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ENGLISH

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Multi Air Conditioner

INSTALLATION MANUAL

IMPORTANT

- Please read this instruction manual completely before installing the product.
- When the power cord is damaged, replacement should be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.
- Please retain this installation manual for future reference after reading it thoroughly.

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Safety Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed.

- Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

⚠ WARNING This symbol indicates the possibility of death or serious injury.

⚠ CAUTION This symbol indicates the possibility of injury or damage to properties only.

- Meanings of symbols used in this manual are as shown below.



Be sure not to do.



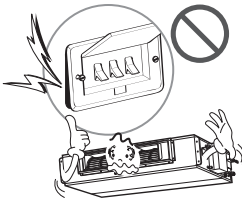
Be sure to follow the instruction.

⚠ WARNING

■ Installation

Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

- There is risk of fire or electric shock.



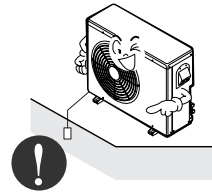
For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.

- Do not disassemble or repair the product. There is risk of fire or electric shock.



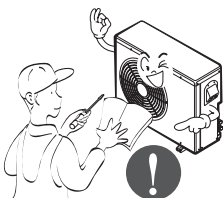
Always ground the product.

- There is risk of fire or electric shock.



Install the panel and the cover of control box securely.

- There is risk of fire or electric shock.



Always install a dedicated circuit and breaker.

- Improper wiring or installation may cause fire or electric shock



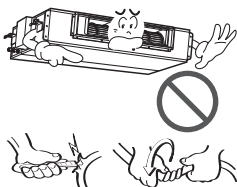
Use the correctly rated breaker or fuse.

- There is risk of fire or electric shock.



Do not modify or extend the power cable.

- There is risk of fire or electric shock.



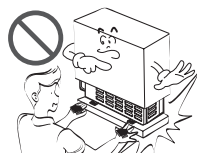
Do not install, remove, or re-install the unit by yourself (customer).

- There is risk of fire, electric shock, explosion, or injury.



Be cautious when unpacking and installing the product.

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.



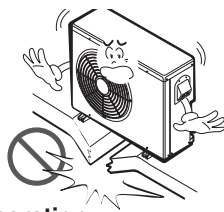
For installation, always contact the dealer or an Authorized Service Center.

- There is risk of fire, electric shock, explosion, or injury.



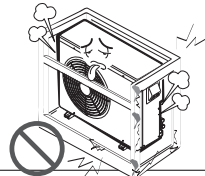
Do not install the product on a defective installation stand.

- It may cause injury, accident, or damage to the product.



Be sure the installation area does not deteriorate with age.

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



■ Operation

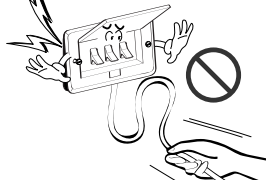
Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Moisture may condense and wet or damage furniture.



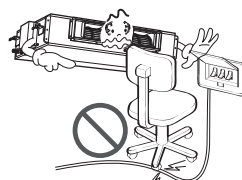
Take care to ensure that power cable could not be pulled out or damaged during operation.

- There is risk of fire or electric shock.



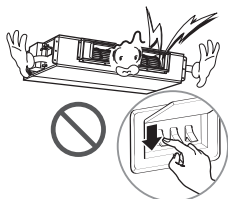
Do not place anything on the power cable.

- There is risk of fire or electric shock.



Do not plug or unplug the power supply plug during operation.

- There is risk of fire or electric shock.



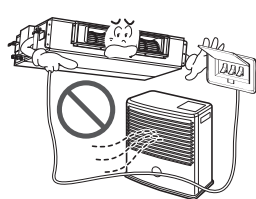
Do not touch (operate) the product with wet hands.

- There is risk of fire or electrical shock.



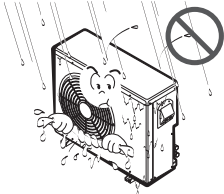
Do not place a heater or other appliances near the power cable.

- There is risk of fire and electric shock.



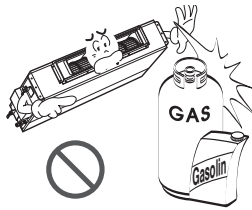
Do not allow water to run into electric parts.

- It may cause There is risk of fire, failure of the product, or electric shock.



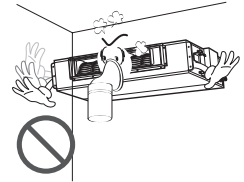
Do not store or use flammable gas or combustibles near the product.

- There is risk of fire or failure of product.



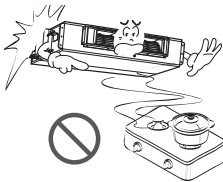
Do not use the product in a tightly closed space for a long time.

- Oxygen deficiency could occur.



When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.

- Do not use the telephone or turn switches on or off. There is risk of explosion or fire



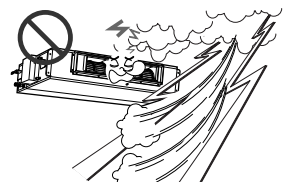
If strange sounds, or small or smoke comes from product. Turn the breaker off or disconnect the power supply cable.

- There is risk of electric shock or fire.



Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.

- There is risk of property damage, failure of product, or electric shock.



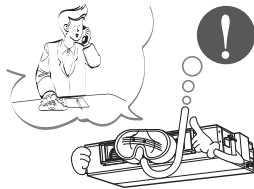
Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

- There is risk of physical injury, electric shock, or product failure.



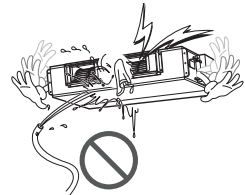
When the product is soaked (flooded or submerged), contact an Authorized Service Center.

- There is risk of fire or electric shock.



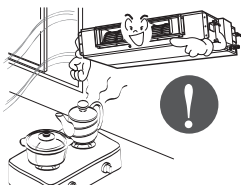
Be cautious that water could not enter the product.

- There is risk of fire, electric shock, or product damage.



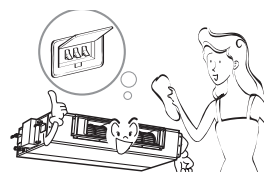
Ventilate the product from time to time when operating it together with a stove, etc.

- There is risk of fire or electric shock.



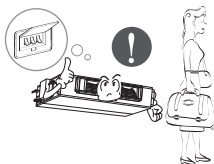
Turn the main power off when cleaning or maintaining the product.

- There is risk of electric shock.



When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.

- There is risk of product damage or failure, or unintended operation.



Take care to ensure that nobody could step on or fall onto the outdoor unit.

- This could result in personal injury and product damage.

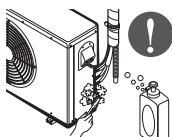


CAUTION

Installation

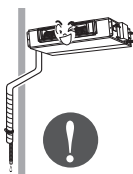
Always check for gas (refrigerant) leakage after installation or repair of product.

- Low refrigerant levels may cause failure of product.



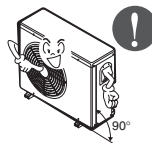
Install the drain hose to ensure that water is drained away properly.

- A bad connection may cause water leakage.



Keep level even when installing the product.

- To avoid vibration or water leakage.



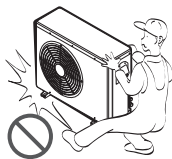
Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.

- It may cause a problem for your neighbors.



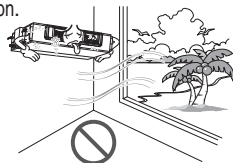
Use two or more people to lift and transport the product.

- Avoid personal injury.



Do not install the product where it will be exposed to sea wind (salt spray) directly.

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.



Operation

Do not expose the skin directly to cool air for long periods of time. (Don't sit in the draft.)

- This could harm to your health.



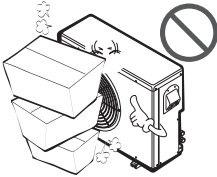
Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.

- There is risk of damage or loss of property.



Do not block the inlet or outlet of air flow.

- It may cause product failure.



Do not step on or put anything on the product. (outdoor units)

- There is risk of personal injury and failure of product.



Do not drink the water drained from the product.

- It is not sanitary and could cause serious health issues.



Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.

- They may burn or explode.



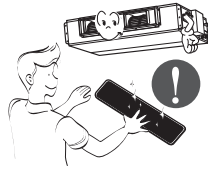
Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.

- There is risk of fire, electric shock, or damage to the plastic parts of the product.



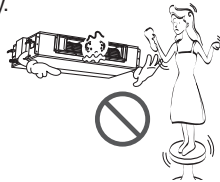
Always insert the filter securely. Clean the filter every two weeks or more often if necessary.

- A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.



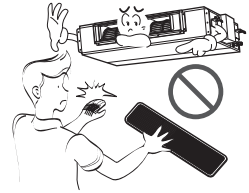
Use a firm stool or ladder when cleaning or maintaining the product.

- Be careful and avoid personal injury.



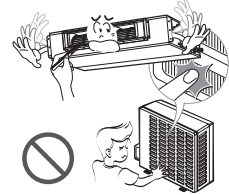
Do not touch the metal parts of the product when removing the air filter. They are very sharp!

- There is risk of personal injury.



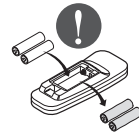
Do not insert hands or other objects through the air inlet or outlet while the product is operated.

- There are sharp and moving parts that could cause personal injury.



Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.

- There is risk of fire or explosion



If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.

- The chemicals in batteries could cause burns or other health hazards.



Introduction

Symbols used in this Manual



This symbol alerts you to the risk of electric shock.

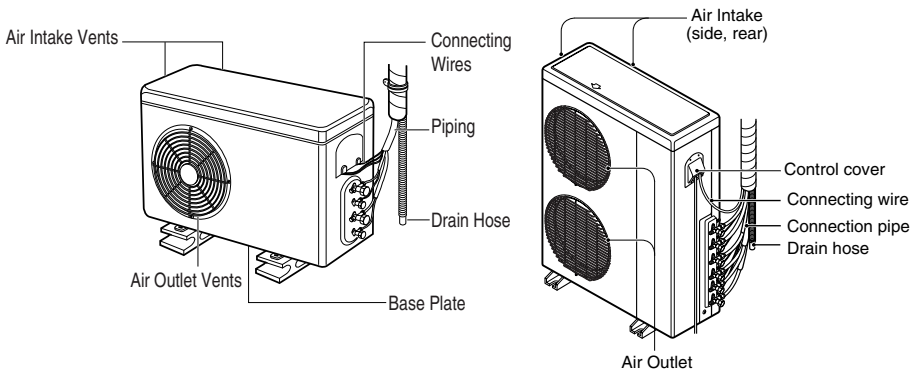
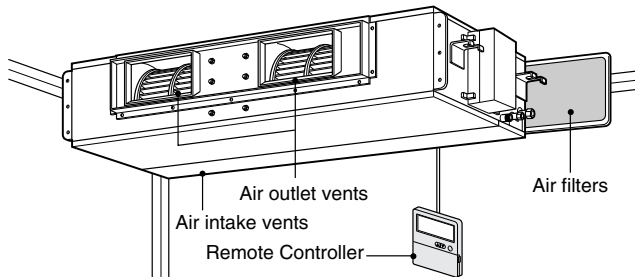


This symbol alerts you to hazards that may cause harm to the air conditioner.

NOTICE

This symbol indicates special notes.

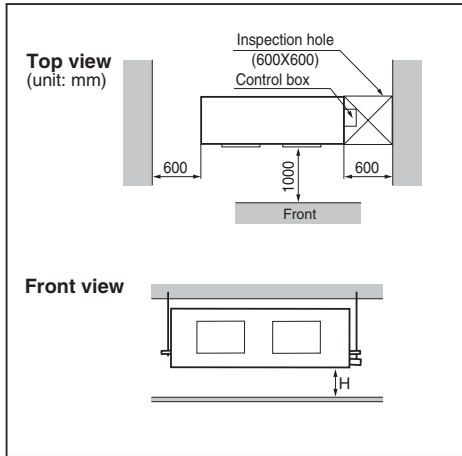
Features



Installation

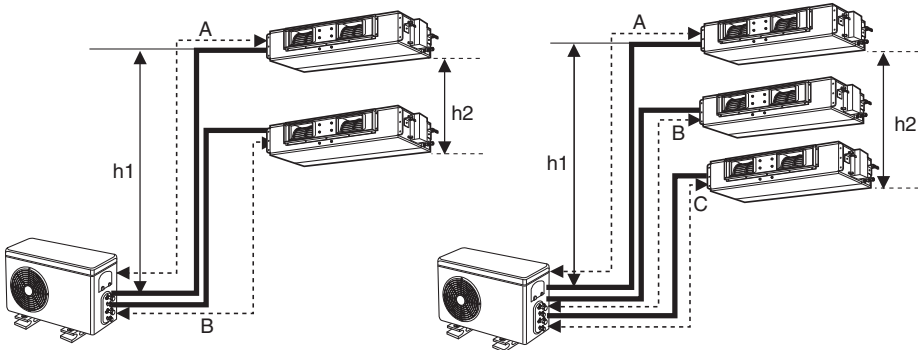
Selection of the best location

- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good.
- There should not be any heat source or steam near the unit



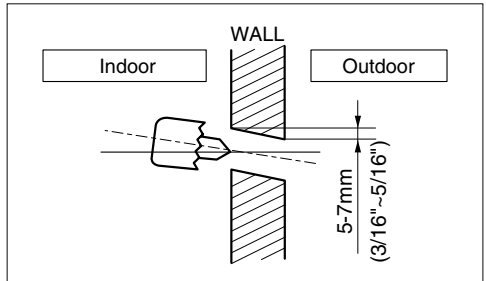
Piping Length and Elevation

Piping Length (m)	F242CX F242HX	F362CX	F363CX	F483CX F483HX
Total(A+B+C)	30	30	45	45
Max/Room(A/B/C)	15	15	15	15
Standard length	7.5	7.5	7.5	7.5
In-Out(h1)	7.5	7.5	7.5	7.5
In-In(h2)	7.5	7.5	7.5	7.5
Additional Refrigerent(g/m)	20	20	20	20



Drill a Hole in the Wall

- Drill the piping hole with a $\phi 70\text{mm}$ hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.

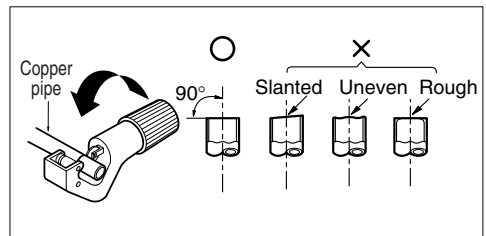


Flaring Work

Main cause for gas leakage is due to defect in flaring work. Carry out correct flaring work in the following procedure.

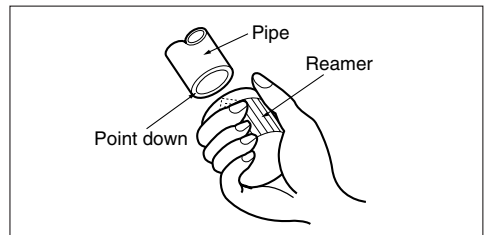
Cut the pipes and the cable.

1. Use the piping kit accessory or the pipes purchased locally.
2. Measure the distance between the indoor and the outdoor unit.
3. Cut the pipes a little longer than measured distance.
4. Cut the cable 1.5m longer than the pipe length.



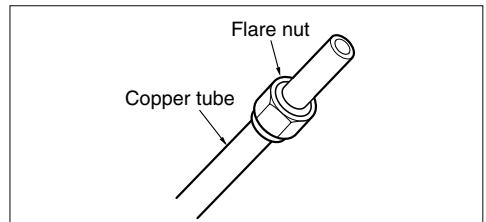
Burrs removal

1. Completely remove all burrs from the cut cross section of pipe/tube.
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.



Putting nut on

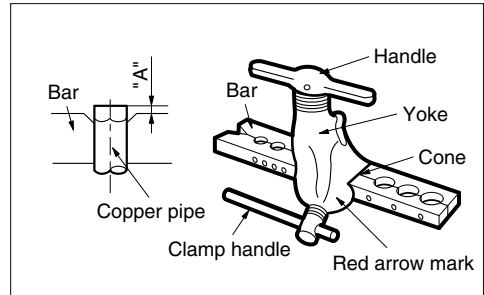
- Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal. (not possible to put them on after flaring work)



Flaring work

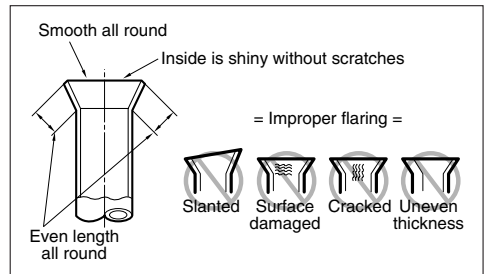
1. Firmly hold copper pipe in a bar in the dimension shown in the table below.
2. Carry out flaring work with the flaring tool.

Outside diameter		A
mm	inch	mm
Ø6.35	1/4	1.1~1.3
Ø9.52	3/8	1.5~1.7
Ø12.7	1/2	1.6~1.8
Ø15.88	5/8	1.6~1.8
Ø19.05	3/4	1.9~2.1



Check

1. Compare the flared work with the figure by.
2. If a flared section is defective, cut it off and do flaring work again.



The Indoor Unit Installation

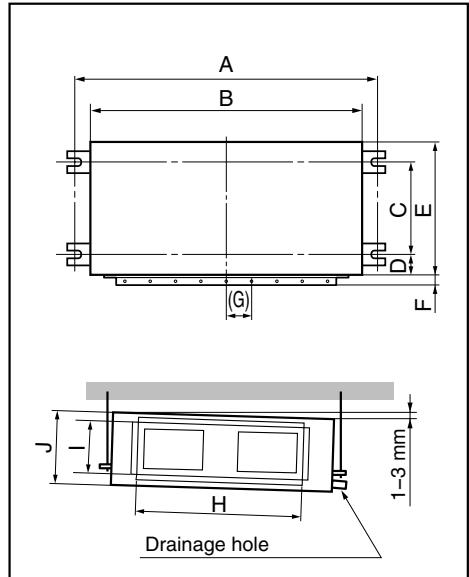
CASE 1

POSITION OF SUSPENSION BOLT

- Apply a joint-canvas between the unit and duct to absorb unnecessary vibration.
- Apply a filter Accessory at air return hole.

(Unit:mm)

Dimension \ Capacity	A	B	C	D	E	F	(G)	H	I	J
12k/18k/24k Btu/h	932	880	355	45.5	450	30	87	750	163	260

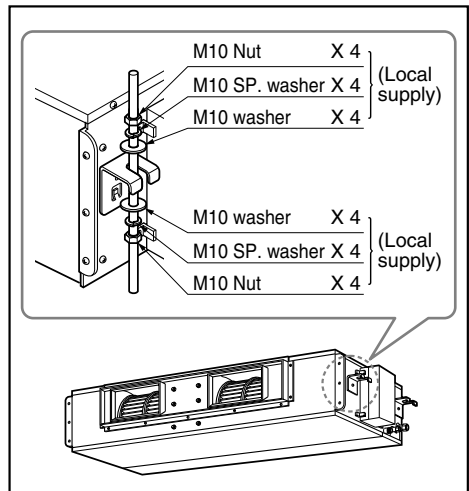


CASE 2

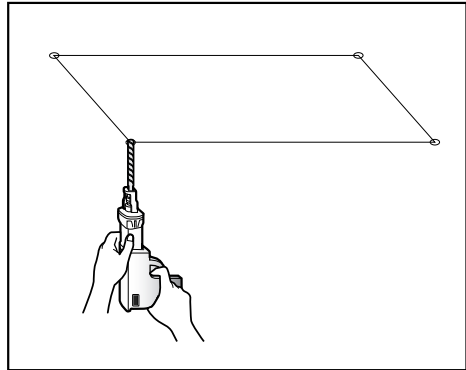
- Install the unit leaning to a drainage hole side as a figure for easy water drainage.

POSITION OF CONSOLE BOLT

- A place where the unit will be leveled and that can support the weight of the unit.
- A place where the unit can withstand its vibration.
- A place where service can be easily performed.



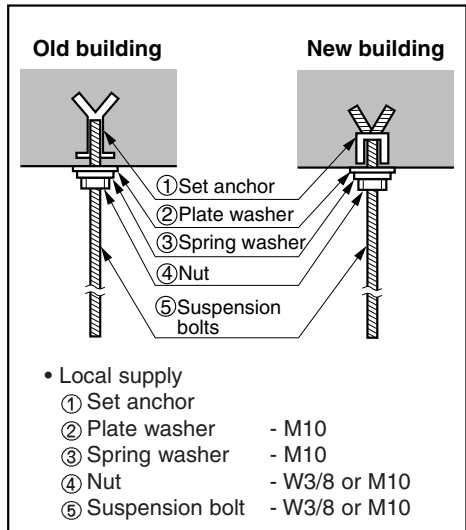
- Select and mark the position for fixing bolts.
- Drill the hole for set anchor on the face of ceiling.



- Insert the set anchor and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- Mount the suspension bolts to the set anchor firmly.
- Secure the installation plates onto the suspension bolts (adjust level roughly) using nuts, washers and spring washers.

CAUTION

Tighten the nut and bolt to prevent unit falling

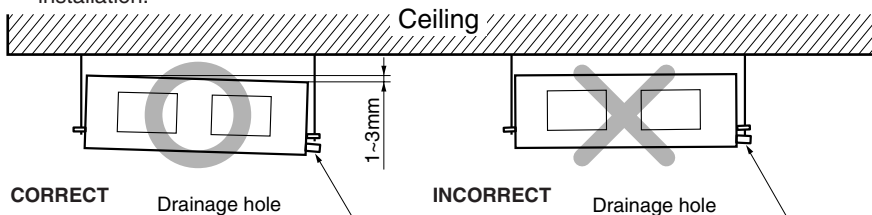


CAUTION

1. **Install declination** of the indoor unit is very **important for the drain** of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe shall be 5mm.

Front of view

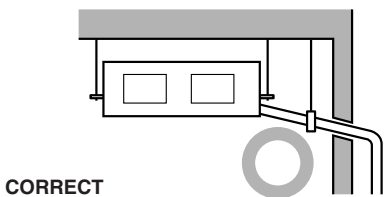
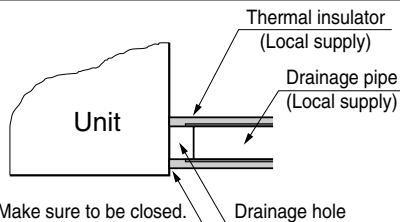
- The unit must be horizontal or declined to the drain hose connected when finished installation.



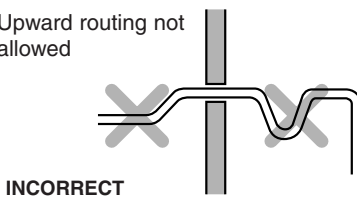
CAUTION FOR GRADIENT OF UNIT AND DRAIN PIPING

Lay the drain hose with a downward inclination so water will drain out.

- Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- 5mm or thicker formed thermal insulator shall always be provided for the drain pipe.



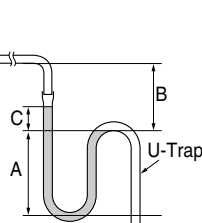
- Upward routing not allowed



- Install the P-Trap (or U-Trap) to prevent a water leakage caused by the blocking of intake air filter.

Applied U-Trap Dimension

- A ≥ 70mm
- B ≥ 2C
- C ≥ 2 x SP
- SP = External Pressure (mmAq)
- Ex) External Pressure = 10mmAq
- A ≥ 70mm
- B ≥ 40mm
- C ≥ 20mm



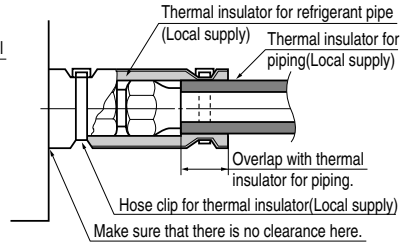
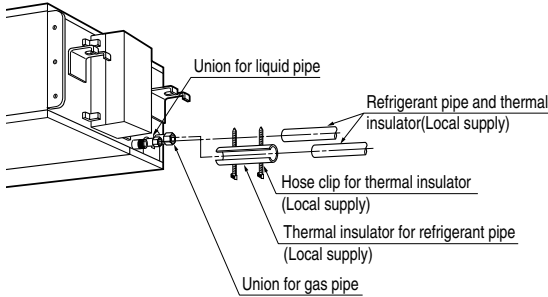
INSULATION, OTHERS

Insulate the joint and tubes completely.

THERMAL INSULATION

All thermal insulation must comply with local requirement.

INDOOR UNIT



REFRIGERANT PIPE

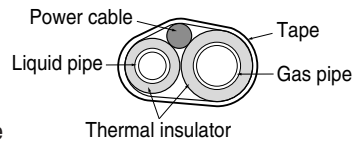
- Insulate and tape both the gas piping and liquid piping.

NOTICE

Common direction of drain and piping. Tape the tubing, drain hose and the connecting cable. Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.

NOTICE

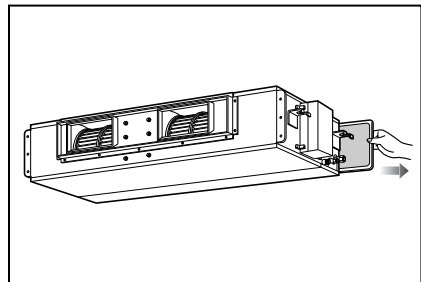
If the drain hose is routed inside the room, insulate the hose with an insulation material* so that dripping from "sweating"(condensation) will not damage furniture or floors.
*Foamed polyethylene or equivalent is recommended.



Checking the Drainage

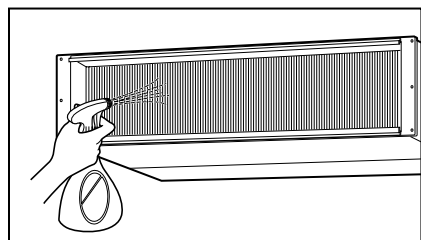
1) Checking the Drainage

1. Remove the Air Filter.



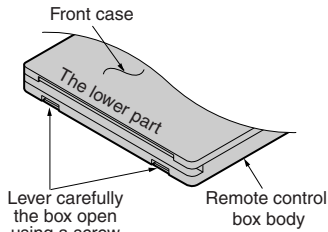
2. Check the drainage.

- Spray one or two glasses of water upon the evaporator.
- Ensure that water flows drain hose of indoor unit without any leakage.



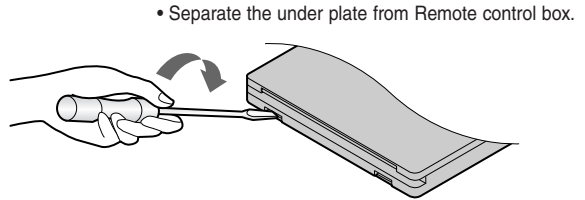
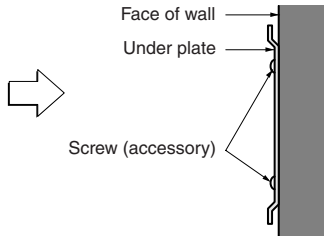
Wired Remote Controller Installation

DISASSEMBLING



Lever carefully the box open using a screw driver, etc.

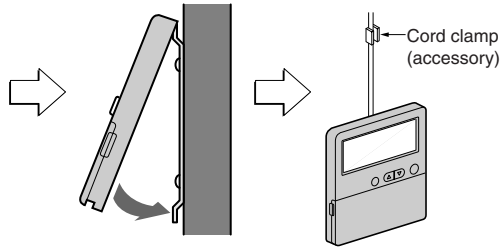
- Fix the under plate on the wall



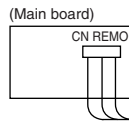
- Separate the under plate from Remote control box.

- Fix the cord clamps on the wall by $\varnothing 3$ tapping screws (accessory).

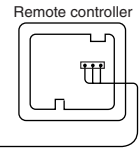
- Fix the remote control cord.



ELECTRICAL WIRING



Wire and make sure that terminal numbers are matched on unit side and remote controller side.



The maximum length of the cord is 100m.
If the length of the cord exceeds 50m,
use a wire size greater than 0.5mm².

WIRED REMOTE CONTROLLER INSTALLATION

- Since the room temperature sensor is in the remote controller, the remote controller box should be installed in a place away from direct sunlight, high humidity and direct supply of cold air to maintain proper space temperature.

Install the remote controller about 5ft(1.5m) above the floor in an area with good air circulation at an average temperature.

Do not install the remote controller where it can be affected by:

- Drafts, or dead spots behind doors and in corners.
- Hot or cold air from ducts.
- Radiant heat from sun or appliances.
- Concealed pipes and chimneys.
- Uncontrolled areas such as an outside wall behind the remote controller.
- This remote controller is equipped with a seven segment LED. display. For proper display of the remote controller LED's, the remote controller should be installed properly as shown in Fig.1.
(The standard height is 1.2~1.5 m from floor level.)

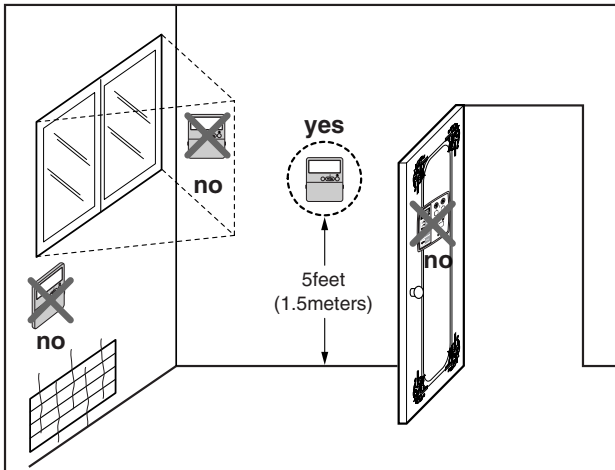


Fig.1 Typical locations for remote controller

Connecting the Cables

Indoor

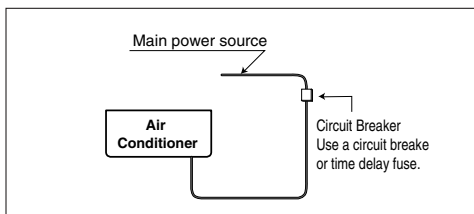
Connect the cable to the indoor unit by connecting the wires to the terminals on the control board individually according to the outdoor unit connection. (Ensure that the color of the wires of the outdoor unit and the terminal No. are the same as those of the indoor unit.)

⚠ CAUTION

- The above circuit diagram is subject to change without notice.
- The earth wire should be longer than the common wires.
- When installing, refer to the circuit diagram behind the panel front of the indoor unit.
- Connect the wires firmly so that they may not be pulled out easily.
- Connect the wires according to color codes, referring to the wiring diagram.

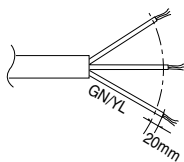
⚠ CAUTION

If a power plug is not used, provide a circuit breaker between power source and the unit as shown by.



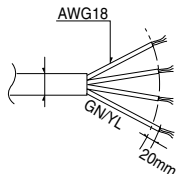
⚠ CAUTION

The power cord connected to the outdoor unit should be complied with the following specifications (UL, ETL recognized or CSA certified).



NORMAL CROSS-SECTIONAL AREA	Grade (mm ²)		
	F242CX/HX	F363CX	F362CX F483CX/HX
	2.5	3.5	4
Cable Type(B)	H07RN-F	H07RN-F	H07RN-F

The power connecting cable connected to the indoor and outdoor unit should be complied with the following specifications.

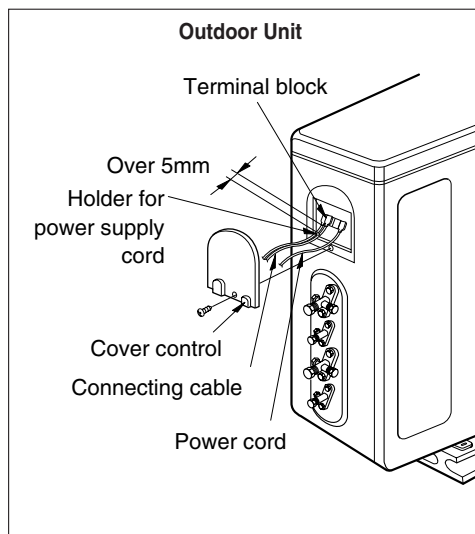


NORMAL CROSS-SECTIONAL AREA	Grade (mm ²)
	0.75
Cable Type(B)	H07RN-F

Outdoor

1. Remove the control cover from the unit by loosening the screw.
Connect the wires to the terminals on the control board individually.
2. Secure the cable onto the control board with the cord clamp.
3. Refix the control cover to the original position with the screw.
4. Use a recognized circuit breaker between the power source and the unit.
A disconnecting device to adequately disconnect all supply lines must be fitted.

Circuit Breaker(A)	Grade			
	F242CX F242HX	F362CX	F363CX	F483CX F483HX
	25A	35A	35A	50A



⚠ CAUTION

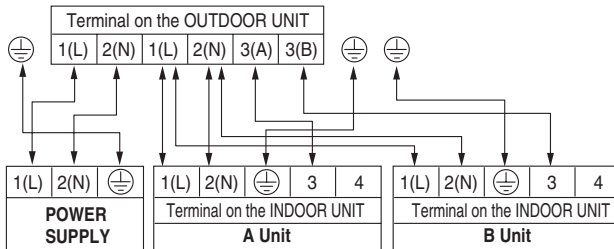
According to the confirmation of the above conditions, prepare the wiring as follows.

1. Never fail to have an individual power circuit specifically for the air conditioner. As for the method of wiring, be guided by the circuit diagram posted on the inside of control cover.
2. The screw which fasten the wiring in the casing of electrical fittings are liable to come loose from vibrations to which the unit is subjected during the course of transportation. Check them and make sure that they are all tightly fastened. (If they are loose, it could cause burn-out of the wires.)
3. Specification of power source.
4. Confirm that electrical capacity is sufficient.
5. See to that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
6. Confirm that the cable thickness is as specified in the power source specification. (Particularly note the relation between cable length and thickness.)
7. Always install an earth leakage circuit breaker in a wet or moist area.
8. The following would be caused by voltage drop.
 - Vibration of a magnetic switch, which will damage the contact point, fuse breaking, disturbance of the normal function of the overload.
9. The means for disconnection from a power supply shall be incorporated in the fixed wiring and have an air gap contact separation of at least 3mm in each active(phase) conductors.

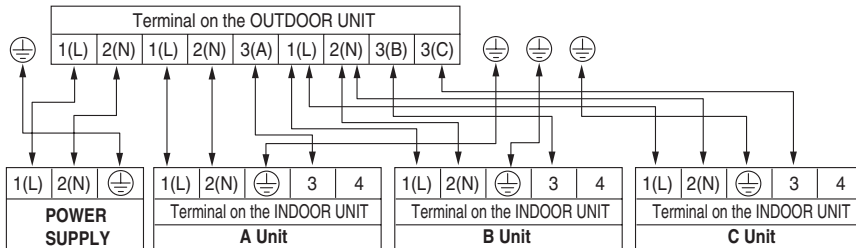
Connection of the cable

1. Remove the cover control from the unit by loosening the screw.
Connect the wires to the terminals on the control board individually as the following.

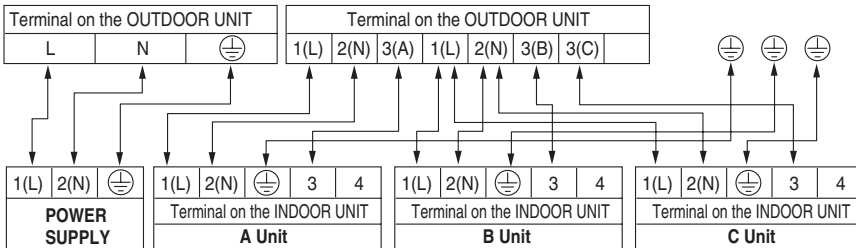
F242CX/F242HX,F362CX



F363CX



F483CX/F483HX

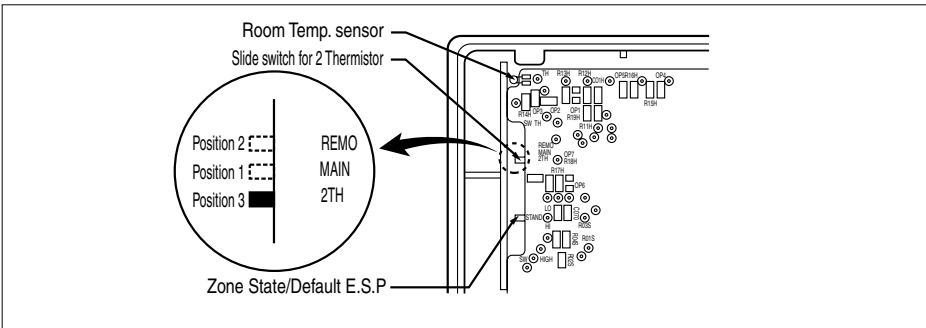


2. Secure the cable onto the control board with the holder (clamer).
3. Refix the cover control to the original position with the screw.
4. Use a recongnized circuit breaker between the power source and the unit. A disconnection device to ade-quately disconnect all supply lines must be fitted.

Optional Operation

1. Two Thermistor System

- (1) Open the rear cover of the wired remote-controller to set the mode.
- (2) Select one of three selectable modes as follows.
 - Position 1: The room temperature is controlled by the thermistor of the main body.
 - Position 2: The room temperature is controlled by the thermistor of the wired remote-controller, control the temperature according to the position of wired remote-controller.
 - Position 3: The room temperature is controlled by lower temperature between the temperature of main body and of remote-controller sensor.
- (3) Move the slide switch to set position.



- (4) Close the rear cover and check if it works normally.



CAUTION:

- Select the position after counselling with a customer.
- In case of cooling mode, room temperature is controlled by the main body sensor.
- To control the room temperature by a wired remote controller, install controller(room temp. sensor) to sense the temperature more accurately.
- Manufactured in the position 3.

2. E.S.P.(External Static Pressure) Setting

- (1) Open the rear cover of the wired remote-controller to set the mode.
- (2) Select one of three selectable modes as follows.

■ Without Zone System

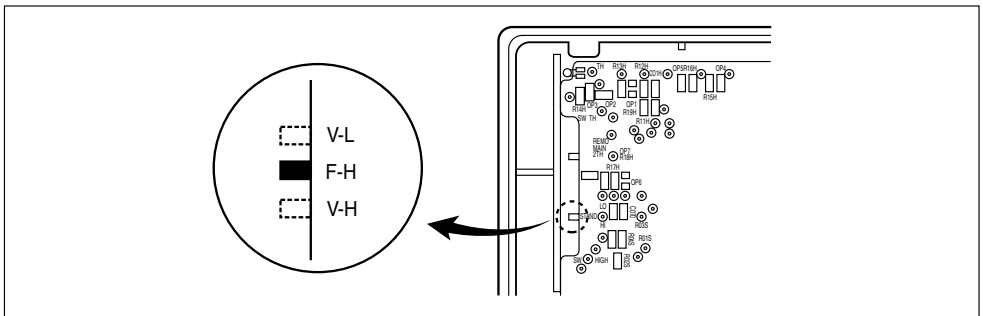
1. Position V-H, F-H:
 - This position sets the maximum E.S.P as a default set.
2. Position V-L:
 - This position sets the minimum E.S.P as a default set.

■ With Zone System

1. Position V-H:
 - Maximum E.S.P setting & Fan speed is varied according to the state of dampers by micom.
2. Position F-H:
 - Maximum E.S.P setting & Fan speed doesn't vary according to the opening & Closing of dampers.
3. Position V-L:
 - Minimum E.S.P setting & Fan speed is varied according to the state of dampers by micom.

* Maximum : 4 mmAq
Minimum : 0 mmAq

- (3) Move the slide switch to set position.



- (4) Close the rear cover and check if it works normally.



CAUTION:

- Select the position after checking duct work and E.S.P of the unit.
- Manufactured in the position F-H.

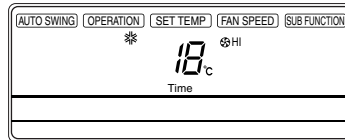
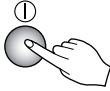
3. How to Set E.S.P?

Procedure of RPM change:

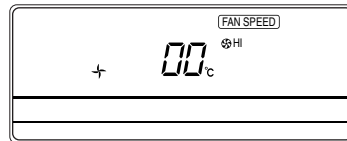
Ex) External Static pressure is 4mmAq for 24k.

- To protect the unit, compressor is designed to be off during E.S.P. setting.

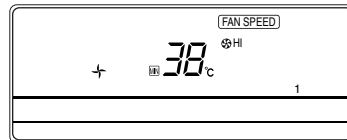
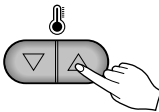
- 1** Push the "On/Off" button.
The unit will start.



- 2** Push the "Timer" and "Wind" button simultaneously for more than 3 seconds.



- 3** Push the "Up" of "Down" button for E.S.P adjustment.
And, adjust the number which you want. (In this example, the number is "138". Refer to the table 1 on the next page.)

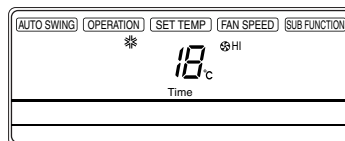


Note: The range of selection is from 1~255. Since, the display is two Digit only.
If the range selection is above 100 then the third digit will appear in the screen as shown.

- 4** Shift the fan speed mode by pressing the fan speed button.
And then, Adjust numbers of next steps by repeating the stage 3.
(In this example, the numbers are "149" and "169" respectively)



- 5** Push the "Timer" and "Wind" button simultaneously for more than 3 seconds.
Then, Wind Data is memorized by the EEPROM of the main PCB.



[Table. 1]

Static Pressure(mmAq)		0	1	2	3	4
Model Name	Step(Hi/Med/Lo)	Setting Value				
12k	12.5 CMM	225	223	220	210	180
	10 CMM	242	240	238	236	235
	8.5 CMM	251	250	249	248	247
18k	16.5 CMM	165	161	158	156	153
	14.5 CMM	182	178	174	170	168
	13 CMM	195	190	186	183	180
24k	18 CMM	147	145	143	140	138
	16.5 CMM	159	156	153	152	149
	14 CMM	180	177	174	171	169

- NOTICE** : 1. Be sure to set the value referring table 1. Unexpected set value will cause mal-function.
 2. Table 1 is based at 220V. According to the fluctuation of voltage, air flow rate varies.

