FILE NO. SVM-22064-3

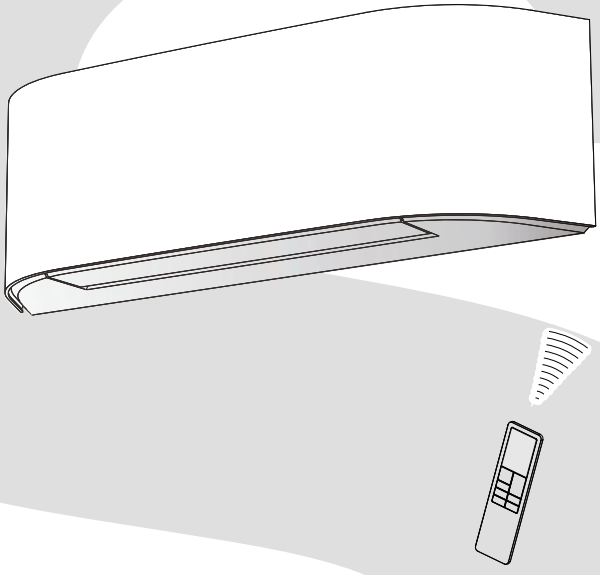
TOSHIBA

SERVICE MANUAL

AIR-CONDITIONER

MULTIPLE TYPE

RAS-M07N4KVRG-E



R32 or R410A

INVERTER

Revised on Nov, 2023

CONTENTS

1. SAFETY PRECAUTIONS

	Read the precautions in this manual carefully before operating the unit.		This appliance is filled with R32. (Flammable Material)
	Information included in the Operation Manual and/or Installation Manual.		Service personnel should be handing this equipment with reference to the Installation Manual.

Warning Indications on the Air Conditioner Unit

Warning indication	Description
	**CAUTION** **BURST HAZARD** Open the service valves before the operation, otherwise there might be the burst.

For general public use

Power supply cord and connecting cable of appliance use shall be at least polychloroprene sheathed flexible cord (design H07RN-F) or cord designation 60245 IEC66. (Shall be installed in accordance with national wiring regulations.)

- Read this “SAFETY PRECAUTIONS” carefully before servicing.
- The precautions described below include the important items regarding safety. Observe them without fail.
- After the servicing work, perform a trial operation to check for any problem.
- Turn off the main power supply switch (or breaker) before the unit maintenance.

■ **Important information regarding the refrigerant used**
This product contains fluorinated greenhouse gases.
Do not vent gases in to the atmosphere. Refrigerant type: **R32**
GWP(1) value: **675*** (ex. R32 ref. AR4)
(1)GWP = global warming potential
The refrigerant quantity is in dicated on the unit name plate.
* This value is based on F gas regulation 517/2014

CAUTION

New Refrigerant Air Conditioner Installation

- **THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT (R32) WHICH DOES NOT DESTROY OZONE LAYER.**

R32 refrigerant is apt to be affected by impurities such as water, oxidizing membrane, and oils because the working pressure of R32 refrigerant is approx. 1.6 times of refrigerant R22. Accompanied with the adoption of the new refrigerant, the refrigeration machine oil has also been changed. Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigeration machine oil does not enter into the new type refrigerant R32 air conditioner circuit.

To prevent mixing of refrigerant or refrigerating machine oil, the sizes of connecting sections of charging port on main unit and installation tools are different from those used for the conventional refrigerant units.

Accordingly, special tools are required for the new refrigerant (R32) units. For connecting pipes, use new and clean piping materials with high pressure fittings made for R32 only, so that water and/or dust does not enter. Moreover, do not use the existing piping because there are some problems with pressure fittings and possible impurities in existing piping.

CAUTION

TO DISCONNECT THE APPLIANCE FROM THE MAIN POWER SUPPLY

This appliance must be connected to the main power supply by a circuit breaker or a switch with a contact separation of at least 3 mm.

DANGER

- **ASK AN AUTHORIZED DEALER OR QUALIFIED INSTALLATION PROFESSIONAL TO INSTALL/MAINTAIN THE AIR CONDITIONER.**

  INAPPROPRIATE SERVICING MAY RESULT IN WATER LEAKAGE, ELECTRIC SHOCK OR FIRE.
- TURN OFF MAIN POWER SUPPLY BEFORE ATTEMPTING ANY ELECTRICAL WORK. MAKE SURE ALL POWER SWITCHES ARE OFF. FAILURE TO DO SO MAY CAUSE ELECTRIC SHOCK.

> ⚠ **DANGER: HIGH VOLTAGE**
>
> The high voltage circuit is incorporated.
>
> Be careful to do the check service, as the electric shock may be caused in case of touching parts on the P.C. board by hand.

- CORRECTLY CONNECT THE CONNECTING CABLE. IF THE CONNECTING CABLE IS INCORRECTLY CONNECTED, ELECTRIC PARTS MAY BE DAMAGED.
- CHECK THAT THE EARTH WIRE IS NOT BROKEN OR DISCONNECTED BEFORE SERVICE AND INSTALLATION. FAILURE TO DO SO MAY CAUSE ELECTRIC SHOCK.
- DO NOT INSTALL NEAR CONCENTRATIONS OF COMBUSTIBLE GAS OR GAS VAPORS. FAILURE TO FOLLOW THIS INSTRUCTION CAN RESULT IN FIRE OR EXPLOSION.
- TO PREVENT THE INDOOR UNIT FROM OVERHEATING AND CAUSING A FIRE HAZARD, PLACE THE UNIT WELL AWAY (MORE THAN 2 M) FROM HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTORS, FURNACE, STOVES, ETC.
- WHEN MOVING THE AIR-CONDITIONER FOR INSTALLATION IN ANOTHER PLACE, BE VERY CARE-FUL NOT TO ALLOW THE SPECIFIED REFRIGERANT (R32) TO BECOME MIXED WITH ANY OTHER GASEOUS BODY INTO THE REFRIGERATION CIRCUIT. IF AIR OR ANY OTHER GAS IS MIXED IN THE REFRIGERANT, THE GAS PRESSURE IN THE REFRIGERATION CIRCUIT WILL BECOME ABNORMALLY HIGH AND IT MAY RESULT IN THE PIPE BURSTING AND POSSIBLE PERSONNEL INJURIES.
- IN THE EVENT THAT THE REFRIGERANT GAS LEAKS OUT OF THE PIPE DURING THE SERVICE WORK AND THE INSTALLATION WORK, IMMEDIATELY LET FRESH AIR INTO THE ROOM. IF THE REFRIGERANT GAS IS HEATED, SUCH AS BY FIRE, GENERATION OF POISONOUS GAS MAY RESULT.

WARNING

- Never modify this unit by removing any of the safety guards or bypassing any of the safety interlock switches.
- Do not install in a place which cannot bear the weight of the unit. Personal injury and property damage can result if the unit falls.
- Before doing the electrical work, attach an approved plug to the power supply cord. Also, make sure the equipment is properly earthed.
- Appliance shall be installed in accordance with national wiring regulations. If you detect any damage, do not install the unit. Contact your dealer immediately.
- Do not use any refrigerant different from the one specified for complement or replacement. Otherwise, abnormally high pressure may be generated in the refrigeration cycle, which may result in a failure or explosion of the product or an injury to your body.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Be aware that refrigerants may not contain an odour.
- Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources or ignition. Else, it may explode and cause injury or death.

- For R32 model, use pipes, fl are nut and tools which is specifi ed for R32 refrigerant. Using of existing (R22) piping, fl are nut and tools may cause abnormally high pressure in the refrigerant cycle (piping), and possibly result in explosion and injury.
- Thickness of copper pipes used R32 must be more than 0.8mm. Never use copper pipes thinner than 0.8mm.
- Do not perform flare connection inside a building or dwelling or room, when joining the heat exchanger of indoor unit with interconnection piping. Refrigerant connection inside a building or dwelling or room must be made by brazing or welding. Joint connection of indoor unit by flaring method can only be made at outdoor or at outside of building or dwelling or room. Flare connection may cause gas leak and flammable atmosphere.
- After completion of installation or service, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
- Appliance and pipe-work shall be installed, operated and stored in a room with a floor area large than A_{min} m^2
  How to get A_{min} m^2 : $A_{min} = (M / (2.5 \times 0.22759 \times h_0))^2$
  M is the refrigerant charge amount in appliance in kg. h_0 is the installation height of the appliance in m : 0.6 m for floor standing/1.8m for wall mounted/1.0 m for window mounted/2.2 m for ceiling mounted.
- Comply with national gas regulations.

WARNING

- **After installation work, make sure below before operation.**
  - Connection pipes are connected properly and no leakage.
  - Packed valves are fully open.
  Running compressor without open packed valves may cause abnormal high pressure and parts failure.
  Leakage at connection piping may suck air and make further high pressure cause burst and injure.
- **During pump down work make sure below process.**
  - Don't mix air into the refrigerant cycle.
  - Stop the compressor before removing piping after packed valves are fully closed.
  Removing piping under the compressor running and packed valves open,
  air might be sucked and refrigeration cycle pressure becomes abnormally high,
  and it causes burst or injury on persons.

CAUTION

- Exposure of unit to water or other moisture before installation may result in an electrical short.
  Do not store in a wet basement or expose to rain or water.
- Do not install in a place that can increase the vibration of the unit. Do not install in a place that can amplify the noise level of the unit or where noise or discharged air might disturb neighbors.
- To avoid personal injury, be careful when handling parts with sharp edges.
- **Perform the specified installation work to guard against an earthquake.**
  If the air conditioner is not installed appropriately, accidents may occur due to the falling unit.
- Please read this installation manual carefully before installing the unit. It contains further important instructions for proper installation, Improper installation may cause fire, burst, electric shock, injury and water leakage.

For Reference:

If a heating operation would be continuously performed for a long time under the condition that the outdoor temperature is 0°C or lower, drainage of defrosted water may be difficult due to freezing of the bottom plate, resulting in a trouble of the cabinet or fan.

It is recommended to procure an antifreeze heater locally for a safe installation of the air conditioner.

For details, contact the dealer.

2. SPECIFICATIONS

Specification

Unit model	Indoor				**RAS-M07N4KVRG-E**	
	Outdoor				*1	
Cooling capacity				(kW)	*1	
Cooling capacity range				(kW)	*1	
Heating capacity				(kW)	*1	
Heating capacity range				(kW)	*1	
Power supply					1Ph/220-240V/50Hz (Supplied by Outdoor unit)	
Electric characteristic	Indoor	Operation mode			**Cooling**	**Heating**
		Running current		(A)	0.25-0.23	0.25-0.23
		Power consumption		(W)	35	35
		Power factor		(%)	63	63
	Outdoor	Operation mode			**Cooling**	**Heating**
		Running current		(A)	*1	
		Power consumption		(W)	*1	
		Power factor		(%)	*1	
		Starting current		(A)	*1	
COP (Cooling / Heating)					*1	
Operating noise	Indoor	High	(Cooling / Heating)	(dB-A)	41/41	
		Medium	(Cooling / Heating)	(dB-A)	31/31	
		Low	(Cooling / Heating)	(dB-A)	22/22	
	Outdoor		(Cooling / Heating)	(dB-A)	*1	
Indoor unit	Unit model				**RAS-M07N4KVRG-E**	
	Dimension	Height		(mm)	300	
		Width		(mm)	987	
		Depth		(mm)	210	
	Net weight			(kg)	11	
	Fan motor output			(W)	30	
	Air flow rate		(Cooling / Heating)	(m^3 / hr)	600/610	
Outdoor unit	Unit model				*1	
	Dimension	Height		(mm)	*1	
		Width		(mm)	*1	
		Depth		(mm)	*1	
	Net weight			(kg)	*1	
	Compressor	Motor output		(W)	*1	
		Type			*1	
		Model			*1	
	Fan motor output			(W)	*1	
	Air flow rate		(Cooling / Heating)	(m^3 / min)	*1	
Piping connection	Type				Flare connection	
	Indoor unit	Liquid side		(mm)	∅6.35	
		Gas side		(mm)	∅9.52	
	Outdoor unit	Liquid side		(mm)	*1	
		Gas side		(mm)	*1	
	Maximum length			(m)	*1	
	Maximum charge-less length			(m)	*1	
	Maximum height difference			(m)	*1	
Refrigerant	Name of refrigerant				R32	
Weight				(kg)	*1	
Wiring connection		Power supply			*1	
		Interconnection			4 Wires: Includes earth	
Usable temperature range		Indoor	(Cooling / Heating)	(°C)	21-32/ -28	
		Outdoor	(Cooling / Heating)	(°C)	*1	
Accessory	Indoor unit	Installation plate			1	
		Wireless remote controller			1	
		Batteries			2	
		Remote controller holder			1	
		Toshiba Ultra pure filter			1	
		Mounting screw			6(∅4x25L)	
		Remote controller holder Flat head wood screw			2(∅3.1x16L)	
		Installation manual			1	
		Owner's manual			1	

*1 : Refer to the service manual of the multi outdoor unit to be combined.

Note : The specification may be subject to change without notice for purpose of improvement.

3. REFRIGERANT R32

This air conditioner adopts the new refrigerant HFC (R32) which does not damage the ozone layer.

The next section describes the precautions for air conditioner using the new refrigerant. Conforming to contents of the next section together with the general cautions included in this manual, perform the correct and safe work.

3-1. Safety During Installation/Servicing

The basic installation servicing work procedures are the same as conventional R410A models.
As R32's pressure is about 1.6 times higher than that of R22, improper installation/servicing may cause a serious trouble. By using tools and materi-als exclusive for R32, it is necessary to carry out installation/ servicing safely while taking the following precautions into consideration.

1. Never use refrigerant other than R32 in an air conditioner which is designed to operate with R32. If other refrigerant than R32 is mixed, pressure in the refrigeration cycle becomes abnormally high, and it may cause personal injury, etc. by a rupture.
2. Confirm the used refrigerant name, and use tools and materials exclusive for the refrigerant. The refrigerant name R32 is indicated on the visible place of the outdoor unit of the air conditioner using R32 as refrigerant. To prevent mischarging, the diameter of the service port differs from that of R22. R32 and other HFCs are heavier than air, and therefore they are inclined to settle near the floor surface.
   If the gas fills up the room or the bottom part of a room, it may also cause oxygen deficiency and may reach its combustion concentration.
   In order to prevent oxygen deficiency and R32 combustion, keep the room well-ventilated for a healthy work environment.
   In particular, using HFCs in a basement room or confined area creates a higher risk; be sure to furnish the room with local exhaust ventilation.
   If a refrigerant leak is confirmed in a room an inadequately ventilated location, do not use a flame until the area has been ventilated appropriately and the work environment has been improved.
   The same applies in case of brazing, ensure appropriate ventilation to prevent oxygen deficiency and R32 combustion.
   Check that there are no dangerous or combustible items nearby, and ensure a fire extinguisher is close at hand.
   Keep a sufficient distance away from causes of fire (ignition sources) such as gas-burning equipment and electric heaters in places where installation, repairs, or similar work on air-conditioning equipment is performed.
3. If a refrigeration gas leakage occurs during installation/servicing, be sure to ventilate fully. If the refrigerant gas comes into contact with fire, a poisonous gas may occur.
4. When installing or removing an air conditioner, do not allow air moisture dust or oil to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture or personal injury may be caused.
5. After completion of installation work, check to make sure that there is no refrigeration gas leakage. If the refrigerant gas leaks into the room, coming into contact with fire in the fan-driven heater, space heater, etc., a poisonous gas may occur
6. When an air conditioning system charged with a large volume of refrigerant is installed in a small room, it is necessary to exercise care so that, even when refrigerant leaks, its concentration does not exceed the marginal level.
   If the refrigerant gas leakage occurs and its concentration exceeds the marginal level, an oxygen starvation accident may result.
7. Be sure to carry out installation or removal according to the installation manual.
   Improper installation may cause refrigeration trouble, water leakage, electric shock, fire, etc.
8. Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician.
   Improper repair's may result in water leakage, electric shock and fire, etc.

3-2. Refrigerant Piping Installation

3-2-1. Piping Materials and Joints Used

For the refrigerant piping installation, copper pipes and joints are mainly used. Copper pipes and joints suitable for the refrigerant must be chosen and installed. Furthermore, it is necessary to use clean copper pipes and joints whose interior surfaces are less affected by contaminants.

1. Copper Pipes

It is necessary to use seamless copper pipes which are made of either copper or copper alloy and it is desirable that the amount of residual oil is less than 40 mg/10 m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface).

Otherwise, the expansion valve or capillary tube may become blocked with contaminants.

As an air conditioner using R32 incurs pres-sure higher than when using R22, it is necessary to choose adequate materials.

Thicknesses of copper pipes used with R32 are as shown in Table 3-2-1. Never use copper pipes thinner than 0.8 mm even when it is available on the market.

Table 3-2-1 Thicknesses of annealed copper pipes

		Thickness (mm)	
Nominal diameter	**Outer diameter (mm)**	**R32(R410A)**	R22
1/4	6.35	0.80	0.80
3/8	9.52	0.80	0.80
1/2	12.70	0.80	0.80
5/8	15.88	1.00	1.00

2. Joints

For copper pipes, flare joints or socket joints are used. Prior to use, be sure to remove all contaminants.

a) Flare Joints

Flare joints used to connect the copper pipes cannot be used for pipings whose outer diameter exceeds 20 mm. In such a case, socket joints can be used.

Sizes of flare pipe ends, flare joint ends and flare nuts are as shown in Tables 3-2-3 to 3-2-6 below.

b) Socket Joints

Socket joints are such that they are brazed for connections, and used mainly for thick pipings whose diameter is larger than 20 mm.

Thicknesses of socket joints are as shown in Table 3-2-2.

Table 3-2-2 Minimum thicknesses of socket joints

Nominal diameter	Reference outer diameter of copper pipe jointed (mm)	Minimum joint thickness (mm)
1/4	6.35	0.50
3/8	9.52	0.60
1/2	12.70	0.70
5/8	15.88	0.80

3-2-2. Processing of Piping Materials

When performing the refrigerant piping installation, care should be taken to ensure that water or dust does not enter the pipe interior, that no other oil than lubricating oils used in the installed air-water heat pump is used, and that refrigerant does not leak. When using lubricating oils in the piping processing, use such lubricating oils whose water content has been removed. When stored, be sure to seal the container with an airtight cap or any other cover.

1. Flare processing procedures and precautions

a) Cutting the Pipe

By means of a pipe cutter, slowly cut the pipe so that it is not deformed.

b) Removing Burrs and Chips

If the flared section has chips or burrs, refrigerant leakage may occur.
Carefully remove all burrs and clean the cut surface before installation.

c) Insertion of Flare Nut

d) Flare Processing

Make certain that a clamp bar and copper pipe have been cleaned.

By means of the clamp bar, perform the flare processing correctly.

Use either a flare tool for R32 or conventional flare tool.

Flare processing dimensions differ according to the type of flare tool. When using a conventional flare tool, be sure to secure “dimension A” by using a gauge for size adjustment.

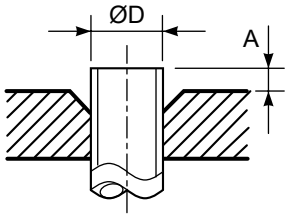


Fig. 3-2-1 Flare processing dimensions

Table 3-2-3 Dimensions related to flare processing for R32(R410A)

Nominal diameter	Outer diameter (mm)	Thickness (mm)	A (mm)		
			Flare tool for R32 clutch type	Conventional flare tool	
				Clutch type	Wing nut type
1/4	6.35	0.8	0 to 0.5	1.0 to 1.5	1.5 to 2.0
3/8	9.52	0.8	0 to 0.5	1.0 to 1.5	1.5 to 2.0
1/2	12.70	0.8	0 to 0.5	1.0 to 1.5	2.0 to 2.5
5/8	15.88	1.0	0 to 0.5	1.0 to 1.5	2.0 to 2.5

Table 3-2-4 Dimensions related to flare processing for R22

Nominal diameter	Outer diameter (mm)	Thickness (mm)	A (mm)		
			Flare tool for R22 clutch type	Conventional flare tool	
				Clutch type	Wing nut type
1/4	6.35	0.8	0 to 0.5	0.5 to 1.0	1.0 to 1.5
3/8	9.52	0.8	0 to 0.5	0.5 to 1.0	1.0 to 1.5
1/2	12.70	0.8	0 to 0.5	0.5 to 1.0	1.5 to 2.0
5/8	15.88	1.0	0 to 0.5	0.5 to 1.0	1.5 to 2.0

Table 3-2-5 Flare and flare nut dimensions for R32(R410A)

Nominal diameter	Outer diameter (mm)	Thickness (mm)	Dimension (mm)				Flare nut width (mm)
			A	B	C	D	
1/4	6.35	0.8	9.1	9.2	6.5	13	17
3/8	9.52	0.8	13.2	13.5	9.7	20	22
1/2	12.70	0.8	16.6	16.0	12.9	23	26
5/8	15.88	1.0	19.7	19.0	16.0	25	29

Table 3-2-6 Flare and flare nut dimensions for R22

Nominal diameter	Outer diameter (mm)	Thickness (mm)	Dimension (mm)				Flare nut width (mm)
			A	B	C	D	
1/4	6.35	0.8	9.0	9.2	6.5	13	17
3/8	9.52	0.8	13.0	13.5	9.7	20	22
1/2	12.70	0.8	16.2	16.0	12.9	20	24
5/8	15.88	1.0	19.7	19.0	16.0	23	27
3/4	19.05	1.0	23.3	24.0	19.2	34	36

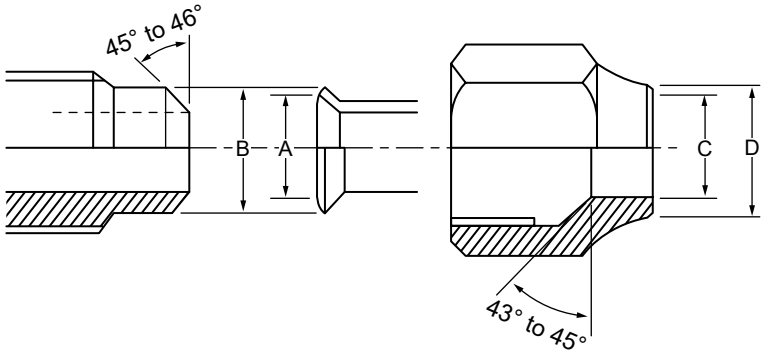


Fig. 3-2-2 Relations between flare nut and flare seal surface

2. Flare Connecting Procedures and Precautions

a) Make sure that the flare and union portions do not have any scar or dust, etc.

b) Correctly align the processed flare surface with the union axis.

c) Tighten the flare with designated torque by means of a torque wrench. The tightening torque for R32 is the same as that for conventional R22. Incidentally, when the torque is weak, the gas leakage may occur. When it is strong, the flare nut may crack and may be made non-removable. When choosing the tightening torque, comply with values designated by manufacturers. Table 3-2-7 shows reference values.

NOTE :

When applying oil to the flare surface, be sure to use oil designated by the manufacturer.
If any other oil is used, the lubricating oils may deteriorate and cause the compressor to burn out.

Table 3-2-7 Tightening torque of flare for R32(R410A) [Reference values]

Nominal diameter	Outer diameter (mm)	Tightening torque N•m (kgf•cm)	Tightening torque of torque wrenches available on the market N•m (kgf•cm)
1/4	6.35	14 to 18 (140 to 180)	16 (160), 18 (180)
3/8	9.52	33 to 42 (330 to 420)	42 (420)
1/2	12.70	50 to 62 (500 to 620)	55 (550)
5/8	15.88	63 to 77 (630 to 770)	65 (650)

3-3. Tools

3-3-1. Required Tools

The service port diameter of packed valve of the outdoor unit in the air-water heat pump using R32 is changed to prevent mixing of other refrigerant. To reinforce the pressure-resisting strength, flare processing dimensions and opposite side dimension of flare nut (For Ø12.7 copper pipe) of the refrigerant piping are lengthened.

The used refrigerating oil is changed, and mixing of oil may cause a trouble such as generation of sludge, clogging of capillary, etc. Accordingly, the tools to be used are classified into the following three types.

1. Tools exclusive for R32 (Those which cannot be used for conventional refrigerant (R22))
2. Tools exclusive for R32, but can be also used for conventional refrigerant (R22)
3. Tools commonly used for R32 and for conventional refrigerant (R22)

The table below shows the tools exclusive for R32 and their interchangeability.

Tools exclusive for R32 (The following tools for R410A are required.)

Tools whose specifications are changed for R32 and their interchangeability

No.	Used tool	Usage	R32(R410A) air-water heat pump installation		Conventional air-water heat pump installation
			Existence of new equipment for R32	Whether conventional equipment can be used	Whether new equipment can be used with conventional refrigerant
1	Flare tool	Pipe flaring	Yes	***(Note 1)**	○
2	Copper pipe gauge for adjusting projection margin	Flaring by conventional flare tool	Yes	***(Note 1)**	***(Note 1)**
3	Torque wrench (For Ø12.7)	Connection of flare nut	Yes	×	×
4	Gauge manifold	Evacuating, refrigerant charge, run check, etc.	Yes	×	×
5	Charge hose				
6	Vacuum pump adapter	Vacuum evacuating	Yes	×	○
7	Electronic balance for refrigerant charging	Refrigerant charge	Yes	×	○
8	Leakage detector	Gas leakage check	Yes	×	○

(Note 1) When flaring is carried out for R32(R410A) using the conventional flare tools, adjustment of projection margin is necessary. For this adjustment, a copper pipe gauge, etc. are necessary.

General tools (Conventional tools can be used.)

In addition to the above exclusive tools, the following equipments which serve also for R22 are necessary as the general tools.

1. Vacuum pump
   Use vacuum pump by attaching vacuum pump adapter.
2. Torque wrench (For Ø6.35, Ø9.52)
3. Pipe cutter
4. Reamer
5. Pipe bender
6. Level vial
7. Screwdriver (+, –)
8. Spanner or Monkey wrench
9. Hole core drill (Ø65)
10. Hexagon wrench (Opposite side 4mm)
11. Tape measure
12. Metal saw

Also prepare the following equipments for other installation method and run check.

1. Clamp meter
2. Thermometer
3. Insulation resistance tester
4. Electroscope

3-4. Recharging of Refrigerant

When it is necessary to recharge refrigerant, charge the specified amount of new refrigerant according to the following steps.

Recover the refrigerant, and check no refrigerant remains in the equipment.

↓

Connect the charge hose to packed valve service port at the outdoor unit's gas side.

↓

Connect the charge hose to the vacuum pump adapter.

↓

Open fully both packed valves at liquid and gas sides.

↓

Place the handle of the gauge manifold Low in the fully opened position, and turn on the vacuum pump's power switch. Then, evacuating the refrigerant in the cycle.

↓

When the compound gauge's pointer has indicated –0.1 Mpa (–76 cmHg), place the handle Low in the fully closed position, and turn off the vacuum pump's power switch.

↓

Keep the status as it is for 1 to 2 minutes, and ensure that the compound gauge's pointer does not return.

↓

Set the refrigerant cylinder to the electronic balance, connect the connecting hose to the cylinder and the connecting port of the electronic balance.

(For refrigerant charging, see the figure below.)

1. Never charge refrigerant exceeding the specified amount.
2. If the specified amount of refrigerant cannot be charged, charge refrigerant **bit by bit** in COOL mode.
3. Do not carry out additional charging.
   When additional charging is carried out if refrigerant leaks, the refrigerant composition changes in the refrigeration cycle, that is characteristics of the air conditioner changes, refrigerant exceeding the specified amount is charged, and working pressure in the refrigeration cycle becomes abnormally high pressure, and may cause a rupture or personal injury.

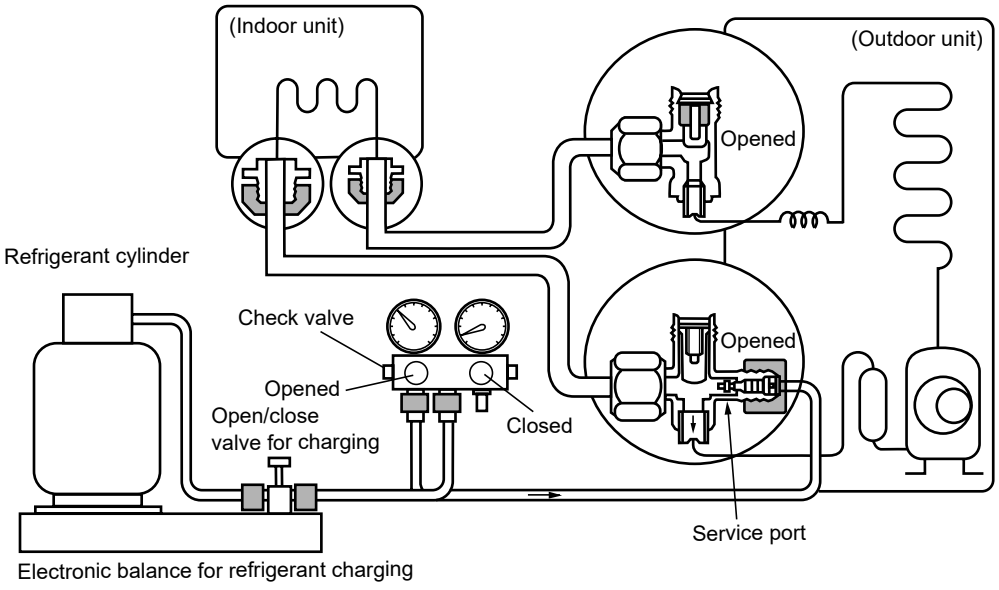


Fig. 3-4-1 Configuration of refrigerant charging

3-5. Brazing of Pipes

3-5-1. Materials for Brazing

1. Silver brazing filler

Silver brazing filler is an alloy mainly composed of silver and copper. It is used to join iron, copper or copper alloy, and is relatively expensive though it excels in solderability.

2. Phosphor bronze brazing filler

Phosphor bronze brazing filler is generally used to join copper or copper alloy.

3. Low temperature brazing filler

Low temperature brazing filler is generally called solder, and is an alloy of tin and lead. Since it is weak in adhesive strength, do not use it for refrigerant pipes.

1. Phosphor bronze brazing filler tends to react with sulfur and produce a fragile compound water solution, which may cause a gas leakage. Therefore, use any other type of brazing filler at a hot spring resort, etc., and coat the surface with a paint.
2. When performing brazing again at time of servicing, use the same type of brazing filler.

3-5-2. Flux

1. Reason why flux is necessary

- By removing the oxide film and any foreign matter on the metal surface, it assists the flow of brazing filler.
- In the brazing process, it prevents the metal surface from being oxidized.
- By reducing the brazing filler's surface tension, the brazing filler adheres better to the treated metal.

2. Characteristics required for flux

- Activated temperature of flux coincides with the brazing temperature.
- Due to a wide effective temperature range, flux is hard to carbonize.
- It is easy to remove slag after brazing.
- The corrosive action to the treated metal and brazing filler is minimum.
- It excels in coating performance and is harmless to the human body.

As the flux works in a complicated manner as described above, it is necessary to select an adequate type of flux according to the type and shape of treated metal, type of brazing filler and brazing method, etc.

3. Types of flux

- **Noncorrosive flux**

  Generally, it is a compound of borax and boric acid.
  It is effective in case where the brazing temperature is higher than 800°C.

- **Activated flux**

  Most of fluxes generally used for silver brazing are this type.
  It features an increased oxide film removing capability due to the addition of compounds such as potassium fluoride, potassium chloride and sodium fluoride to the borax-boric acid compound.

4. Piping materials for brazing and used brazing filler/flux

Piping material	Used brazing filler	Used flux
Copper - Copper	Phosphor copper	Do not use
Copper - Iron	Silver	Paste flux
Iron - Iron	Silver	Vapor flux

1. Do not enter flux into the refrigeration cycle.
2. When chlorine contained in the flux remains within the pipe, the lubricating oil deteriorates. Therefore, use a flux which does not contain chlorine.
3. When adding water to the flux, use water which does not contain chlorine (e.g. distilled water or ion-exchange water).
4. Remove the flux after brazing.

3-5-3. Brazing

As brazing work requires sophisticated techniques, experiences based upon a theoretical knowledge, it must be performed by a person qualified.

In order to prevent the oxide film from occurring in the pipe interior during brazing, it is effective to proceed with brazing while letting dry Nitrogen gas (N2) flow.

Never use gas other than Nitrogen gas.

1. Brazing method to prevent oxidation

1) Attach a reducing valve and a flow-meter to the Nitrogen gas cylinder.
2) Use a copper pipe to direct the piping material, and attach a flow-meter to the cylinder.
3) Apply a seal onto the clearance between the piping material and inserted copper pipe for Nitrogen in order to prevent backflow of the Nitrogen gas.
4) When the Nitrogen gas is flowing, be sure to keep the piping end open.
5) Adjust the flow rate of Nitrogen gas so that it is lower than 0.05 m^3/Hr or 0.02 MPa (0.2kgf/cm^2) by means of the reducing valve.
6) After performing the steps above, keep the Nitrogen gas flowing until the pipe cools down to a certain extent (temperature at which pipes are touchable with hands).
7) Remove the flux completely after brazing.

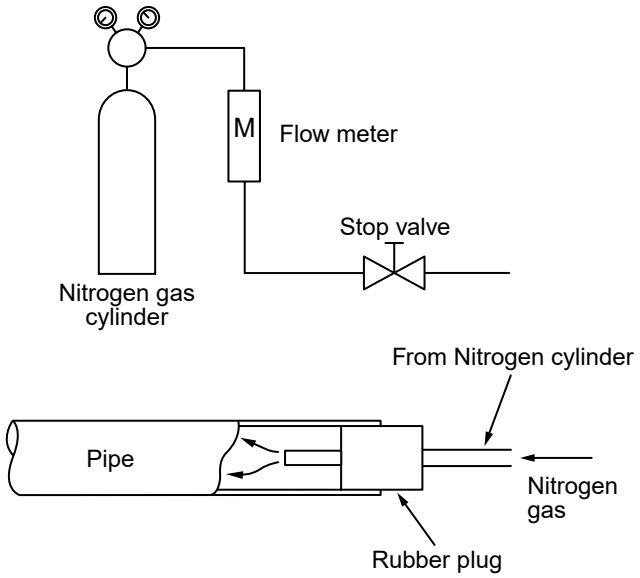
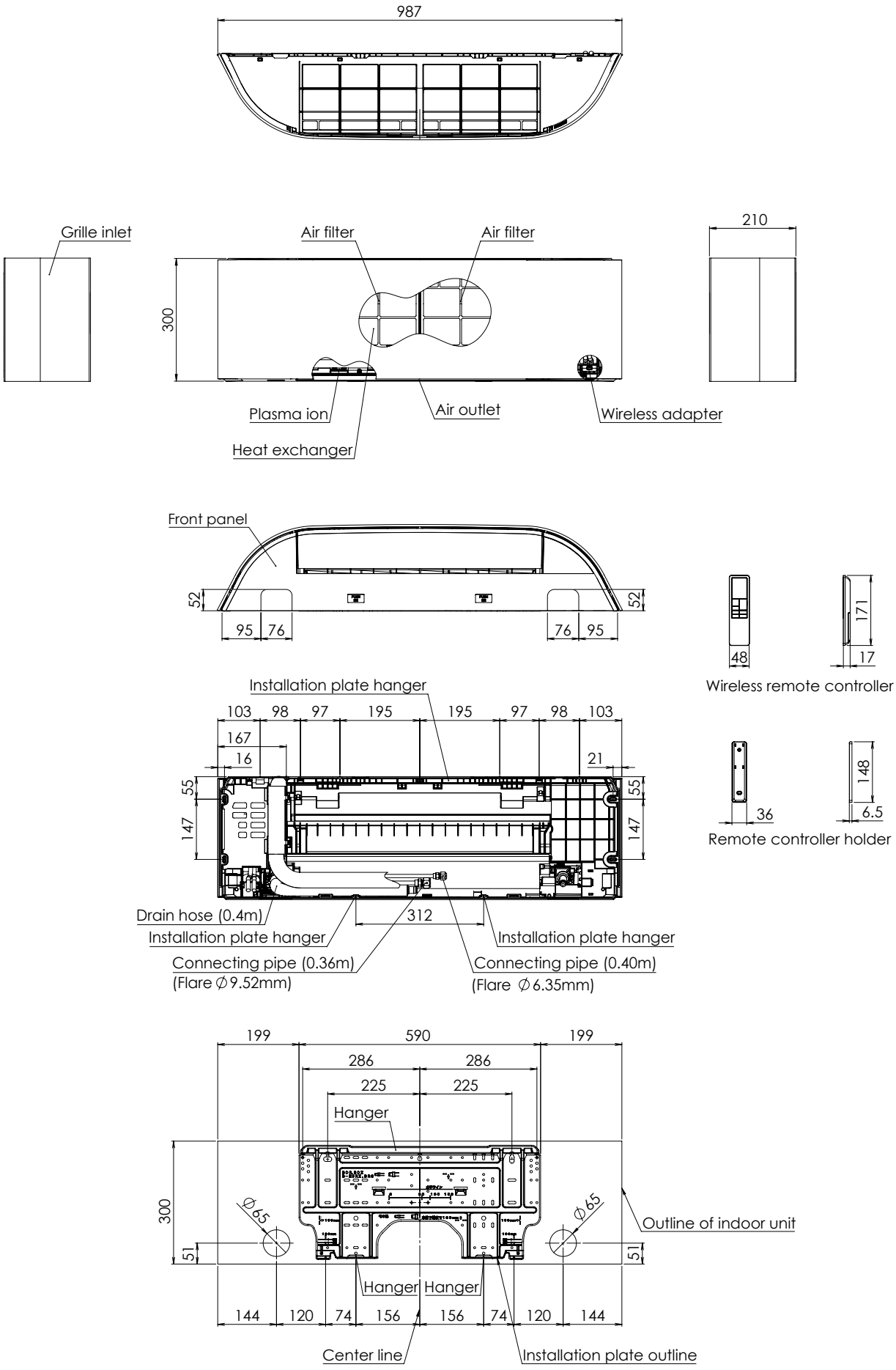


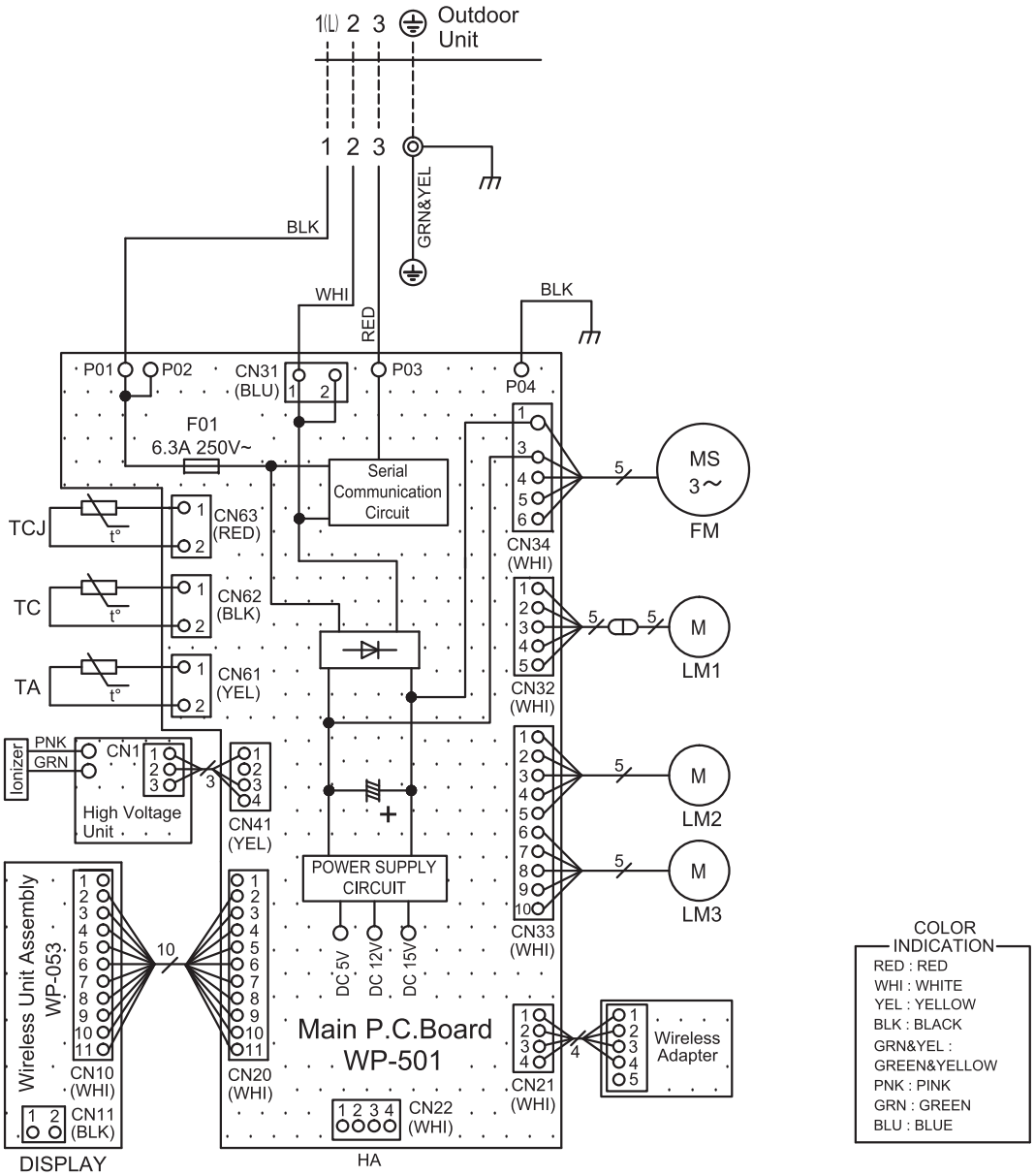
Fig. 3-5-1 Prevention of oxidation during brazing

4. CONSTRUCTION VIEWS

4-1. Indoor Unit



5. WIRING DIAGRAM



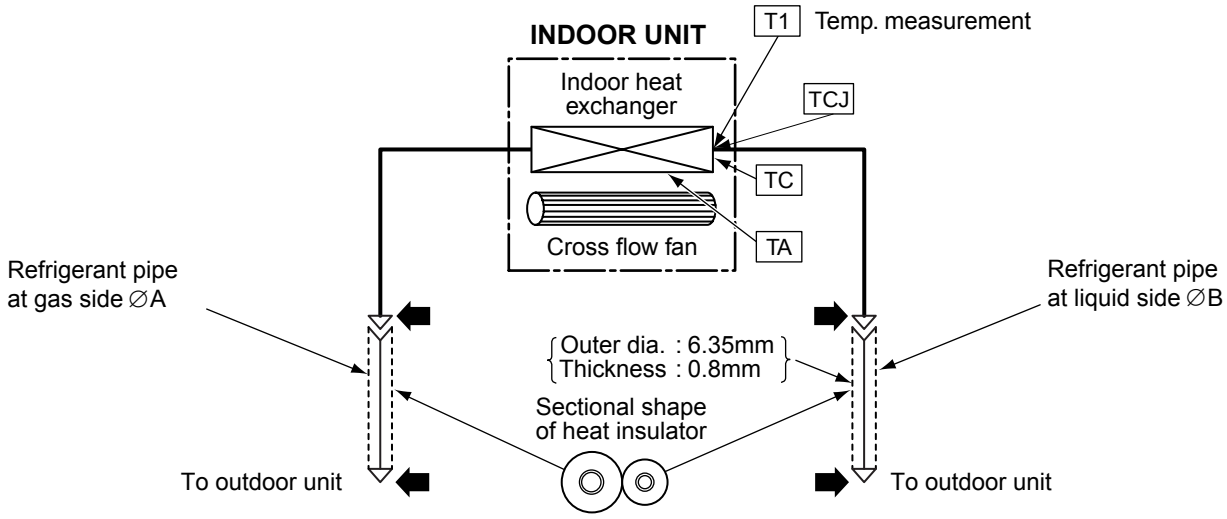
6. SPECIFICATIONS OF ELECTRICAL PARTS

Indoor Unit

No.	Parts name	Type name	Specifications
1	Fan Motor (for indoor)	ICF-340-30-6	DC280-340V, 42W
2	Room temp. sensor (TA-sensor)	(-)	10kΩ at 25°C
3	Heat exchanger temp. sensor (TC-sensor)	(-)	10kΩ at 25°C
4	Heat exchanger temp. sensor (TCJ-sensor)	(-)	10kΩ at 25°C
5	Louver motor	24BYJ48-ST, MSBPC20F04	Output (Rated) 4 phase, DC12V

7. REFRIGERANT CYCLE DIAGRAM

Refrigerant Cycle Diagram

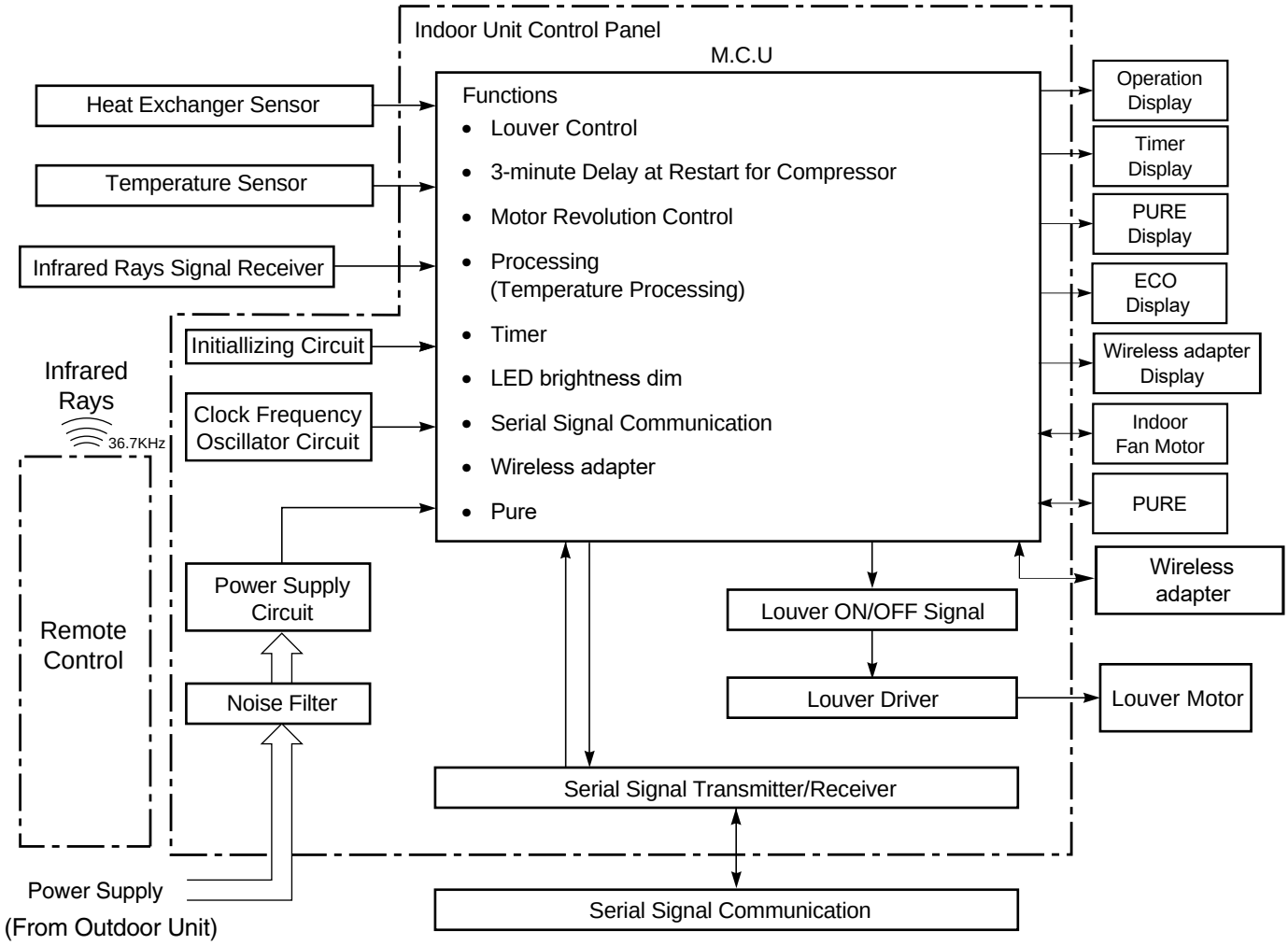


Dimension table

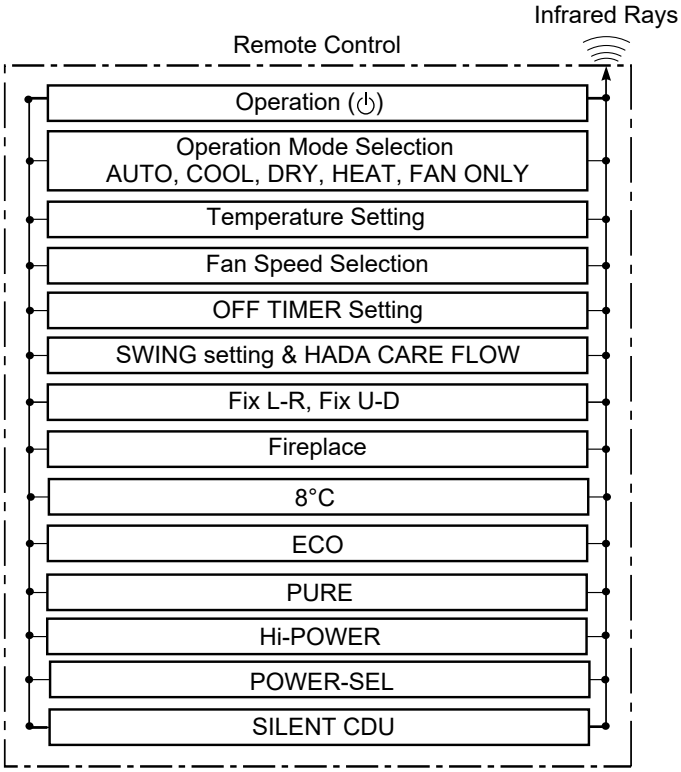
Indoor unit	Outer diameter of refrigerant pipe (mm)	
	Gas side ∅A	Liquid side ∅B
RAS-M07N4KVRG-E	9.52	6.35

8. CONTROL BLOCK DIAGRAM

Indoor Unit



REMOTE CONTROL



9. OPERATION DESCRIPTION

9-1. Outline of Air Conditioner Control

This air conditioner is a capacity-variable type air conditioner. Its system can control the speed of compressor motor according to load. The drive circuit for the indoor motor is mounted in the indoor unit. The drive circuits for outdoor motor and compressor are mounted in the outdoor unit.

The entire air conditioner is mainly controlled by the indoor unit controller. The indoor unit controller drives the indoor fan motor based upon command sent from the remote controller. Moreover, it also determines required speed of compressor motor and then transfers the operation command to the outdoor unit controller.

1. Role of indoor unit controller

The indoor unit controller judges the operation commands from the remote controller and assumes the following functions.

- Judgment of suction air temperature of the indoor heat exchanger by using the indoor temp. sensor. (TA sensor)
- Judgment of the indoor heat exchanger temperature by using heat exchanger sensor (TC sensor)(Prevent-freezing control, etc.)
- Louver motor control
- Indoor fan motor operation control
- LED (Light Emitting Diode) display control
- Transferring of operation command signal (Serial signal) to the outdoor unit
- Reception of information of operation status (Serial signal including outside temp. data) from the outdoor unit and judgment/display of error.

2. Contents of operation command signal (Serial signal) from indoor unit controller to outdoor unit controller

The following three types of signals are sent from the indoor unit controller.

- Operation mode set on the remote controller
- Compressor revolution command signal defined by indoor temperature and set temperature (Correction along with variation of room temperature and correction of indoor heat exchanger temperature are added.)
- Temperature of indoor heat exchanger
- For these signals ([Operation mode] and [Compressor revolution] indoor heat exchanger temperature), the outdoor unit controller monitors the input current to the inverter, and performs the followed operation within the range that current does not exceed the allowable value.

3. Contents of operation command signal (Serial signal) from outdoor unit controller to indoor unit controller

The following signals are sent from the outdoor unit controller.

- The current operation mode
- The current compressor revolution
- Outdoor temperature
- Existence of protective circuit operation
  For transferring of these signals, the indoor unit controller monitors the contents of signals, and judges existence of trouble occurrence. Contents of judgment are described below.
- Whether distinction of the current operation status meets to the operation command signal
- Whether protective circuit operates
  When no signal is received from the outdoor unit controller, it is assumed as a trouble.

9-2. Operation Description

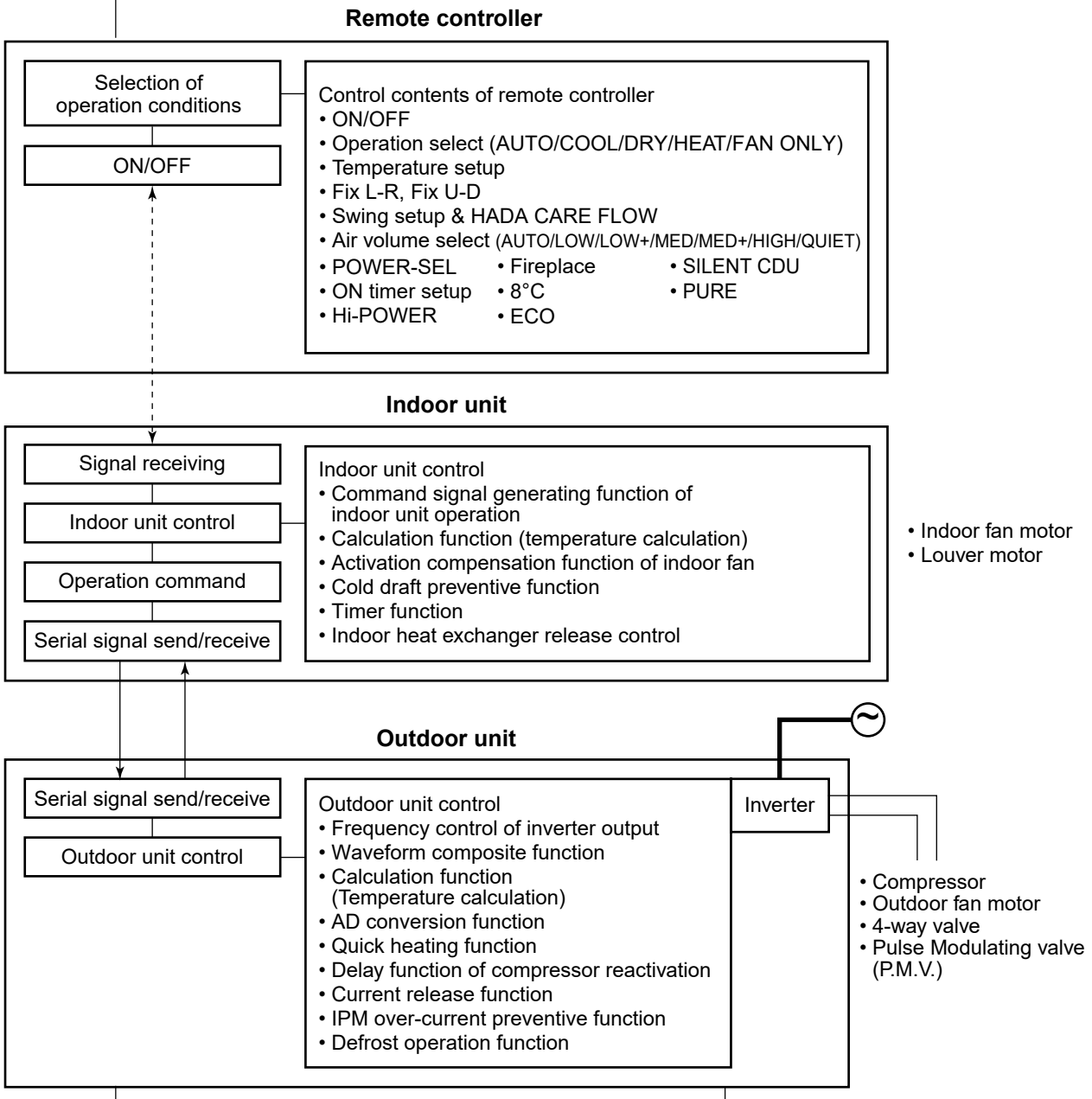
9-3. Auto Restart Function

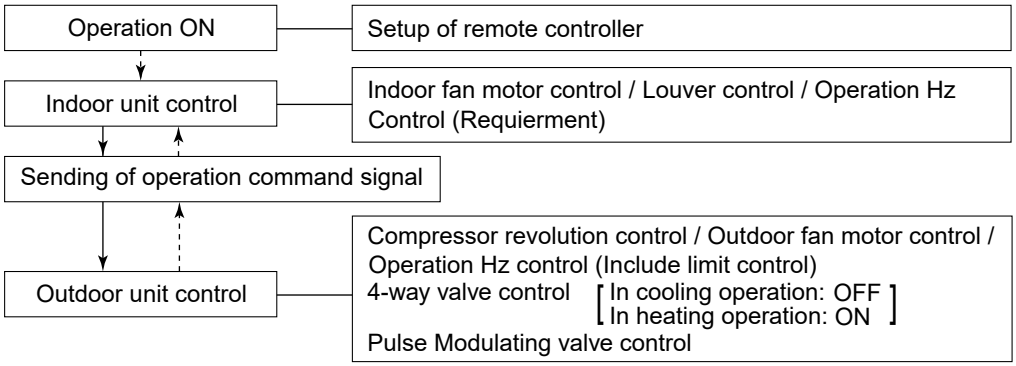
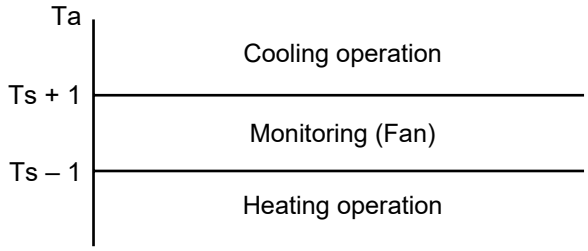
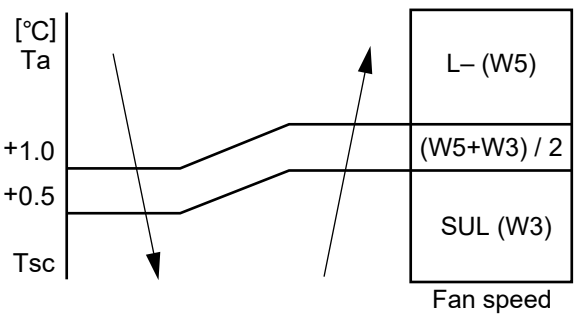
9-4. Remote Controller and Its Fuctions

Item	Operation flow and applicable data, etc.	Description
1. Basic operation	1. Operation control	

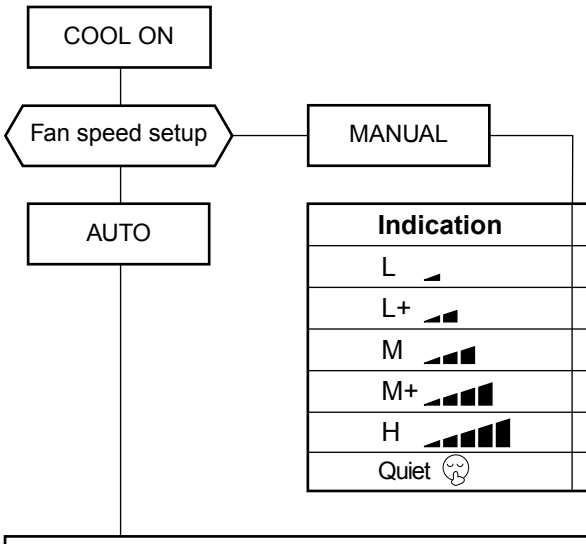
Receiving the user's operation condition setup, the operation statuses of indoor/outdoor units are controlled.

1) The operation conditions are selected by the remote controller as shown in the below.
2) A signal is sent by ON button of the remote controller.
3) The signal is received by a sensor of the indoor unit and processed by the indoor controllers as shown in the below.
4) The indoor controller controls the indoor fan motor and louver motor.
5) The indoor controller sends the operation command to the outdoor controller, and sends/receives the control status with a serial signal.
6) The outdoor controller controls the operation as shown in the left, and also controls the compressor, outdoor fan motor, 4-way valve and pulse Modulating valve.



Item	Operation flow and applicable data, etc.	Description
1. Basic operation	**2. Cooling/Heating operation** The operations are performed in the following parts by controls according to cooling/heating conditions. 1) Receiving the operation ON signal of the remote controller, the cooling or heating operation signal starts being transferred form the indoor controller to the outdoor unit. 2) At the indoor unit side, the indoor fan is operated according to the contents of "**2. Indoor fan motor control**" and the louver according to the contents of "**5. Louver control**", respectively. 3) The outdoor unit controls the outdoor fan motor, compressor, pulse Modulating valve and 4-way valve according to the operation signal sent from the indoor unit.  	
	3. AUTO operation Selection of operation mode As shown in the following figure, the operation starts by selecting automatically the status of room temperature (Ta) when starting AUTO operation. *1. When reselecting the operation mode, the fan speed is controlled by the previous operation mode.  	1) Detects the room temperature (Ta) when the operation started. 2) Selects an operation mode from Ta in the left figure. 3) Fan operation continues until an operation mode is selected. 4) When AUTO operation has started within 2 hours after heating operation stopped and if the room temperature is 20°C or more, the fan operation is performed with "Super Ultra LOW" mode for 3 minutes. Then, select an operation mode. 5) If the status of compressor-OFF continues for 15 minutes the room temperature after selecting an operation mode (COOL/HEAT), reselect an operation mode.
	4. DRY operation DRY operation is performed according to the difference between room temperature and the setup temperature as shown below. In DRY operation, fan speed is controlled in order to prevent lowering of the room temperature and to avoid air flow from blowing directly to persons.  	1) Detects the room temperature (Ta) when the DRY operation started. 2) Starts operation under conditions in the left figure according to the temperature difference between the room temperature and the setup temperature (Tsc). Setup temperature (Tsc) = Set temperature on remote controller (Ts) + (0.0 to 1.0) 3) When the room temperature is lower 1°C or less than the setup temperature, turn off the compressor.

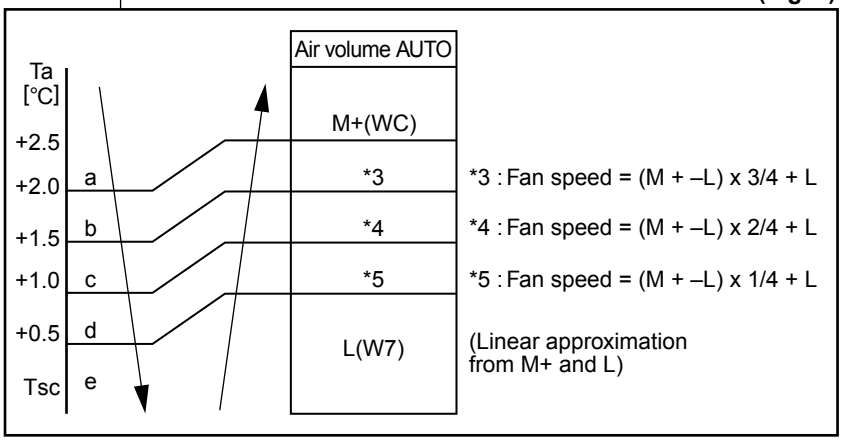
Item	Operation flow and applicable data, etc.	Description
2. Indoor fan motor control	**<In cooling operation>** (This operation controls the fan speed at indoor unit side.) The indoor fan (cross flow fan) is operated by the phase-control induction motor. The fan rotates in 5 stages in MANUAL mode, and in 5 stages in AUTO mode, respectively. (Table 1)	



(Fig. 1)

Indication	Fan speed
L	W7
L+	(L + M) / 2
M	WA
M+	(M + H) / 2
H	WD
Quiet	W5

(Fig. 2)



(Table 1) Indoor fan air flow rate

Fan speed level	Mode			Cooling		Heating	
	Cool	Heat	Dry	Fan speed (rpm)		Fan speed (rpm)	
WF		UH		1020	630	1030	640
WE	UH	H		1020	630	980	610
WD	H	M+	UH	970	600	930	570
WC	M+		H	920	560	860	510
WB		M	M+	830	490	790	460
WA	M		M	780	460	760	440
W9		L+		750	430	690	380
W8	L+	L	L+	690	380	560	300
W7	L	L-		560	300	560	300
W6	L-		L	560	280	550	270
W5	UL	UL	L-	540	260	550	270
W4			UL	540	260	550	270
W3	SUL		SUL/SL-	520	250	520	250
W2		SUL		520	250	520	250
W1				500	230	500	230

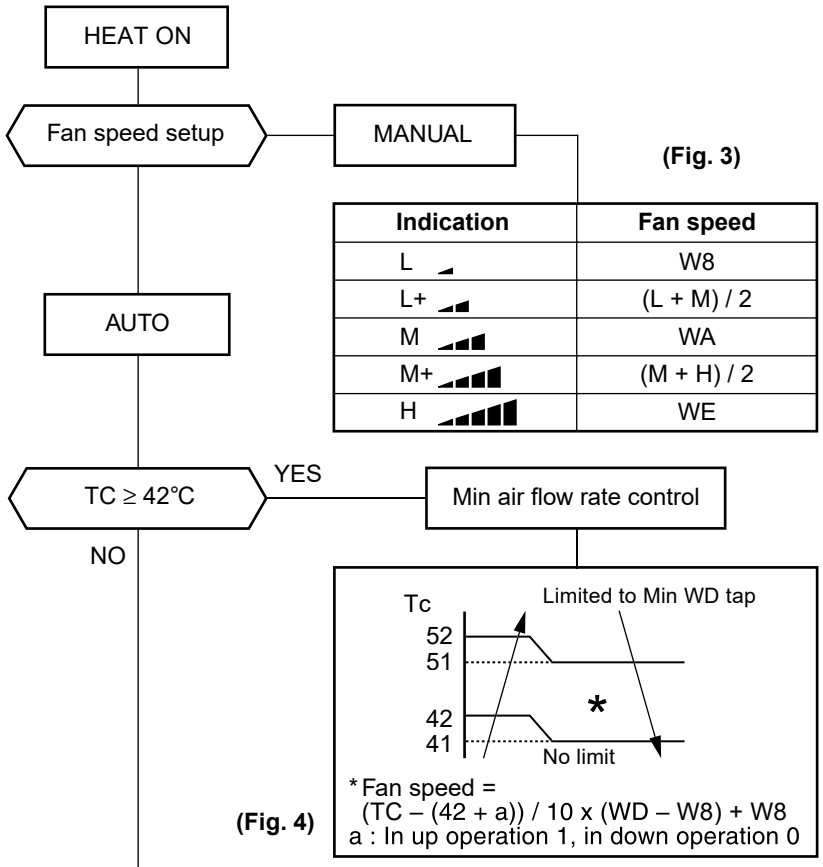
*** Symbols**

UH	: Ultra High
H	: High
M+	: Medium+
M	: Medium
L+	: Low+
L	: Low
L-	: Low–
UL	: Ultra Low
SUL	: Super Ultra Low

* The values of fan speed and air flow volume indicate on the table are measured when the louver is inclined downward. Fan speed and air flow volume broadly vary with position of louver.

1) When setting the fan speed to L, L+, M, M+,H or Quiet on the remote controller, the operation is performed with the constant speed shown in Fig. 1.
2) When setting the fan speed to AUTO on the remote controller, revolution of the fan motor is controlled to the fan speed level shown in Fig. 2 and Table 1 according to the setup temperature, room temperature, and heat exchanger temperature.

Item	Operation flow and applicable data, etc.	Description
2. Indoor fan motor control	**<In heating operation>**	1) When setting the fan speed to L, L+, M, M+ or H on the remote controller, the operation is performed with the constant speed shown in Fig. 3 and Table 1. 2) When setting the fan speed to AUTO on the remote controller, revolution of the fan motor is controlled to the fan speed level shown in Fig. 5 according to the set temperature and room temperature. 3) Min air flow rate is controlled by temperature of the indoor heat exchanger (Tc) as shown in Fig. 4. 4) Cold draft prevention, the fan speed is controlled by temperature of the indoor heat exchanger (Tc) as shown in Fig. 6. 5) In order to prevent Cold draft when compressor step during heating operation. Then louver will move to upper position and fan speed will reduce or off.



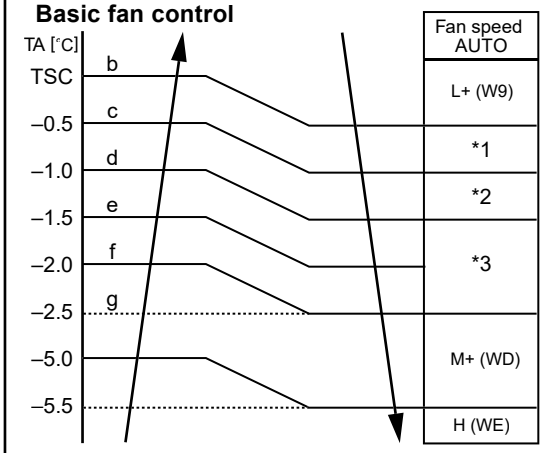
(Fig. 3)

Indication	Fan speed
L	W8
L+	(L + M) / 2
M	WA
M+	(M + H) / 2
H	WE

(Fig. 4)

* Fan speed =
(TC – (42 + a)) / 10 x (WD – W8) + W8
a : In up operation 1, in down operation 0

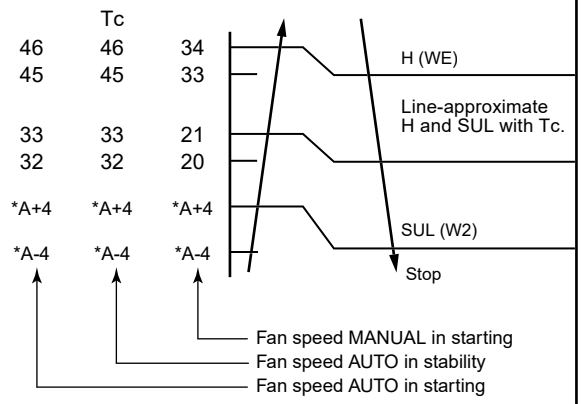
Basic fan control



*1: Fan speed = (M + -L+) x 1÷4 + L+
*2: Fan speed = (M + -L+) x 2÷4 + L+
*3: Fan speed = (M + -L+) x 3÷4 + L+
(Calculated with linear approximation from M+ and L+)

(Fig. 5)

Cold draft preventive control



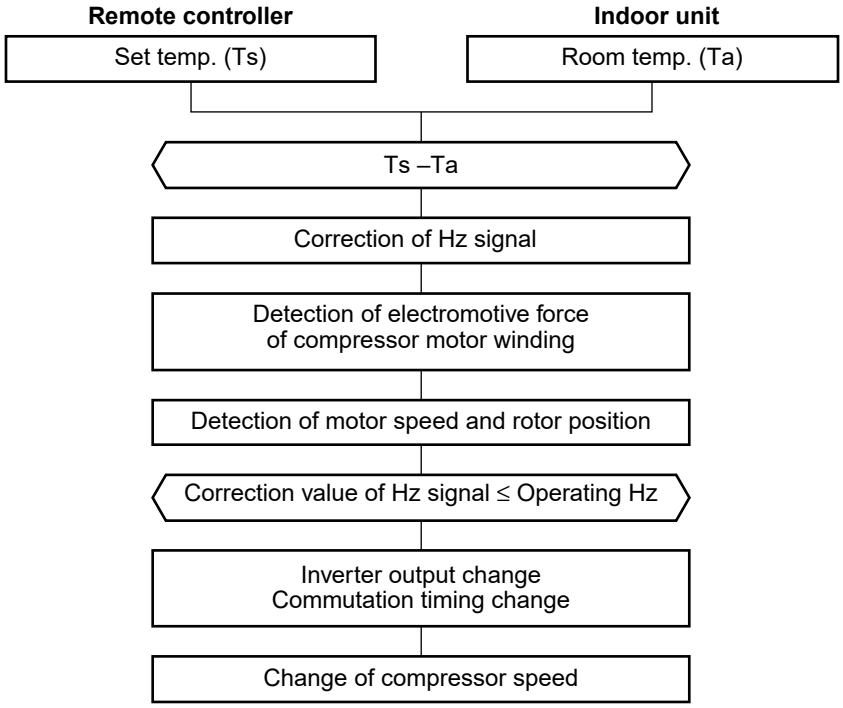
* No limitation while fan speed MANUAL mode is in stability.
* A: When Tsc ≥ 24, A is 24, and when Tsc < 24, A is Tsc
Tsc: Set value

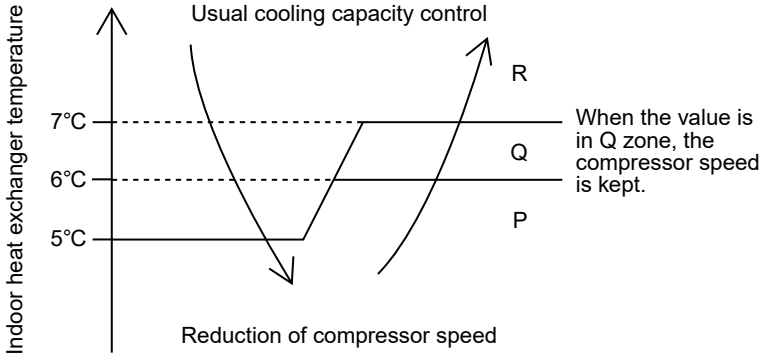
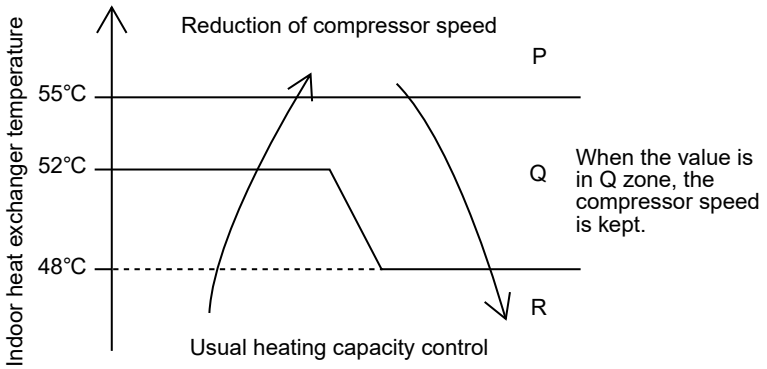
(Fig. 6)

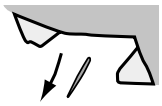
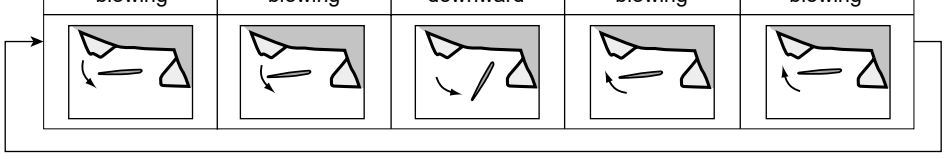
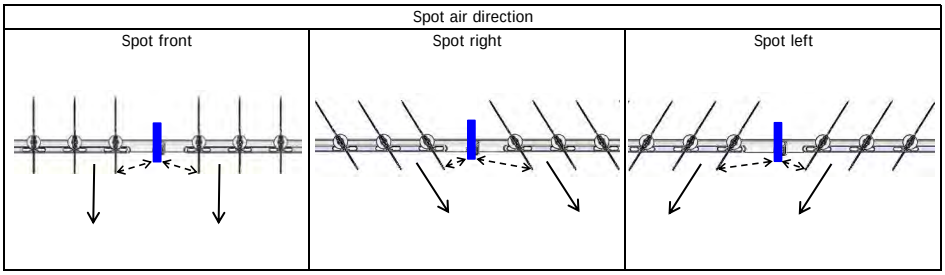
[In starting and in stability]

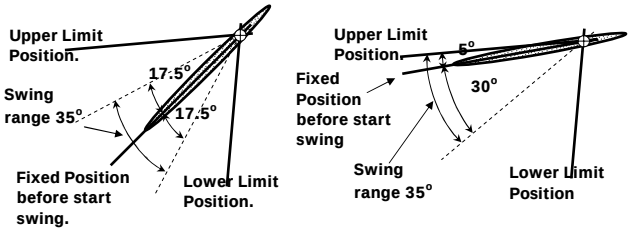
	In starting	In stability
FAN AUTO	• Until 12 minutes passed after operation start • When 12 to 25 minutes passed after operation start and room temp. is 3°C or lower than set temp.	• When 12 to 25 minutes passed after operation start and room temp. is higher than (set temp. –3°C) • When 25 minutes or more passed after operation start
FAN Manual	• Room temp. < Set temp. –4°C	• Room temp. ≥ Set temp. –3.5°C

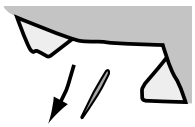
Item	Operation flow and applicable data, etc.	Description
3. Capacity control	The cooling or heating capacity depending on the load is adjusted. According to difference between the setup value of temperature and the room temperature, the capacity is adjusted by the compressor revolution.	1) The difference between set temperature on remote controller (Ts) and room temperature (Ta) is calculated. 2) According to the temperature difference, the correction value of Hz signal which determines the compressor speed is set up. 3) The rotating position and speed of the motor are detected by the electromotive force occurred on the motor winding with operation of the compressor. 4) According to the difference resulted from comparison of the correction value of Hz signal with the present operation Hz, the inverter output and the commutation timing are varied. 5) Change the compressor motor speed by outputting power to the compressor. * The contents of control operation are same in cooling operation and heating operation



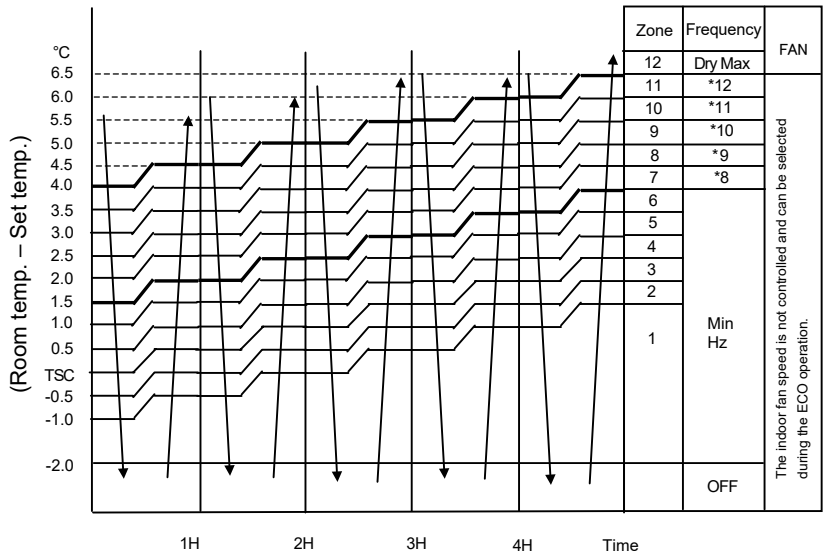
Item	Operation flow and applicable data, etc.	Description
4. Release protective control by temperature of indoor heat exchanger	**<In cooling/dry operation>** (Prevent-freezing control for indoor heat exchanger) In cooling/dry operation, the sensor of indoor heat exchanger detects evaporation temperature and controls the compressor speed so that temperature of the heat exchanger does not exceed the specified value.  	1) When temperature of the indoor heat exchanger drops below 5°C, the compressor speed is reduced. (P zone) 2) When temperature of the indoor heat exchanger rises in the range from 6°C to under 7°C, the compressor speed is kept. (Q zone) 3) When temperature of the indoor heat exchanger rises to 7°C or higher, the capacity control operation returns to the usual control in cooling operation. (R zone)
	<In heating operation> (Prevent-overpressure control for refrigerating cycle) In heating operation, the sensor of indoor heat exchanger detects condensation temperature and controls the compressor speed so that temperature of the heat exchanger does not exceed the specified value.  	1) When temperature of the indoor heat exchanger rises in the range from 52°C to 55°C, the compressor speed is kept. (Q zone) When temperature of the indoor heat exchanger drops in the range from 48°C to under 55°C, the compressor speed is kept. (Q zone) 2) When temperature of the indoor heat exchanger rises to 55°C or higher, the compressor speed is reduced. (P zone) 3) When temperature of the indoor heat exchanger does not rise to 52°C, or when it drops below to 48°C, the capacity control operation returns to the usual control in heating operation. (R zone)

Item	Operation flow and applicable data, etc.	Description
5. Louver control 1) Louver position	This function controls the air direction of the indoor unit. • The position is automatically controlled according to the operation mode (COOL/HEAT). • The set louver position is stored in memory by the microcomputer, and the louver returns to the stored position when the next operation is performed. (Cooling/Heating memory position) The angle of the louver is indicated as the louver closes fully is 0°. 1) Louver position in cooling operation **Cooling operation/ AUTO (COOL)**  Initial setting of "Cooling storage position" Louver : Directs downward (31.8°) **2) Louver position in heating operation** **Heating operation/ AUTO (HEAT)**  Initial setting of “Heating storage position” Louver : Directs downward (76.9°)	
2) Air direction adjustment **Air direction** Horizontal blowing / Inclined blowing / Blowing downward / Inclined blowing / Horizontal blowing  Spot air direction Spot front / Spot right / Spot left 		• The louver position can be arbitrarily set up by pressing [FIX] button.

Item	Operation flow and applicable data, etc.	Description
Louver control		
3) Swing	• Swing operation is perfor in range 35° with the Fixed position as the center. • If the swing range exceeded either upper or lower limit position, swing operation is perfomed in range 35° from the limit. 	• Swing When pressing [SWING] button during operation, the louver starts swinging.
4) HADA CARE Position	• Air flow upward to the ceiling provide indirect air flow to body and homogenize room temperature. • HADA care Louver position.	

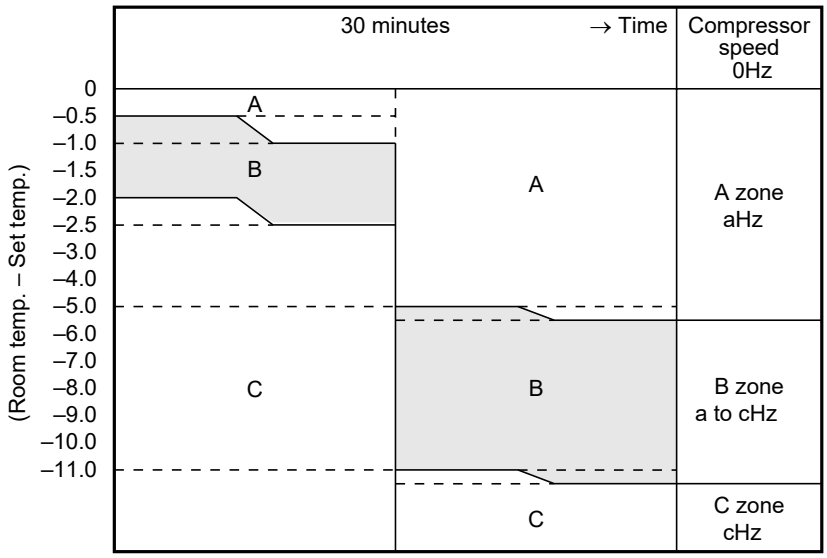
Cooling operation/ AUTO (COOL)	**Heating operation/ AUTO (HEAT)**
	
Initial setting of "Cooling storage position" Louver : Directs downward (31.8°)	Initial setting of “Heating storage position” Louver : Directs downward (76.9°)

Item	Operation flow and applicable data, etc.	Description
6. ECO operation	[ECO] Feature set from MENU button. **<Cooling operation>** This function operates the air conditioner with the difference between the set and the room temperature as shown in the following figure.	**<Cooling operation>** 1) The control target temperature increase 0.5ºC per hour up to 2ºC starting from the set temperature when ECONO has been received. 2) The indoor fan speed is depend on presetting and can change every speed after setting ECO operation. 3) The compressor speed is controlled as shown in the left figure.



* 12 (DRY max - COOL min) /6 x 5 + COOL min
* 11 (DRY max - COOL min) /6 x 4 + COOL min
* 10 (DRY max - COOL min) /6 x 3 + COOL min
* 9 (DRY max - COOL min) /6 x 2 + COOL min
* 8 (DRY max - COOL min) /6 x 1 + COOL min

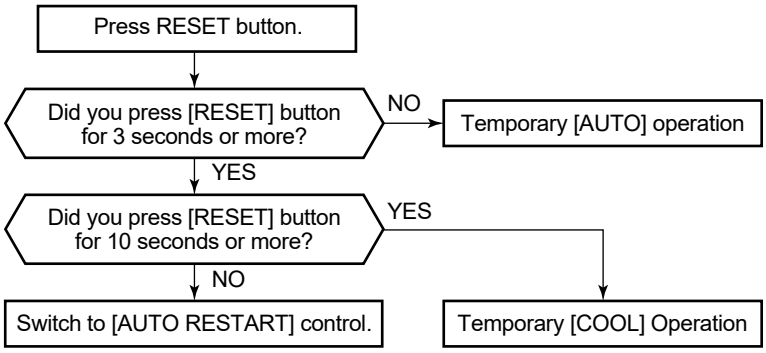
<Heating operation>



<Heating operation>

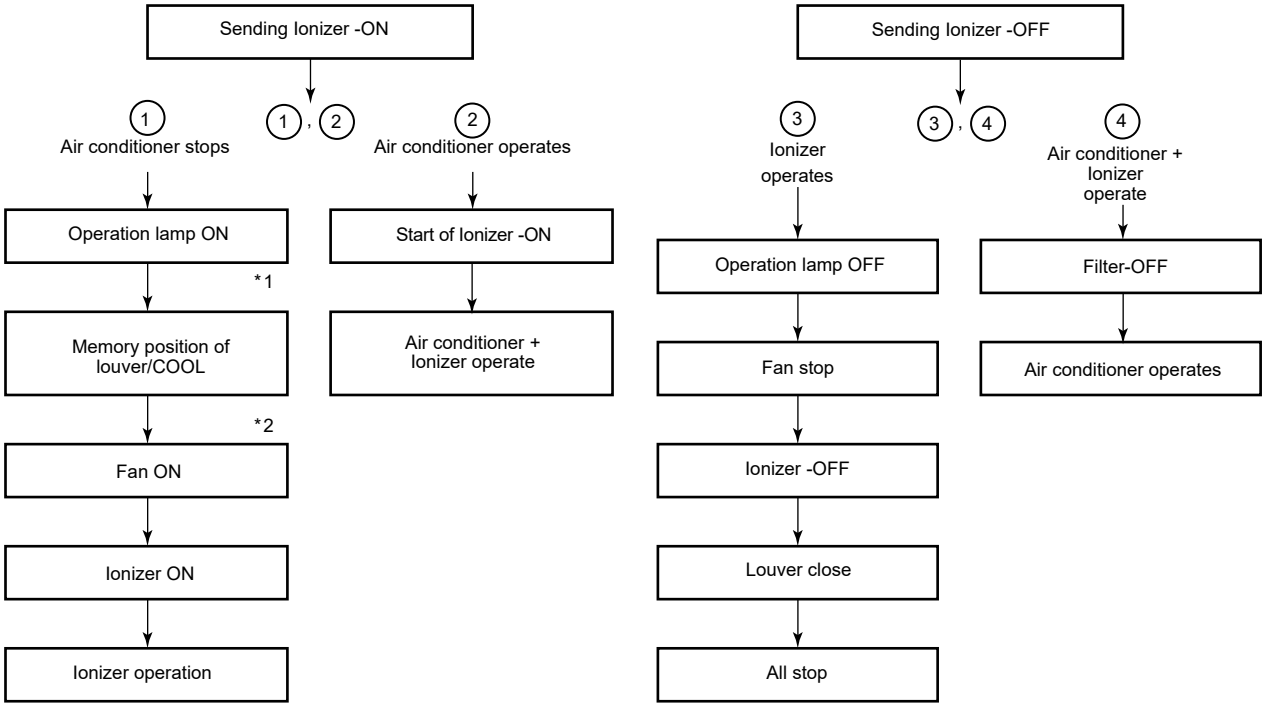
1) The difference of room temperature and set temperature are separated in to A zone, B zone and C zone.
   Three zone will changed again 30 minutes after ECO operation start.
2) The compressor speed is controlled as shown on the table.
3) The indoor fan speed is not controlled and can be selected during the ECO operation.

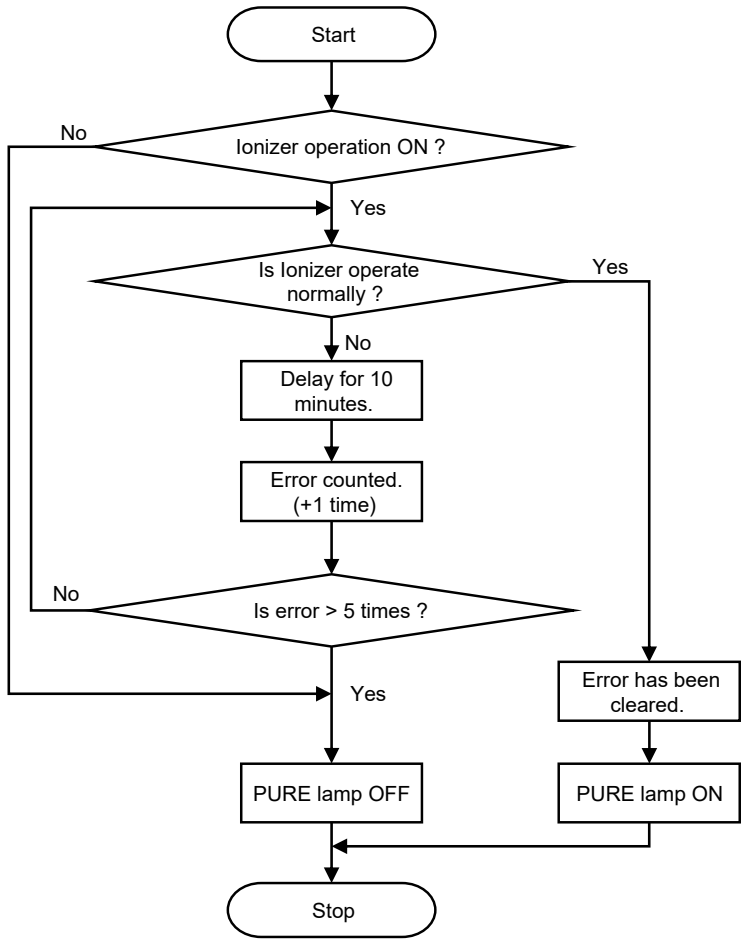
Item	Operation flow and applicable data, etc.	Description
7. Temporary operation	Pressing [RESET] button starts the temporary operation of [AUTO] operation. When keeping [RESET] button pressed for 10 seconds or more, the temporary [COOL] operation is performed.	1) When pressing [RESET] button, the temporary [AUTO] operation starts. 2) When keeping [RESET] button pressed for 3 seconds or more, Pi, Pi, Pi sound is heard and [AUTO RESTART] control is changed. 3) When keeping [RESET] button pressed for 10 seconds or more, “Pi” sound is heard and the temporary [COOL] operation starts. 4) To stop the temporary operation, press the button again.
8. Ionizer control	This function cleaning the air in the room. If Ionizer -ON signal is received while the air conditioner stops, the Ionizer starts operation, and if it is received while the air conditioner operates, the air conditioner and the Ionizer start operation.	* When the previous operation was the operation of air conditioner + Ionizer, an operation of air conditioner + Ionizer starts by pushing AC button on the remote controller. (Operation of air conditioner + Ionizer is stored in memory.) * 1 Swing is available * 2 Fan speed is Fan Auto mode varies in order, (M + 1) → (L) → (L–) → (SL).



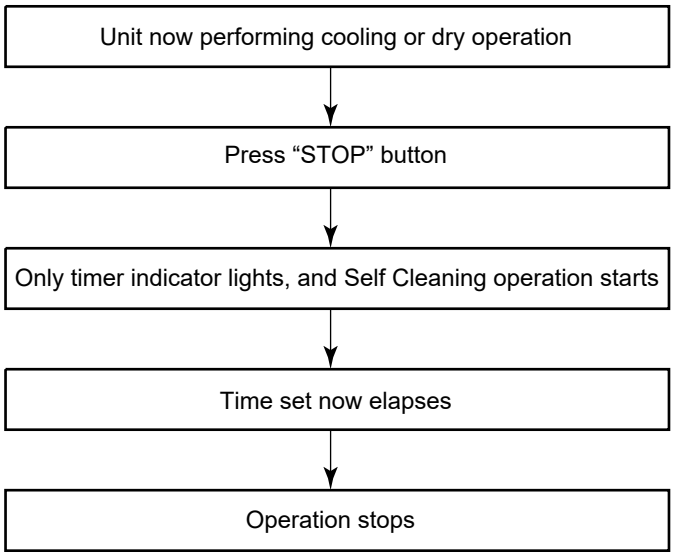
Present status	Operation button	
	PURE button	Air conditioner
Stop	Ionizer	AC operation*
Ionizer only	Stop (All)	AC + Ionizer
Air conditioner	AC + Ionizer	All stop
Joint use of AC and Ionizer	AC operation	All stop

	Louver*1	Fan speed *2
Ionizer operation	Cooling position	AUTO, L, L+, M, M+, H
AC + Ionizer operation	Follows to AC operation	Follows to AC operation



Item	Operation flow and applicable data, etc.	Description
9. Ionizer control [Detection of abnormality]		**1. Purpose** The Ionizer function control diagram is shown in the left hand side for the purpose of telling the user when the Ionizer is malfunction. **2. Description** The Ionizer tend to be malfunction by following cases. 1) When the abnormal discharge occurred which caused by various factors, for such as, build-up of dirt, smoke or an extremely wet environment. **3. Operation** The sequences of how Ionizer function operates are described in the left side flow chart. 1) At start, The Ionizer have been turned on after received the command from remote controller. When the operation is in state of check " Is Ionizer operate normally ? " If the abnormal occurs after 1 second of this state, The error will be judged and counted for 1 time. After that, Ionizer will be stop for 10 minutes and PURE Lamp display is still turn on. 2) After 10 minutes of error, Ionizer operation is restart and perform checking state again. If the error is continue until it get counted for 5 times, Ionizer operation will be stopped and the PURE lamp will be turn off itself.

Item	Operation flow and applicable data, etc.	Description
10. Self-Cleaning function		**1. Purpose** The Self-Cleaning operation is to minimize the growth of mold, bacteria etc. by running the fan and drying so as to keep the inside of the air conditioner clean. **Self-Cleaning operation** When the cooling or dry operation shuts down, the unit automatically starts the Self-Cleaning operation which is then performed for the specified period based on duration of the operation which was performed prior to the shutdown, after which the Self-Cleaning operation stops. (The Self-Cleaning operation is not performed after a heating operation.) **2. Operation** 1) When the stop signal from the remote controller or timer-off function is received, only the timer indicator light. 2) The period of the Self-Cleaning operation is determined by the duration of the operation performed prior to the reception of the stop code. 3) After the Self-Cleaning operation has been performed for the specified period, the unit stops operating.



- During Self-Cleaning operations: The louver opens slightly. The indoor fan operates continuously at a speed of 500 rpm.

Self-Cleaning operation times

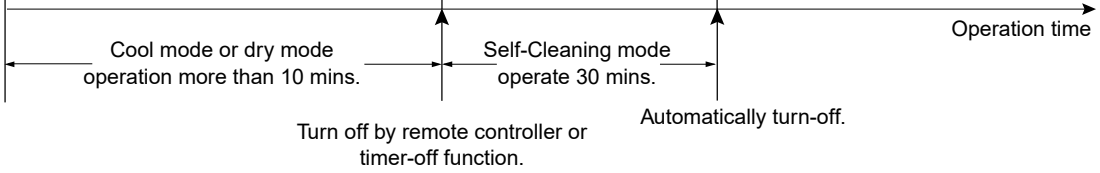
	Operation time	Self-Cleaning operation time
Cooling: Auto (cooling) Dry	Up to 10 minutes	No Self-Cleaning operation performed (0 minutes)
	10 minutes or longer	30 mins.
Heating: Auto (heating)	No Self-Cleaning operation performed	
Auto (fan only)		
Shutdown		

- To stop an ongoing Self-Cleaning operation at any time
  Press the start/stop button on the remote controller twice during the Self-Cleaning operation. (After pressing the button for the first time, press it for the second time without delay (within 10 minutes).)

Item	Operation flow and applicable data, etc.	Description
10. Self-Cleaning function		

10-1-1. Self-Cleaning diagram

Operation display	ON	OFF	OFF
FCU fan	ON rpm is depend on presetting.	ON (500RPM)	OFF
FCU louver	OPEN	OPEN (12.7º)	CLOSE
Timer display	ON or OFF depend on presetting of timer function.	ON	ON or OFF depend on presetting of timer function.
Compressor	ON or OFF depend on presetting per room temperature.	OFF	OFF
CDU fan	ON or OFF depend on presetting per room temperature.	OFF	OFF



10-1-2. Self-Cleaning function release

How to set/cancel Self-Cleaning function

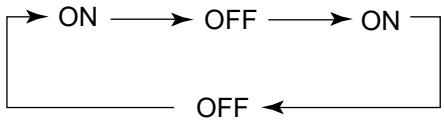
To set/cancel the Self-Cleaning function, proceed as follows:

- Setting diagnosis code "06" on remote controller (See detail of setting diagnosis code in 11-4)
- Turn on the power supply to air conditioner, after that press [RESET] button on air conditioner 1 time to turn on the air conditioner (The LED display will show in operation LED)①
- Take the remote controller to direction of LED display on air conditioner, press button "up" (see detail of setting diagnosis code in 11-4) 1 time to send the code "07"
  (within 3 sec. after press [RESET] button), then air conditioner will shutdown automatically. Also, LED display will show flash follow the able below.

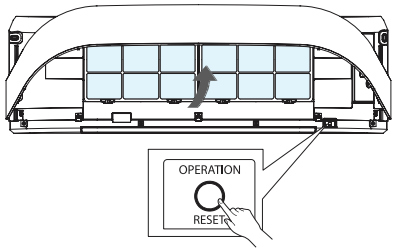
Self-cleaning function	Operation LED	Timer LED
ON	flash 1 Hz	not flash
OFF	flash 1 Hz	Flash 1 Hz

Note) Table above will show current status of Self-Cleaning function

- Set or Cancel Self-Cleaning function by push the RESET button on air conditioner.
  When setting is changed, the sound warning will alarm "Beep". The setting is changed following below.

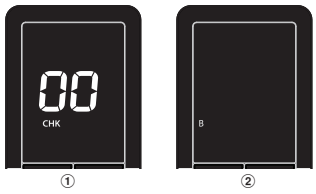


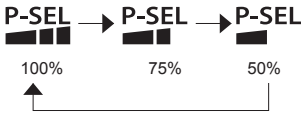
- Turn on air conditioner again by remote controller to confirm setting.

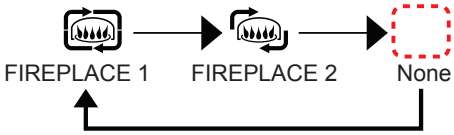


OPERATION / RESET Button

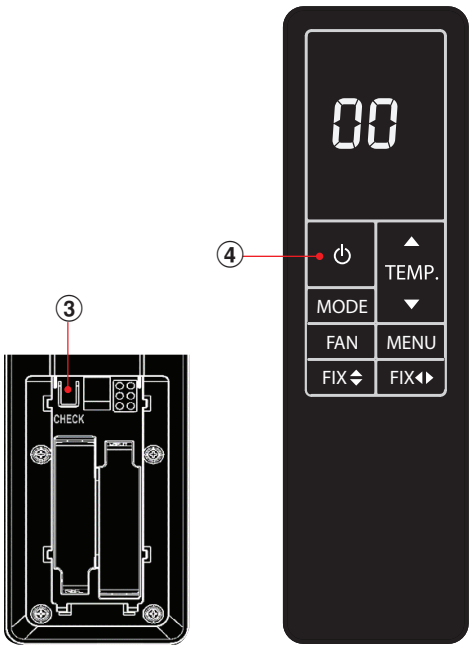
①

Item	Operation flow and applicable data, etc.	Description
11. Remote-A or B selection	**Setting the remote controller** To separate using of remote control for each indoor unit in case of 2 air conditioner are installed nearly. **Remote Control B Setup.** 1. Press RESET button on the indoor unit to turn the air conditioner ON. 2. Point the remote control at the indoor unit. 3. Push and hold CHECK button on back side of Remote Control. "00" will be shown on the display. (Picture ①) 4. Press MODE during pushing CHECK ."B" will show on the display and "00" will disappear and the air conditioner will turn OFF. The Remote Control B is memorized. (Picture ②) **Note** : 1. Repeat above step to reset Remote Control to be A. 2. Remote Control A has not "A" display. 3. Default setting of Remote Control from factory is A.  	**1. Purpose** This operation is to operate only one indoor unit using one remote controller. **2. Description** When operating one indoor unit in a situation where two indoor units have been installed in the same room or nearby rooms, this operation prevents the remote controller signal from being received simultaneously by both units, thus preventing both units from operating. **3. Operation** The indoor unit on which the remote controller selection has been set to B receives the signal of the remote controller also set to B. (At the factory the remote controller selection is set to A on all the indoor units. There is no A setting display.)
12. Hi-POWER Mode	**([Hi-POWER] Feature set from MENU button** When [Hi-POWER] Feature is select while the indoor unit is in Auto, Cooling or Heating operation, Hi-P mark is indicated on the display of the remote controller and the unit operates as follows. **1. Automatic operation** • The indoor unit operates in according to the current operation. **2. Cooling operation** • The preset temperature drops 1ºC (The value of the preset temperature on the remote controller does not change.) The indoor unit's fan speed level increase 1 tap **3. Heating operation** • The preset temperature increases 2ºC (The value of the preset temperature on the remote controller does not change.) The indoor unit's fan speed level increase 1 tap **4. The Hi-POWER mode can not be set in Dry operation**	

Item	Operation flow and applicable data,etc	Description
13. POWER Selection Mode	To automatically control room temperature to save energy (except in DRY and FAN ONLY mode) – Power Selection 75% is 75% of maximum current. – Power Selection 50% is 50% of rate maximum current. 1. Press MENU button for enter menu setting and press TEMP. button to select POWER-SEL. 2. Enter POWER-SEL setting by press MENU button again. 3. Select POWER-SEL level by press TEMP. button. 4. Confirm POWER-SEL level by press MENU button. 5. Leave from menu setting display by select EXIT. **POWER-SELECTION AND SILENT OPERATION**  	**1. Purpose** The function is used when its circuit breaker is shared with other electrical appliances. It limits the maximum current/ power consumption to 100%, 75% or 50%. The lower the percentage, the higher the saving and also the longer the compressor lifetime. **2. Description** When the level is selected, Power-SEL level flashes on LCD display for 3 seconds. In case of 75% and 50% level, number "75" or "50" also flashes for 2 seconds. Note : Due to the reason that POWER SELECT FUNCTION limits the maximum current, inadequate capacity may occur.
14. Silent Operation	**Silent 1:** Cooling/heating capacity is limited maximum for 70% of rated. Only compressor speed is limited. **Silent 2:** CDU sound level is limited for lowest CDU sound level. Compressor and CDU fan speed are limited. 1. Press MENU button for enter menu selection. During triangle mark blink can select menu by press TEMP. button. 2. Enter SILENT set by press MENU button. 3. Select SILENT operation by press TEMP. button. 4. Confirm selected feature by press MENU button again. 5. Leave from menu setting display by select EXIT. **POWER-SELECTION AND SILENT OPERATION**  	This function is used when the user need to keep silent at outdoor side. It is limit maximum compressor speed and CDU fan speed. Sound level can be implemented by 2 silent level. **Sound level:** Rated level > Silent 1 > Silent 2 **Note:** Due to Silent operation reason, In adequate cooling/heating capacity may occur.

Item	Operation flow and applicable data,etc	Description
15. Fireplace Operation	**Fireplace 1:** Cancel cold draft prevention control and fan speed depend on user require base on basic control. **Fireplace 2:** Cold draft prevention control is active with super low fan speed (640 rpm). 1. Press MENU button for enter menu setting and press TEMP. button to select FIREPLACE. 2. Enter FIREPLACE set by press MENU button. 3. Select FIREPLACE operation by press TEMP. button. 4. Confirm selected feature by press MENU button again. 5. Leave from menu setting display by select EXIT. **Fireplace Operation**  	Keep air circulation during other heat source applied. **Note:** • With Fireplace operation on heating mode indoor unit always runs and cold air breezing might be occurred. • Fireplace doesn't work with IMS multi system combination.
16. 8°C heating / Frost protective operation	Press TEMP button down on remote controller in heating mode until set temperature lower than 17°C . Set temperature is performed for 5°C to 16°C and no cold draft prevention control.	Intended for cold latitudes and performs objective heating operation.
17. QUIET mode	The "Quiet mode" selected from [FAN] button; - The fan of the indoor unit will be restricted the revolving speed at speed UL. The "Quiet mode" is canceled by [FAN] button is pressed to select other speed.	Quiet mode is the system which, control the revolving speed of indoor fan to work constantly at lower than speed L. In addition, noise level of indoor unit is less than usual. Remarks : 1. Quiet mode is unable to work in dry mode. 2. Quiet mode is appropriate to work with less cooling load and less heating load condition. Because of the fan speed L- may cause not enough the cooling capacity or heating capacity.

<table>
<tr><th>Item</th><th>Operation flow and applicable data, etc.</th><th>Description</th></tr>
<tr><td>18. Display lamp brightness adjustment</td><td colspan="2">To decrease the display lamp brightness or turn it off.
1. Press and hold FAN for 3 seconds until brightness level (d0, d1, d2 or d3) is shown on remote control LCD then release the button.
2. Press TEMP. Rise or Decrease TEMP. to adjust brightness in 4 levels.

<table>
<tr><th>Remote control LCD</th><th>Operation display</th><th>Brightness</th></tr>
<tr><td>d3</td><td>Lamp illuminates full brightness.</td><td>100%</td></tr>
<tr><td>d2</td><td>Lamp illuminates 50% brightness.</td><td>50%</td></tr>
<tr><td>d1</td><td>Lamp illuminates 50% brightness and the operation lamp is turned off.</td><td>50%</td></tr>
<tr><td>d0</td><td>All lamps are turned off.</td><td>All turned off</td></tr>
</table>
● In the examples of d1 and d0, the lamp illuminates for 5 seconds before going off.</td></tr>
<tr><td>19. Short Timer</td><td>In the normal condition, after switching one circuit breaker, 3-minute delay time for compressor and 1 hour for plasma air purifier are set for the maintenance of the unit.
 
</td><td>Purpose
To start the unit immediately for the purpose of testing, trial...etc, short timer can be used. maintenance of the unit.

Short Timer Setting
① Press [⏻] button to turn the unit OFF.
② Set the operation mode or plasma air purifier on the remote control without sending the signal to the unit.
③ Press CHECK button and hold, "00" will show on display, them press [ ] button to make "00" disappear.
④ Press [⏻] button to turn the unit ON.
⑤ When short timer is activated, all setting on the remote operates immediately, besides, all indicatiors on front panel turns ON continuously for 3 seconds.</td></tr>
</table>

9-3. Auto Restart Function

This indoor unit is equipped with an automatic restarting function which allows the unit to restart operating with the set operating conditions in the event of a power supply being accidentally shut down.
The operation will resume without warning three minutes after power is restored.

This function is not set to work when shipped from the factory. Therefore it is necessary to set it to work.

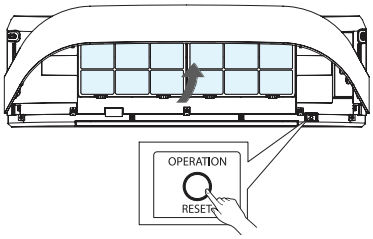
9-3-1. How to Cancel the Auto Restart Function

To cancel auto restart function, proceed as follows :

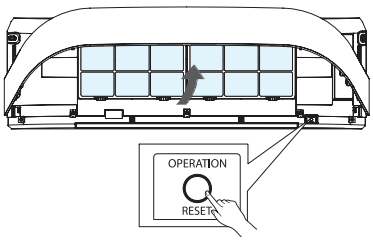
Repeat the setting procedure : the unit receives the signal and beeps three times.

The unit will be required to be turned on with the remote controller after the main power supply is turned off.

- **When the unit is standby (Not operating)**

Operation	Motions
Press [RESET] button for more than three seconds. (Less than 10 seconds)  OPERATION / RESET Button	The unit is on standby. ↓ The unit starts to operate. The white indicator is on. ↓ After approx. three seconds, The unit beeps three times and continues to operate. **The white indicator flashes for 5 seconds.** If the unit is not required to operate at this time, press [RESET] button once more or use the remote controller to turn it off.

- **When the unit is in operation**

Operation	Motions
Press [RESET] button for more than three seconds. (Less than 10 seconds)  OPERATION / RESET Button	The unit is in operation. The white indicator is on. ↓ The unit stops operating. The white indicator is turned off. ↓ After approx. three seconds, The unit beeps three times. **The white indicator flashes for 5 seconds.** If the unit is required to operate at this time, press [RESET] button once more or use the remote controller to turn it on.

9-3-2. How to Set the Auto Restart Function

To set the auto restart function, proceed as follows:

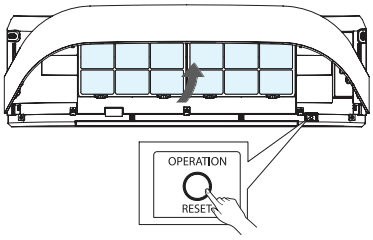
The power supply to the unit must be on ; the function will not set if the power is off.

Press the [RESET] button located in the center of the front panel continuously for three seconds.

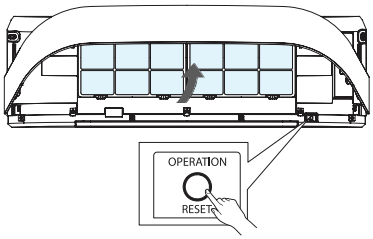
The unit receives the signal and beeps three times.

The unit then restarts operating automatically in the event of power supply being accidentally shut down.

• When the system is on stand-by (not operating)

Operation	Motions
Press [RESET] button for more than three seconds. (Less than 10 seconds)  OPERATION / RESET Button	The unit is on standby. ↓ The unit starts to operate. The white indicator is on. ↓ After approx. three seconds, The unit beeps three times and continues to operate. If the unit is not required to operate at this time, press [RESET] button once more or use the remote controller to turn it off.

• When the system is operating

Operation	Motions
Press [RESET] button for more than three seconds. (Less than 10 seconds)  OPERATION / RESET Button	The unit is in operation. The white indicator is on. ↓ The unit stops operating. The white indicator is turned off. ↓ After approx. three seconds, The unit beeps three times. If the unit is required to operate at this time, press [RESET] button once more or use the remote controller to turn it on.

9-3-3. Power Failure During Timer Operation

When the unit is turned off because of power failure during timer operation, the timer operation is canceled. In that case, set the timer operation again.

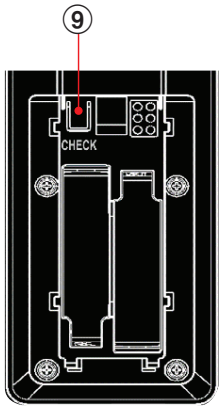
NOTE :

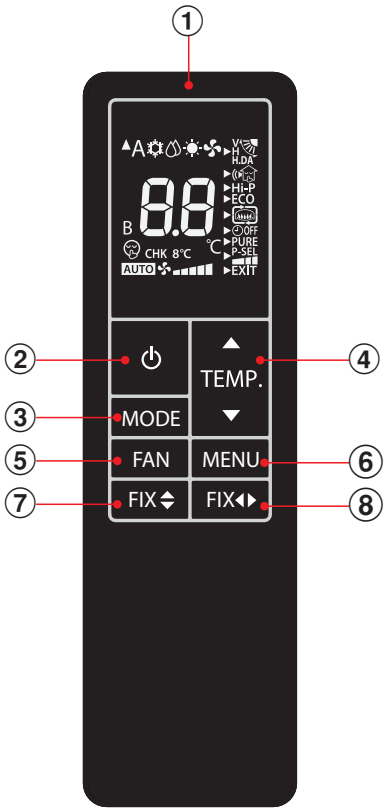
The Daily Timer is reset while a command signal can be received from the remote controller even if it stopped due to a power failure.

9-4. Remote control

9-4-1. Parts Name of Remote Controller

① Infrared signal emitter
② Start/Stop button
③ Mode select button
④ Temperature button
⑤ Fan speed button
⑥ Menu select button
⑦ Set louver Up-Down button
⑧ Set louver Left-Right button
⑨ Check button*
*Check button under battery cover





9-4-2. Operation of remote control

1. AUTOMATIC OPERATION

To automatically select cooling, heating, or fan only operation

1. Press MODE : Select Auto A.
2. Press TEMP. : Set the desired temperature. Min. 17°C, Max. 30°C.
3. Press FAN : Select AUTO, LOW, LOW+, MED, MED+, HIGH or Quiet

2. COOLING / FAN ONLY / OPERATION

1. Press MODE : Select Cool, or Fan only.
2. Press TEMP. : Set the desired temperature. Min. 17°C, Max. 30°C.
   Fan Only: No temperature indication
3. Press FAN : Select AUTO, LOW, LOW+, MED, MED+, HIGH or Quiet

3. HEATING and 8°C OPERATION

1. Press MODE : Select Heat.
2. Press TEMP. : Set the desired temperature. Min = 5°C, Max = 30°C.
   * Temperature range 5-16°C is Heat mode with 8°C operation with less of energy usage
3. Press FAN : : Select AUTO, LOW, LOW+, MED, MED+, HIGH or Quiet

Note: During 8°C mode active (temperature range 5-16°C), some operation such as QUIET, HI-POWER, TIMER OFF cannot use.

4. DRY OPERATION

For dehumidification, a moderate cooling performance is controlled automatically.

1. Press MODE : Select Dry.
2. Press TEMP. : Set the desired temperature. Min. 17°C, Max. 30°C.

Note: DRY mode fan speed is set to Auto only.

5. MENU SETUP

For select more setting of Air conditioner such as Louver select Hi Power, OFF Timer and other use MENU button. MENU

LOUVER SWING and HADA CARE FLOW OPERATION V H H.DA

Comfortable air flow can select from feature.

Louver swing operation: V H

- To distribute air flow in both vertical and horizontal by swing the louver automatically.

HADA care flow operation: H.DA

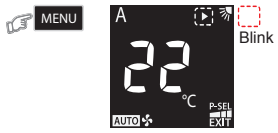
- Air flow upward to the ceiling, provide Indirect air flow to body and homogenize room temperature.

Note:

- During HADA CARE FLOW mode, FIX button cannot active.

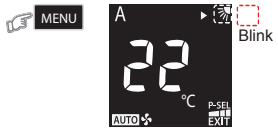
Louver Swing and HADA Care Flow Operation Setting

1. Press MENU button for enter menu selection

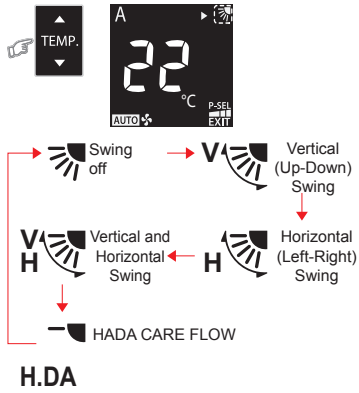


During triangle mark blink ▶ can select menu by press TEMP. button.

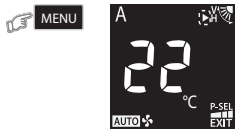
2. Enter Louver set by press MENU button again.
triangle mark will stop blink and setting feature will be blink instead.



3. Select Louver swing or HADA CARE FLOW by press TEMP. button.

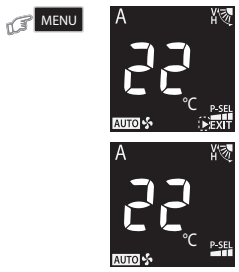


4. Confirm selected feature by press MENU button again.



When feature had selected will return to menu selection display triangle mark will blink ▶.

5. Leave from menu setting display by select exit and press menu button



Leave from menu setting to normal display (no triangle and feature blink).

SILENT OPERATION (Outdoor Unit)

Keep outdoor unit operating silently to ensure either yourself or neighborhood will have a tight sleep in nighttime. By this feature, the heating capacity will be optimized to deliver such silent experience. The silent operation can be selected from one of two purposes (Silent 1 and Silent 2).
There are three setting parameters: Standard level > Silent 1 > Silent 2

Silent 1:

- Though operating silently, the Heating (or Cooling) capacity is still prioritized to ensure having sufficient comfort inside the room.
- This setting is a perfect balance between the Heating (or Cooling) capacity and the Sound level of outdoor unit.

Silent 2:

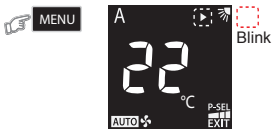
- Compromising the Heating (or Cooling) capacity to the Sound level in any circumstance where the outdoor unit's sound level is highly prioritized.
- This setting has a purpose to reduce the maximum sound level of outdoor unit by 4 dB(A).

Note:

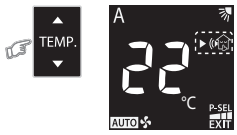
- While activating of Silent operation, inadequate heating (or cooling) capacity may occur.

Silent Operation Setting

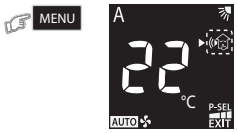
1. Press MENU button for enter menu selection



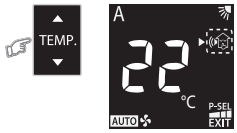
During triangle mark blink ▶ can select menu by press TEMP. button.



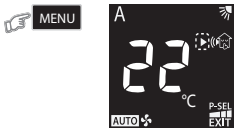
2. Enter SILENT set by press MENU button.
   triangle mark will stop blink and setting feature will be blink instead.



3. Select SILENT operation by press TEMP. button.

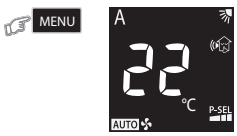


4. Confirm selected feature by press MENU button again.



When feature had selected will return to menu selection display triangle mark will blink

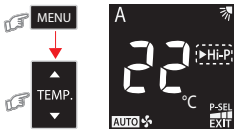
5. Leave from menu setting display by select EXIT.



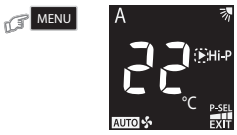
Hi POWER OPERATION Hi-P

To automatically control room temperature and airflow for faster cooling or heating operation (except in DRY and FAN ONLY mode)

1. Press MENU button for enter menu setting and press TEMP. button to select Hi POWER



2. Confirm selected feature by press MENU button again.

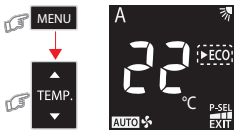


3. Leave from menu setting display by select EXIT.

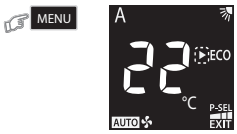
ECO OPERATION ECO

To automatically control room temperature to save energy (except in DRY and FAN ONLY mode)

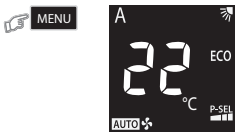
1. Press MENU button for enter menu setting and press TEMP. button to select ECO



2. Confirm selected feature by press MENU button again.



3. Leave from menu setting display by select EXIT.



Note:

- Cooling operation; the set temperture will increase automatically 1 degree/hour for 2 hours (maximum 2 degrees increase).
  For heating operation the set temperature will decrease.

FIREPLACE OPERATION

Keep indoor unit's fan blowing continuously during thermo off, to circulate heat from other sources over the room. There are three setting parameters: Default setting > Fireplace 1 > Fireplace 2

Fireplace 1:

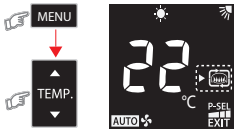
- During thermo off period, the indoor unit's fan will continue to run by the same speed, previously selected by end-user.

Fireplace 2:

- During thermo off period, the indoor unit's fan will continue to run at super-low speed, programmed from factory.

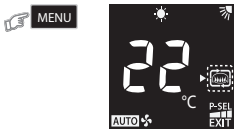
Fireplace Operation Setting

1. Press MENU button for enter menu setting and press TEMP. button to select FIREPLACE

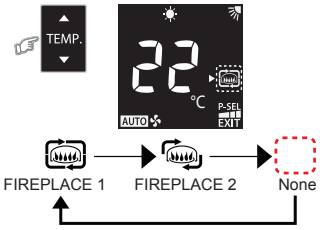


Blink both triangle and feature mark Feature not yet set

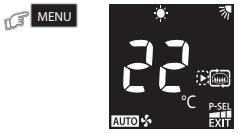
2. Enter FIREPLACE set by press MENU button.
triangle mark will stop blink and setting feature will be blink instead.



3. Select FIREPLACE operation by press TEMP. button.



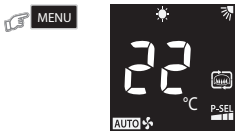
4. Confirm selected feature by press MENU button again.



Blink only triangle Feature already set

When feature had selected will return to menu selection display triangle mark will blink ▶

5. Leave from menu setting display by select EXIT.



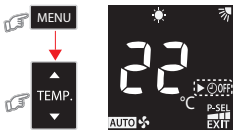
Note:

- While Fireplace operation on heating mode, indoor unit fan always runs and cold air breezing might be occurred.
- Fireplace will operate in Heating mode only.
- Fireplace doesn't work with IMS multi system combination.

TIMER OFF OPERATION

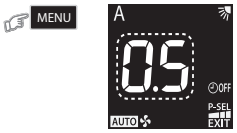
To set the timer OFF when the air conditioner is operating.

1. Press MENU button for enter menu setting and press TEMP. button to select TIMER OFF.

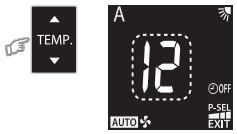


Blink both triangle and feature mark Feature not yet set

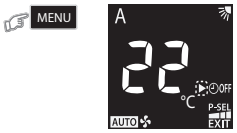
2. Enter TIMER set by press MENU button.
triangle mark will stop blink and setting feature will be blink instead.



3. Select TIMER OFF by press TEMP. button.
Can select TIMER OFF from 0.5 - 12hrs.

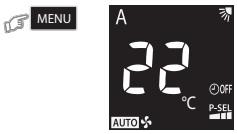


4. Confirm TIMER OFF by press MENU button.



Blink only triangle Feature already set

5. Leave from menu setting display by select EXIT.

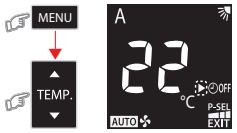


Note:

- Keep the remote control in accessible transmission to the indoor unit; otherwise, the time lag of up to 15 minutes will occur.
- The setting will be saved for the next same operation.

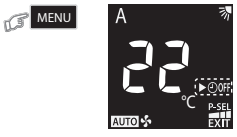
Cancel TIMER OFF

6. During TIMER OFF already set (no.5) press MENU button and press TEMP. button to select TIMER OFF.



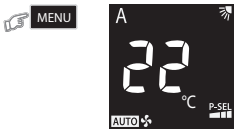
Blink only triangle Feature already set

7. Press MENU button again will cancel TIMER OFF.



Blink both triangle and feature mark Feature not yet set

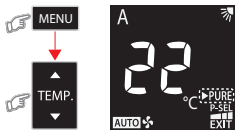
8. Leave from menu setting display by select EXIT.



PLASMA ION OPERATION PURE

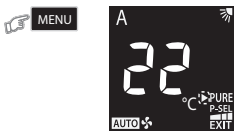
Capture efficiency of floating impurities in the air is accelerated by plasma ion contaminates such as bacteria, odor, smoke, dust and virus are caught and deactivated by Plasma Ion.

1. Press MENU button for enter menu setting and press TEMP. button to select PURE



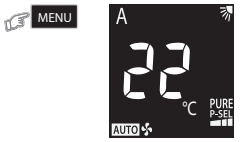
Blink both triangle and feature mark Feature not yet set

2. Confirm selected feature by press MENU button again.



Blink only triangle Feature already set

3. Leave from menu setting display by select EXIT.



Note:

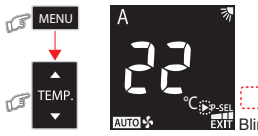
- Plasma Ion operation dose not remove harmful substances from cigarette smoke (carbon monoxide etc.). Open a window occasionally for ventilation.

POWER-SELECTION OPERATION P-SEL

This function is used when the circuit breaker is shared with other electrical appliances. It limits the maximum current and power consumption to 100%, 75%, or 50% and can be implemented by POWER-SELECTION. The lower percentage, the higher saving and also longer compressor lifetime.
Note:

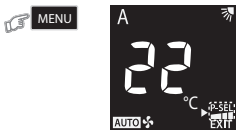
- Due to the reason that POWER-SELECTION function limits the maximum current, inadequate cooling or heating capacity may occur.

1. Press MENU button for enter menu setting and press TEMP. button to select ECO

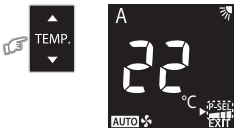


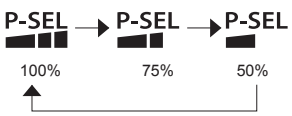
Blink only triangle

2. Enter POWER-SEL setting by press MENU button again.

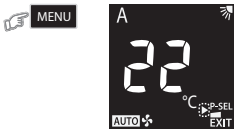


3. Select POWER-SEL level by press TEMP. button.

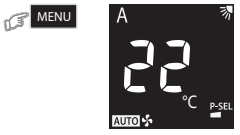




4. Confirm POWER-SEL level by press MENU button.

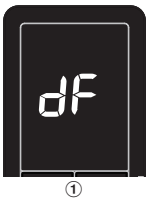


5. Leave from menu setting display by select EXIT.



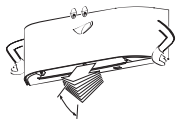
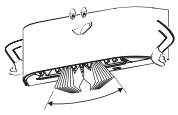
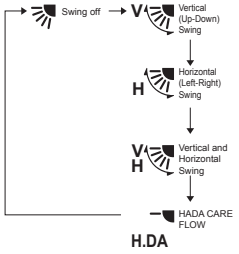
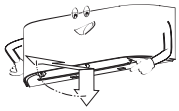
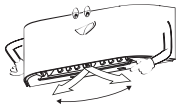
6. MANUAL DEFORST OPERATION

To defrosting the heat exchanger of the outdoor unit during Heating operation
Press and hold MENU : for 5 seconds , then remote control display will show dF as picture ① for 2 seconds.



①

7. AIR FLOW DIRECTION

1	Press FIX : Move the louver in the desired vertical direction.	
2	Press FIX : Move the louver in the desired horizontal direction.	
3	SWING operation can be selected from MENU button MENU  	• Vertical (Up-Down) swing  • Horizontal (Left-Right) swing  • HADA Care flow 

Note:

- Do not move the louver manually by hands or others.
- The louver may automation positioning by some operation mode.

8. WIRELESS LAN CONNECTION

Toshiba Home AC Control

Please visit the application store on your device to download and install Toshiba Home AC Control application.

Application
Keyword : Toshiba Home AC Control

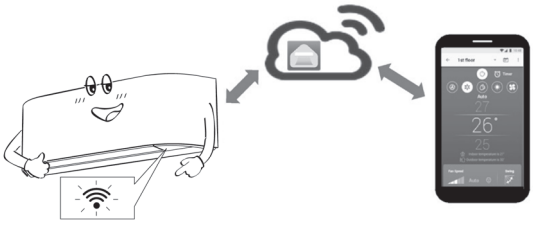
Toshiba Home AC Control application support

iOS : 9.0 or later.

Android : Version 5.0 or later.

About Toshiba Home AC Control

1. Toshiba Home AC Control can control AC operation by Smartphone or tablet (mobile device) via internet connection.
2. Everywhere control, control software run on Cloud system and mobile device can set and monitor AC operation via internet connection.
3. Everyone can control, 1 Wireless adapter maximum 5 User (use 1 email register).
4. Multi AC system control, 1 user can control 10 AC.
5. Group control.
   5.1 Can create and control 3 groups of AC.
   5.2 Can control max 10 AC per group.

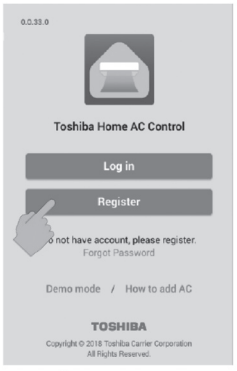


Note:

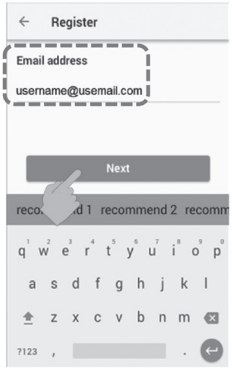
1. Adapter can register only 1 email address, if register with new email, current email will be invalid.
2. 1 email address can use for register 5 devices for control same AC.

Register process

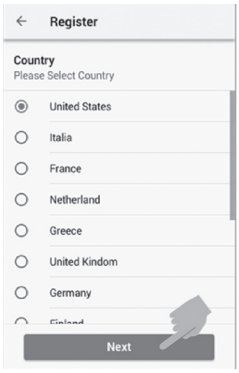
Open an application and follow register for User registration.



① Tab Register

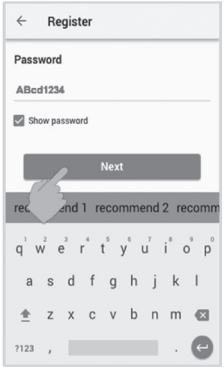


② Enter email address

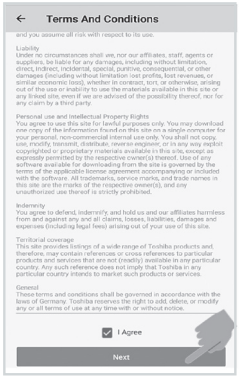


③ Select country

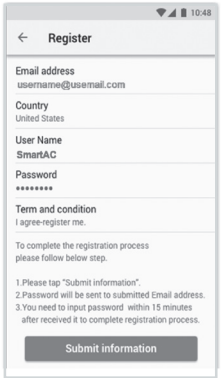
④ Enter user name



⑤ Enter password by 6-10 characters, combination of alphabet and number



⑥ Check for term and condition

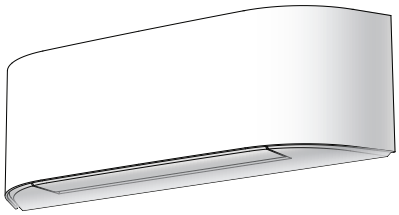


⑦ Confirm information

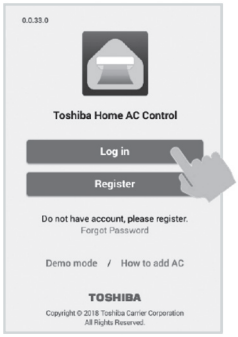
⑧ Information will be submitted to email, click link to confirm

Login to Toshiba Home AC Control application.

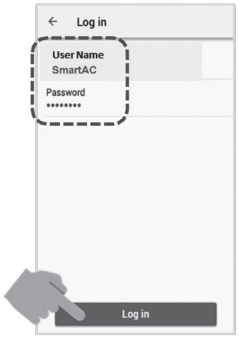
① Connect Wireless adapter to A/C and turn on power supply.



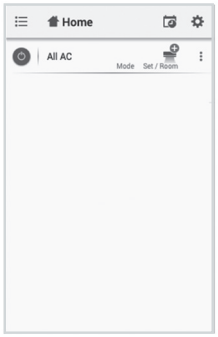
Built-in type , Wireless adapter already install with unit.



② Open application and select Log in.

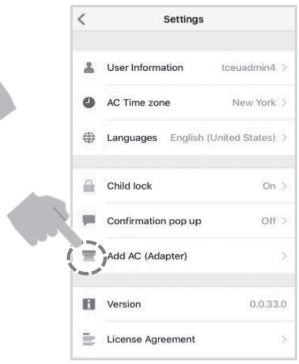


③ Enter user name and password.

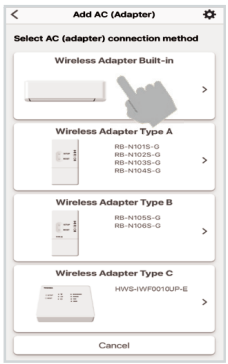


④ Login successful.

Add Wireless adapter for control by Toshiba Home AC Control application.



① Select “Add AC (Adapter)” from both display above.



② Select AC (adapter) connection method.

Wireless adapter Built-in
Active Wireless adapter by remote controller and Auto login.

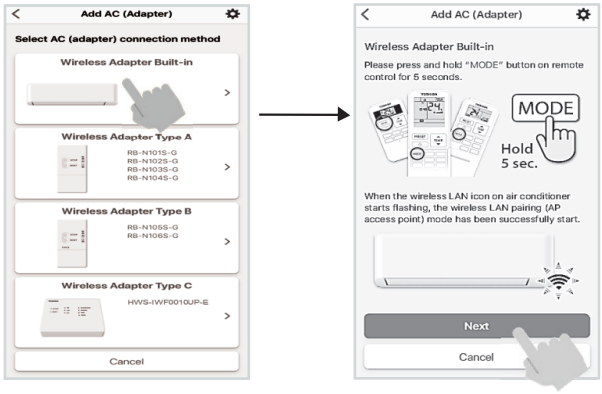
*Note

1.In case of Wi-Fi router change or Email for register change need to re-process for add Wireless adapter again (Built in type : Press MODE button at Remote controller 5 seconds for active AP mode).

2.In case of change Wireless adapter to use with other A/C need to factory reset and re-process for add Wireless adapter again (Built in type : Press MODE button at Remote controller 5 seconds and select “rb”).

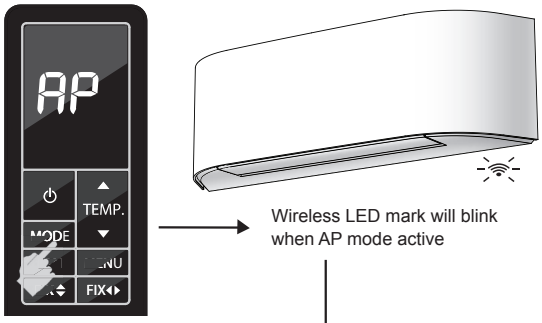
Add Wireless adapter for control by Toshiba Home AC Control application.

③ AC (adapter) connect



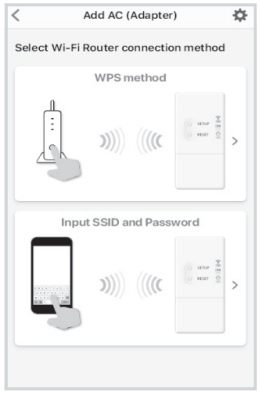
④ Active Wireless adapter by Remote controller

Press and hold
MODE button 5 seconds



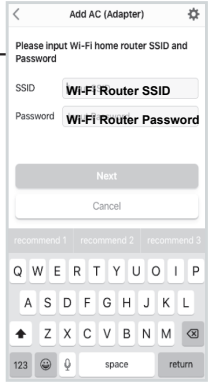
Wireless LED mark will blink
when AP mode active

⑤ Connect with Home Wi-Fi Router

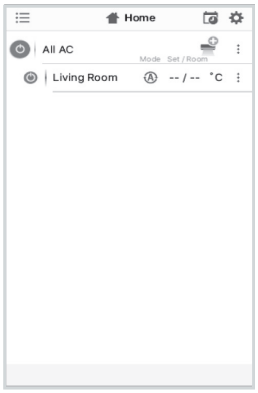


WPS mode

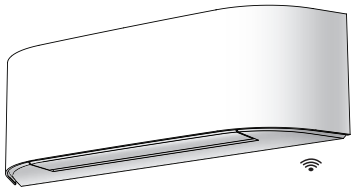
Manual input



⑥ A/C add finished



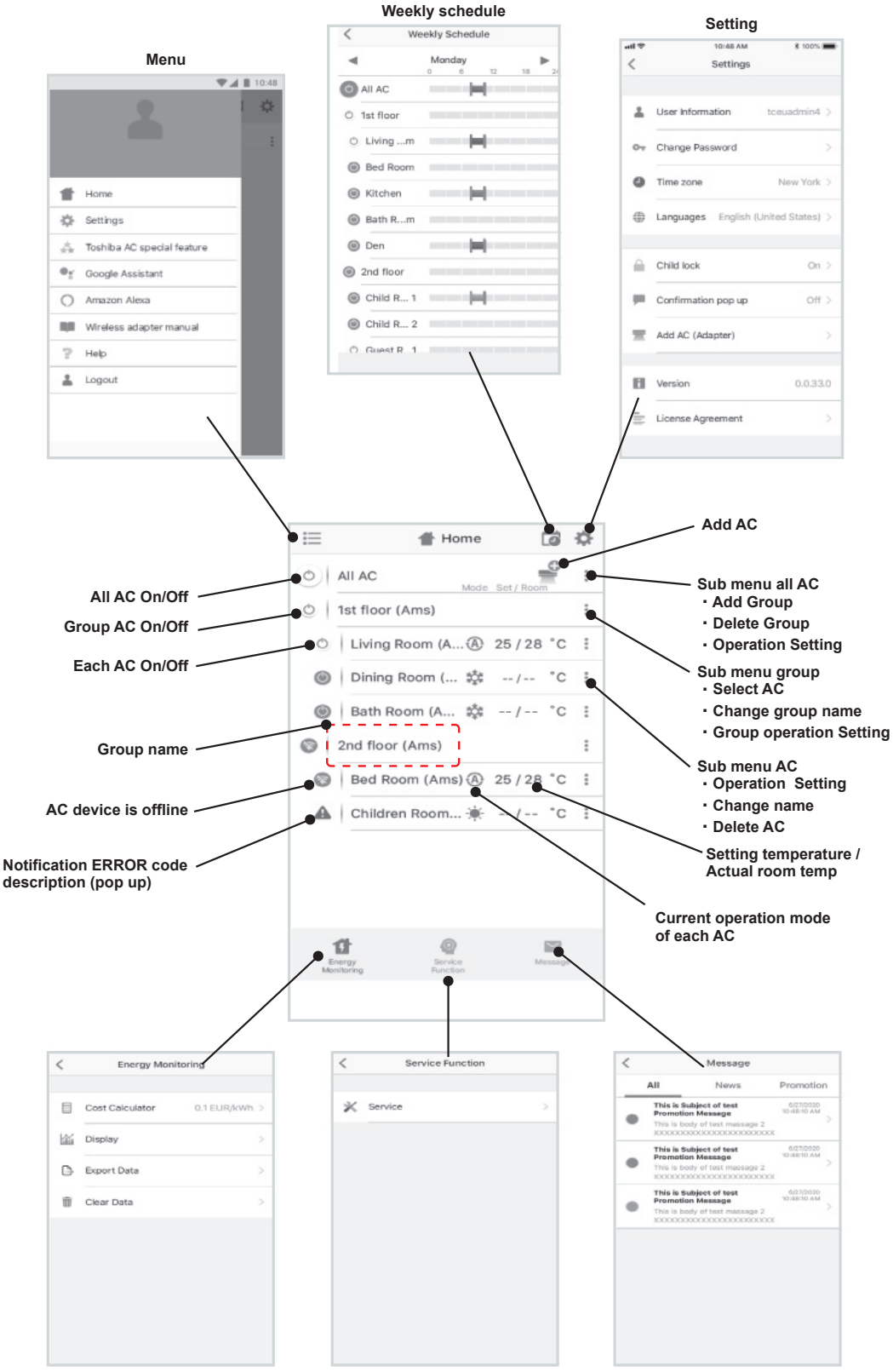
⑦ Connect successfully



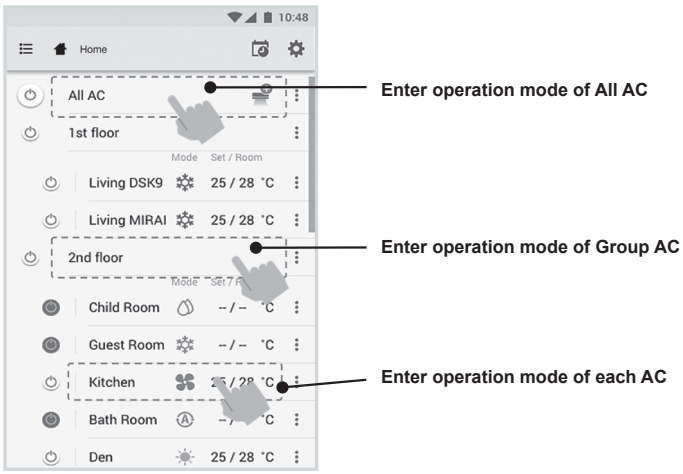
Wireless LED lamp stop blink.

Toshiba Home AC Control application

Home screen



Mode and Condition setting.



Mode select for Toshiba Home AC Control application.

Provide for 5 operation modes

Auto

Cool

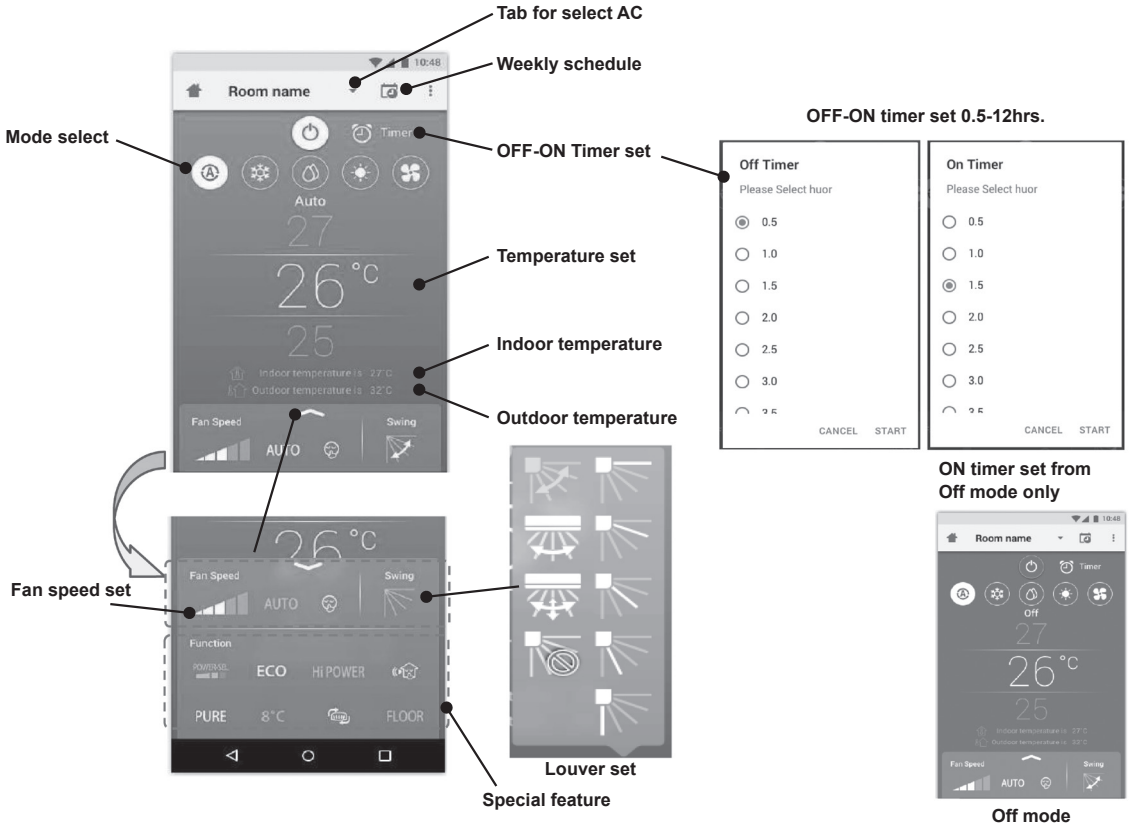
Dry

Heat

Fan only

Off

Setting in operation mode.

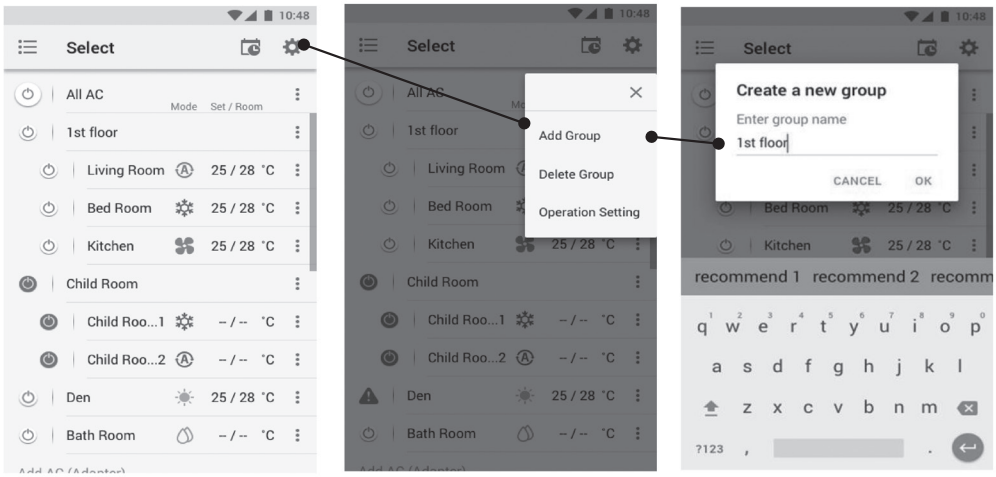


Group operation.

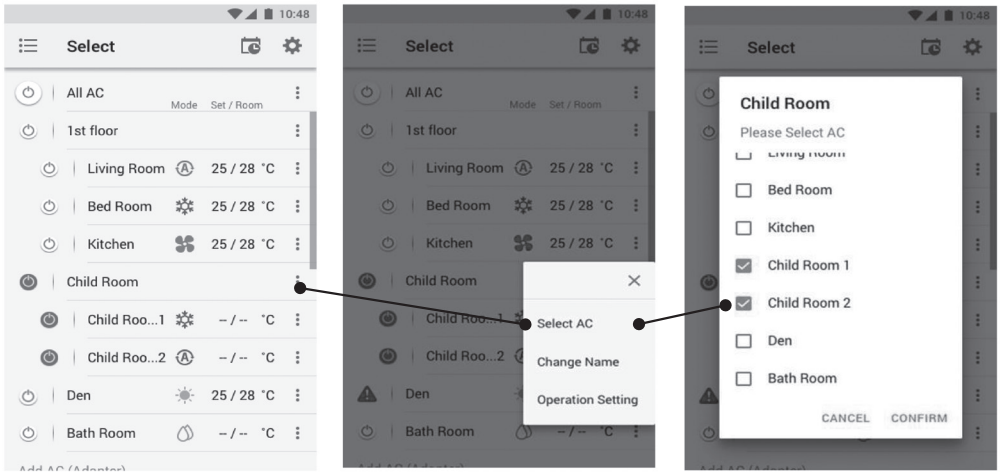
Maximum 3 groups

1 Group maximum = 10 units.

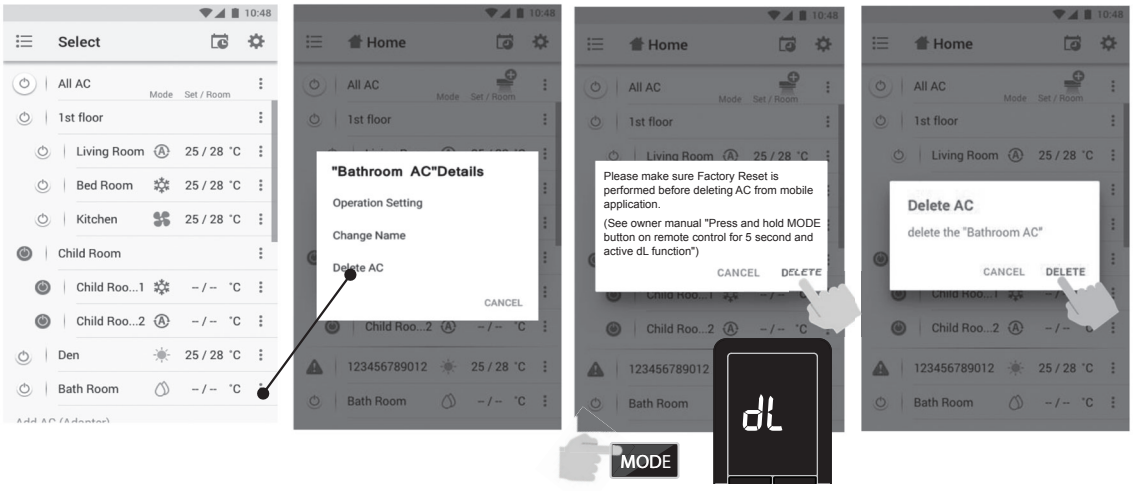
Add group



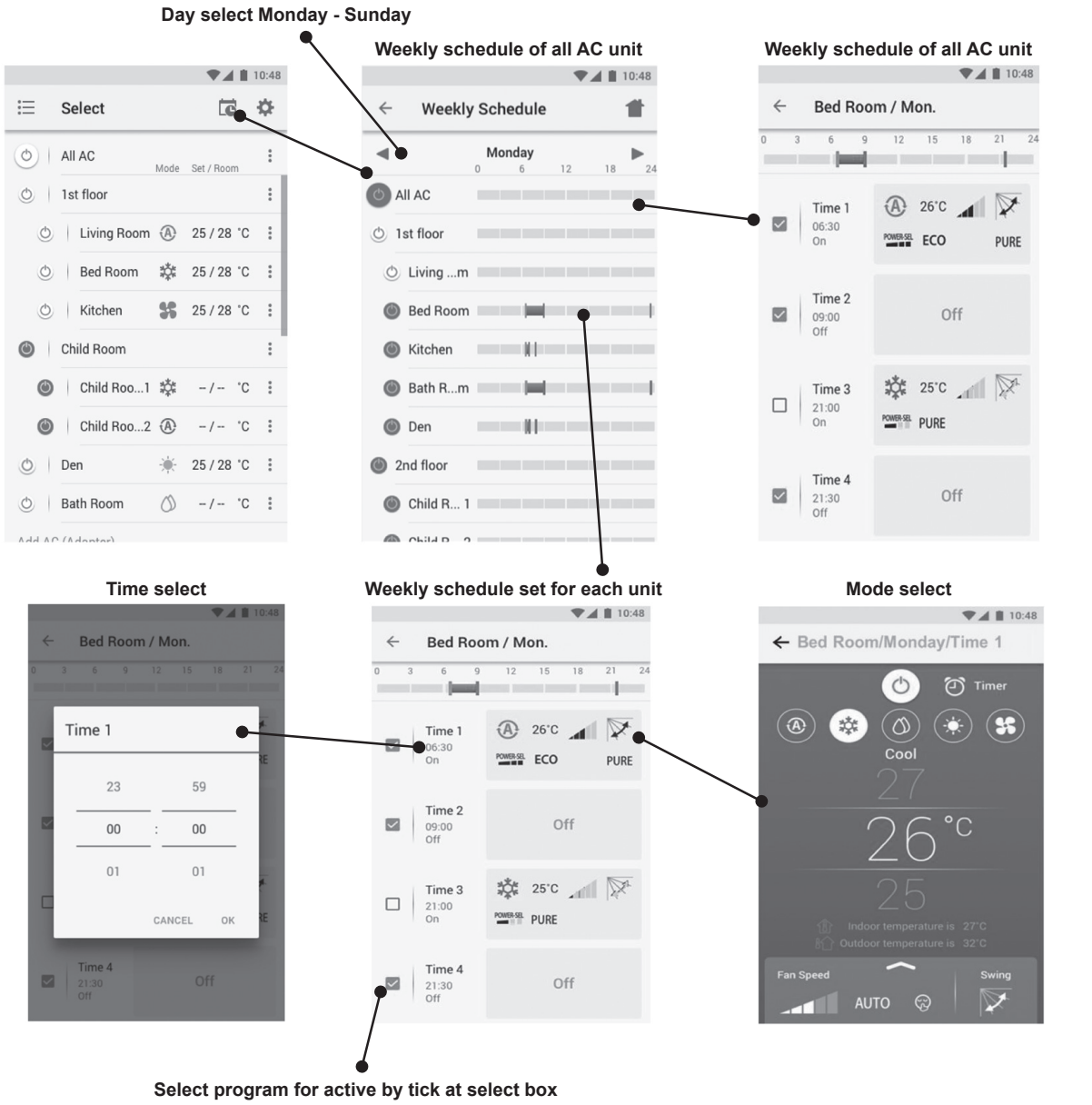
Add AC in group



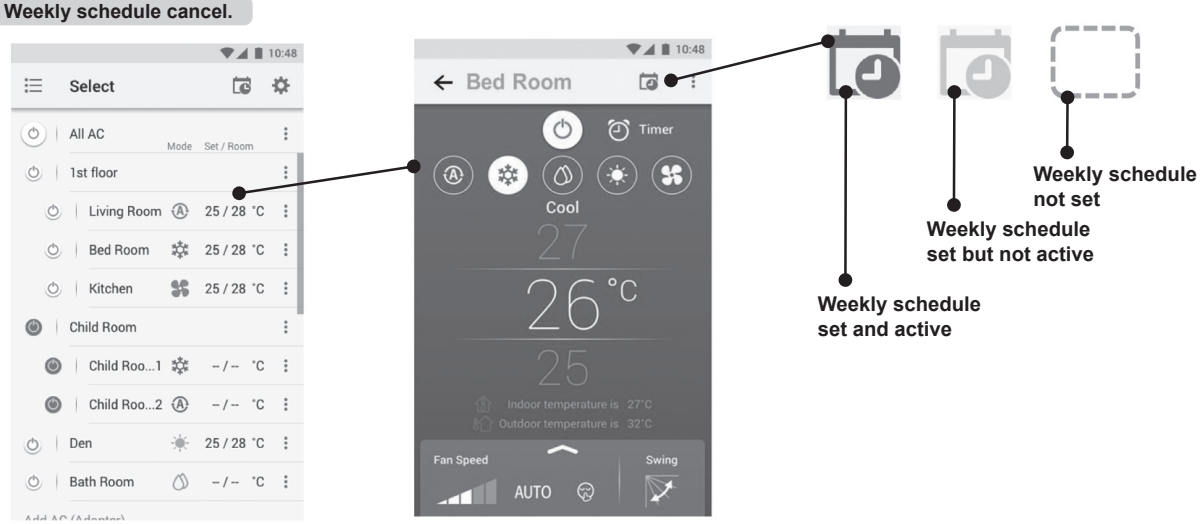
Delete AC in group



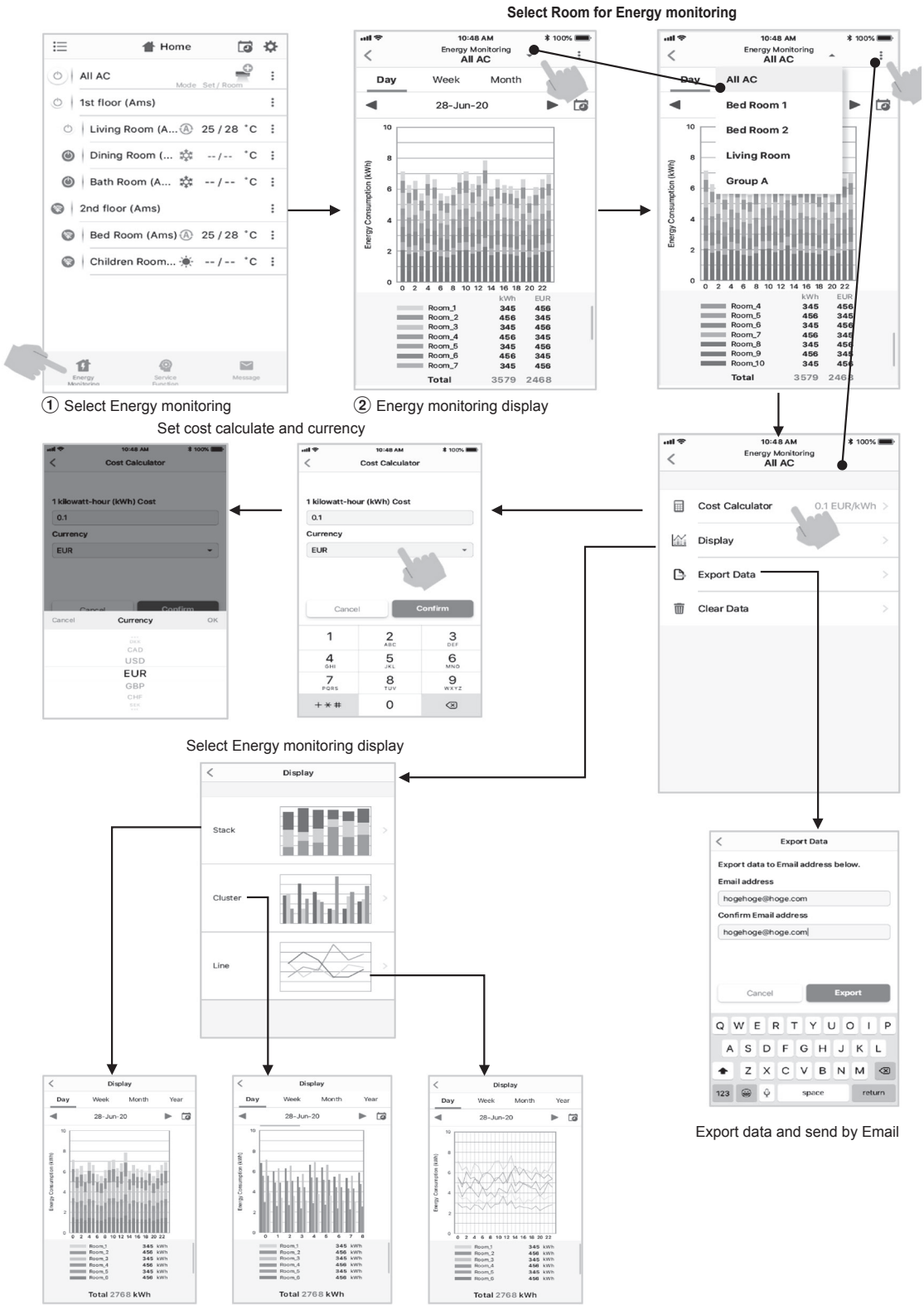
Weekly schedule set.



Weekly schedule cancel.

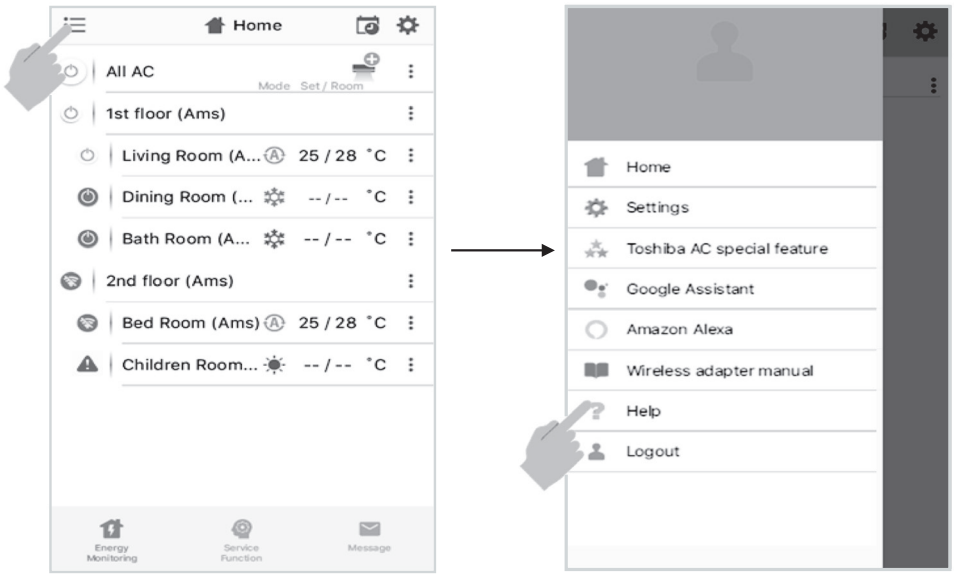


Energy monitoring



- The power consumption displayed is just an estimate as it is calculated simply. It may sometimes differ from the result measured by the power meter.

In case of have some problem can check from Help menu.



Note :

"The Wireless Adapter must be installed, maintained, repaired and removed by a qualified installer or qualified service person."

''Contact dealer and/or service center when equipment is malfunction."

9-4-3. Name and Functions of Indications on Remote Controller

[Display]

All indications, except for the clock time indicator, are displayed by pressing the ⏻ button.

1 **Transmission mark**

This transmission mark ▲ indicates when the remote controller transmits signals to the indoor unit.

2 **Mode indicator**

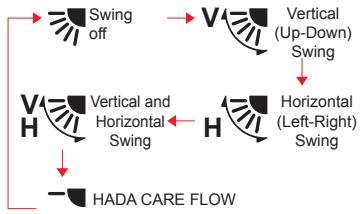
Indicates the current operation mode.
(A : Automatic , ☼ : Cool, 💧 : Dry,
☀ : Heat, ✣ : Fan only)

3 **Temperature indicator**

Indicates the temperature setting.

4 **SWING and HADA CARE FLOW indicator**

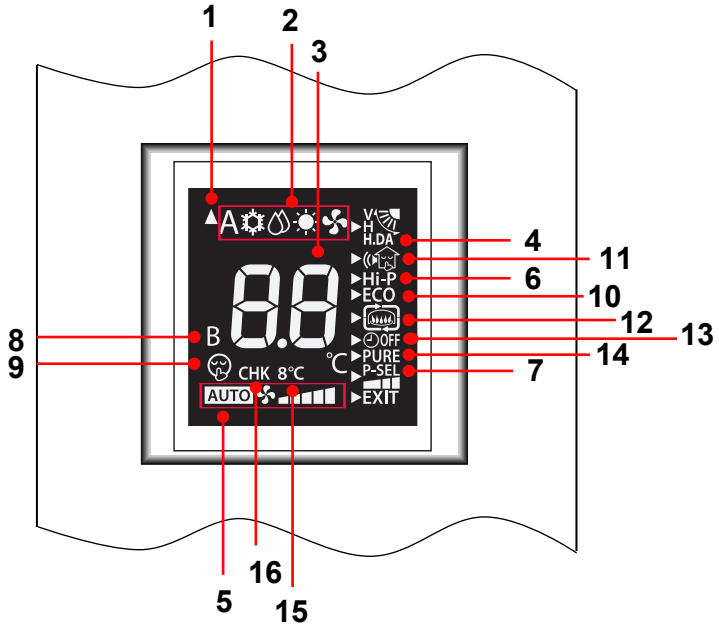
Indicates status of SWING and HADA CARE FLOW



5 **FAN speed indicator**

Indicates the selected fan speed.

AUTO or five fan speed levels
(LOW ▁ , LOW⁺ ▁▂ , MED ▁▂▃ , MED⁺ ▁▂▃▄ , HIGH ▁▂▃▄▅) can be shown.



6 **Hi-POWER indicator**

Indicates when the Hi-POWER operation starts.

7 **POWER-SEL**

Indicates the selected POWER-SEL level.
(▁▂▃ 100%, ▁▂ 75%, ▁ 50%)

8 **A, B change indicator remote controller**

When the remote controller switching function is set, “B” appears in the remote controller display. (When the remote controller setting is “A”, there is no indication at this position.)

9 ***Quiet***

Indicates when quiet is activated.
Press Fan button to start and press it again to select other fan speed for operation.

10 ***ECO indicator***

Indicates when the ECO is in activated.

11 ***Silent operation***

Indicates the selected Silent 1 and Silent 2.

12 ***Fireplace operation***

Indicates the selected Fireplace 1 and Fireplace 2.

13 ***Timer off operation.***

Indicates when the OFF timer operation active.

14 ***PURE***

Indicates when Plasma Ion operation active.

15 ***8°C OPERATION***

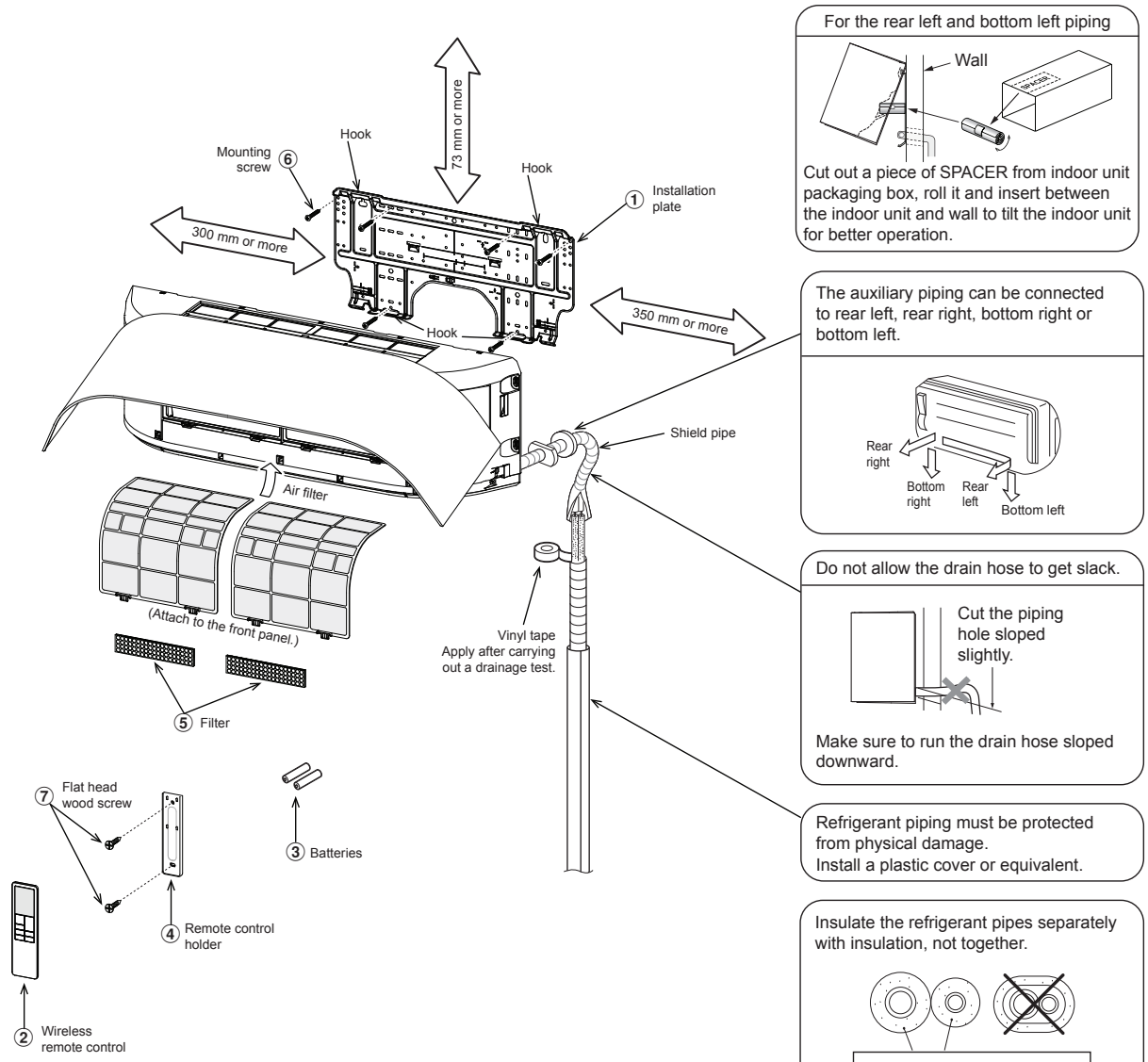
Indicates when 8°C operation star.

16 **Service Mode indicator**

Shows during enter service Mode.

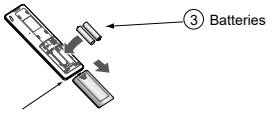
10. INSTALLATION PROCEDURE

10-1. Installation Diagram of Indoor and Outdoor Units



Before installing the wireless remote controller

- Loading Batteries
  1. Remove the slide cover.
  2. Insert 2 new batteries (AAA type) following the (+) and (-) positions.

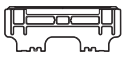
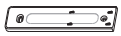


10-2. Installation

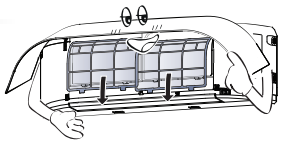
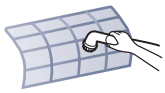
10-2-1. Optional installation parts

Part code	Parts name	Q'ty
Ⓐ	Refrigerant piping Liquid side : Ø6.35 mm Gas side : Ø9.52 mm	One each
Ⓑ	Pipe insulating material (polyethylene foam, 6 mm thick)	1
Ⓒ	Putty, PVC tapes	One each

10-2-2. Accessory and installation parts

Indoor Unit			
No.	**Part name**	**No.**	**Part name**
①	 Installation plate × 1	②	 Wireless remote control × 1
③	 Battery × 2	④	 Remote control holder × 1
⑤	 Toshiba Ultra pure filter × 2	⑥	 Mounting screw × 10
⑦	Flat head wood screw × 2	⑧	 Screw × 2
⑨	 Owner's Manual × 1	⑩	 Installation Manual × 1
⑪	 Decorative fabric (dark gray) × 1 Decorative fabric (light gray) × 1	⑫	B B Label × 2 (for Multi model)

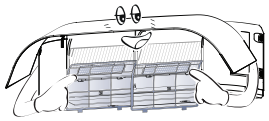
Air filter


Clean every 2 weeks.

1. Open the air inlet grille.
2. Remove the air filters.
3. Vacuum or wash and then dry them.
4. Reinstall the air filters and close the air inlet grille.

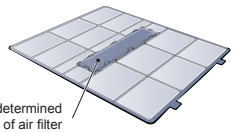
Filter



Maintenance & Shelf-life

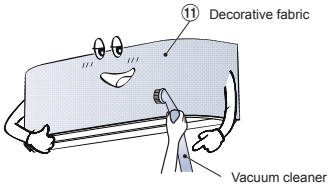
Clean every 3-6 months when dust stuck or covers the filter.

1. Recommend to use vacuum to clean by sucking the dusts which stick or dip inside the filter or use the blower to blow the dust go out through the filter.
2. If necessary to use water to clean, simply use the plain water to wash the filter, dry with the sunlight for 3-4 hours or until it completely dry.
   Nevertheless, use hair drier to dry it. However, washing with water, it may reduce the performance of the filter.
3. Replace every 2 years or sooner. (contact your dealer to purchase new filter) **(P/N : RB-A622DA)**



Note: Filter life depends on the level of impurities in your operating environment. Higher levels of impurities may require more frequent cleaning and replacement. In all cases, we recommend an additional set of filters to improve the purifying and deodorizing performance of your air conditioner.

Decorative fabric



Maintenance & Shelf-life

- Clean when dust stuck or covers the decorative fabric.
- Take extra care when cleaning the decorative fabric.
- Vacuum the decorative fabric with soft brush nozzle that use for cleaning on furniture or curtain.
- In case of getting heavy dirty on decorative fabric, please use dry cleaning service or wash by hand with warm water separated from other clothes (to avoid color staining), then line dry in the shade.

Note:

- Switch 'OFF' and unplug the air conditioner before removing the grille and decorative fabric.
- Ensure decorative fabric are completely dry before refitting to the grille.
- Do not put the decorative fabric in a dishwasher, washing machine, tumble dryer, oven, microwave or near an open flame.

10-2-3. Installation/Servicing Tools

Changes in the product and components

In the case of an air conditioner using R32, in order to prevent any other refrigerant from being charged accidentally, the service port diameter of the outdoor unit control valve (3 way valve) has been changed. (1/2 UNF 20 threads per inch)

- In order to increase the pressure resisting strength of the refrigerant piping flare processing diameter and size of opposite side of flare nuts has been changed. (for copper pipes with nominal dimensions 1/2 and 5/8)

New tools for R32(R410A)

New tools for R32(R410A)	Applicable to R22 model		Changes
Gauge manifold	×		As pressure is high, it is impossible to measure by means of conventional gauge. In order to prevent any other refrigerant from being charged, each port diameter has been changed.
Charge hose	×		In order to increase pressure resisting strength, hose materials and port size have been changed (to 1/2 UNF 20 threads per inch). When purchasing a charge hose, be sure to confirm the port size.
Electronic balance for refrigerant charging	○		As pressure is high and gasification speed is fast, it is difficult to read the indicated value by means of charging cylinder, as air bubbles occur.
Torque wrench (nominal diam. 1/2, 5/8)	×		The size of opposite sides of flare nuts have been increased. Incidentally, a common wrench is used for nominal diameters 1/4 and 3/8.
Flare tool (clutch type)	○		By increasing the clamp bar's receiving hole, strength of spring in the tool has been improved.
Gauge for projection adjustment	–	—	Used when flare is made by using conventional flare tool.
Vacuum pump adapter	○		Connected to conventional vacuum pump. It is necessary to use an adapter to prevent vacuum pump oil from flowing back to the charge hose. The charge hose connecting part has two ports-one for conventional refrigerant (7/16 UNF 20 threads per inch) and one for R32(R410a). If the vacuum pump oil (mineral) mixes with R32(R410a) a sludge may occur and damage the equipment.
Gas leakage detector	×		Exclusive for HFC refrigerant.

- Incidentally, the "refrigerant cylinder" comes with the refrigerant designation R32(R410A) and protector coating in the U.S's ARI specified rose color (ARI color code: PMS 507).
- Also, the "charge port and packing for refrigerant cylinder" require 1/2 UNF 20 threads per inch corresponding to the charge hose's port size.

10-3. Indoor Unit

10-3-1. Installation place

- A place which provides the spaces around the indoor unit as shown in the diagram
- A place where there are no obstacles near the air inlet and outlet
- A place which allows easy installation of the piping to the outdoor unit
- A place which allows the front panel to be opened
- The indoor unit shall be installed at least 2.5 m height. Also, it must avoided to put anything on the top of the indoor unit.

CAUTION

- Direct sunlight to the indoor unit's wireless receiver should be avoided.
- The microprocessor in the indoor unit should not be too close to RF noise sources. (For details, see the owner's manual.)

<Remote control>

- A place where there are no obstacles such as a curtain that may block the signal from the indoor unit.
- Do not install the remote control in a place exposed to direct sunlight or close to a heating source, such as a stove.
- Keep the remote control at least 1 m apart from the nearest TV set or stereo equipment. (This is necessary to prevent image disturbances or noise interference.)
- The location of the remote control should be determined as shown below.

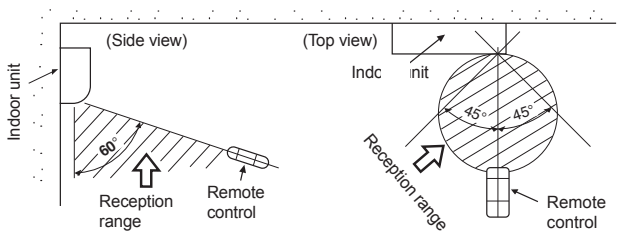


Fig. 10-3-1

10-3-2. Cutting a hole and mounting installation

<Cutting a hole>

When installing the refrigerant pipes from the rear.

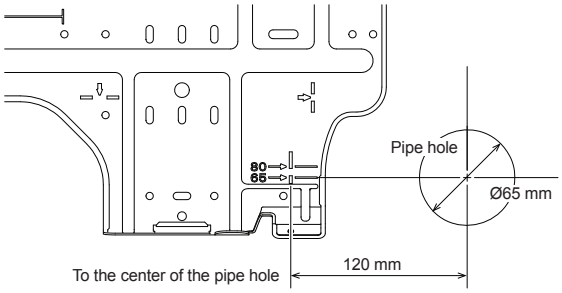


Fig. 10-3-2

1. After determining the pipe hole position on the mounting plate (➡), drill the pipe hole (∅65 mm) at a slight downward slant to the outdoor side.

NOTE

- When drilling a wall that contains a metal lath, wire lath or metal plate, be sure to use a pipe hole brim ring sold separately.

<Mounting the installation plate>

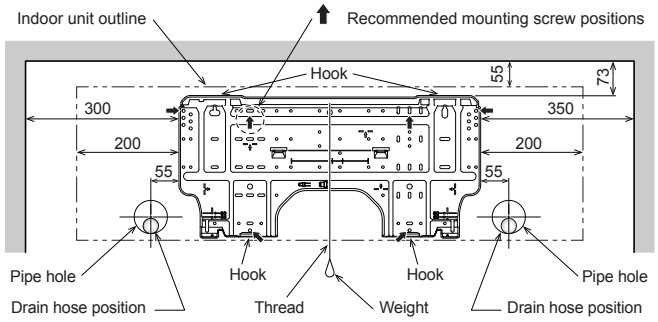


Fig. 10-3-3

<Space allows under the indoor unit>

- Space allows for moving range of the air inlet grille and horizontal louver in operation above curtain rails, window cornice or other objects.

(Unit : mm)

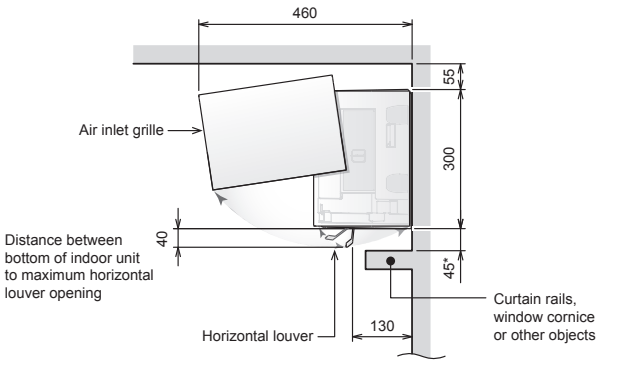


Fig. 10-3-4

CAUTION

- If have curtain rails, window cornice or other objects, allow space from the indoor unit should be 65 mm or more.
- If allow space is less than 65 mm, this can affect the opening and closing of the air inlet grille and the horizontal louver.
- However, there should be no objects in the air outlet position. It will block the air fl ow direction and drop performance.

<When the installation plate is directly mounted on the wall>

1. Securely fit the installation plate onto the wall by screwing it in the upper and lower parts to hook up the indoor unit.
2. To mount the installation plate on a concrete wall with anchor bolts, utilize the anchor bolt holes as illustrated in the above figure.
3. Install the installation plate horizontally in the wall.

CAUTION

When installing the installation plate with a mounting screw, do not use the anchor bolt hole. Otherwise the unit may fall down and result in personal injury and property damage.

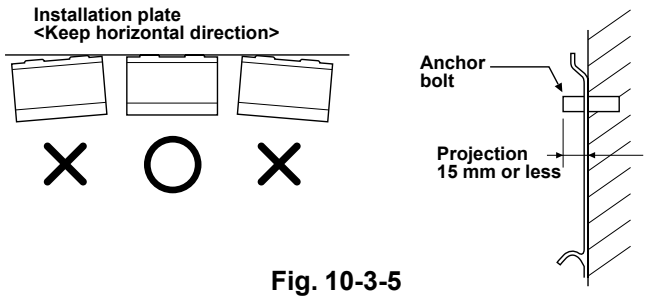


Fig. 10-3-5

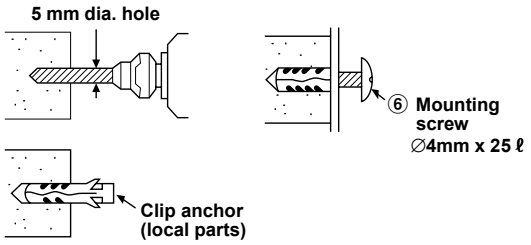


Fig. 10-3-6

CAUTION

Failure to firmly install the unit may result in personal injury and property damage if the unit falls.

- In case of block, brick, concrete or similar type walls, make 5 mm dia. holes in the wall.
- Insert clip anchors for appropriate mounting ⑥ screws.

NOTE:

- Secure four corners and lower parts of the installation plate with 4 to 6 mounting screws to install it.

10-3-3. Wiring Connection

<Indoor unit>

Wiring of the connecting cable can be carried out without removing the front panel.

1. Remove the air inlet grille. Open the air inlet grille upward and pull it toward you.
2. Remove the terminal cover and cord clamp.
3. Insert the connecting cable (according to the local cords) into the pipe hole on the wall.
4. Take out the connecting cable through the cable slot on the rear panel so that it protrudes about 20 cm from the front.
5. Insert the connecting cable fully into the terminal block and secure it tightly with screws.
6. Tightening torque : 1.2 N·m (0.12 kgf·m)
7. Secure the connecting cable with the cord clamp.
8. Fix the terminal cover, rear plate bushing and air inlet grille on the indoor unit.

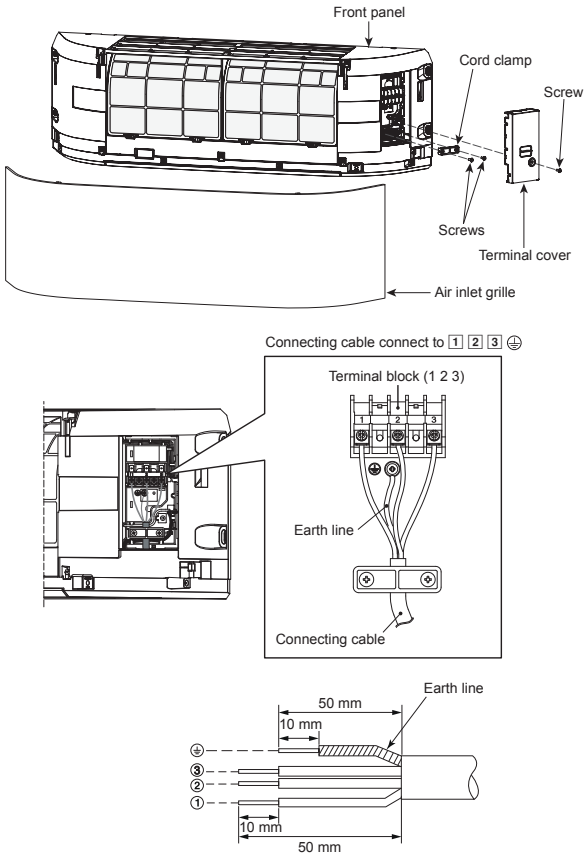


Fig. 10-3-7

NOTE:

- Use stranded wire only.
- Wire type : More than H07RN-F or 60245 IEC66 (1.5 mm2 or more)

<How to install the air inlet grille on the indoor unit>

- When attaching the air inlet grille, the contrary of the removed operation is performed.

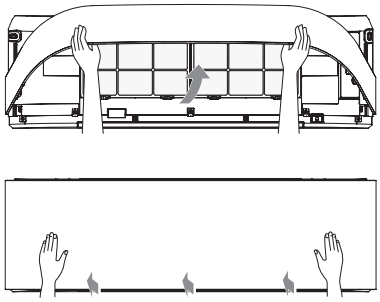


Fig. 10-3-8

10-3-4. Piping and drain hose installation

<Piping and Drain Hose Forming>

- Since dewing results in a machine trouble, make sure to insulate both the connecting pipes. (Use polyethylene foam as insulating material.)
- The connection of pipes can be installed in the following directions.

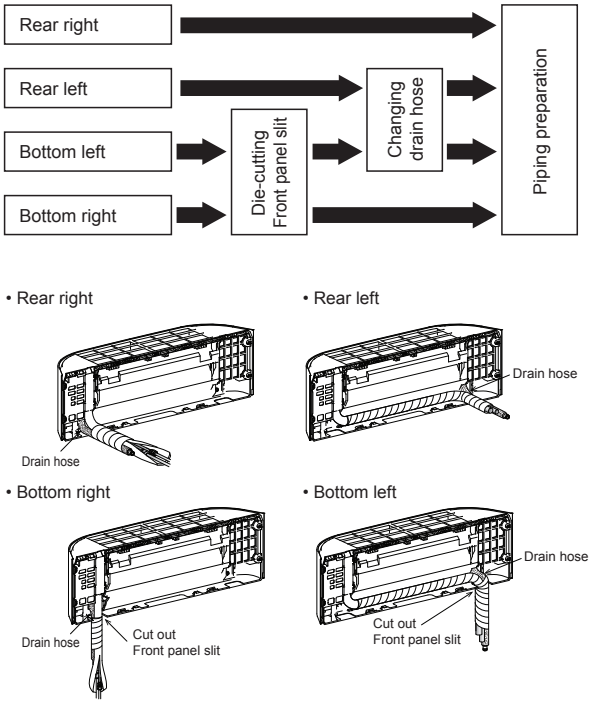


Fig. 10-3-9

1. **Die-cutting Front panel slit**
   - Cut out the slit on the bottom left or bottom right side of the Front panel for the bottom left or bottom right connection with a coping saw.
2. **Changing drain hose**
   - For leftward connection, bottom-leftward connection and rear leftward connection's piping, it is necessary to change the drain hose and drain cap.

<How to cutting the Front panel>

- To connect piping to the bottom side, the Front panel must be cut off.
- The front panel can be removed by removing 2 screws securing then secure remove the front panel from the main body.

※ Be careful of air inlet grill fall down that may cause of injure of part damage.

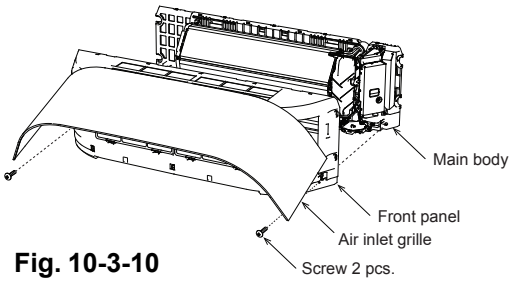


Fig. 10-3-10

- The marking for cutting are indicated on the inside of the Front panel in the following positions.

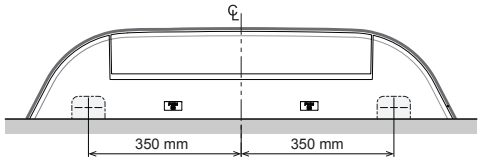


Fig. 10-3-11

- Cut off the pipe exist from inside of Front panel using a coping saw or an equivalent tool.
- The plastic burrs from the cutting process should be removed with a half round file or an equivalent tool.

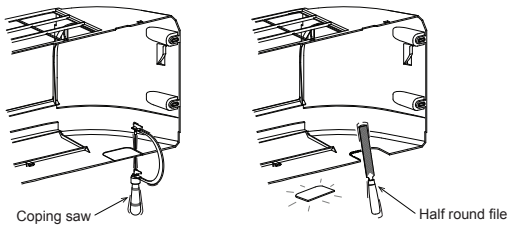


Fig. 10-3-12

CAUTION

When cutting the Front panel, be careful of cutting tools and any sharp edges of plastic. It can cause injuries.

<How to remove the drain hose>

- Removed fixing screw of LED set then pull out it from the main body.
- Removed 2 screws to fix drain pan then secure remove the drain pan from the main body.

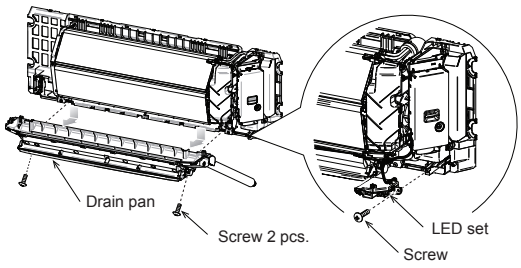


Fig. 10-3-13

- The drain hose can be removed by removing the screw securing the drain hose then secure rotate steel plate of drain hose to out of the Drain pan and pulling out the drain hose.

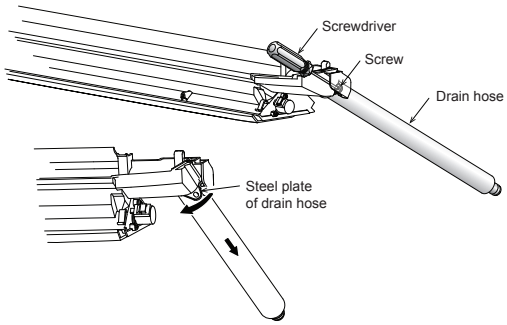


Fig. 10-3-14

<How to fix the drain hose>

- To install the drain hose, insert the drain hose firmly until the connection part contacts with heat insulator, secure push steel plate of drain hose to predetermined position of Drain pan then fix it by original screw.

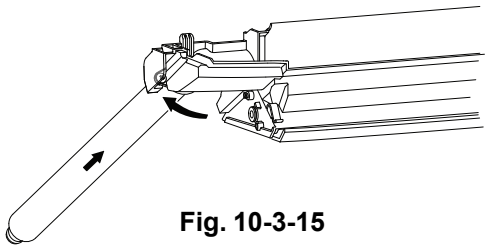


Fig. 10-3-15

CAUTION

When removing or install the drain hose, be careful of any sharp edges of steel plate. The edges can cause injuries.

<How to remove the drain cap>

- Clip the drain cap by needle-nose pliers and pull out.

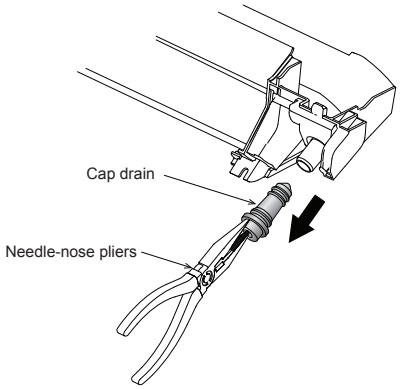


Fig. 10-3-16

<How to fix the drain cap>

- Insert hexagonal wrench (dia. 4 mm) in a center head.

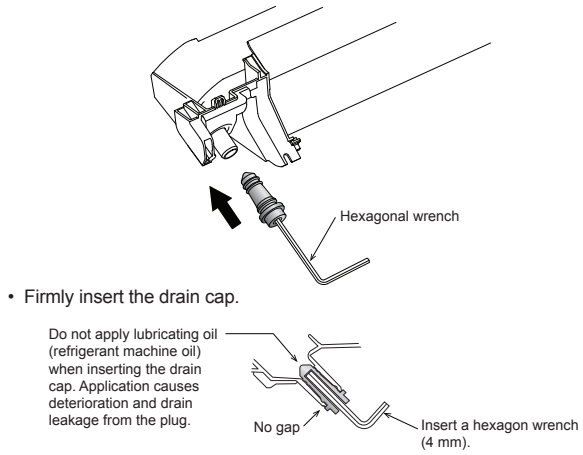


Fig. 10-3-17

CAUTION

Firmly insert the drain hose and drain cap; otherwise, water may leak.

<Left-hand connection with piping>

Bend the connecting pipe so that it is laid within 43 mm above the wall surface. If the connecting pipe is laid exceeding 43 mm above the wall surface, the indoor unit may unstably be set on the wall. When bending the connecting pipe, make sure to use a spring bender so as not to crush the pipe.

Bend the connecting pipe within a radius of 30 mm.

To connect the pipe after installation of the unit (figure)

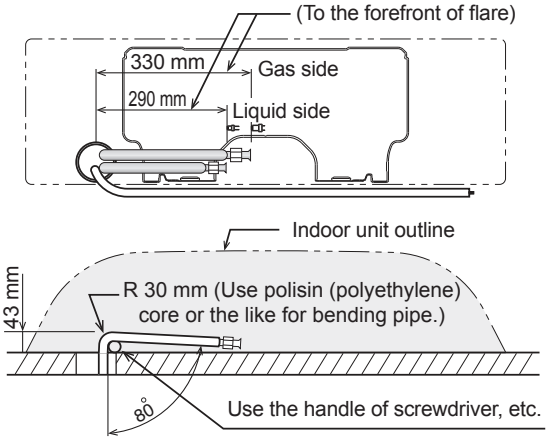


Fig. 10-3-18

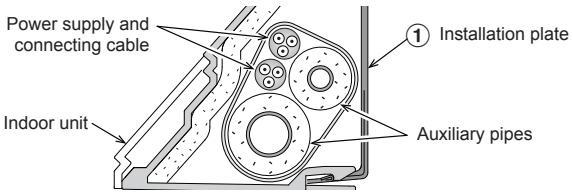
NOTE :

If the pipe is bent incorrectly, the indoor unit may unstably be set on the wall.

After passing the connecting pipe through the pipe hole, connect the connecting pipe to the auxiliary pipes and wrap the facing tape around them.

CAUTION

- Bind the auxiliary pipes (two) power supply and connecting cable with facing tape tightly.



- Carefully arrange pipes so that any pipe does not stick out of the rear plate of the indoor unit.
- Carefully connect the auxiliary pipes and connecting pipes to each other and cut off the insulating tape wound on the connecting pipe to avoid double-taping at the joint, moreover, seal the joint with the vinyl tape, etc.
- Since dewing results in a machine trouble, make sure to insulate both the connecting pipes. (Use polyethylene foam as insulating material.)
- When bending a pipe, carefully do it, not to crush it.

10-3-5. Indoor unit fixing

1. Pass the pipe through the hole in the wall, and hook the indoor unit on the installation plate at the upper hooks.
2. Swing the indoor unit to right and left to confirm that it is firmly hooked up on the installation plate.
3. While pressing the indoor unit onto the wall, hook it at the lower part on the installation plate. Pull the indoor unit toward you to confirm that it is firmly hooked up on the installation plate.

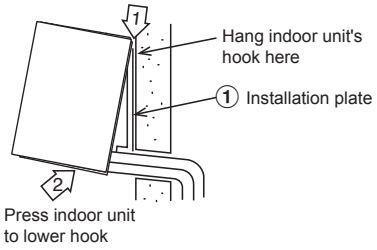


Fig. 10-3-19

- For detaching the indoor unit from the installation plate, pull the indoor unit toward you while pushing its bottom up at the specified parts.

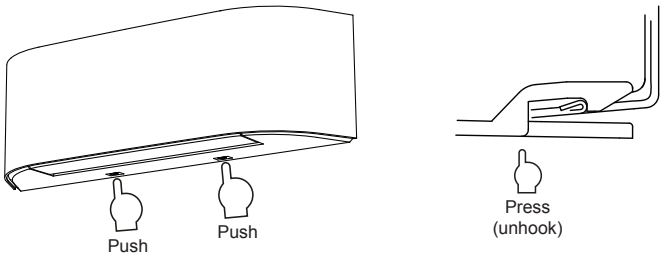
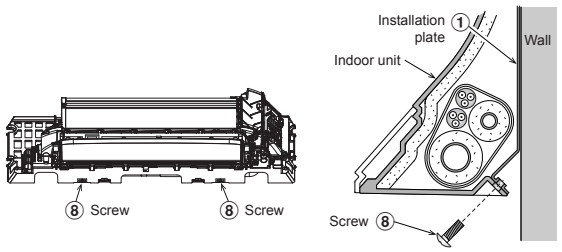


Fig. 10-3-20

CAUTION

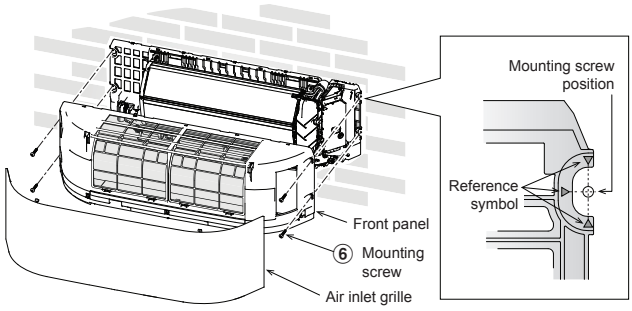
MOUNTING INDOOR UNIT TO THE INSTALLATION PLATE

- The lower part of indoor unit may float, due to the condition of piping and installer cannot fix it to the installation plate. In that case, use the screws provided to fix the indoor unit with the installation plate.
- Especially when the pipes are pulled out to the left side, the indoor unit must be screwed to the installation plate.



MOUNTING INDOOR UNIT TO THE INSTALLATION PLATE

- In case left side or right of indoor unit may float, the provided screws should be used to fix the indoor unit directly to the wall at the predetermined position.
- In the case of block, brick, concrete or similar type wall, determining the mount screw position on the wall can be used symbol (►) on the main body of indoor unit for drill hole to insert clip anchors for appropriate mounting screw.



10-3-6. Drainage

1. Run the drain hose sloped downwards.

NOTE

- Hole should be made at a slight downward slant on the outdoor side.

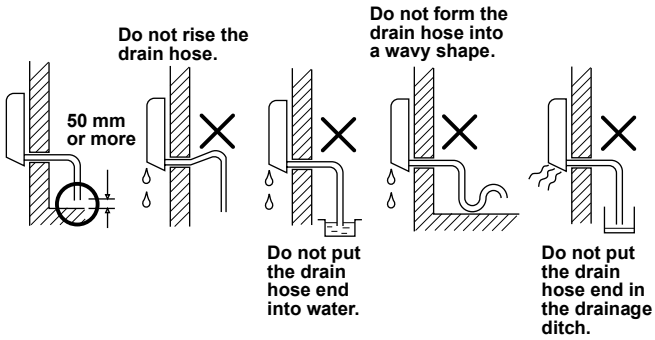


Fig. 10-3-21

2. Put water in the drain pan and make sure that the water is drained out of doors.
3. When connecting extension drain hose, insulate the connecting part of extension drain hose with shield pipe.

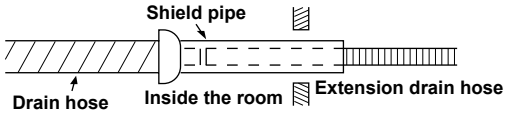


Fig. 10-3-22

CAUTION

Arrange the drain pipe for proper drainage from the unit. Improper drainage can result in dew-dropping.

This air conditioner has the structure designed to drain water collected from dew, which forms on the back of the indoor unit, to the drain pan.
Therefore, do not store the power cord and other parts at a height above the drain guide.

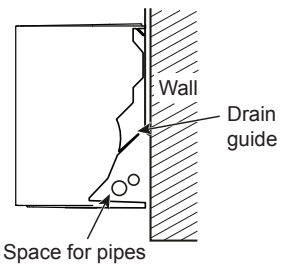


Fig. 10-3-23

10-4. Others

10-4-1. Gas leak test

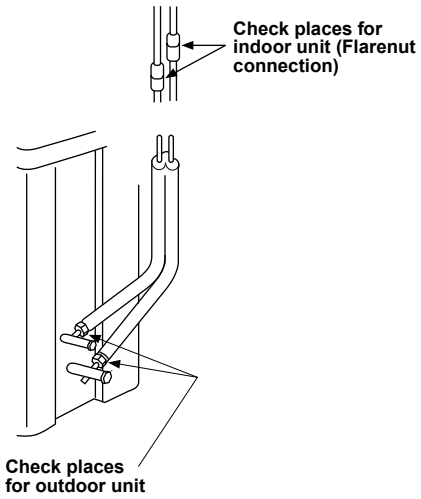


Fig. 10-4-1

- Check the flare nut connections for the gas leak with a gas leak detector or soap water.

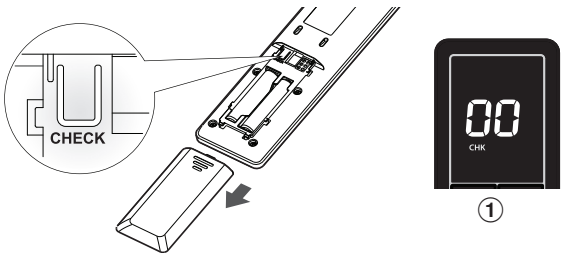
10-4-2. Remote Control A-B Selection

- When two indoor units are installed in the same room or adjacent two rooms, if operating a unit, two units may receive the remote control signal simultaneously and operate. In this case, the operation can be preserved by setting either one remote control to B setting. (Both are set to A setting in factory shipment.)
- The remote control signal is not received when the settings of indoor unit and remote control are different.
- There is no relation between A setting/B setting and A room/B room when connecting the piping and cables.

To separate using of remote control for each indoor unit in case of 2 air conditioner are installed near.

Remote Control B Setup.

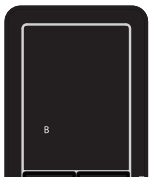
1. Press [RESET] button on the indoor unit to turn the air conditioner ON.
2. Point the remote control at the indoor unit.
3. Push and hold [CHECK] button on back side of Remote Control. “00” will be shown on the display (Picture ①).



①

Fig. 10-4-2

4. Press [MODE] during pushing [CHECK]. “B” will show on the display and “00” will disappear and the air conditioner will turn OFF.
   The Remote Control B is memorized (Picture ②).



②

Note : 1. Repeat previous step to reset Remote Control to be A.
2. Remote Control A have not “A” display.
3. Default setting of Remote Control from factory is A.

10-4-3. Test operation

To switch the TEST RUN (COOL) mode, press [RESET] button for 10 sec. (The beeper will make a short beep.)

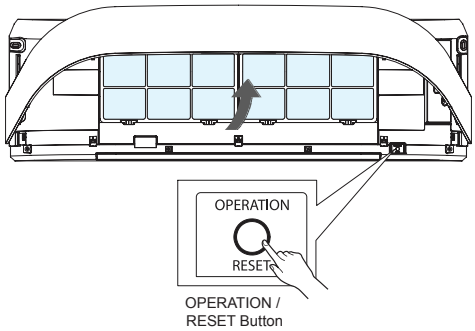


Fig. 10-4-3

10-4-4. Auto restart function setting

This product is designed so that, after a power failure, it can restart automatically in the same operating mode as before the power failure.

Information

The product is shipped with Auto Restart function in the ON position. Turn it OFF if this function is not required.

<How to turn OFF the Auto Restart Function>

- Press and hold the [OPERATION] button on the indoor unit for 3 seconds (3 beep sounds but OPERATION lamp does not blink).

<How to turn ON the Auto Restart Function>

- Press and hold the [OPERATION] button on the indoor unit for 3 seconds (3 beep sounds and OPERATION lamp blink 5 time/sec for 5 seconds).

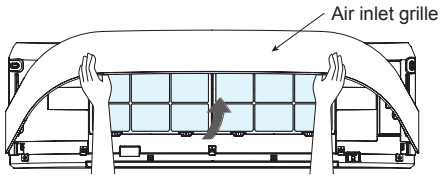
NOTE

- In case of ON timer or OFF timer are set, AUTO RESTART OPERATION does not activate.

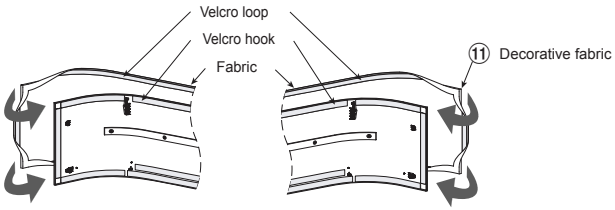
10-4-5. Decorative Fabric Installation

- The decorative fabric for cover on the air inlet grille of indoor unit was put in the accessories. User can use it as required.
  The method of installation is as follows.

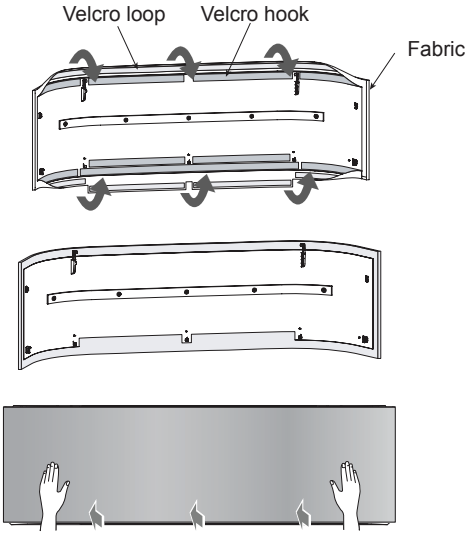
1. Remove the air inlet grille.
   Open the air inlet grille upward and pull it toward you. As shown on figure as below.



2. Prepare the fabric that you choose for install.
3. Insert the fabric into the left and right side of the air inlet grille and adjust corner position of decorative fabric is smooth.
   Attach the hook and loop of Velcro tape fully together. As shown on figure as below.



4. Insert the fabric into the top and bottom side of the air inlet grille. Attach the hook and loop of Velcro tape fully together. As shown on figure as below.



5. Reassembly the air inlet grille by reverse process of 1.

NOTE :

- The tightness of the fabric depends on attaching the hook and loop of Velcro around the air inlet grille, take appropriate action.

CAUTION

If clean decorative fabric by washing, it may affect to appearance and fitting of the decorative fabric. Recommend to use vacuum cleaner to removing the dusts from decorative fabric.

11. HOW TO DIAGNOSE THE TROUBLE

11-1. First Confirmation

11-1-1. Confirmation of Power Supply

Confirm that the power breaker operates (ON) normally.

11-1-2. Confirmation of Power Voltage

Confirm that power voltage is AC 220–230–240 ± 10%.

If power voltage is not in this range, the unit may not operate normally.

11-1-3. Operation Which is not a Trouble (Program Operation)

For controlling the air conditioner, the program operations are built in the microcomputer as described in the following table.
If a claim is made for running operation, check whether or not it meets to the contents in the following table. When it does, we inform you that it is not trouble of equipment, but it is indispensable for controlling and maintaining of air conditioner.

Table 11-1-1

No.	Operation of air conditioner	Description
1	When power breaker is turned “ON”, the operation indicator (White) of the indoor unit flashes.	The OPERATION lamp of the indoor unit flashes when power source is turned on. If [⏻] button is operated once, flashing stops. (Flashes also in power failure)
2	Compressor may not operate even if the room temperature is within range of compressor-ON.	The compressor does not operate while compressor restart delay timer (3-minutes timer) operates. The same phenomenon is found after power source has been turned on because 3-minutes timer operates.
3	In Dry and ECO mode, FAN (air flow) display does not change even though FAN (air flow select) button is operated.	The air flow indication is fixed to [AUTO].
4	Increasing of compressor motor speed stops approx. 30 seconds after operation started, and then compressor motor speed increases again approx. 30 seconds after.	For smooth operation of the compressor, the compressor motor speed is restricted to Max. 41 rps for 2 minutes, and Max.91 rps for 2 minutes to 3 minutes, respectively after the operation has started.
5	In AUTO mode, the operation mode is changed.	After selecting Cool or Heat mode, select an operation mode again if the compressor keeps stop status for 15 minutes.
6	In HEAT mode, the compressor motor speed does not increase up to the maximum speed or decreases before the temperature arrives at the set temperature.	The compressor motor speed may decrease by high-temp. release control (Release protective operation by temp.-up of the indoor heat exchanger) or current release control.

11-2. Primary Judgment

To diagnose the troubles, use the following methods.

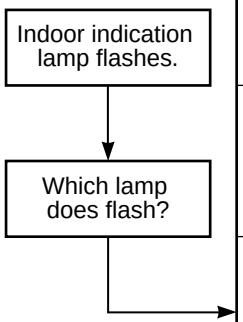
1) Judgment by flashing LED of indoor unit
2) Self-diagnosis by service check remote controller
3) Judgment of trouble by every symptom

Firstly use the method 1) for diagnosis. Then, use the method 2) or 3) to diagnose the details of troubles.

11-3. Judgment by Flashing LED of Indoor Unit

While the indoor unit monitors the operation status of the air conditioner, if the protective circuit operates, the contents of self-diagnosis are displayed with block on the indoor unit indication section.

Table 11-3-1



Item	Check code	Block display	Description for self-diagnosis
A	—	OPERATION Flashing display (1 Hz)	Power failure (when power is ON)
B	00	OPERATION Flashing display (5 Hz)	Protective circuit operation for indoor P.C. board
C	01	OPERATION TIMER (White) Flashing display (5 Hz)	Protective circuit operation for connecting cable and serial signal system
D	02	OPERATION Flashing display (5 Hz)	Protective circuit operation for outdoor P.C. board
E	03	OPERATION TIMER Flashing display (5 Hz)	Protective circuit operation for others (including compressor)
F	33	OPERATION / TIMER	Release status display
		Normal / Normal	Nothing
		Flash 1 Hz / None	Current release
		Flash 2 Hz 2 times every 1 sec / None	TD release
		None / Flash 1 Hz	TC release

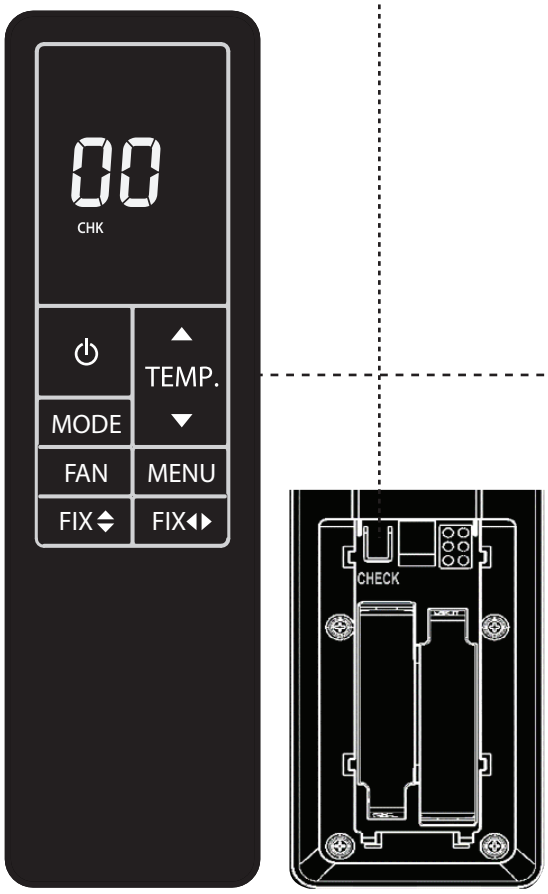
NOTES :

1. The contents of items B and C and a part of item E are displayed when air conditioner operates.
2. When item B and C, and item B and a part of item E occur concurrently, priority is given to the block of item B.
3. The check codes can be confirmed on the remote controller for servicing.

11-4. Self-Diagnosis by Remote Controller (Check Code)

1. If the lamps are indicated as shown B to E in Table 11-3-1, execute the self-diagnosis by the remote controller.
2. When the remote controller is set to the service mode, the indoor controller diagnoses the operation condition and indicates the in formation of the self-diagnosis on the display of the remote controller with the check codes. If a fault is detected, all lamps on the indoor unit will flash at 5Hz and it will beep for 10 seconds (Beep, Beep, Beep ...). The timer lamp usually flashes (5Hz) during self-diagnosis.

11-4-1. How to Use Remote Controller in Service Mode



1 Press [CHECK] button at back side of remote controller to the service mode.

- " 00 " is indicated on the display of the remote controller.

2 Press [TEMP ▲] button If there is no fault with a code, the indoor unit will beep once (Beep) and the display of the remote controller will change as follows :

→ 00 → 01 → 02 ··· 1d → 1E → 33 → 7F →

- TheTIMER indicator of the indoor unit flashes continuously. (5 times per 1 sec.)
- Check the unit with all 52 check codes (00 to 33) as shown in Table-11-3-1.
- Press [TEMP ▼] button to change the check code backward.

If there is a fault, the indoor unit will beep for 10 seconds (Beep, Beep, Beep...).

Note the check code on the display of the remote controller.

- 2-digits alphanumeric will be indicated on the display.
- All indicators on the indoor unit will flash. (5 times per 1 sec.)

3 Press [TEMP ▲▼] until 7F for clear service code after service finish.

4 Press [⏻] button to release the service mode.

- The display of the remote controller returns to as it was before service mode was engaged.

Alphanumeric characters are used for the check codes.

5 is 5. 6 is 6.
A is A. b is B.
C is C. d is D.

Fig. 11-4-1

11-4-2. Caution at Servicing

1. After using the service mode of remote controller finished, press the [⏻] button to reset the remote controller to normal function.
2. After finished the diagnosis by the remote controller, turn OFF power supply and turn its ON again to reset the air conditioner to normal operation. However, the check codes are not deleted from memory of the microcomputer.
3. After servicing finished, enter service mode again and select "7F" for send code to the indoor unit.
   The check code stored in memory is cleared.

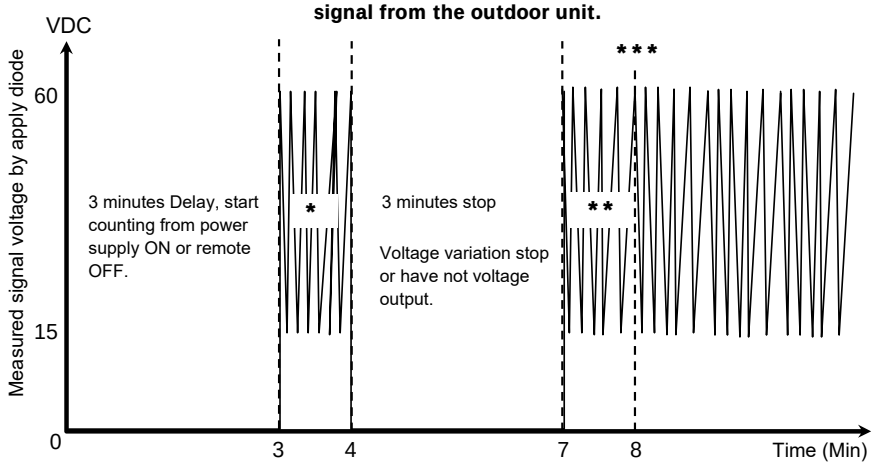
Table 11-4-1

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	Block	Check code	Cause of operation	Air conditioner status	Display flashing error	
00	Indoor P.C. board.	0C	TA sensor ; The room temperature sensor is short-Circuit or disconnection.	Operation continues.	Flashes when error is detected.	1. Check the sensor TA and connection. 2. In case of the sensor and its connection is normal, check the P.C. board.
		0d	TC sensor ; The heat exchanger temperature sensor of the indoor unit is out of place, disconnection, short-circuit or migration.	Operation continues.	Flashes when error is detected.	1. Check the sensor TC and connection. 2. In case of the sensor and its connection is normal, check the P.C. board.
		0E	Gas detector sensor failure	Outdoor Unit "OFF" Indoor Unit continue fan only operation for 250 minute or "OFF".	Flashes when error is detected.	1. Check Gas sensor shortage / open. 2. Check Gas sensor disconnect.
		11	Fan motor of the indoor unit is failure, lock-rotor, short-circuit, disconnection, etc. Or its circuit on P.C. board has problem.	All OFF	Flashes when error is detected.	1. Check the fan motor and connection. 2. In case of the motor and its connection is normal, check the P.C. board.
		12	Other trouble on the indoor P.C. board.	Depend on cause of failure.	Depend on cause of failure.	1. Reset power supply. 2. Replace P.C. board.
		25	Refrigerant leakge is detected	Operation stops	"A" LED is flushing Beep sounds Fan forced operation	Check leakage Replace new sensor
		26	Gas detector sensor life time	Operation continues.	Flashes when error is detected.	Replace new sensor.

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	**Block**	**Check code**	**Cause of operation**	**Air conditioner status**	**Display flashing error**	
01	Serial signal and connecting cable.	04	1) Defective wiring of the connecting cable or miss-wiring. 2) Operation signal has not send from the indoor unit when operation start. 3) Outdoor unit has not send return signal to the indoor unit when operation started. 4) Return signal from the outdoor unit is stop during operation. • Some protector (hardware, if exist) of the outdoor unit open circuit of signal. • Signal circuit of indoor P.C. board or outdoor P.C. board is failure in some period.	Indoor unit operates continue. Outdoor unit stop.	Flashes when error is detected. Flashing stop and outdoor unit start to operate when the return signal from the outdoor unit is normal.	1) to 3) The outdoor unit never operate. • Check connecting cable and correct if defective wiring. • Check 25A fuse of inverter P.C. board. • Check 3.15A fuse of inverter P.C. board. • Check operation signal of the indoor unit by using diode. Measure voltage at terminal block of the indoor unit between No.2 and No.3 (or L2 and S) If signal is varied 15-60V continuously, replace inverter P.C. board. If signal is not varied, replace indoor P.C. board. 4) The outdoor unit abnormal stop at some time. • If the other check codes are found concurrently, check them together. • Check protector (hardware) such as Hi-Pressure switch, Thermal-Relay, etc. • Check refrigerant amount or any possibility case which may caused high temperature or high pressure. • Check operation signal of the indoor unit by using diode. Measure voltage at terminal block of the indoor unit between No.2 and No.3 (or L2 and S) If signal is varied 15-60V continuously, replace inverter P.C. board. If signal is not varied, replace indoor P.C. board.

Note : Operation signal of the indoor unit shall be measured in the sending period as picture below.

Sending signal of the indoor unit when have not return signal from the outdoor unit.



* Signal send only 1 minute and stop. Because of return signal from outdoor unit has not received.

** Signal resend again after 3 minutes stop. And the signal will send continuously.

*** 1 minute after resending, the indoor unit display flashes error.

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	Block	Check code	Cause of operation	Air conditioner status	Display flashing error	
02	Outdoor P.C. board	14	Current on inverter circuit is over limit in short time. ● Inverter P.C. board is failure, IGBT shortage, etc. ● Compressor current is higher than limitation, lock rotor, etc.	All OFF	Flashes after error is detected 8 times*.	1. Remove connecting lead wire of the compressor, and operate again. 2. If outdoor fan does not operate or operate but stop after some period, replace the inverter P.C. board. 3. If outdoor fan operates normally, measure 3-Phase output of inverter P.C. board (150-270VAC) at the connecting lead wire of compressor. 4. If 3-Phase output is abnormal, replace inverter P.C.Board. 5. If 3-Phase output is normal, replace compressor. (lock rotor, etc.)
		16	Compressor position-detect circuit error or short-circuit between winding of compressor.	All OFF	Flashes after error is detected 8 times*.	1. Remove connecting lead wire of the compressor, and operate again. 2. If outdoor fan does not operate or operation but stop after some period, replace the inverter P.C. board. 3. If outdoor fan operates normally, measure resistance of compressor winding. If circuit is shortage, replace the compressor.
		17	Current-detect circuit of inverter P.C. board error.	All OFF	Flashes after error is detected 4 times*.	Even if trying to operate again, all operations stop, replace inverter P.C. board.
		18	TE or TS sensor; abnormal. Out of place, disconnection, shortage, or misconnection (TE sensor is connected to TS connector, TS sensor is connected to TE sensor connector) TE sensor; Outdoor heat exchanger temperature sensor TS sensor; Suction pipe temperature sensor	All OFF	Flashes after error is detected 4 times*.	1. Check sensors, TE, TS connection. In case of sensors and it's connection is normal, check the inverter P.C. board 2. Check 4way valve operation/position. In case TE, TS detected temperature relationship are different from normal operation, "18" might be detected.
		19	TD sensor ; Discharge pipe temperature sensor is disconnection or shortage.	All OFF	Flashes after error is detected 4 times*.	1. Check sensors TD and connection. 2. In case of the sensor and its connection is normal, check the inverter P.C. board.
		1A	Outdoor fan failure or its drive-circuit on the inverter P.C. board failure.	All OFF	Flashes after error is detected 8 times*.	1. Check the motor, measure winding resistance, shortage or lock rotor. 2. Check the inverter P.C. board.
		1b	TO sensor ; The outdoor temperature sensor is disconnection or shortage.	Operation continues.	Record error after detected 4 times*. But does not flash display.	1. Check sensors TO and connection. 2. In case of the sensor and its connection is normal, check the inverter P.C. board.

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	Block	Check code	Cause of operation	Air conditioner status	Display flashing error	
02	Outdoor P.C. board	1C	Compressor drive output error. (Relation of voltage, current and frequency is abnormal) ● Overloading operation of compressor caused by over-charge refrigerant, P.M.V. failure, etc. ● Compressor failure (High current).	All OFF	Flashes after error is detected 8 times*.	1. Check installation conditions such as packed valve opening, refrigerant amount and power supply (rate ±10%, both of operation and non operation condition). 2. Check P.M.V. by measure the resistance of the coil and confirm its operation (sound of initial operation, etc.) 3. Observe any possibility cause which may affect operation load of compressor. 4. Operate again. If compressor operation is failure when 20 seconds passed (count time from operation starting of compressor), replace compressor.
	* 4 or 8 times ; When first error is detected, error is count as 1 time, then once operation is stop and re-started. After re-starting operation within 6 minutes, if same error is detected, error count is add (count become 2 times) When error count comes 4 or 8 times, record error to check code. But after re-starting operation, if no error is detected and air conditioner can operate more than 6 minutes, error count is cleared.					
03	The others (including compressor)	07	Return signal of the outdoor unit has been sent when operation start. But after that, signal is stop some time. ● Instantaneous power failure. ● Some protector (hardware) of the outdoor unit open circuit of signal. ● Signal circuit of indoor P.C. board or outdoor P.C. board is failure in some period.	Indoor unit operates continue. Outdoor unit stop.	Flashes when error is detected. Flashing stop and outdoor unit start to operate when the return signal from the outdoor unit is normal.	1. Check power supply (Rate ± 10%) 2. If the air conditioner repeat operates and stop with interval of approx. 10 to 40 minutes. ● Check protector (hardware) such as Hi-Pressure switch, Thermal-Relay, etc. ● Check refrigerant amount, packed valve opening and any possibility cause which may affect high temperature or high pressure. 3. Check operation signal of the indoor unit by using diode. Measure voltage at terminal block of the indoor unit between No.2 and No.3 (or L2 and S) If signal is varied 15-60V continuously, replace inverter P.C. board. If signal is not varied, replace indoor P.C. board.

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	Block	Check code	Cause of operation	Air conditioner status	Display flashing error	
03	The others (including compressor)	1d	Compressor does not rotate. Because of missed wiring, missed phase or shortage.	All OFF	Flashes after error is detected 8 times*.	1. Remove connecting lead wire of the compressor, and operate again. 2. If outdoor fan does not operate or operation but stop after some period, replace the inverter P.C. board. 3. If outdoor fan operates normally, measure 3-Phase output of inverter P.C. board (150-270VAC) at the connecting lead wire of compressor. 4. If 3-Phase output is abnormal, replace inverter P.C.Board. 5. If 3-Phase output is normal, measure resistance of compressor winding. 6. If winding is shortage, replace the compressor.
		1E	Discharge temperature exceeded 117°C.	All OFF	Flashes after error is detected 4 times*.	1. Check sensors TD. 2. Check refrigerant amount. 3. Check P.M.V. by measure the resistance of the coil and confirm its operation (sound of initial operation, etc.) 4. Observe any possibility cause which may affect high temperature of compressor.
		1F	Compressor is high current though operation Hz is decreased to minimum limit. ● Installation problem. ● Instantaneous power failure. ● Refrigeration cycle problem. ● Compressor break down. ● Compressor failure (High current).operation, etc.)	All OFF	Flashes after error is detected 8 times*.	1. Check installation conditions such as packed valve opening, refrigerant amount and power supply (rate ±10%, both of operation and non operation condition). 2. Check P.M.V. by measure the resistance of the coil and confirm its operation (sound of initial operation, etc.) 3. Observe any possibility cause which may affect high current of compressor. 4. If 1, 2 and 3 are normal, replace compressor.

Block distinction		Operation of diagnosis function				Action and Judgment
Check code	Block	Check code	Cause of operation	Air conditioner status	Display flashing error	
03	The others (including compressor)	21	Return signal of the outdoor unit has been sent when operation start. But after that, signal is stop some time. ● Instantaneous power failure. ● Some protector (hardware) of the outdoor unit open circuit of signal. ● Signal circuit of indoor P.C. board or outdoor P.C. board is failure in some period. ● TE, TC high tmperature TE for cooling operation TC for heating operation.	Indoor unit operates continue. Outdoor unit stop.	Flashes when error is detected 11 times*. Flashing stop and outdoor unit start to operate when the return signal from the outdoor unit is normal.	1. Check power supply (Rate ±10%) 2. If the air conditioner repeat operat and stop with interval of approx. 10 to 40 minutes. ● Check protector (hardware) such as Hi-Pressure switch, Thermal-Relay, etc. ● Check refrigerant amount, packed valve opening and any possibility cause which may affect high temperature or high pressure. 3. Check operation signal of the indo unit by using diode. Measure voltage at terminal block of the indoor unit between No.2 and No.3 (or L2 and S) If signal is varied 15-60V continuously, replace inverter P.C. board. If signal is not varied, replace indoor P.C. board. 4. Check and clean heat exchanger area Indoor and Outdoor unit.

* 4, 8 or 11 times ; When first error is detected, error is count as 1 time, then once operation is stop and re-started. After re-starting operation within 6 minutes, if same error is detected, error count is add (count become 2 times) When error count comes 4, 8 or 11 times, record error to check code. But after re-starting operation, if no error is detected and air conditioner can operate more than 6 minutes, error count is cleared.

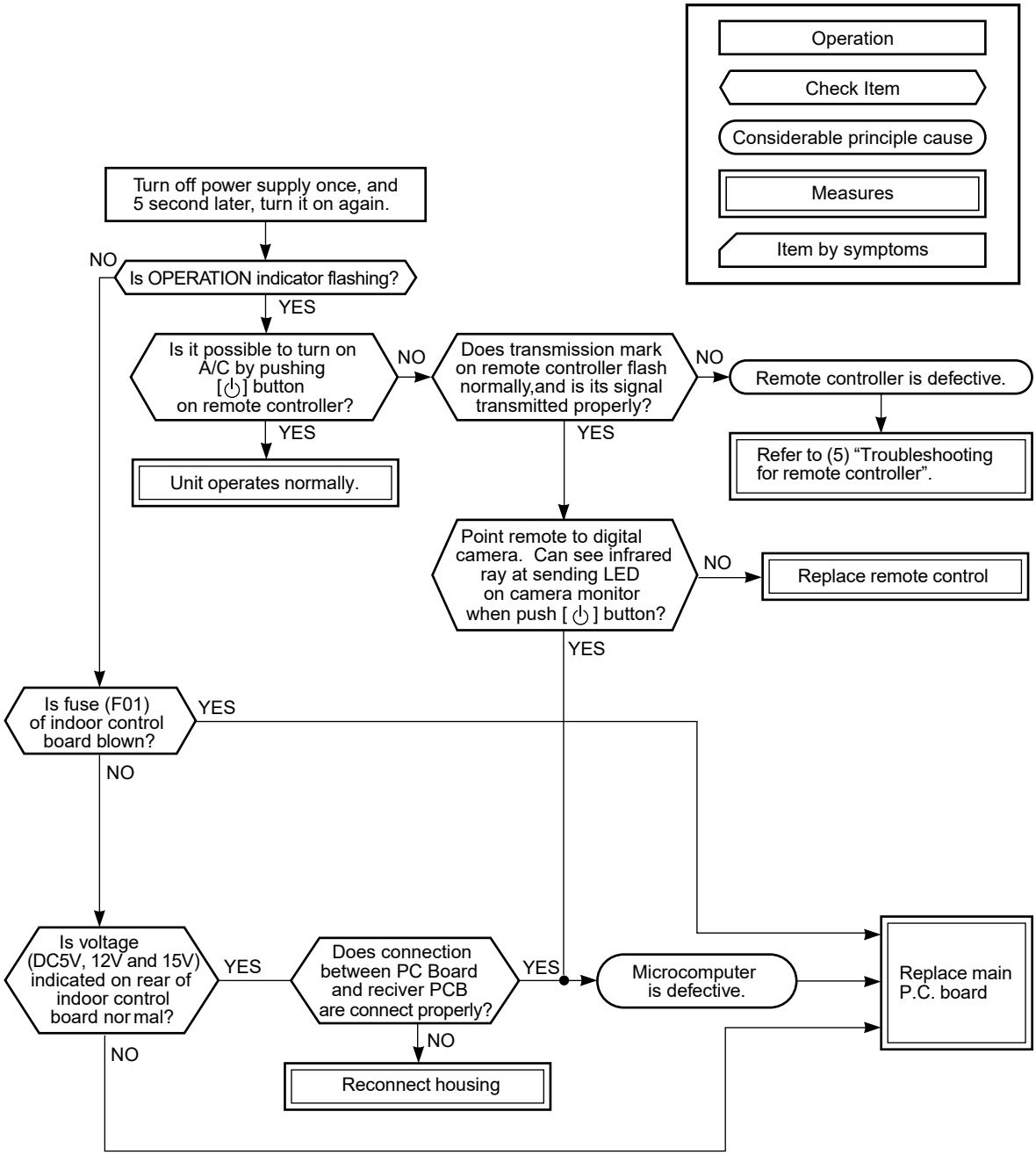
11-5. Judgment of Trouble by Every Symptom

11-5-1. Indoor Unit (Including Remote Controller)

(1) Power is not turned on (Does not operate entirely)

<Primary check>

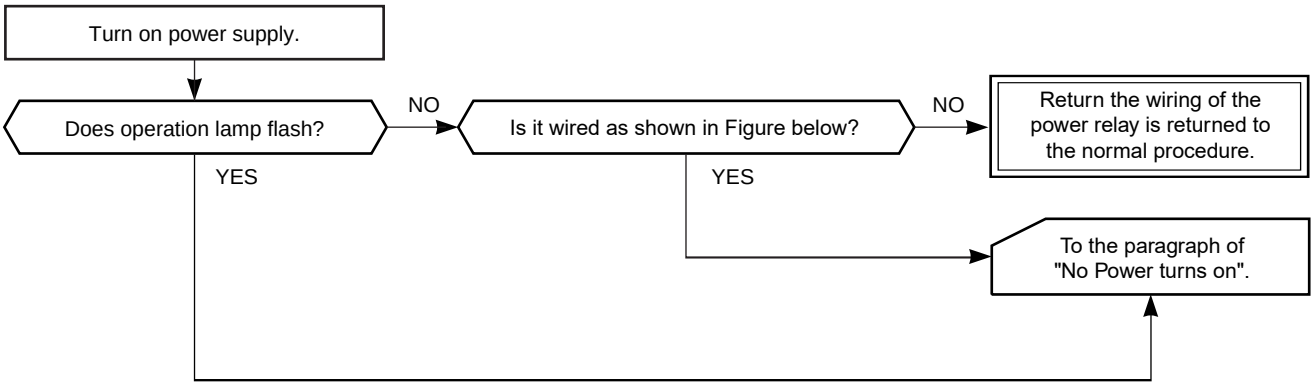
1. Is the supply voltage normal?
2. Is the normal voltage provided to the outdoor unit?
3. Is the crossover cable connected properly?
4. Is the fuse (F01) blown?



- Be sure to disconnect the motor connector CN34 after shut off the power supply, or it will be a cause of damage of the motor.

(2) Power is not turned on though Indoor P.C. board is replaced

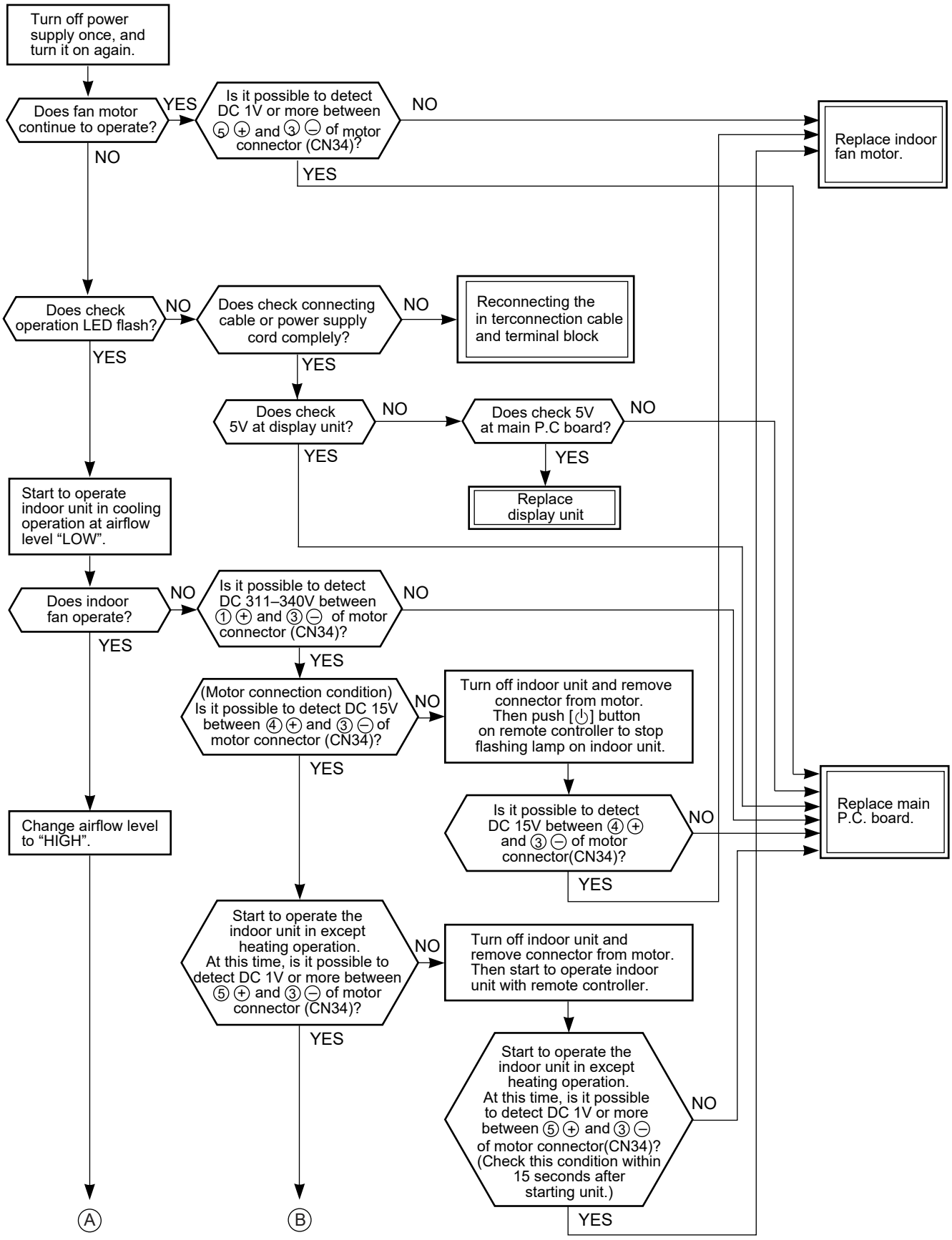
<Confirmation procedure>

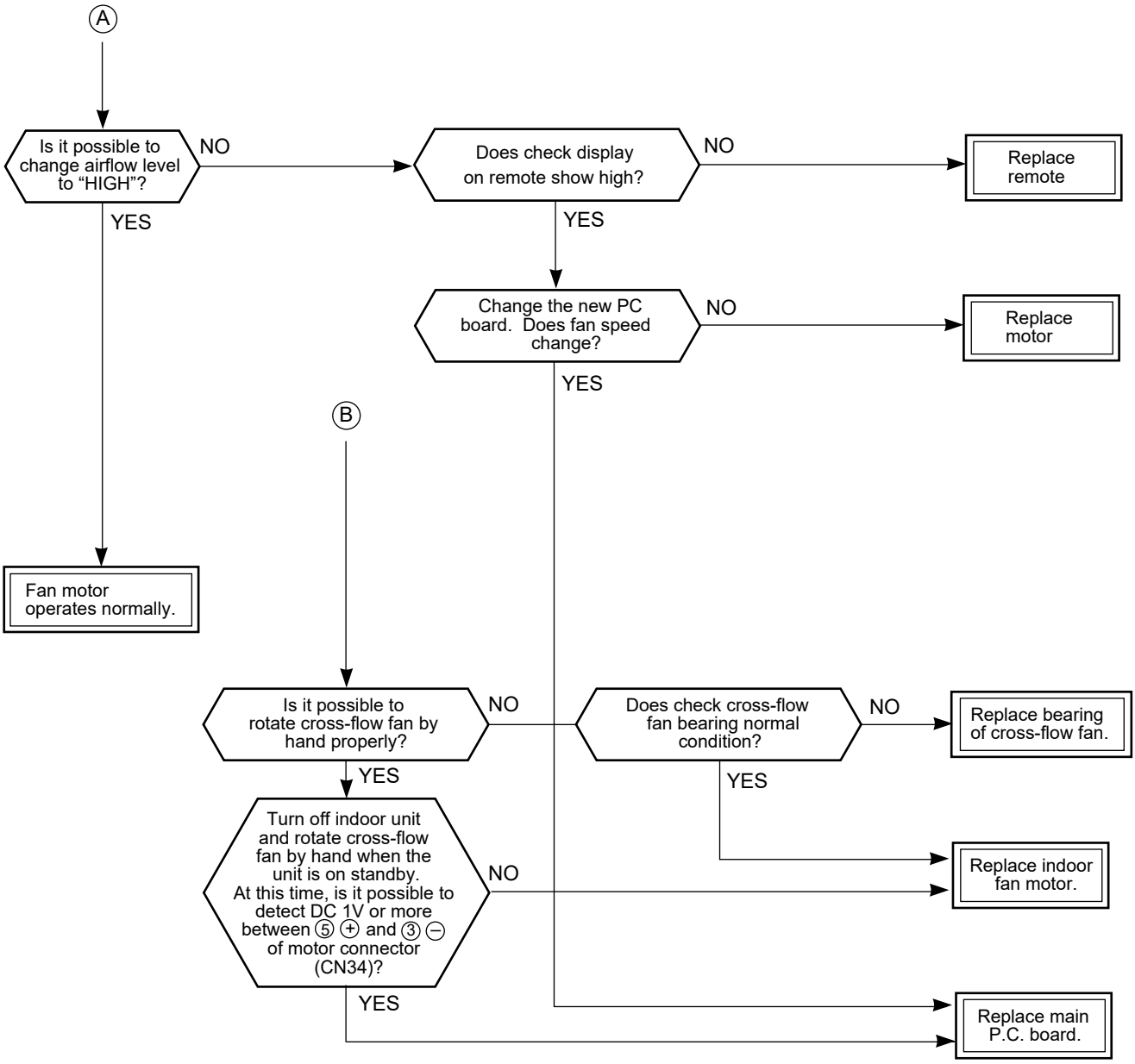


(3) Only the indoor motor fan does not operate

<Primary check>

1. Is it possible to detect the power supply voltage (AC220–240V) between ① and ② on the terminal block?
2. Does the indoor fan motor operate in cooling operation?
   (In heating operation, the indoor fan motor does not operate for approximately 10 minutes after it is turned on, to prevent a cold air from blowing in.)




A
Is it possible to change airflow level to “HIGH”?
NO
YES
Does check display on remote show high?
NO
YES
Replace remote
Change the new PC board. Does fan speed change?
NO
YES
Replace motor
Fan motor operates normally.
B
Is it possible to rotate cross-flow fan by hand properly?
NO
YES
Does check cross-flow fan bearing normal condition?
NO
YES
Replace bearing of cross-flow fan.
Turn off indoor unit and rotate cross-flow fan by hand when the unit is on standby. At this time, is it possible to detect DC 1V or more between ⑤ ⊕ and ③ ⊖ of motor connector (CN34)?
NO
YES
Replace indoor fan motor.
Replace main P.C. board.

(4) Indoor fan motor automatically starts to rotate by turning on power supply

[For DC fan motor]

<Cause>

The IC is built in the indoor fan motor. Therefore the P.C. board is also mounted to inside of the motor.

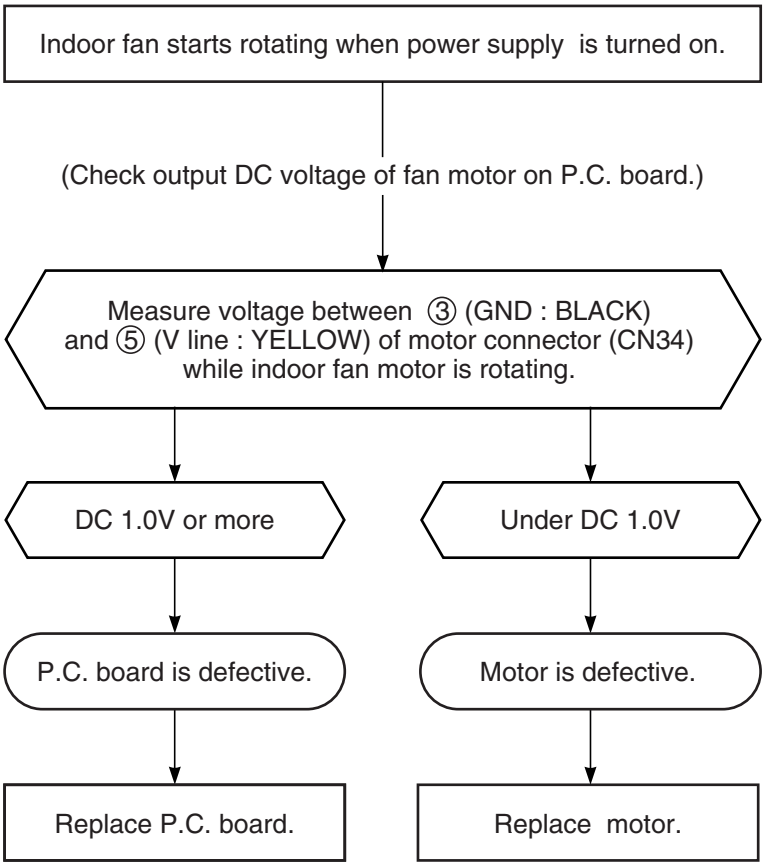
If the P.C. board is soldered imperfectly or the IC is defective, the fan motor may automatically rotate by turning on power supply.

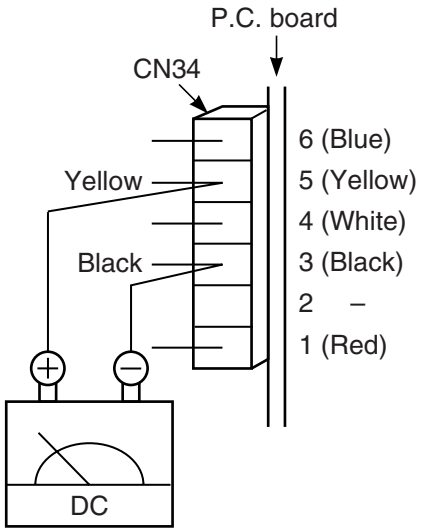
<Inspection procedure>

1. Remove the front panel. (Remove 2 screws.)
2. Remove the cover of the fan motor lead wires.
3. Check DC voltage with CN34 connector while the fan motor is rotating.

NOTE :

- Do not disconnect the connector while the fan motor is rotating.
- Use a thin test rod.

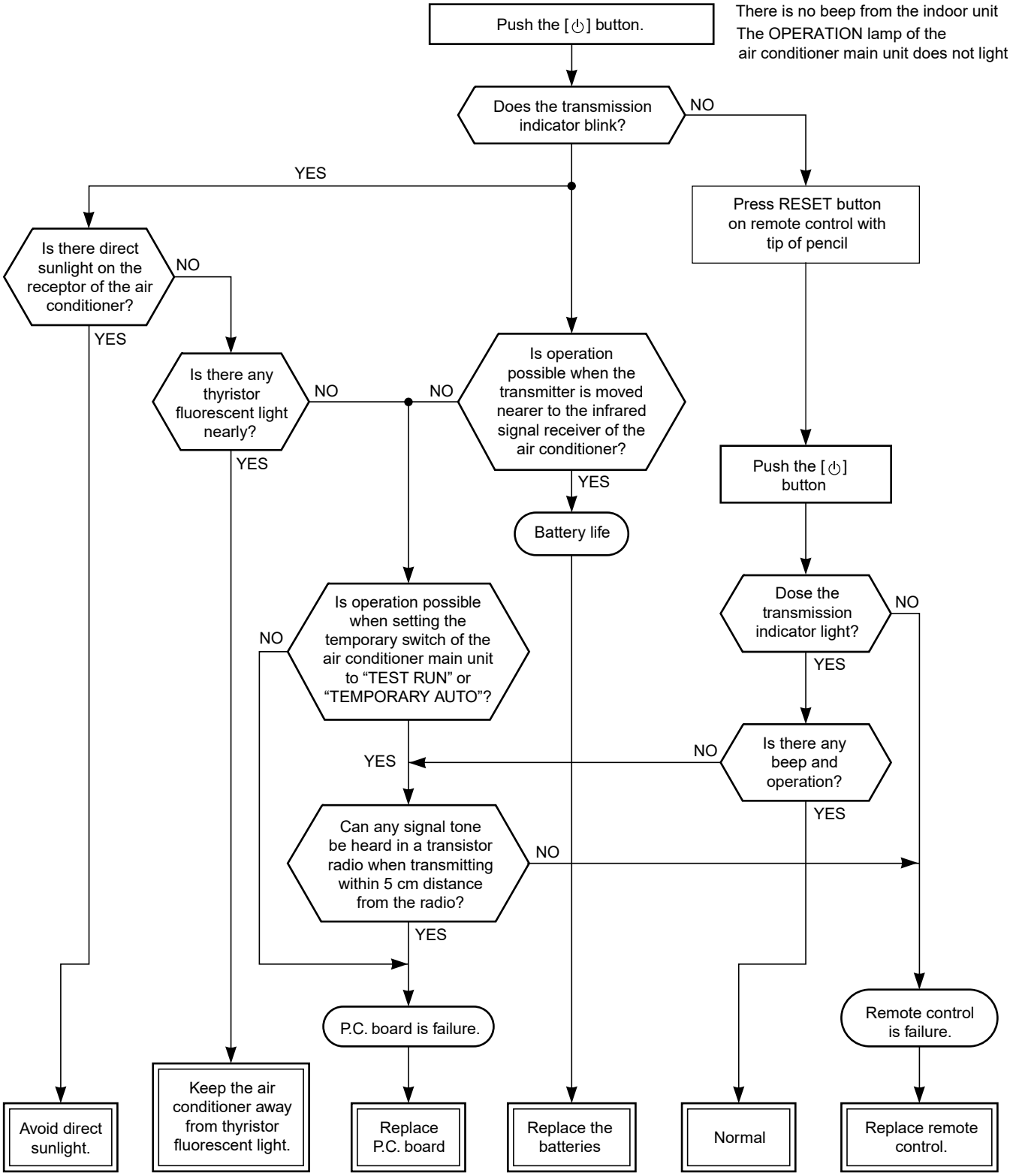




(5) Troubleshooting for remote controller

<Primary check>

Check that A or B selected on the main unit is matched with A or B selected on the remote controller.



11-6. How to Check Simply the Main Parts

11-6-1. How to Check the P.C. Board (Indoor Unit)

(1) Operating precautions

1) When removing the front panel or the P.C. board, be sure to shut off the power supply breaker.
2) When removing the P.C. board, hold the edge of the P.C. board and do not apply force to the parts.
3) When connecting or disconnecting the connectors on the P.C. board, hold the whole housing. Do not pull at the lead wire.

(2) Inspection procedures

1) When a P.C. board is judged to be defective, check for disconnection, burning, or discoloration of the copper foil pattern or this P.C. board.
2) The P.C. board consists of the following 2 parts.

a. Main P.C. board part :

DC power supply circuit, Indoor fan motor control circuit, CPU and peripheral circuits, buzzer, and Driving circuit of louver.

b. Indication unit of infrared ray receiving infrared ray receiving circuit, LED :

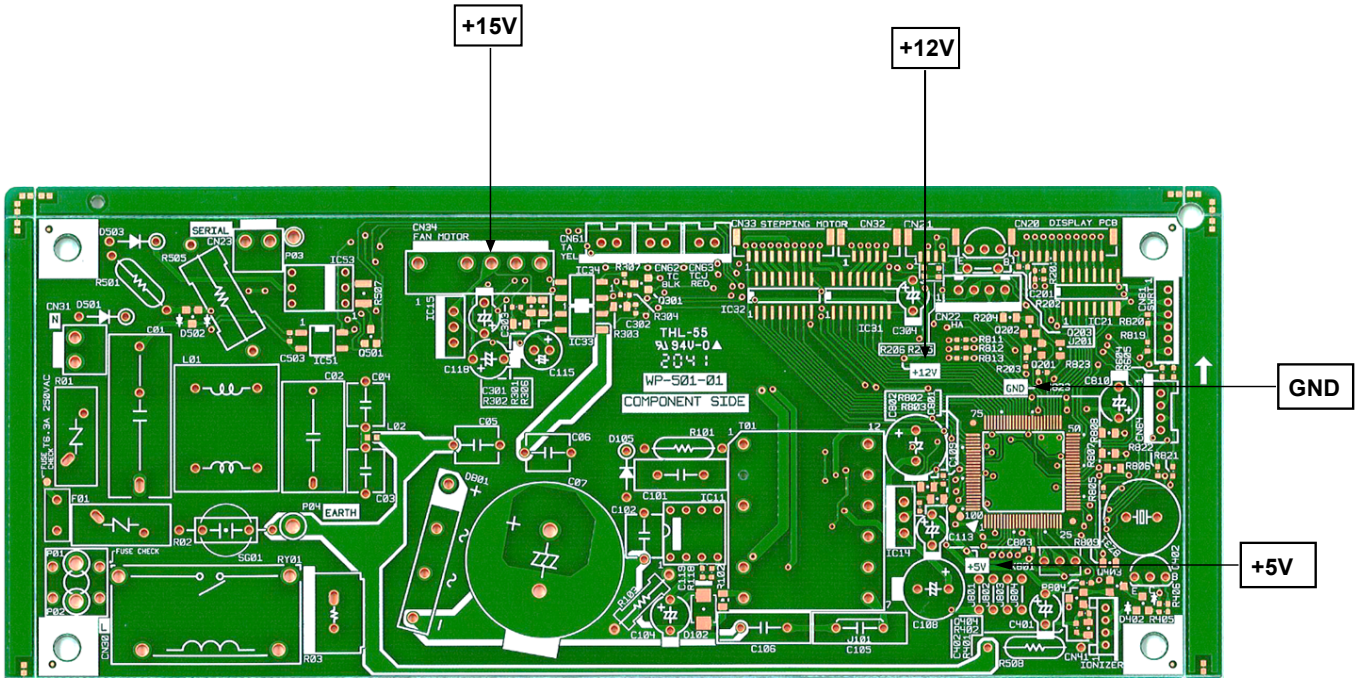
To check defect of the P.C. board, follow the procedure described below.

(3) Check procedures

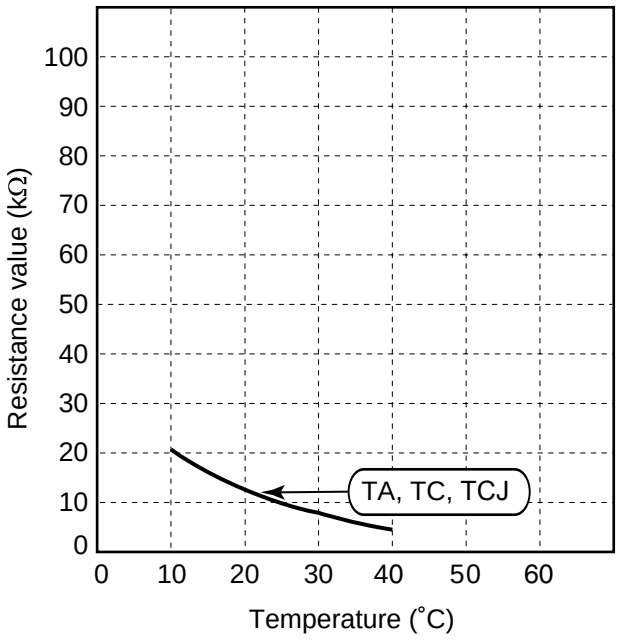
Table 11-6-1

No.	Procedure	Check points	Causes
1	Turn off the power supply breaker and remove the P.C. board assembly from electronic parts base. Remove the connecting cables from the terminal block.	Check whether or not the fuse (F01) is blown.	Impulse voltage was applied or the indoor fan motor short-circuited.
2	Remove the connector of the motor and turn on the power supply breaker. If OPERATION indicator flashes (once per second), it is not necessary to check steps (1 to 4) in the right next column.	Check power supply voltage : 1. Between Pin 4 of CN30 and CN31 (AC 220–240V) 2. Between ⊕ and ⊖of C01 (DC 310–340V) 3. Between 12V and GND 4. Between 5V and GND	1. The terminal block or the crossover cable is connected wrongly. 2. The fuse (F01), line filter (L01), resistor (R03), or the diode (DB01) is defective. 3. T01 is defective. 4. IC14 and T01 are defective.
3	Push [⏻] button once to start the unit. (Do not set the mode to On-Timer operation.)	Check power supply voltage : 1. Between CN23 and CN31 (DC 15–60V)	IC52 and IC53 are defective.
4	Shorten the restart delay timer and start unit.	Check whether or not all indicators (OPERATION,TIMER, HI-POWER, ECO, Wireless adepter) are lit for 3 seconds and they return to normal 3 seconds later.	The indicators are defective or the housing assembly (CN20) is defective.
5	Push [⏻] button once to start the unit. • Shorten the restart delay timer. • Set the operation mode to COOL. • Set the fan speed level to AUTO. • Set the preset temperature much lower than the room temperature. (The unit (compressor) operates continuously in the above condition.)	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely low. 2. The connection of the heat exchanger sensor is loose. (The connector is disconnected.) (CN62, CN63) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective.
6	If the above condition (No. 5) still continues, start the unit in the following condition. • Set the operation mode to HEAT. • Set the preset temperature much higher than room temperature.	1. Check whether or not the compressor operates. 2. Check whether or not the OPERATION indicator flashes.	1. The temperature of the indoor heat exchanger is extremely high. 2. The connection of the heat exchanger sensor short-circuited. (CN62, CN63) 3. The heat exchanger sensor and the P.C. board are defective. (Refer to Table 11-4-1.) 4. The main P.C. board is defective
7	Connect the motor connector to the motor and turn on the power supply. Start the unit the following condition. • Set the fan speed level to HIGH. (The unit (compressor) operates continuously in the above condition in No. 5.)	1. Check it is impossible to detect the voltage (AC120V or higher voltage) between red and black lead of the motor. 2. The motor does not operate or the fan motor does not rotate with high speed. (But it is possible to receive the signal from the remote controller.) 3. The motor rotates but vibrates strongly.	1. The indoor fan motor is defective. (Protected operation of P.C. board.) 2. The P.C. board is defective. 3. The connection of the motor connector is loose.

11-6-2. P .C . Board Layout

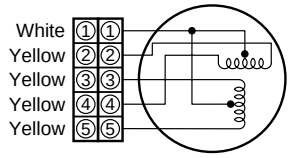


[1] Sensor characteristic table



TA : Room temp. sensor
TC, TCJ : Heat exchanger temp. sensor

11-6-3. Indoor Unit (Other Parts)

<table>
<tr><th>No.</th><th>Part name</th><th>Checking procedure</th></tr>
<tr><td>1</td><td>Room temp. (TA) sensor
Heat exchanger (TC, TCJ) sensor</td><td>Disconnect the connector and measure the resistance value with tester.
(Normal temp.)
<table>
<tr><th>Temperature / Sensor</th><th>10°C</th><th>20°C</th><th>25°C</th><th>30°C</th><th>40°C</th></tr>
<tr><td>TA, TC, TCJ (kΩ)</td><td>20.7</td><td>12.6</td><td>10.0</td><td>7.9</td><td>4.5</td></tr>
</table></td></tr>
<tr><td>2</td><td>Remote controller</td><td>Refer to 11-5-1. (5).</td></tr>
<tr><td>3</td><td>Louver motor
24BYJ48-ST
MSBPC20F04</td><td>Measure the resistance value of each winding coil by using the tester.
(Under normal temp. 25°C)
 

<table>
<tr><th>Position</th><th>Resistance value</th></tr>
<tr><td rowspan="2">1 to 2
1 to 3
1 to 4
1 to 5</td><td>24BYJ48-ST
200Ω ± 7%</td></tr>
<tr><td>MSBPC20F04
250Ω ± 7%</td></tr>
</table>
at 25°C</td></tr>
<tr><td>4</td><td>Indoor fan motor</td><td>Refer to 11-5-1. (3) and (4).</td></tr>
</table>

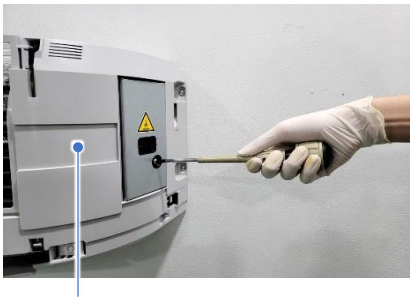
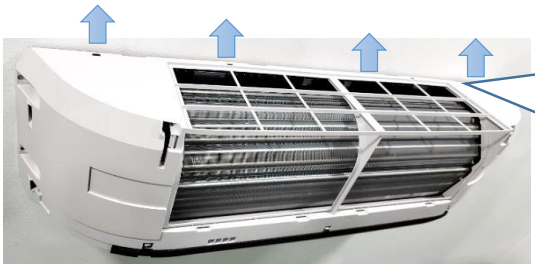
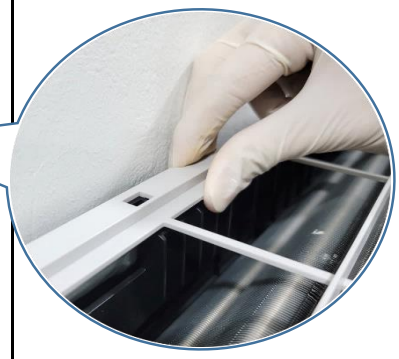
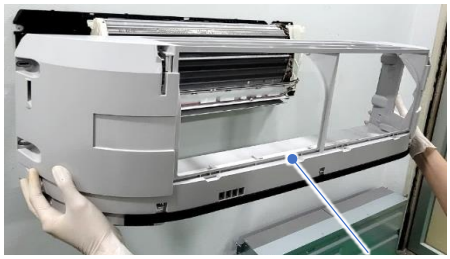
12. HOW TO REPLACE THE MAIN PARTS

WARNING

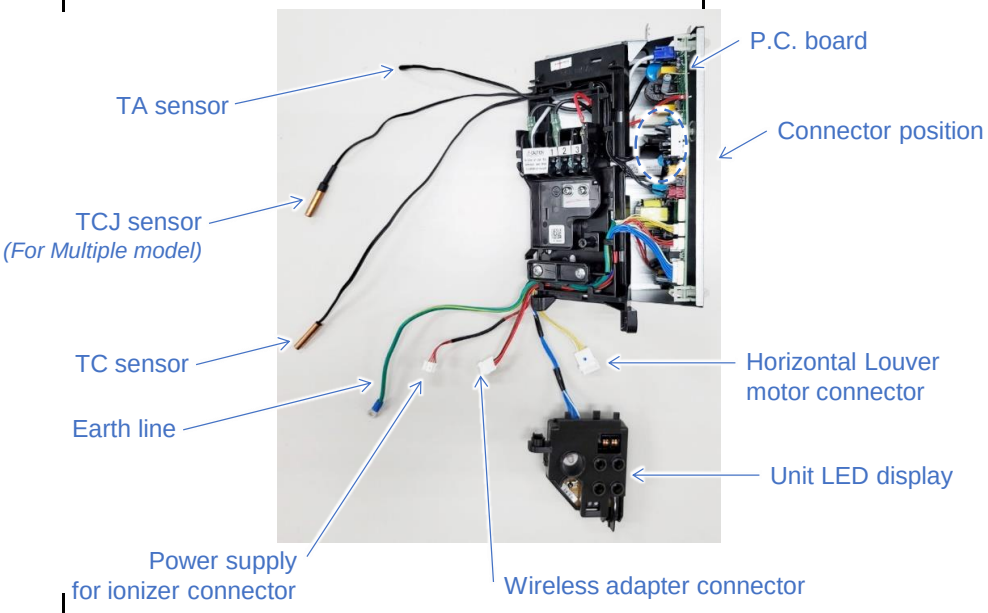
- Since high voltages pass through the electrical parts, turn off the power without fail before proceeding with the repairs. Electric shocks may occur if the power plug is not disconnected.
- After the repairs have been completed (after the front panel and cabinet have been installed), perform a test run, and check for smoking, unusual sounds and other abnormalities.
  If this check is omitted, a fire and/or electric shocks may occur.
  Before proceeding with the test run, install the front panel and cabinet.
- Ensure that the following steps are taken when doing repairs on the refrigerating cycle.
  1. Do not allow any naked flames in the surrounding area.
     If a gas stove or other appliance is being used, extinguish the flames before proceeding.
     If the flames are not extinguished, they may ignite any oil mixed with the refrigerant gas.
  2. Do not use welding equipment in an airtight room.
     Carbon monoxide poisoning may result if the room is not properly ventilated.
  3. Do not bring welding equipment near flammable objects.
     Flames from the equipment may cause the flammable objects to catch fire.
- **If keeping the power on is absolutely unavoidable while doing a job such as inspecting the cir-cuitry, wear rubber gloves to avoid contact with the live parts.**
  Electric shocks may be received if the live parts are touched.
  High-voltage circuits are contained inside this unit.
  Proceed very carefully when conducting checks since directly touching the parts on the control circuit board may result in electric shocks.

12-1. Indoor unit

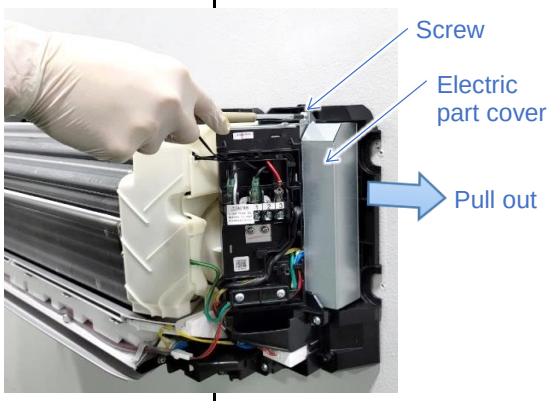
No.	Part name	Procedures	Remarks
①	Air inlet grille	1) Stop operation of the air conditioner and turn off its main power supply. 2) Open the air inlet grille and push the arm toward the outside, and remove the grille. 	
②	Air filters	1) Follow to the procedure in the item ①.  2) Push up the rib air filter and remove the air filters left and right from the front panel.	

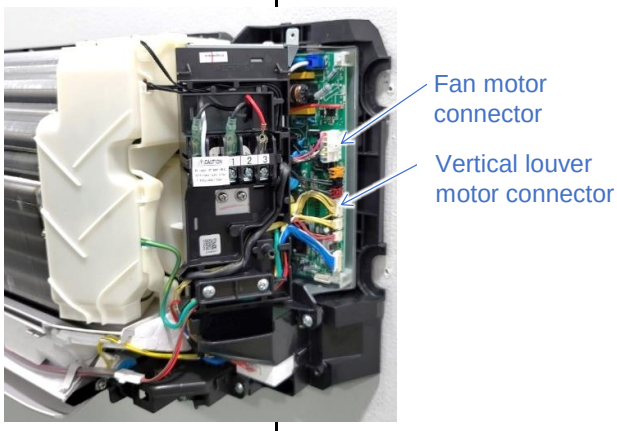
No.	Part name	Procedures	Remarks
3	Front panel	1) Stop operation of the air conditioner and turn off its main power supply. 2) Remove screw holding the terminal cover  Front panel  Terminal cover 3) Remove the fixing screw (2 pcs) on front panel.  Screw  4) Take off the hooks of front panel from top side of the back body.   5) Slightly open the lower part of the front panel then pull the upper part of the front panel toward you to remove it as shown on figure  Front panel 	

No.	Part name	Procedures	Remarks
④	Electrical part	1) Follow the procedure item ③.	

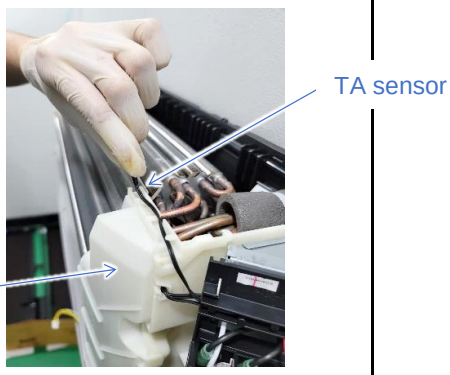


2) Remove screw holding the electrical part cover.
3) Disconnect the connectors for the fan motor and vertical louver motor from P.C. board assembly.

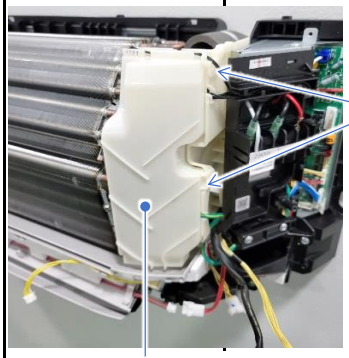


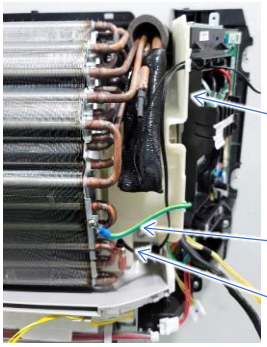


4) Remove TA sensor from the cover drain

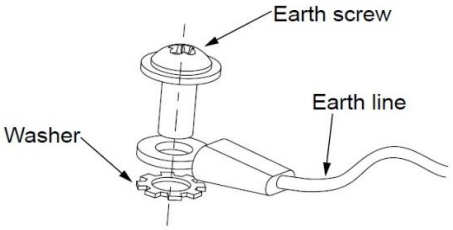


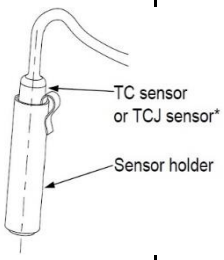
No.	Part name	Procedures	Remarks
4	Electrical part	5) Remove the cover drain from main unit.	



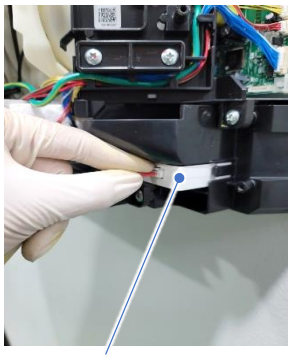


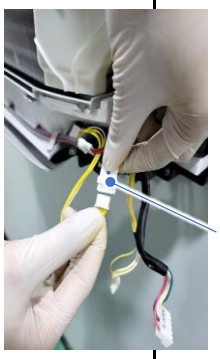
6) Remove the earth screw and earth line from the evaporator.
7) Pull out TC, TCJ sensor from sensor holder of the evaporator.



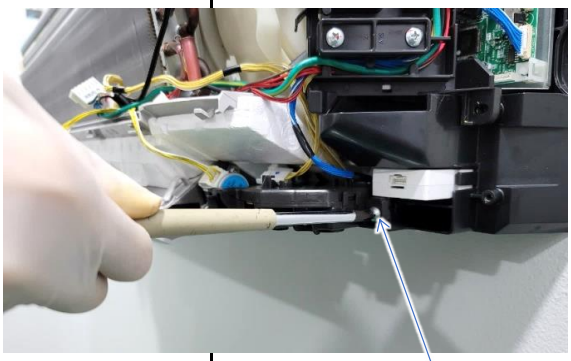


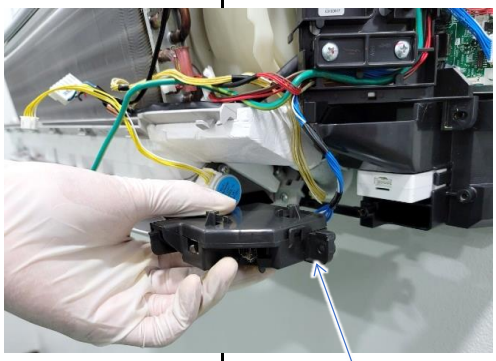
8) Disconnect the connector of Ionizer, wireless adapter and Horizontal louver motor



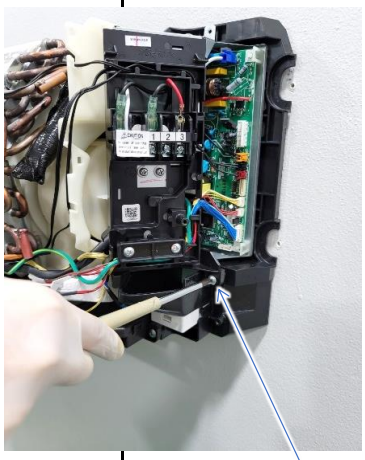


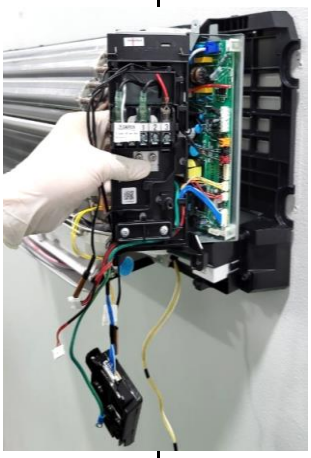
No.	Part name	Procedures	Remarks
4	Electrical part	9) Remove the fixing screw that secures unit LED display then pull out from main body.	

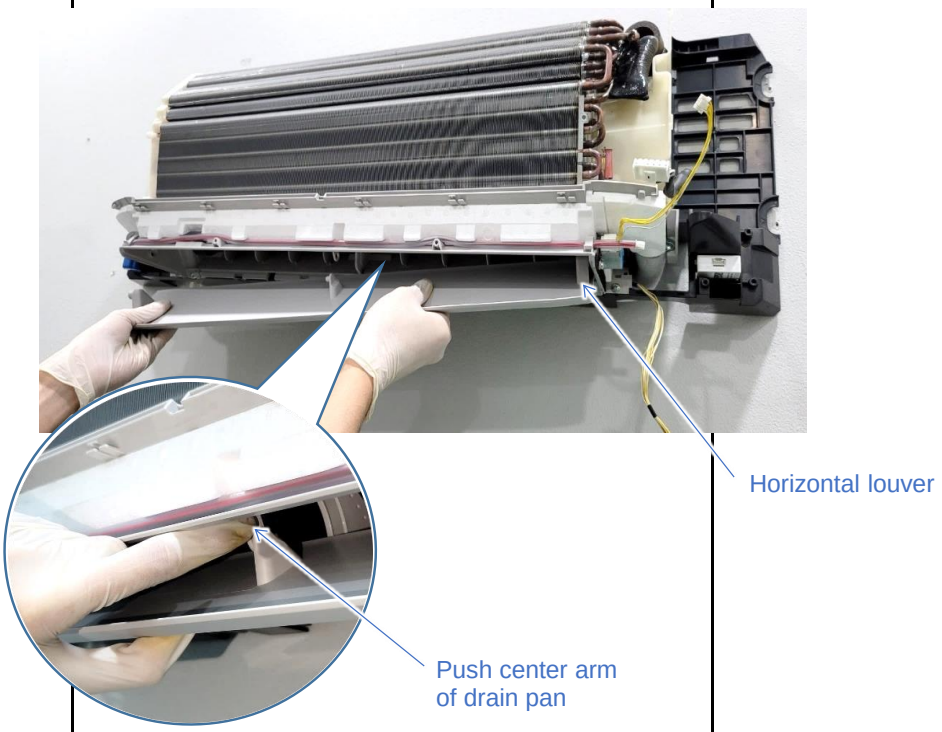




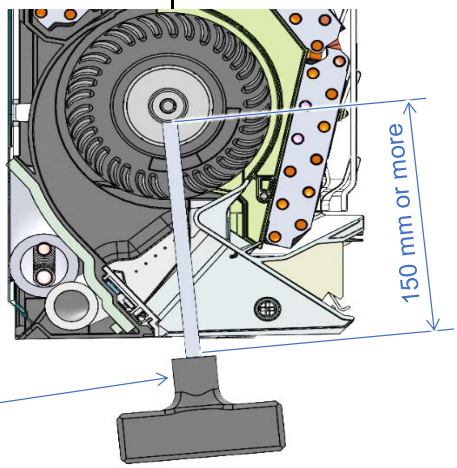
10) Remove the fixing screw that secures the electrical box then pull out from main body.



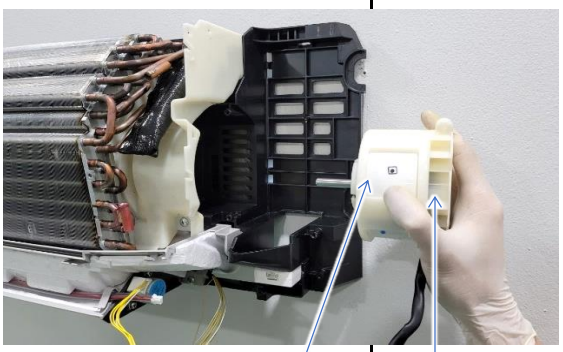


No.	Part name	Procedures	Remarks
5	Horizontal louver	1) Remove center shaft of the horizontal louver from the drain pan then remove side shaft. 	

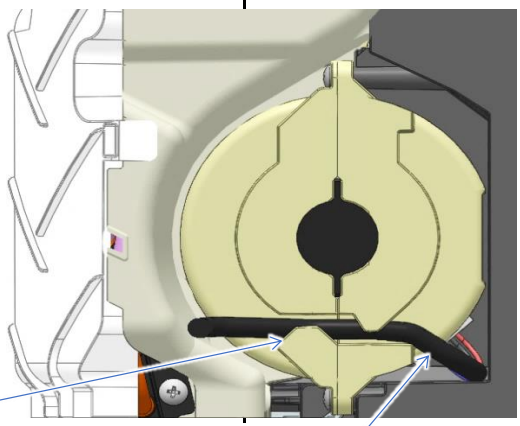
No.	Part name	Procedures	Remarks
⑥	Fan motor	1) Follow the procedure item ③, ④ and ⑤ 2) Loosen the set screw of the cross flow fan.	

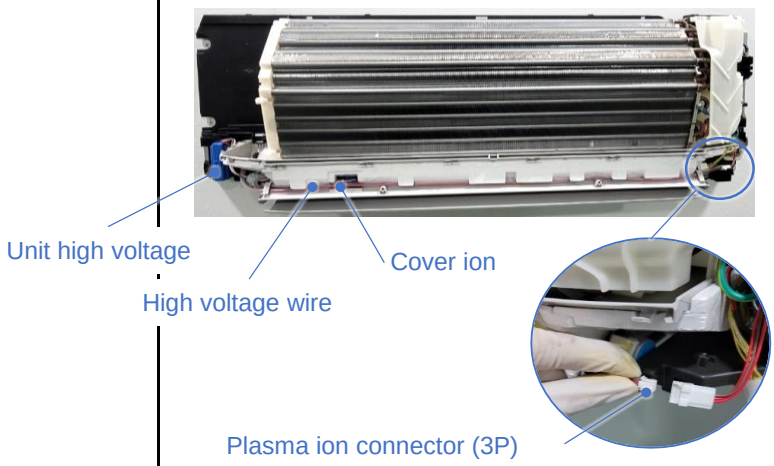
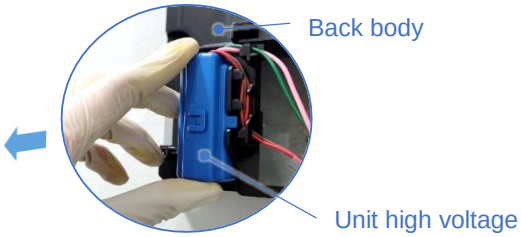
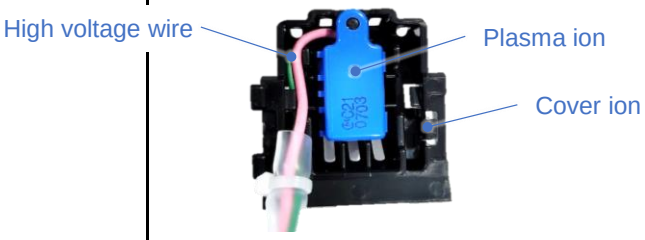
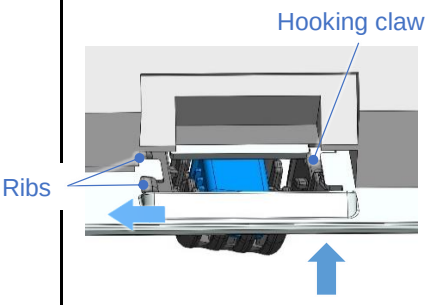


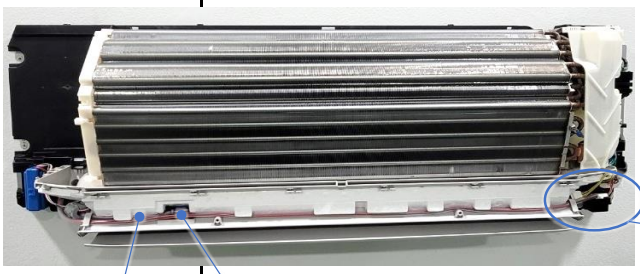
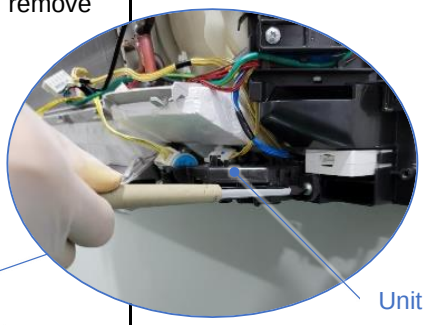
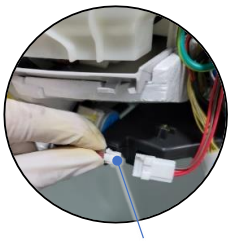
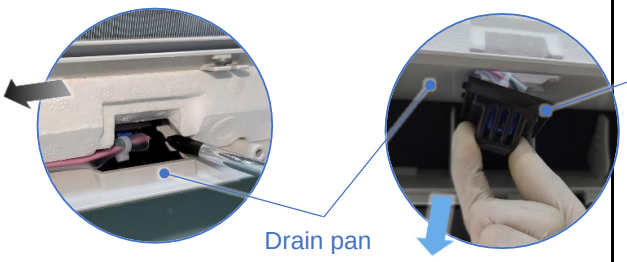
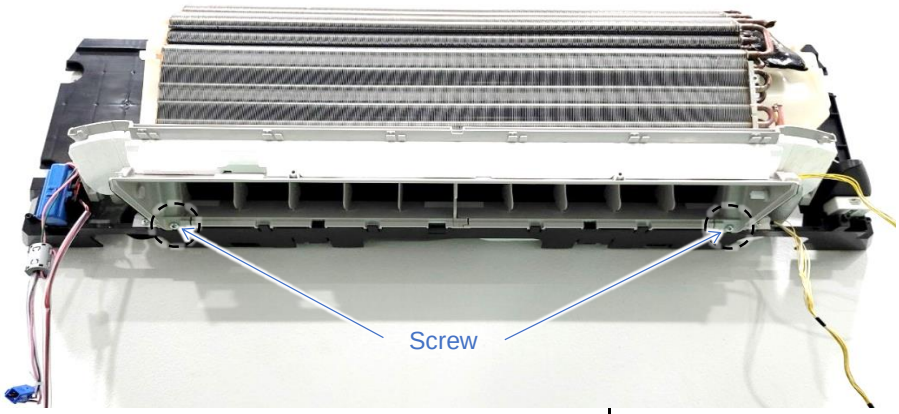
3) Remove 2 fixing screws of the motor band.
4) Pull motor band and fan motor outward.

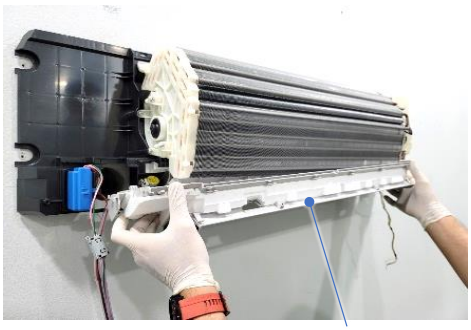
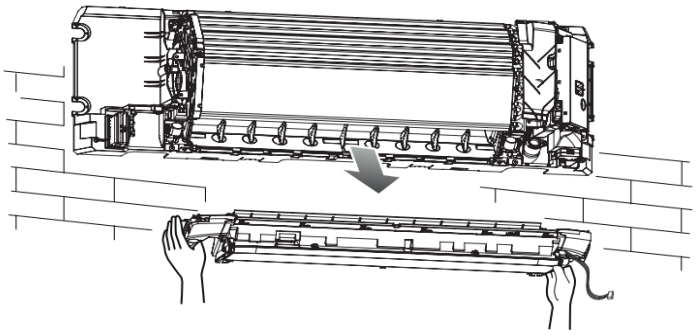
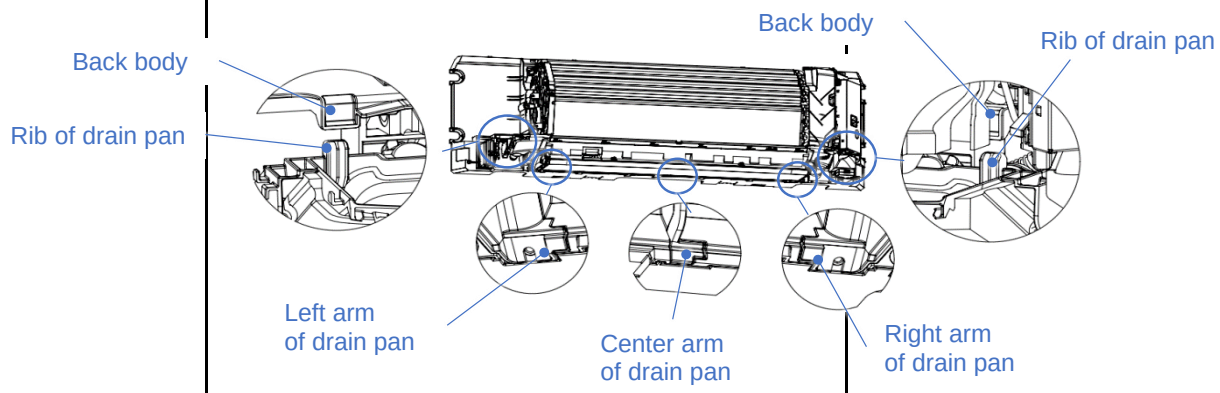
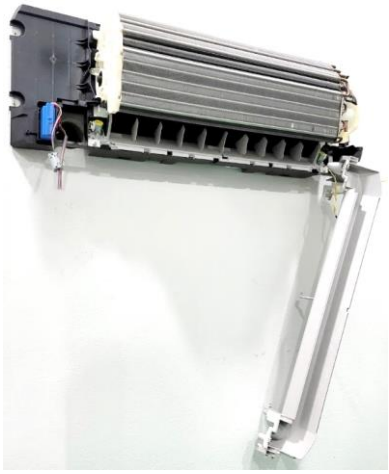


<To re-installation>
- Check the type name of fan motor.
- Keep connector position and arrange fan motor wires follow figure.

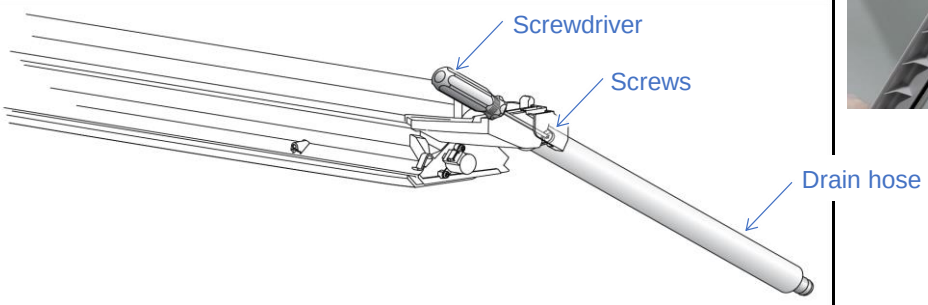


No.	Part name	Procedures	Remarks
⑦	Plasma ion assembly	1) Follow the procedure item ③ 2) Disconnect the plasma ion connector.  3) Remove cover ion by push hooking claw to left side direction and then pulling out of the drain pan.  4) Pulling out the high voltage unit from back body.  **<To re-installation>** - Arrange high voltage wire follow the figture.  - Insert 2 ribs into the drain pan. - Press hooking claw to the drain pan.	

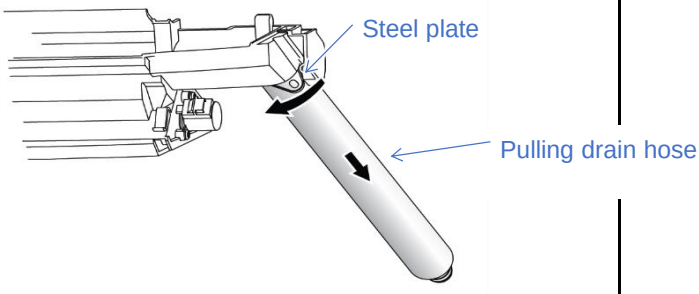
No.	Part name	Procedures	Remarks
⑧	Drain pan assembly	1) Follow the procedure item ③ 2) Remove fixing screw of the unit display and remove unit display.   Unit display Cover ion High voltage wire Louver motor HR connector (white)  3) Disconnect the cord motor of Louver-HR (5P) 4) Disconnect the plasma ion connector.  Plasma ion connector (3P) 5) Remove cover ion by push hooking claw to left side direction and then pulling out of the drain pan.  Cover ion Drain pan 6) Remove fixing screw of drain pan 2 positions follow the figture.  Screw	

No.	Part name	Procedures	Remarks
⑧	Drain pan assembly	7) Remove drain pan can be selected remove drain hose or not remove drain hose following: **- Not remove drain hose;** Pulling out the drain pan from back body, then holding the drain pan with main unit.  Drain pan **- Remove drain hose;** Drain hose can be removed follow the procedure item⑨. After that remove the drain pan from main unit.  **<To re-installation>** - Press the drain pan into the back body. - Please make sure ribs of drain pan in left and right side must be install to lock position. - Press the right, left and center arms of drain pan to back body.  Back body Rib of drain pan Back body Rib of drain pan Left arm of drain pan Center arm of drain pan Right arm of drain pan	

No.	Part name	Procedures	Remarks
⑨	Drain hose	1) Follow the procedure item ③ . 2) The drain hose can be removed by removing the screw securing the drain hose then secure rotate steel plate of drain hose to out of the drain pan and pulling out the drain hose	

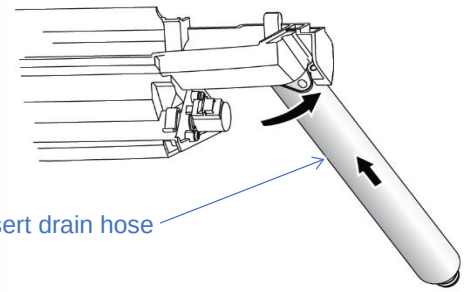


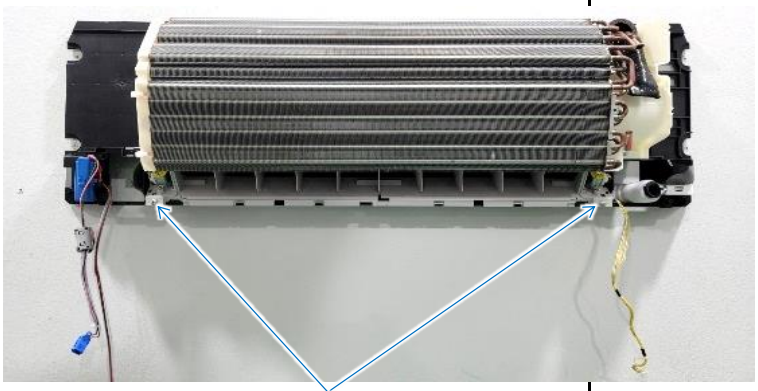
3) When removing the drain hose, be careful of any sharp edges of steel plate. The edges can injuries.



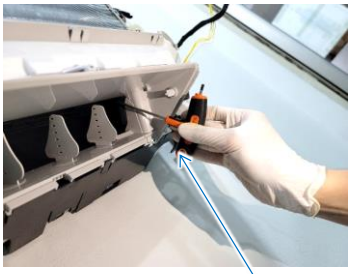
<To re-installation>

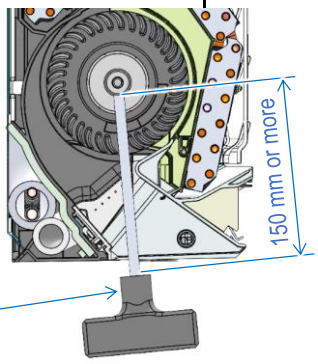
- To install the drain hose, insert the drain hose firmly until the connection part contacts with heat insulator, secure push steel plate of drain hose to predetermined position of Drain pan then fix it by original screw.



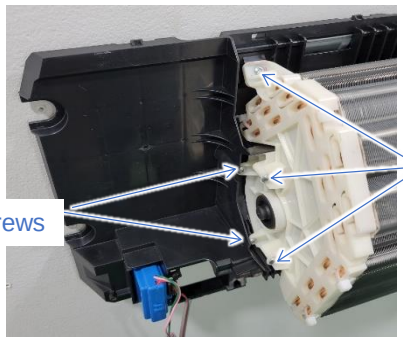
No.	Part name	Procedures	Remarks
⑩	Vertical louver assembly	1) Remove drain pan follow the procedure item ③ and ⑧.  Screws 2) Remove 2 fixing screws from the base vertical louver, then remove the vertical louver assembly from the main body.  Vertical louver assembly	

No.	Part name	Procedures	Remarks
(11)	Cross flow fan	1) Follow the procudure item ⑧ and ⑩. 2) Loosen the set screw of the cross flow fan.	





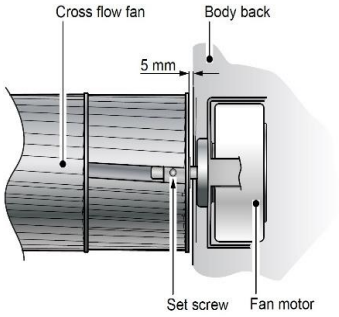
3) Remove 2 fixing screws from the bearing base and 3 fixing screws of evaporator, then remove it from the main unit.



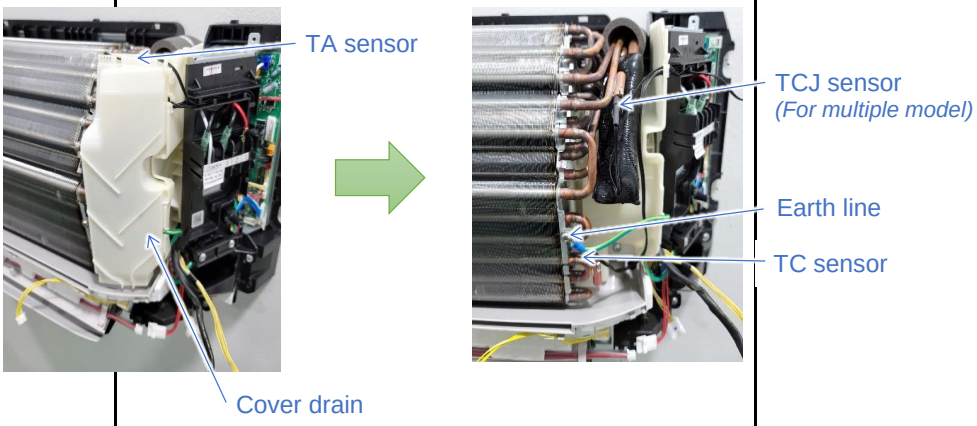
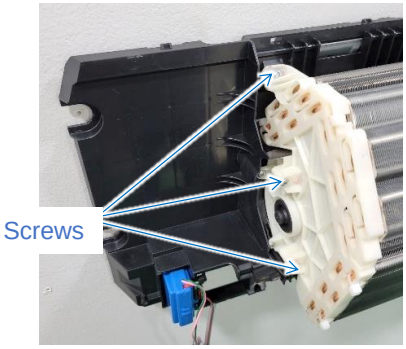
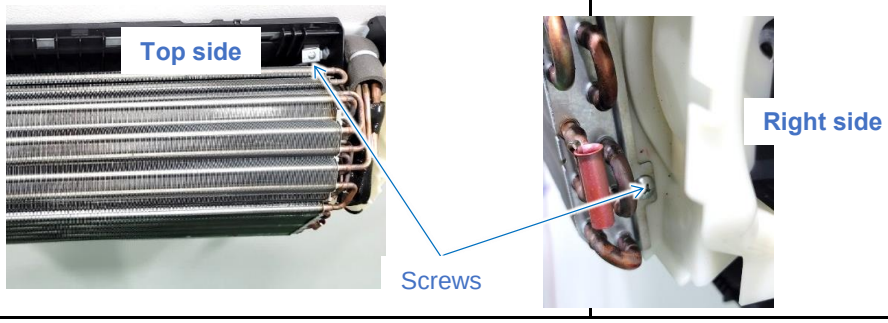
4) Lift up the heat exchanger follow the figure. Pull out the left hand side until the cross flow fan released from the shalf of the fan motor and thenpull out the lower side of heat exchanger follow the figure.

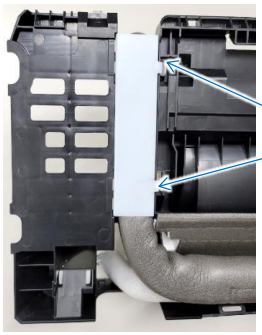
<To re-installation>

1) To incorporate the fan motor and the motor into the position in the following figure.



- Install the cross flow fan so that the right end if the 1st joint from the right of the cross flow fan is keep 5mm from closed wall of the main unit.

No.	Part name	Procedures	Remarks
(12)	Heat exchanger (Evaporator)	1) Follow the procedure item ③ . 2) Remove TA sensor, cover drain, TC/TCJ sensor and earth line from the heat exchanger.  3) Remove 3 fixing screws at the left side of the heat exchanger.  4) Remove 2 fixing screws at the upper and the bottom right side of the heat exchanger. 	

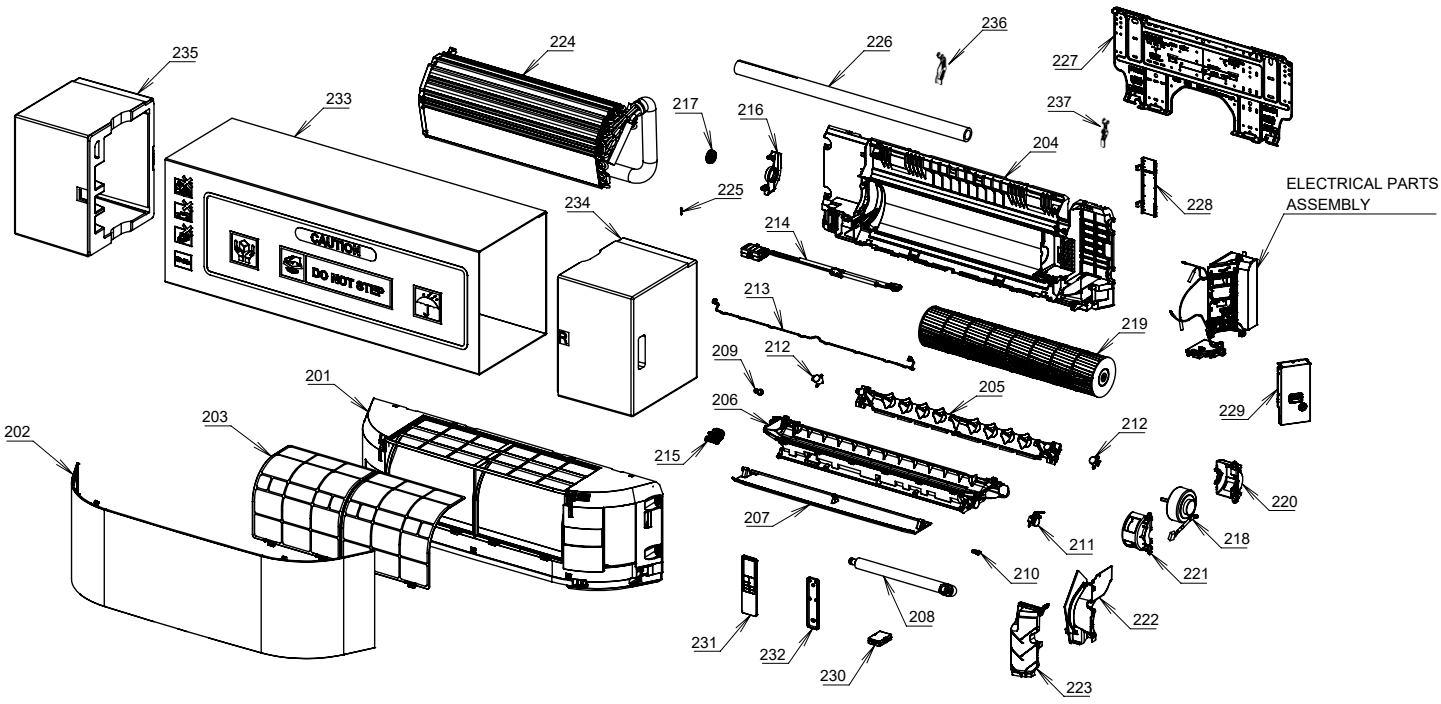
No.	Part name	Procedures	Remarks
(12)	Heat exchanger (Evaporator)	5) Remove the pipe holder from the rear side of the main unit.  6) Pull out the heat exchanger to upper side  **<To re-installation>** - Keep the back body horizontally and put the heat exchanger to the back body - Make sure the heat exchanger can be assembled with the back body and secure it tightly with screws.	

Microcomputer

No.	Part name	Procedure	Remarks
①	Common procedure	1) Turn the power supply off to stop the operation of air-conditioner. 2) Remove the front panel. • Remove the 2 fixing screws. 3) Remove the electrical part base.	Replace terminal block, microcomputer ass'y and the P.C. board ass'y.

13. EXPLODED VIEWS AND PARTS LIST

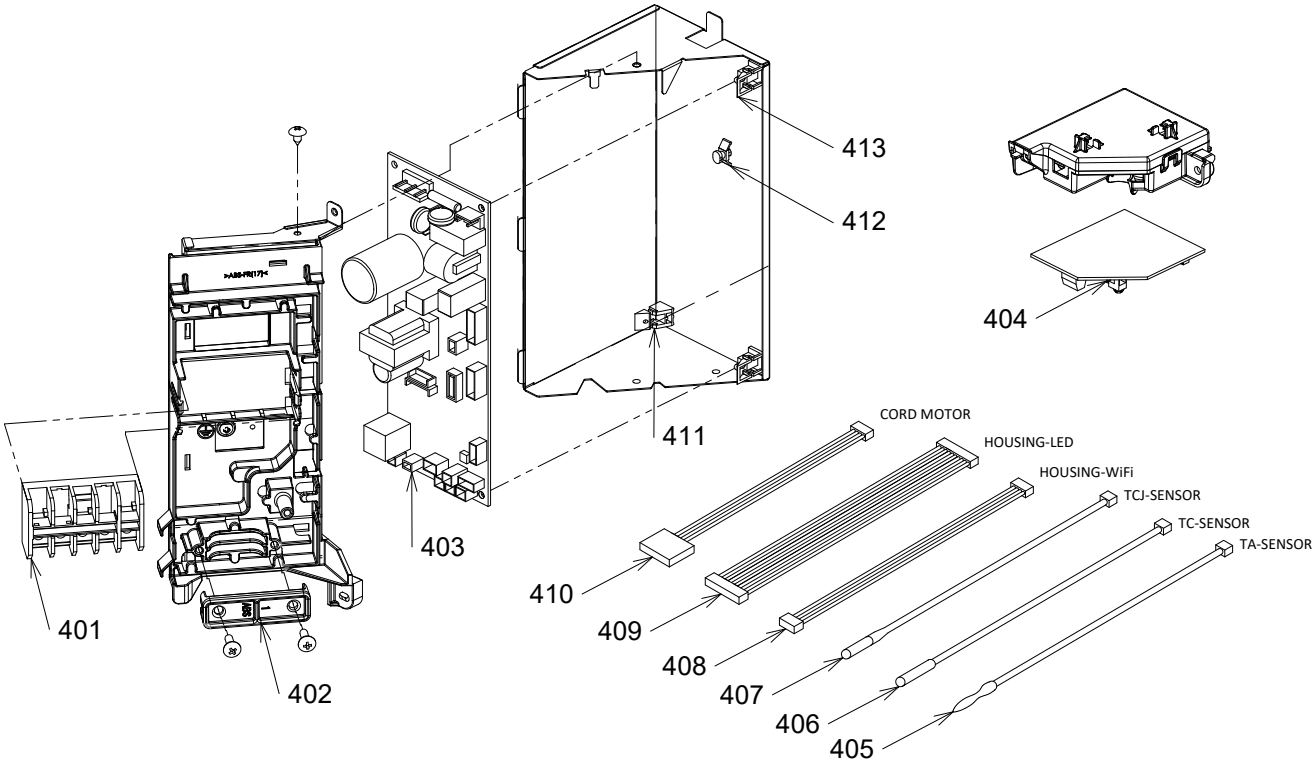
13-1. Indoor Unit



Location No.	Part No.	Description
201	43T00823	FRONT PANEL ASSY
202	43T09592	GRILLE OF AIR INLET ASSY
203	43T80363	AIR FILTER
204	43T03421	BACK BODY ASSY
205	43T22418	VERTICAL LOUVER ASSY
206	43T72364	DRAIN PAN ASSY
207	43T22376	HORIZONTAL LOUVER
208	43T70321	DRAIN HOSE
209	43T79322	DRAIN CAP
210	43125202	COVER-AXIS
211	43T21478	MOTOR; STEPPING
212	43T21434	STEPPING-MOTOR
213	43T60634	VERTICAL MOTOR CORD
214	43T80362	HIGH VOLTAGE UNIT ASSY
215	43T80354	IONIZER UNIT COVER
216	43T22377	BASE BEARING
217	43T22312	BEARING ASSY, MOLD
218	43T21488	MOTOR FAN
219	43T20361	CROSS FLOW FAN ASSY

Location No.	Part No.	Description
220	43T39423	MOTOR BAND BACK
221	43T39424	MOTOR BAND FRONT
222	43T39425	MOTOR COVER
223	43T79326	DRAIN COVER
224	43T44713	REFRIGERATION CYCLE ASSY
225	43T19333	HOLDER, SENSOR
226	43T11321	PIPE-SHIELD
227	43T82346	INSTALLATION PLATE ASSY
228	43T49388	PIPE HOLDER
229	43T62396	TERMINAL COVER ASSY
230	43T66421	WIRELESS ADAPTER (WRE-T00BJ10)
231	43T66422	WIRELESS REMOCO
232	43T66423	HOLDER, REMOTE CONTROL
233	43T91410	PACKING SLEEVE
234	43T91411	PACKING CUSHION RIGHT
235	43T91412	PACKING CUSHION LEFT
236	43T79328	DRAIN COVER LEFT
237	43T79329	DRAIN COVER RIGHT

13-2. Indoor Unit (Part-E)



Location No.	Part No.	Description
401	43T6V695	TERMINAL(3P)
402	43T62340	CORD-CLAMP
403	43TN9743	PC BOARD (WP-501)
404	43T6W727	PC BOARD ASSY : WRS-LED
405	43T50399	TEMPERATURE SENSOR
406	43T50393	TEMPERATURE SENSOR
407	43T50400	TEMPERATURE SENSOR

Location No.	Part No.	Description
408	43T60533	HOUSING-WiFi
409	43T60537	HOUSING-LED
410	43T60538	CORD-MOTOR
411	43T95302	SPACER(EDGE)
412	43T95303	SUPPORTER, ASSY
413	43T95304	SPACER-KGES

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