.

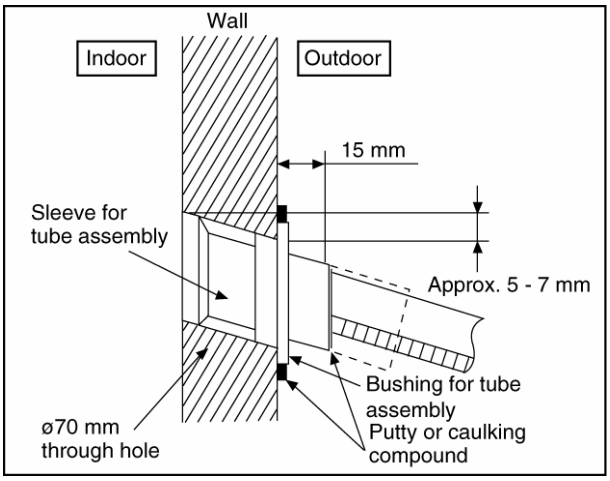
2 Drill the piping plate hole with ø70mm hole-core drill.
- Putting measuring tape at position as shown in the diagram above.
The hole center is obtained by measuring the distance namely 128 mm for left and right hole respectively. Another method is intersection point of arrow mark extension.
The meeting point of the extension arrow mark is the hole center position.
- Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side. (refer to step 3)

10.2.2 To Drill a Hole in the Wall and Install a Sleeve of Piping

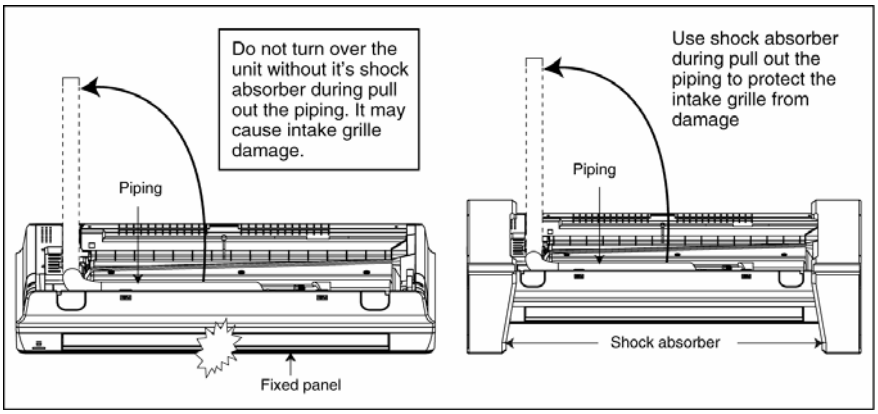
1 Insert the piping sleeve to the hole.
2 Fix the busing to the sleeve.
3 Cut the sleeve until it extrudes about 15mm from the wall.

⚠ Caution
When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

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



10.2.3 Indoor Unit Installation



10.2.3.1 For the right rear piping

Step-1 Pull out the Indoor piping

↓

Step-2 Install the Indoor Unit

↓

Step-3 Secure the Indoor Unit

↓

- If indoor power supply, excess length of power supply must arrange accordingly, please refer "Power supply cord arrangement" before secure the indoor unit.

Step-4 Insert the connection cable

- Remove front grille and metal cover.
- Insert the cables from bottom of the unit through the control board hole until terminal board area.

10.2.3.2 For the right and right bottom piping

Step-1 Pull out the Indoor piping

↓

Step-2 Install the Indoor Unit

↓

Step-3 Insert the connection cable

↓

- Remove front grille and metal cover.
- Insert the cables from bottom of the unit through the control board hole until terminal board area.

Step-4 Secure the Indoor Unit

- If indoor power supply, excess length of power supply must arrange accordingly, please refer "Power supply cord arrangement" before secure the indoor unit.

10.2.3.3 For the embedded piping

Step-1 Replace the drain hose

↓

Step-2 Bend the embedded piping

↓

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

Step-3 Pull the connection cable into Indoor Unit

↓

- Remove front grille and metal cover.
- Insert the cables from bottom of the unit through the control board hole until terminal board area.

Step-4 Cut and flare the embedded piping

↓

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

Step-5 Install the Indoor Unit

↓

Step-6 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.)

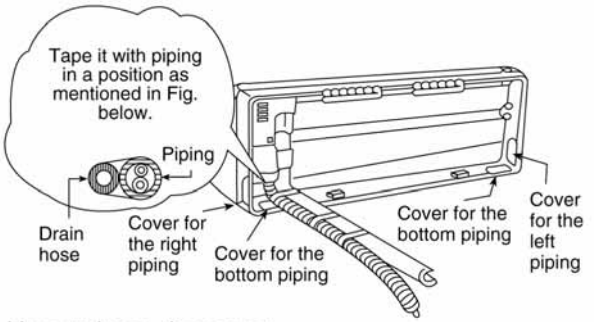
Step-7 Insulate and finish the piping

↓

- Please refer to "Insulation of piping connection" column as mentioned in indoor/outdoor unit installation.

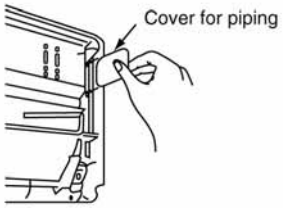
Step-8 Secure the Indoor Unit

Right Rear piping

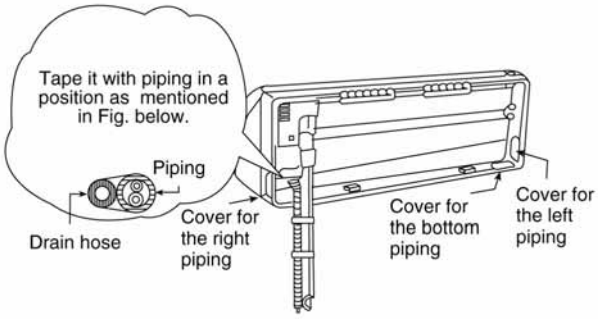


How to keep the cover

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.)

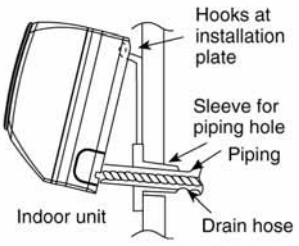


Right and Right Bottom piping



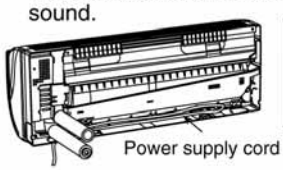
Install the indoor unit

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



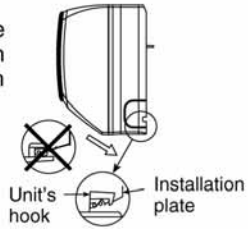
Secure the Indoor Unit

1. Power supply cord arrangement
   Excess length of power supply cord should be arranged behind the chassis at piping keeping area as shown in the diagram without tying up in a bundle.
   Ensure that the power supply cord is not clamped in between unit's hook (2 position) and installation plate.
   Ensure that the power supply cord is not stretched between chassis back and installation plate. It may create squeak sound.

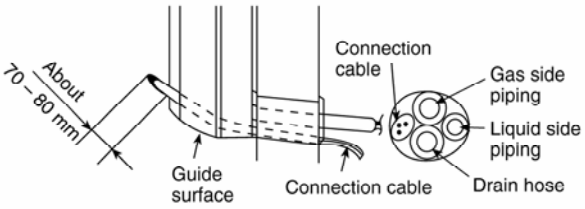


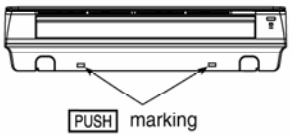
Do not tie up power supply cord into a bundle by band. It may generate heat and cause fire.

2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slot (sound click).



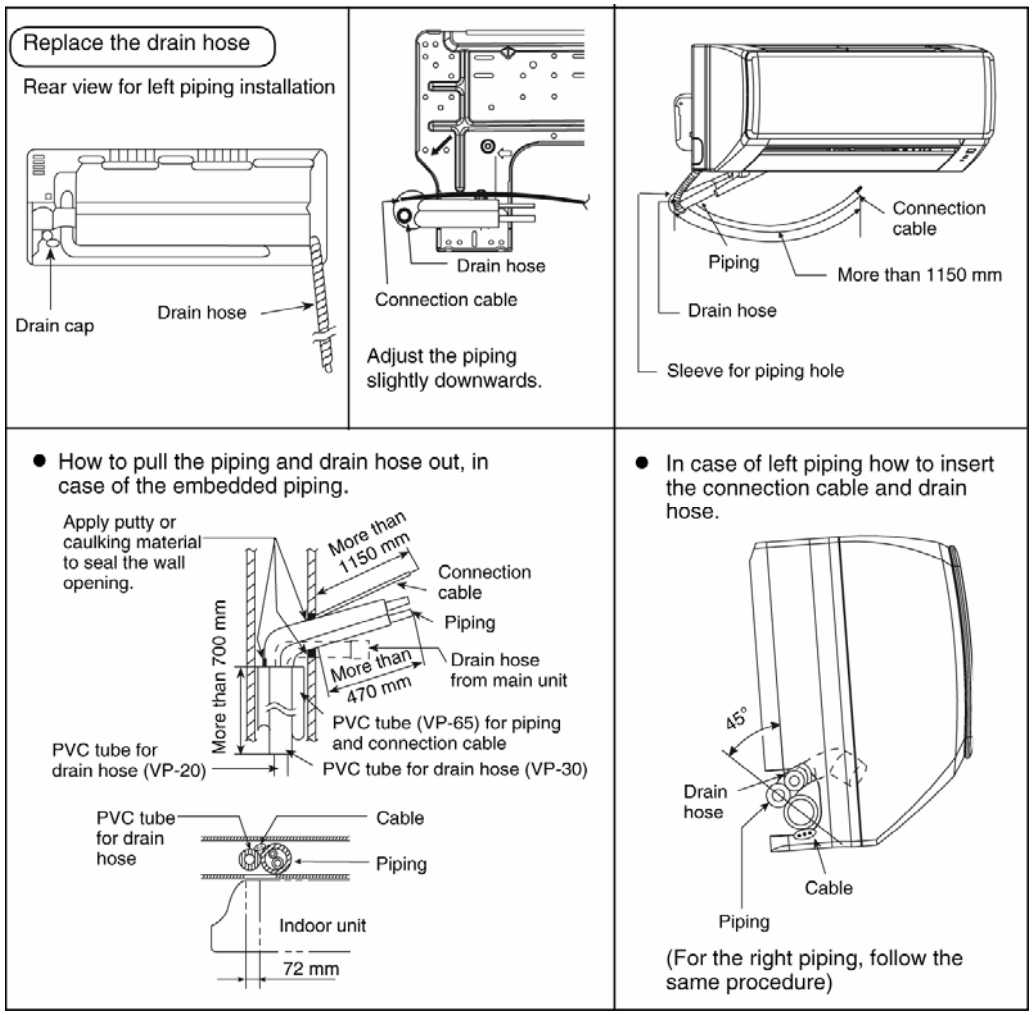
Insert the connection cable





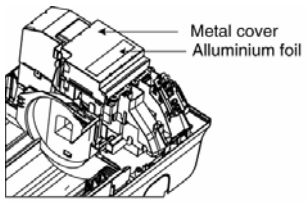
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

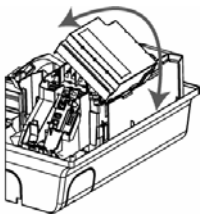
(This can be used for left rear piping and bottom piping also.)



10.2.4 Connect the Cable to the Indoor Unit

1 Install the indoor unit on the installing holder that mounted on the wall.
2 Remove front grille by loosening the screw.
3 Remove metal cover without damaging alluminium foil.



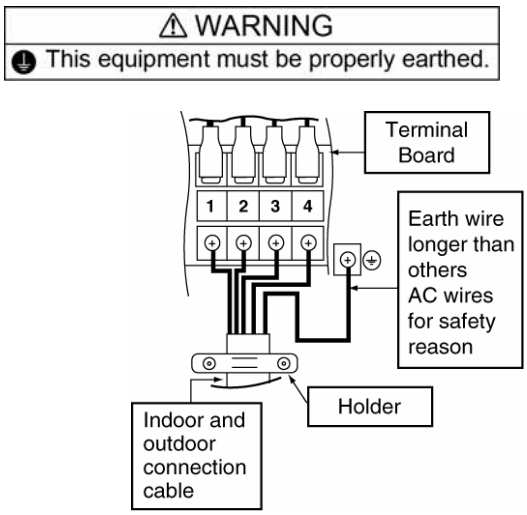


4 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 x 2.5 mm^2 (2.0 ~ 2.5HP) flexible cord, type designation 245 IEC 57 or heavier cord. Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.

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

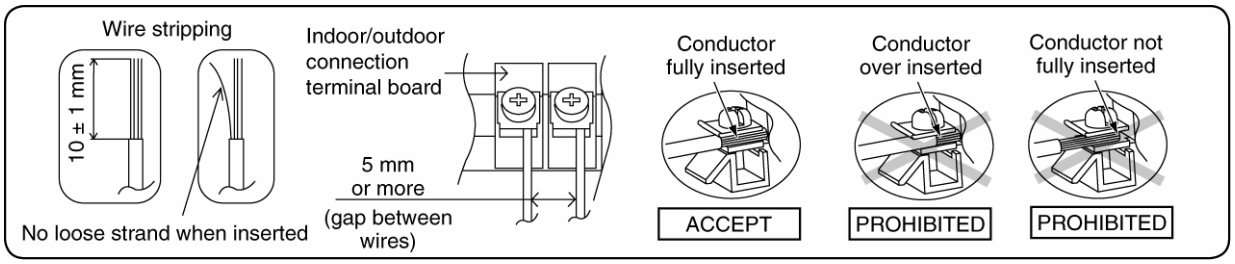
- Secure the connection cable onto the control board with the holder.

1 Secure the connection cable onto the control board with the holder.
2 Fix back metal cover to original position without damaging alluminium foil. Ensure metal cover is fitted at both end.



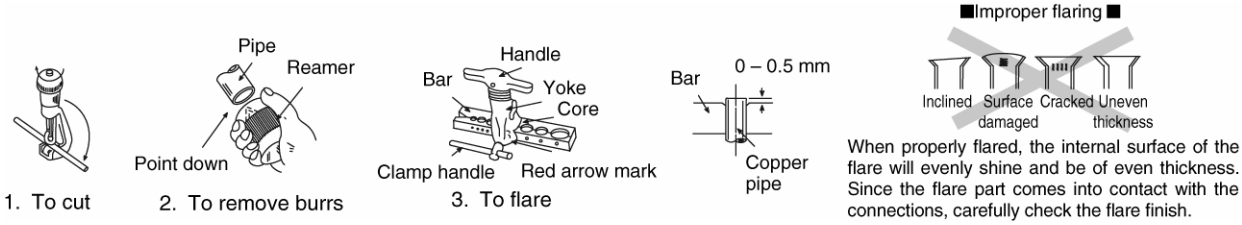
- Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

10.2.5 Wire Stripping and Connecting Requirement



10.2.5.1 Cutting and Flaring the Piping

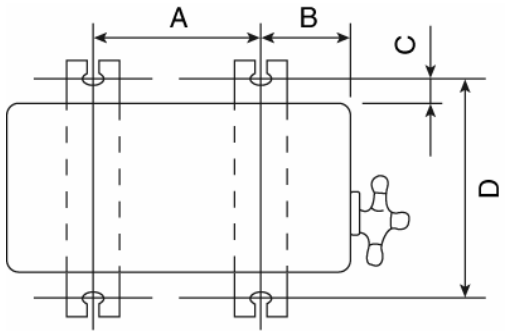
1 Please cut using pipe cutter and then remove the burrs.
2 Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3 Please make flare after inserting the flare nut onto the copper pipes.



10.3 Outdoor Unit

10.3.1 Install the Outdoor Unit

- After selecting the best location, start installation 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.



Model	A	B	C	D
YA18***, YA24***	612.5 mm	131 mm	19 mm	383 mm

10.3.2 Connecting the Piping

10.3.2.1 Connecting the Piping to Indoor

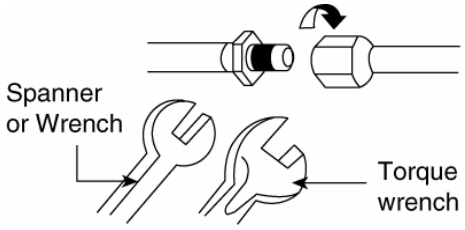
Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

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.

10.3.2.2 Connecting the Piping to Outdoor

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.
Make flare after inserting the flare nut (locate at valve) onto the copper pipe.
Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

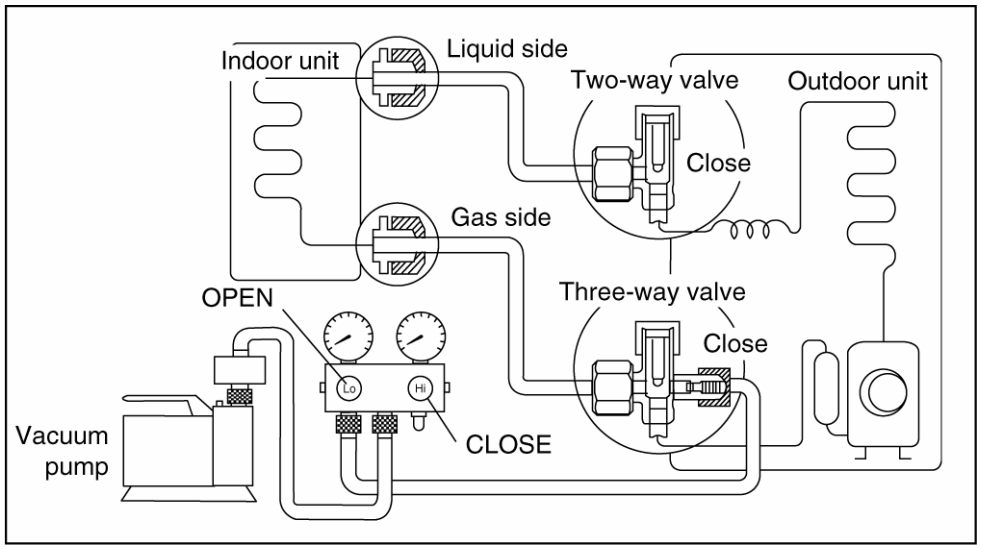


Do not overtighten, overtightening may cause gas leakage	
Piping size	Torque
6.35 mm (1/4”)	[18 N•m (1.8 kgf.m)]
9.52 mm (3/8”)	[42 N•m (4.3 kgf.m)]
12.7 mm (1/2”)	[55 N•m (5.6 kgf.m)]
15.88 mm (5/8”)	[65 N•m (6.6 kgf.m)]
19.05 mm (3/4”)	[100 N•m (10.2 kgf.m)]

10.3.3 Evacuation of the Equipment

FOR ENVIRONMENTAL PROTECTION, MANUFACTURER STRONGLY RECOMMENDS TO USE EVACUATION METHOD.

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



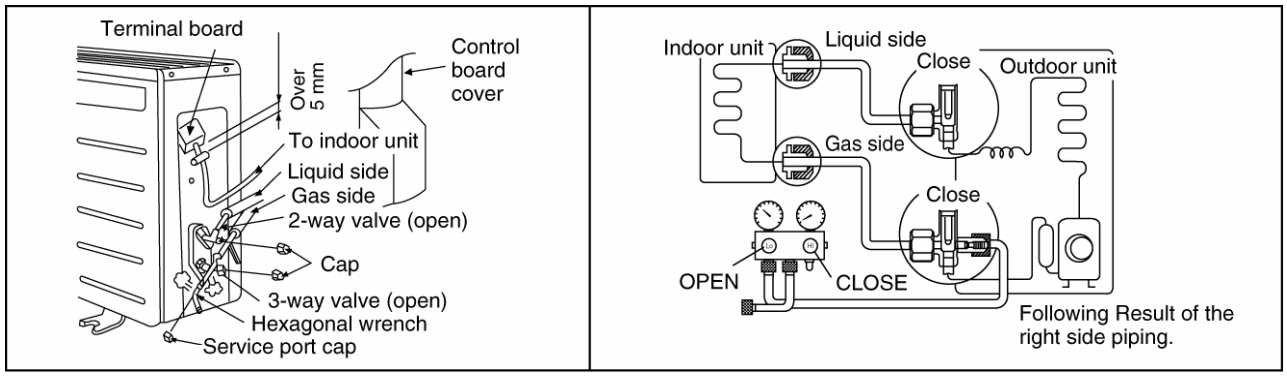
1 Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2 Connect the center hose of the charging set to a vacuum pump.
3 Turn on the power switch of 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 TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERENT GAS LEAKAGE.
5 Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
6 Tighten the service port caps of the 3-way valve at a torque of 18 N•m with a torque wrench.
7 Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8 Mount valve caps onto the 2-way valve and the 3-way valve.
   - Be sure to check for gas leakage.

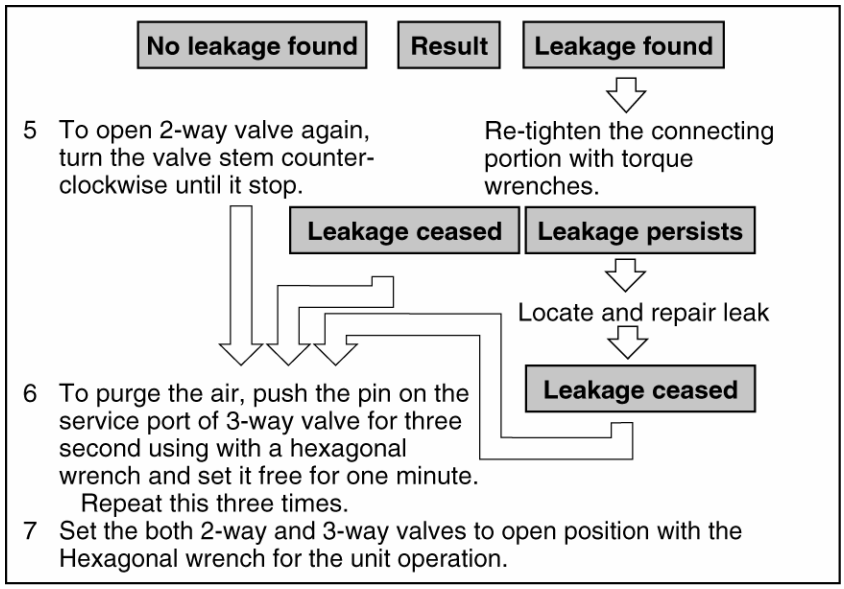
- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in the step ③ above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step ③.
- If the leak does not stop when the connections are retightened, repair location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

10.3.4 Air Purging of the Piping and Indoor

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

1 Remove the caps from the 2-way and 3-way valves.
2 Remove the service-port cap from the 3-way valves.
3 To open the valve, turn the valve stem of 2-way valve counter-clockwise approx. 90° and hold it there for ten seconds, then close it.
4 Check gas-leakage of the connecting portion of the pipings.
   - For the left pipings, refer to item 4(A).





4(A). Checking gas leakage for left piping

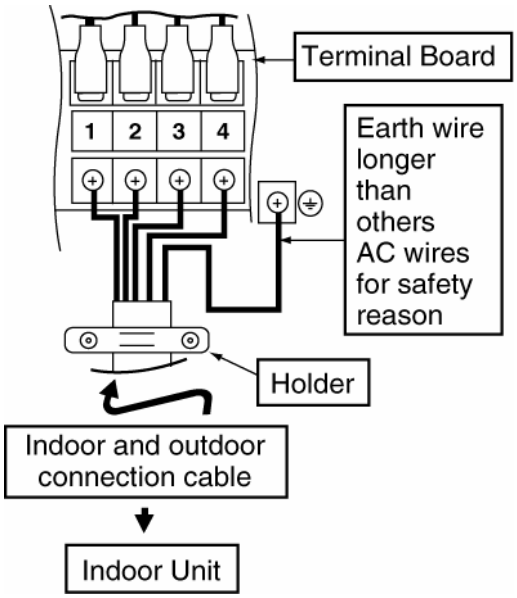
1 a. Connect the manifold gauge to the service port of 3-way valve.
   b. Measure the pressure.
2 a. Keep it for 5-10 minutes.
   b. Ensure that the pressure indicated on the gauge is the same as that of measured during the first time.

10.3.5 Connect the Cable to the Outdoor Unit

1 Remove the control board cover from the unit by loosening the screw.

2 **Connecting cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 5 x 2.5mm^2 (2.0~2.5HP) flexible cord, type designation 245 IEC 57 or heavier cord. Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.

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



3 Secure the cable onto the control board with the holder.

4 Attach the control board cover back to the original position with the screw.

5 For wire stripping and connection requirement, refer to instruction ⑤ of the indoor unit.

⚠ WARNING
⏚ This equipment must be properly earthed.

- Earth wire shall be Yellow/Green (Y/G) in colour and longer than the other AC wires for safety reason.

10.3.6 Pipe Insulation

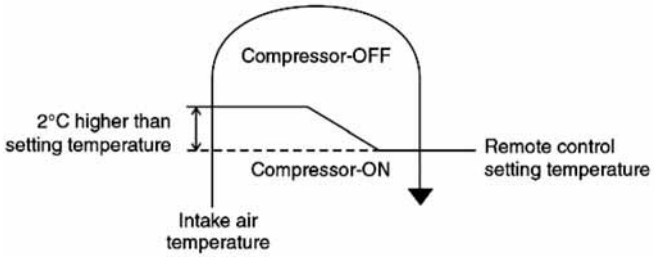
1 Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.

2 If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

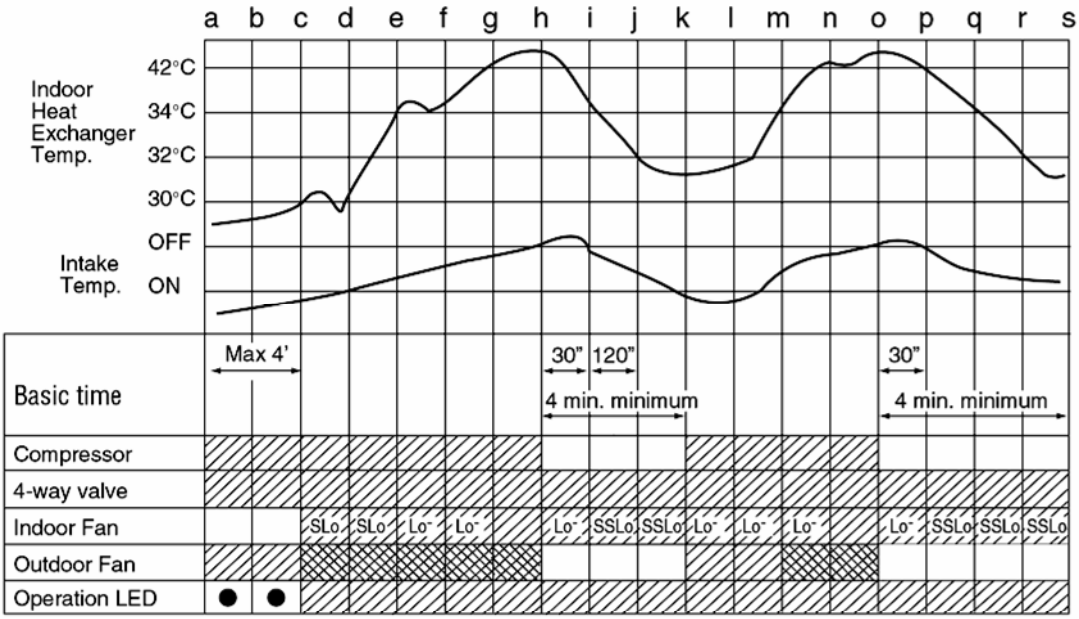
11. Operation Control

11.1 Heating Operation

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



11.1.1 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

● : Blinking

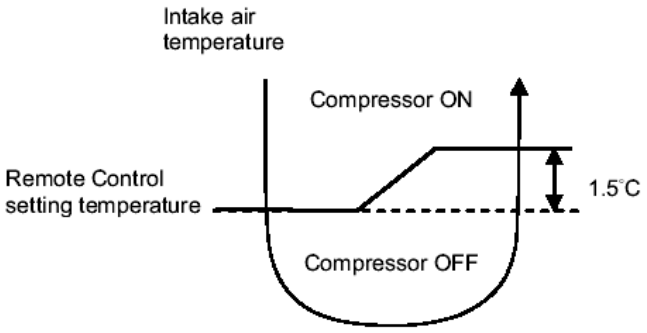
Operation

Stop

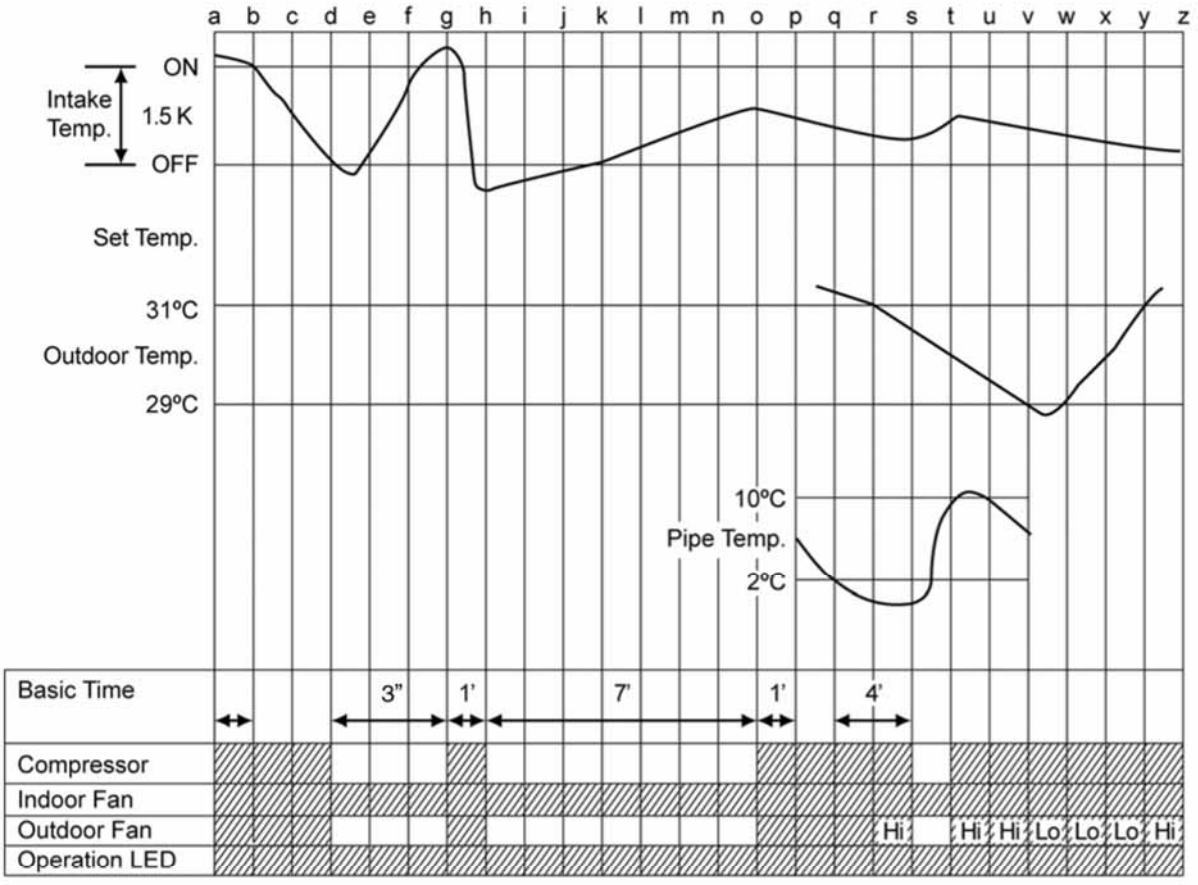
Operation or stop

11.2 Cooling Operation

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



11.2.1 Cooling Operation Time Diagram



<Description of operation>

d – g	: restart control (waiting for 3 min.)
a – b, g – h, o – p	: 60 sec. Forcible operation.
h – o	: 7 min. time save control.
q – t	: freeze prevention control.
v – y	: outdoor fan control.

Operation

Stop

11.3 Automatic Operation

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

↑ Intake Air Temperature	23°C & Above	Cooling Operation
	Below 20°C	Heating Operation

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

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

- Operation mode will be determine again for judgement after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.
  * The present 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	Heating
Cooling	23°C	Cooling	O (Judgement: 23°C & Above)	O (Judgement: Below 23°C)
		Heating		
Heating	25°C	Cooling	O (Judgement: 25°C & Above)	O (Judgement: Below 25°C)
		Heating		

- Automatic Set Temperature
  For each operation, set temperature will automatically set as shown below.
- The setting temperature for all the operations can be changed one level up or one level down from the standard temperature as shown in below table by pressing on the temperature up or temperature down button at remote control.

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

- The operation mode judging temperature and standard setting temperature can be increased by 2°C permanently, by open the circuit of JX03 at indoor unit's printed circuit board.

↑ Intake Air Temperature	25°C & Above	Cooling Operation
	Below 22°C	Heating Operation

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

11.4 Indoor Fan Speed Control

- Indoor fan speed can be set using remote control.

11.4.1 Fan Speed Rotation Chart

Speed		CS-YA18MKD	CS-YA24MKD
Cool	Heat		
SHi	Hi	1310	1530
Hi		1240	1390
Me	Me	1140	1270
Lo+	Lo	1100	1230
Lo		1040	1150
Lo-	Lo-	850	940
SLo	SLo	650	720
	SSLo	300	300

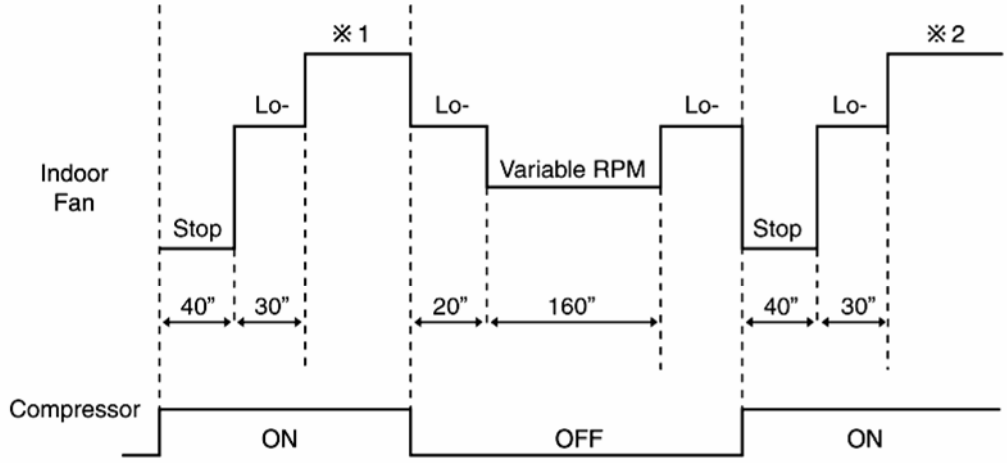
11.4.2 Automatic Fan Speed Control

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

Speed Mode				SHi	Hi	Me	Lo+	Lo	Lo-	SLo	SSLo	Stop
Cooling	Normal	Manual	Hi		o							
			Me			o						
			Lo					o				
		Auto			o	o			o			o
Heating	Normal	Manual	Hi	o					o	o	o	o
			Me			o			o	o	o	o
			Lo				o		o	o	o	o
		Auto				o	o		o	o	o	o

- Auto Fan Speed during cooling operation:
  1 Indoor fan will rotate alternately between off and on as shown in below diagram.
  2 At the beginning of each compressor starts operation, indoor fan speed increases gradually for deodorizing purpose.
  3 For the first time the compressor operates, indoor fan will be switched to Hi fan speed from Lo- after 70 seconds from the start of compressor. This cause the room temperature to achieve the setting temperature quickly.
  4 During compressor stops, indoor fan will operate at Lo- for the beginning 20 seconds to prevent higher volume of refrigerant in liquid form returning to the compressor.
  5 After the compressor turned off for 3 minutes, indoor fan will start to operate at Lo- to circulate the air in the room. This is to obtain the actual reading of the intake air temperature.

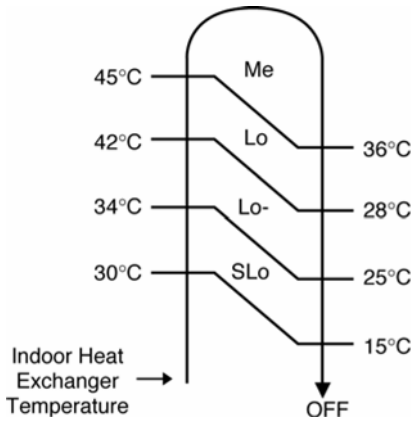
6 For the resume of compressor operation, indoor fan will operate at Me fan speed to provide comfort and lesser noise environment, after 70 seconds from the restarts of compressor.



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

※ 2 Fan Speed is Me after the compressor restarts.

- Auto Fan Speed during Heating operation.
  - Indoor fan will rotate in the range of SLo → Me according to the heat exchanger temperature.



11.4.3 Manual Fan Speed Control

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

11.5 Outdoor Fan Speed Control

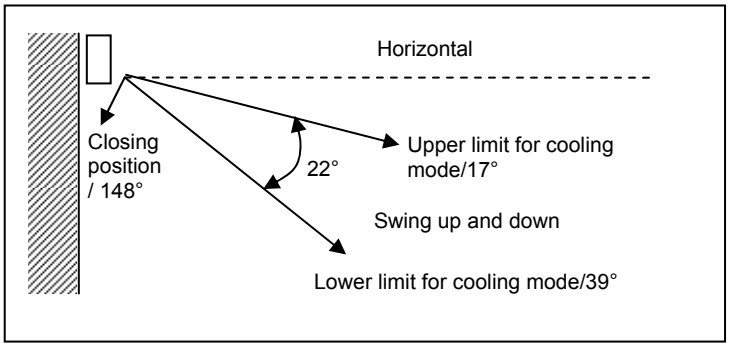
- There is 2 speeds for outdoor fan motor. Outdoor fan speed can be changed to Hi or Lo according to outdoor temperature.
- For Cooling operation, when outdoor temperature reaches to 31°C (Hi-speed), 29°C (Lo-speed).
- For heating operation, when outdoor temperature reaches to 13.5°C (Hi-speed), 15.5°C (Lo-speed).
- When air conditioner is turned on, the compressor and the outdoor fan will operate simultaneously.
- Likewise, both compressor and outdoor fan will stop at the same time if the unit is turned off.

11.6 Vertical Airflow Direction Control

11.6.1 Auto Control

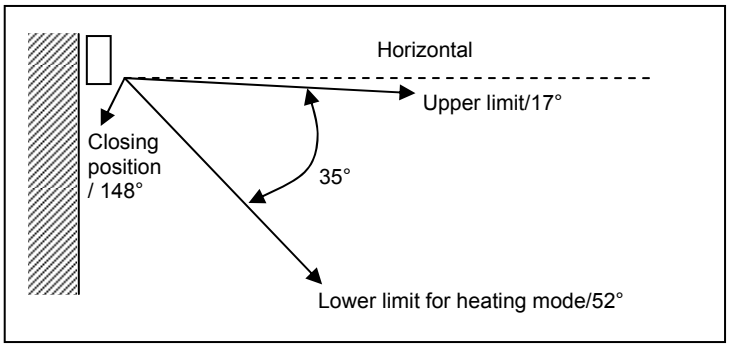
(Cooling Operation Condition)

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



(Heating Operation Condition)

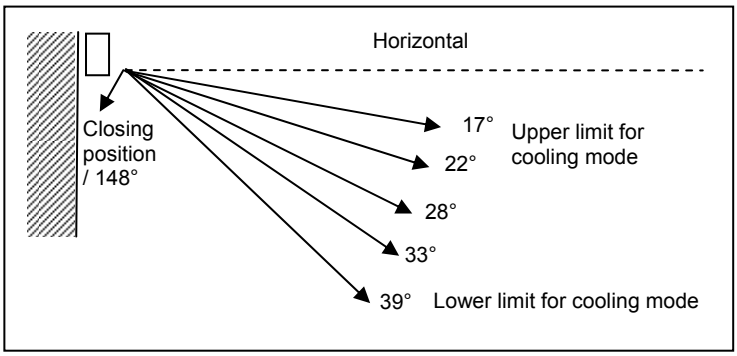
- When the piping air temperature reaches 38°C, the louver is changed from upper to lower limit. When the piping air temperature falls 35°C, the louver is changed from lower to upper limit.



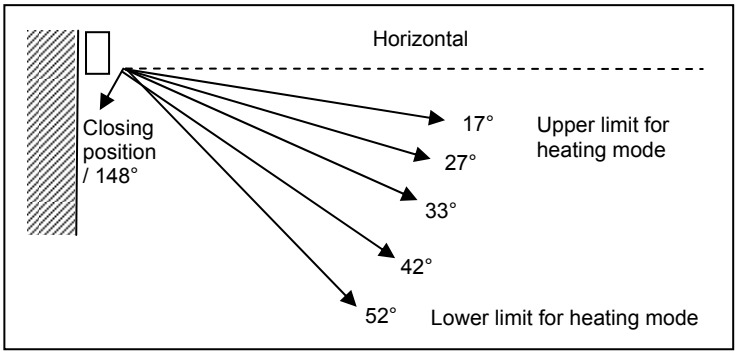
11.6.2 Manual Control

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

(Cooling Operation Condition)



(Heating Operation Condition)



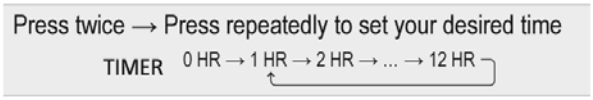
11.7 Horizontal Airflow Direction Control

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

11.8 Timer Control

11.8.1 To Set the Timer

- To turn ON the unit at a preset time, set the timer while the unit is OFF (the operation will start 15 minutes early before the preset time).
- To turn OFF the unit at a delayed time, set the timer while the unit is ON.



- Once the timer is set, the TIMER indication on the remote control display will be shown.
- To check the remaining time before the timer takes effect, press TIMER.
- To cancel the timer, press TIMER once, then press again and hold for approximately 3 seconds.
- The timer will also be canceled when you press OFF/ON or when power failure occurs.
- This setting is for one time operation, you will need to set again each time you want to use the timer.

11.9 Random Auto Restart Control

- If there is a power failure during operation, the air conditioner will automatically restart after 3 to 4 minutes when the power is resumed.
- It will start with previous operation mode and airflow direction.
- If there are more than one air conditioner unit in operation and power failure occur, restart time for each unit to operate will be decided randomly using 4 parameters:- intake air temperature, setting temperature, fan speed and air swing louver position.
- This Random Auto Restart Control is not available when Timer is set.
- This control can be omitted by open the circuit of JX02 at indoor unit printed circuit board.

11.10 Remote Control Signal Receiving Sound

- Short beep sound will be heard when turn ON the air conditioner or enabling other operations.
- Long beep sound will be heard when turn OFF the air conditioner or disabling other operations.

12. Protection Control

(For 13.1 to 13.7 information applies only to Cooling Operation)

12.1 Restart Control (Time Delay Safety Control)

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

12.2 7 Minutes Time Save Control

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

12.3 60 Seconds Forced Operation

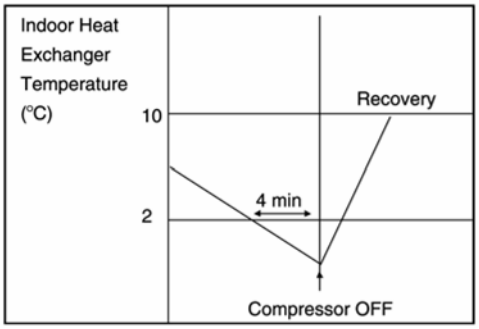
- Once the air conditioner is turned on, the compressor will not stop within 60 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, force stop by pressing the OFF/ON operation button at the remote control is permitted.
- The reason for the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

12.4 Starting Current Control

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

12.5 Freeze Prevention Control

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



12.6 Compressor Reverse Rotation Protection Control

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

s T = Intake air temperature - Indoor heat exchanger temperature

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

12.7 Dew Prevention Control

- To prevent dew formation at indoor unit discharge area.
- This control starts if:
  - Cooling mode is activated.
  - Remote Control setting temperature is less than 25°C.
  - Fan speed is at Lo.
  - Room temperature is constant (±1°C) for 30 minutes.
  - Compressor is continuously running.
- Fan speed, will be adjusted accordingly in this control.
  - Fan speed will be increased slowly.
- Dew prevention stop condition
  - Remote control setting temperature is more than 25°C.
  - Fan speed is not set to Lo.

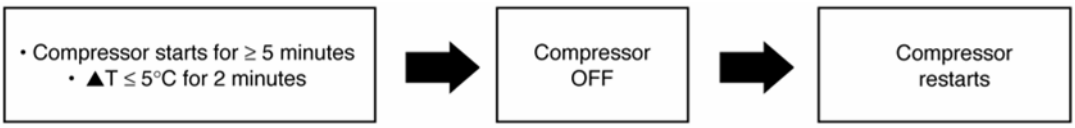
(For 13.8 to 13.14 information applies only to Heating Operation)

12.8 Restart Control (Time Delay Safety Control)

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

12.9 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 continuous 2 minutes, compressor will stop and restart automatically.
- Time Delay Safety Control is activated before the compressor restart.



s T = Indoor heat exchanger temperature - Intake air temperature

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

12.10 Overload Protection Control

- Outdoor Fan Control
  - If the temperature of the Outdoor Heat Exchanger less than -3°C, Outdoor Fan is ON. The Outdoor Fan stop, when Outdoor Heat Exchanger temperature is Tb 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	≥ 5°C ~ < 20°C	≥ 20°C ~ < 25°C	≥ 25°C	Outdoor Fan OFF
Tb	≥ 5°C	≥ 3°C	≥ 1.5°C	≥ 0.5°C	≥ 0.5°C	

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

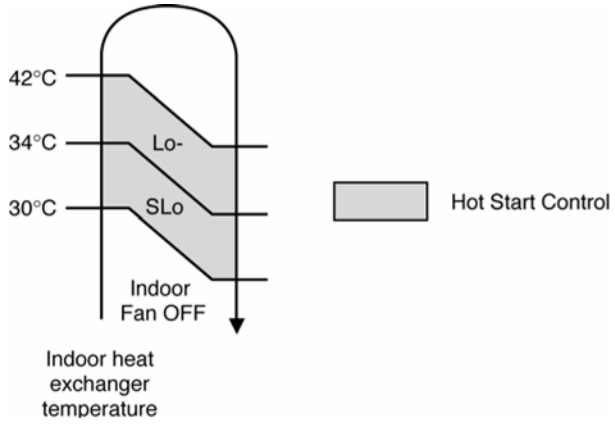
- Compressor High Pressure Control
  - If the indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.
  - Time Delay Safety Control is activated before the compressor restart.

12.11 4-Way Valve Control

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

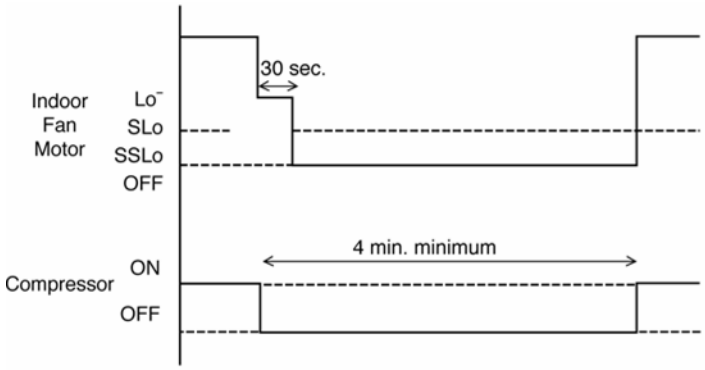
12.12 Hot Start Control

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



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

12.13 Cold Draft Prevention Control



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

12.14 Deice Control

Deice starts to prevent frosting at outdoor heat exchanger.

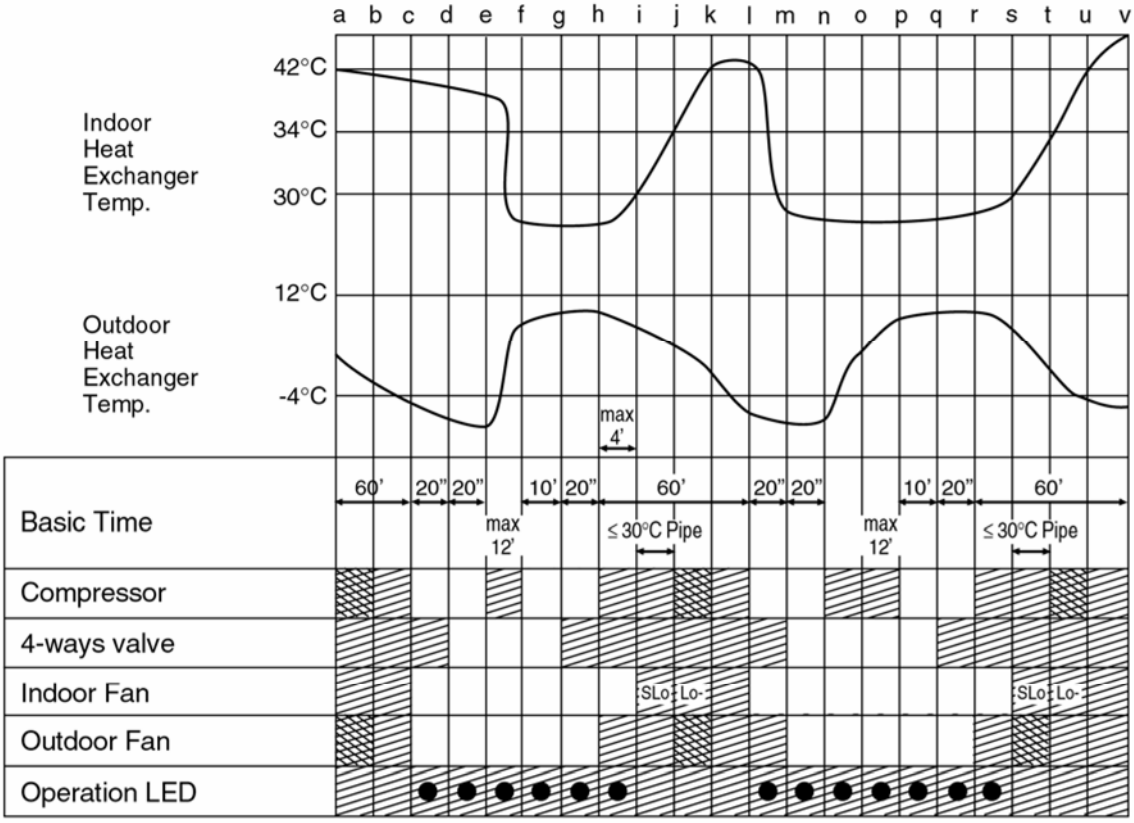
- Normal Deice
  Deice operation detection commences in Heating operation starts or 60 minutes after previous deice operation. If the outdoor piping temperature drops to -4°C for 50 sec. continuously during compressor is in operation, deice will start.
  (There is no detection during Outdoor Fan stops.)

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

- Deice ends when
  (a) 12 minutes after deicing operation starts;
  (b) The outdoor piping temperature rises to about 12°C.

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

a) Normal Deice Time Diagram

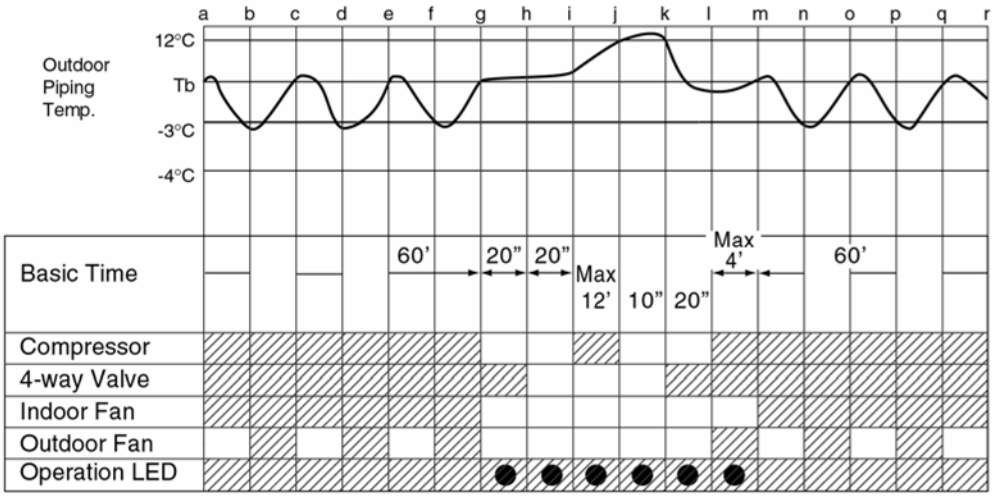


<Description of operation>

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 Deice Time Diagram



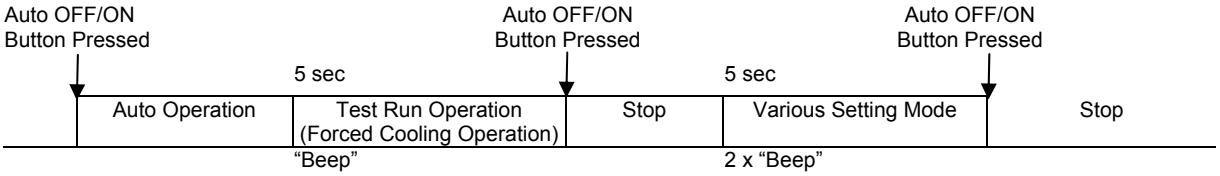
<Description of operation>

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

13. Servicing Mode

13.1 Auto OFF/ON Button



1 AUTO OPERATION MODE
The Auto Operation will be activated immediately once the Auto OFF/ON button is pressed. This operation can be used to operate air conditioner with limited function if remote control is misplaced or malfunction.

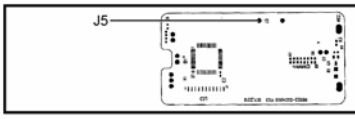
2 TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
The Test Run Operation will be activated if the Auto OFF/ON button is pressed continuously for more than 5 seconds. A "beep" sound will be heard at the fifth seconds, in order to identify the starting of this operation.

3 VARIOUS SETTING MODE
The Various Setting Mode will be activated if (within 20 seconds of Test Run Operation) the Auto OFF/ON button is pressed for more than 5 seconds. 2 "beep" sounds will be heard to identify the starting of this operation.
Under Various Setting Mode, user could perform the following operation:
i. Press Auto OFF/ON button to toggle remote control receiving sound.
- Short "beep": Turn ON remote control receiving sound.
- Long "beep": Turn OFF remote control receiving sound.

After Auto OFF/ON button is pressed, the 20 seconds counter for Remote Control Receiving Sound OFF/ON Mode is restarted.

13.2 Remote Control Number Switch

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



Remote Control Printed Circuit Board	
Jumper A (J5)	Remote Control No.
Short	A (Default)
Open	B

- During unit is OFF (remote control OFF indicator is shown), after select the transmission code combination of remote control, press OFF/ON button for 20 seconds at remote control to transmit and store the desired transmission code to the EEPROM.

14. Troubleshooting Guide

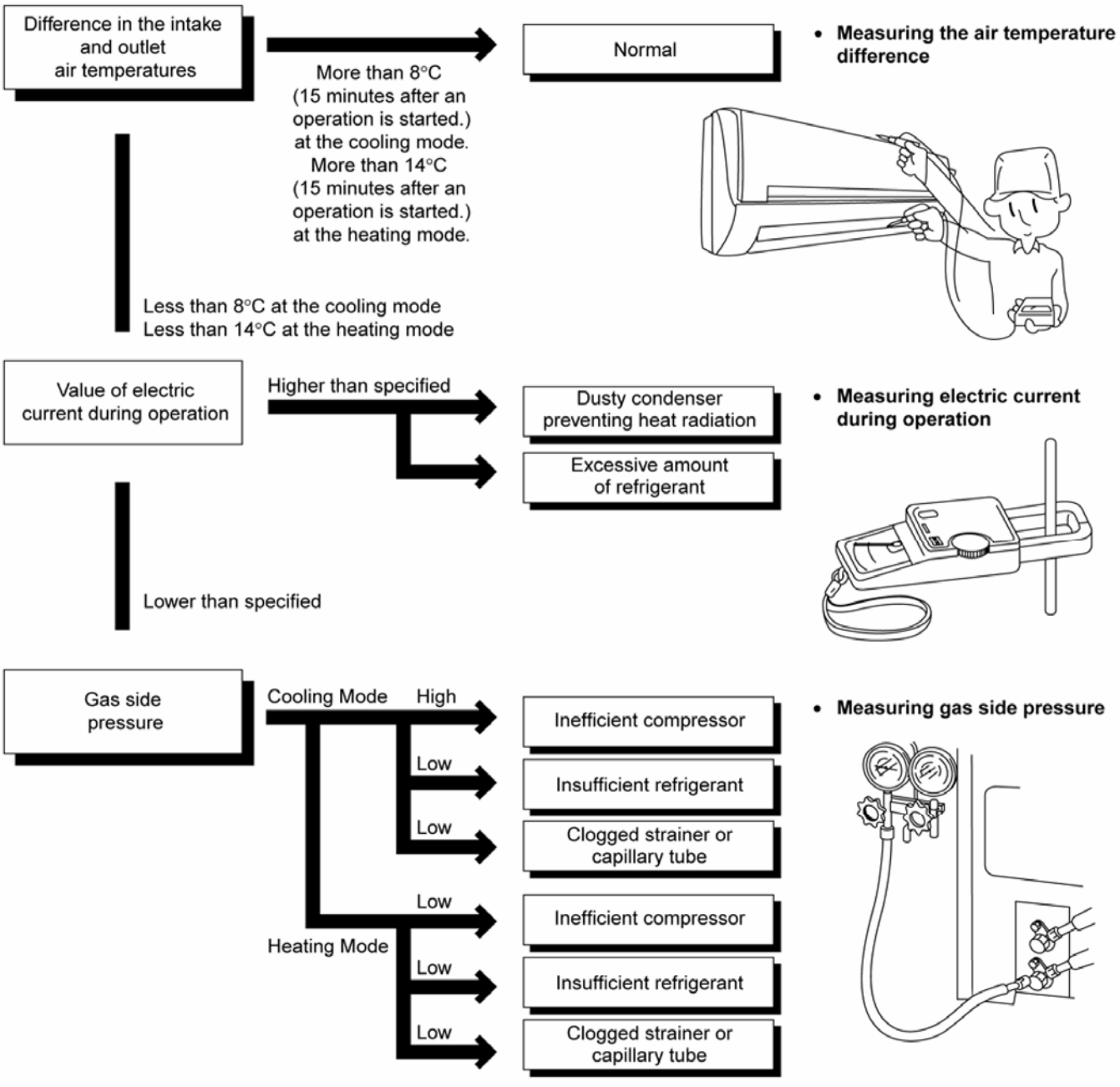
14.1 Refrigeration cycle system

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/cm^2G)	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



- **Measuring the air temperature difference**

- **Measuring electric current during operation**

- **Measuring gas side pressure**

14.1.1 Relationship between the condition of the air conditioner and pressure and electric current

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

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

14.1.2 Diagnosis methods of a malfunction of a compressor and 4-way Valve

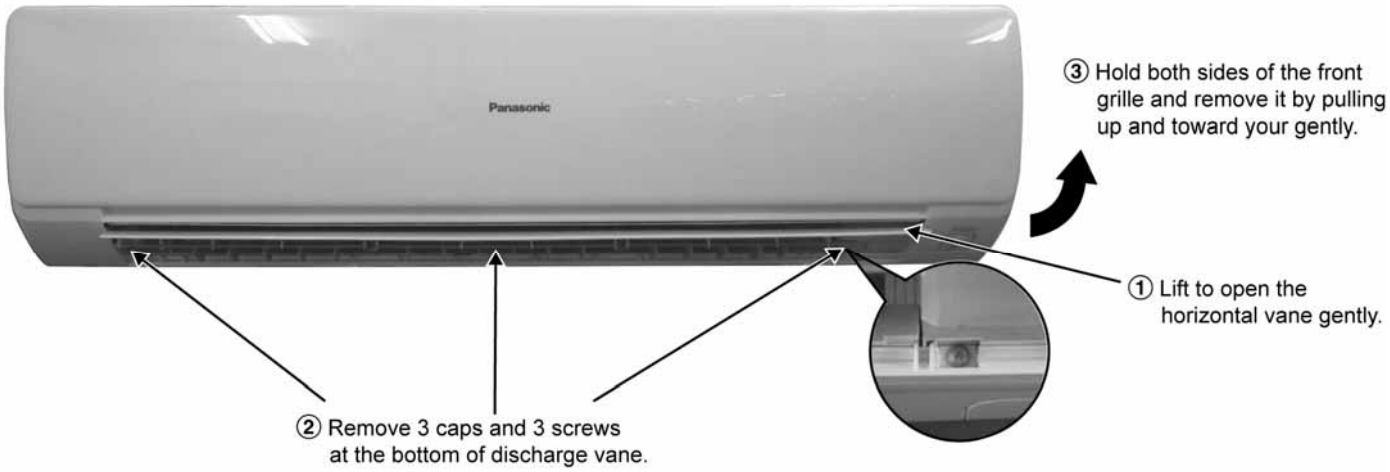
Nature of fault	Symptom
Insufficient compressing of a compressor	• Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70°C to 90°C). • The different between high pressure and low pressure becomes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

15. Disassembly and Assembly Instructions

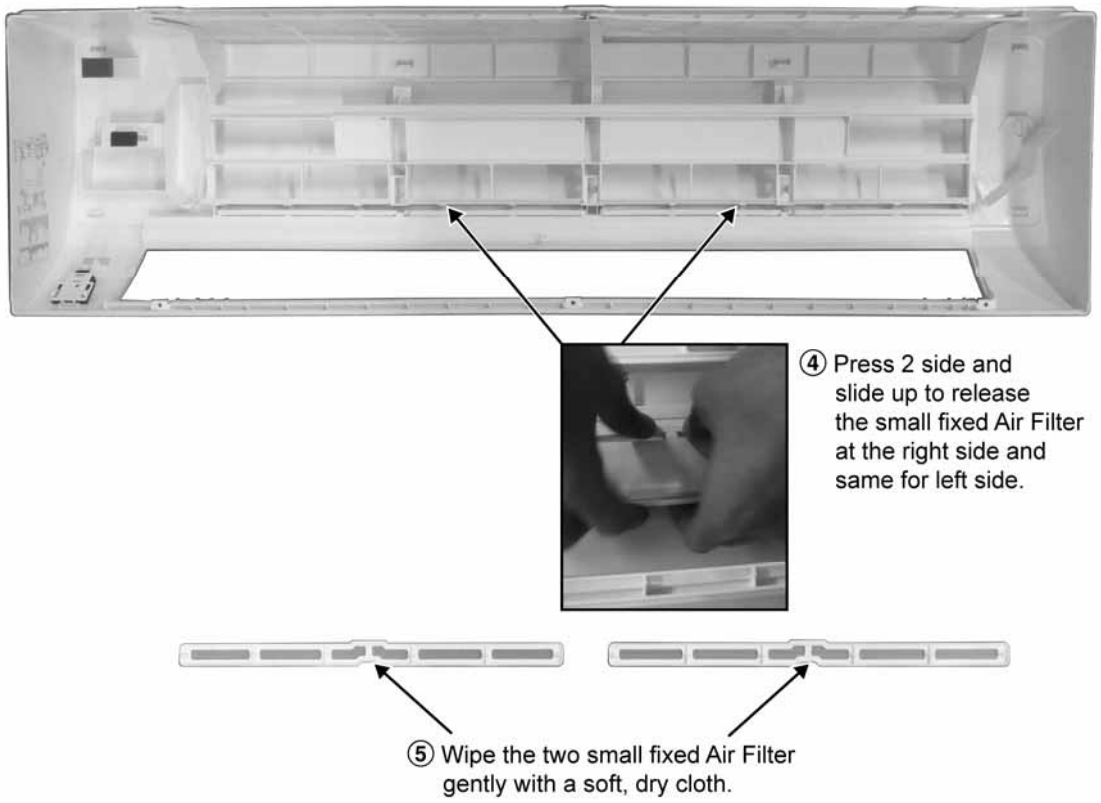
WARNING

High Voltage is generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

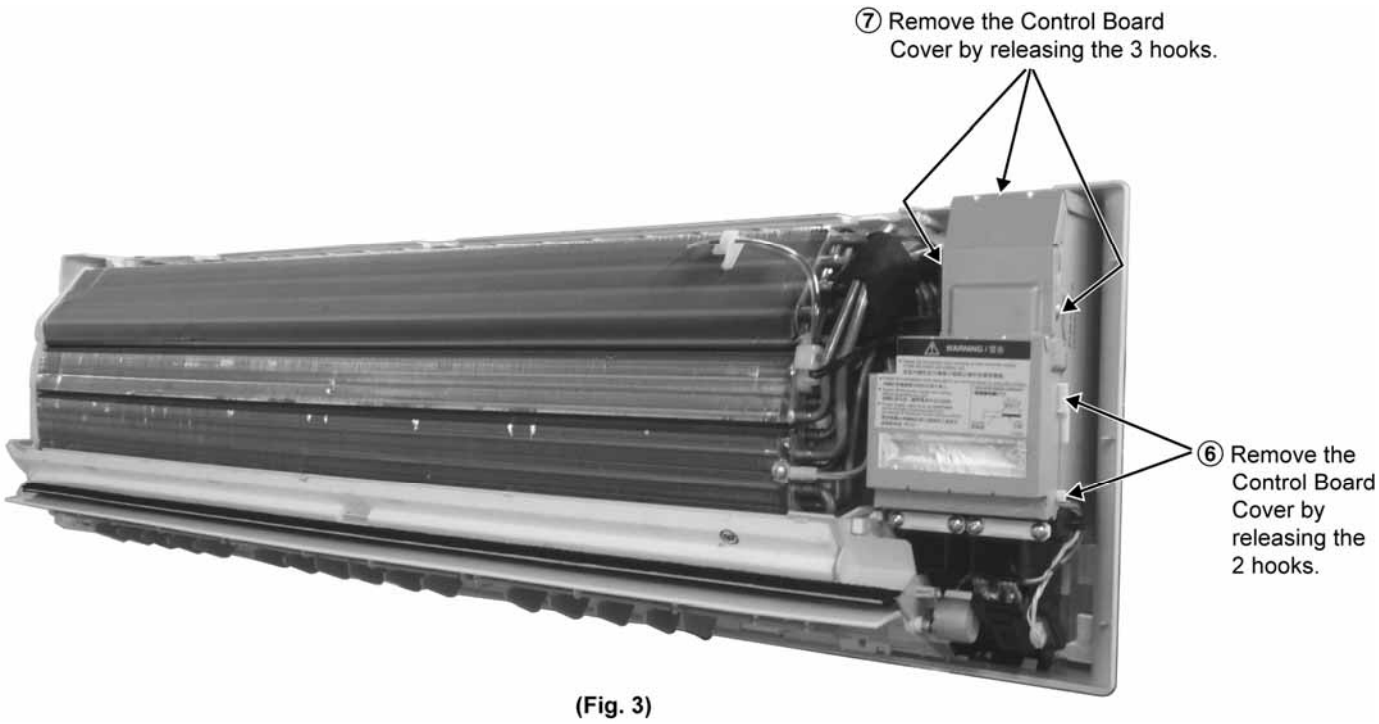
15.1 Small Air Filter, Indoor Electronic Controllers and Control Board Removal Procedures



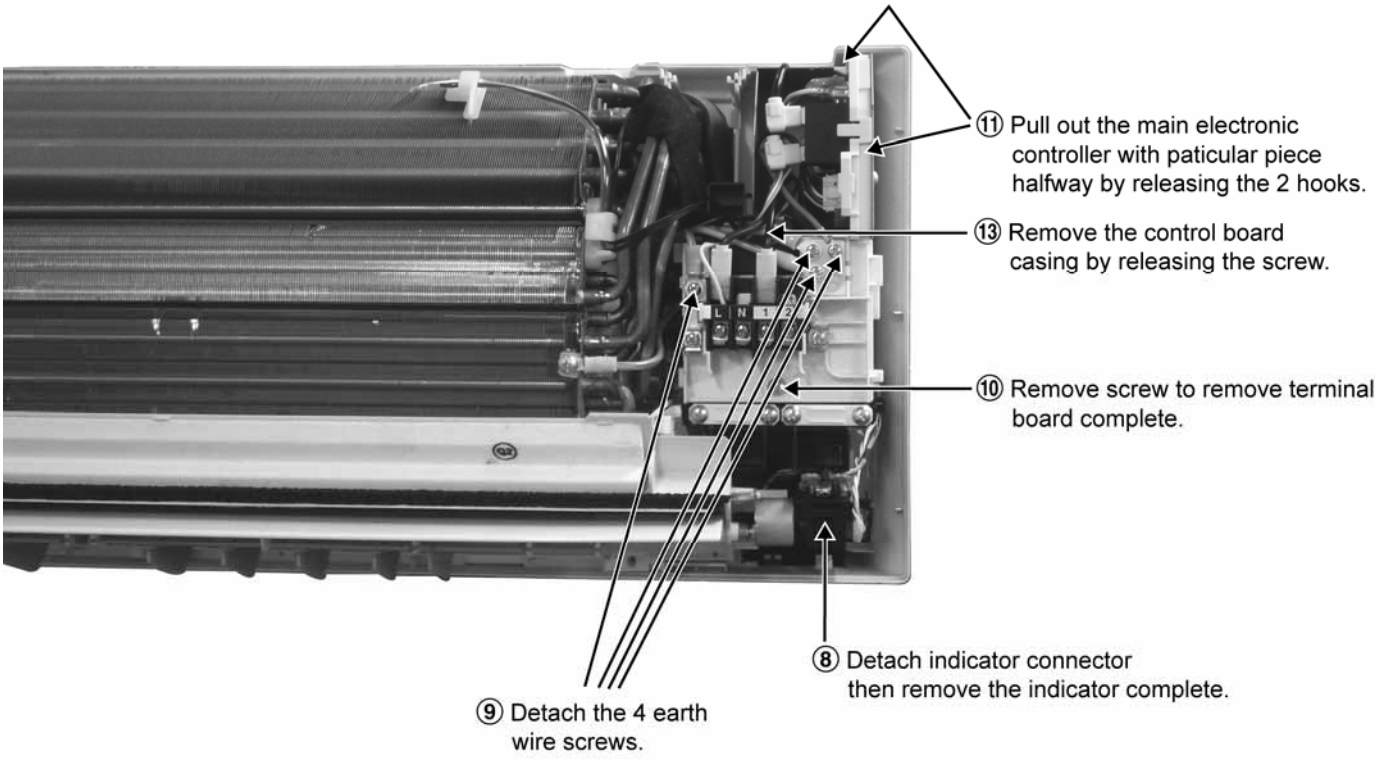
(Fig. 1)



(Fig. 2)

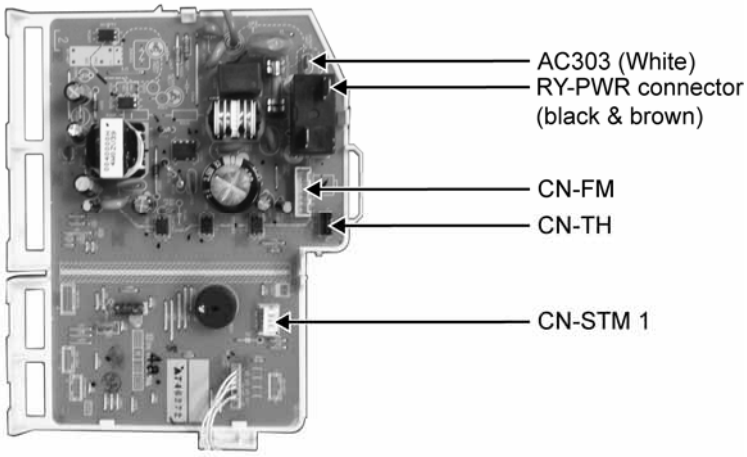

⑦ Remove the Control Board Cover by releasing the 3 hooks.
⑥ Remove the Control Board Cover by releasing the 2 hooks.

(Fig. 3)

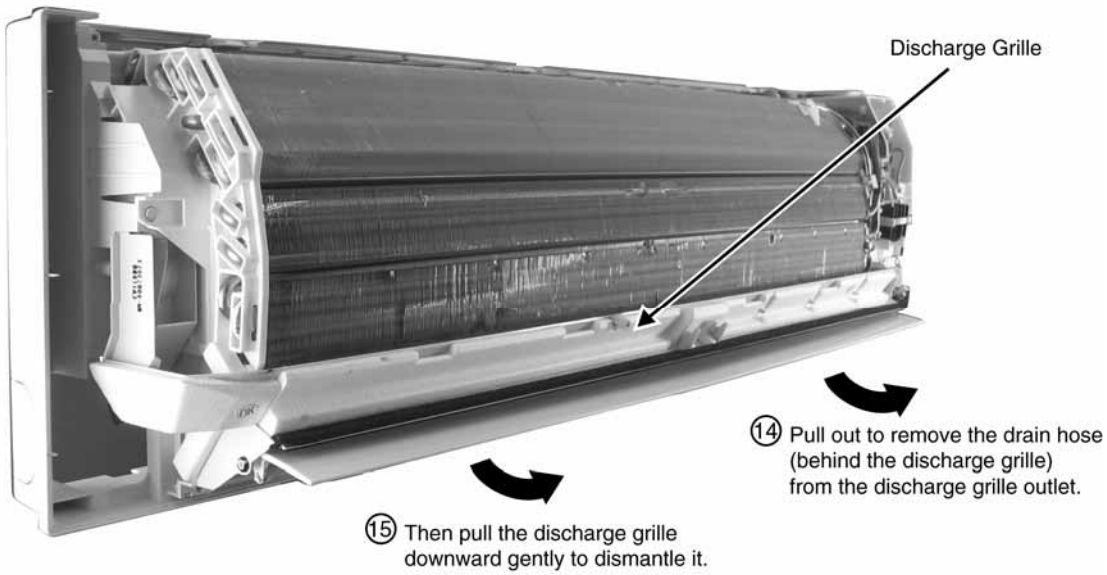

⑪ Pull out the main electronic controller with paticular piece halfway by releasing the 2 hooks.
⑬ Remove the control board casing by releasing the screw.
⑩ Remove screw to remove terminal board complete.
⑧ Detach indicator connector then remove the indicator complete.
⑨ Detach the 4 earth wire screws.

(Fig. 4)

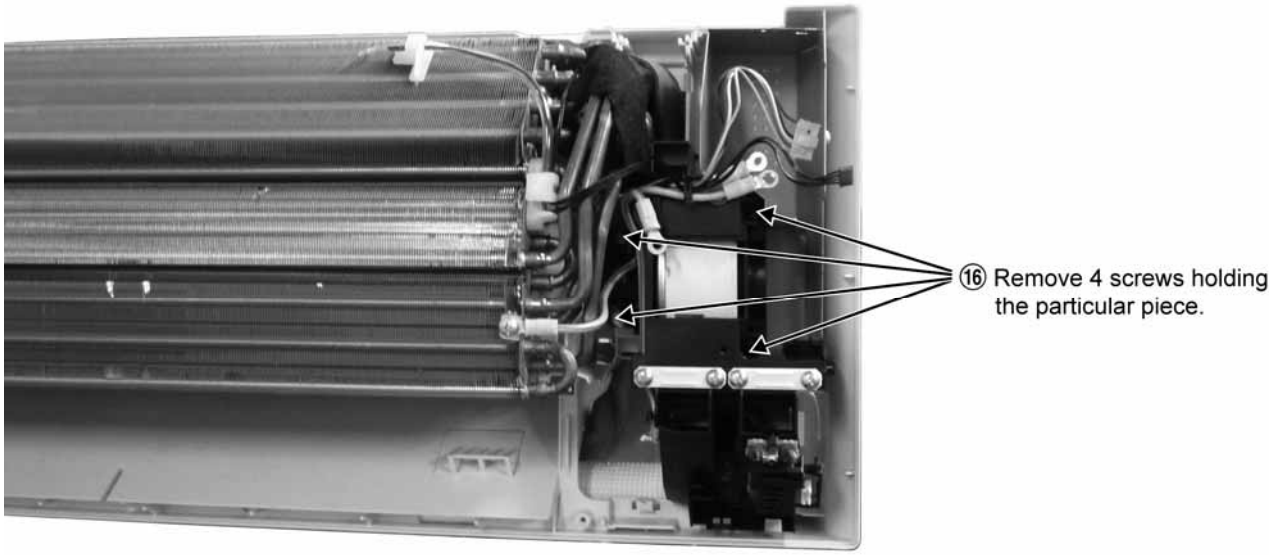
⑫ Detach the connectors as labeled
from the main electronic controller.



(Fig. 5)

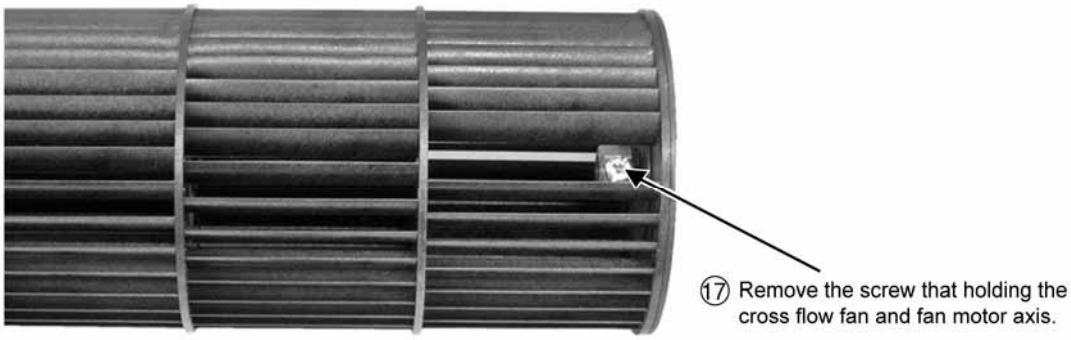


(Fig. 6)

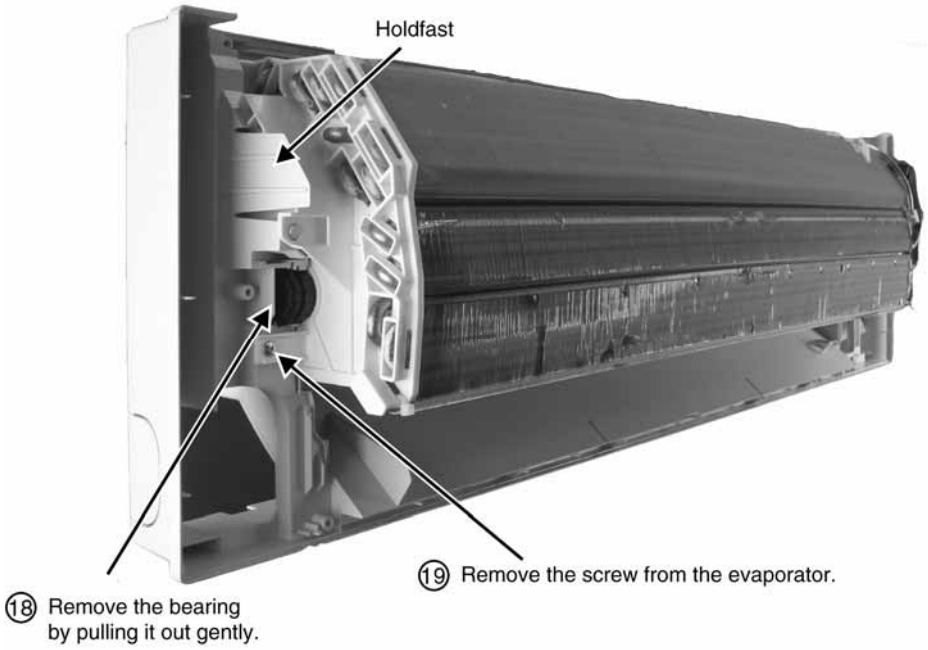


(Fig. 7)

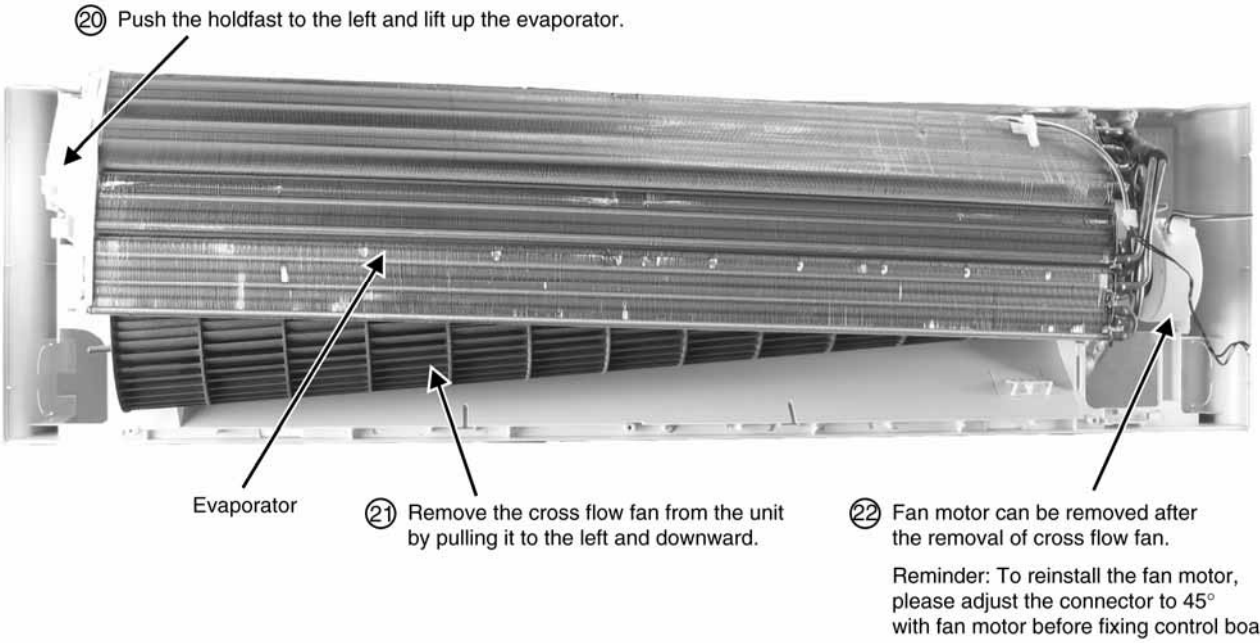
15.2 To Remove Cross Flow Fan and Indoor Fan Motor



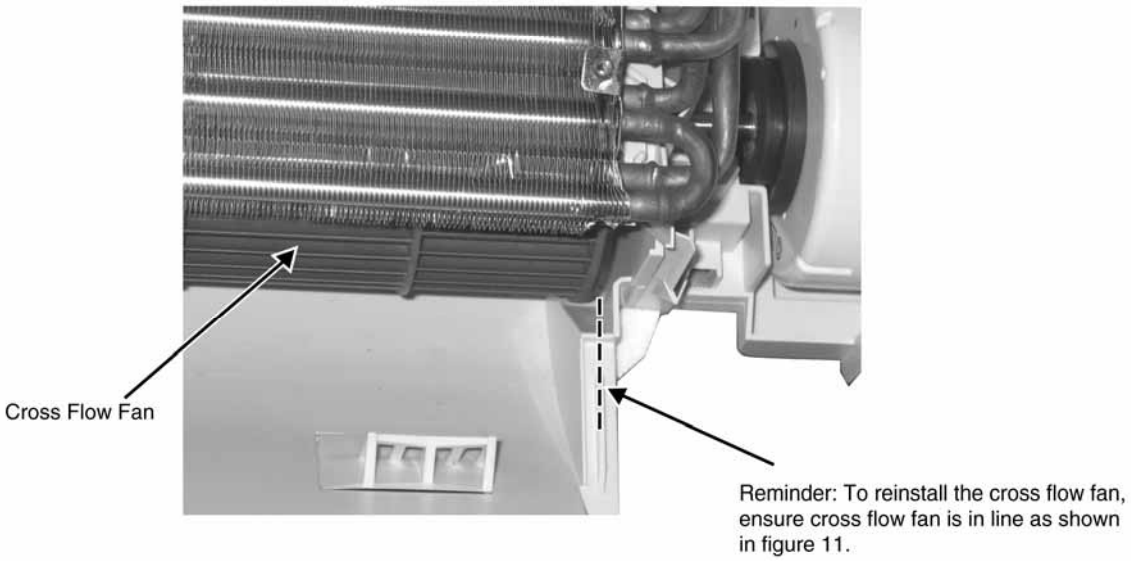
(Fig. 8)



(Fig. 9)


20 Push the holdfast to the left and lift up the evaporator.
Evaporator
21 Remove the cross flow fan from the unit by pulling it to the left and downward.
22 Fan motor can be removed after the removal of cross flow fan.
Reminder: To reinstall the fan motor, please adjust the connector to 45° with fan motor before fixing control board.

(Fig. 10)

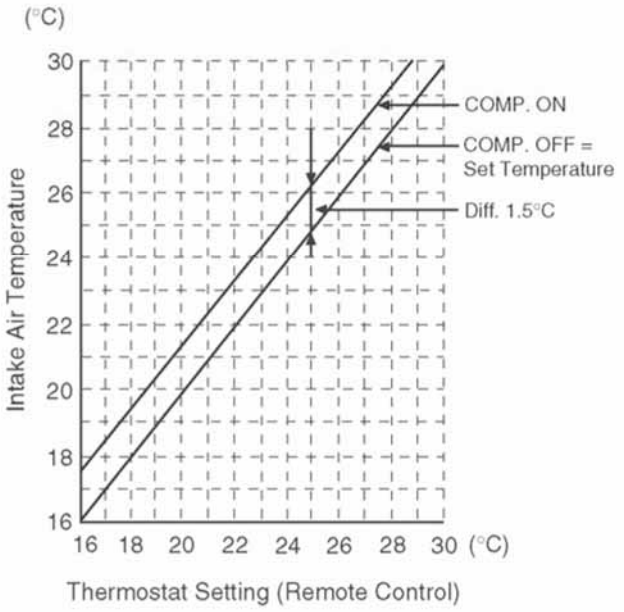

Cross Flow Fan
Reminder: To reinstall the cross flow fan, ensure cross flow fan is in line as shown in figure 11.

(Fig. 11)

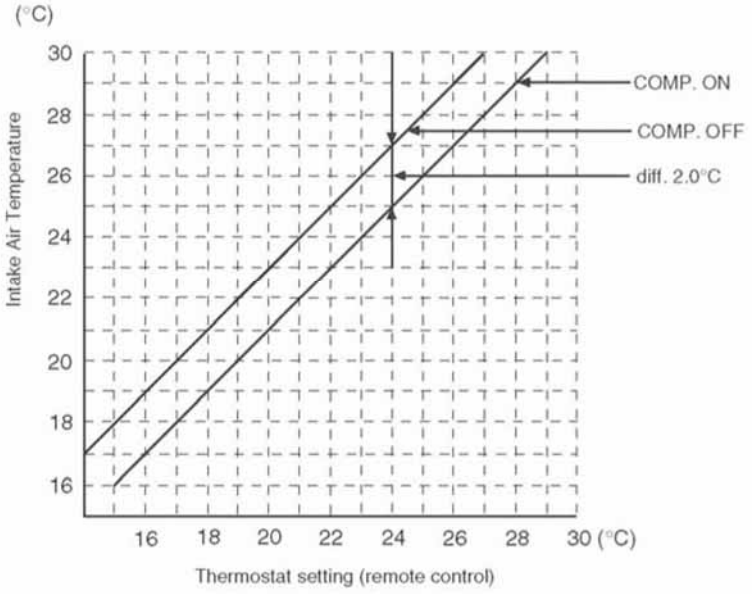
16. Technical Data

16.1 Thermostat Characteristics

• **Cooling**



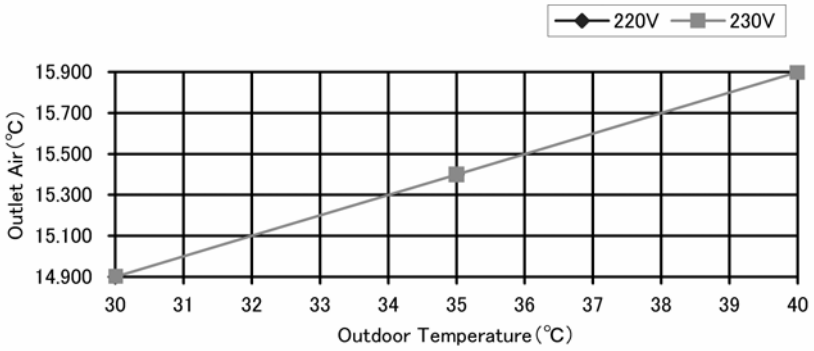
• **Heating**

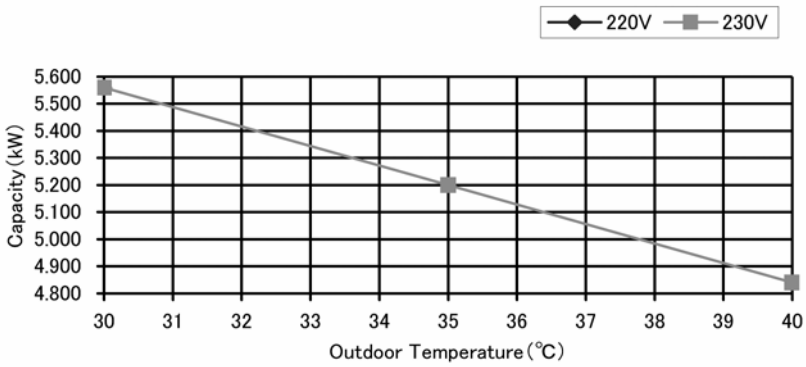


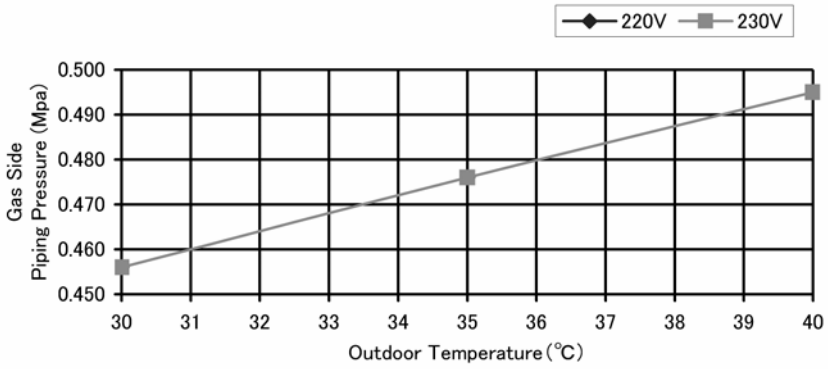
16.2 Operation Characteristics

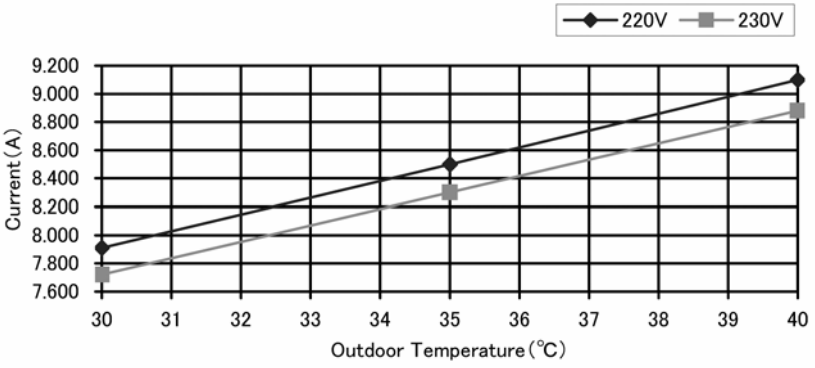
16.2.1 CS-YA18MKD CU-YA18MKD

- Cooling Characteristic
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Operation condition: High fan speed
  - Piping length: 5m

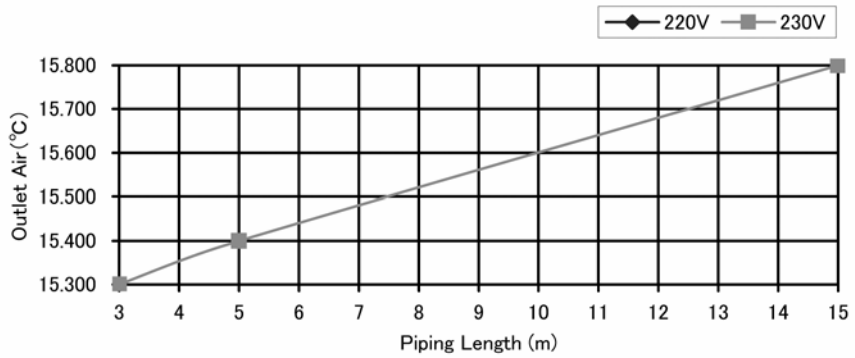


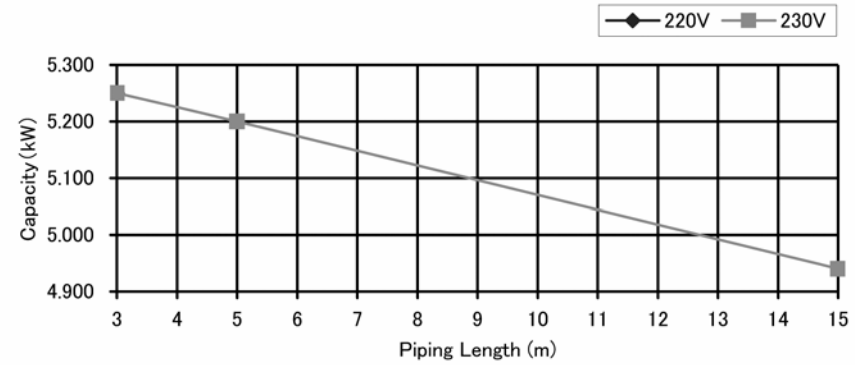


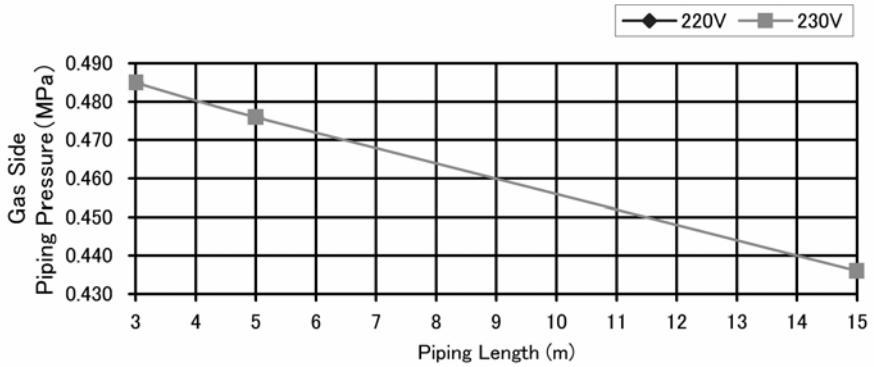


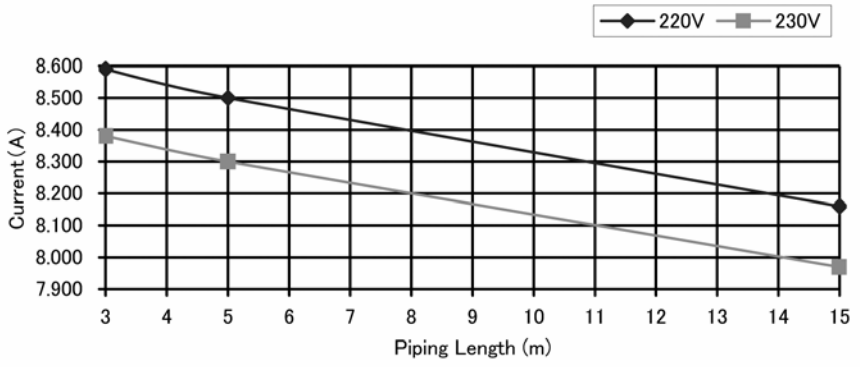


- Piping Length Characteristic
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Operation condition: High fan speed
  - Outdoor temperature: 35°C (DBT), 24°C (WBT)
  - Piping length: 5m

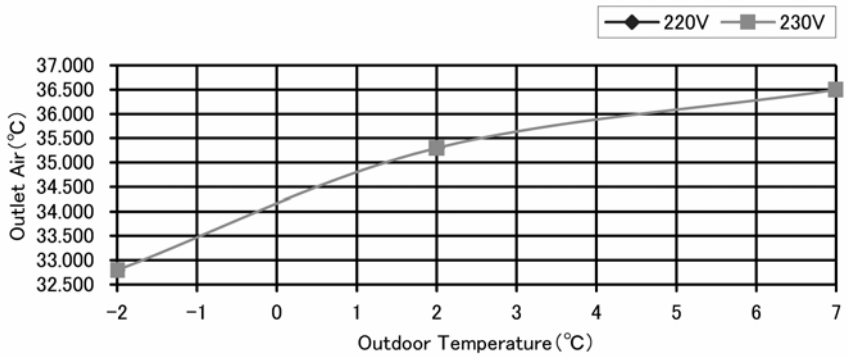


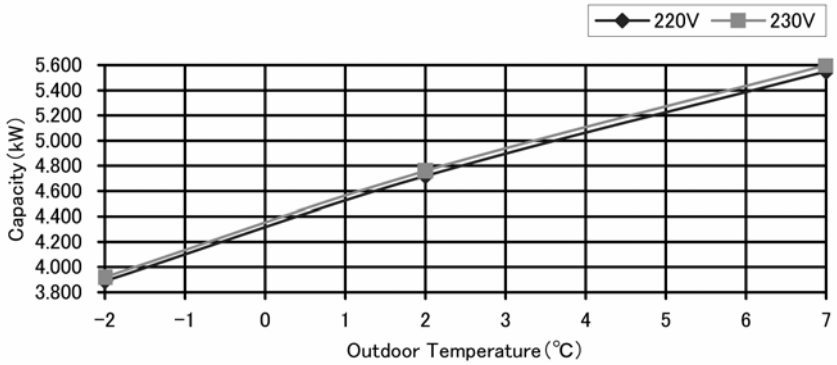


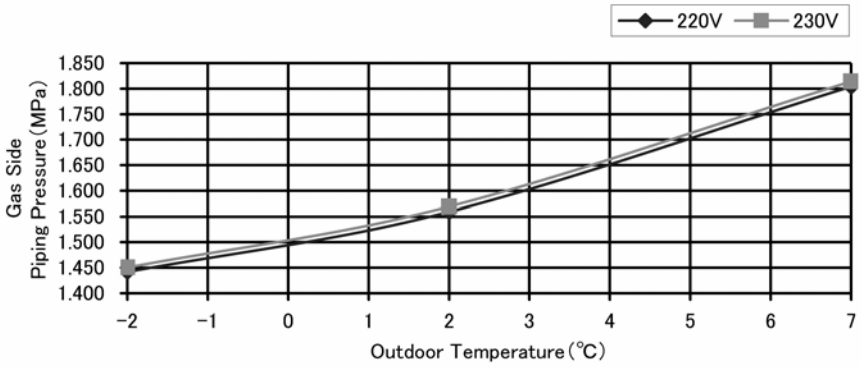


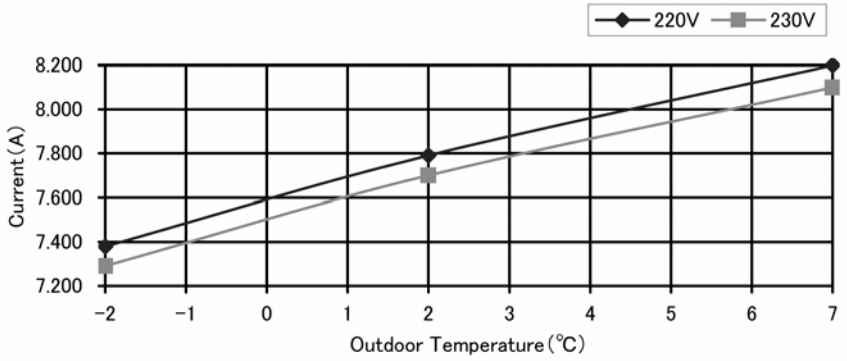


- Heating Characteristic
  - Room temperature: 20°C (DBT)
  - Operation condition: High fan speed
  - Piping length: 5m

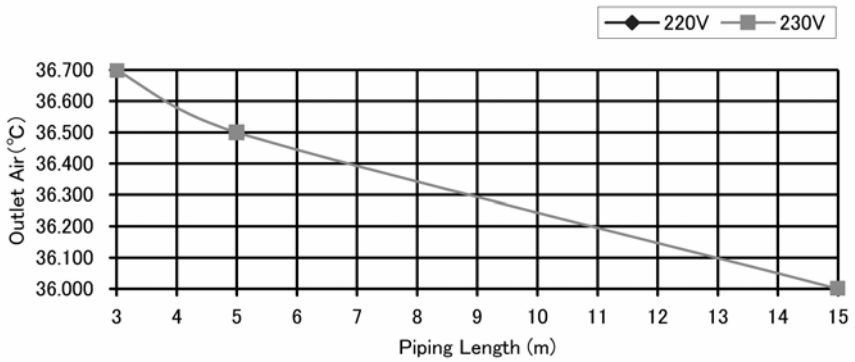


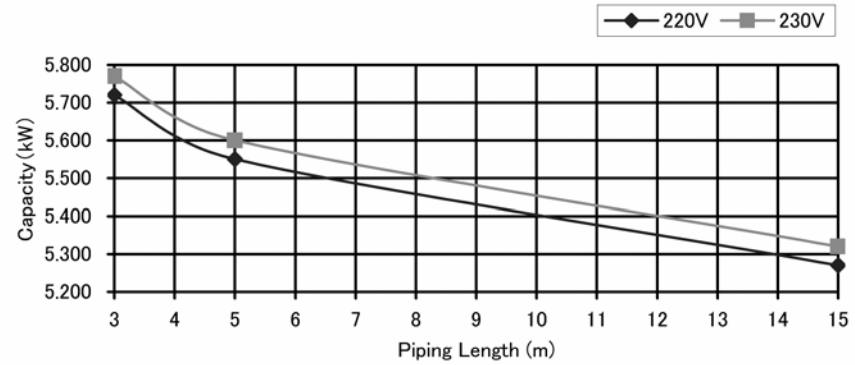


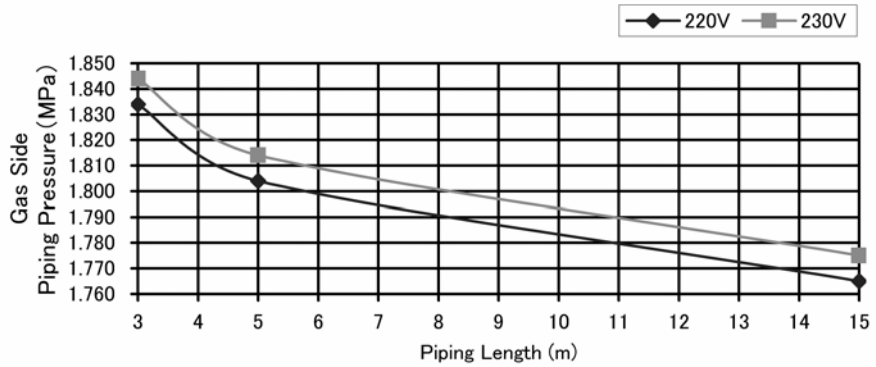


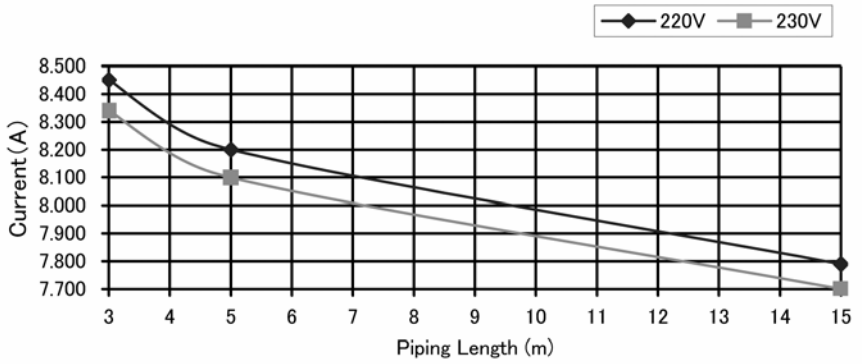


- Piping Length Characteristic
  - Room temperature: 20°C (DBT)
  - Operation condition: High fan speed
  - Outdoor temperature: 7°C (DBT), 6°C (WBT)
  - Piping length: 5m



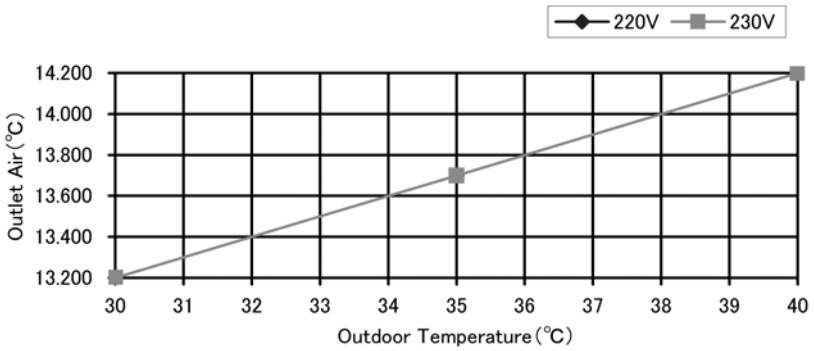


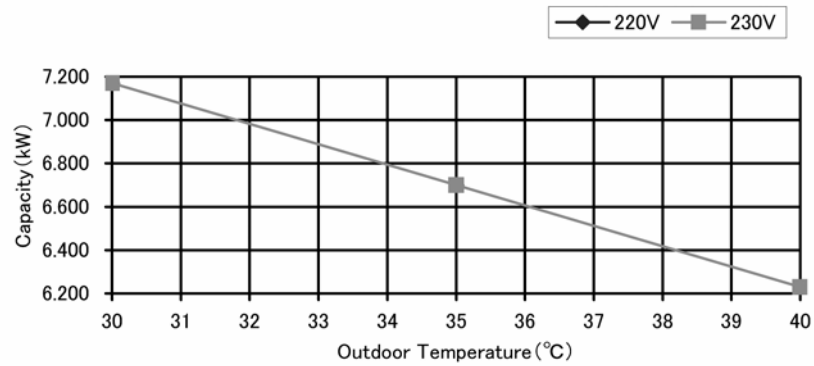


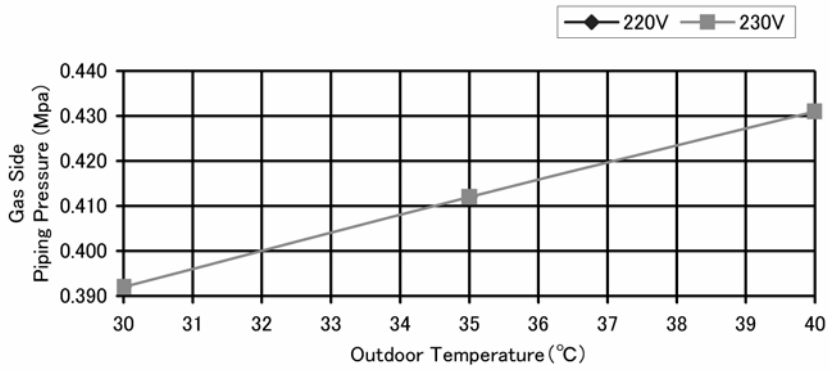


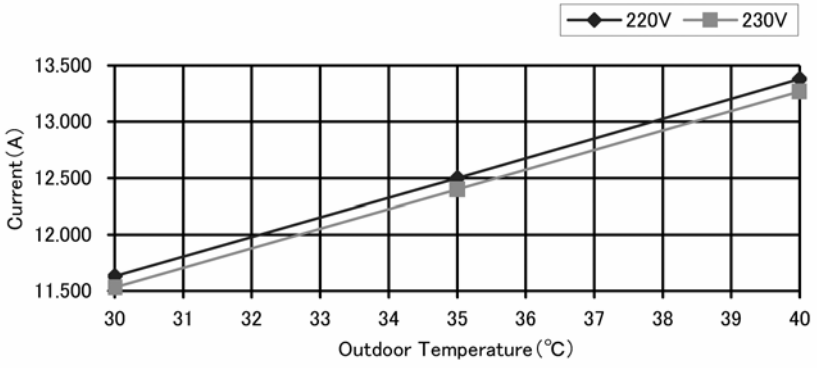
16.2.2 CS-YA24MKD CU-YA24MKD

- Cooling Characteristic
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Operation condition: High fan speed
  - Piping length: 5m

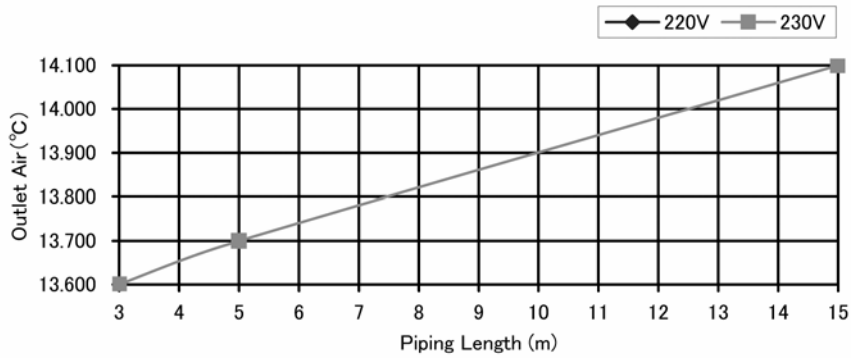


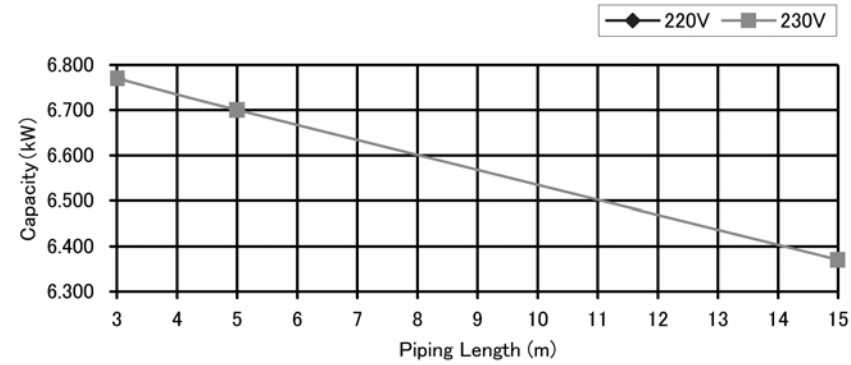


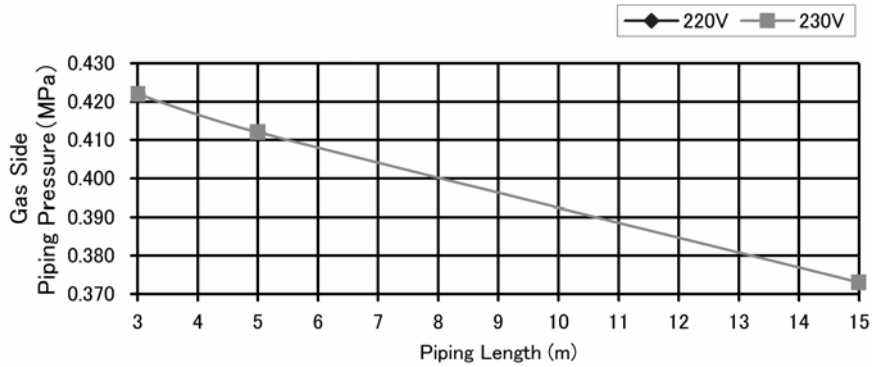


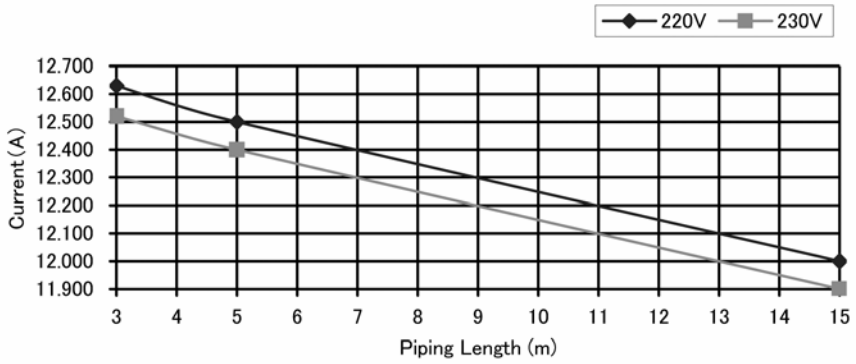


- Piping Length Characteristic
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Operation condition: High fan speed
  - Outdoor temperature: 35°C (DBT), 24°C (WBT)
  - Piping length: 5m

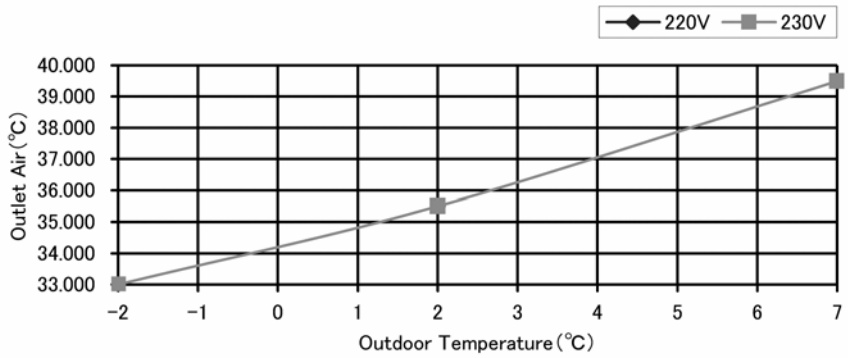


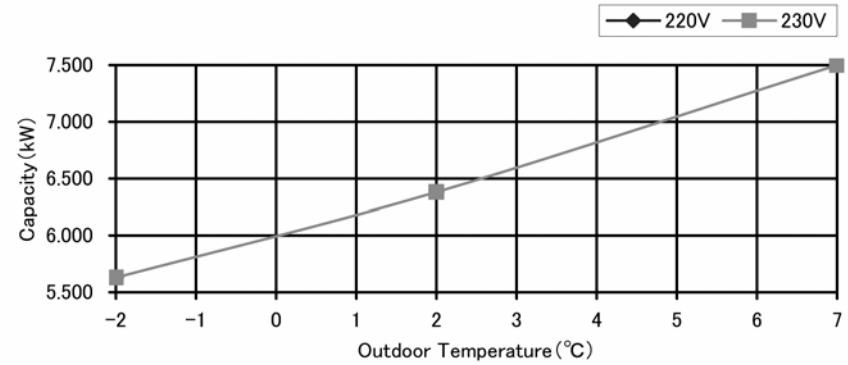


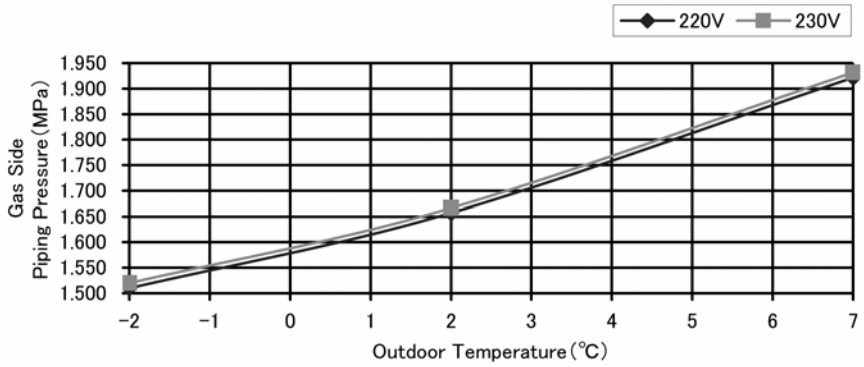


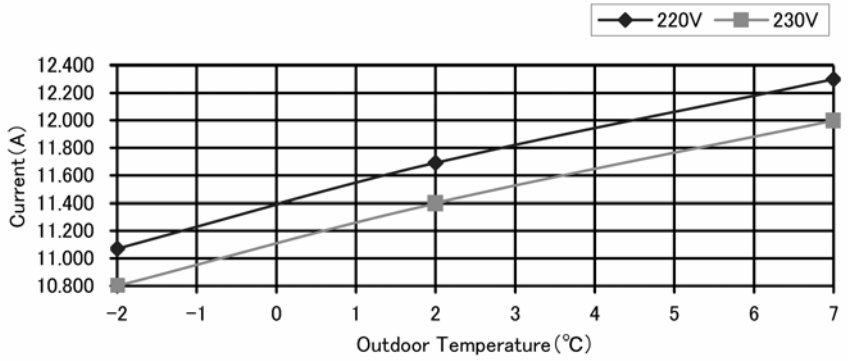


- Heating Characteristic
  - Room temperature: 20°C (DBT)
  - Operation condition: High fan speed
  - Piping length: 5m

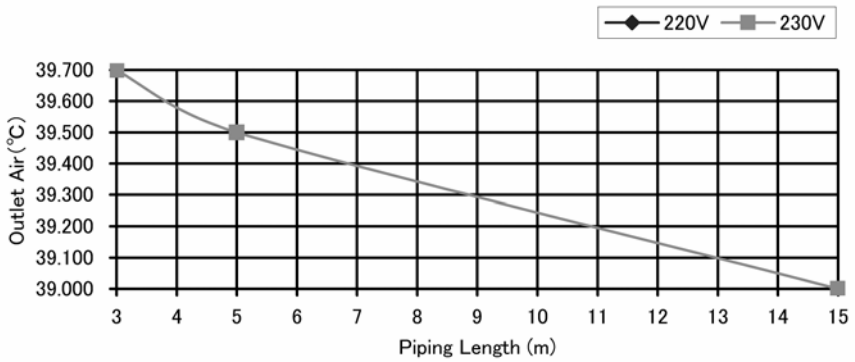


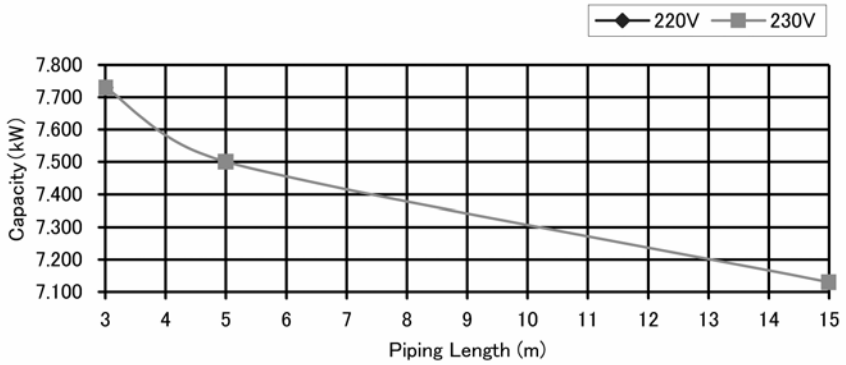


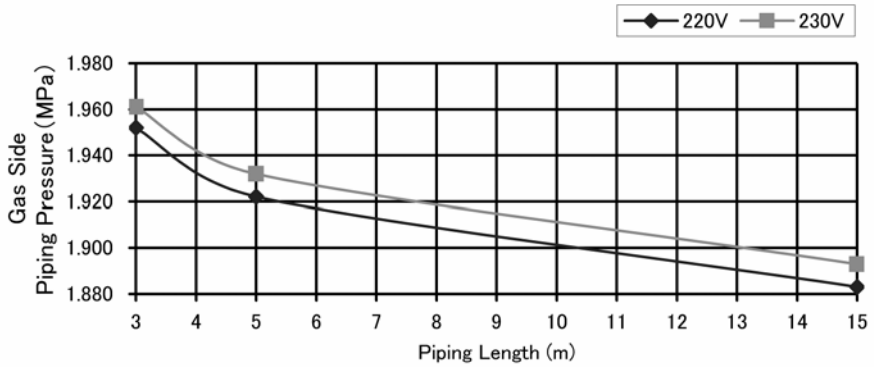


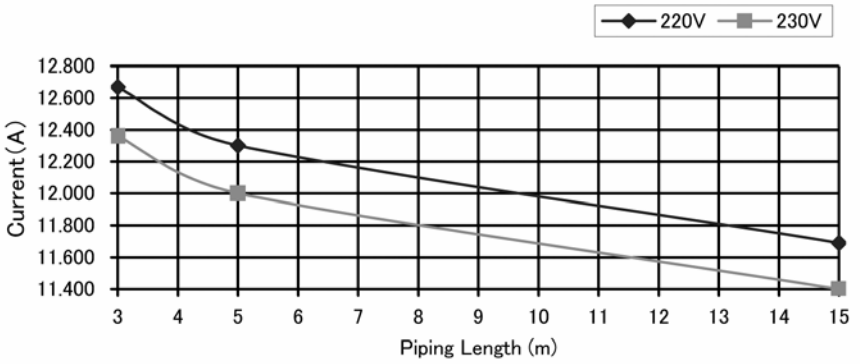


- Piping Length Characteristic
  - Room temperature: 20°C (DBT)
  - Operation condition: High fan speed
  - Outdoor temperature: 7°C (DBT), 6°C (WBT)
  - Piping length: 5m



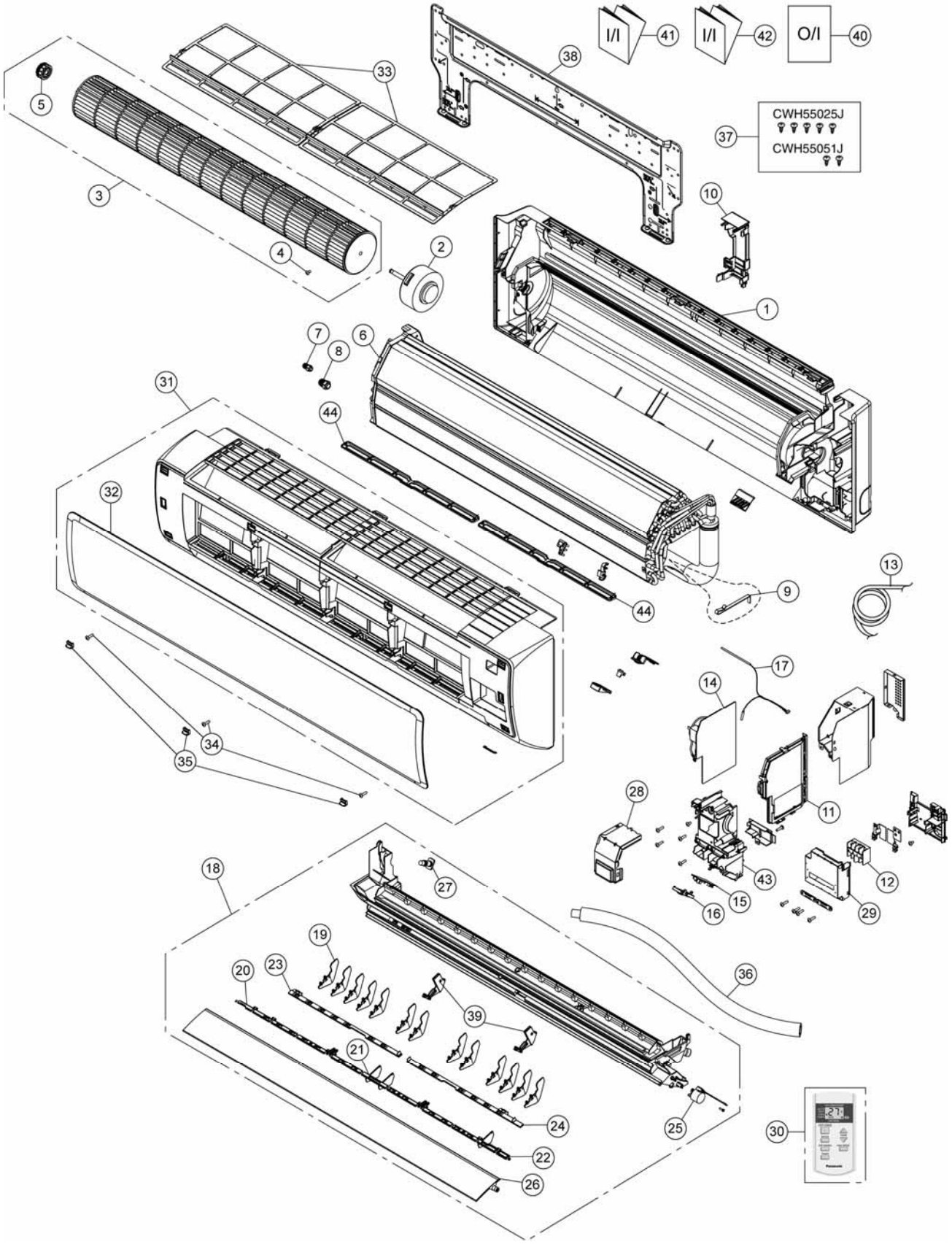






17. Exploded View and Replacement Parts List

17.1 Indoor Unit



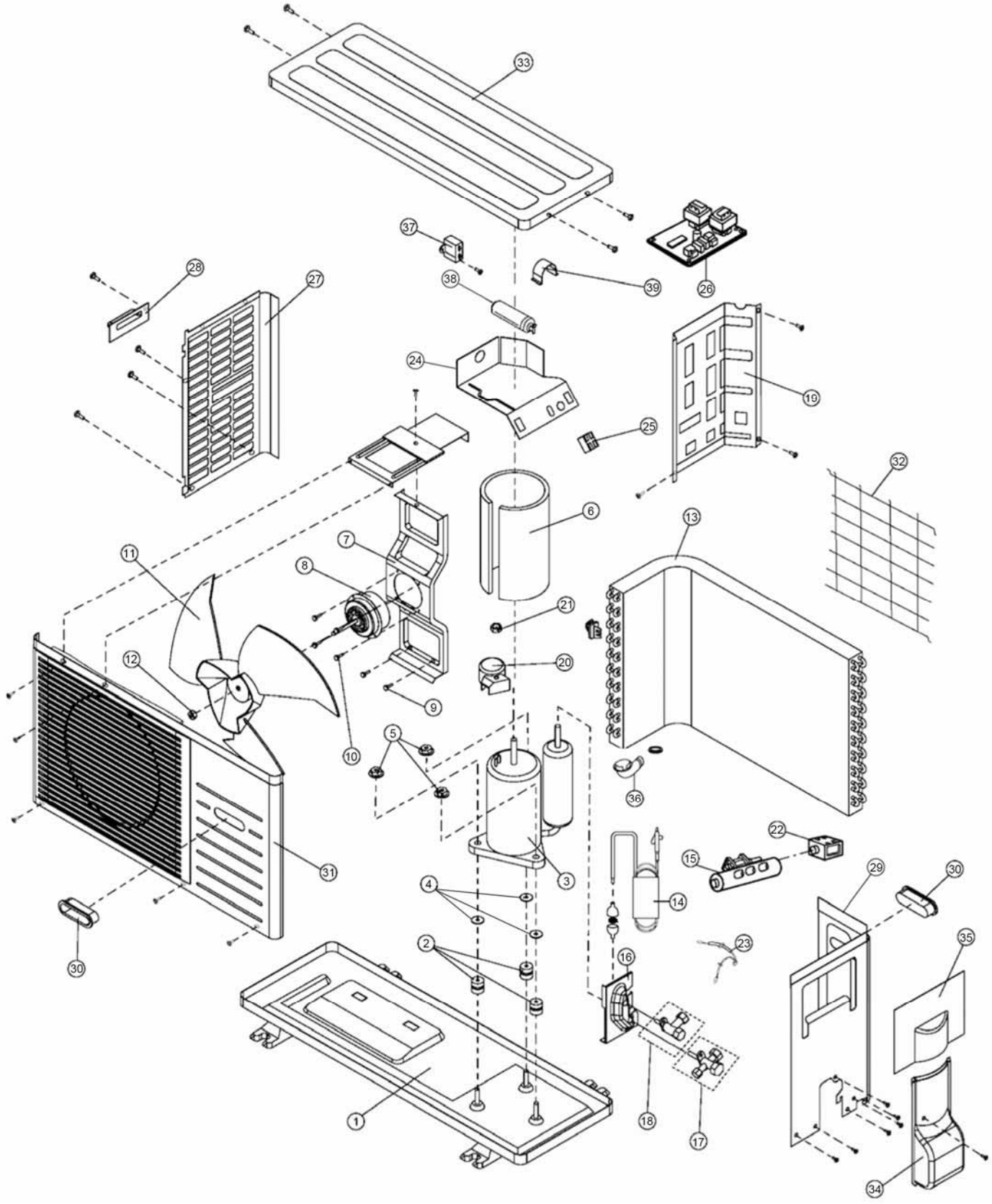
Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

REF. NO.	PART NAME & DESCRIPTION	QTY	CS-YA18MKD	CS-YA24MKD	REMARK
1	CHASSIS COMPLETE	1	CWD50C1654	←	
2	FAN MOTOR	1	ARW7628AC	ARW7627AC	○
3	CROSS FLOW FAN COMPLETE	1	CWH02C1077	←	
4	SCREW - CROSS FLOW FAN	1	CWH551146	←	
5	BEARING ASS'Y	1	CWH64K007	←	
6	EVAPORATOR	1	CWB30C2730	CWB30C2777	
7	FLARE NUT (LIQUID)	1	CWT251026	←	
8	FLARE NUT (GAS)	1	CWT251062	CWT251036	
9	HOLDER SENSOR	1	CWH32143	←	
10	BACK COVER CHASSIS	1	CWD933031	←	
11	CONTROL BOARD CASING	1	CWH102434	←	
12	TERMINAL BOARD COMPLETE	1	CWA28C2521	CWA28C2523	
13	POWER SUPPLY CORD-COMPLETE	1	CWA20C2829	CWA20C2836	○
14	ELECTRONIC CONTROLLER - MAIN	1	CWA73C5523	CWA73C5522	○
15	ELECTRONIC CONTROLLER-INDICATOR	1	CWA746284	←	
16	INDICATOR HOLDER	1	CWD933338	←	
17	SENSOR COMPLETE	1	CWA50C2401	←	
18	DISCHARGE GRILLE COMPLETE	1	CWE20C3162	←	
19	VERTICAL VANE	15	CWE241355	←	
20	CONNECTING BAR	1	CWE261230	←	
21	CONNECTING BAR	1	CWE261231	←	
22	CONNECTING BAR	1	CWE261232	←	
23	CONNECTING BAR	1	CWE261233	←	
24	CONNECTING BAR	1	CWE261234	←	
25	A.S.MOTOR,DC SINGLE 12V 300OHM	1	CWA981241	←	
26	HORIZONTAL VANE	1	CWE24C1377	←	
27	CAP - DRAIN TRAY	1	CWH521096	←	
28	CONTROL BOARD TOP COVER	1	CWH131447	←	○
29	CONTROL BOARD FRONT COVER	1	CWH13C1233	←	○
30	REMOTE CONTROL CO.(WIRELESS)	1	CWA75C3731	←	○
31	FRONT GRILLE COMPLETE	1	CWE11C5056	CWE11C5004	
32	INTAKE GRILLE COMPLETE	1	CWE22C1693	←	
33	E-ION FILTER	2	CWD001318	←	
34	SCREW - FRONT GRILLE	3	XTT4+16CFJ	←	
35	CAP - FRONT GRILLE	3	CWH521194	←	
36	DRAIN HOSE	1	CWH851173	←	
37	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1824	←	
38	INSTALLATION PLATE	1	CWH361098	←	
39	FULCRUM	2	CWH621103	←	
40	OPERATING INSTRUCTION	1	CWF567981	←	
41	INSTALLATION INSTRUCTION	1	CWF614818	←	
42	INSTALLATION INSTRUCTION	1	CWF614819	←	
43	FAN MOTOR BRACKET	1	CWD541160	←	○
44	AIR FILTER (SMALL)	2	CWD001319	←	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

17.2 Outdoor Unit



Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

REF. NO.	PART NAME & DESCRIPTION	QTY	CU-YA18MKD	CU-YA24MKD	REMARK
1	CHASSIS ASSY	1	CWD50K2087	←	
2	ANTI-VIBRATION BUSHING	3	CWH50055	←	O
3	COMPRESSOR	1	2JS318D3AA04	2JS438D3CC04	
4	PACKING	3	CWB81043	←	
5	NUT-COMPRESSOR MOUNT	3	CWH561049	←	
6	SOUND PROOF MATERIAL	1	CWG302221	←	
7	FAN MOTOR BRACKET	1	CWD541055	←	
8	FAN MOTOR	1	CWA951353J	←	
9	SCREW - FAN MOTOR BRACKET	2	CWH551217	←	O
10	SCREW - FAN MOTOR MOUNT	3	CWH55252J	←	
11	PROPELLER FAN ASSY	1	CWH03K1017	←	
12	NUT - PROPELLER FAN	1	CWH561038J	←	
13	CONDENSER	1	CWB32C2678	CWB32C2679	
14	TUBE ASSY(CHK.VALVE,CAP.TUBE)	1	CWT01C4945	CWT01C4944	O
15	4 WAYS VALVE	1	CWB001026J	←	
16	HOLDER - COUPLING	1	CWH351036	←	O
17	3 WAYS VALVE (GAS)	1	CWB011212	CWB011484	
18	2 WAYS VALVE (LIQUID)	1	CWB021483	←	
19	SOUND PROOF BOARD	1	CWH151051	←	O
20	TERMINAL COVER	1	CWH171012	←	O
21	NUT-TERMINAL COVER	1	CWH7080300J	←	
22	V-COIL COMPLETE (4-WAYS VALVE)	1	CWA43C2121J	←	
23	SENSOR COMPLETE (COMP. DISC.)	1	CWA50C2396	←	
24	CONTROL BOARD CASING	1	CWH102206	←	
25	TERMINAL BOARD ASSY	1	CWA28K1070J	←	
26	ELECTRONIC CONTROLLER - MAIN	1	CWA743367	←	
27	CABINET SIDE PLATE(L)	1	CWE041255A	←	
28	HANDLE	1	CWE161010	←	
29	CABINET SIDE PLATE(R)	1	CWE041083A	←	
30	HANDLE	2	CWE16000E	←	
31	CABINET FRONT PLATE CO.	1	CWE06K1043	←	
32	WIRE NET	1	CWD041041A	←	
33	CABINET TOP PLATE	1	CWE03K1009A	←	
34	CONTROL BOARD COVER (BOTTOM)	1	CWH131168	←	
35	CONTROL BOARD COVER (TOP)	1	CWH131169A	←	
36	ACCESSORY CO.(DRAIN ELBOW)	1	CWG87C900	←	
37	CAPACITOR-FM	1	DS441355NPQA	←	
38	CAPACITOR-COMP	1	CWA312079	←	
39	HOLDER-CAPACITOR	1	CWH30060	←	

(Note)

- All parts are supplied from PHAAM, Malaysia (Vendor Code: 00029488).
- "○" marked parts are recommended to be kept in stock.

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