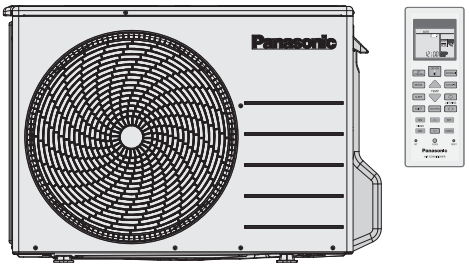
Order No: PAPAMY1801030CE

Service Manual

Air Conditioner



Indoor Unit
CS-C12UKF-2

Outdoor Unit
CU-C12UKF-2

Destination
Iran

⚠ 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.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

Panasonic®

TABLE OF CONTENTS

PAGE

1. Safety Precautions 3

2. Specification 5

3. Features....7

4. Location of Controls and Components....8

4.1 Indoor Unit....8
4.2 Outdoor Unit....8
4.3 Remote Control....8

5. Dimensions 9

5.1 Indoor Unit....9
5.2 Outdoor Unit....10

6. Refrigeration Cycle Diagram....11

7. Block Diagram 12

8. Wiring Connection Diagram....13

9. Electronic Circuit Diagram 14

10. Printed Circuit Board 15

10.1 Indoor Unit....15

11. Installation Instruction....18

11.1 Select the Best Location....18
11.2 Indoor Unit....19
11.3 Outdoor Unit....25

12. Operation Control....31

12.1 Cooling Operation....31
12.2 Soft Dry Operation....32
12.3 Automatic Operation....33
12.4 Indoor Fan Speed Control....34
12.5 Outdoor Fan Speed Control....35
12.6 Vertical Airflow Direction Control....36
12.7 Horizontal Airflow Direction Control....40
12.8 JETSTREAM Operation....41
12.9 Quiet Operation....43
12.10 Timer Control....44
12.11 Sleep Mode Operation....44
12.12 Random Auto Restart Control....44
12.13 Remote Control Signal Receiving Sound....44
12.14 nanoe-G Operation....45
12.15 In-filter Deactivation Operation....47
12.16 ECONAVI Operation....48

13. Protection Control....56

13.1 Restart Control (Time Delay Safety Control)....56
13.2 7 Minutes Time Save Control....56
13.3 60 Seconds Forced Operation....56
13.4 Starting Current Control....56
13.5 Freeze Prevention Control....57
13.6 Compressor Reverse Rotation Protection Control....57
13.7 Dew Prevention Control....57

14. Servicing Mode....58

PAGE

14.1 Auto OFF/ON Button....58
14.2 Remote Control Button....59

15. Troubleshooting Guide....62

15.1 Refrigeration Cycle System....62

16. Disassembly and Assembly Instructions....64

16.1 Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures....64

17. Technical Data....70

17.1 Thermostat Characteristics....70
17.2 Operation Characteristics....71

18. Exploded View and Replacement Parts List....73

18.1 Indoor Unit....73
18.2 Outdoor Unit....76

- Specifications, designs and contents in this Service Manual are subject to change without notice.

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 white background denotes item that is PROHIBITED.
	Symbol with dark background denotes item that must be carried out.

- 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.
- This appliance is not intended for accessibility by the general public.

	⚠ **WARNING**	
1.	Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.	
2.	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.	
3.	Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.	
4.	Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury. 	
5.	Do not sit or step on the unit, you may fall down accidentally. 	
6.	Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.	
7.	When installing or relocating 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.	
8.	Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.	
9.	Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.	
10.	Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.	
11.	Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.	
12.	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.	
13.	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.	
14.	Do not use joint cable for indoor/outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction **CONNECT THE CABLE TO THE INDOOR UNIT** and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.	
15.	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 fire or electrical shock.	
16.	This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD), with sensitivity of 30mA at 0.1 sec or less. Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown.	
17.	During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.	
18.	During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigeration piping 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
19.	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.
20.	After completion of installation, confirm there is no leakage of 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 the refrigerant contacts with fire.
22.	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 electrical shock in case of equipment breakdown or insulation breakdown.

	⚠ 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.	Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
3.	Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
4.	Do not touch the sharp aluminium fin, sharp parts may cause injury.
5.	Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
6.	Select an installation location which is easy for maintenance.
7.	Power supply connection to the room air conditioner. Use power supply cord 3 x 1.5 mm^2 type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited. 1) Power supply connection to the receptacle using power plug. Use an approved 15/16A power plug with earth pin for the connection to the socket. 2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.
8.	Installation work. It may need two people to carry out the installation work.

2. Specification

Model			Indoor	CS-C12UKF-2
			Outdoor	CU-C12UKF-2
Performance Test Condition				NEW JIS
Power Supply			Phase, Hz	Single, 50
			V	220
Cooling	Capacity		kW	3.51
			BTU/h	12000
			kJ/h	12640
	Running Current		A	5.1
	Input Power		W	1.10k
	EER		W/W	3.19
			BTU/hW	10.91
	Power Factor		%	98
	Indoor Noise (H / L)		dB-A	41 / 30
			Power Level dB	54 / -
	Outdoor Noise (H / L)		dB-A	51 / -
			Power Level dB	66 / -
Max Current (A) / Max Input Power (W)				7.4 / 1.60k
Starting Current (A)				26.0
Compressor		Type		Hermetic Motor
		Motor Type		Induction (2-poles)
		Output Power	W	950
Indoor Fan	Type			Cross-Flow Fan
	Material			ASG20K1
	Motor Type			DC Motor (8-poles)
	Input Power		W	46.2
	Output Power		W	40
	Speed	QLo	rpm	780
		Lo	rpm	850
		Me	rpm	1030
		Hi	rpm	1210
		SHi	rpm	1330
Outdoor Fan	Type			Propeller Fan
	Material			PP Resin
	Motor Type			AC Motor (4-poles)
	Input Power		W	86.9
	Output Power		W	46
	Speed	Hi	rpm	1000
Moisture Removal			L/h (Pt/h)	2.0 (4.2)
Indoor Airflow		QLo	m^3/min (ft^3/min)	7.0 (247)
		Lo	m^3/min (ft^3/min)	7.7 (272)
		Me	m^3/min (ft^3/min)	9.5 (335)
		Hi	m^3/min (ft^3/min)	11.2 (395)
		SHi	m^3/min (ft^3/min)	12.5 (441)
Outdoor Airflow		Hi	m^3/min (ft^3/min)	39.0 (1380)

Model		Indoor	CS-C12UKF-2	
		Outdoor	CU-C12UKF-2	
Refrigeration Cycle	Control Device		Capillary Tube	
	Refrigerant Oil	cm^3	FV50S (670)	
	Refrigerant Type	g (oz)	R22, 950 (33.5)	
Dimension	Height (I/D / O/D)	mm (inch)	295 (11-5/8)	619 (24-3/8)
	Width (I/D / O/D)	mm (inch)	919 (36-3/16)	824 (32-15/32)
	Depth (I/D / O/D)	mm (inch)	199 (7-27/32)	299 (11-25/32)
Weight	Net (I/D / O/D)	kg (lb)	9 (20)	32 (71)
Piping	Pipe Diameter (Liquid / Gas)	mm (inch)	6.35 (1/4) / 12.70 (1/2)	
	Standard length	m (ft)	5.0 (16.4)	
	Length range (min – max)	m (ft)	3 (9.8) ~ 20 (65.6)	
	I/D & O/D Height different	m (ft)	15 (49.2)	
	Additional Gas Amount	g/m (oz/ft)	10 (0.1)	
	Length for Additional Gas	m (ft)	7.5 (24.6)	
Drain Hose	Inner Diameter	mm	16.0	
	Length	mm	650	
Indoor Heat Exchanger	Fin Material		Pre Coat	
	Fin Type		Slit Fin	
	Row x Stage x FPI		2 x 15 x 17	
	Size (W x H x L)	mm	610 x 315 x 25.4	
Outdoor Heat Exchanger	Fin Material		Blue Coated	
	Fin Type		Slit Fin	
	Row x Stage x FPI		2 x 28 x 17	
	Size (W x H x L)	mm	25.4 x 588 x 775.4:795.3	
Air Filter	Material		Polypropelene	
	Type		One-touch	
Power Supply			Indoor	
Power Supply Cord		A	15	
Thermostat			-	
Protection Device			2-Stage Overload Protector	
			Dry Bulb	Wet Bulb
Indoor Operation Range		Maximum °C (°F)	32 (89.6)	23 (73.4)
		Minimum °C (°F)	20 (68)	11 (51.8)
Outdoor Operation Range		Maximum °C (°F)	55 (131)	31 (87.8)
		Minimum °C (°F)	16 (60.8)	11 (51.8)

* Applicable for new remote control for temperature range (20°C ~ 30°C).

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

3. Features

- Air Purifying System with nanoe-G
  - Deactivates and removes bacterial, viruses and mould.

- Long Installation Piping
  - Long piping up to 20 meters.

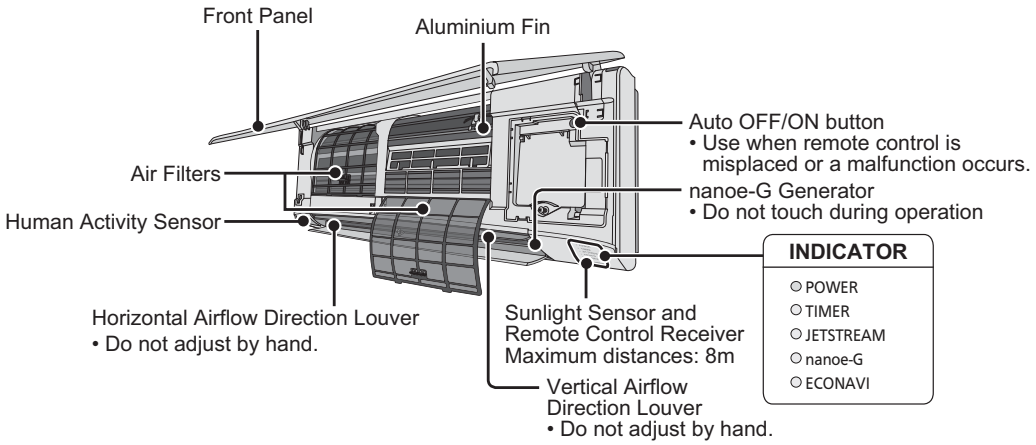
- Easy to use remote control

- Quality Improvement
  - Random auto restart after power failure for safety restart operation
  - Gas leakage protection
  - Prevent compressor reverse cycle
  - Inner protector to protect compressor
  - Noise prevention during soft dry operation
  - Blue coated condenser for high resistance to corrosion

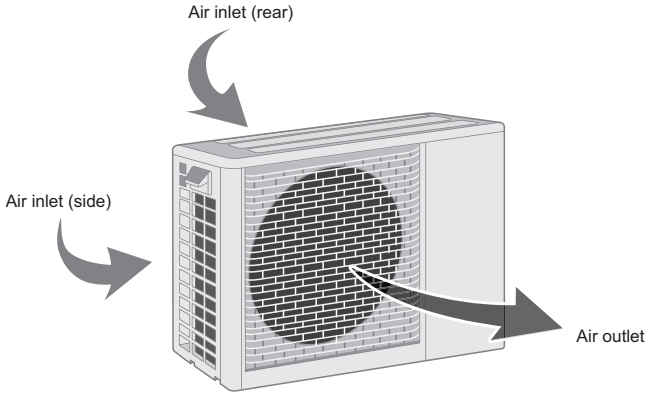
- Operation Improvement
  - Quiet mode to reduce the indoor unit operating sound
  - Jetstream mode to reach the desired room temperature quickly
  - 24-hour timer setting

4. Location of Controls and Components

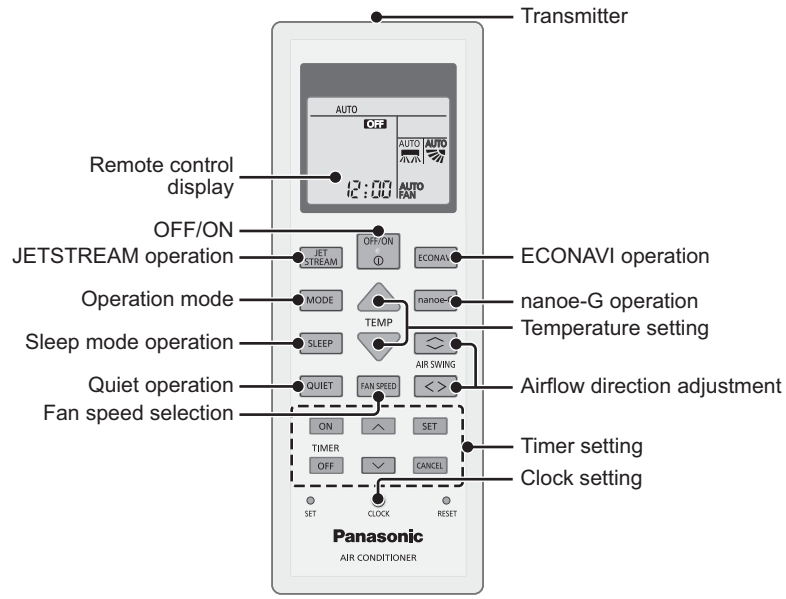
4.1 Indoor Unit



4.2 Outdoor Unit



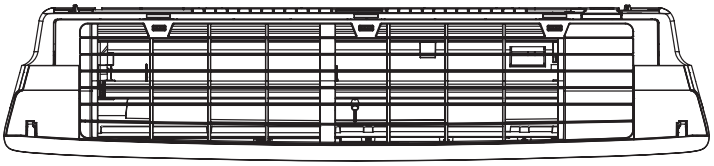
4.3 Remote Control



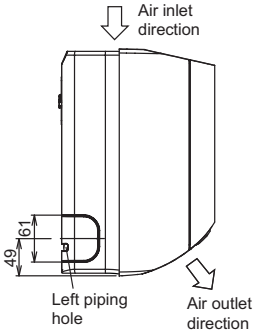
5. Dimensions

5.1 Indoor Unit

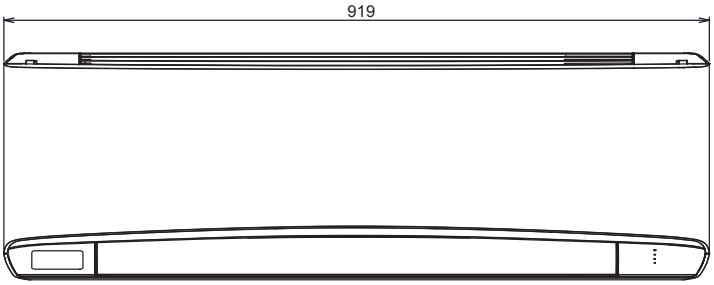
<Top View>



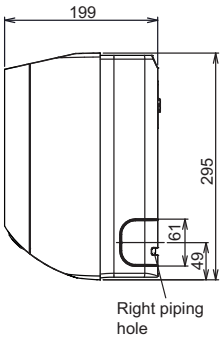
<Side View>



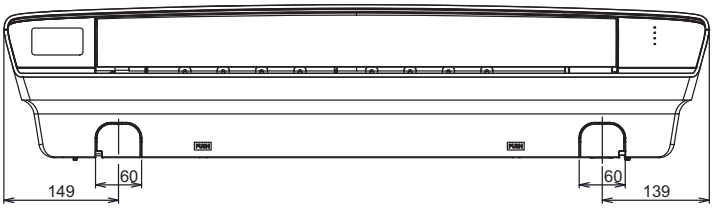
<Front View>



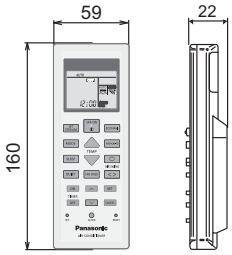
<Side View>



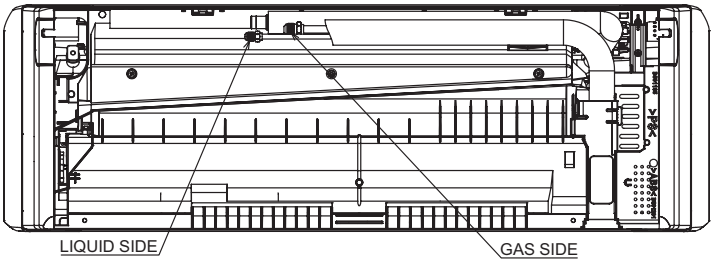
<Bottom View>



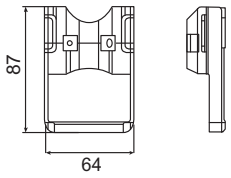
<Remote Control>



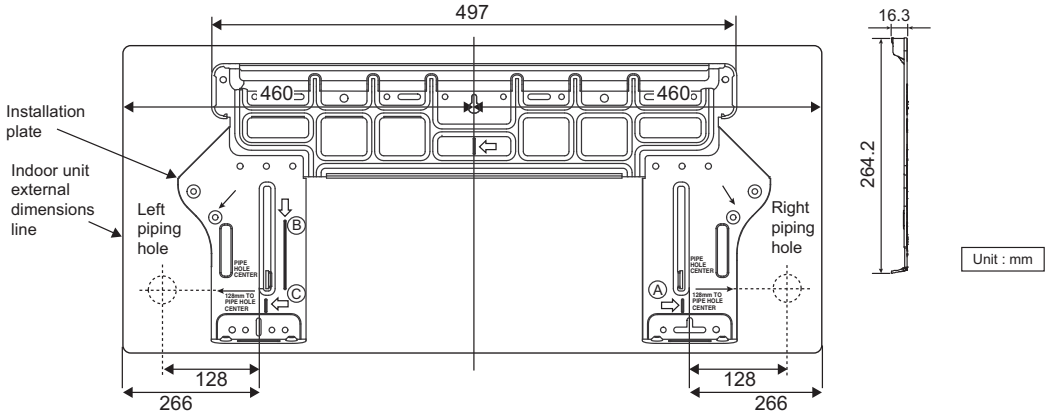
<Rear View>



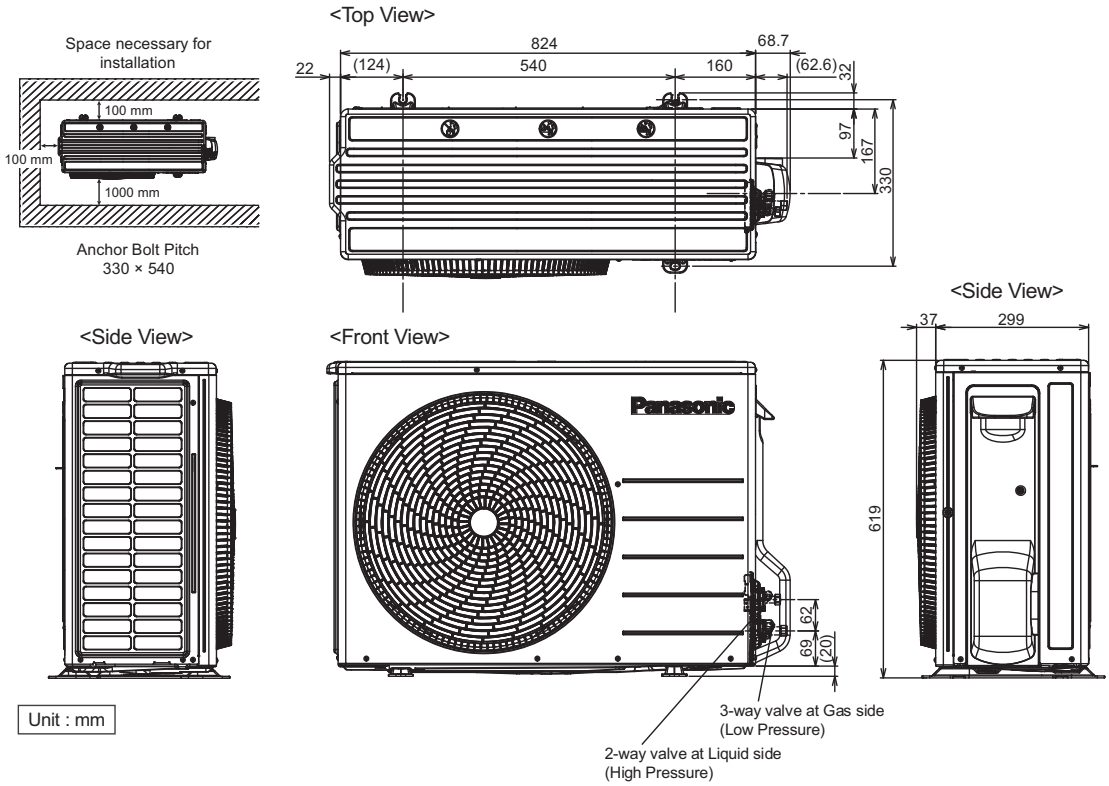
<Remote Control Holder>



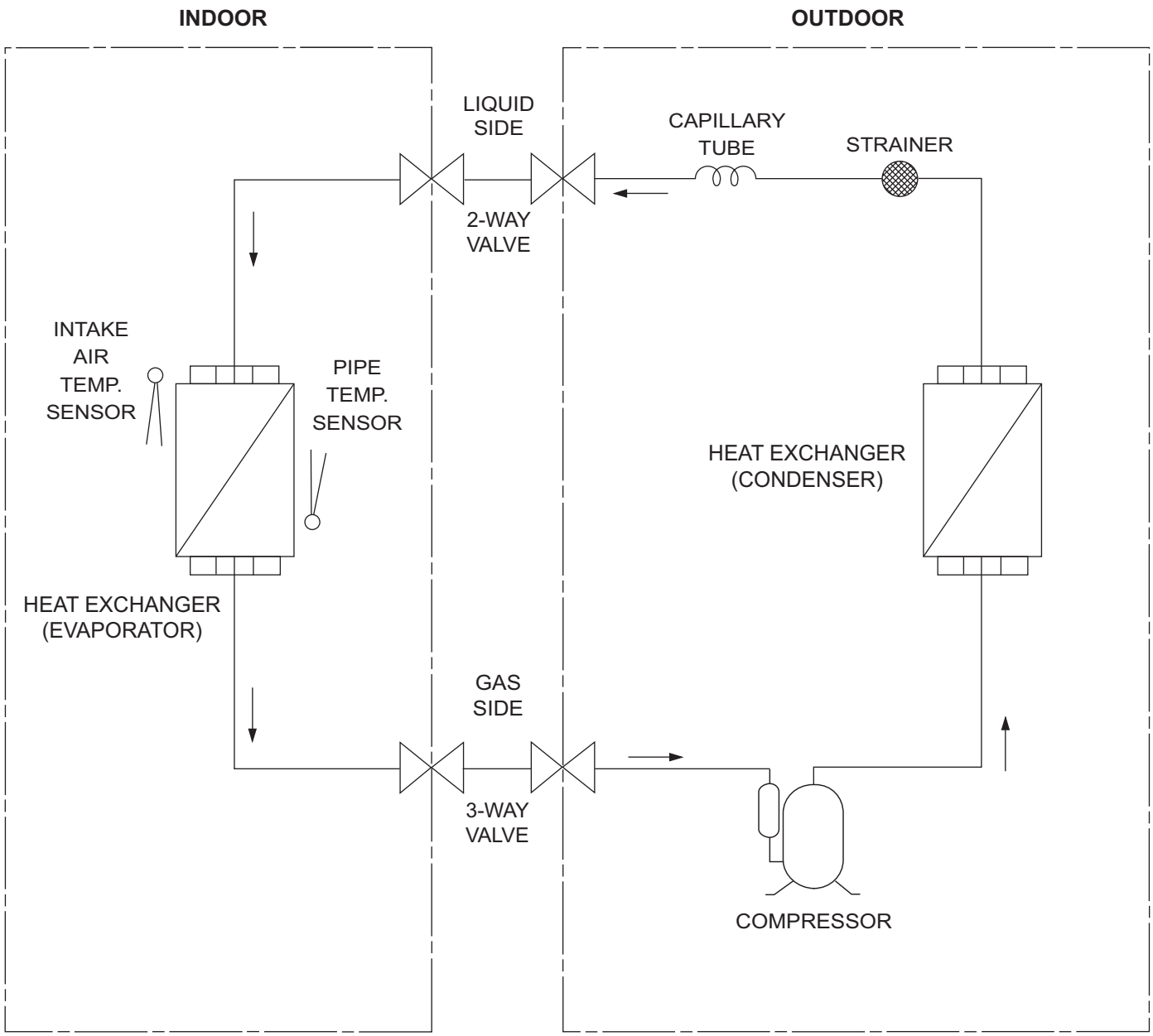
Relative position between the indoor unit and the installation plate <Front View>



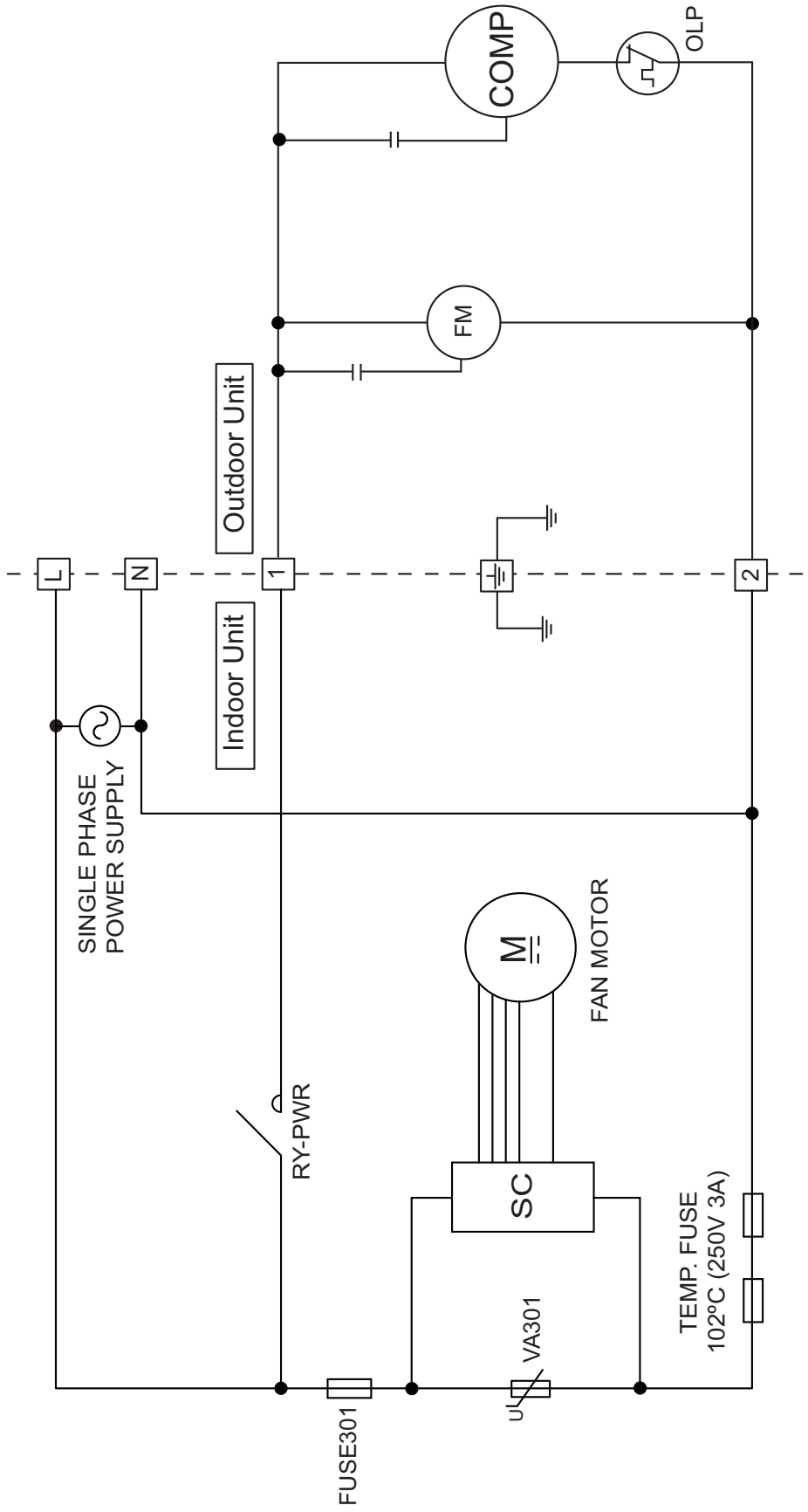
5.2 Outdoor Unit



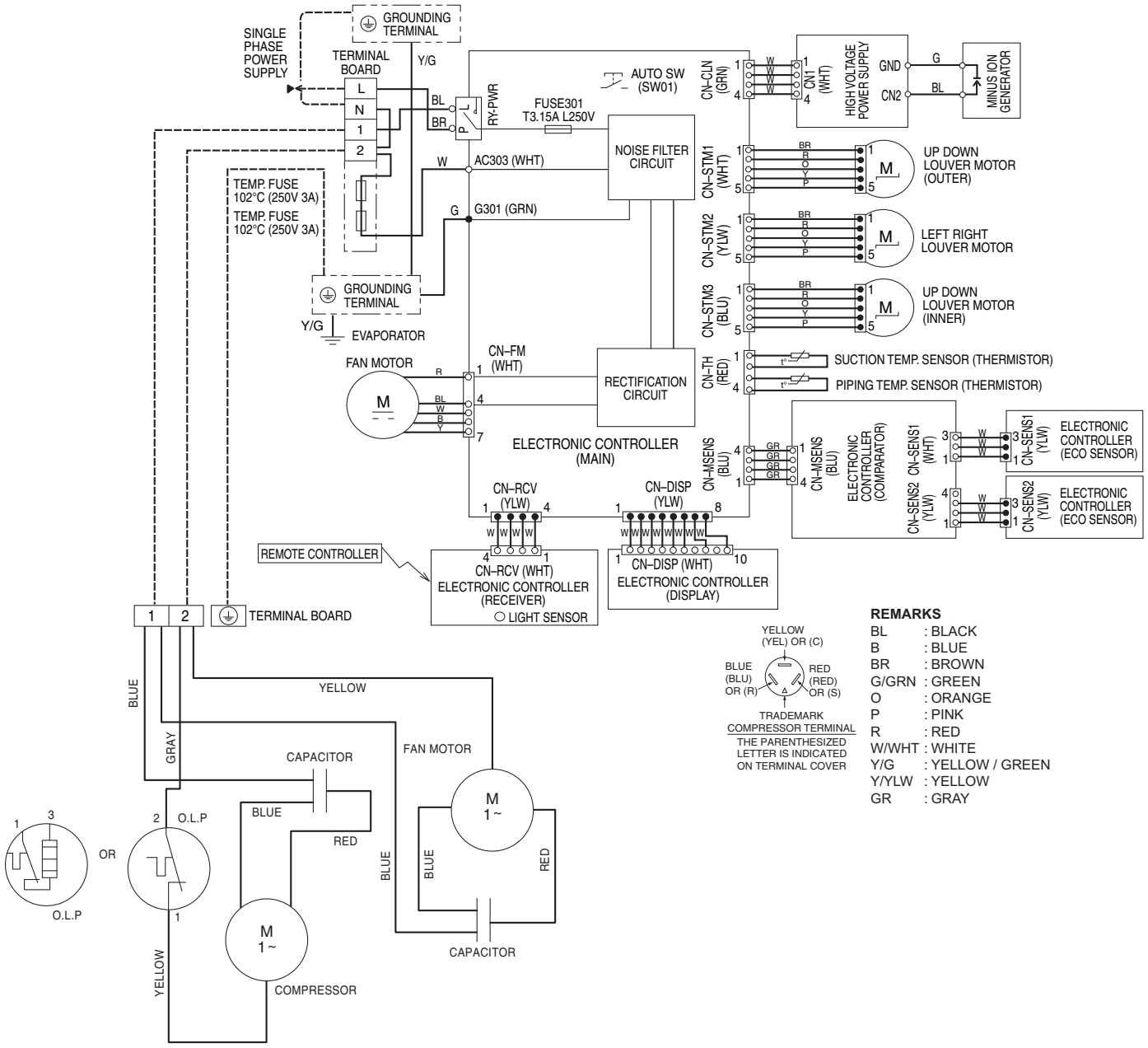
6. Refrigeration Cycle Diagram



7. Block Diagram



8. Wiring Connection Diagram



Resistance of Outdoor Fan Motor Windings

MODEL	CU-C12UKF-2
CONNECTION	ACXA92-00120
BLUE-YELLOW	137 Ω
YELLOW-RED	65 Ω

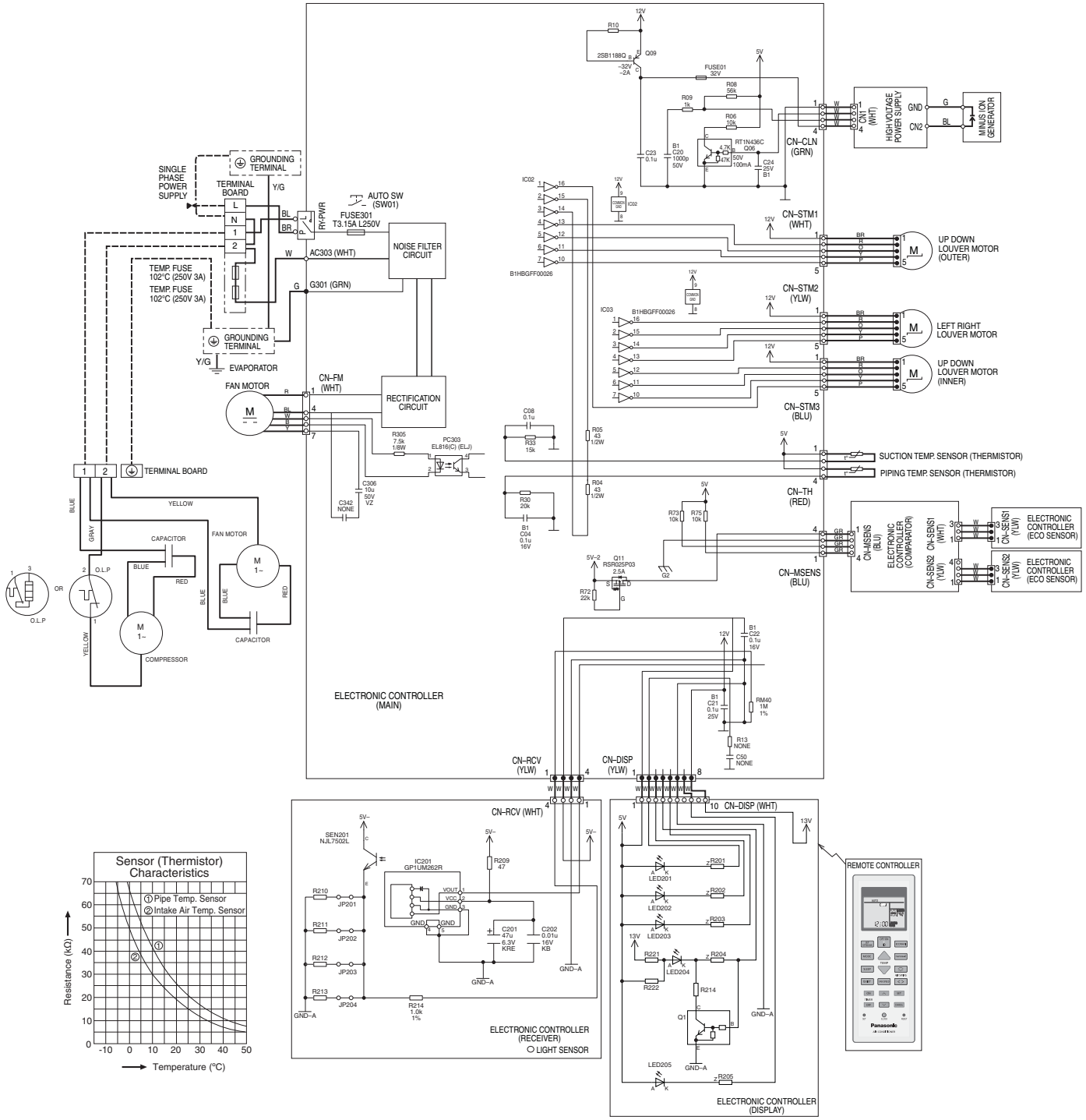
Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-C12UKF-2
CONNECTION	2PS206D3BB06
C-R	2.318 Ω
C-S	2.750 Ω

Note: Resistance at 20°C of ambient temperature.

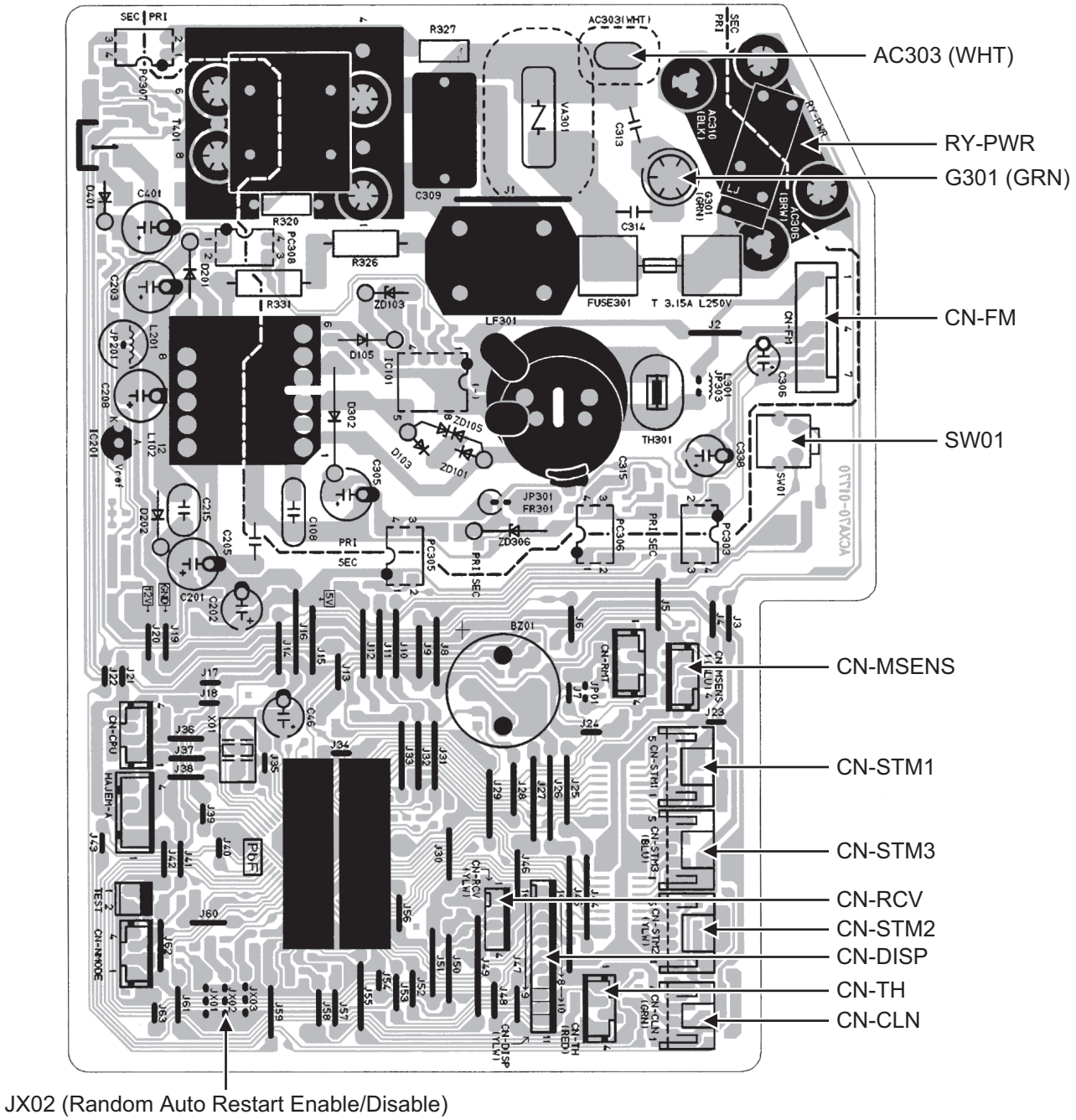
9. Electronic Circuit Diagram



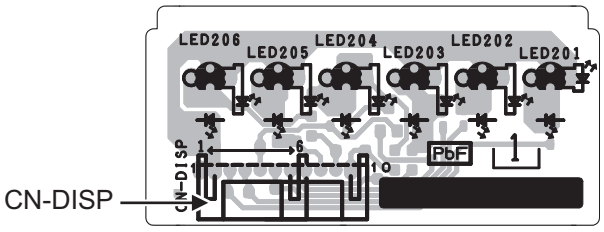
10. Printed Circuit Board

10.1 Indoor Unit

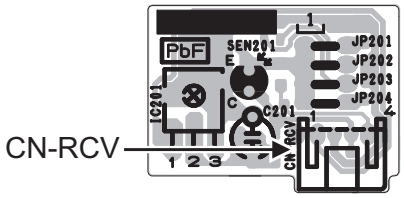
10.1.1 Main Printed Circuit Board



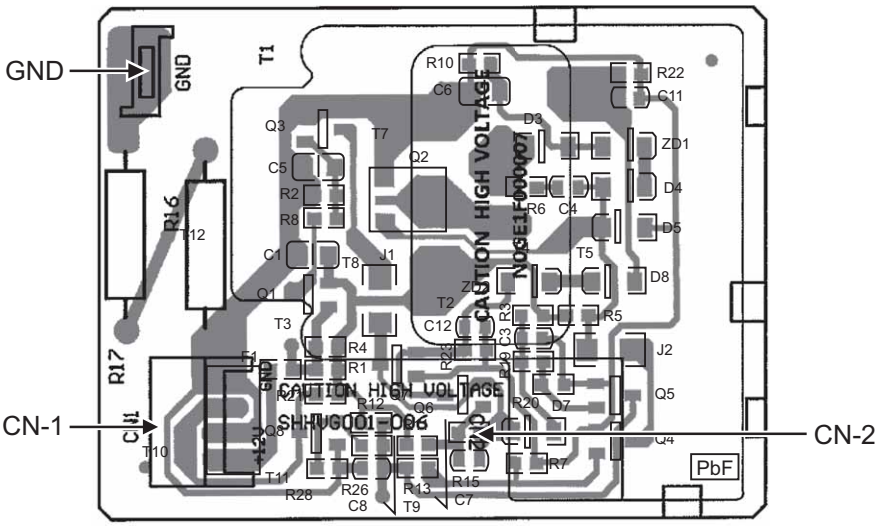
10.1.2 Indicator Display Printed Circuit Board



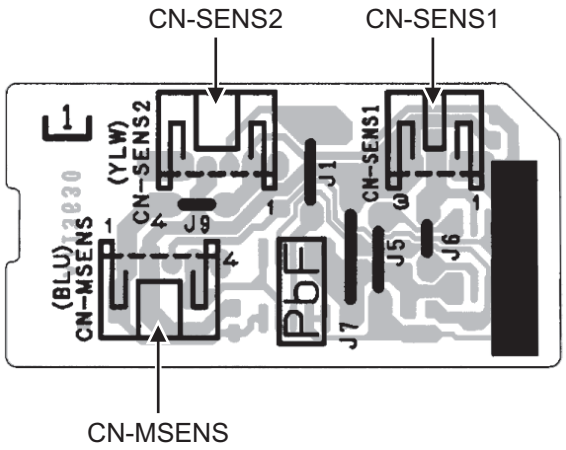
10.1.3 Receiver Printed Board



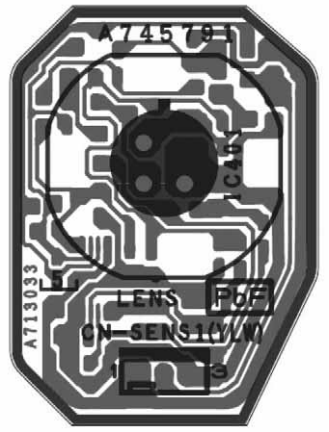
10.1.4 High Voltage Power Supply Printed Circuit Board

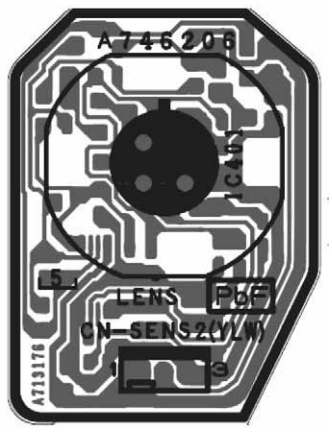


10.1.5 Comparator Printed Circuit Board



10.1.6 Human Activity Sensor Printed Circuit Board





11. Installation Instruction

11.1 Select the Best Location

11.1.1 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.
- Installation height for indoor unit must be at least 2.5 m.

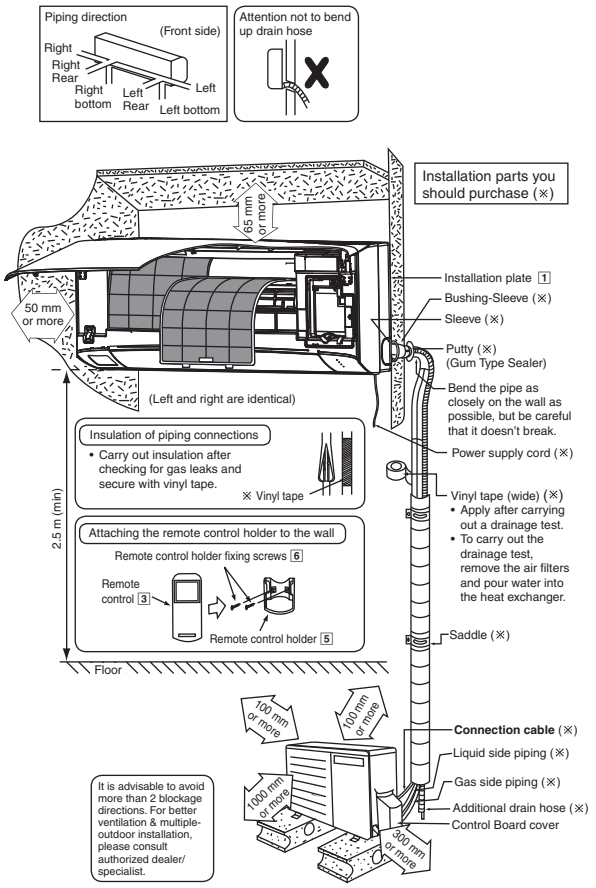
11.1.2 Outdoor Unit

- 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						
C12***	1.5HP	12.7 mm (1/2")	6.35 mm (1/4")	5	15	3	20	10	7.5

Example: For C12***
If the unit is installed at 10 m distance, the quantity of additional refrigerant should be 25 g .... (10-7.5) m x 10 g/m = 25 g.

11.1.3 Indoor/Outdoor Unit Installation Diagram

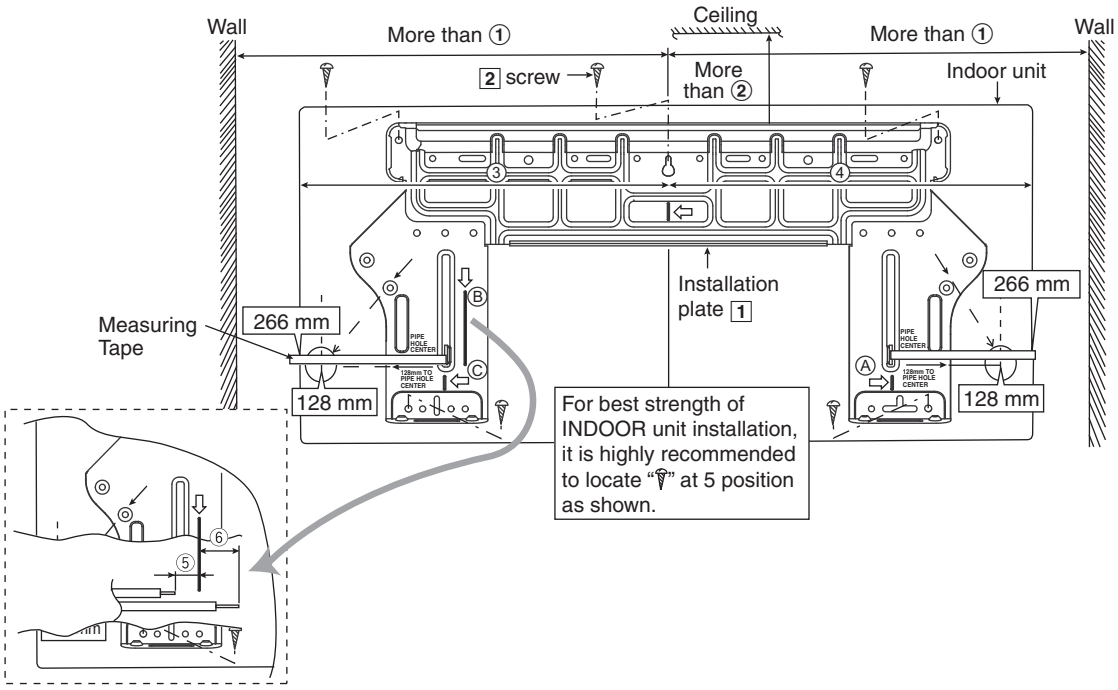


- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

11.2 Indoor Unit

11.2.1 How to Fix Installation Plate

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



Model	Dimension					
	①	②	③	④	⑤	⑥
C12***	515 mm	85 mm	460 mm	460 mm	17 mm	35 mm

The center 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 center to unit's left side is ③.
From installation plate center to unit's right side is ④.

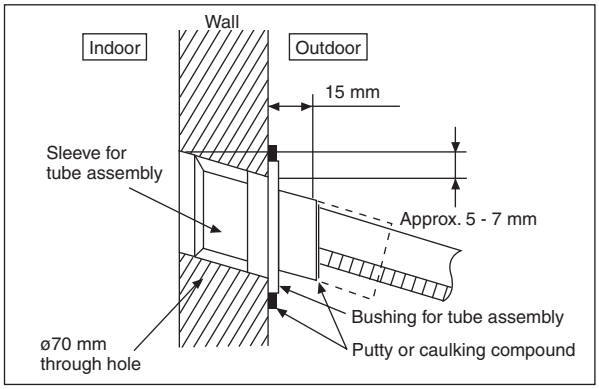
Ⓑ : For left side piping, piping connection for liquid should be about ⑤ from this line.
: For left side piping, piping connection for gas should be about ⑥ from this line.

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 ø70 mm 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 11.2.2)

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

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



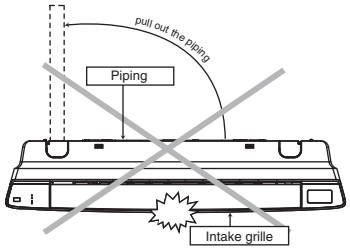
⚠ CAUTION

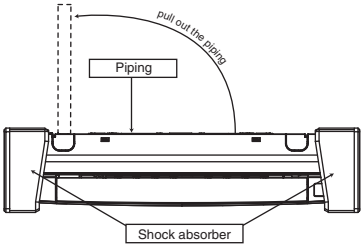
When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

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

11.2.3 Indoor Unit Installation

- Do not turn over the unit without it's shock absorber during pull out the piping. It may cause intake grille damage.
- Use shock absorber during pull out the piping to protect the intake grille from damage.





11.2.3.1 For the Right Rear Piping

Step-1 Pull out the Indoor piping

Step-2 Install the Indoor Unit

Step-3 Secure the Indoor Unit

Step-4 Insert the power supply cord and connection cable

- Insert the cables from bottom of the unit through the control board hole until terminal board area.

11.2.3.2 For the Right and Right Bottom Piping

Step-1 Pull out the Indoor piping

Step-2 Install the Indoor Unit

Step-3 Insert the power supply cord and connection cable

- Insert the cables from bottom of the unit through the control board hole until terminal board area.

Step-4 Secure the Indoor Unit

11.2.3.3 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

- The power supply cord and indoor unit and outdoor unit connection cable can be connected without removing the front grille.

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

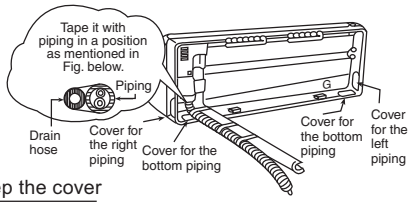
- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

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

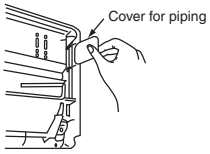
Right Rear piping



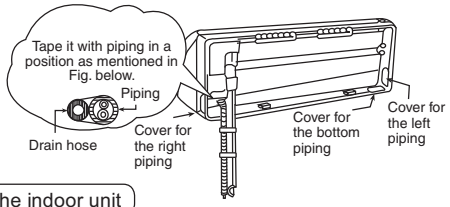
How to keep the cover

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.)

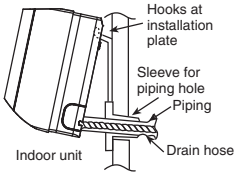


Right and Right Bottom piping



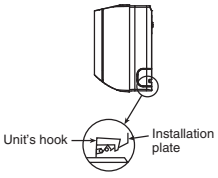
Install the indoor unit

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.

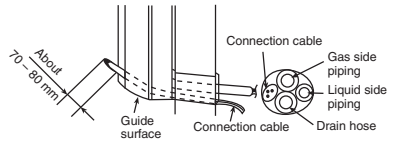


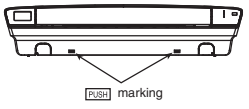
Secure the Indoor Unit

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



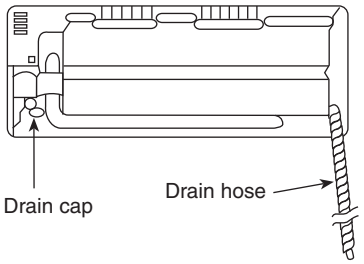


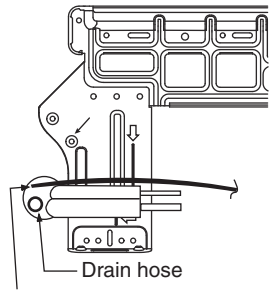
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

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

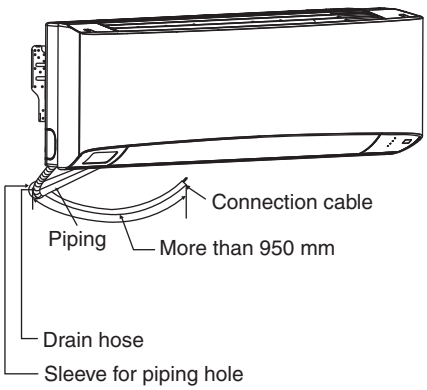
Replace the drain hose

Rear view for left piping installation

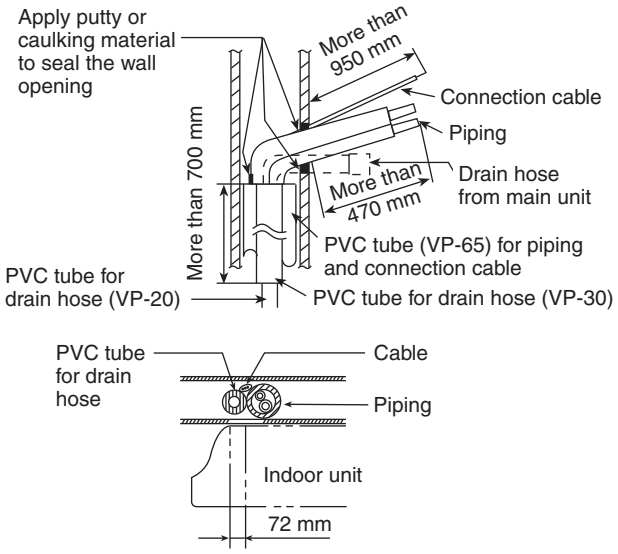




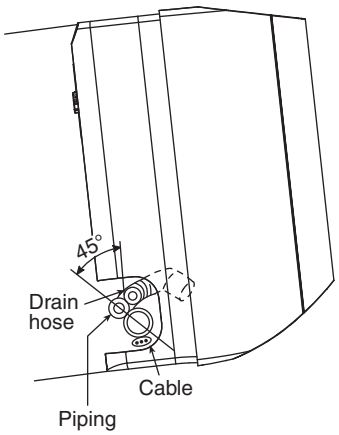
Adjust the piping slightly downwards



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



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



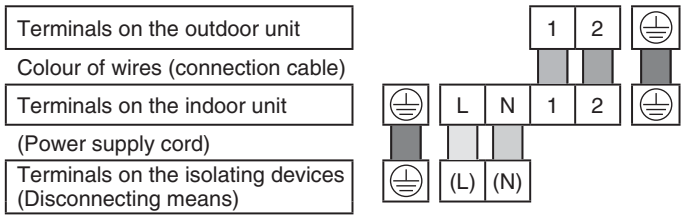
(For the right piping, follow the same procedure)

11.2.4 Connect the Cable to the Indoor Unit

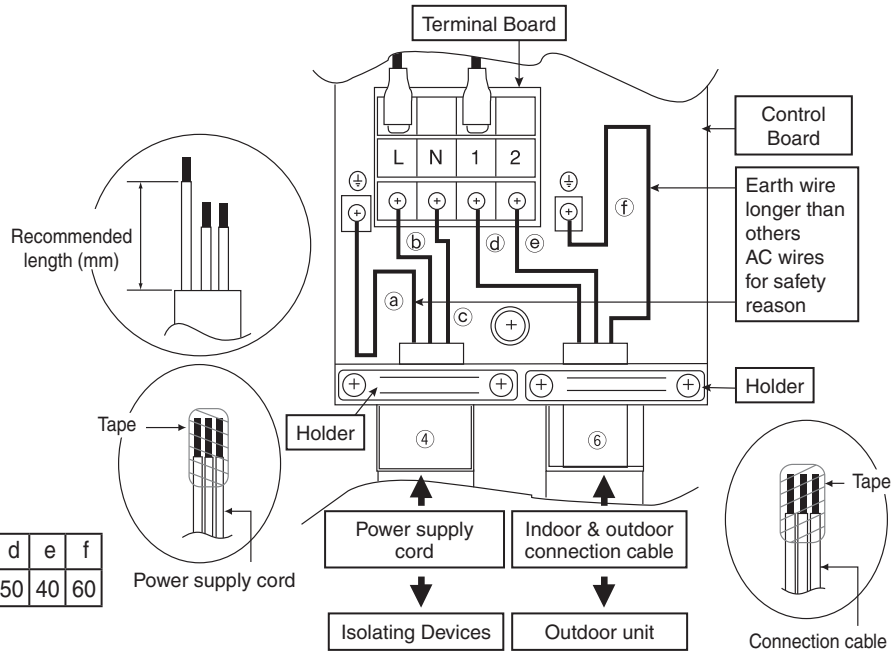
The power supply cord, indoor and outdoor unit connection cable can be connected without removing the front grille.

1 Install the indoor unit on the installing holder that mounted on the wall.
2 Open the front panel and grille door by loosening the screw.
3 Cable connection to the power supply through Isolating Devices (Disconnecting means).
   - Connect the approved polychloroprene sheathed **power supply cord** 3 x 1.5 mm^2 type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the other end of the cable to Isolating Devices (Disconnecting means).
   - Do not use joint power supply cord. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.
   - In unavoidable case, joining of power supply cord between isolating devices and terminal board of air conditioner shall be done by using approved socket and plug with earth pin rated 15/16A. Wiring work to both socket and plug must follow to national wiring standard.
4 Bind all the power supply cord lead wire with tape and route the power supply cord via the left escapement.
5 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 x 1.5 mm^2 flexible cord, type designation 60245 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.
6 Bind all the indoor and outdoor connection cable with tape and route the connection cable via the right escapement.

7 Remove the tapes and connect the power supply cord and connection cable between indoor unit and outdoor unit according to the diagram below.



8 Secure the power supply cord and connection cable onto the control board with the holder.
9 Close grille door by tighten with screw and close the front panel.



Recommended length (mm)	a	b	c	d	e	f
	55	35	35	50	40	60

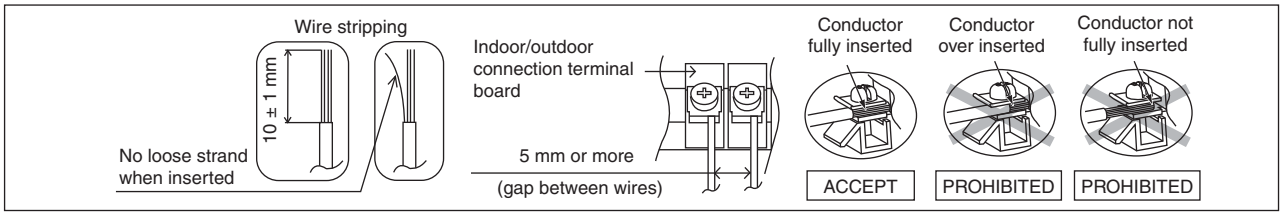
⚠ WARNING

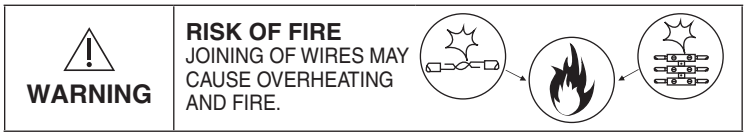
This equipment must be properly earthed.

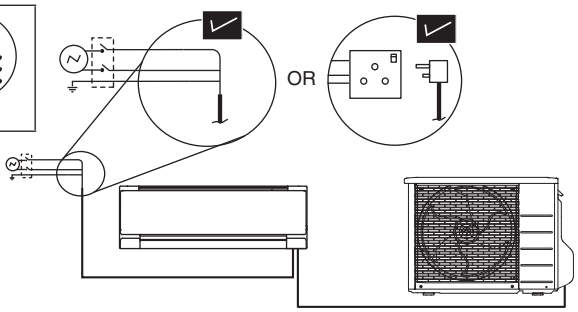
Note:

- Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
- 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 as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.

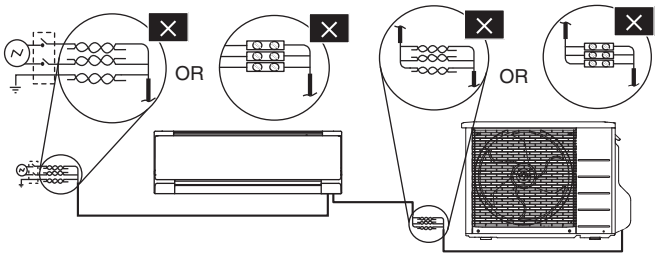
11.2.4.1 Wire Stripping and Connecting Requirement







Do not joint wires

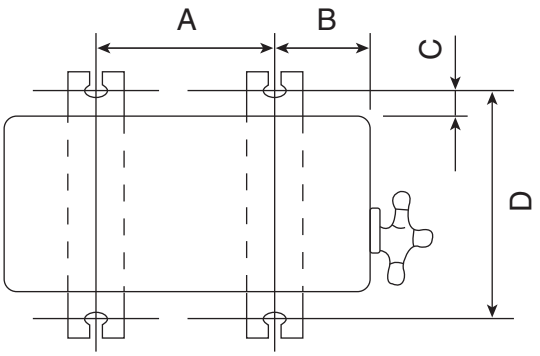


- Use complete wire without joining.
- Use approved socket and plug with earth pin.
- Wire connection in this area must follow to national wiring rules.

11.3 Outdoor Unit

11.3.1 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.
  3 Please fasten the installation stand firmly with bolt or nails.



Model	A	B	C	D
C12***	540 mm	160 mm	18.5 mm	330 mm

11.3.2 Connect the Piping

11.3.2.1 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)

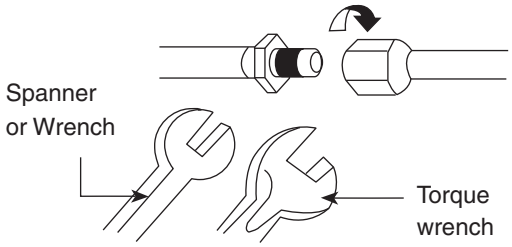
Connect the piping

- 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.

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)]

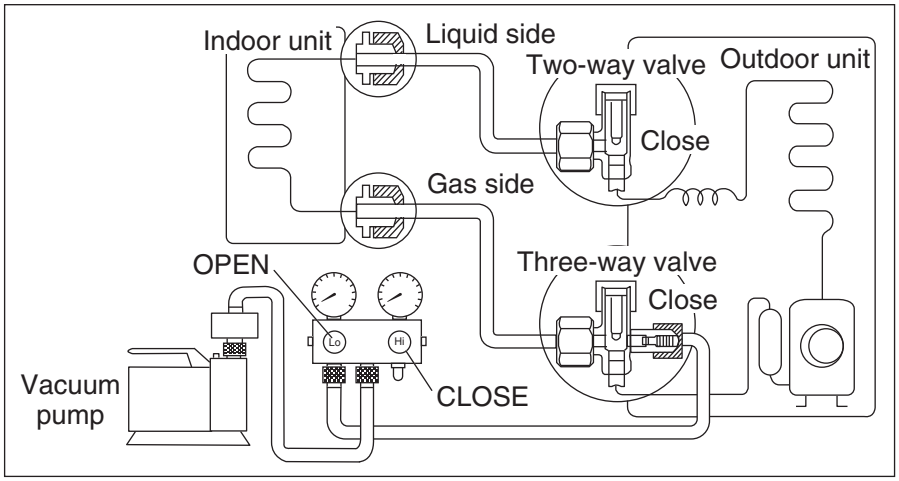
11.3.2.2 Connecting the Piping to Outdoor

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.



11.3.3 Evacuation of the Equipment

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



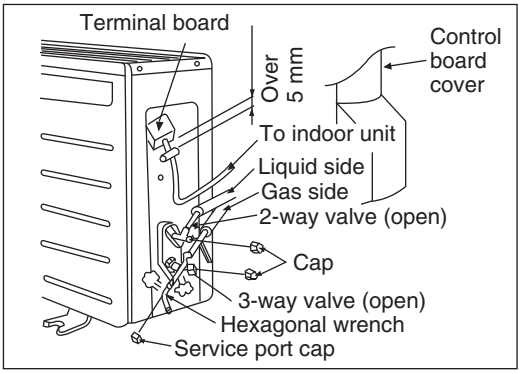
1 Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2 Connect the center hose of the charging set to a vacuum pump.
3 Turn on the power switch of 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 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 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.

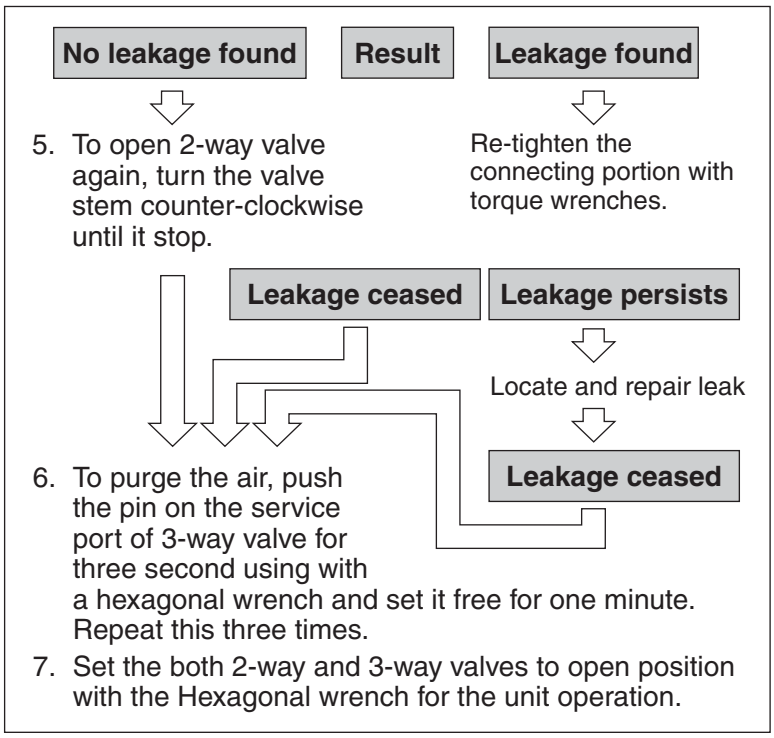
- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step ③ above take the following measure:
- If the leak stops when the piping connections are tightened further, continue working from step ③.
- If the leak does not stop when the connections are retightened, repair location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

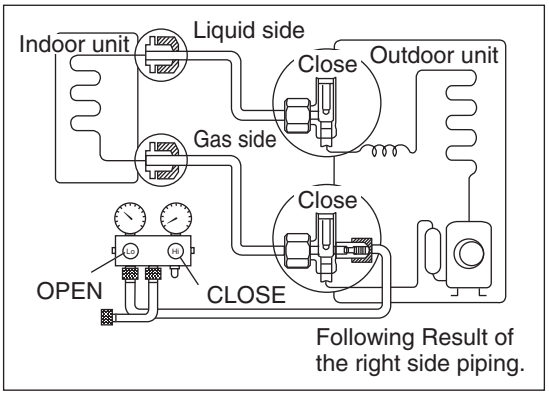
11.3.4 Air Purging of the Piping and Indoor

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).



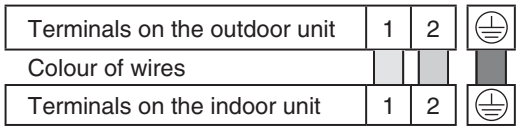




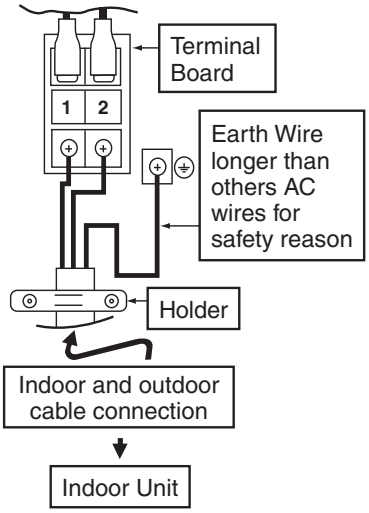
4(A). Checking gas leakage for left piping
1) a. Connect the manifold gauge to the service port of 3-way valve.
   b. Measure the pressure.
2) a. Keep it for 5-10 minutes.
   b. Ensure that the pressure indicated on the gauge is the same as that of measured during the first time.

11.3.5 Connect the Cable to the Outdoor Unit

1 Remove the control board cover from the unit by loosening the screw.
2 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 x 1.5 mm^2 flexible cord, type designation 60245 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.



3 Secure the cable onto the control board with the holder (clamper).
4 Attach the control board cover back to the original position with screw.
5 For wire stripping and connection requirement, refer to instruction 11.2.4 of indoor unit.



⚠ WARNING
⏚ This equipment must be properly earthed.

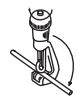
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

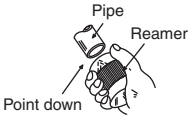
11.3.6 Piping Insulation

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.

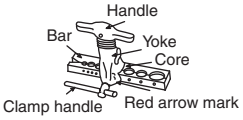
11.3.6.1 Cutting and Flaring the Piping

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.

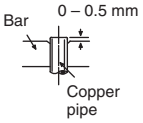

1. To cut

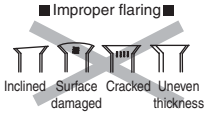


2. To remove burrs



3. To flare



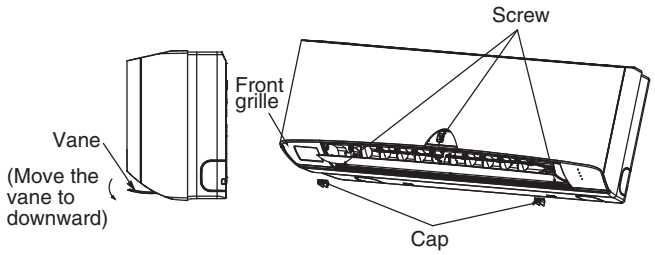


When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

11.3.7 How to Take Out Front Grille

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

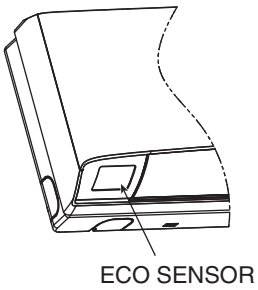
1 Set the vertical airflow direction louvers to the horizontal position.
2 Remove the 2 caps on the front grille as shown in the illustration.
3 And then remove the 3 mounting screws.
4 Pull the lower section of the front grille towards you to remove the front grille.



When reinstalling the front grille, carry out above step 2 - 3 in the reverse order.

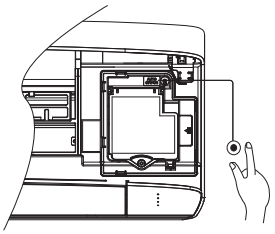
11.3.8 ECO Sensor

- Do not hit or violently press the sensor.
  This can lead to damage and malfunction.
- Do not place large objects near the sensor and keep heating units or humidifiers of the sensor's detection area.
  This may lead to sensor malfunction.



11.3.9 Auto Switch Operation

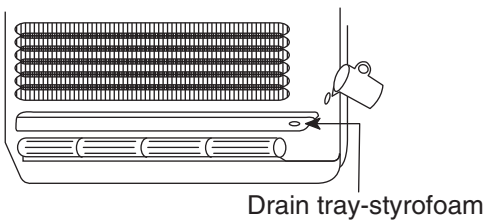
The below operations will be performed by pressing the "AUTO" switch.



1 AUTO OPERATION MODE
  The Auto operation will be activated immediately once the Auto Switch is pressed and release within 5 sec..
2 TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
  The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation.
3 REMOTE CONTROLLER RECEIVING SOUND ON/OFF
  The ON/OFF of Remote controller receiving sound can be change over by the following steps:
  a) Press "AUTO" switch continuously for 5 sec. until "pep pep" sound is heard during fi rst 20 sec. from step 2.
  b) Press "AUTO" switch again. Everytime "AUTO" switch is pressed (within 20 sec. interval), Remote controller receiving sound status will be swapped between ON and OFF. Long "peep" sound indicates that Remote controller receiving sound is ON. Short "pep" sound indicates that Remote controller receiving sound is OFF.

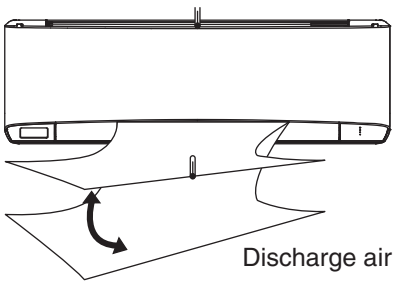
11.3.10 Check the Drainage

- 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.



11.3.11 Evaluation of the Performance

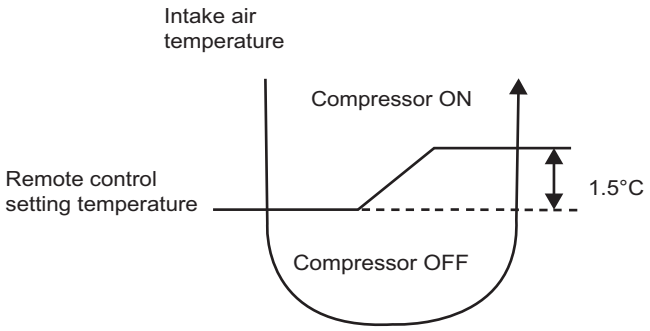
- Operate the unit at cooling/heating operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C during Cooling operation or more than 14°C during Heating operation.



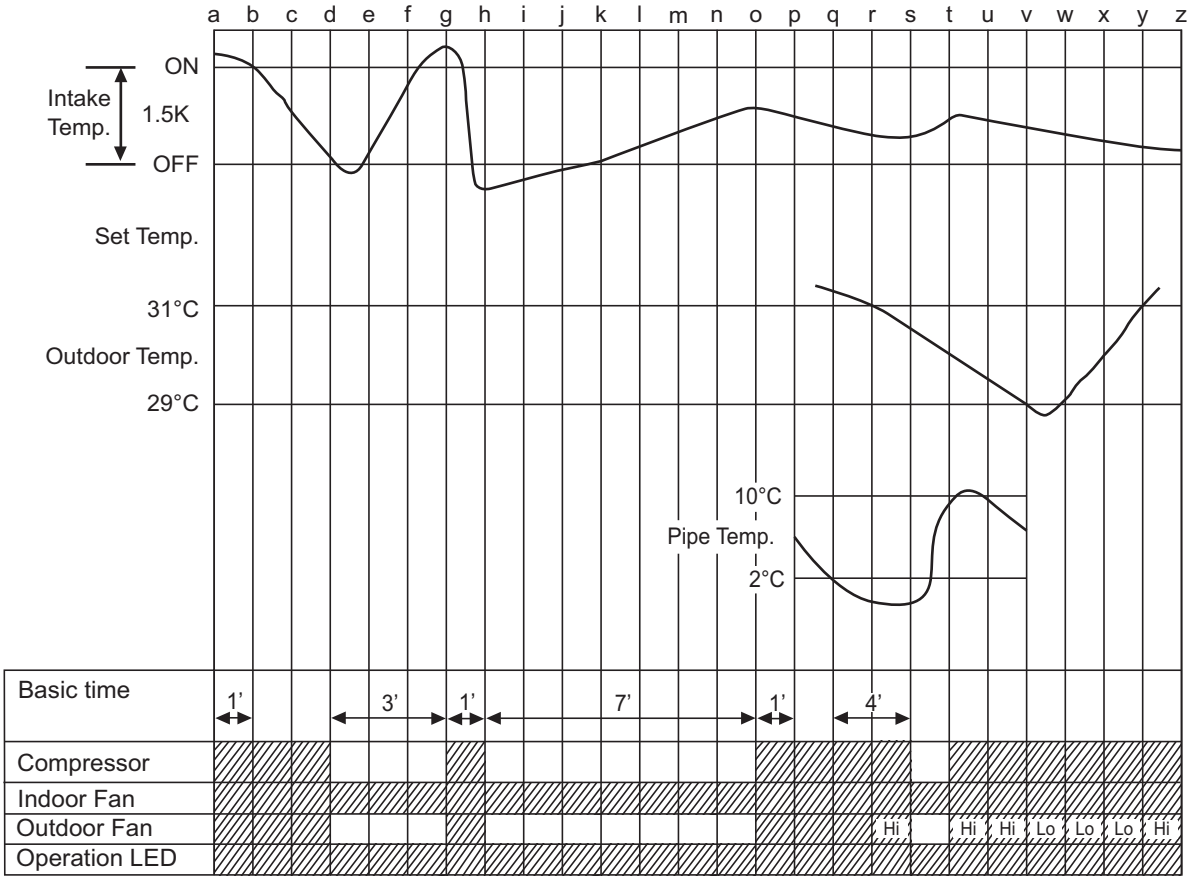
12. Operation Control

12.1 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 and 20°C to 30°C (Applicable for new remote control for temperature range (20°C ~ 30°C)).
- During cooling operation, the compressor will stop and restart as shown in figure below:



12.1.1 Cooling Operation Time Diagram



<Description of operation>

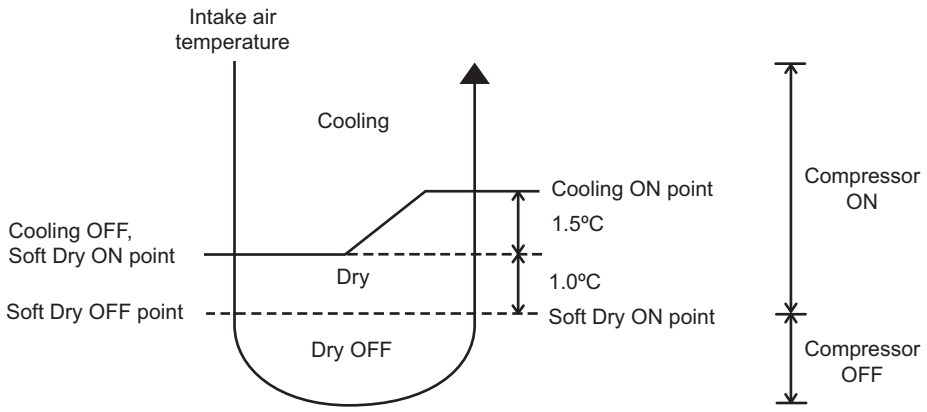
d - g	: restart control (waiting for 3 min.)
a -b, g - h, o - p	: 60 sec. Forcible operation.
h - o	: 7 min. time save control.
q - t	: freeze prevention control.
v - y	: outdoor fan control.

Operation

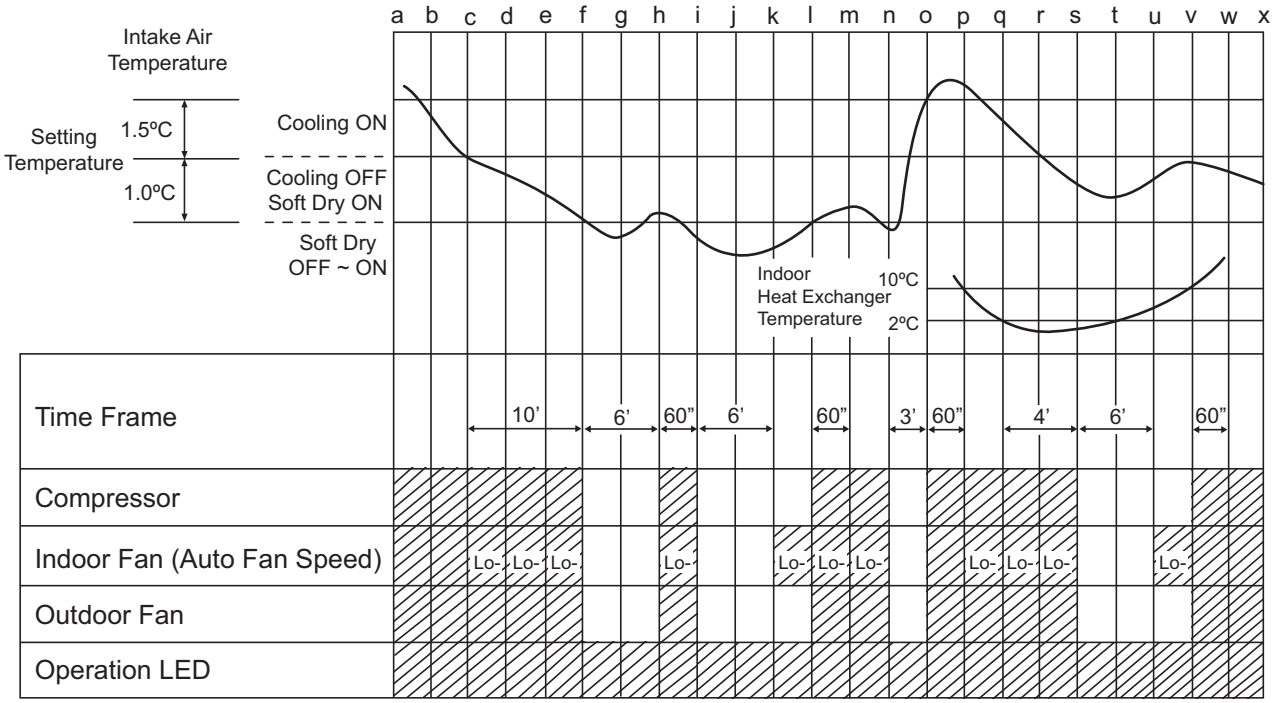
Stop

12.2 Soft Dry Operation

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



12.2.1 Soft Dry Operation Time Diagram



<Description of operation>

h - i, l - m, o - p, v - w	: Minimum 60 seconds forced operation
n - o	: Minimum 3 minutes restart control (Time Delay Safety Control) - Cooling operation
f - h, i - k, s - u	: Minimum 6 minutes restart control (Time Delay Safety Control) - Soft dry operation
q - v	: Freeze Prevention Control

Operation

Stop

12.3 Automatic Operation

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

Intake Air Temperature		
	↑ 23°C	Cooling Operation
	↓	Soft Dry 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
Soft Dry Operation	22°C

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

			Cooling	Soft Dry
Higher	→	+2°C	27°C	24°C
Standard	→	±0°C	25°C	22°C
Lower	→	-2°C	23°C	20°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	Cooling Operation
	↓	Soft Dry Operation

	Setting Temperature (Standard)
Cooling Operation	27°C
Soft Dry Operation	24°C

12.4 Indoor Fan Speed Control

- Indoor fan speed can be set using remote control.

12.4.1 Fan Speed Rotation Chart

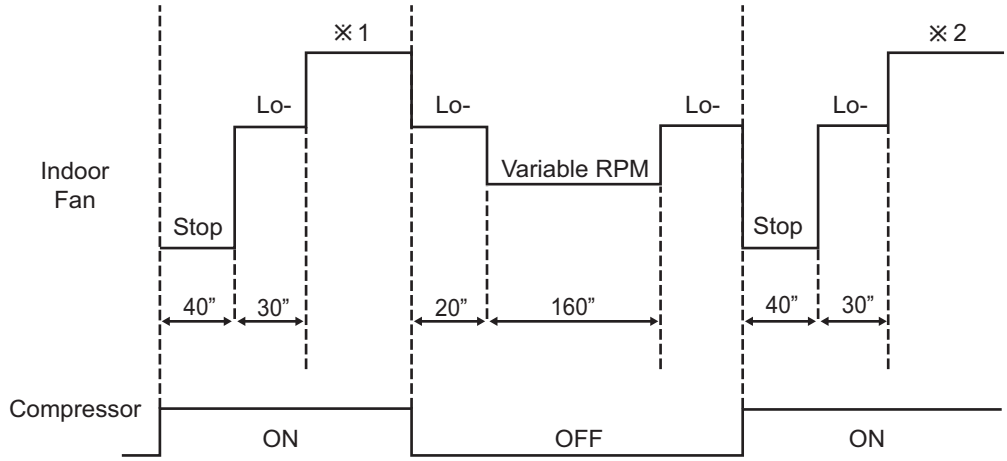
Speed	Fan Speed (rpm)
	CS-C12UKF-2
Shi	1330
Hi	1210
Me	1030
HLo	890
CLo	850
Lo-	810
SLo	790
Qhi	1140
QMe	960
QLo	780

12.4.2 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.

				SHi	Hi	Me	HLo	CLo	Lo-	SLo	Stop
Cooling	Normal	Manual	Hi		o						
			Me			o					
			Lo					o			
		Auto			o	o			o		o
	Quiet	Manual	QHi		Hi-90						
			QMe			Me-90					
			QLo					CLo-90			
		Auto			Hi-90	Me-90			o		o
	Jetstream			o							
Soft Dry	Normal	Manual							o		o
		Auto							o		o
	Quiet	Manual							o		o
		Auto							o		o
Mode Judgment										o	

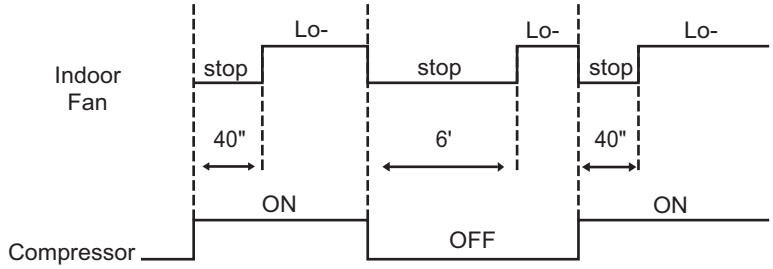
- Auto Fan Speed during cooling operation:
  1 Indoor fan will rotate alternately between off and on as shown in below diagram.
  2 At the beginning of each compressor starts operation, indoor fan speed increases gradually for deodorizing purpose.
  3 For the first time the compressor operates, indoor 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 Soft Dry operation.
  1 Indoor fan will rotate alternately between off and Lo-.
  2 At the beginning of each compressor starts operation, indoor fan will increase fan speed gradually for deodorizing purpose.
  3 When compressor turned off for 6 minutes, indoor fan will start at Lo- to circulate the air in the room. This is to obtain the actual reading of intake air temperature.



12.4.3 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.

12.4.4 Indoor Fan Motor rpm Abnormal Control

- Immediate after the fan motor is started, rpm abnormal control is performed every second.
- During fan motor on, if fan motor feedback ≥ 2550 rpm or < 50 rpm continuously for 10 seconds, the fan motor error counter increased; fan motor is then stopped and restarted. If the fan motor error counter increased to 7, then air conditioner will stop operation.

12.5 Outdoor Fan Speed Control

- There is only one speed for outdoor fan motor. (Applicable for CU-C12UK)
- 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.

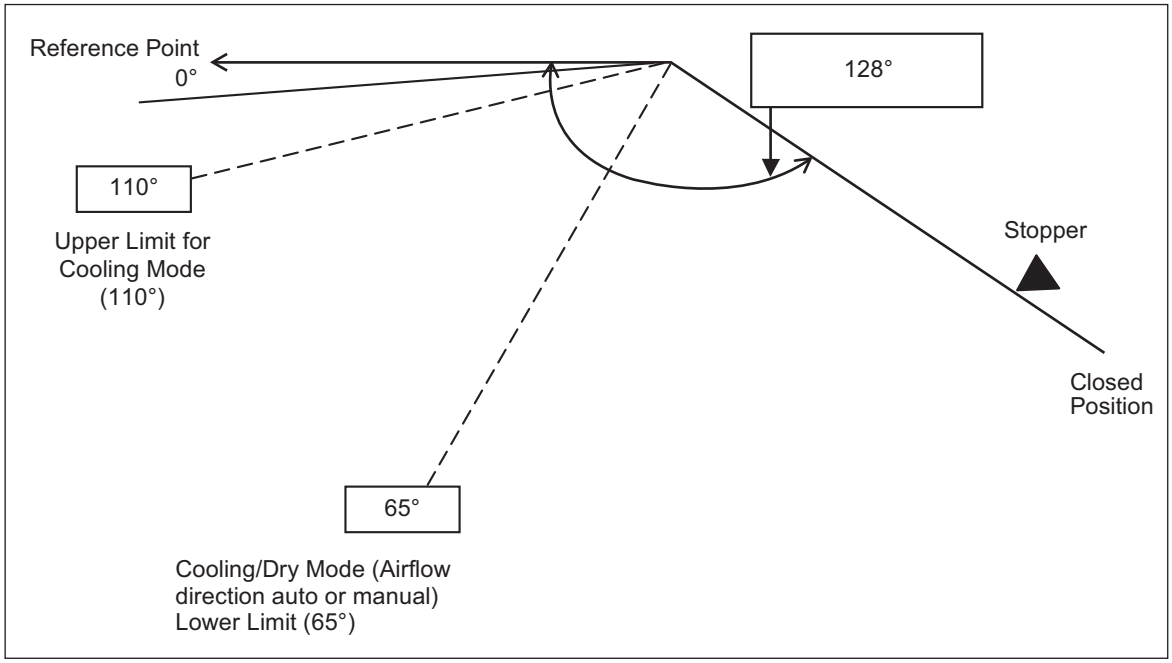
12.6 Vertical Airflow Direction Control

12.6.1 Auto Control

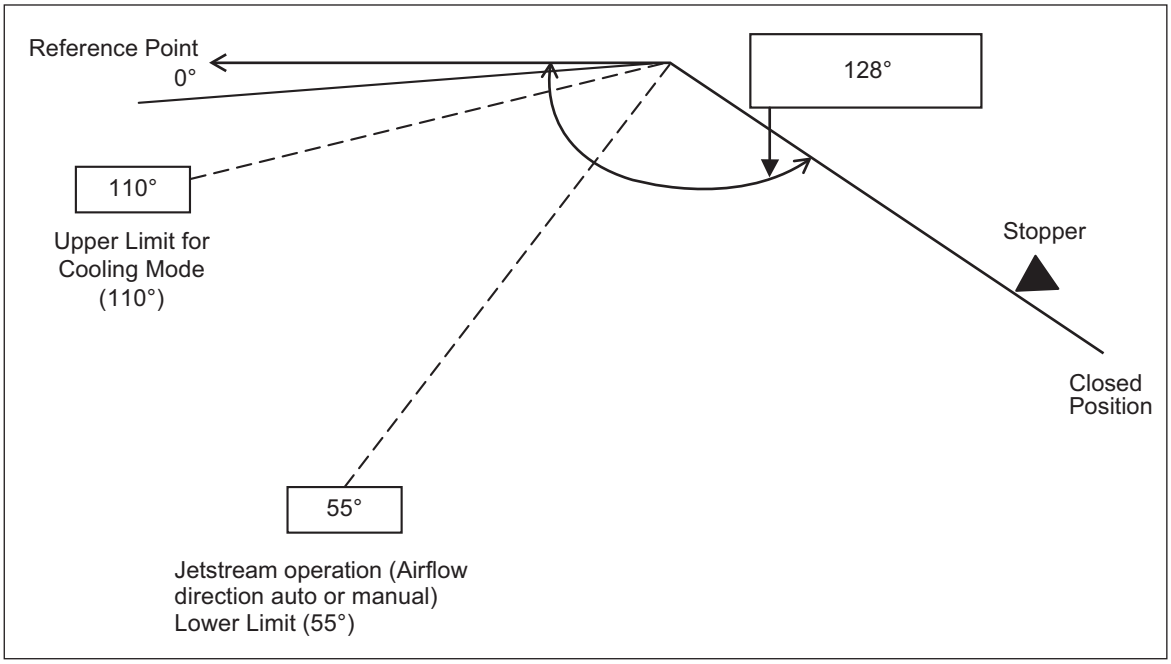
- When the vertical airflow direction is set to Auto using the remote control, the louver swings up and down as shown in the diagram.
- When stops operation using the remote control, the discharge vent is reset and stops at the closing position.
- During Cooling operation or Soft Dry operation, indoor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

Inner Vane

Cooling / Dry Mode

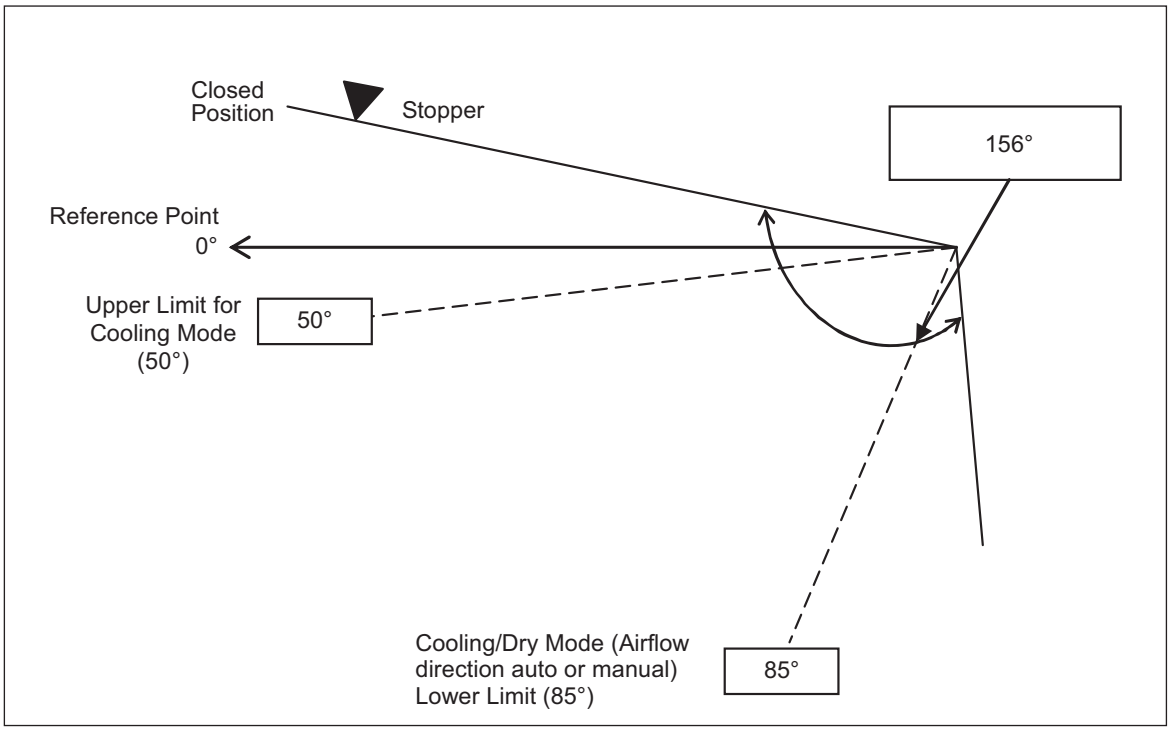


Jetstream Operation

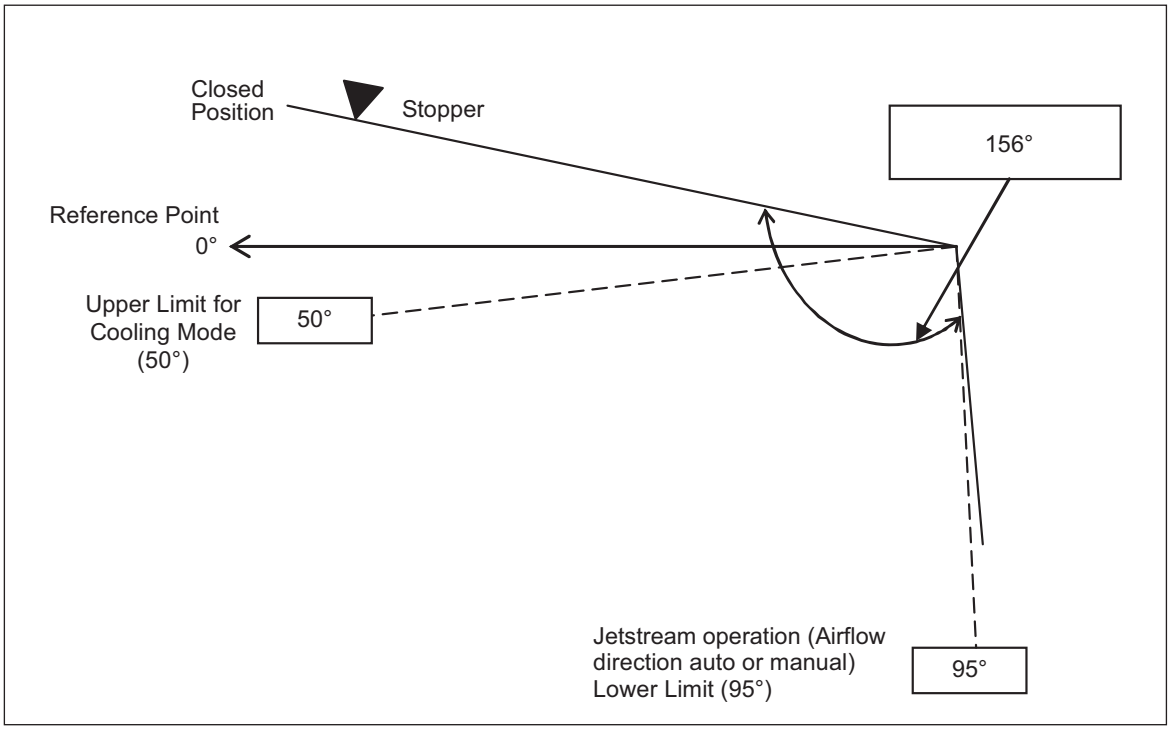


Outer Vane

Cooling / Dry Mode



Jetstream Operation

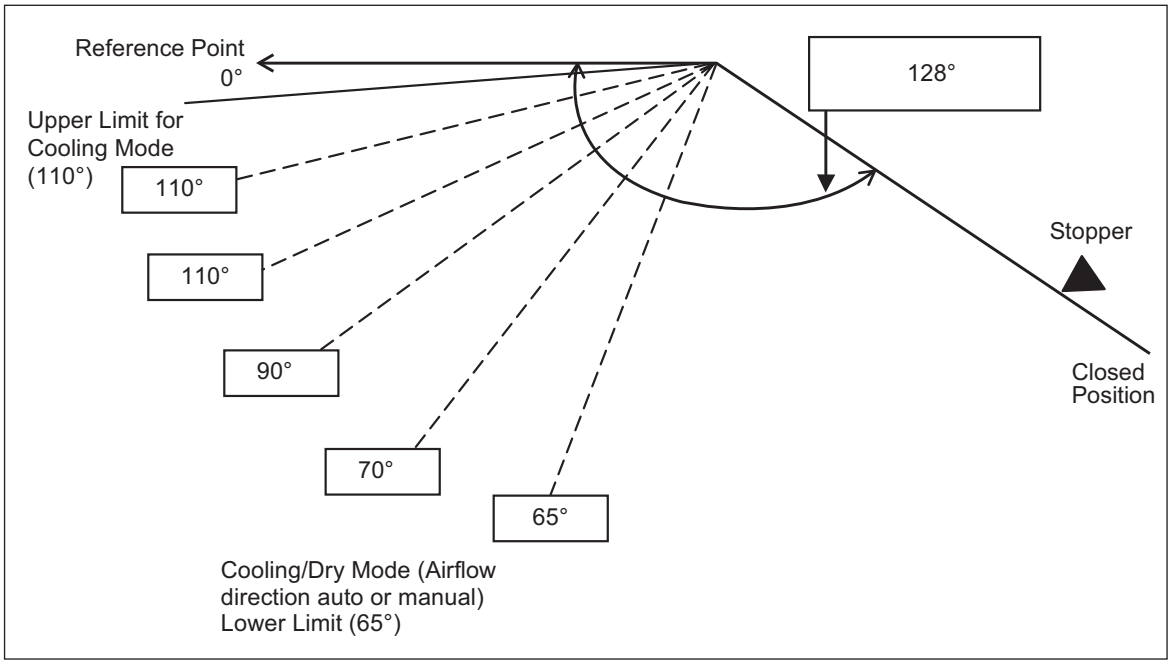


12.6.2 Manual Control

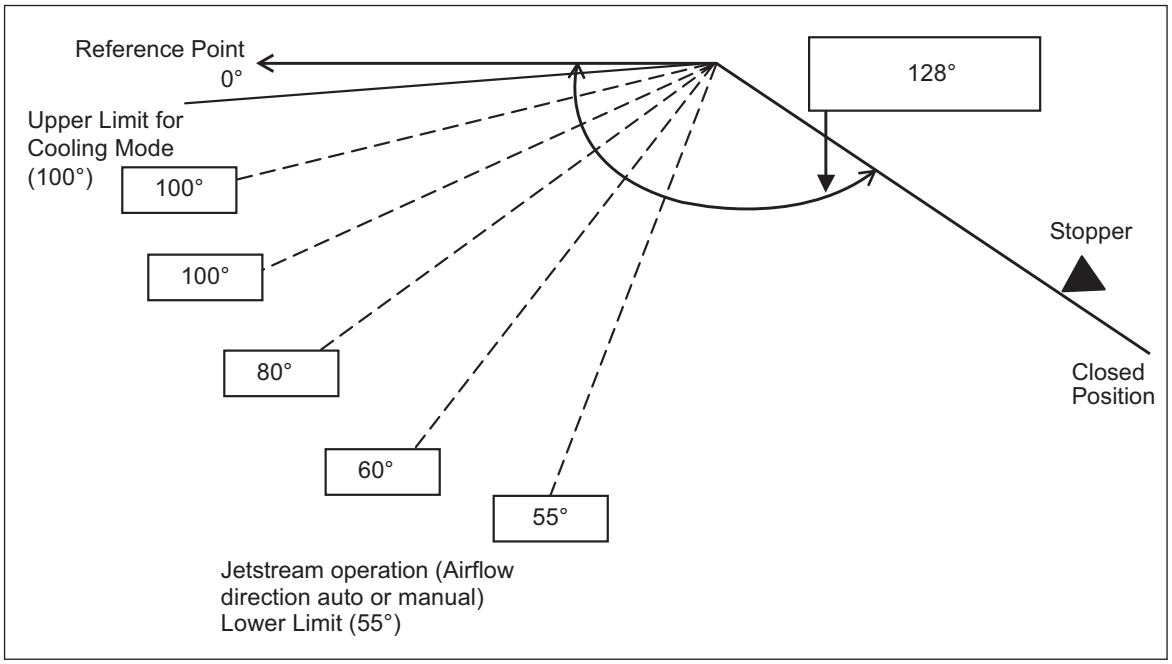
- When the vertical airflow direction is set to Manual using the remote control, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.
- The louver can be adjusted by pressing the button to the desired louver position.
- When stop operation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

Inner Vane

Cooling / Dry Mode

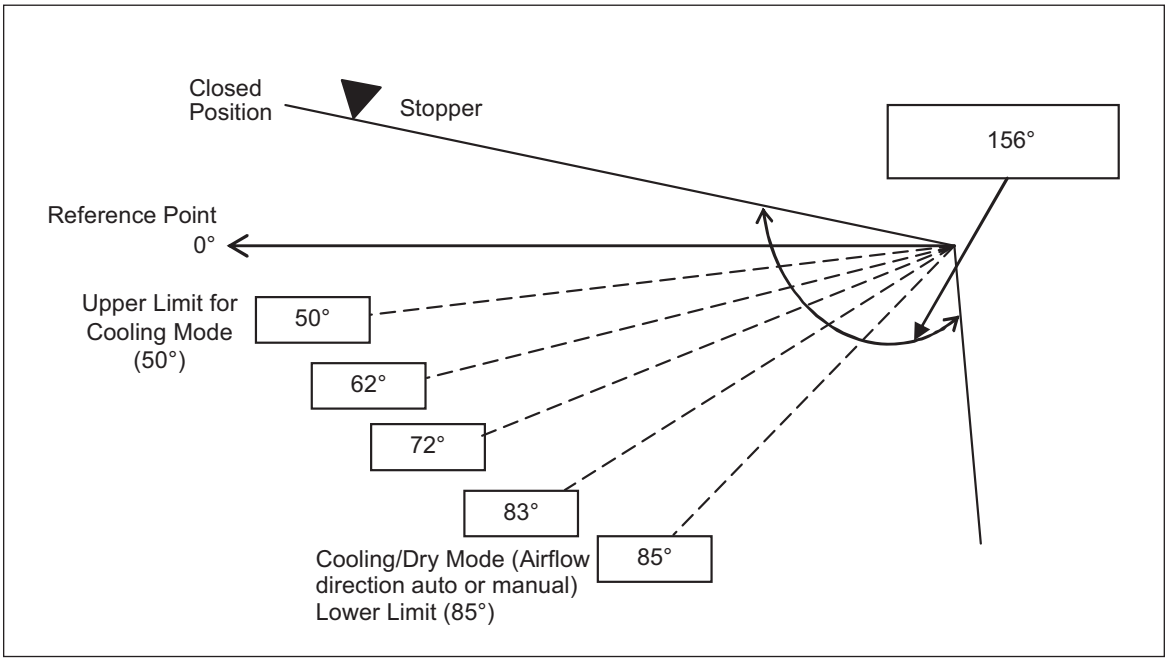


Jetstream Operation

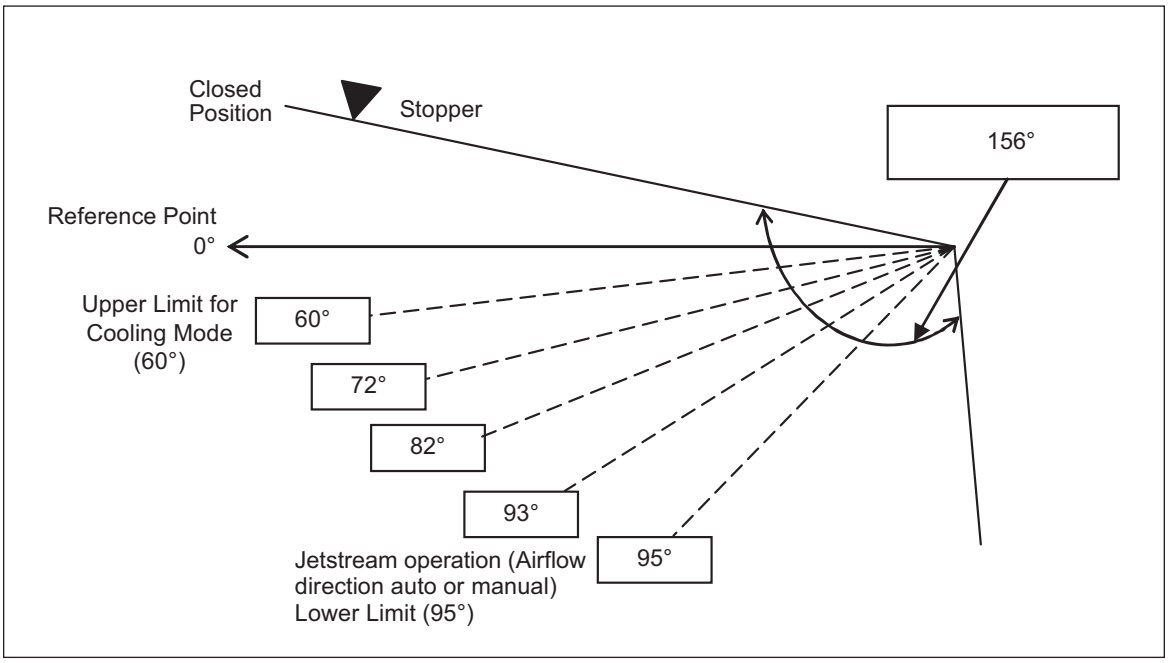


Outer Vane

Cooling / Dry Mode



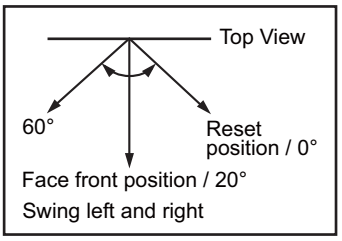
Jetstream Operation



12.7 Horizontal Airflow Direction Control

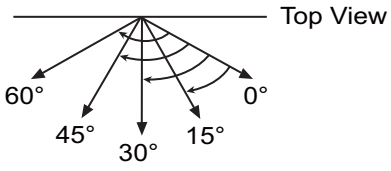
12.7.1 Auto Control

- When the horizontal airflow is set to Auto using the remote control, the vanes swings left and right as shown in the diagram.
- When stopped with remote control, the discharge vanes are reset and stop at the reset position.
- During Cooling operation or Soft Dry operation, indoor fan motor may stop to rotate at certain periods. At that condition, the vane will stop swinging and rest at face front position.



12.7.2 Manual Control

- When the horizontal airflow direction is set to Manual using the remote control, 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 stopped with remote control, the vanes is reset and stopped at reset position.



12.8 JETSTREAM Operation

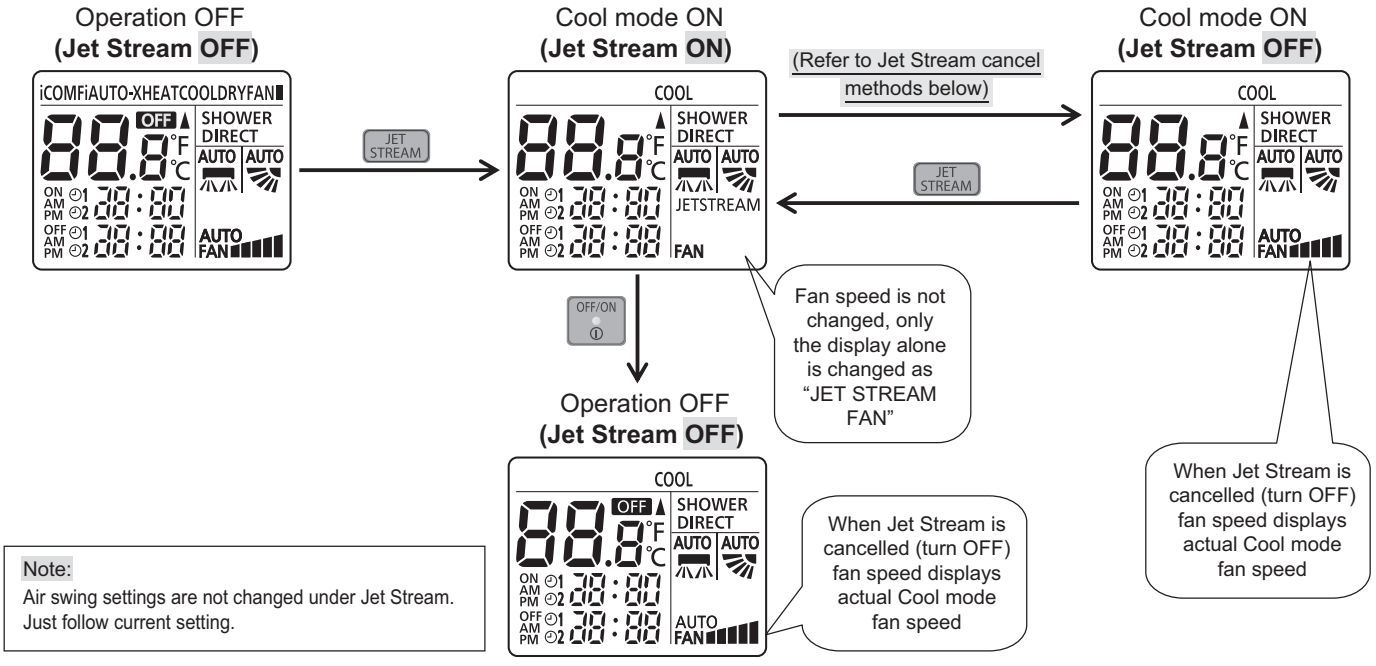
- JETSTREAM operation can be set using remote control.
- This operation is used to cool down room temperature at faster speed compare to normal operation by thermal shift and fan speed control.
- Thermal control.
  - Fan speed setting temperature will shift 2°C lower than remote control setting temperature for maximum 1 hours to accelerate room cooling.
- Fan speed control.
  - Fan speed is fixed at Super high fan speed.
  - Fan speed selection is prohibited. Fan speed selection will cancel JETSTREAM operation.
- JETSTREAM operation can be cancelled by pressing the respective button again.
- Airflow direction control is follow remote control setting.

- Horizontal vane control
  - During JETSTREAM operation at Cooling mode, if user changes horizontal vane direction setting, horizontal vane direction will be -10° of the new setting.
  - Remote control remains the same set displays horizontal vane direction, but the actual unit horizontal vane angle is different.

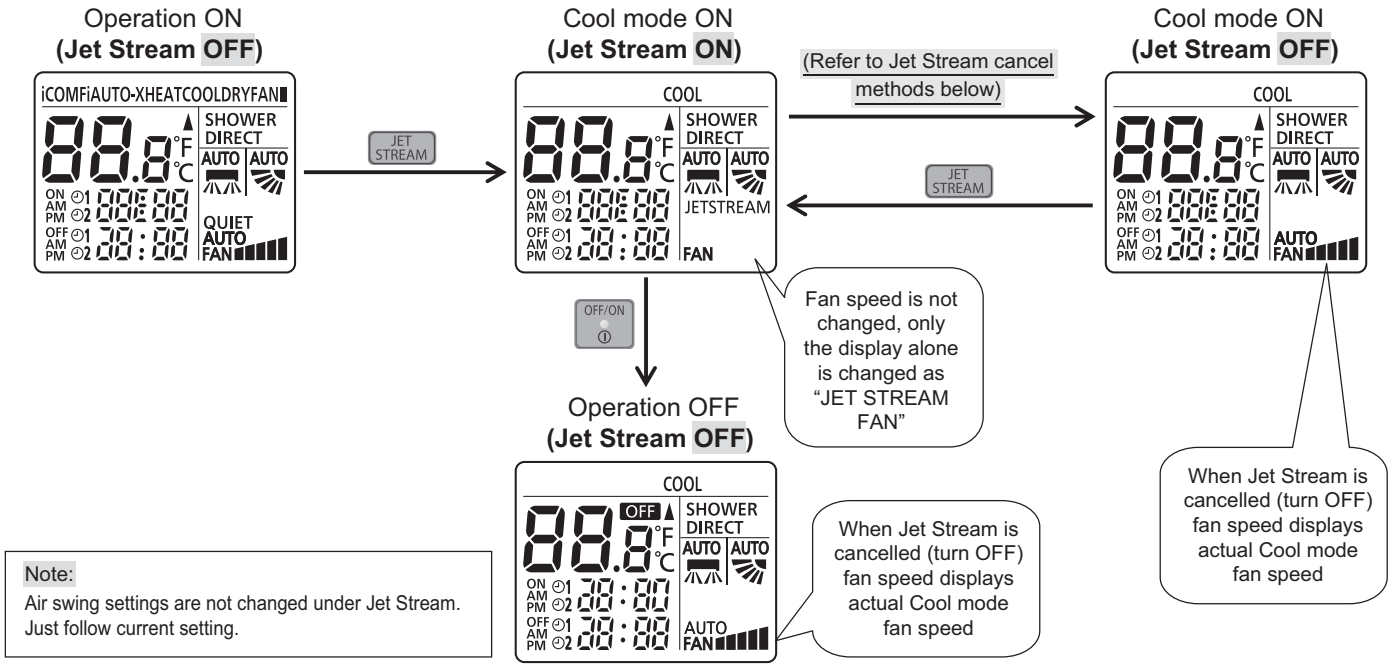
Air Swing Setting	Operation Mode: Cool
Manual	-10° down from previous step setting
Auto	Auto air swing with range shift -10° down

- Control condition
  - JETSTREAM operation start condition
    - When JETSTREAM button at remote control is pressed.
    - When unit in OFF operation and JETSTREAM button at remote control is pressed. Unit will turn ON under COOL mode and JETSTREAM operation.
  - JETSTREAM operation stop condition
    - When one of the following conditions is satisfied, quiet operation stops:
      - Quiet button is pressed.
      - Stop by OFF/ON button.
      - ECONAVI button is pressed.
      - FAN SPEED button is pressed.
      - JETSTREAM button is pressed again.
      - Operation mode is changed.
      - When daily timer OFF reached or Sleep timer ends.

- JETSTREAM ON/OFF method
  - When operation is OFF



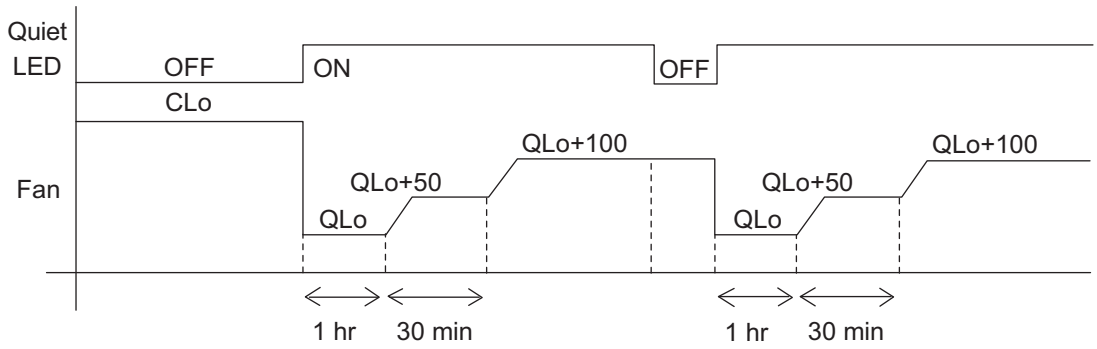
- When operation is ON



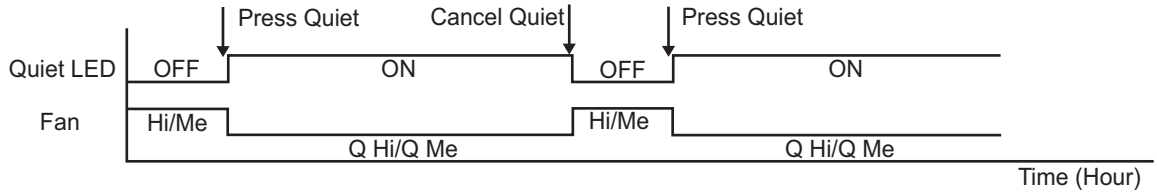
12.9 Quiet Operation

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

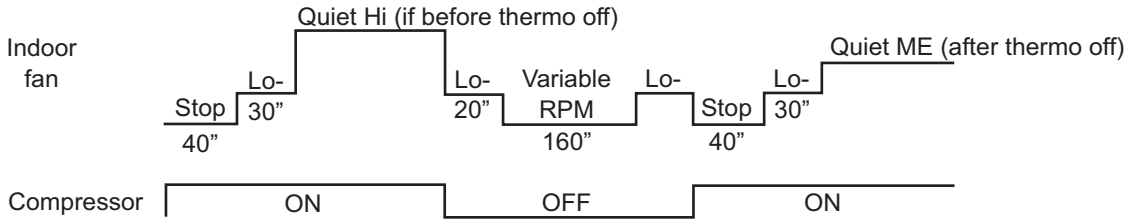
- To provide quiet cooling operation condition.
- Once the Quiet Operation is set at the remote control, the Quiet LED brightness will be dimmed. The sound level will reduce around 2dB(A) for Lo fan speed or 3dB(A) for Hi/Me fan speed against the present operation sound level.
- Dew formation become severe at Quite Lo Cool, therefore Quiet Lo cool operated only 1 hour 30 minutes (1 hour QLo, 30 minutes QLo + 50 rpm).
- Manual Airflow Direction:
  - RPM control during Lo cool



  - RPM control during Hi & Me cool



- Auto Fan Speed



- Quiet operation stops when:
  - Quiet button is pressed again.
  - JETSTREAM button is pressed.
  - Stop by OFF/ON button.
  - OFF Timer activates.
  - Sleep mode timer delay OFF.
  - Operation mode button is changed.

12.10 Timer Control

12.10.1 ON Timer

- When the ON Timer is set by using the remote control, the unit will start to operate slightly before the set time, so that the room will reach nearly to the set temperature by the set time.
- For Cooling and Soft Dry operation, the operation will start 15 minutes before the set time.
- For Automatic operation, the indoor fan will operate at SLo speed for 20 seconds, 15 minutes before the set time to detect the intake air temperature to determine the operation mode. The power LED will blink.

12.10.2 OFF Timer

- When the OFF Timer is set using the remote control, the unit will stop operate according to the desired setting.
  Notes:
  1 By pressing ON/OFF operation button, the ON Timer or OFF Timer will not be cancel.
  2 To cancel the previous timer setting, press CANCEL button.
  3 To activate the previous timer setting, press SET button.
  4 If main power supply is switched off, the Timer setting will be cancel.

12.11 Sleep Mode Operation

To maximise comfort while sleeping

- This operation provides you with a comfortable environment while sleeping. It will automatically adjust the sleep pattern temperature during the activation period.
- The indoor unit indicator will dim when this operation is activated. This is not applicable if the indicator brightness has been dimmed.
- This operation is incorporated with the activation timer (0.5, 1, 2, 3, 4, 5, 6, 7, 8 or 9 hours).
- Can be set together with timer. When used together with the OFF timer, sleep operation has the priority.
- Can be cancelled by pressing the respective button until it reaches 0.0h.

12.12 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.

12.13 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.

12.14 nanoe-G Operation

- This operation provides clean air by producing great amount of negative ions and distribute through the discharge airflow to capture or deactivate molds, bacteria or viruses.

- nanoe-G operation start condition
  - During unit running at any operation mode, if nanoe-G operation is activated, combination operation (operation mode + nanoe-G operation) starts.
  - During unit is OFF, if nanoe-G operation is activated, nanoe-G individual operation starts.

- nanoe-G operation stop condition
  - When OFF/ON button is pressed to stop the operation.
  - When nanoe-G button is pressed.
  - When OFF Timer activates.

- nanoe-G operation pause condition
  - When indoor fan stop (during deice, odor cut control, thermostat off, etc.). nanoe-G operation resume after indoor fan restarts.
  - When indoor intake temperature ≥ 40°C. nanoe-G operation resume after indoor intake temperature < 40°C continuously for 30 minutes.

- Indoor fan control
  - During any operation mode combines with nanoe-G operation, fan speed follows respective operation mode. However, nanoe-G system enabled when fan speed ≥ 500 rpm to ensure proper negative ion distribution, nanoe-G system disabled when fan speed < 500 rpm.
  - During nanoe-G individual operation, only Auto Fan Speed is allowed. Even if Fan Speed button is pressed, no signal is sent to the unit and no change on remote control display.

- Airflow direction control
  - During any operation mode combines with nanoe-G operation, airflow direction follows respective operation mode.
  - During nanoe-G individual operation, only Auto Air Swing is allowed. Even if Air Swing button is pressed, no signal is sent to the unit and no change on remote control display.

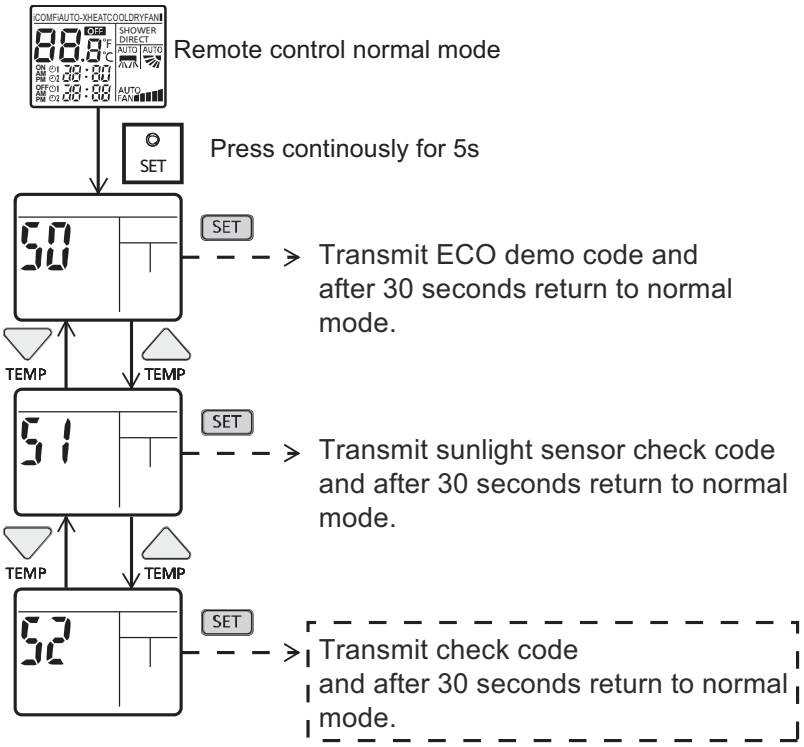
- Timer control
  - When ON Timer activates when unit stops, previous operation resumes and restored last saved nanoe-G operation status.
  - When ON Timer activates during any operation, no change on current operation.
  - When OFF Timer activates during any operation, all operation stops and the latest nanoe-G operation status is saved.

- Indicator
  - When nanoe-G starts, nanoe-G indicator ON.

- Remote control receiving sound
  - Normal operation ➔ nanoe-G operation : Beep
  - Nanoe-G operation ➔ Normal operation : Beep
  - Stop ➔ nanoe-G individual operation : Beep
  - Nanoe-G individual operation ➔ Stop : Long Beep

- Power failure
  - During nanoe-G individual operation, if power failure occurs, after power resumes, nanoe-G individual operation resumes immediately.
  - During combination operation, if power failure occurs, after power resumes, combination operation resume immediately.

- nanoe-G check mode
  - To enable nanoe-G check mode, during nanoe-G operation ON:



  - If there is abnormal discharge, nanoe-G indicator blinks immediately.

- Error detection control
  When nanoe-G indicator blinks, it indicates error listed below:
  - Nanoe-G connector at main PCB open
    - Judgment method
      - During nanoe-G operation, nanoe-G connector at main PCB is opened.

    - Troubleshooting method
      - Connect the connector or stop operation to cancel the blinking.
      - Switch off the power supply and unplug before cleaning.
      - Clean the dirty nanoe-G generator with cotton bud.

  - Abnormal discharge error
    - Judgment method
      - During nanoe-G operation, the nanoe-G system has abnormal discharge due to short-circuit caused by water or dust adhesion and so forth, with Lo-feedback voltage (at microcontroller).
      - When abnormal discharge occurred, every 30 minutes the unit supplies power to the nanoe-G system.
      - When abnormal discharge occurs for 24 times continuously, nanoe-G indicator blinks.

    - Troubleshooting method
      - Press nanoe-G button or OFF/ON button to stop the operation and check the nanoe-G connector at PCB.
      - After that, press nanoe-G button again to confirm the nanoe-G indicator do not blinks.
      - The 24 timer counter will be clear after 10 minutes of normal operation or when operation stops.

    - Error reset method
      - Press “OFF/ON” button to OFF the operation.
      - Press AUTO OFF/ON button at indoor unit to OFF the operation.
      - OFF Timer activates.
      - Power supply reset.

- nanoe-G breakdown error
  - Judgment method
    - Hi-feedback voltage (at microcontroller) supplied to the nanoe-G system when nanoe-G operation is OFF; nanoe-G breakdown error show immediately.
    - It is due to indoor PCB or nanoe-G high voltage power supply damage.
    - Operations except nanoe-G continue. Both Timer indicator and nanoe-G indicator blink.

  - Troubleshooting method
    - Press nanoe-G button or OFF/ON button to stop the operation.
    - Change nanoe-G high voltage power supply or main PCB.
    - When Lo-feedback voltage supplied to nanoe-G system during nanoe-G operation ON, nanoe-G indicator and Timer indicator stop blinking.

12.15 In-filter Deactivation Operation

- This operation helps to deactivate virus and bacteria on filter after the unit turned off using nanoe-G generator.

- In-filter deactivation start condition
  - nanoe-G is in ON condition before the unit is turned off either by OFF/ON button or OFF Timer.
  - Elapsed time from previous in-filter deactivation operation is more than 24 hrs.
  - Unit operation time before unit is turned off is more than 2 hours or accumulated unit operation time achieves 4hrs if unit operation time less than 2 hours.

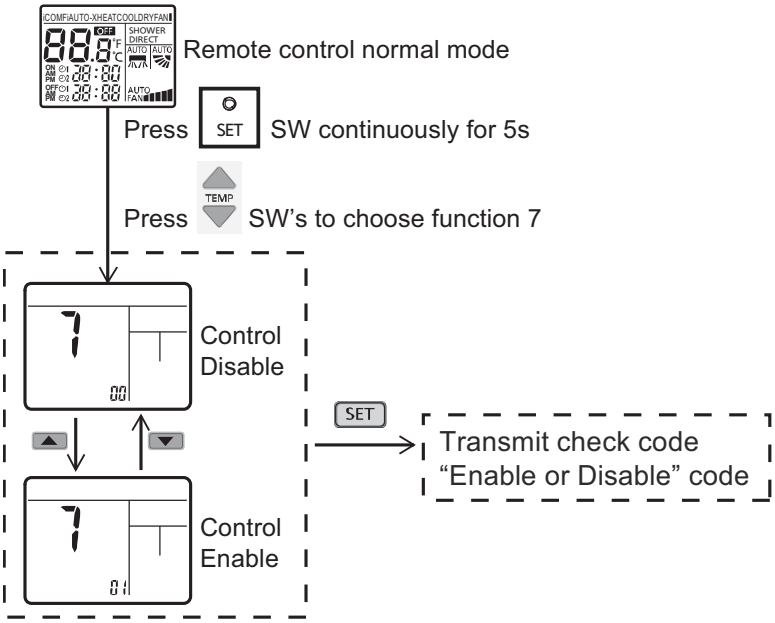
- In-filter deactivation stop condition
  - The unit is turned on.
  - nanoe-G generator operation time during in-filter deactivation operation has achieved 120 minutes.
  - The unit received disable signal from remote control.
  - Nanoe-G abnormality occurs.

- Control contents:
  - When the unit operate in Cool or Dry mode before turned off.
    1. The unit will operate fan operation, fan motor will operate at 500 rpm for 30 minutes then stop.
    2. During fan operation, horizontal vane will fixed at 30° (outer vane) and 63° (inner vane) for 30 minutes then close.
    3. After 30 minutes the unit will continue with common control.
  - Common control.
    - nanoe-G generator will operate for 120 minutes.

- Timer control
  - When ON Timer activates during in filter deactivation operation, in-filter deactivation operation stops.
  - When OFF Timer activates during in filter deactivation operation, in-filter operation will continue.

- Indicator
  - nanoe-G indicator ON.
  - Power indicator OFF.

- Enable or disable selection



- Power failure
  - During in-filter operation, if power failure occurs, after power resumes in-filter deactivation operation will not resume.

12.16 ECONAVI Operation

- Area of human availability, activity level and absent is judged based on pulses by using 2 infrared sensors. The internal setting temperature shift, fan speed and horizontal airflow direction are adjusted in order to provide comfort environment while maintain the energy saving level.

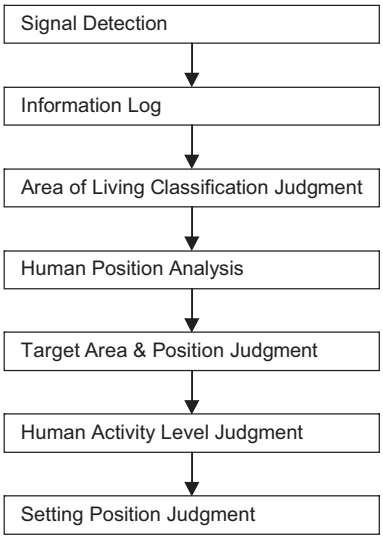
- ECONAVI start condition:
  - When ECONAVI button is pressed.

- ECONAVI stop conditions:
  - When ECONAVI button is pressed again.
  - When unit is OFF by OFF/ON button.
  - When unit is OFF when OFF TIMER activates.
  - When unit is OFF by AUTO OFF/ON button at indoor unit.
  - When QUIET operation activates.
  - When <> button is pressed.
  - When JETSTREAM mode is selected.

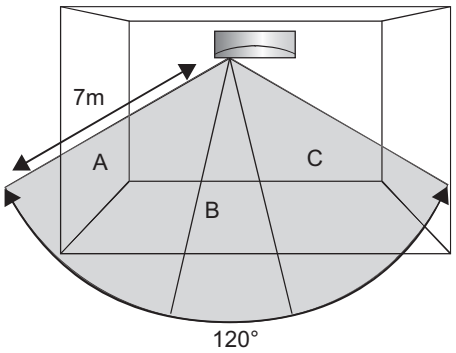
12.16.1 Human Activity Sensor

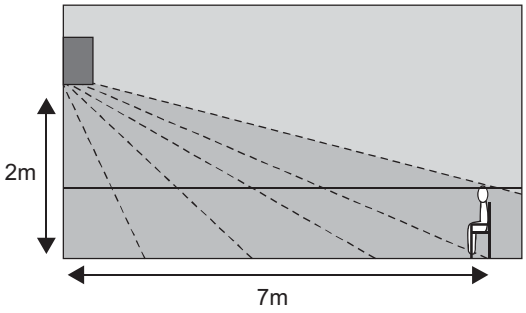
- Area of human availability, activity level and absent is judged based on pulses by using 2 infrared sensors. The internal setting temperature shift, fan speed and horizontal airflow direction are adjusted in order to provide comfort environment while maintain the energy saving level.

- Human activity judgment is as following



12.16.1.1 Signal Detection





- Human Activity sensor will turns on according to infrared sensors signal detection.

Signal detection		Possible detected human position area
Sensor 1	Sensor 2	
1	0	C
0	1	A
1	1	B
		A & B
		B & C
		A & C
		A, B & C
0	0	–

12.16.1.2 Information Log

- The signal from Infrared sensors will be log to human activity database for further analysis.

12.16.1.3 Area of Living Classification Judgment

- The system is able to judge area of living according to human activity database, classified as following:
  - Living Area – In front of television, dining table, etc.
  - Walkway – Human detection is relatively less.
  - Non-Living Area – near windows, wall, etc.

12.16.1.4 Human Position Analysis

- According to Area of Living, frequency of activity and indoor unit intake temperature, the system will analyze the human position away from the indoor unit.

12.16.1.5 Target Area and Position Judgment

- The system will judge the indoor unit installation position according to human activity Non-Living Area:
  - Non-Living Area at Position A – Indoor unit installed at left side of the room.
  - Non-Living Area at Position C – Indoor unit installed at right side of the room.
  - Other than above – Indoor unit installed at center of the room.
- Every 4 hours, the Target Area and Position Judgment will restart.

12.16.1.6 Human Activity Level Judgment

- Human Activity Level is judged based on the frequency of pulses detected by the infrared sensors within a timeframe. The activity level will be categorized into High, Normal, Low level.
- When a pulse is detected within this timeframe, the status of human presence is judged.
- When there is no signal detection continues for 20 minutes or more, the status of human absence is judged.

12.16.1.7 Setting Position Judgment

- According to installation position when there is only one activity area detected, the horizontal airflow direction louver position is fixed according to chart below:

Target area	Horizontal airflow direction louver position		
	Left installation	Center installation	Right installation
A	3	2	2
B	1	1	1
C	5	5	4

- Louver position refer to horizontal airflow direction control.
- When 2 activity areas have been detected, according to Human Activity Level, the timing of horizontal airflow direction louver steps at the targeted activity areas is judged.

Operation Mode	Activity level difference	Louver stop time
Cooling	1 level	Higher Activity level ≈ 60 seconds Lower Activity level ≈ 30 seconds
	2 levels	Higher Activity level ≈ 60 seconds Lower Activity level ≈ 8 seconds

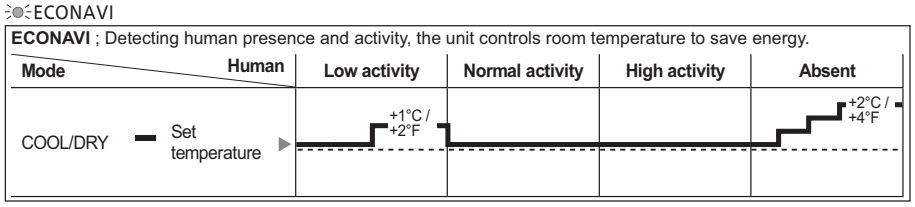
- When 3 activity areas have been detected, according to Human Activity Level the timing of horizontal airflow louver steps at the targeted activity areas is judged.

Operation Mode	Activity level	Louver stop time
Cooling	Hi Me Lo	≈ 45 seconds ≈ 30 seconds ≈ 20 seconds

- When 3 activity areas have same activity level, the horizontal airflow direction louver will swing left and right.

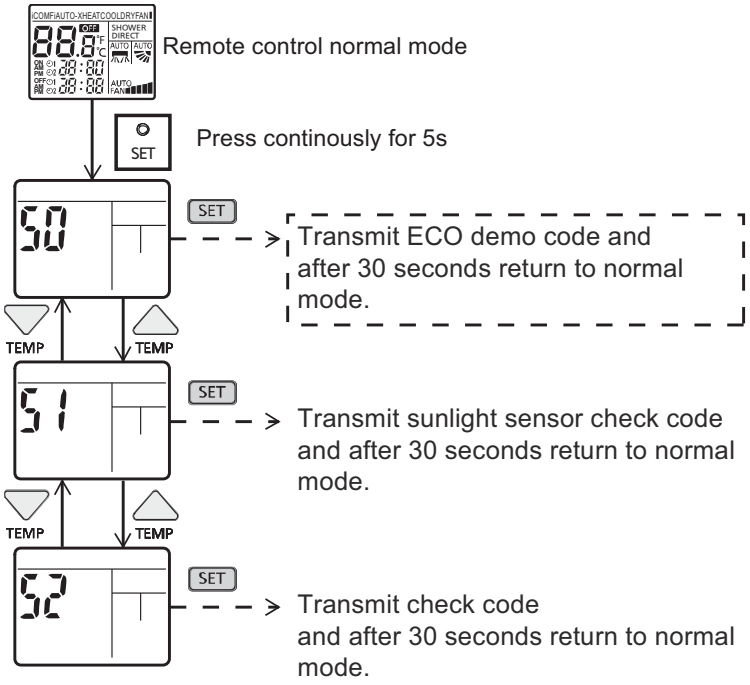
12.16.1.8 Setting Temperature and Fan Speed Shift

- Cooling Dual Sensor



12.16.1.9 ECONAVI Demo Mode

- To enable ECO DEMO mode, during unit is OFF (power standby):



- To disable ECO Demo MODE:
  - Transmit ECO Demo signal again.

- Operation details

Infrared Sensor		Vane position	Fan speed
Sensor 1	Sensor 2		
1	0	5	HI
1	1	Auto Swing	HI
0	1	2	HI
0	0	Auto Swing	LO

- The target area will maintain for 5 seconds before changeover to next detection.
- If no activity detection, the last action will maintain for 30 seconds before changeover to human absence status.

12.16.1.10 Human Activity Sensor Abnormality

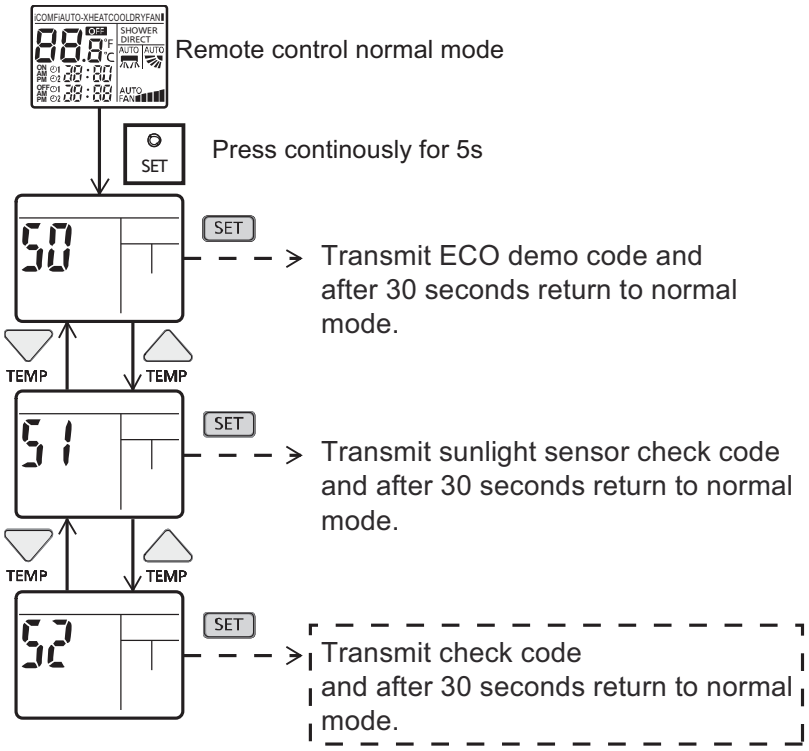
- Abnormality detection:
  - Connector disconnection / Wire cut abnormality
    - Sensor judge Hi level continuously for 25 seconds.
  - Circuit abnormality
    - 70 seconds after power ON, if human activity sensor judge Lo level continuously for 25 seconds.

- Error Code judgment
  - When abnormality happened, internal counter increase by 1 time.
  - Human activity sensor power OFF, retry after 5 seconds.
  - When the human activity sensor maintains normal condition for 120 seconds, the counter reset or AC reset.
  - When abnormality counter reached 4 times, H59 occurred – No TIMER indicator blinking.

- When error code happened, the unit is able to operate without ECONAVI.

12.16.1.11 Human Activity Sensor Check Mode

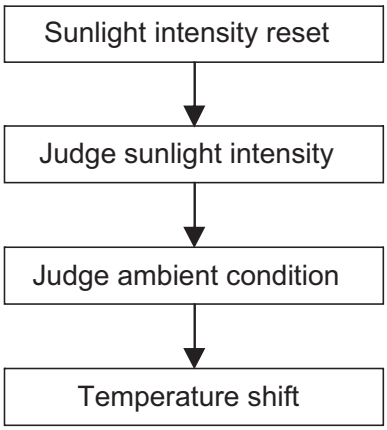
- To enable Human Activity sensor abnormality check mode, during ECONAVI operation ON:



- During ECONAVI is ON, when CHECK signal received, if either sensors has abnormality, the 4 times abnormality counter is ignored, ECONAVI Indicator will blink immediately and error code is memorized.
- The unit could operate without ECONAVI.
- The ECONAVI indicator blinking could be cancelled by pressing ECONAVI button again.
- If the human activity sensor has no abnormality, the CHECK process will end and continue with normal operation.

12.16.2 Sunlight Sensor

- During ECONAVI operation, the sunlight sensor detects sunlight intensity coming through windows and differentiates between sunny and cloudy or night to further optimize energy saving by adjusting the temperature.
- Sunlight judgment is as following

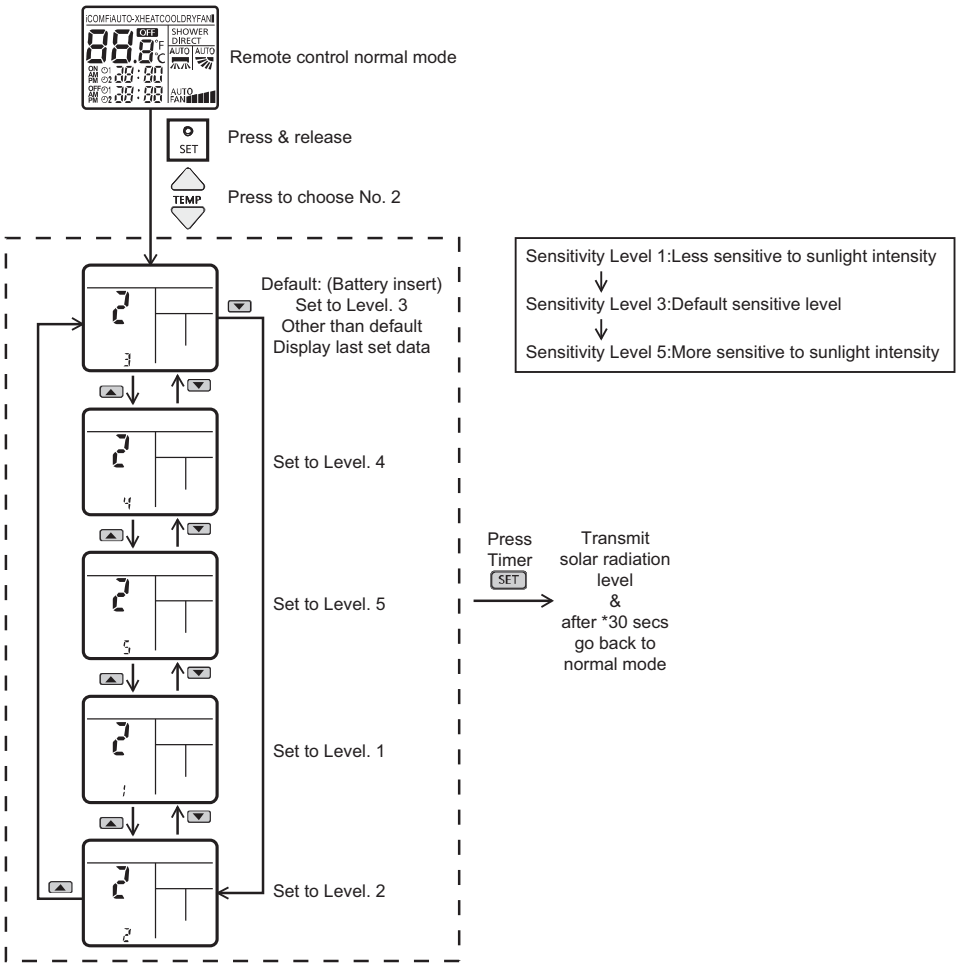


12.16.2.1 Sunlight Intensity Reset

- The sunlight intensity will to reset to zero (no sunlight condition) when
  - Each time ECONAVI is activated.
  - Setting temperature is changed.
  - Operation mode is changed.

12.16.2.2 Judge Sunlight Intensity

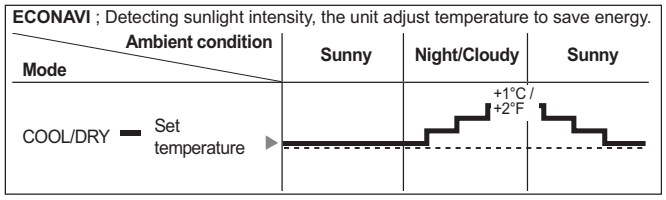
- Based on sunlight sensor output voltage, the sunlight intensity value will be computed and logged to sunlight intensity database.
- The sunlight sensor sensitivity could be adjusted:



12.16.2.3 Judge Ambient Condition

- According to sunlight intensity over a period of time, the system will analyze the ambient condition is sunny, cloudy or night.

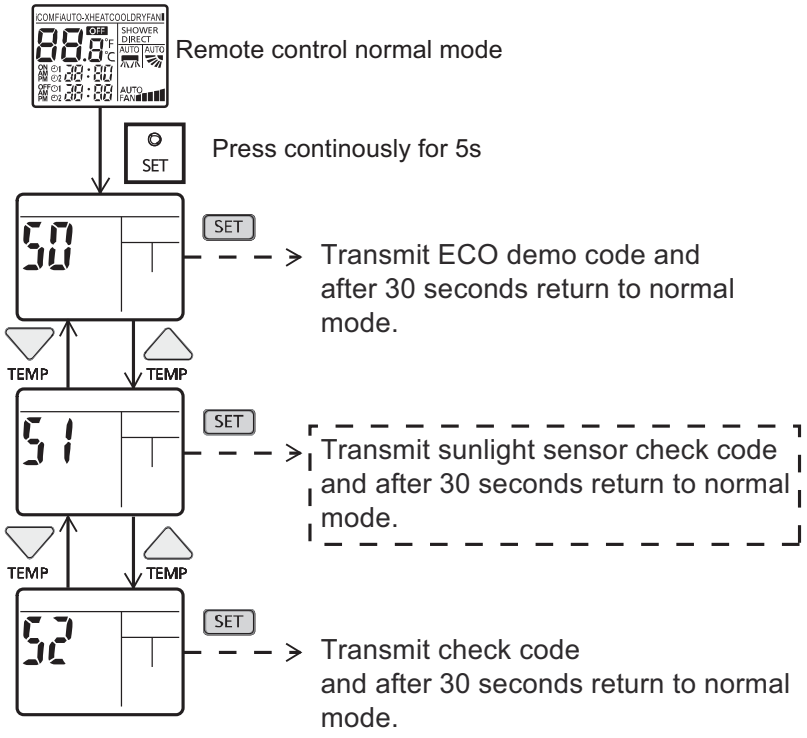
12.16.2.4 Temperature Shift



- In a room without window or with thick curtain, the sunlight sensor will judge as cloudy/night.

12.16.2.5 Sunlight Sensor Check Mode

- To enable sunlight sensor check mode, during unit is OFF (power standby):



- Operation details
  - The sunlight sensor check mode will be operated for 5 minutes.
  - During check mode, the ON and OFF timer will be memorized but it operation be ignored.
  - During check mode, if the sunlight sensor check code is retransmitted, the 5 minutes counter will be reset.
  - During check mode, if sunlight sensor detected the sunlight intensity value above minimum level, the ECONAVI indicator turns ON. Else if sunlight sensor detected sunlight intensity value below minimum level, the ECONAVI indicator is OFF.
- To disable sunlight sensor check mode
  - After check mode is ended (5 minutes counter elapsed), press AUTO OFF/ON button at indoor unit.
  - If the sunlight sensor detected sunlight intensity is at abnormal range, the check mode will be ended. Please check for error code.

12.16.2.6 Sunlight Sensor Abnormality

- Abnormality detection:
  - When ECONAVI is ON, if the sunlight intensity value below minimum level continuously for 24 hours, the sunlight sensor disconnection error counter will increase by 1 time. If the ECONAVI is OFF, the 24 hours timer will be reset, but the sunlight sensor disconnection error counter will not be reset.
- Error Code judgment
  - When sunlight sensor disconnection error counter reached 15 times.
  - No TIMER indicator or ECONAVI indicator blink.
- When error code happened, the unit is able to operate without sunlight sensor.

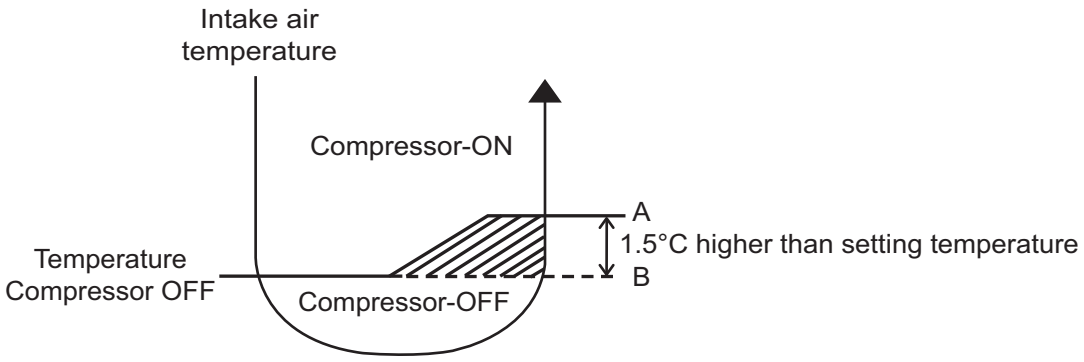
13. Protection Control

13.1 Restart Control (Time Delay Safety Control)

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

13.2 7 Minutes Time Save Control

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



13.3 60 Seconds Forced Operation

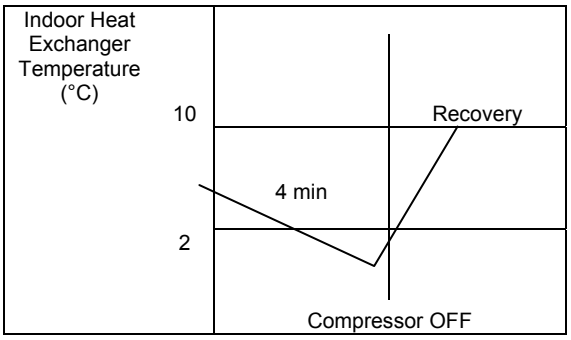
- Once the air conditioner is turned on, the compressor will not stop within 60 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, forced stop by pressing the OFF/ON operation button at the remote control is permitted.
- The reason for the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

13.4 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 seconds later.
- The reason of the difference is to reduce the starting current flow.

13.5 Freeze Prevention Control

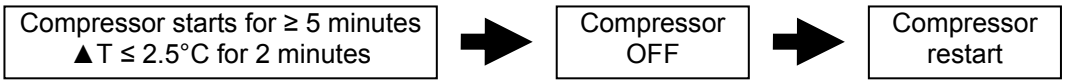
- To protect indoor heat exchanger from freezing and to prevent higher volume of refrigerant in liquid form return to compressor.
- This control will activate when temperature of indoor heat exchanger falls below 2°C continuously for more than 4 minutes and compressor turn off.



- 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.

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



▲ T = Intake air temperature – Indoor heat exchanger temperature

- This is to prevent compressor from rotate reversely when there is an instantaneous power failure.
- If this condition happens continuously for 5 times within 50 minutes, unit will turn OFF with TIMER LED blinks.
- The 5 Times counter can be reset when either one of the following condition happen:
  - Unit is OFF by remote control or AUTO OFF/ON button.
  - Indoor intake temperature – Indoor piping temperature > 5°C for one minute or more.
  - Operation mode change.

- The unit could be ON by pressing OFF/ON button at remote control but the TIMER LED will continue blinking.

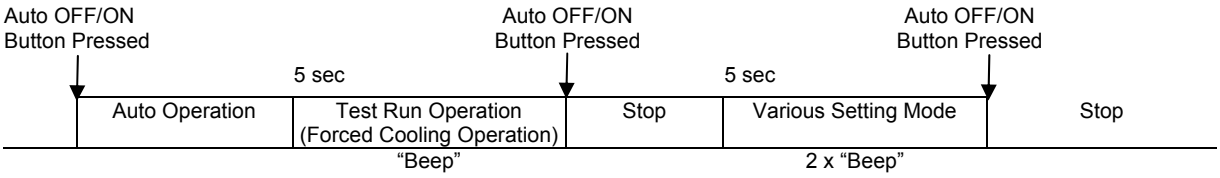
- TIMER LED blinking will be reset if:
  - Indoor intake temperature – Indoor piping temperature > 5°C for one minute or more.
  - Power supply reset.

13.7 Dew Prevention Control

- To prevent dew formation at indoor unit discharge area.
- This control starts if:
  - Cooling mode or Quiet mode is activated.
  - Remote Control setting temperature is less than 25°C.
  - Fan speed is at CLo or QLo.
  - Room temperature is constant (±1°C) for 30 minutes.
  - Compressor is continuously running.
- Fan speed will be adjusted accordingly in this control.
  - Fan sped will be increased slowly if the unit is in quiet mode and Lo fan speed.
- Dew prevention stop condition.
  - Remote control setting temperature is more than 25°C.
  - Fan speed is not at Lo or QLo.
  - Select Powerful operation.

14. Servicing Mode

14.1 Auto OFF/ON Button

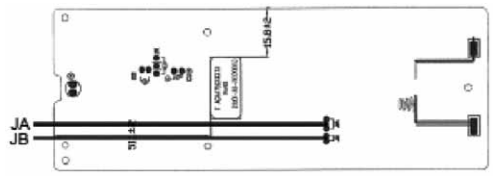


1 AUTO OPERATION MODE
The Auto Operation will be activated immediately once the Auto OFF/ON button is pressed. This operation can be used to operate air conditioner with limited function if remote control is misplaced or malfunction.

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.
ii. Remote Control Number Switch.
- There are 4 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 or more 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 (J-A)	Jumper B (J-B)	Remote Control No.
Short	Open	A (Default)
Open	Open	B
Short	Short	C
Open	Short	D

- During Various Setting Mode, press any button at remote control to transmit and store the desired transmission code to the EEPROM.
- After signal is received, the Various Setting Mode is cancelled and return to normal operation.
- If there is no code is transmitted of Auto OFF/ON button is not pressed within 20 seconds, the Various Setting Mode will be cancelled.

14.2 Remote Control Button

14.2.1 SET Button

- To check remote control transmission code and store the transmission code to EEPROM.
  - Press “Set” button by using pointer.
  - Press “Timer Set” button until a “beep” sound is heard as confirmation of transmission code change.
  - LCD returns to original display if remote control does not operate for 30 seconds.

- To limit set temperature range for COOL & DRY mode.
  - Press “Set” button by using pointer.
  - Press TEMP increment or decrement button to choose No. 3.
  - Press Timer increment or decrement button to select desired temperature low limit of set temperature for COOL & DRY mode.
  - Press Timer Set button to confirm low limit selection.
  - Press TEMP increment or decrement button to choose No. 4.
  - Press Timer decrement or increment button to select desired temperature high limit of set temperature for COOL & DRY mode.
  - Press Timer Set button to confirm high limit selection.
  - LCD returns to original display if remote control does not operate for 30 seconds or press Timer Cancel button.

14.2.2 RESET

- To clear and restore the remote control setting to factory default.
  - Press once to clear the memory

14.2.3 TIMER 

- To change indoor unit indicators’ intensity:
  - Press continuously for 5 seconds.

14.2.4 TIMER 

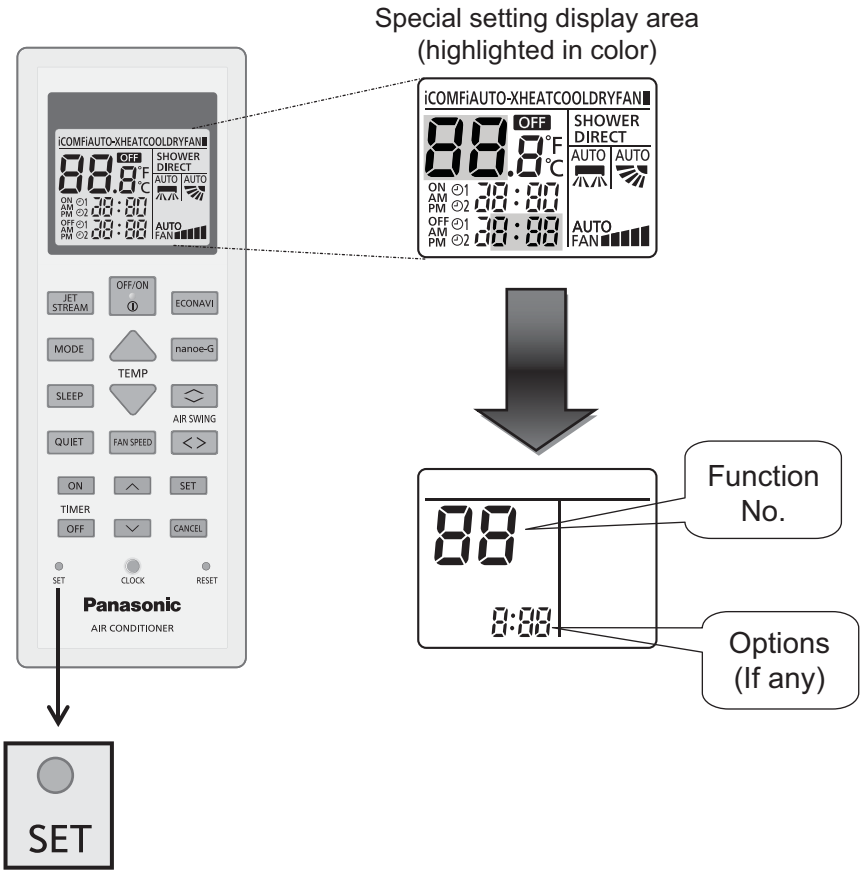
- To change remote control display from Degree Celsius (°C) to Degree Fahrenheit (°F)
  - Press continuously for 10 seconds.

14.2.5 TEMP 

- To change remote control set temperature range from 16°C ~ 30°C (60°F ~ 86°F) to 20°C ~ 30°C (68°F ~ 86°F).
  - Press continuously for 15 seconds.
- Not applicable for new remote control for temperature range (20°C ~ 30°C).

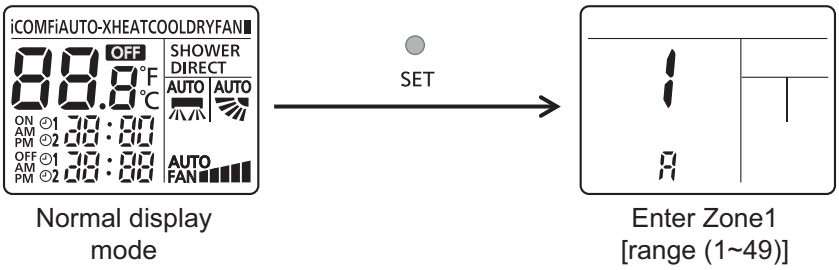
14.2.6 Special Setting mode

1 LCD display area:

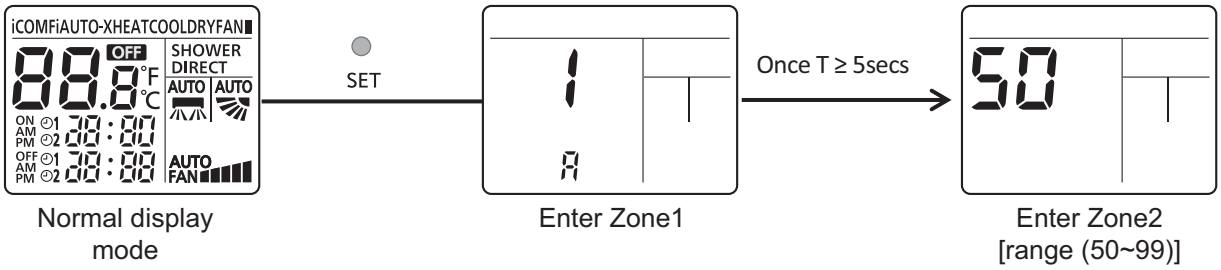


2 Cannot enter this special setting mode under the following conditions:
① Operation ON.
② Under [Real/ON/OFF] time setting mode.

3 To enter zone 1 area:



4 To enter zone 2 area: (Press SET continuously for T ≥ 5 secs)



5 Function & Options list:

Note: The functions described in the table may not be applicable to the model and may subject to change without further notice.

	Function		Options	Remark
	No	Name		
Zone 1	1	Remote control number selection	A, B, C, D	
	2	Solar radiation sensitivity level adjustment	1, 2, 3, 4, 5	
	3	[iAUTO-X/iAUTO/iCOMF, Cool & Dry] mode set temperature [Low2] selection	16°C ~ [High2]	
	4	[iAUTO-X/iAUTO/iCOMF, Cool & Dry] mode set temperature [High2] selection	[Low2] ~ 30°C	
	5	Heat mode set temperature Low1 selection	16°C ~ [High1]	
	6	Heat mode set temperature High1 selection	[Low1] ~ 30°C	
	7	Filter cleaning enable/disable selection	00 / 01	
	8	nanoe-G default ON enable/disable selection	00 / 01	
	9	Dust sensor monitoring & LED enable/disable selection	00 / 01	
	10	Auto restart enable/disable selection	00 / 01	
	11	Dust sensor sensitivity level adjustment	1, 2, 3	
	12 ~ 49	Reserve		
Zone 2	50	ECO demo ON	None (No display)	
	51	Light sensor check	None (No display)	
	52	nanoe-G / ECO sensor check	None (No display)	
	53	DOA check	None (No display)	
	54	Odor cut control selection [Enable (01) / Disable (00)]	00 / 01	
	55	Frequency tolerance selection [±3Hz (03) / ±7Hz (07)]	03 / 07	
	56	Fixed fan speed selection during heat mode compressor OFF	00/01	
	57	nanoe check	None (No display)	
	58	Heat mode thermo shift adjustment	-3°C ~ 3°C	
	59	Others (Cool & Dry) mode thermo shift adjustment	-3°C ~ 3°C	
	60	Deice start determination judgment temperature switching	00/01	
	61	Cool mode disable selection [Yes (01) / No (00)]	00/01	
	62	Heat mode disable selection [Yes (01) / No (00)]	00/01	
	63	Base pan heater selection [A / b]	A / b	
	64	Fan speed reduction during cool mode thermo-Off [Enable (01) / Disable (00)]	00/01	
	65 ~ 99	Reserve		

15. Troubleshooting Guide

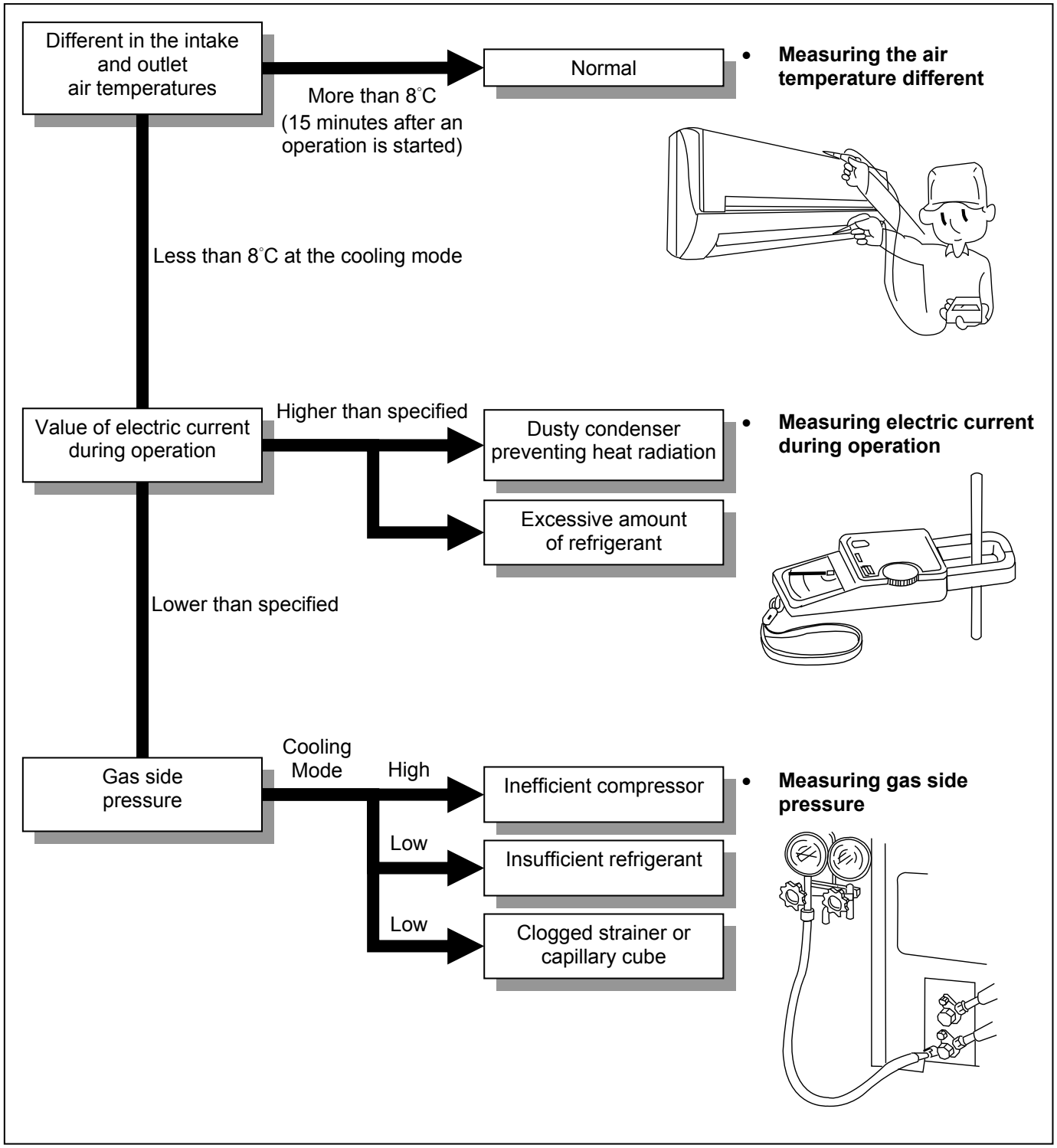
15.1 Refrigeration Cycle System

In order to diagnose malfunctions, ensure the air conditioner is free from electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan. The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas Pressure MPa (kg/cm^2G)	Outlet air Temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16

Condition: Indoor fan speed = High
Outdoor temperature = 35°C



15.1.1 Relationship Between the Condition of the Air Conditioner and Pressure and Electric Current

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

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

15.1.2 Diagnosis Methods of a Malfunction of a Compressor

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.

16. 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.

16.1 Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

16.1.1 To Remove Front Grille

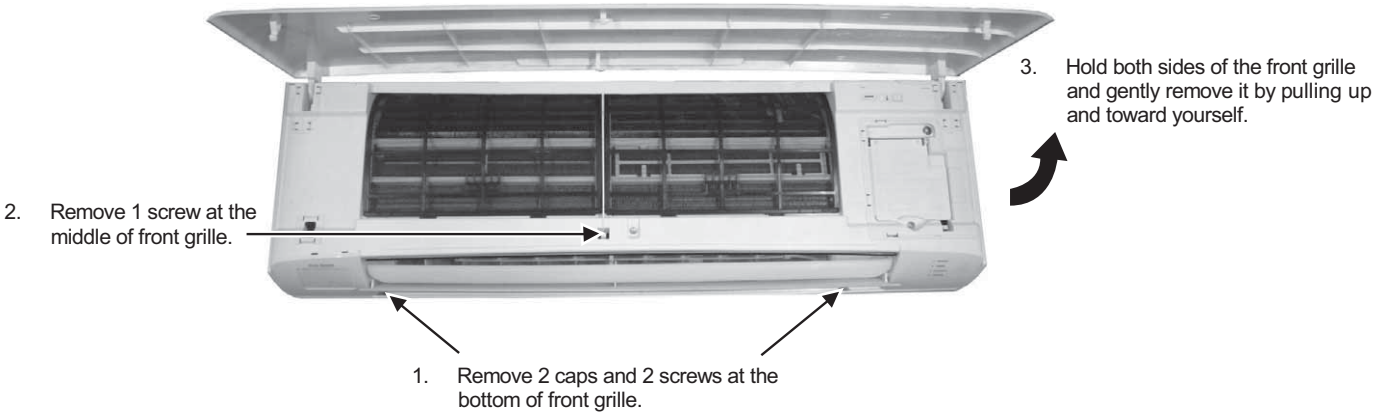
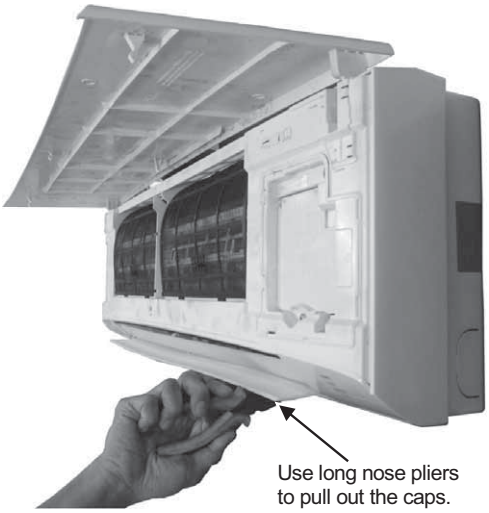


Figure 1

16.1.2 Caps Removal



⚠ CAUTION

a. Use a manual screw driver with at least 150 mm shaft length. Do not use a hand drill type.
b. Slightly tilt the screw driver handle downward so that the shaft does not touch the flap. Be careful not to scratch the flap while undoing the screws.

16.1.3 To Remove Electronic Controller

Figure 2

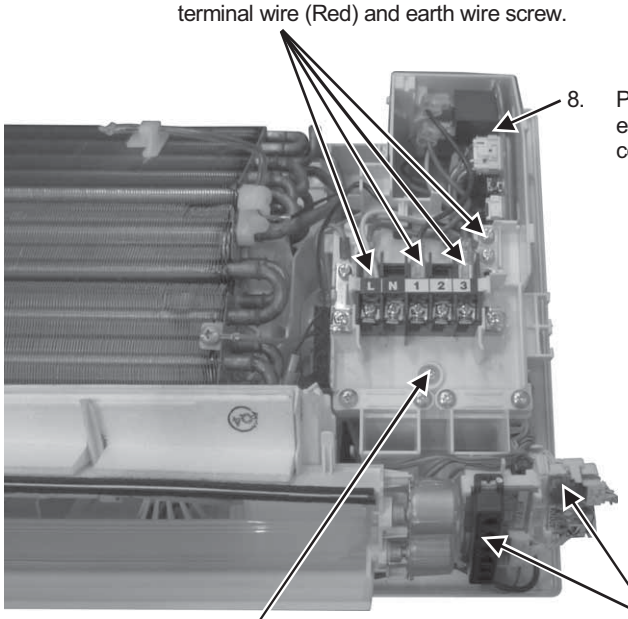


Figure 3

9. Detach all connectors as labelled from the electronic controller. Then pull out the electronic controller gently.

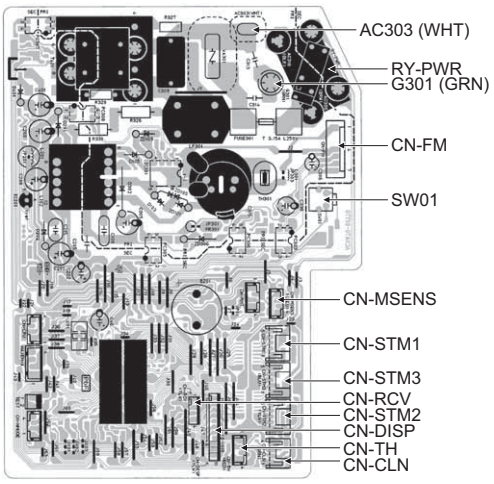
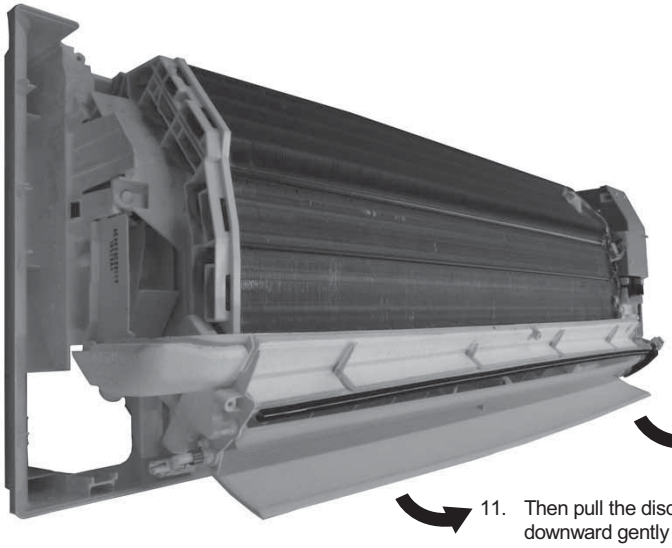


Figure 4

16.1.4 To Remove Discharge Grille

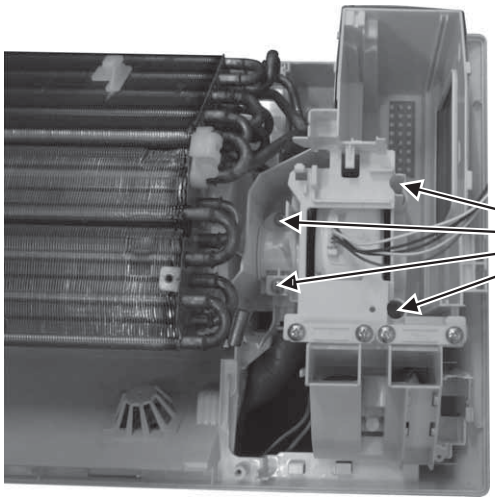


10. Pull out and remove the drain hose from the discharge grille.

11. Then pull the discharge grille downward gently to dismantle it.

Figure 5

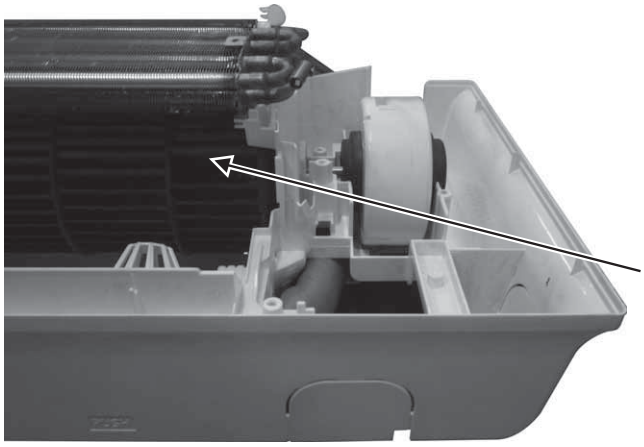
16.1.5 To Remove Control Board



12. Remove the 4 screws holding the control board, then pull out the control board.

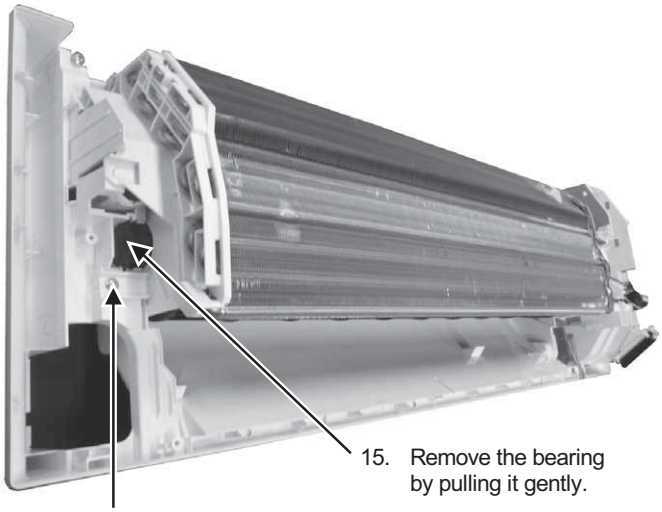
Figure 6

16.1.6 To Remove Cross Flow Fan and Indoor Fan Motor



13. Remove the screw that holding the cross flow fan and fan motor axis.

Figure 7



15. Remove the bearing by pulling it gently.

14. Remove the screw from the evaporator.

Figure 8

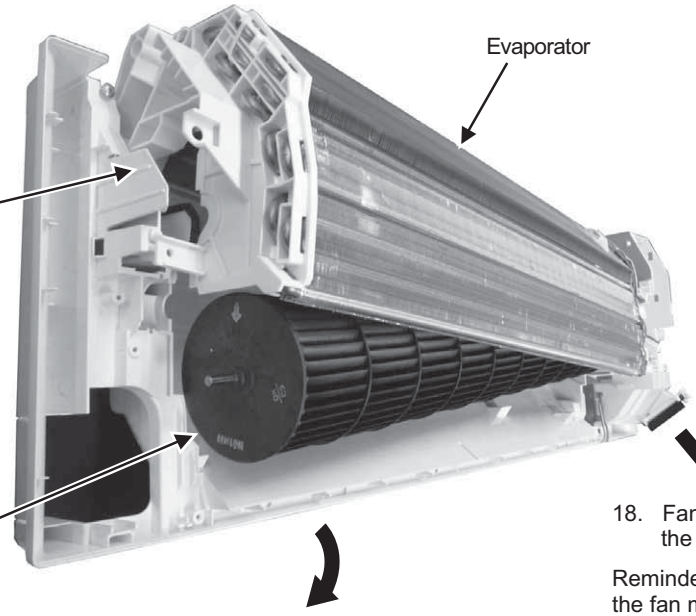


Figure 9

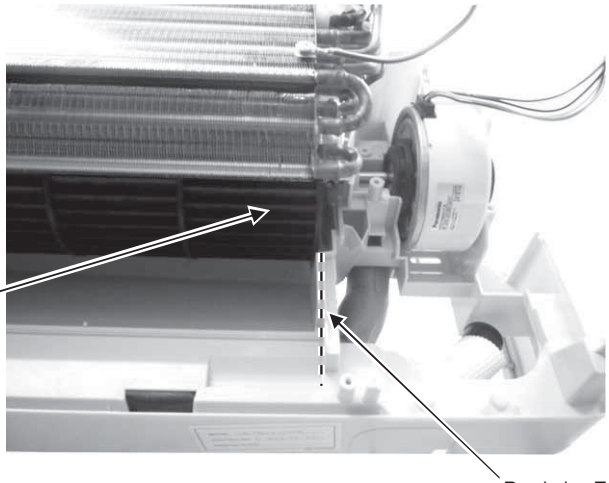
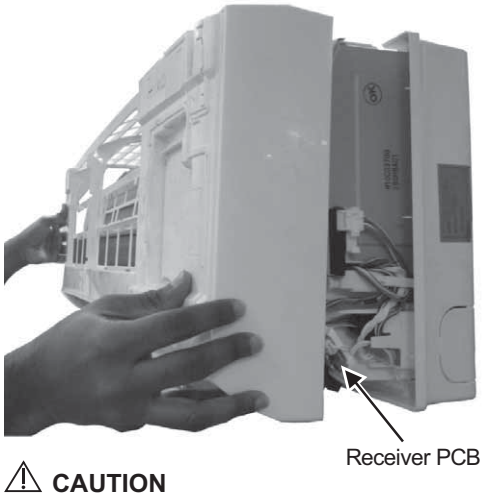


Figure 10

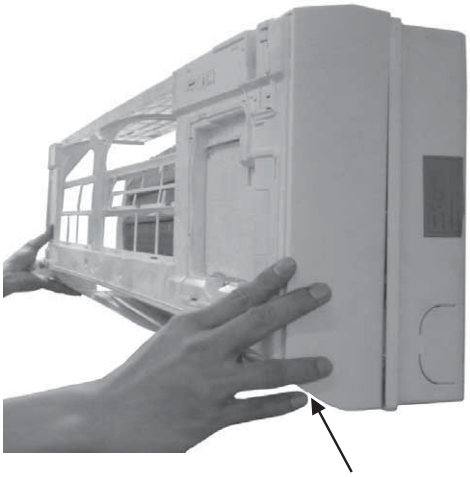
16.1.7 To Assemble the Front Grille



⚠ **CAUTION**

Do not directly fix the front grille complete, to avoid hitting the Receiver PCB.

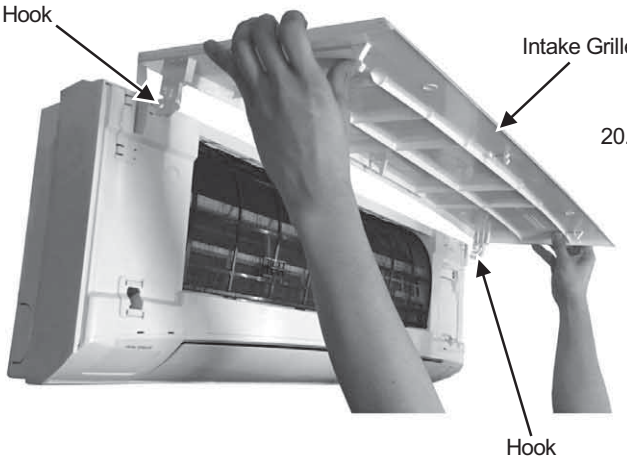
Figure 11



19. Gently assemble the right side of the front grille first then fix the left side.

Figure 12

16.1.8 To Assemble the Intake Grille



20. Align the intake grille hooks into the slot.

21. Place in the hook to the slot.

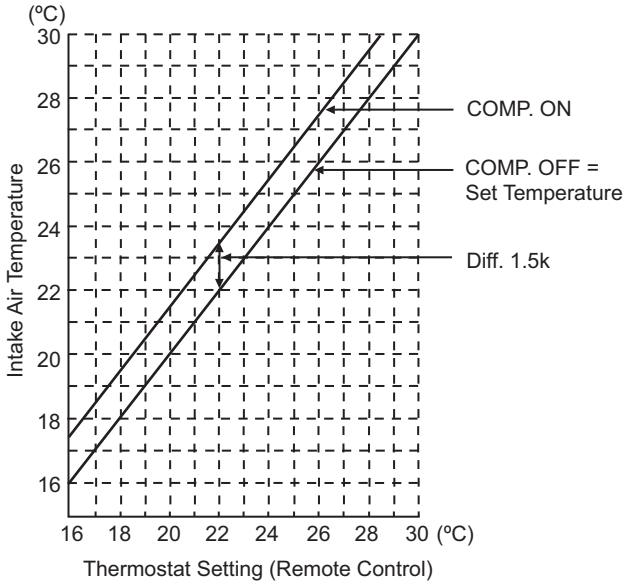
22. Then slightly bend the intake grille and push in the hooks into the slot.

Figure 13

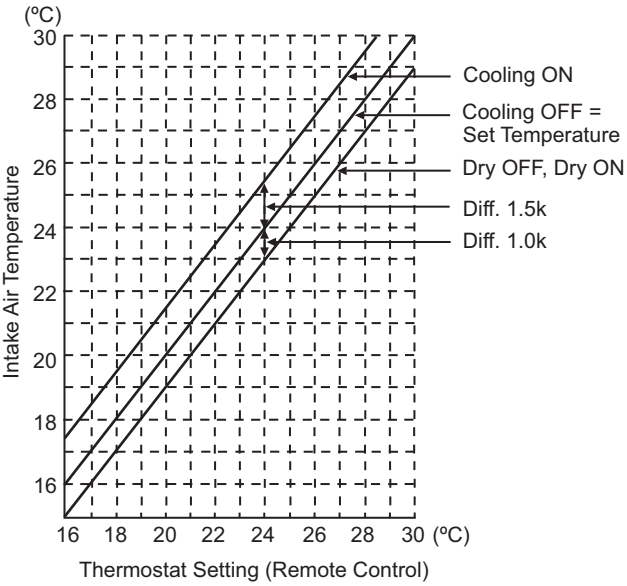
17. Technical Data

17.1 Thermostat Characteristics

Cooling



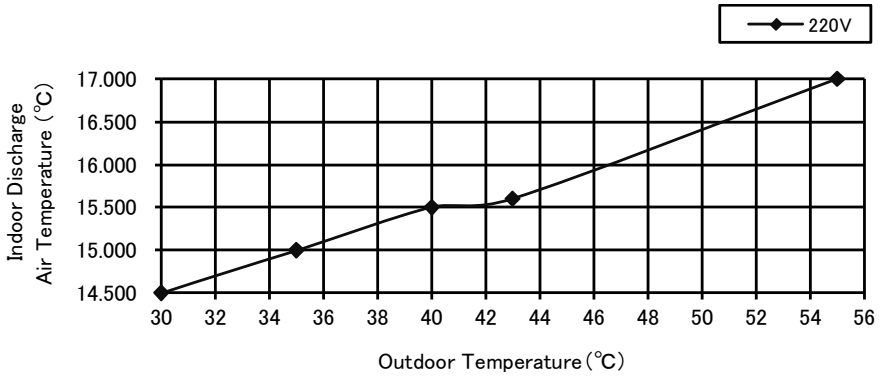
Soft Dry

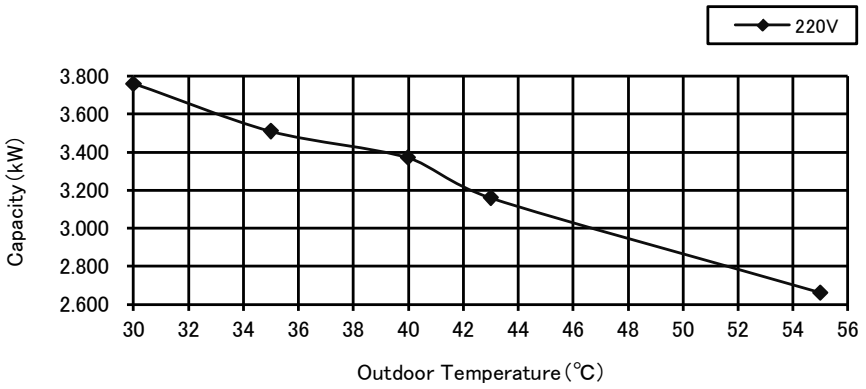


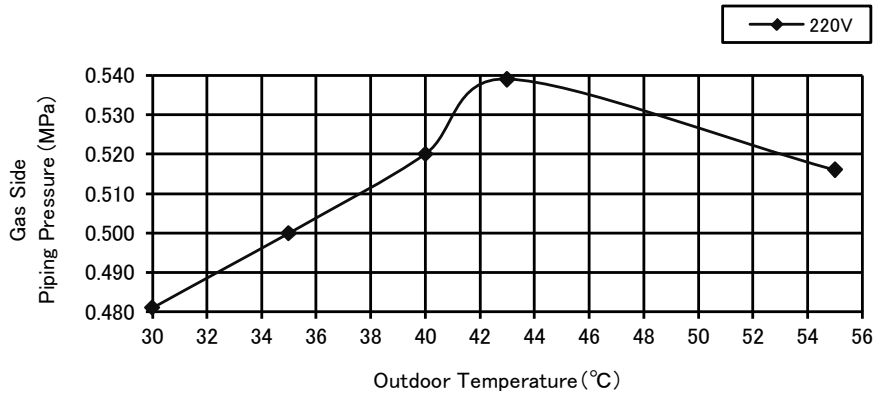
17.2 Operation Characteristics

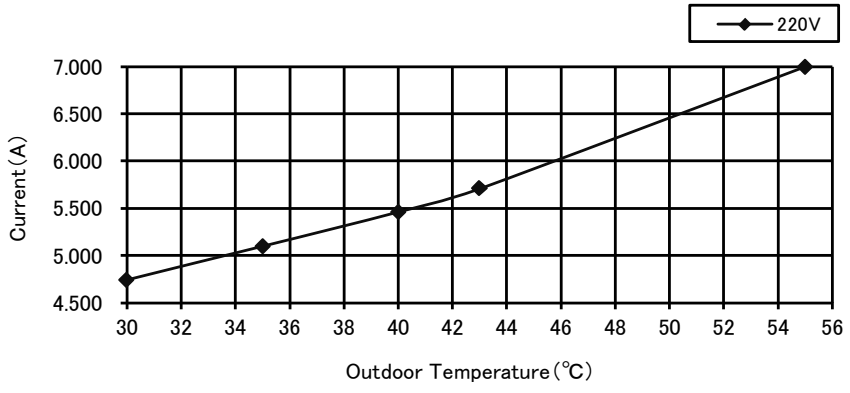
17.2.1 CS-C12UKF-2 CU-C12UKF-2

- Cooling Characteristic
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Operation condition: High fan speed
  - Piping length: 5.0 m

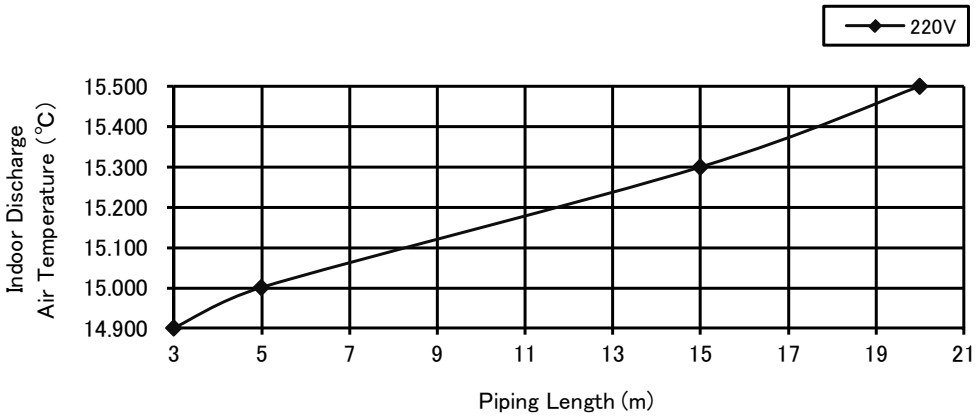


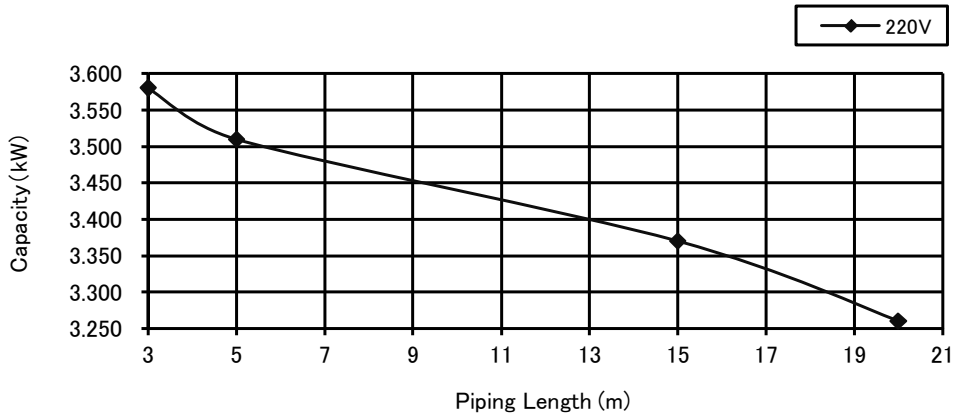


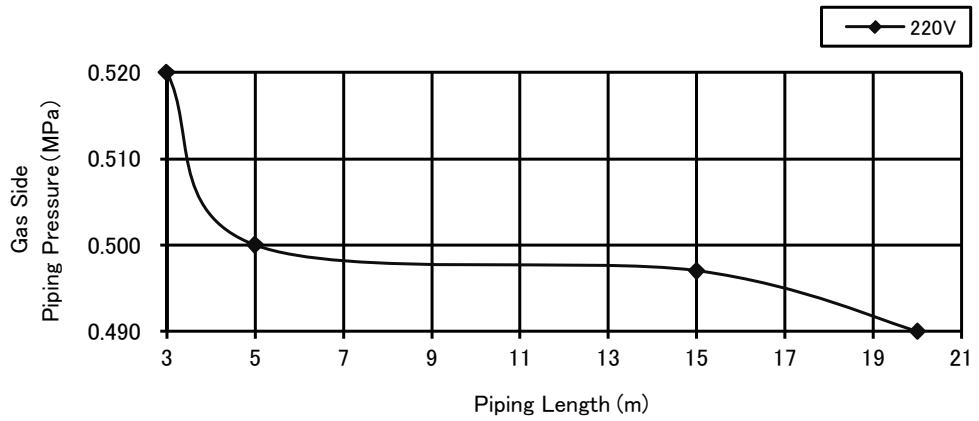


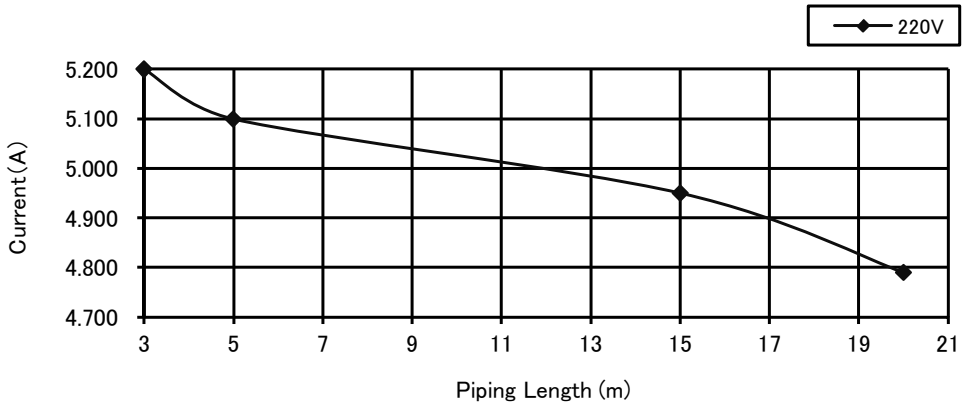


- Piping Length Characteristic Cooling
  - Room temperature: 27°C (DBT), 19°C (WBT)
  - Outdoor temperature: 35°C (DBT), 24°C (WBT)
  - Operation condition: High fan speed



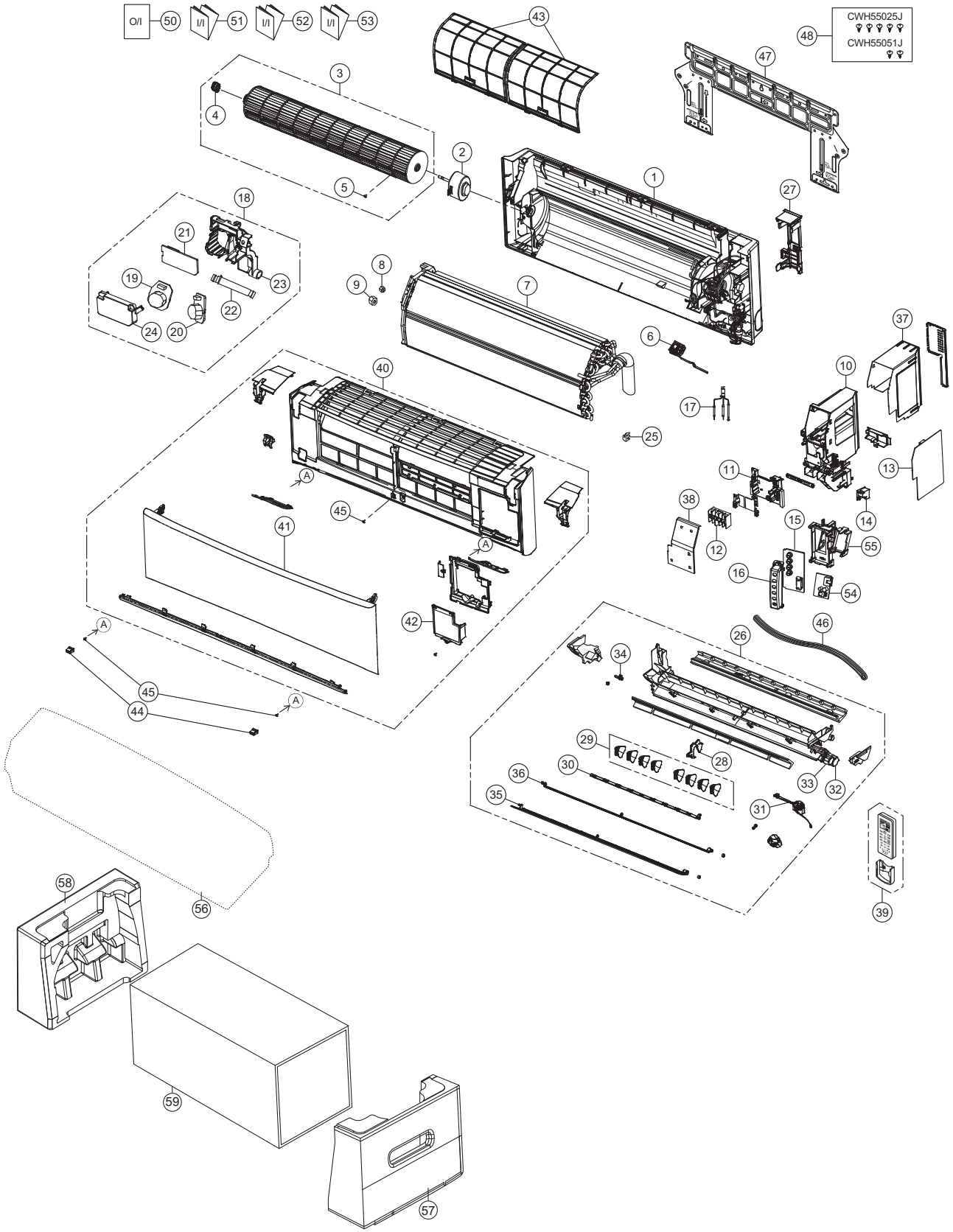






18. Exploded View and Replacement Parts List

18.1 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.

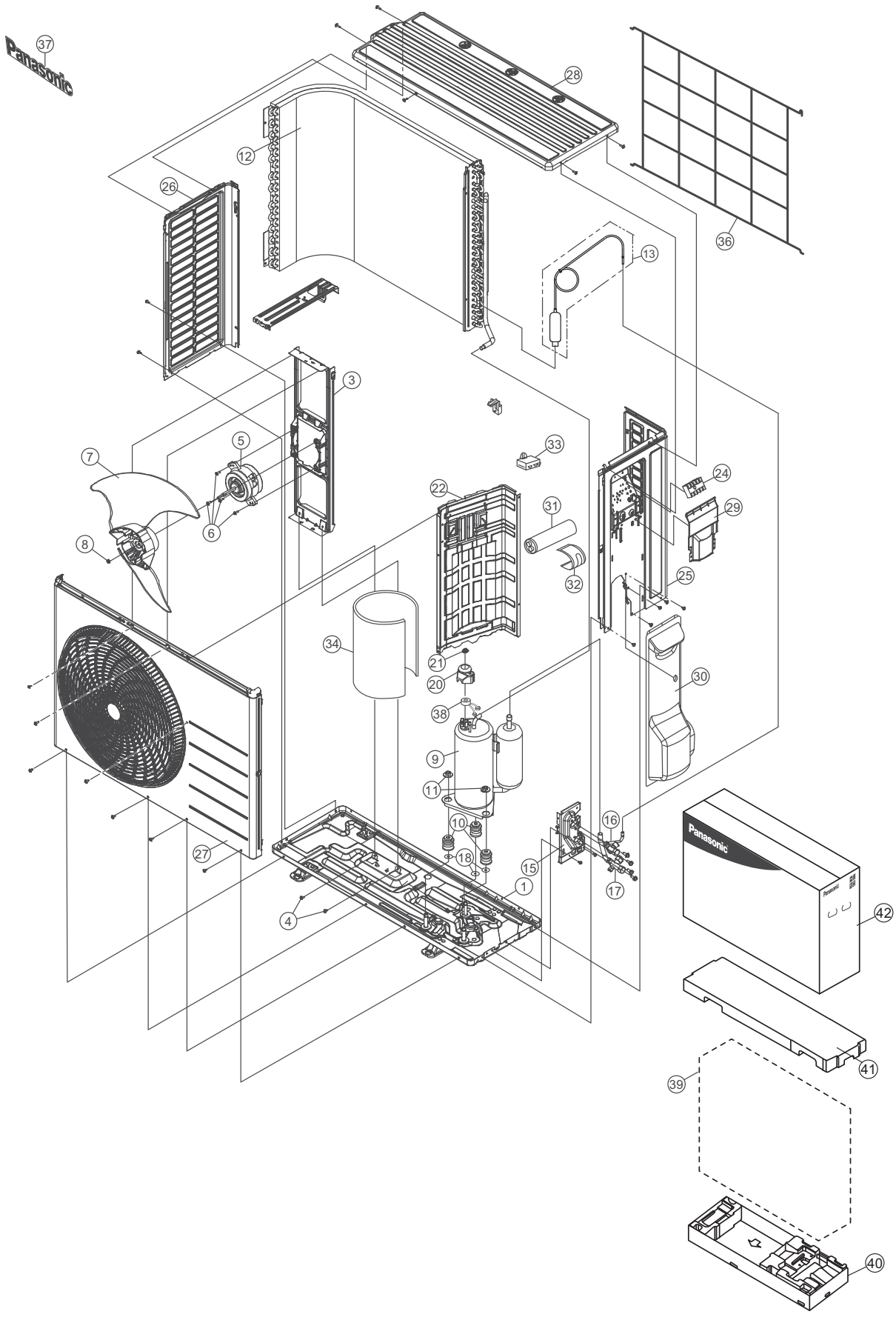
SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-C12UKF-2	REMARK
	1	CHASSY COMPLETE	1	ACXD50C00200	
⚠	2	FAN MOTOR	1	L6CBYYYL0175	O
	3	CROSS-FLOW FAN COMPLETE	1	CWH02C1076	
	4	BEARING ASSY	1	CWH64K1006	
	5	SCREW - CROSS-FLOWFAN	1	CWH551146	
⚠	6	GENERATOR COMPLETE	1	ACXH94C00220	
	7	EVAPORATOR	1	CWB30C4563	
	8	FLARE NUT (LIQUID)	1	CWT251026	
	9	FLARE NUT (GAS)	1	CWT251062	
	10	CONTROL BOARD CASING	1	ACXH10-00200	
	11	PARTICULAR PIECE - TERMINAL	1	CWD933137	
⚠	12	TERMINAL BOARD COMPLETE	1	CWA28C2687	O
⚠	13	ELECTRONIC CONTROLLER - MAIN	1	ACXA73C40370	O
⚠	14	ELECTRONIC CONTROLLER - HVU	1	N0GE1F000007	O
⚠	15	ELECTRONIC CONTROLLER - INDICATOR	1	ACXA73-03720	O
	16	INDICATOR HOLDER	1	ACXD93-00930	
	17	SENSOR COMPLETE	1	CWA50C2122	O
⚠	18	SENSOR COMPLETE (ECO)	1	CWA50C3265	O
⚠	19	ELECTRONIC CONTROLLER (ECO SENSOR)	1	CWA745791	O
⚠	20	ELECTRONIC CONTROLLER (ECO SENSOR)	1	CWA746206	O
⚠	21	ELECTRONIC CONTROLLER (COMPARATOR)	1	CWA747891	O
	22	LEAD WIRE - PCB ECO	1	CWA68C1926	
	23	CONTROL BOARD CASING FOR PCB ECO	1	CWD933929	
	24	CONTROL BOARD CASING FOR PCB ECO	1	CWD933930	
	25	CLIP FOR SENSOR	1	CWH32142	
	26	DISCHARGE GRILLE COMPLETE	1	ACXE20C00640	
	27	BACK COVER CHASSIS	1	CWD933233C	
	28	FULCRUM	2	ACXH62-00040	
	29	VERTICAL VANE	8	CWE241457	
	30	CONNECTING BAR	1	CWE261314	
⚠	31	AIR SWING MOTOR ASSY	1	ACXA98K00020	O
⚠	32	AIR SWING MOTOR	1	CWA981241	O
⚠	33	AIR SWING MOTOR	1	CWA981299	O
	34	CAP - DRAIN TRAY	1	CWH521259	
	35	HORIZONTAL VANE COMPLETE	1	ACXE24C00240	
	36	HORIZONTAL VANE COMPLETE	1	CWE24C1514	
	37	CONTROL BOARD TOP COVER	1	ACXH13-00190	
	38	CONTROL BOARD FRONT COVER CO.	1	ACXH13C00150	
	39	REMOTE CONTROL COMPLETE	1	ACXA75C08030	O
	40	FRONT GRILLE COMPLETE	1	ACXE10C07520	O
	41	INTAKE GRILLE COMPLETE	1	ACXE22C03090	
	42	GRILLE DOOR COMPLETE	1	CWE14C1090	
	43	AIR FILTER	2	CWD001279	O
	44	CAP - FRONT GRILLE	2	ACXH52-00020	
	45	SCREW - FRONT GRILLE	3	XTT4+16CFJ	
	46	DRAIN HOSE	1	ACXH85-00140	
	47	INSTALLATION PLATE	1	CWH361134	
	48	BAG COMPLETE - INSTALLATION SCREW	1	CWH82C1705	
	50	OPERATING INSTRUCTION	1	ACXF55-17320	
	51	INSTALLATION INSTRUCTION	1	ACXF60-25720	

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CS-C12UKF-2	REMARK
	52	INSTALLATION INSTRUCTION	1	ACXF60-25730	
	53	INSTALLATION INSTRUCTION	1	ACXF60-25740	
	54	ELECTRONIC CONTROLLER - RECEIVER	1	ACXA73-07230	
	55	HOLDER - RECEIVER	1	ACXD93-00700	
	56	BAG	1	CWG861497	
	57	SHOCK ABSORBER (RIGHT)	1	ACXG70-01180	
	58	SHOCK ABSORBER (LEFT)	1	ACXG70-01190	
	59	C. C. CASE	1	ACXG50-41950	

(Note)

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

18.2 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.

SAFETY	REF. NO.	PART NAME & DESCRIPTION	QTY.	CU-C12UKF-2	REMARK
	1	CHASSY ASSY	1	CWD52K1283	
	3	FAN MOTOR BRACKET	1	CWD541167	
	4	SCREW - FAN MOTOR BRACKET	2	CWH551217	
⚠	5	FAN MOTOR	1	ACXA92-00120	O
	6	SCREW - FAN MOTOR MOUNT	4	CWH55406J	
	7	PROPELLER FAN ASSY	1	CWH03K1066	
	8	NUT - PROPELLER FAN	1	CWH56053J	
⚠	9	COMPRESSOR	1	2PS206D3BB06	O
	10	ANTI - VIBRATION BUSHING	3	CWH50077	
	11	NUT - COMPRESSOR MOUNT	3	CWH561096	
	12	CONDENSER	1	CWB32C3564	
	13	CAPILLARY TUBE ASSY	1	ACXB15K05590	
	15	HOLDER COUPLING	1	CWH351233	
	16	2-WAYS VALVE (LIQUID)	1	CWB021077	O
	17	3-WAY VALVE (GAS)	1	CWB011482	O
	18	PACKING	3	CWB81043	
	20	TERMINAL COVER	1	CWH171011	
	21	NUT - TERMINAL COVER	1	CWH7080300J	
	22	SOUND PROOF BOARD	1	CWH151278	
⚠	24	TERMINAL BOARD ASSY	1	CWA28K1272	O
	25	CABINET SIDE PLATE CO.	1	CWE04C1355	
	26	CABINET SIDE PLATE	1	CWE041579A	
	27	CABINET FRONT PLATE ASSY	1	CWE06C1360	
	28	CABINET TOP PLATE	1	CWE031148A	
	29	PLATE - C. B. COVER	1	CWH131470	
	30	CONTROL BOARD COVER - COMPLETE	1	CWH13C1253	
⚠	31	CAPACITOR - COM.	1	CWA312076	O
	32	HOLDER CAPACITOR	1	CWH30057	
⚠	33	CAPACITOR - F.M	1	DS441355NPQA	O
	34	SOUND PROOF MATERIAL	1	ACXG30-00090	
	36	WIRE NET	1	CWD041166A	
	37	PANASONIC BADGE	1	CWE373439	
	38	OVER LOAD PROTECTOR - COMPLETE	1	ACXA12C00740	
	39	BAG	1	CWG861078	
	40	BASE BOARD COMPLETE	1	ACXG62C00890	
	41	TOP BOARD COMPLETE	1	ACXG60C00150	
	42	C. C. CASE	1	ACXG50-40470-1	

(Note)

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

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