

Duct Type SPLIT TYPE AIR CONDITIONER INSTALLATION INSTRUCTION SHEET (PART NO. 9374815012)

CAUTION
R410A REFRIGERANT
This air conditioner contains and operates with refrigerant R410A and Polyol Ester oil.
THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.
Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

- Indoor unit is an appliance not accessible to the general public.
For authorized service personnel only.
- DANGER** This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel.
 - WARNING** This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
 - CAUTION** This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.

DANGER
Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.

This air conditioner uses new refrigerant HFC (R410A).

- The basic installation work procedures are the same as conventional refrigerant models. However, pay careful attention to the following points:
- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the conventional piping and flare nuts with the R410A piping and flare nuts.
 - Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]
 - Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
 - When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.

Special tools for R410A

Tool name	Contents of change
Gauge manifold	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed.
Charge hose	It is recommended the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 53 kgf/cm ²) for high pressure. -0.1 to 3.8 MPa (-76 cmHg to 38 kgf/cm ²) for low pressure.
Vacuum pump	To increase pressure resistance, the hose material and base size were changed.
Gas leakage detector	A conventional vacuum pump can be used by installing a vacuum pump adapter. Special gas leakage detector for HFC refrigerant R410A.

Copper pipes

It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants. As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials. Thicknesses of copper pipes used with R410A are as shown in the table. Never use copper pipes thinner than that in the table even when it is available on the market.

Pipe outside diameter	Thickness
6.35 mm (1/4 in.)	0.80 mm
9.52 mm (3/8 in.)	0.80 mm
12.70 mm (1/2 in.)	0.80 mm

- For authorized service personnel only.
- WARNING**
 - For the room air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
 - Connect the indoor unit and outdoor unit with the room air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.
 - Installation work must be performed in accordance with national wiring standards by authorized personnel only.
 - If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.
 - Do not use an extension cord.
 - Do not turn on the power until all installation work is complete.

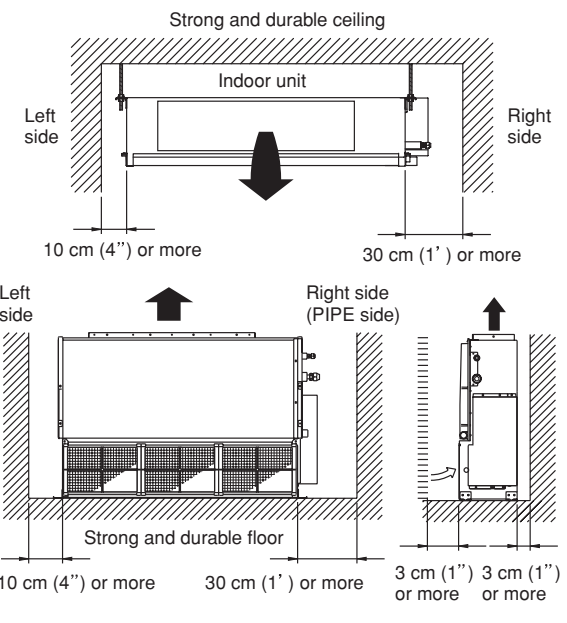
CAUTION
This installation instruction sheet describes how to install the indoor unit only. To install the outdoor unit, refer to the installation instruction sheet included with the outdoor unit.

- Be careful not to scratch the room air conditioner when handling it.
- After installation, explain correct operation to the customer, using the operating manual.
- Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.

SELECTING THE MOUNTING POSITION

- WARNING**
Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.
- CAUTION**
- Do not install where there is the danger of combustible gas leakage.
- Do not install near heat sources.
- If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.
- Take precautions to prevent the unit from falling.

- Decide the mounting position with the customer as follows:
- INDOOR UNIT**
- Install the indoor unit level on a strong wall, floor, ceiling which is not subject to vibration.
 - The inlet and outlet ports should not be obstructed: the air should be able to blow all over the room.
 - Install the unit near an electric outlet or special branch circuit.
 - Do not install the unit where it will be exposed to direct sunlight.
 - Install the unit where connection to the outdoor unit is easy.
 - Install the unit where the drain pipe can be easily installed.
 - Take servicing, etc. into consideration and leave the spaces shown on the right. Also install the unit where the filter can be removed.
 - Install the indoor unit where vibrations and noise are not amplified.
 - When installing the unit on the floor, provide an opening that will allow sufficient air to reach the air inlet panel.



STANDARD PARTS

The following installation parts are furnished. Use them as required.
INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Installation template	1	For positioning the indoor unit
Hanger	4	For suspending the indoor unit from ceiling
Tapping screw (φ4 × 10)	8	For installing the hanger
Special nut A (large flange)	4	For suspending the indoor unit from ceiling
Special nut B (small flange)	4	
Coupler heat insulation (large)	1	For indoor side pipe joint (large pipe)
Coupler heat insulation (small)	1	For indoor side pipe joint (small pipe)

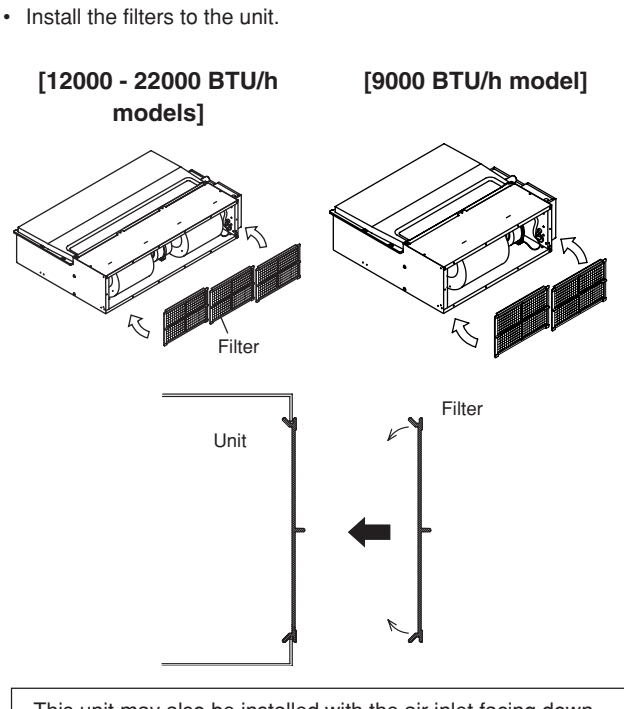
Name and Shape	Q'ty	Application
Blinder	(Small) 1 (Large) 4	For remote controller and remote controller cord binding For fixing the coupler heat insulation
Remote controller	1	
Remote controller cord	1	For connecting the remote controller
Tapping screw (φ4 × 16)	2	For installing the remote controller
Filter	2	9000 BTU/h model
	3	12000 - 22000 BTU/h models
Drain hose insulation	1	Insulates the drain hose and vinyl hose connection

OPTIONAL PARTS

- The following options are available.
- Simple remote controller: UTB-YPB (P/N 9077582006)
 - Remote sensor: UTD-RS100 (P/N 9072619004)
 - External control set: UTD-ECS5A (P/N 9077359004)

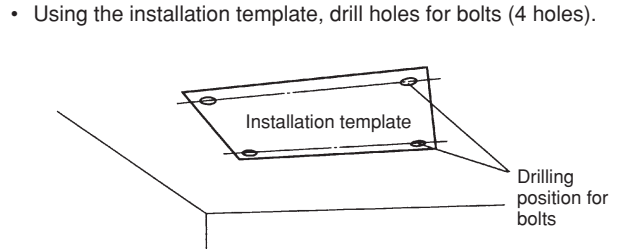
1 INDOOR UNIT INSTALLATION

A. CEILING CONCEALED TYPE

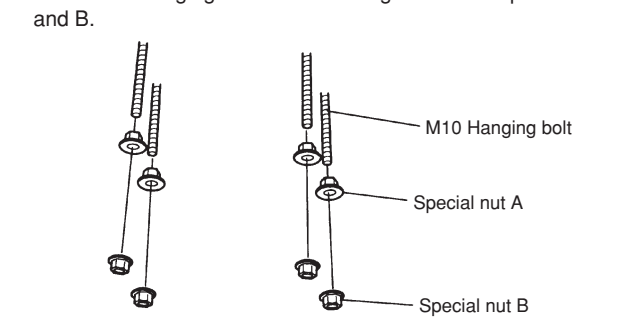


This unit may also be installed with the air inlet facing down. See also B-1 for such cases.

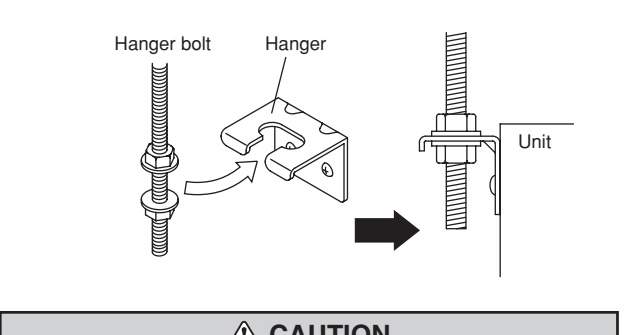
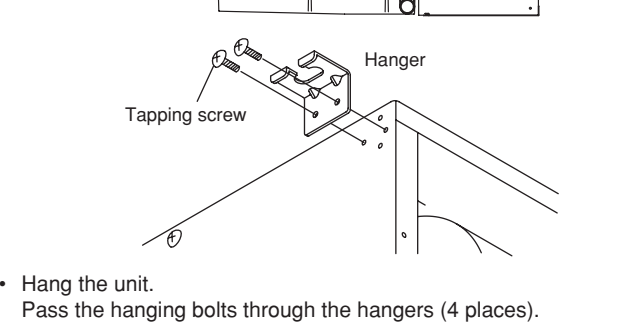
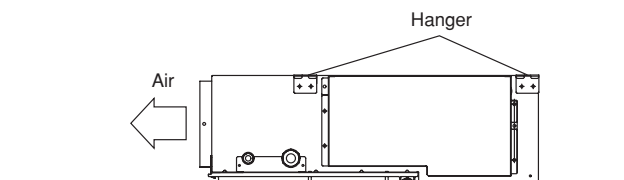
2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS



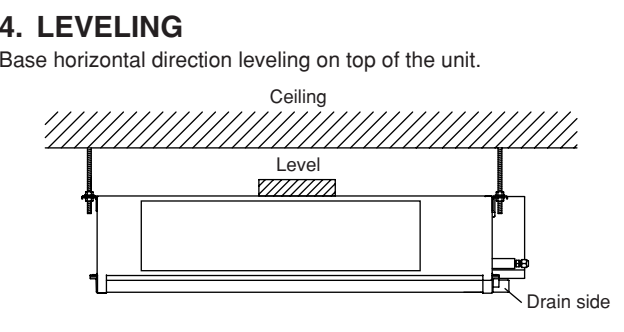
3. INSTALLING THE HANGERS



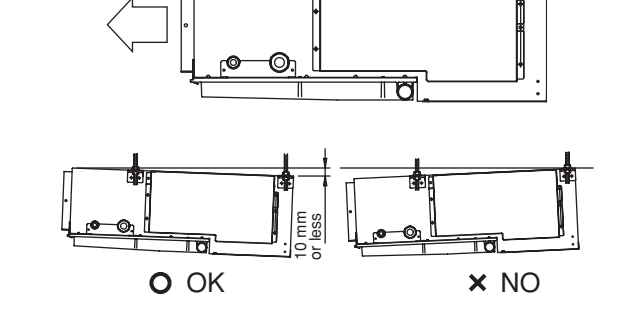
4. LEVELING



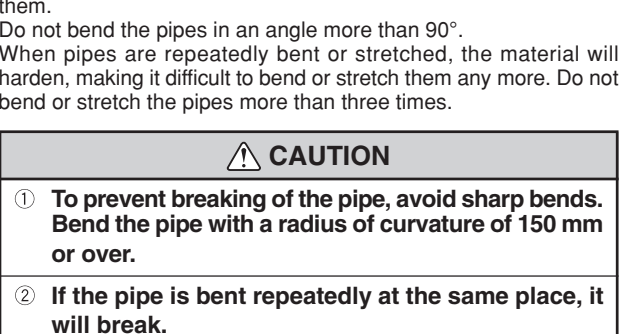
5. SERVICE HOLE DIMENSIONS



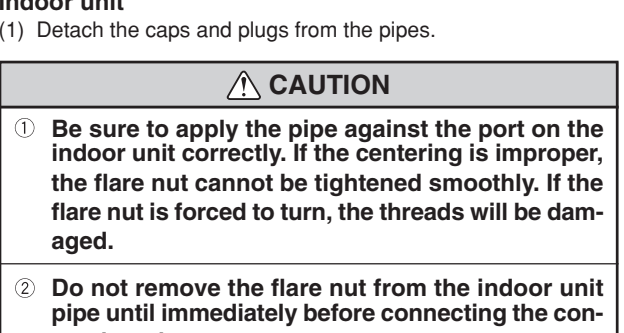
2. BENDING PIPES



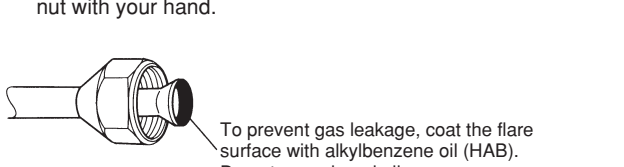
3. CONNECTION PIPES



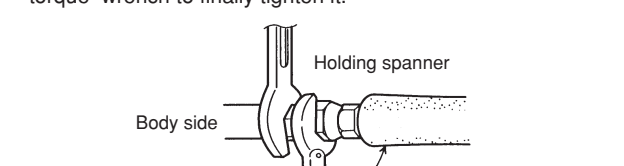
4. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)



A. CEILING CONCEALED TYPE



B. FLOOR STANDING CONCEALED TYPE



CAUTION

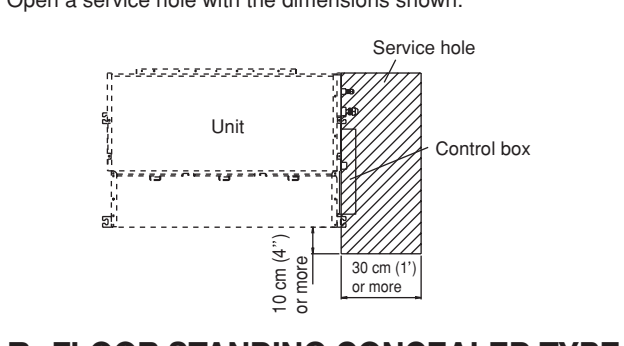
- Install the piping so that the control box cover can be removed for servicing.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

CAUTION

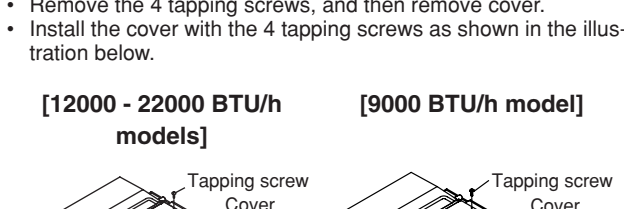
Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.

Flare nut	Tightening torque
6.35 mm (1/4 in.) dia.	14 to 18 N·m (140 to 180 kgf·cm)
9.52 mm (3/8 in.) dia.	33 to 42 N·m (330 to 420 kgf·cm)
12.70 mm (1/2 in.) dia.	50 to 62 N·m (500 to 620 kgf·cm)

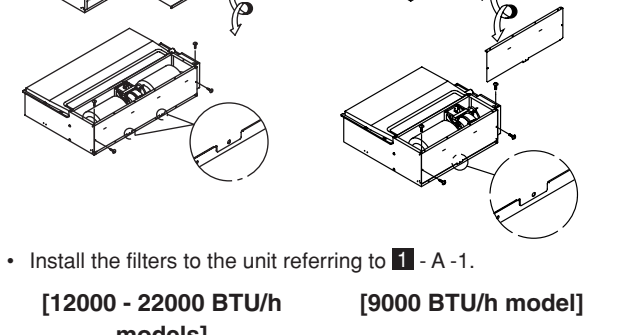
1. INSTALL THE FILTERS



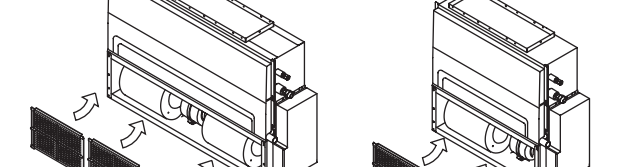
2. DRILLING HOLES FOR BOLTS AND INSTALLING THE BOLTS



3. INSTALLING THE HANGERS



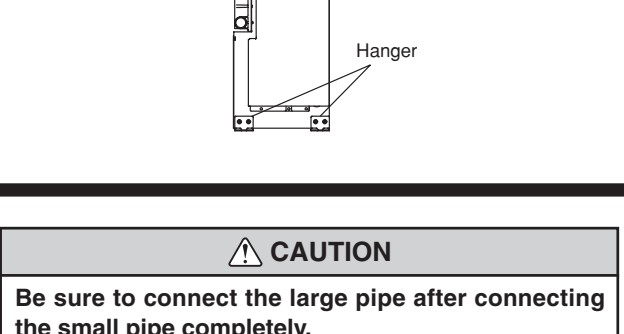
4. LEVELING



5. SERVICE HOLE DIMENSIONS



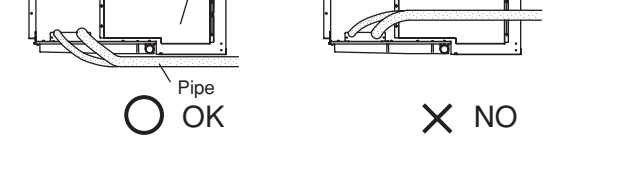
6. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)



A. CEILING CONCEALED TYPE



B. FLOOR STANDING CONCEALED TYPE



CAUTION

- Install the piping so that the control box cover can be removed for servicing.
- In order to prevent water from leaking into the control box, make sure that the piping is well insulated.

CAUTION

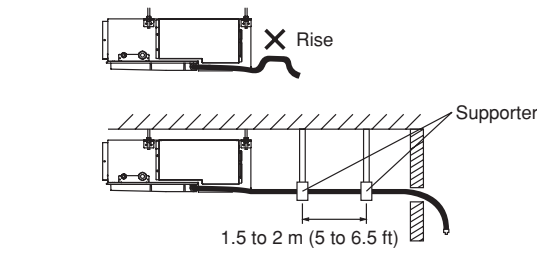
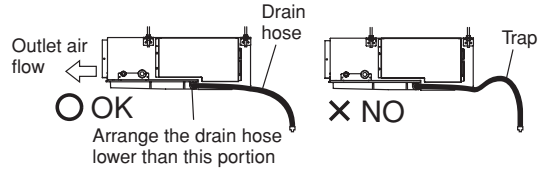
Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.

Flare nut	Tightening torque
6.35 mm (1/4 in.) dia.	14 to 18 N·m (140 to 180 kgf·cm)
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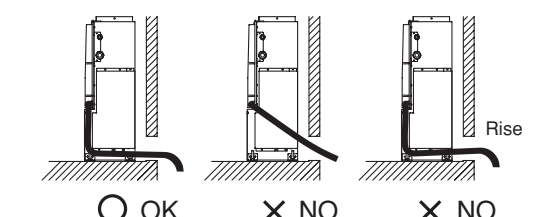
3 INSTALLING DRAIN HOSE

- INSTALL THE DRAIN HOSE**
- Install the drain hose with downward gradient (1/50 to 2/50) and so there are no rises or traps in the hose.
 - Use general hard polyvinyl chloride pipe and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
 - When the hose is long, install supporters.
 - Do not perform air bleeding.
 - Always heat insulate the indoor side of the drain hose.

A. CEILING CONCEALED TYPE



B. FLOOR STANDING CONCEALED TYPE



CAUTION

- Install the drain hose so that the control box cover can be removed for servicing.
- In order to prevent water from leaking into the control box, make sure that the drain hose is well insulated.
- After the wiring is connected and installation of the piping and drain hose is complete, make a seal around the opening in the wall.

The outside diameter of drain port is 26 mm, use a suitable drain hose.

Drain hose insulation Unit 0 mm Drain hose

4 ELECTRICAL WIRING

WARNING

- Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
- Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal board. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
- Always connect the ground wire.

HOW TO CONNECT WIRING TO THE TERMINALS

A. For solid core wiring (or F-cable)

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (1 5/16") of expose the solid wire.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") of expose the strand wiring.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

A. Solid wire

B. Strand wire

HOW TO FIX CONNECTION CORD AND POWER CABLE AT THE CORD CLAMP

After passing the connection cord and power cable through the insulation tube, fasten it with the cord clamp.

Use VW-1, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

1. INDOOR UNIT SIDE

- Remove the control box cover from the control box.

(2) Cord connection.

- Clamp the connection cord with the cord clamp.
- Connect the connection cord to the terminal board.
- Clamp the remote control cord with nylon clamp.
- Connect the remote control cord to the terminal board.

CAUTION

- Tighten the indoor unit connection cord (to the outdoor unit) and power supply indoor and outdoor unit terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.
- If the indoor unit connection cord (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.
- Wired the indoor unit connection cord (to the outdoor unit) by matching the numbers of the outdoor and indoor units terminal board numbers as shown in terminal label.
- Ground both the indoor and outdoor units by attaching a ground wire.
- Unit shall be grounded in compliance with the applicable local and national codes.

2. Floor standing concealed/ceiling concealed select switch

- The DIP switches were set for use as a ceiling concealed type at the factory.
- The following changes must be made to the settings if the unit is to be used as a floor standing concealed type.
- Changing the settings for the electrical circuits. DIP Switch 1 (SW1) on the printed circuit board inside the electric component box must be set as follows.

1. INSTALLING THE REMOTE CONTROLLER

- Open the operation panel on the front of the remote controller. remove the two screws indicated in the following figure, and then remove the front case of the remote controller.
- Install the rear case to the wall, etc. with the two tapping screws.

When installing the remote controller, remove the connector from the front case. The wires may break if the connector is not removed and the front case hangs down. When installing the front case, connect the connector to the front case.

Refer to the following information to install the remote controller wires.

Install the remote controller wires so as not to be direct touched with your hand.

5 REMOTE CONTROLLER SETTING

CAUTION

- In order to detect the room temperature correctly when using the temperature sensor of the remote controller, do not install the remote controller in a place where it will be exposed to direct sunlight or directly below the air outlet of the indoor unit.
- When installing the remote controller and cord near a source of electromagnetic waves, separate the remote controller from the source of the electromagnetic waves and use shielded cord.
- Do not touch the remote controller PC board and PC board parts directly with your hands.

3. SETTING THE DIP SWITCHES

When using a battery (memory backup)

Change the DIP switch setting to use batteries. (The DIP switch is not set to use batteries at the factory.)

Change the DIP switch setting to use batteries. (The DIP switch is not set to use batteries at the factory.)

Change DIP switch No. 6 from OFF to ON. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

2. ROUTING THE REMOTE CONTROLLER WIRES

- Install the remote controller wires to the terminals on the top of the rear case as shown in the following figure.
- Fasten the wires with the binder.

(Example)

3. SETTING THE DIP SWITCHES

When using a battery (memory backup)

Change the DIP switch setting to use batteries. (The DIP switch is not set to use batteries at the factory.)

Change DIP switch No. 6 from OFF to ON. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

4. SETTING THE ROOM TEMPERATURE DETECTION LOCATION

The detection location of the room temperature can be selected from the following three examples. Choose the detection location that is best for the installation location.

A. Indoor unit setting (factory setting)

The room temperature is detected by the indoor unit temperature sensor.

- When the THERMO SENSOR button is pressed, the lock display flashes because the function is locked at the factory.

B. Remote controller setting

The room temperature is detected by the remote controller temperature sensor.

- Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.
- Press the THERMO SENSOR button to select the temperature sensor of the indoor unit or the remote controller.

C. Indoor unit/remote controller setting (room temperature sensor selection)

The temperature sensor of the indoor unit or the remote controller can be used to detect the room temperature.

- Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.
- Press the THERMO SENSOR button to select the temperature sensor of the indoor unit or the remote controller.

NOTES

If the function to change the temperature sensor is used as shown in examples A and B (other than example C), be sure to lock the detection location. If the function is locked, the lock display will flash when the THERMO SENSOR button is pressed.

6 TEST RUN

CAUTION

Always turn on the power 12 hours prior to the start of the operation in order to ensure compressor protection.

- Stop the air conditioner operation.
- Press the master control button and the fan control button simultaneously for 2 seconds or more to start the test run.

Test run display

- Press the start/stop button to stop the test run.

[SELF-DIAGNOSIS]

When the error indication "E:EE" is displayed, follow the following items to perform the self-diagnosis. "E:EE" indicates an error has occurred.

1. REMOTE CONTROLLER DISPLAY

- Stop the air conditioner operation.
- Press the set temperature buttons Δ/V simultaneously for 5 seconds or more to start the self-diagnosis.

Refer to the following tables for the description of each error code.

Unit number (usually 0) Error code

EX. Self-diagnosis

- Press the set temperature buttons Δ/V simultaneously for 5 seconds or more to stop the self-diagnosis.

Error code	Error contents
00	Communication error (indoor unit ↔ remote controller)
01	Communication error (outdoor unit → indoor unit)
02	Room temperature sensor open
03	Room temperature sensor short-circuited
04	Indoor heat exchanger temperature sensor open
05	Indoor heat exchanger temperature sensor short-circuited
06	Outdoor heat exchanger temperature sensor
08	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor
0c	Discharge pipe temperature sensor
11	Model abnormal
12	Indoor fan abnormal
13	Outdoor signal abnormal
14	Outdoor EEPROM abnormal
15	Compressor temperature sensor
16	Pressure switch abnormal
17	IPM error
1A	Compressor cannot operate
1b	Outdoor fan abnormal

7 AIR FLOW SETTING

Static range is 0 to 40 Pa. If static pressure is over 20 Pa, we recommend High static mode. Change the High static and Normal mode. If select the High static mode, air flow increases. About 9000 BTU model and 22000 BTU model, High static mode and Normal mode are same air flow.

The air flow is set according to the DIP switch settings in the following tables.

[12000 - 18000 BTU/h models]

Fan mode	DIP-SW4		
	1	2	3
Normal mode ($0 \leq Pa \leq 20$)	—	OFF	OFF
High static pressure mode ($20 < Pa \leq 40$)	—	ON	OFF

* When the PC board of the indoor unit is set for the quiet mode, air flow and cooling and heating performance will be reduced slightly. The quiet mode can only be used when the external static pressure is 40 Pa or less.

CAUTION

Do not set any switches other than those specified in this sheet. The air conditioner may not operate correctly if any switches other than those specified are changed.

8 SPECIAL INSTALLATION METHODS

CAUTION

- When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands.
- Be sure to turn off the main power.

1. GROUP CONTROL SYSTEM

A number of indoor units can be operated at the same time using a single remote controller.

(1) Wiring method (indoor unit to remote controller)

(2) Rotary switch setting (indoor unit)

Set the unit number of each indoor unit using the rotary switch on the indoor unit circuit board. The rotary switch is normally set to 0.

(3) DIP switch setting (remote controller)

Change DIP switch No. 3 on the remote controller from OFF to ON.

2. DUAL REMOTE CONTROLLERS (OPTIONAL)

Two separate remote controllers can be used to operate the indoor units.

(1) Wiring method (indoor unit to remote controller)

(2) DIP switch setting (remote controller)

Set the remote controller DIP switch Nos. 1 and 2 according to the following table.

Number of remote controllers	Master unit	
	DIP-SW No. 1	DIP-SW No. 2
1 (Normal)	ON	OFF
2 (Dual)	OFF	OFF

Number of remote controllers	Slave unit	
	DIP-SW No. 1	DIP-SW No. 2
1 (Normal)	—	—
2 (Dual)	ON	ON

3. AUTO RESTART

When the air conditioner power was temporarily turned off by a power failure etc., it restarts automatically after the power recovers. (Operated by setting before the power failure)

The auto restart function can be canceled.

(1) DIP switch setting (indoor unit)

Change the DIP switch (SW1-1) on the indoor unit circuit board from ON to OFF. The auto restart function will be canceled.

[DIP-SWITCH SETTING]

● Indoor unit

NO.	NO.	SW state		Detail
		OFF	ON	
DIP-Switch 1	1	Invalidity	Validity *	Auto restart setting
	2	—	— *	Temperature correction setting for heating
	3	—	— *	Remote controller setting
DIP-Switch 4	1	—	*	Remote controller setting
	2	—	*	Air flow setting
	3	—	*	Air flow setting

● Remote controller

NO.	NO.	SW state		Detail
		OFF	ON	
DIP-Switch	1	—	*	Dual remote controller setting
	2	—	*	Group control setting
	3	One unit *	Multiple unit *	Group control setting
	4	Heat & Cool model	Cooling only model	Model setting
	5	Invalidity	Validity *	Auto changeover setting
	6	Invalidity*	Validity	Memory backup setting

* : Factory setting