

HITACHI HITACHI SPLIT UNIT AIR CONDITIONER INSTALLATION MANUAL

INDOOR UNIT / OUTDOOR UNIT RAK-18PSC/RAC-18WSC RAK-25PSC/RAC-25WSC RAK-35PSC/RAC-35WSC

Carefully read through the procedures of proper installation before starting installation work.

- Tools Needed For Installation Work: Measuring Tape, Knife, Saw, Pipe Cutter, Hexagonal Wrench, Power Drill, Vacuum Pump, Pliers or Wrench, Torque Wrench, Vacuum Pump Adaptor, Flare Tool, Gas Leakage Detector, Manifold Valve, Charge Hose.

SAFETY PRECAUTION

- Read the safety precautions carefully before operating the unit. The contents of this section are vital to ensure safety. Please pay special attention to the following sign. WARNING: Incorrect methods of installation may cause death or serious injury. CAUTION: Improper installation may result in serious consequence. Make sure to connect earth line. This sign in the figures indicates prohibition.

WARNING

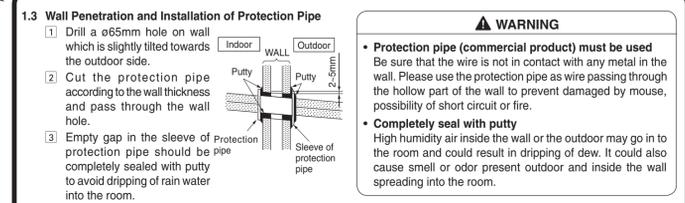
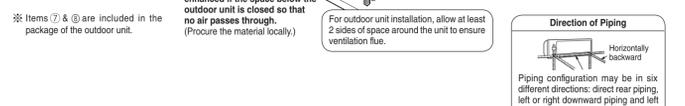
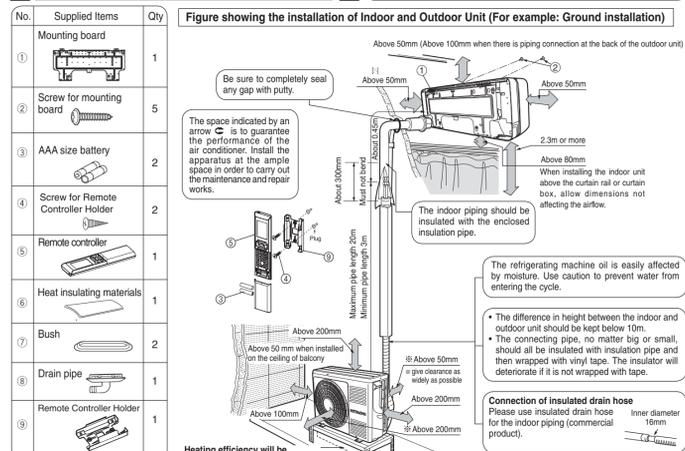
- Please request your sales agent or qualified technician to install your unit. Water leakage, short circuit or fire may occur if you do the installation work yourself. Please observe the installation stated in the installation manual during the process of installation. Make sure that the units are mounted at locations which are able to provide full support to the weight of the units. Observe the rules and regulations of the electrical installation and the methods described in the installation manual when dealing with the electrical work. Be sure to use the specified cables for connecting the indoor and outdoor units. Be sure to use the specified piping set for R410A. When installing or transferring an air conditioner to another location, make sure that air other than the specified refrigerant (R410A) does not enter the refrigeration cycle. Be sure to ventilate fully if a refrigerant gas leak while at work. After completion of installation work, check to make sure that there is no refrigeration gas leakage. Unauthorized modifications to the air conditioner may be dangerous. Be sure to connect the earth line from the power supply wire to the outdoor unit and between the outdoor and indoor unit. When finishing the refrigerant collection (pumping down), stop the compressor and then remove the coolant pipe. The electric cables should never be reworked nor added. Make sure to use an exclusive circuit breaker. Otherwise fire or electric shock might occur by connection failure, isolation failure or over current. Make sure to connect cables to terminal properly and terminal cover should close firmly. Make sure that there is no dust on any connection points of electric cables and fix firmly. Otherwise, fire or electric shock might occur.

CAUTION

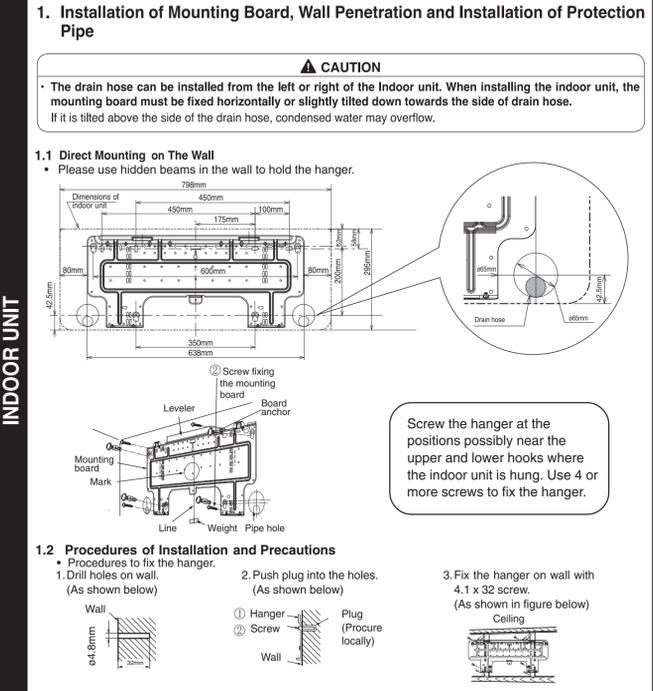
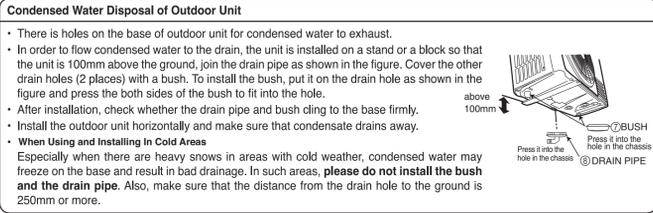
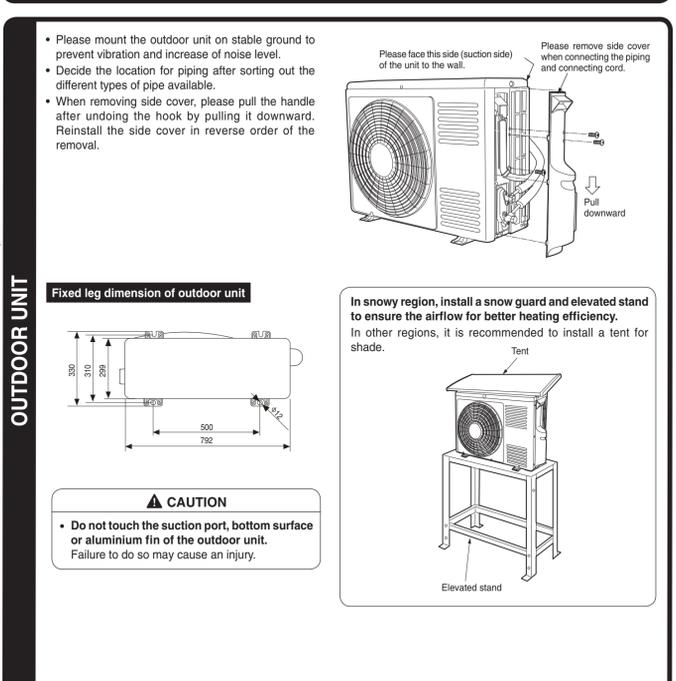
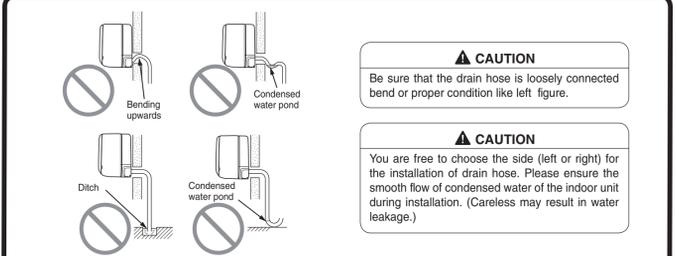
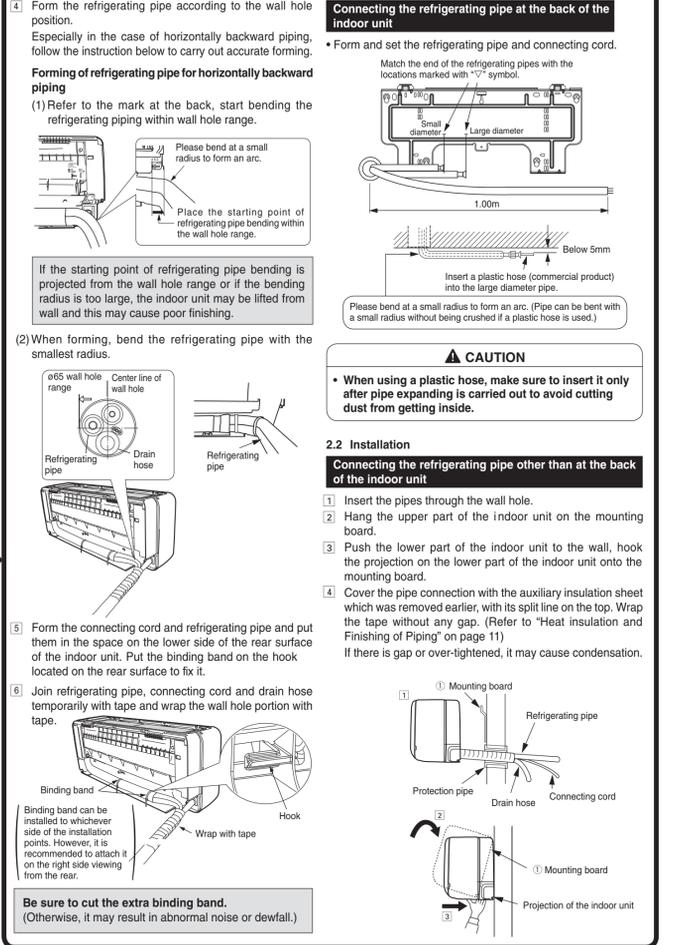
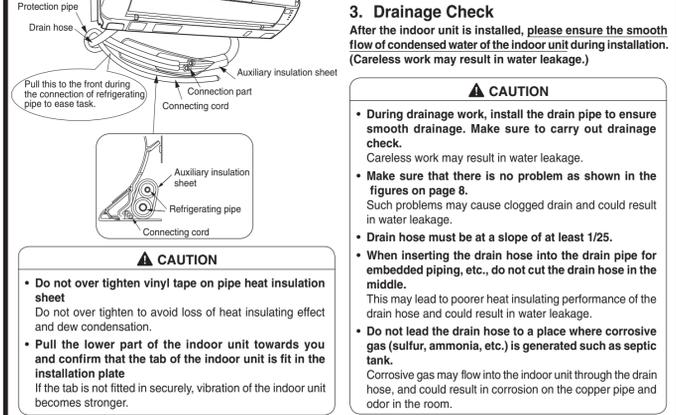
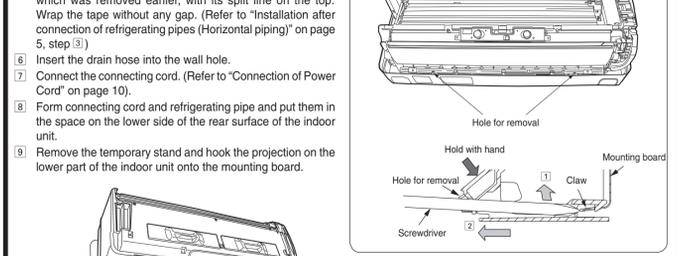
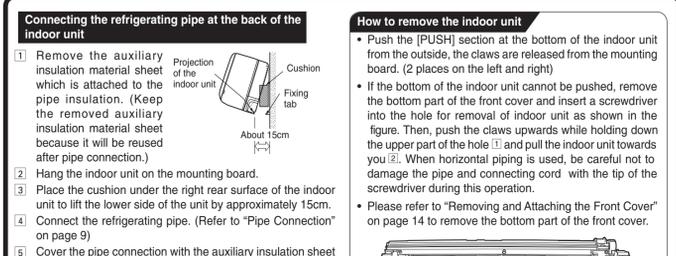
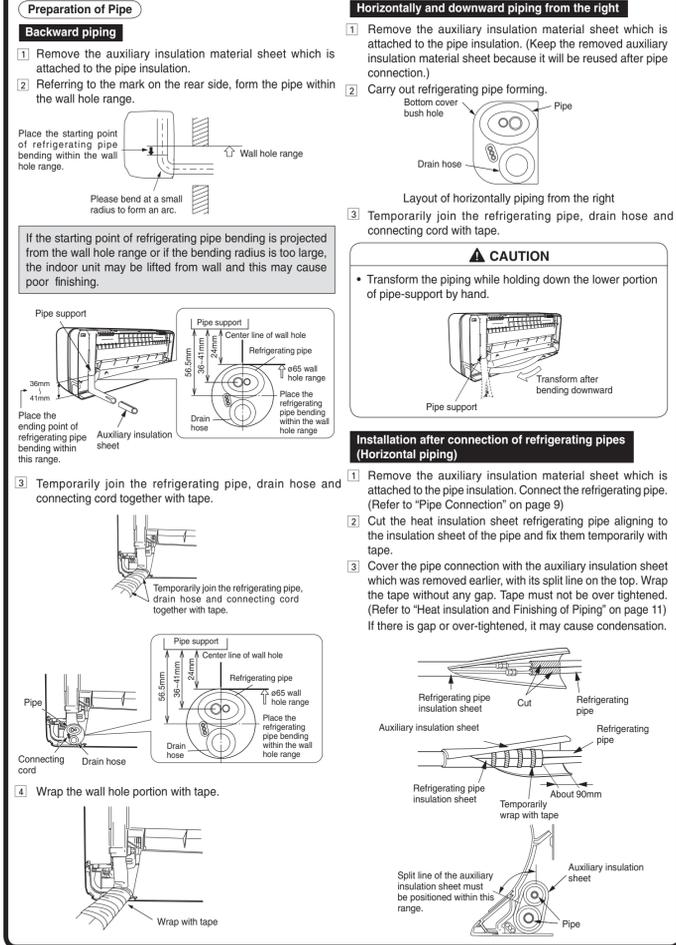
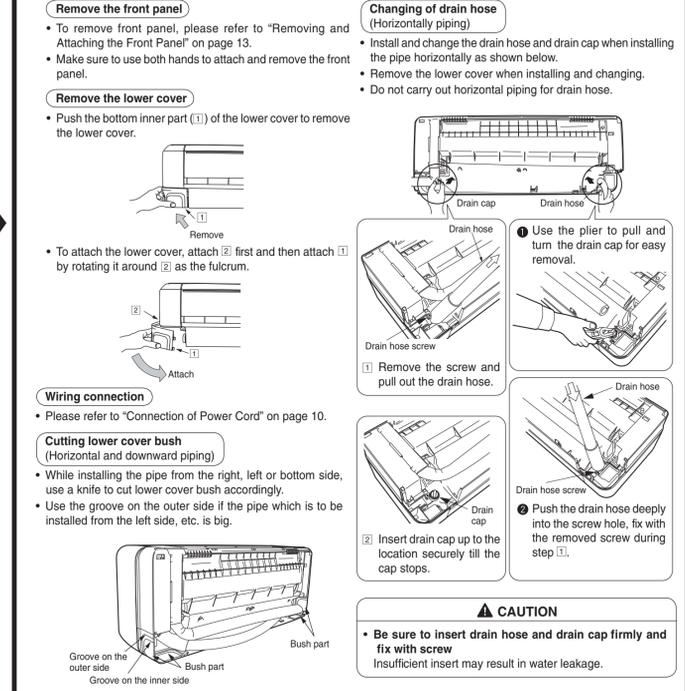
- A circuit breaker must be installed in the house distribution box for the direct connected power supply cables to the outdoor unit. Do not install the unit near a location where there is flammable gas. Please ensure smooth flow of water when installing the drain hose. An IEC approved power cord should be used.

THE CHOICE OF MOUNTING SITE

- WARNING: The unit should be mounted at stable, non-vibratory location which can provide full support to the unit. CAUTION: No nearby heat source and no obstruction near the air outlet is allowed. The location must be convenient for water drainage and pipe connection with the outdoor unit. Do not install at a location where there is flammable gas, steam, oil and smoke. To avoid interference from noise, please place the unit and its remote controller at least 1m from the radio and television. Do not install at a location where there is flammable gas, steam, oil and smoke. Do not install the indoor unit in a place where small animals may build their nests. The outdoor unit and its connecting cord at least 1m away from the antenna or signal line of television, radio or telephone.

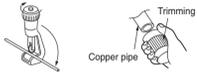


2. Installation of the Indoor Unit



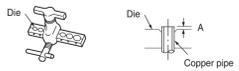
### 1. Pipe Cutting and Flaring

- Use a pipe cutter to cut the pipe and remove burr.



#### CAUTION

- Remove burr. If burr is not removed, it may cause leakage.
- Point the side to be trimmed downwards during trimming to prevent copper chips from entering the pipe.
- Before flaring, please put on the flare nut.



#### Use exclusive tool for refrigerant R410A.

Outer Diameter (ø)	A (mm) Rigid Flaring Tool	
	For R410A tool	For R22 tool
6.35 (1/4")	0-0.5	1.0
12.7 (1/2")	0-0.5	1.0

### 2. Pipe Connection

- Remove the flare nut from the pipe of the indoor unit by removing the flare nut (female side) with a spanner while holding down the half union (male side) with a spanner.
- Do not crush the pipe while bending it.
- Apply refrigerant oil on the connection part. After carrying out the center alignment and manual tightening of the flare nut, tighten the flare nut securely with a torque wrench (spanner).



\* Tightening torque must be as shown in the table below.

	Outer diameter of pipe (ø)	Torque N·m (kgf·cm)
Small diameter side	6.35 (1/4")	13.7-18.6 (140-190)
Large diameter side	12.7 (1/2")	44.1-53.9 (450-550)
Valve head cap	6.35 (1/4")	19.6-24.5 (200-250)
Large diameter side	12.7 (1/2")	29.4-34.3 (300-356)
Valve core cap		12.3-15.7 (125-160)

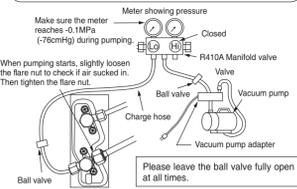
#### CAUTION

- When removing flare nut of the indoor unit, first remove the nut of small diameter side. Otherwise the nut of big diameter side will fly out.
- Prevent water from entering into the piping when connecting.
- Be sure to tighten the flare nut to the specified torque with a torque wrench.
- If the flare nut is over-tightened, it may split after sometime and may cause refrigerant leak.
- When using a control valve, make sure that the packing is not deteriorated and avoid excessive tightening of the handle. Otherwise, gas may leak from the service valve.

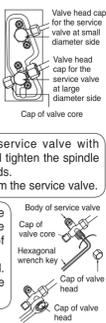
### 3. Remove of Air from the Pipe and Gas Leakage Inspection

From the viewpoint of global environment protection, air purge type should be vacuum pump method.

- Fully tighten the "H" shuttle of the manifold valve and completely unscrew the "Lo" shuttle. Run the vacuum pump. (Adapter is switched on)
- After pumping for about 10-15 minutes, completely loosen the "Lo" shuttle and switch off the vacuum pump. (Adapter is switched off)



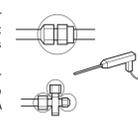
- Remove the valve head cap of the service valve.
- Remove the cap of valve core and connect the charge hose.
- Connect the vacuum pump adapter to the vacuum pump and connect the charge hose to the adapter.
- Loosen the spindle of the service valve with small diameter by 1/4 turn and tighten the spindle immediately after 5 to 6 seconds.
- Remove the charging hose from the service valve.



- Unscrew the spindle of both the service valves in anticlockwise direction to allow the flow of refrigerant (unscrew halfway).
- Tighten the cap of valve head. Check and make sure that there is no gas leakage.

### Gas Leakage Inspection

Please use gas leakage detector to check if leakage occurs at connection of Flare nut as shown on the right.

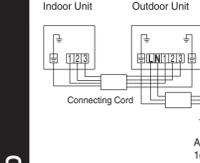


If gas leakage occurs, further tighten the connection to stop leakage. (Be sure to use R410A detector.)

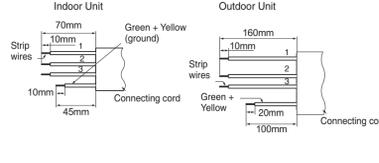
### Works to be done when transferring or removing air conditioner

- Perform force-cooling operation (refer to "Force-cooling operation" on page 12) for about 5 minutes as a preliminary operation.
- Tighten the spindle of the service valve at small diameter side in clockwise direction.
- Continue the force-cooling operation for another 1-2 minutes, and then tighten the spindle of the service valve at large diameter side in clockwise direction.
- Stop the force-cooling operation.

### Procedures of Wiring



### Detail of Cutting the Connecting Cord

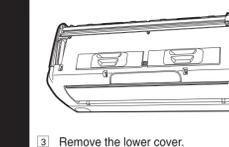


#### WARNING

- If the supply cord is damaged, it must be replaced by a special cord (Maker's service parts) available from the manufacturer or its service agent.
- The naked part of the wire core should be 10mm fit it to the terminal tightly. Then try to pull the individual wire to check if the contact is tight. Improper insertion may burn the terminal.
- Be sure to use only wire specified for the use of air-conditioner.
- Be sure to use only power cables approved from the authorities in your country. For example in Germany: Cable type: NYM 3x1.5mm<sup>2</sup>. (Fuse = 25A time delay)
- Please refer to the manual for wire connection, the wiring technique should meet the standard of the electrical installation.
- Leave some space in the connecting cord for maintenance purpose and be sure to secure it with the cord band.
- Secure the connecting cord along the coated part of the wire using the cord band. Do not exert pressure on the wire as this may cause overheating or fire.
- There is a AC voltage of 220-230V between the L and N terminals. Therefore, before servicing, be sure to remove the plug from the AC outlet.

### Wiring of the Indoor Unit

- Remove the front panel. (Refer to "Removing and Attaching the Front Panel" on page 13)
- Remove the terminal cover and screw, hold the upper part when removing.



- Remove the lower cover.

- Bring the connecting cord from the rear surface to the front surface through the cable guide.
- The connecting cord should be fixed with the terminal. Tightening torque reference value: 1.2-1.6N·m (12-16kgf·cm). Excessive tightening may damage the terminal.
- Connect the connecting cord and fix with cord band.
- Hook onto the claw at the lower part of the terminal cover and fix with screw.

### Wiring of the Outdoor Unit

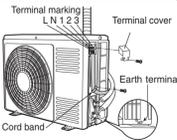
Please remove the side cover and terminal cover for wiring connection.

#### WARNING

- When the fuse (F5 or F6) has been blown out by the improper connection of power cable, it can be restored by exchanging the fuse (service part No. HWRA-C50X2 A52).
- Please exchange the blown-out fuse after making sure the right connection.
- The connecting cord must be fixed with cord band. Otherwise rain water may enter and cause short circuit. Besides, an external force may apply to the connection part of the connecting cord and could result in heat and fire.
- The terminal cover and side cover must be installed after work is done.

#### CAUTION

- Outdoor supply cords shall not be lighter than polychloroprene sheathed flexible cord with code designation 60245 IEC 57.



**IMPORTANT**

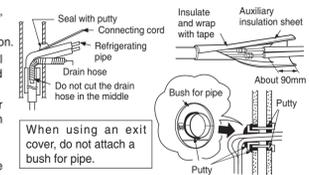
Fuse Capacity

25A time-delay fuse

Wire length	Wire cross-section
up to 6m	1.5mm <sup>2</sup>
up to 15m	2.5mm <sup>2</sup>
up to 20m	4.0mm <sup>2</sup>

### 1. Heat Insulation and Finishing of Piping

- Cover the pipe connection with the auxiliary insulation sheet, wrap the tape without any gap.
- If there is gap or over-tightened, it may cause condensation.
- Please wrap the pipe and power cord together with vinyl tape as shown in the figure of the installation of indoor and outdoor units on page 2.
- To enhance the heat insulation and to prevent water condensation, please cover the outdoor part of the drain hose and pipe with insulation sheet.
- When using an exit cover, do not attach a bush for pipe.
- When an exit cover is not used, seal the gap of the hole on the wall, bush and pipe completely with putty. If an exit cover is used, seal the gap of the hole on the wall and pipe completely with putty. In the case of embedded piping, seal the gap of the pipe completely with putty. Incomplete sealing could cause entering of high humidity air into the wall or indoor unit, which could result in dripping of dew. It could also cause smell or odor present outdoor and inside the wall spreading into the room.



#### CAUTION

- Completely seal any gap with putty. High humidity air inside the wall or the outdoor may go in to the room and could result in dripping of dew. It could also cause smell or odor present outdoor and inside the wall spreading into the room.

### 2. Affixing the Remote Controller

- Procedures to fix the holder of remote control.

- Drill holes on wall.
- Push plug into the holes.

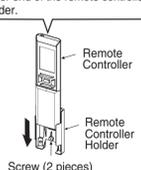


The remote controller must be slide in the remote controller holder, in the direction as shown in the figure, until it hooks at the lower end of the remote controller holder.

### Installation Of Remote Controller

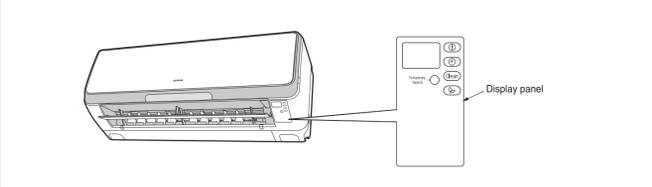
The remote controller can be placed in its holder which is fixed on wall or beam.

- To operate the remote controller at its holder, please ensure that the unit can receive signal transmitted from the controller at the place where the holder is to be when signal is received from the remote controller. The signal transmission is weakened by the fluorescent light. Therefore, during the installation of the remote control holder, please switch on the light, even during day time, to determine the mounting location of the holder.



### 3. Remove the Protection Sheet

- Remove the protection sheet on the display panel.



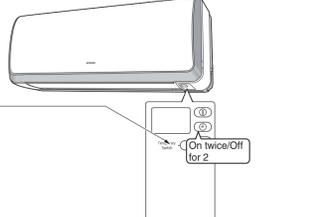
### 4. Operation Test

#### Operation test

- Please ensure that the air conditioner is in normal operating condition during the operation test.
- Explain to your customer about the proper operation procedures as described in the operation manual.
- If the indoor unit won't operate, check the cable for correct connection.

#### Force-cooling operation

- When the temporary switch of the indoor unit is pressed for more than 5 seconds, the force-cooling operation starts. Use this mode when performing the failure diagnosis or collecting refrigerant into the outdoor unit.
- The Timer lamp flashes when force-cooling is in operation.
- Press the temporary switch again or use the remote controller to stop the force-cooling operation once this operation is completed.



#### CAUTION

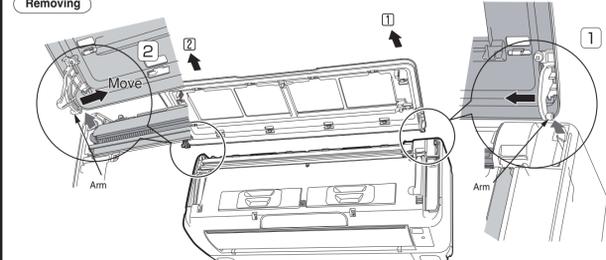
- Do not operate the unit for more than 5 minutes while the spindle of the service valve is closed.

### Removing and Attaching the Front Panel

- Be sure to hold the front panel with both hands to detach and attach it.

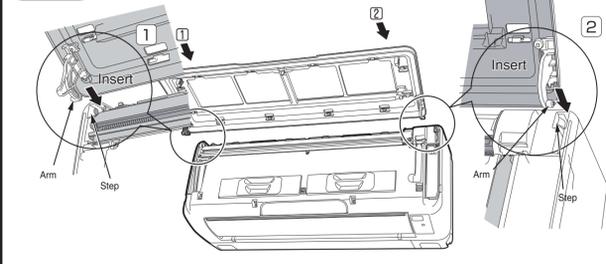
Please refer to the operation manual on how to open and close the front panel.

#### Removing



- Perform force-cooling operation (refer to "Force-cooling operation" on page 12) for about 5 minutes as a preliminary operation.
- Tighten the spindle of the service valve at small diameter side in clockwise direction.
- Continue the force-cooling operation for another 1-2 minutes, and then tighten the spindle of the service valve at large diameter side in clockwise direction.
- Stop the force-cooling operation.

#### Attaching



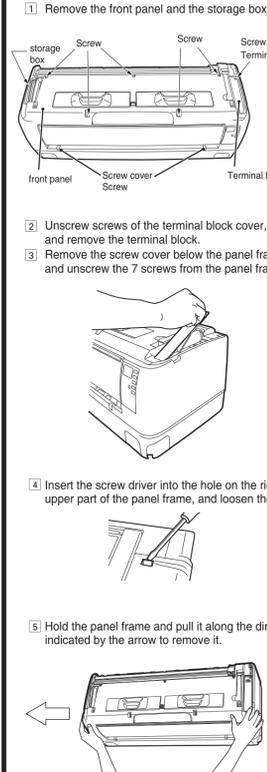
- Push the end of the right-side arm outward to release the tab.
- Move the left-side arm outward to release the left tab, and then pull the panel towards you.
- Insert the shaft of the left arm along the step on the unit into the hole.
- Securely insert the shaft of the right arm along the step on the unit into the hole.
- Make sure that the front panel is securely attached, and then close the front panel.

#### CAUTION

- When being installed or removed, the panel is likely to slide off.
- When lifting to open the panel, do not apply too much force. Otherwise, the panel may come off or malfunction may be caused.

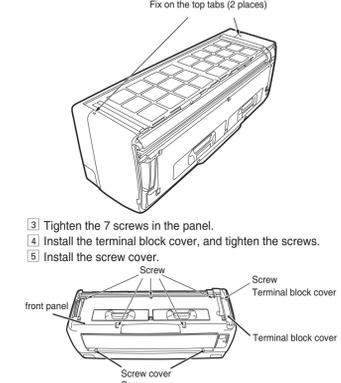
### How to remove the panel frame

- Remove the front panel and the storage box.
- Unscrew screws of the terminal block cover, and remove the terminal block.
- Remove the screw cover below the panel frame, and unscrew the 7 screws from the panel frame.
- Insert the screw driver into the hole on the right upper part of the panel frame, and loosen the jaw.
- Hold the panel frame and pull it along the direction indicated by the arrow to remove it.



### Attaching the Front Cover

- Make sure that the dew receiving pan and the cleaning unit are securely attached.
- After attaching the left and right sides of the front cover onto the unit, ensure that the top tabs (2 places) have been fixed on.
- Tighten the 7 screws in the panel.
- Install the terminal block cover, and tighten the screws.
- Install the screw cover.
- Install the storage box and the panel.



Fix on the top tabs (2 places)

#### How to connect the optional parts

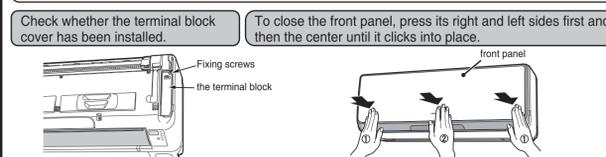
- For cable connection to control P.W.B., you need to remove front cover and electrical box cover. Each connecting location is as below.
- ① Dry contact: CN6
- ② WiFi Adapter or H-LINK RAC Adapter: CN7
- ③ Wired Remote Controller: CN21
- Please check and confirm manuals attached to each optional parts for more connection details.
- You can refer to this installation manual how to remove and re-attach the front cover.
- Please be careful not to damage lead wires by edge of plate when connecting the optional parts.



### Verifying installation of the terminal block and the front panel

- Before trial running of the air conditioner, be sure to check the following steps 1 and 2, and then operate it in the cooling-heating room.

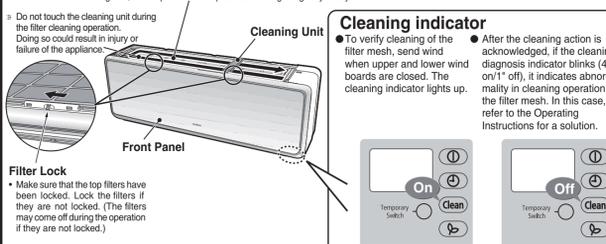
- Check whether the terminal block cover has been installed.
- To close the front panel, press its right and left sides first and then the center until it clicks into place.



### Verifying cleaning of the filter mesh

- Before turning on the power of the air conditioner, make sure that the filters (2 pieces at the top and 2 pieces in front) have been installed properly and locked.
- When the power of the air conditioner turns on, the "Filter Cleaning Operation" starts automatically. The CLEAN indicator is lit during the filter cleaning operation.

Unlike the conventional type of air conditioner, this air conditioner has no grille at its top surface. It is because this air conditioner is equipped with the cleaning unit, and to prevent the top surface from getting dirty easily.

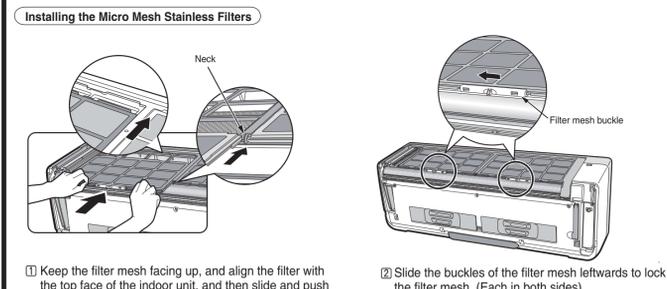


- Filter cleaning operation check will take approximately 5 minutes for the cleaning unit to make one cycle of back and forth movement. Make sure that the cleaning unit is actually working by a visual inspection from the top of the indoor unit.
- Close the front panel properly.
- If the "ON/OFF" button on the remote control is pressed during the operation check, the operation check is stopped before its completion. Wait until the operation check is completed without pressing any button on the remote controller.
- If the filters are not installed properly, "Filter Cleaning Operation" is found abnormal and the CLEAN indicator blinks.
- The filters may come off during operation if they are not installed properly.
- If the CLEAN indicator blinks during the "Filter Cleaning Operation" means that the operation is stopped before its completion due to an abnormal condition. In this case, refer to "Check the Operation of the Filter Cleaning Unit" and "Troubleshooting" of the operation manual and take appropriate actions.

### How to check Micro Mesh Stainless Filter installation

- Remove the front panel and check if the filter locks (2 pcs) are tripped or slant.
- If the filters are not inserted properly, refer to following "Installing the Micro Mesh Stainless Filters".
- Please perform "Filter cleaning operation check" again after reinstalled the filters.

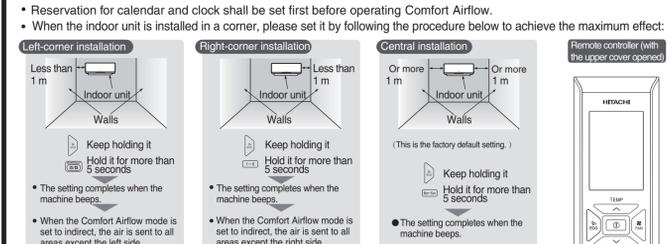
#### Installing the Micro Mesh Stainless Filters



- Keep the filter mesh facing up, and align the filter with the top face of the indoor unit, and then slide and push it in. (The shape of the left and right filters are the same.)
- Slide the buckles of the filter mesh leftwards to lock the filter mesh. (Each in both sides)

### Settings of [Comfort Airflow]

- Reservation for calendar and clock shall be set first before operating Comfort Airflow.
- When the indoor unit is installed in a corner, please set it by following the procedure below to achieve the maximum effect:



- When the room and installing location change, please set the remote controller again.