







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
INVERTER SYSTEM MULTI TYPE INDOOR UNIT INSTALLATION MANUAL

MODEL  RAD-18QPB
RAD-25QPB
RAD-35QPB
RAD-50QPB

- Carefully read through the procedure before starting installation work.
- The sales agent should inform customers regarding the correct operation of installation.
- Explanation for outdoor unit is in "How To Use" (Instruction Manual) that is packed with outdoor unit.


Tools Needed For Installation Work
(Mark  is exclusive use tool for R410A)
●   Screwdriver ● Measuring Tape ● Knife
● Saw ● \varnothing 65mm Power Drill ● Hexagonal Wrench Key ( 4mm) ● Wrench (14, 17, 22, 26mm) ●  Gas Leakage Detector ● Pipe Cutter ● Putty ● Vinyl Tape
● Pliers ● Flare Tool ●  Vacuum Pump Adapter
● Manifold Valve ● Charge Hose ● Vacuum Pump

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 wire.**
 -  **This sign in the figures indicates prohibition.**

Be sure that the unit operates in proper condition after installation. Explain to customer the proper way of operating the unit as described in the user's guide.

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 instructions stated in the installation manual during the process of installation. Improper installation may cause water leakage, electric shock and fire.
- Make sure that the units are mounted at locations which are able to provide full support to the weight of the units. If not, the units may collapse and impose danger.
- Observe the rules and regulations of the electrical installation and the methods described in the installation manual when dealing with the electrical work. Use wire which is approved official in your country. A short circuit and fire may occur due to the use of low quality wire or improper work.
- Be sure to use the specified wire for connecting the indoor and outdoor units. Please ensure that the connections are tight after the conductors of the wire are inserted into the terminals. Improper insertion and loose contact may cause over-heating and fire.
- Please use the specified components for installation work. Otherwise, the units may collapse or water leakage, electric shock and fire may occur.
- 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. If other air should enter, the pressure level of the refrigeration cycle may increase abnormally high leading to possibility of unit rupture.
- Be sure to use the specified piping set for R410A. Otherwise, this may result in broken copper pipes or faults.
- When installing or removing an air conditioner, do not allow air or moisture to remain in the refrigeration cycle. Otherwise, pressure in the refrigeration cycle may become abnormally high so that a rupture may be caused.
- Be sure to ventilate fully if a refrigerant gas leak while at work. If the refrigerant gas comes into contact with fire, a poisonous gas may occur.
- 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.
- Unauthorized modifications to the air conditioner may be dangerous. If a breakdown occurs please call a qualified air conditioner technician or electrician. Improper repairs may result in water leakage, electric shock and fire, etc.
- Be sure to connect the earth wire from the power supply wire to the outdoor unit and between the outdoor and indoor unit. Improper earthing may cause electric shock. 

CAUTION

- A circuit breaker must be installed in the house distribution box for the direct connected power supply wire to the outdoor unit. In case of other installations a main switch with a contact gap or more than 3mm has to be installed. Without a circuit breaker, the danger of electric shock exists.
- Do not install the unit near a location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it. Piping shall be suitable supported with a maximum spacing of 1m between the supports.
- Please ensure smooth flow of water when installing the drain hose.
- An IEC approved power cord should be used. Power cord type: NYM.

THE CHOICE OF MOUNTING SITE

(Please note the following matters and obtain permission from customer before installation.)

WARNING

- The unit should be mounted at stable, non-vibratory location which can provide full support to the unit.








WARNING

- No nearby heat source and no obstruction near the air outlet is allowed.
- The clearance distances from top, right and left are specified in figure below.
- The location must be convenient for water drainage and pipe connection with the outdoor unit.
- To avoid interference from noise, please place the unit and its remote controller at least 1m from the radio and television.
- To avoid any error in signal transmission from the remote controller, please put the controller far away from high-frequency machines and high-power wireless systems.

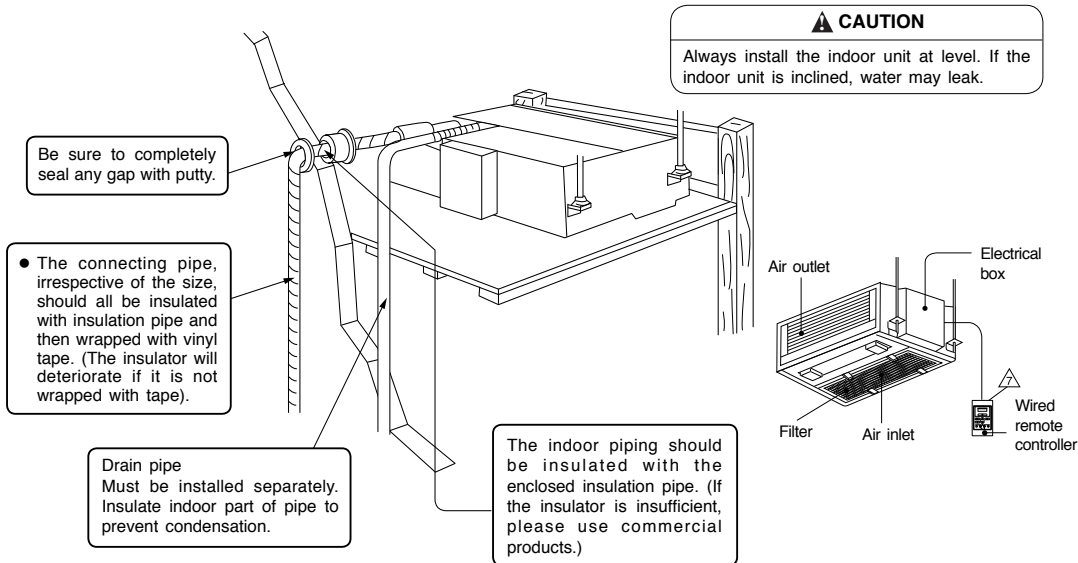
Accessories to indoor Unit:

No.	Item	Quantity
①	Flare Insulator	1
②	Binder	2
③	4.0 x 10 Screw	2
④	Insulation Pipe	1
⑤	Aluminium Tape (large)	1
⑥	Band	1
⑦	Suspension Clamp (right, left) each	2
⑧	4.0 x 10 Screw	8

Other optional parts for display panel wired remote controller & wireless remote controller SPX-RCDA & SPX-RCKA1

No.	Item	Quantity
	Display panel	1
	Panel installation plate	1
	Panel cover	1
	Remote controller (wireless)	1
	Remote Controller Holder	1
	3.1 x 16 screw	2
	Wired Remote Controller with 2 screws	1

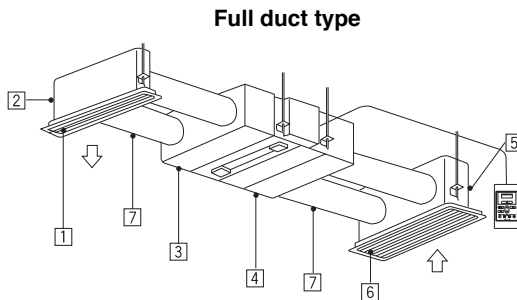
[Indoor unit installation]



- "Height difference" and "Piping length" of Indoor and Outdoor unit are different by Outdoor unit. Please refer to the installation manual in Outdoor unit.

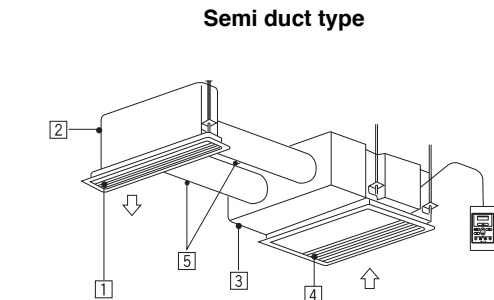
1. RECOMMENDATION FOR INSTALLATION

- The figures below are the recommended installation type for this duct model.
- All the optional parts mentioned for each installation type and screws should be purchased locally prior to the installation.



Need optional parts when installing full duct type (Local purchase)

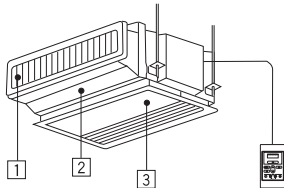
①	Discharge grille
②	Chamber of discharge grille \varnothing 150mm
③	Chamber of discharge of unit side \varnothing 150mm
④	Chamber of suction of unit side \varnothing 150mm
⑤	Chamber of suction grille \varnothing 150mm
⑥	Suction grille with filter
⑦	Flexible duct \varnothing 150mm 1m Flexible duct \varnothing 150mm 2m



Need optional parts when installing semi duct type (Local purchase)

①	Discharge grille
②	Chamber of discharge grille \varnothing 150mm
③	Chamber of discharge of unit side \varnothing 150mm
④	Suction grille
⑤	Flexible duct \varnothing 150mm 1m Flexible duct \varnothing 150mm 2m

Non duct type



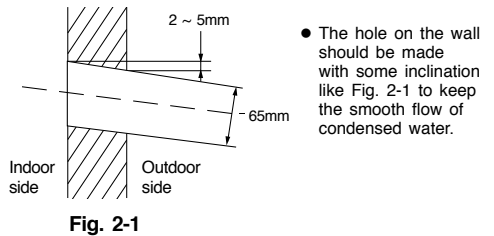
Need optional parts when installing non duct type (Local purchase)

①	Discharge grille
②	Discharge duct
③	Suction grille

2. Installation procedure and notice

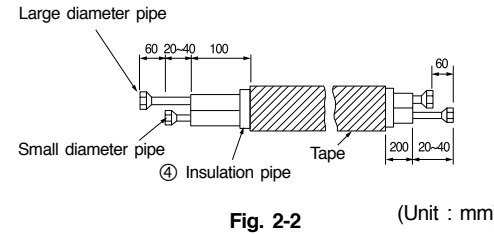
Select the installation location carefully for the split type air conditioner. It is very difficult to move a split type air conditioner after the first installation.

2.1 Make a hole on the wall as shown in Fig. 2-1.



2.2 Connecting pipe installation

- Seal the end of the pipes to prevent damage from moisture and water.



2.3 Drain pipe installation

- Use PVC pipe VP20 (O.D. 25mm) for drain pipe.
- You must roll an insulation (thickness 10mm or more) over the indoor section of the drain pipe.
- Position the drain pipe in the downward direction to enable free-flow of water. Fix it with a hanger and avoid twisting the pipe as shown in Fig. 2-3.

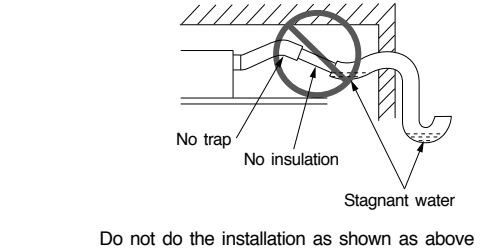
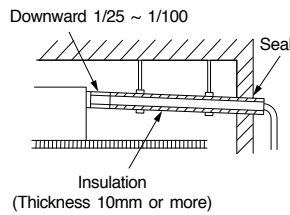
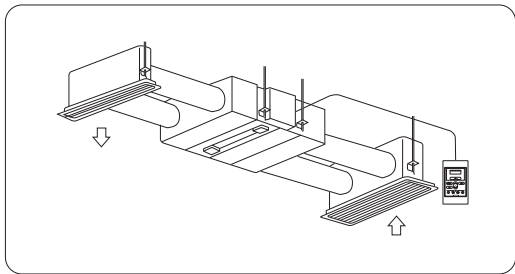


Fig. 2-3

2.4 Installation method of unit type

INSTALLATION OF FULL DUCT TYPE



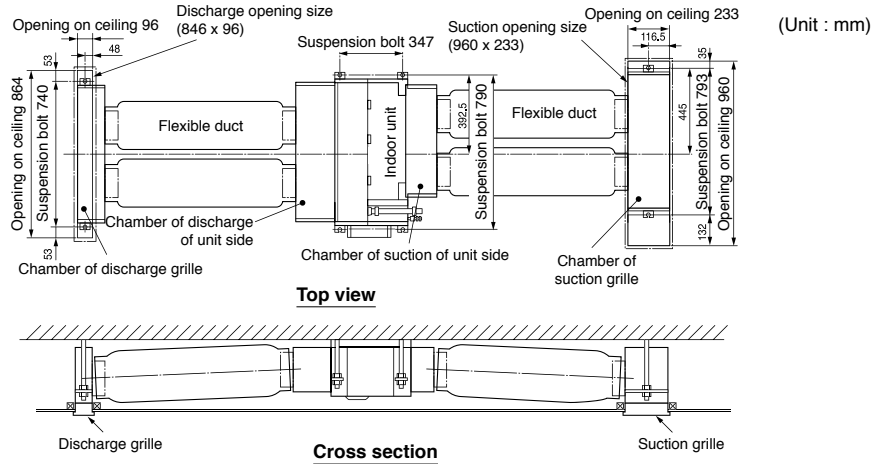
- Select the indoor unit position, fixing direction of air outlet so that cool/hot air reaches all the room. Standard position of the indoor unit is with the wall side on the ceiling.
- Remove the factory fitted filter and filter holders before installing of full duct type.

- Permissible length and bending of duct.

	Permissible length	Bending
Discharging side duct	4m or less added to suction side	90° or less, 1 section
Suction side duct	1m or less	45° or less, 1 section

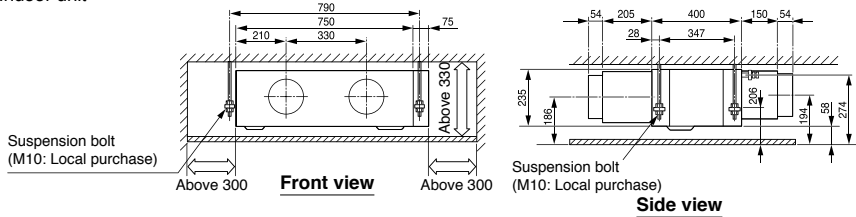
- Secure the space for installation, inspection or servicing.
- Apply water-proof treatment to back surface of ceiling under the indoor unit, to prevent water drop.
- Do not allow any obstacle to block air flow within 1m of suction grille.

(1) Installation figure

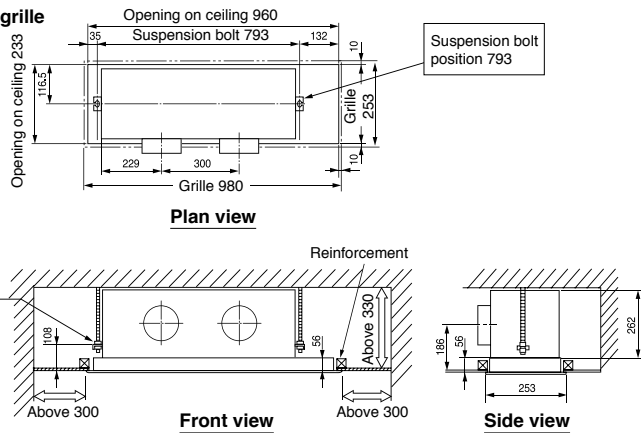


(2) Opening on ceiling and suspension bolt position

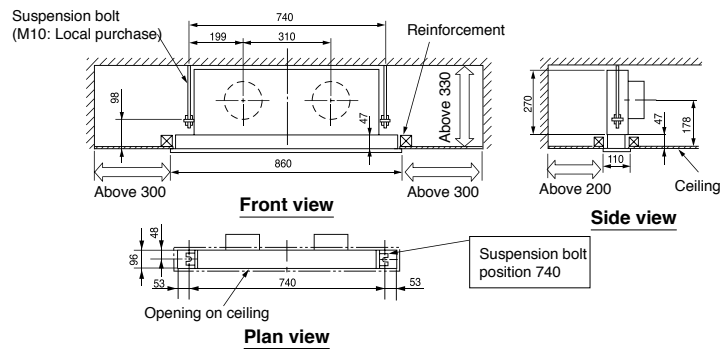
• Indoor unit



• Chamber of suction grille



• Chamber of discharge grille

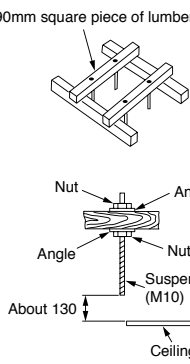


- Arrange drain pipe, refrigerant pipe, and connecting cord in their installation position.
- For finishing of opening on ceiling, arrange with builder in detail.

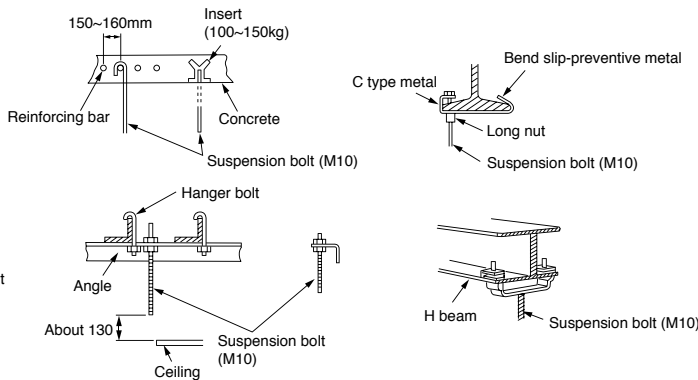
(3) Installation of suspension bolt

- Make sure to reinforce furring of ceiling (frame: ceiling joint and supporter) to maintain level of ceiling and prevent vibration of ceiling plate.
- Suspension bolts should be purchased in the field.
- Refer to diagrams shown below for length of suspension bolts.

• In case of wooden frame

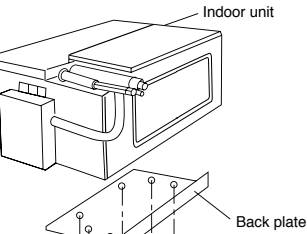
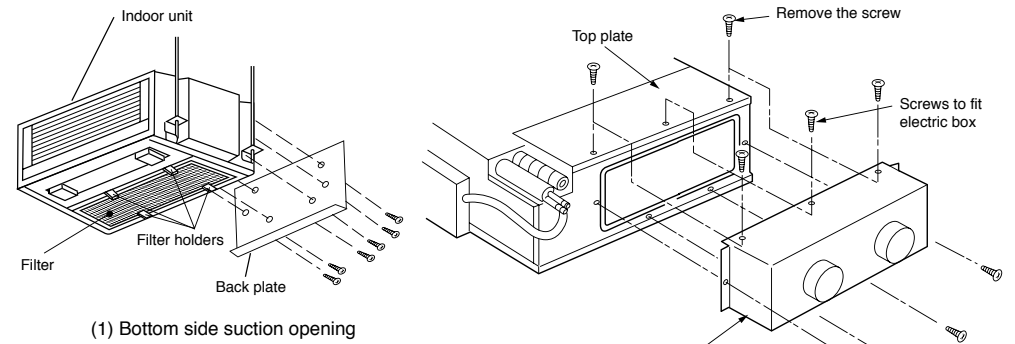
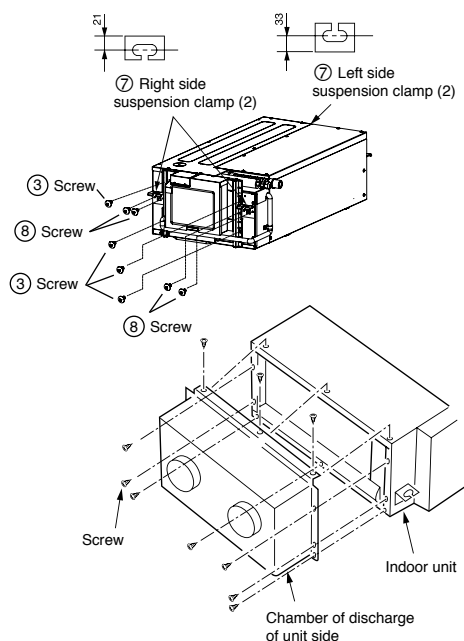


• In case of steel frame



(4) Preparation for installing indoor unit

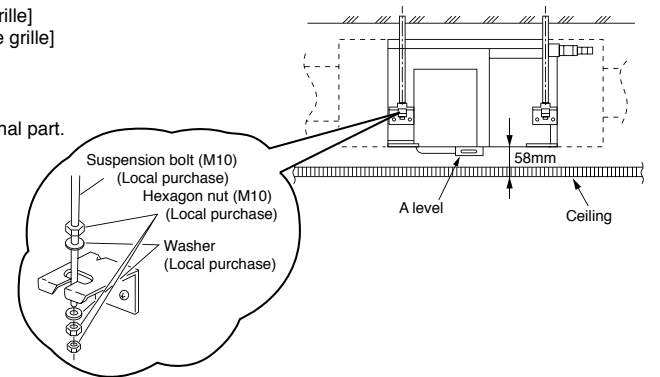
- Remove the screw ③ of the electric box and then remove electric box.
- Relocate the electric box with lead wires kept connected. Ensure the lead wire is positioned at the upper side, and hook the claw of electric box to the bottom of the indoor unit using 4 screws.
- Install 4 suspension clamps at both sides of indoor unit, 2 clamps at each side, using 8 tapping screws ⑧. (Since size of left and right clamps are different for certain parts, refer to diagram on the right.)
- Install chamber of discharge of unit side on the indoor unit using 10 tapping screws.
- Remove the filter at the bottom side of indoor unit by unscrew 8 screws at the filter holders. (4 portions)
- Remove 6 screws at back plate of indoor unit. Then install the back plate at the bottom of indoor unit using 6 screws.
- Remove 2 screws at top plate of indoor unit and install chamber of suction of unit side using 7 screws.



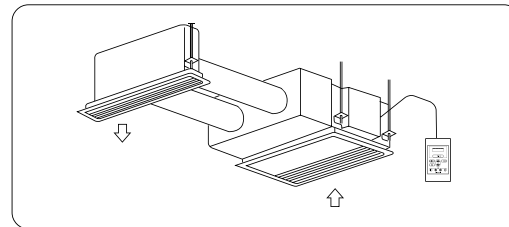
(5) Installation of indoor unit

- Set nut and washer on suspension bolt and hook it to suspend clamp by lifting the indoor unit.
- Make sure that the indoor unit is leveled using a level or vinyl hose with water.
- Fix the indoor unit so that the space between bottom surfaces of ceiling and indoor unit is 58mm.

[Installation of chamber of suction grille]
[Installation of chamber of discharge grille]
[Installation of suction grille]
[Installation of discharge grille]
[Installation of flexible duct]
Refer to installation manual of optional part.



INSTALLATION OF SEMI DUCT TYPE

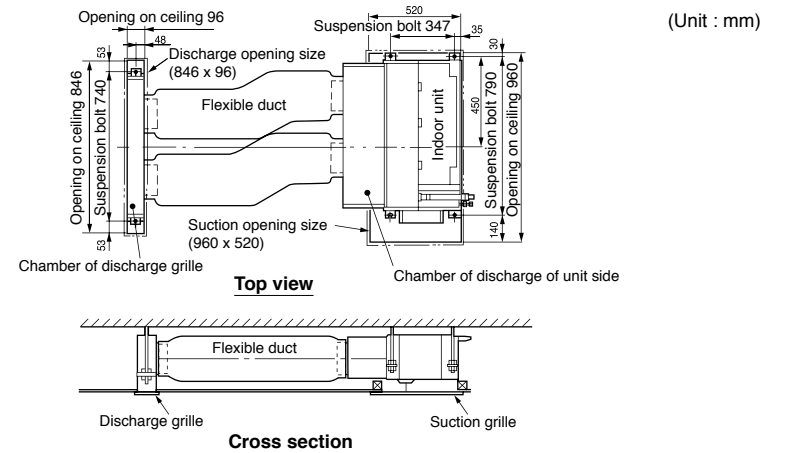


- Select the indoor unit position, fixing direction of air outlet so that cool/hot air reaches the entire room. Standard position or the indoor unit is on wall side.
- Permissible length and bending of duct.

	Permissible length	Bending
Discharging side duct	4m or less	90° or less, 1 section

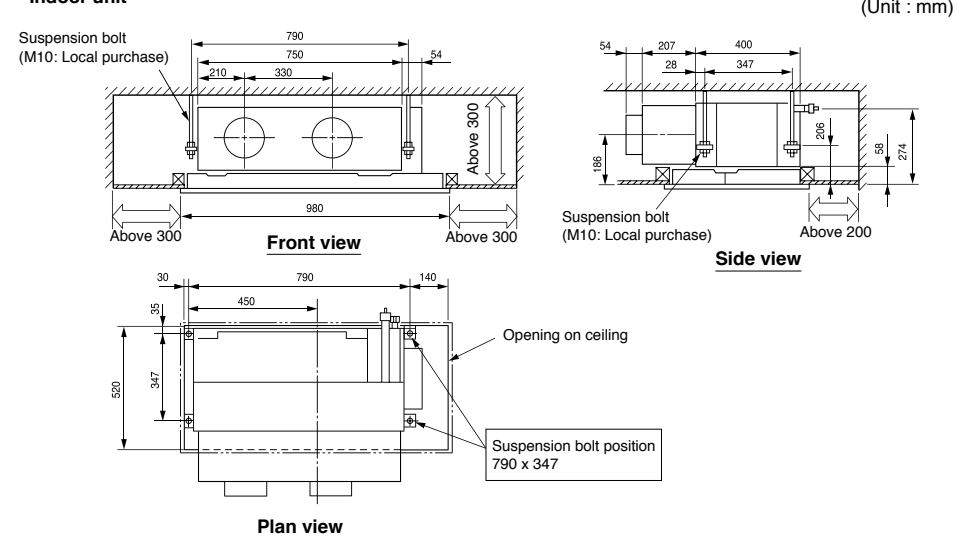
- Secure the space for installation, inspection or servicing.
- Apply waterproof treatment under the indoor unit to prevent water leak.
- Make sure that no obstacle is blocking the air flow within 1m of suction grille.

(1) Installation figure

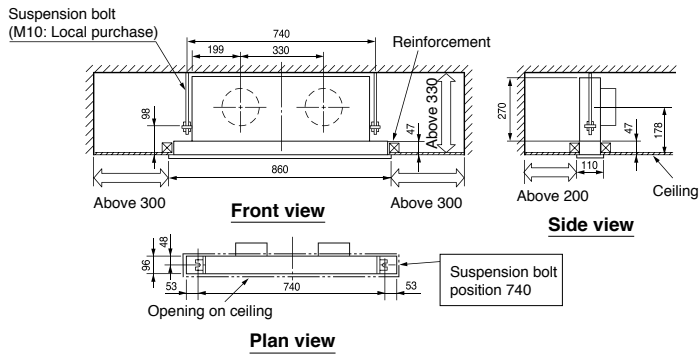


(2) Opening on ceiling and suspension bolt position

• Indoor unit



• Chamber of discharge grille



(3) Installation of suspension bolt

- This is the same as for discharge/suction duct type. Follow instructions for discharge/suction duct type.

(4) Preparation for installing indoor unit

- Remove the screw ③ of the electric box and then remove electric box.
- Relocate the electric box with lead wires kept connected. Ensure the lead wire is positioned at the upper side, and hook the claw of electric box to side plate. Then fix the electric box to the bottom of the indoor unit using 4 screws.
- Install 4 suspension clamps at both sides of indoor unit, 2 clamps at each side, using 8 tapping screws ⑧.
- (Since sizes of left and right clamps are different for certain parts, refer to diagram on the right.)
- Install chamber of discharge of unit side on the indoor unit using 10 tapping screws.

(5) Installation of indoor unit

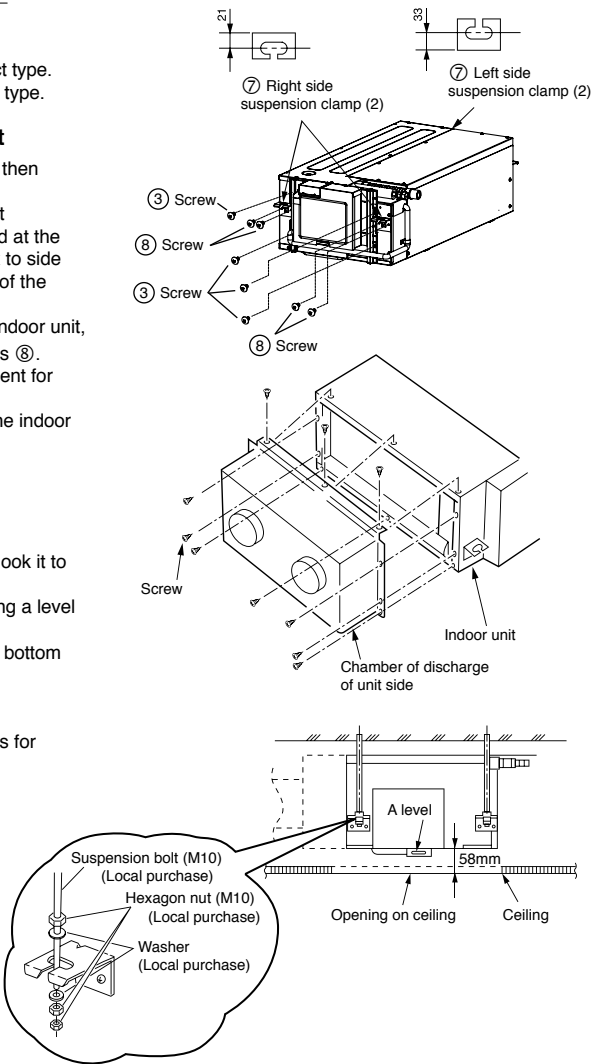
- Set nut and washer on suspension bolt and hook it to suspension clamp by lifting the indoor unit.
- Make sure that indoor unit is kept at level using a level or vinyl hose with water.
- Fix the indoor unit so that the space between bottom surfaces of ceiling and indoor unit is 58mm.

Refer to the installation manual of optional parts for installation of:

- Discharge grille chamber
- Suction grille
- Discharge grille
- Flexible duct

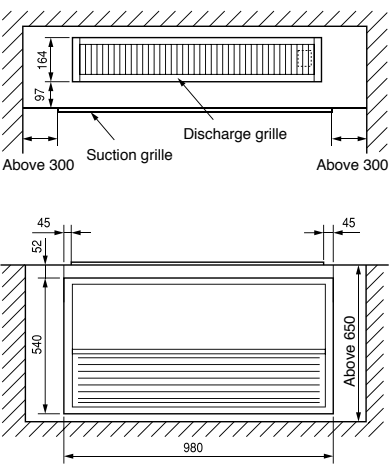
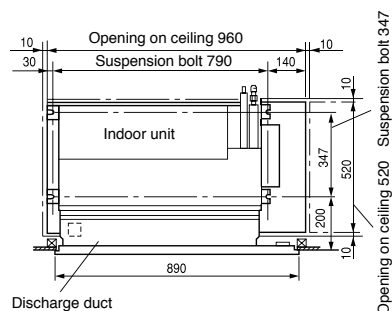
CAUTION

- Install the indoor unit in a straight level. If the indoor unit is inclined, water may leak.
- If space between bottom surfaces of indoor unit and ceiling is not correct, there may be a gap between grille and ceiling surface, with consequent leakage of condensed water.

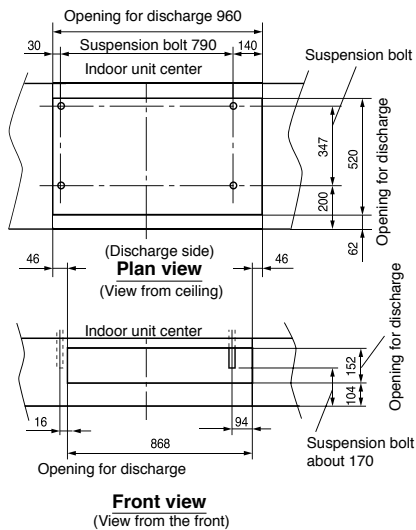


INSTALLATION OF NON DUCT TYPE

(1) Installation figure

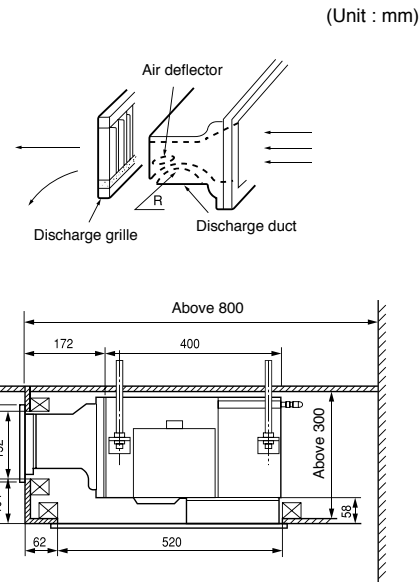


(2) Opening on ceiling and suspension bolt position



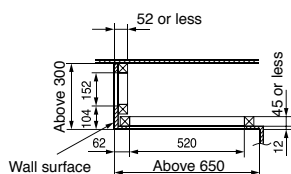
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- Select the indoor unit position, fixing direction of air outlet so that cool/hot air reaches all the room.
- Do not allow any obstacle to block air flow within 1m of suction grille.



(Unit : mm)

- Use M10 bolt for suspension.
- Opening of ceiling and suspension bolt position are as shown on the left.
- Before installing the indoor unit, prepare opening 960mm x 520mm on ceiling, and 868mm x 152mm on wall and arrange drain pipe, refrigerant pipe and connecting cord in their installation positions.
- For finishing of opening on ceiling and wall arrange with builder in detail.
- Be sure to reinforce furring of ceiling (frame: ceiling joint and joist supporter) to maintain level of ceiling and prevent vibration of ceiling plate.



(Unit : mm)

(3) Installation of suspension bolt

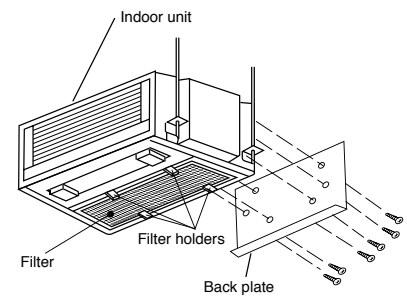
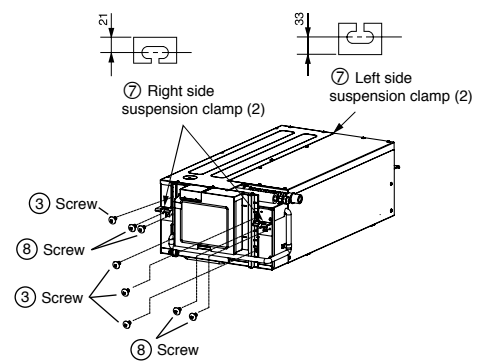
- This is the same as for discharge/suction duct type. Follow instructions for discharge/suction duct type.

(4) Preparation for installing indoor unit

- Remove the screw ③ of the electric box and then remove electric box.
- Relocate the electric box with lead wires kept connected. Ensure the lead wire is positioned at the upper side, and hook the claw of electric box to side plate. Then fix the electric box to the bottom of the indoor unit using 4 screws.
- Install 4 suspension clamps at both sides of indoor unit, 2 clamps at each side, using 8 tapping screws ⑧.

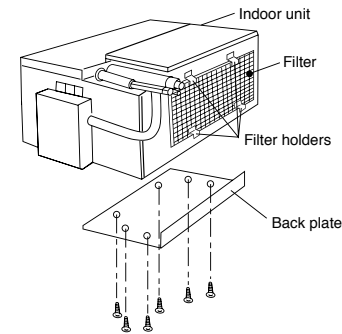
(5) Change of suction opening and filter position from bottom to back side

- Remove the filter from the bottom side of indoor unit by removing 8 screws from the filter holders.
- Remove 6 screws from the back plate of the indoor unit.



(1) Bottom side suction opening

- Then install the back plate at the bottom of indoor unit using 6 screws.
- Install filter at backside of indoor unit by fixing it with filter holders (4 portions) using 8 screws.



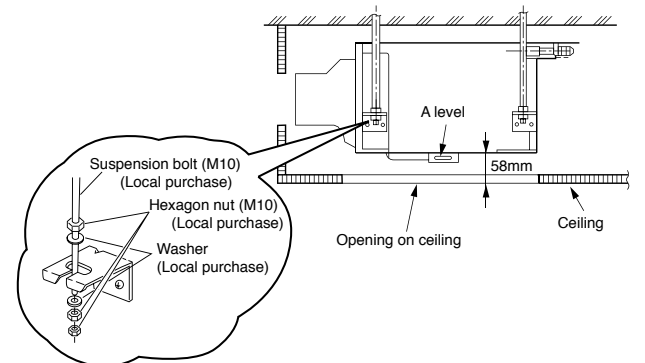
(2) Back side suction opening

(6) Installation of indoor unit

- Set nut and washer on suspension bolt and hook it to suspension clamp by lifting the indoor unit.
- Make sure that indoor unit is kept at a straight level using a level or vinyl hose with water.
- Fix the indoor unit so that the space between bottom surfaces of ceiling and indoor unit is 58mm.

CAUTION

- Be sure to install the indoor unit level. If the indoor unit is inclined, water may leak.
- If space between bottom surfaces of indoor unit and ceiling is not correct, there may be a gap between grille and ceiling surface, with consequent dropping of condensed water.



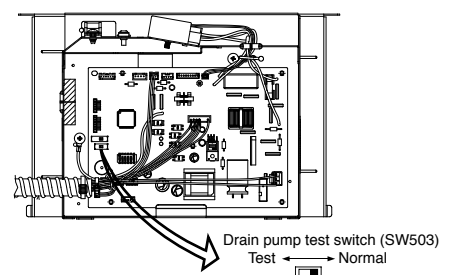
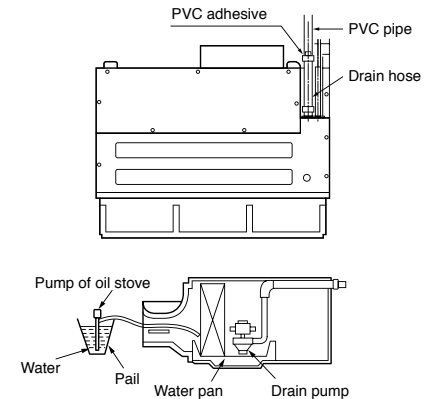
2.5 Connection of the drain pipe

- Securely glue connection part of drain hose and PVC pipe, using PVC adhesive.

CAUTION

- If gluing of drain hose and PVC pipe is too weak, water leakage may occur.

- Make sure to wrap generally-available insulator (10m or more of foamed polythene) around drain hose inside the house for insulation.
- To check the drain and water leakage, after connecting power:
 - Add water to the water pan of the indoor unit as shown below.
- Test run method
 - Turn power on.
 - Remove lid of electric box and set the drain pump test run switch to TEST.
 - After checking the drainage, return the switch to NORMAL.
- Perform test running of drain pump to check drainage operation.

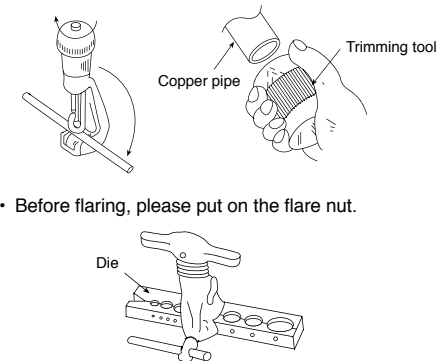


CAUTION

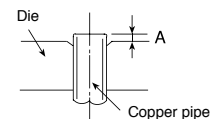
- If checking of drainage is omitted, water leakage may occur.
- If drain pump test run is left set to TEST, drain pump may malfunction.

2.6 Preparation of pipe

- Use a pipe cutter to cut the copper pipe.



- Before flaring, please put on the flare nut.



- Please use exclusive tool.

CAUTION

- Jagged edge will cause leakage.
- Point the side to be trimmed downwards during trimming to prevent copper chips from entering the pipe.

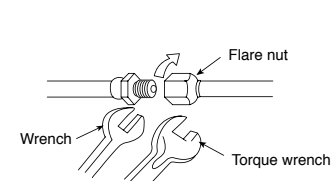
Outer Diameter mm (inch)	Thickness (mm)	Flare tool for R410A Clutch type	A (mm)	
			Conventional flare tool Clutch type	Wing nut type
6.35 (1/4")	0.8	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
9.52 (3/8")	0.8	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
12.70 (1/2")	0.8	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.5
15.88 (5/8")	1.0	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.5

2.7 Pipe connection

⚠ CAUTION

In case of removing flare nut of an indoor unit, first remove a nut of small diameter side, or a seal cap of big diameter side will fly out. Free from water into the piping when working.

- Please be careful when bending the copper pipe.
- Screw in the screws manually while adjusting the center. After that, use a torque wrench to tighten the connection.

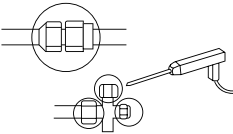


	Outer dia. of pipe	Torque N·m (kgf·cm)
Small dia. side	6.35 (1/4")	14.0 – 18.0 (140 – 180)
Large dia. side	9.52 (3/8")	33.0 – 42.0 (330 – 420)
	12.70 (1/2")	50.0 – 62.0 (500 – 620)
	15.88 (5/8")	63.0 – 77.0 (630 – 770)
Valve head cap	Small dia. side	6.35 (1/4")
	Large dia. side	9.52 (3/8")
Valve core cap		12.7 (1/2")

Gas leakage inspection

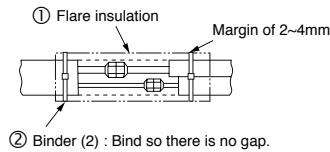
Use gas leakage detector to check if leakage occurs when flare nut is connected as shown in the figure.

If gas leakage occurs, tighten the connection to stop the leakage. (Use the detector provided for R410A).



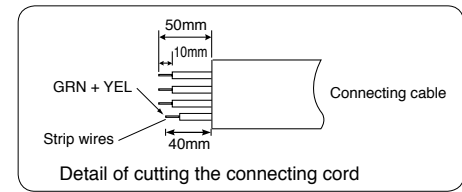
Sealing the refrigerating pipe

Cover pipe connection section using flare insulation material and wrap a tape around it, leaving no gaps.



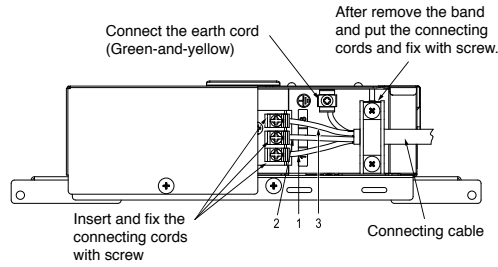
2.8 Connection of the connecting cord

- (1) Remove the cover of the electric box.
- (2) Connect the connecting cords.
- (3) Assemble the cover of electric box.



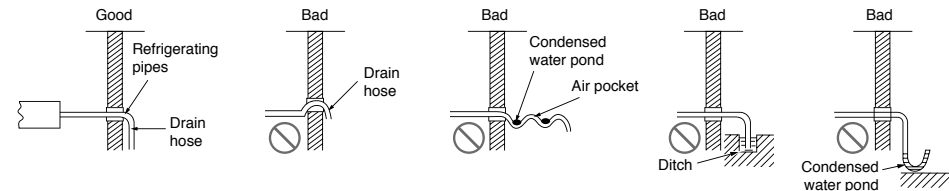
⚠ WARNING

- This appliance must be earthed.
- Do not make any connection in the middle of the connecting cable. It may cause overheating, smoke emission, or fire.



3. Checking of drawing drain hose

- (1) Connect the separate drain hose to the drain hose that is attached to the indoor unit.
- (2) For a smooth flow of the condensed water, the drain hose should be inclined as shown in the figure below.



⚠ CAUTION

Please ensure the smooth flow of condensed water of the indoor unit during installation. (Carelessness may result in water leakage.)

⚠ CAUTION

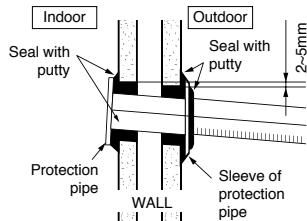
Be sure that the hose is not loosely connected or bent.

4. Checking procedure after installation

- 4.1 Confirm the smooth flow of water from the drain hose by pouring some water into the evaporating pan.
- 4.2 Use 'bushing' to arrange all the refrigerating pipes and sealer that belong to the pipe set, as shown in figures 4-1 and 4-2.

Wall penetration and installation of protection pipe

- Drill a ø65mm hole on wall which is slightly tilted towards the outdoor side. Drill the wall at a small angle.
- Cut the protection pipe according to the wall thickness.
- Empty gap in the sleeve of protection pipe should be completely sealed with putty to avoid dripping of rain water into the room.



⚠ CAUTION

Be sure that the wire is not in contact with any metal in the wall. Please use the protection pipe as wire passing through the hollow part of the wall so as to prevent the possibility of damaged by mouse.

Fig. 4-1

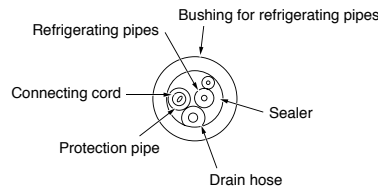


Fig. 4-2

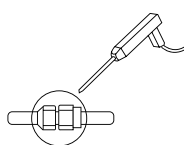
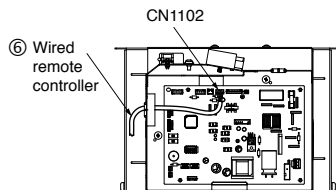


Fig. 4-3

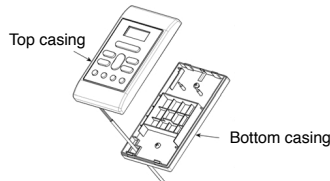
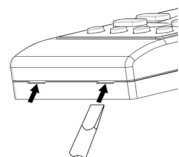
- 4.3 Wind the inadhesive vinyl tape which is belonged from the pipe set around the refrigerating pipes and the connecting cord.
- 4.4 Leakage checking of refrigerant at the coupling by gas leak detector or soapsuds, as shown in Fig. 4-3.
- 4.5 Checking of evaporator coldness (cooling operation).
- 4.6 Checking of warm wind from condenser (cooling operation).

5. Installation of wired remote controller (Optional)

- (a) Connection to the electrical box:
 - Remove the cover of electric box
 - Connect the connector of wired remote controller to CN1102
 - Assemble back the cover of electrical box



- (b) Wiring installation for wired remote controller (2 methods);
 - Wired remote controller casing can be opened by pressing the slots with minus screw driver (see below diagram)



- Decide the fixing location of remote controller so that the length of wire shall be within 5 meters.

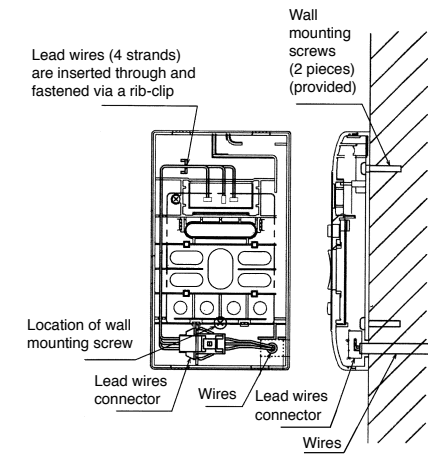
⚠ CAUTION

- Do not cut the provided wire. Excess wire should be properly wound and fitted at safe place.
- Do not join the wire with additional wire.

Wiring installation illustrations

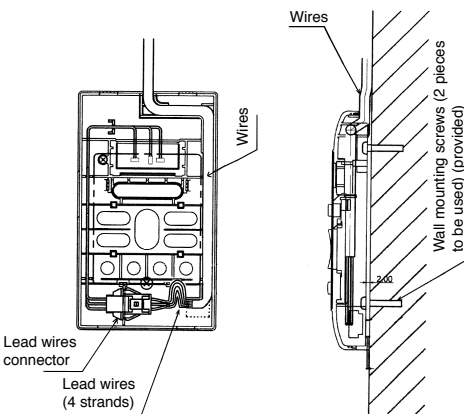
Wall recessed wiring installation (Optional)

1. When connecting the wires via the wall's recessed slot:
 - Fix the bottom casing to the wall by the screw provided.
 - Assemble the top casing to the fixed bottom casing. (Refer to the illustration below for installation details.)



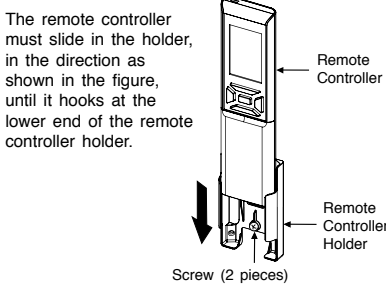
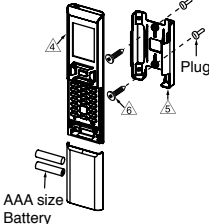
Inside top wiring installation (Alternative)

2. When connecting wires from the inside top portion of the top casing:
 - Break off a perforated aperture located at the top portion of the bottom casing by using a nipper. Smoothen the aperture by using a nipper.
 - Fix the bottom casing to the wall by provided screw.
 - Connect the wires to the lead wires connector.
 - Mount the wires through the provided slot on top casing.
 - Assemble the top casing to the fixed bottom casing. (Refer to the illustration below for installation details)



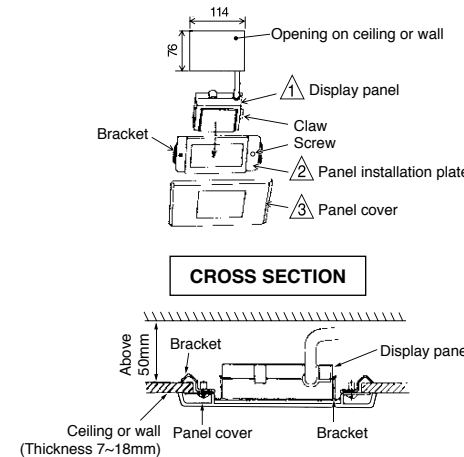
6. Installation of wireless remote controller (Optional)

- The remote controller can be placed in its holder which is fixed on a wall or a 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 fixed. The unit will beep when signal is received from the remote controller. The signal transmission is weakened by the fluorescent light. Therefore, during the installation of the remote controller holder, please switch on the light, even during day time, to determine the mounting location of the holder.



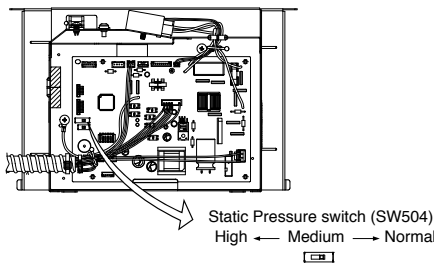
Installation of display panel (Optional)

- Select an installation position on ceiling or wall where there is no obstacle to interrupt signal reception.
- Loosen the screws of panel installation plate so that bracket can be slightly moved.
- Match the display panel to panel installation plate so the fixing claws on the panel are securely hooked.
- Match brackets to the opening on ceiling or wall and tighten screws until bracket is firmly secured to ceiling material.
- Install the panel cover so inside claws are securely hooked to the panel installation plate.
- Conduct the indoor unit side housing of display panel cord to the electric box of the indoor unit and connect it with the housing at the side of the unit.



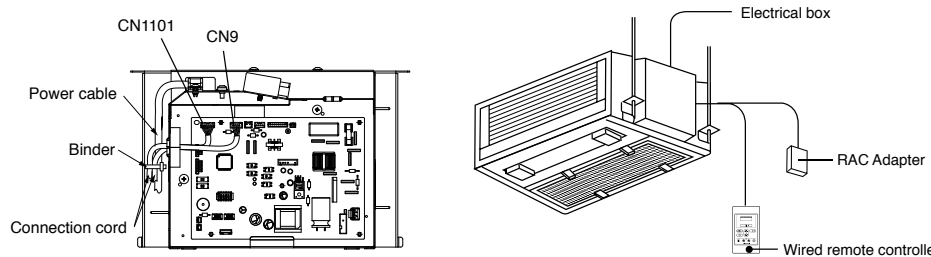
7. Setting of switches High static-pressure switch

- (Full duct type and semi duct type)
- For full duct type, set the static-pressure switch to HIGH STATIC-PRESSURE.
- For semi duct type, set the static pressure switch to MED.
- If not set to HIGH or MED, there will be reduction of cooling and heating capacities. (At the time of delivery, the switch is set as "NORMAL".)



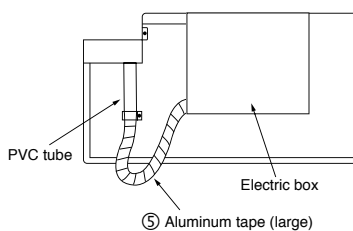
8. When connecting the HA system / Dry Contact / H-Link (Optional)

- A separately purchased HA Connection Cord is required to get connected to the HA-System.
- To connect to H-link, a separately purchased RAC adapter is required.
- To install the wiring, the electrical box cover must be opened. (As for HA system/Dry contact, connect to CN9 whereas for the RAC adapter, connect to CN1101).
- The connection cord and power cables are to be arranged and tied up as per the diagram as shown below.
- Please refer to the respective user manuals of the HA-System and the RAC adapter, for further details.
- Please refer to the user manual for instructions on the removal and installation of the electrical box.
- For ordering all optional parts, please refer to the catalogue for part number.



9. Protection of lead wire

Wrap aluminum tape around PVC tube between electric box and indoor unit (cord band).



10. Operation test

- Please ensure that the air conditioner is in normal operating condition during the operation test.
- Explain to your customer the proper operation procedures as described in the user's manual.
- If the indoor unit does not operate, check to see that the connections are correct.

⚠ CAUTION

Trial run should be conducted on one unit at a time to check for incorrect wiring of connecting cord.

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