

Refrigerant R410A Duct Type

SPLIT TYPE AIR CONDITIONER

INSTALLATION INSTRUCTION SHEET

(PART NO. 9357874098)

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.

This air conditioner uses new refrigerant R410A. The basic installation work procedures are the same as conventional refrigerant (R22) models. However, pay careful attention to the following points:

- Since the working pressure is 1.5 times higher than that of conventional refrigerant (R22) models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant (R22) 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 (R22) and for safety. Therefore, check backward. (The charging port thread diameter for R410A is 1/2 inch (16 mm) per inch.)
- Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant (R22) 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.

Test name	Contents of device
Gas pressure	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous reading of other parameters, the diameter of the test hose is changed. It is recommended the gauge with scale: 0 to 1.5 MPa (0 to 15 kgf/cm ²) for high pressure.
Charge rate	To increase pressure, increase the flow rate of the gas. To increase pressure, increase the flow rate of the gas. To increase pressure, increase the flow rate of the gas.
Working pressure	Working pressure is 1.5 times higher than that of conventional refrigerant (R22).
Gas leakage detector	Special gas leakage detector for R410A.

Refrigerant	Outer diameter (mm)	Inner diameter (mm)	Wall thickness (mm)
R410A	16	14.2	0.9
R22	16	14.2	0.8
R410A	22	19.8	1.2
R22	22	19.8	1.1

For authorized service personnel only.

- For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.
- Connect the indoor unit and outdoor unit with the air conditioner piping and coils 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.
- Be careful not to scratch the 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.

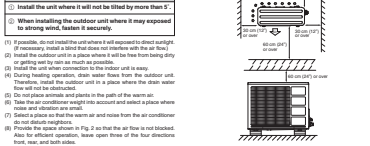
SELECTING THE MOUNTING POSITION

- Install it at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not tip over or fall.
- Do not install where there is the danger of combustible gas leakage.
- Do not install the unit near heat source of heat, stove, or furnace-like gas.
- It should endure 10 years old after approach the unit, take preventive measures so that they cannot reach the unit.

Check the installing position with the customer as follows:

- INDOOR UNIT**
 - Install the indoor unit on a place having a sufficient strength so that it will not tip over or fall from the indoor unit.
 - The inlet and outlet pipes should not be obstructed; the air should be able to flow at the top.
 - Leave the space required to service the air conditioner (Fig. 1).
 - Install the indoor unit where the drain pipe can be easily installed and the ceiling will not leak water (Fig. 1).

- OUTDOOR UNIT**
 - Install the unit where it will not be tilted by more than 5°.
 - When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.
 - If necessary, install a third set screw (not included with the air conditioner) to prevent the outdoor unit from falling.
 - If the outdoor unit is placed where it will be hit by strong wind, or getting wet by rain, as a countermeasure:
 - Use a rain pipe to prevent rain from hitting the outdoor unit.
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 - Do not place animals and plants in the path of the warm air. Therefore, install the outdoor unit in a place where there is space between the outdoor unit and the plants.
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 - Check the indoor unit in Fig. 2 as for the air flow. Do not block it. Also, do not obstruct the space between the heat exchanger heat, fan, and both sides.



STANDARD PARTS

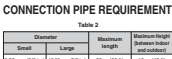
The following installation parts are furnished. Use them as required.

Accessories	Qty.	Application
Insulation (large)	1	For protecting the indoor unit
Hanger	4	For supporting the indoor unit from ceiling
Special nut A (large)	4	For supporting the indoor unit from ceiling
Special nut B (small)	4	For supporting the indoor unit from ceiling
Coupler head (small)	1	For indoor unit pipe joint (small pipe)
Coupler head (large)	1	For indoor unit pipe joint (large pipe)
Slider	1	For fixing the drain hose
Remote controller	1	For fixing the drain hose
Remote controller (2nd hand)	1	For fixing the drain hose
Remote controller (3rd hand)	1	For connecting the remote controller
Drain hose insulation	1	For insulating the drain hose and wire connection
Drain pipe	1	For outdoor unit drain piping (1.6m & Cool model)
Drain cap	1	For outdoor unit drain piping (1.6m & Cool model)

INDOOR UNIT ACCESSORIES



OUTDOOR UNIT ACCESSORIES



INSTALLATION PROCEDURE

Read the following instructions carefully.

1. INDOOR UNIT INSTALLATION

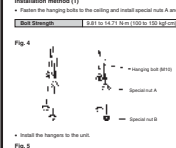
WARNING Install the air conditioner in a location which can withstand a blow of at least five times the weight of the main unit and which will not easily rattle or vibrate.

- Drilling holes for bolts and installing the bolts.
 - Hang the unit.
 - Place the hanging bolts through the hangers (four pieces) (Fig. 5).
 - Insert the hangers to the unit.
 - Slide the unit in the arrow direction and fasten it.



2. INSTALLING THE HANGERS

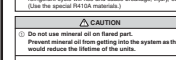
Fasten the hanging bolts to the ceiling and install special nuts A and B. (See the special R410A instructions.)



3. CONNECTING THE PIPING

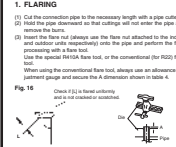
When bending the pipe, do not bend it more than 90°. If the pipe is bent more than 90°, it will be damaged.

- Flaring.
 - Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
 - While working the pipes, be sure to blow dry nitrogen gas through them.
 - The maximum length of this product is shown in table 4. If the pipe is further apart than this, correct operation can not be guaranteed.
- Connecting the piping.
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 - While working the pipes, be sure to blow dry nitrogen gas through them.
 - The maximum length of this product is shown in table 4. If the pipe is further apart than this, correct operation can not be guaranteed.



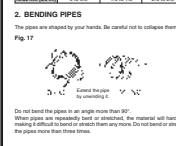
4. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)

Slit copper heat insulation (green and white) to the place when connecting pipes.



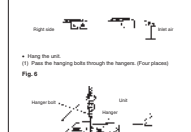
5. BENDING PIPES

The pipes are stamped by your hands. Be careful not to collapse them.



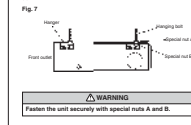
6. SERVICE HOLE DIMENSIONS

It should be possible to install and remove the unit without trouble.



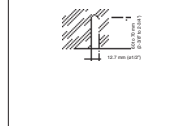
7. LEVELING

Basic horizontal direction leveling on top of the unit.



8. VACUUM PROCESS

Do not purge the air with refrigerant but use a vacuum pump to vacuum the installation. There is no extra refrigerant in the outdoor unit for air purging!



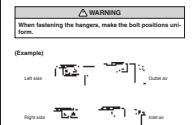
9. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 7.5 m is charged in the outdoor unit at the factory.

Pipe length	12 m	15 m	20 m	25 m
Additional charge (kg)	0.25	0.35	0.50	0.75

10. GAS LEAKAGE INSPECTION

After connecting the piping, check the joints for gas leakage with a leak detector.



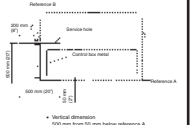
2. OUTDOOR UNIT INSTALLATION

WARNING Install the unit where it will not be tilted by more than 5°.

- When installing the outdoor unit where it may be exposed to strong wind, fasten it securely.
- Set the unit on a strong stand, such as one made of concrete blocks to resist strong wind.
- Do not set the unit directly on the ground because it will cause trouble. Since the drain pipe and drain cap are used, the drain water in the pipe may freeze in extremely cold weather.

3. SERVICE HOLE DIMENSIONS

It should be possible to install and remove the unit without trouble.



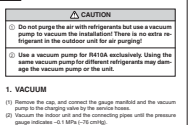
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Basic horizontal direction leveling on top of the unit.



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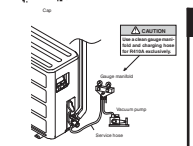
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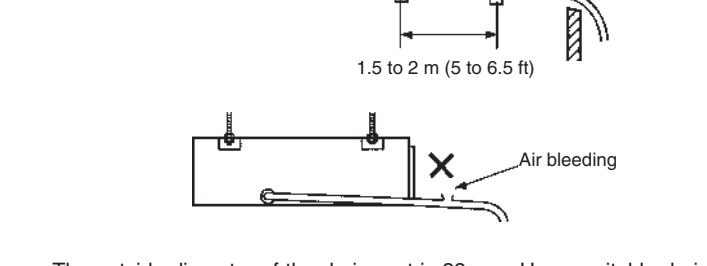
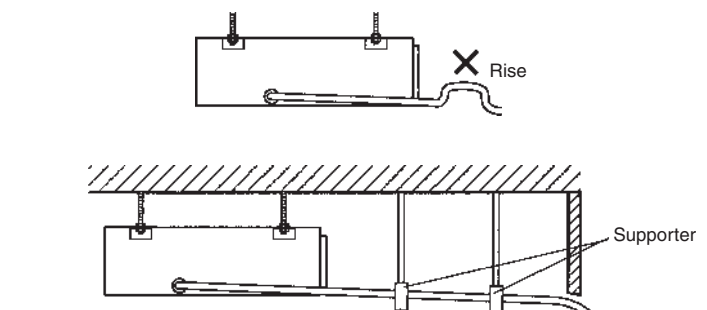
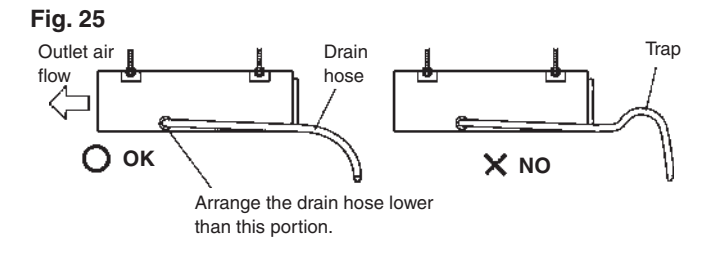
After connecting the piping, check the joints for gas leakage with a leak detector.



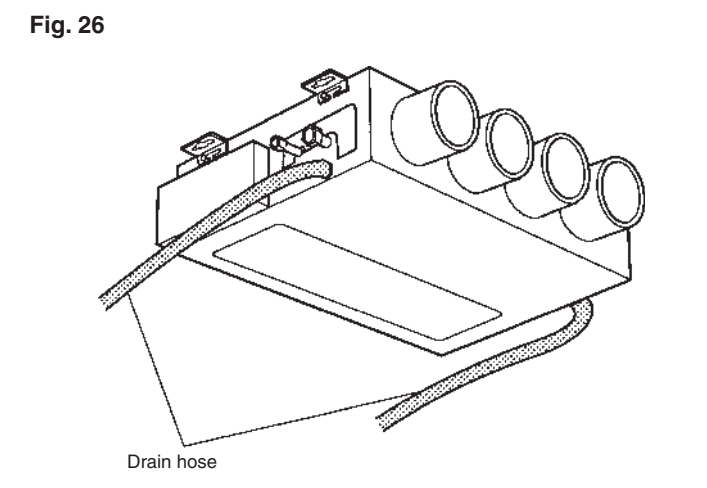
6 INSTALLING DRAIN HOSE

CAUTION
Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.

NOTE : INSTALL THE DRAIN HOSE
• Install the drain hose with downward gradient (1/50 to 1/100) and so there are no rises or traps in the hose.
• Use general hard polyvinyl chloride pipe (VP25) [outside diameter 38 mm] 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.



• The outside diameter of the drain port is 38 mm. Use a suitable drain hose.
• There is a drain port on both the left and right sides. Select the drain port to match the local conditions.

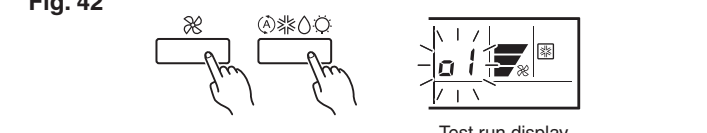


Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

10 TEST RUN

CAUTION
Supply power to the crankcase heater for at least 12 hours before the start of operation in winter.

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

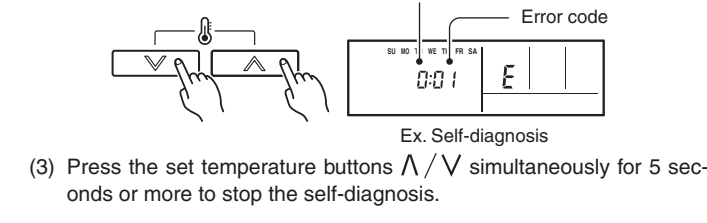


(3) Press the start/stop button to stop the test run.

[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

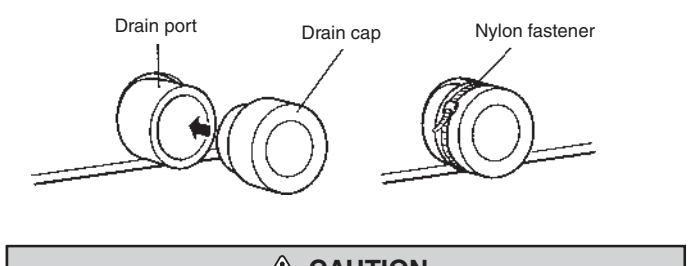
(1) Stop the air conditioner operation.
(2) Press the set temperature buttons A / V simultaneously for 5 seconds or more to start the self-diagnosis.
Refer to the following tables for the description of each error code.



(3) Press the set temperature buttons A / V simultaneously for 5 seconds or more to stop the self-diagnosis.

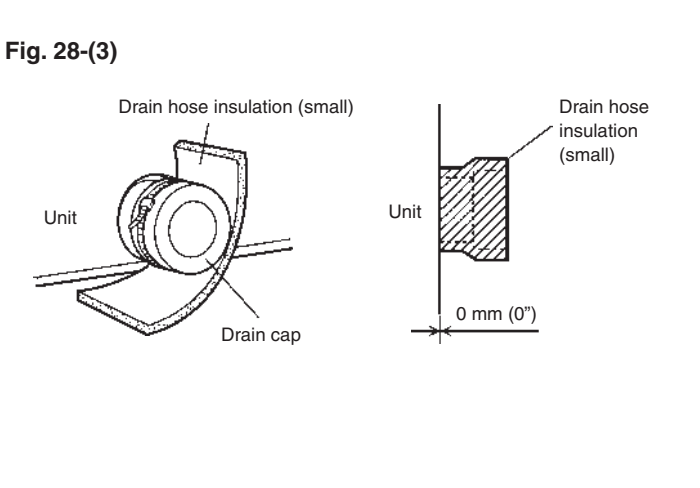
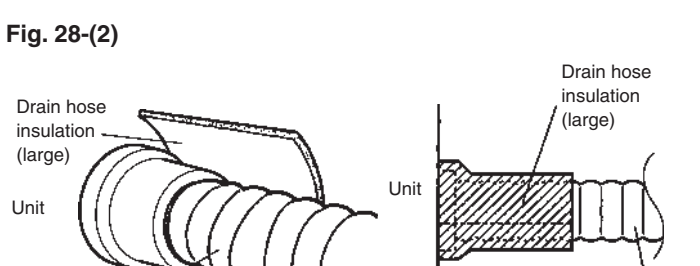
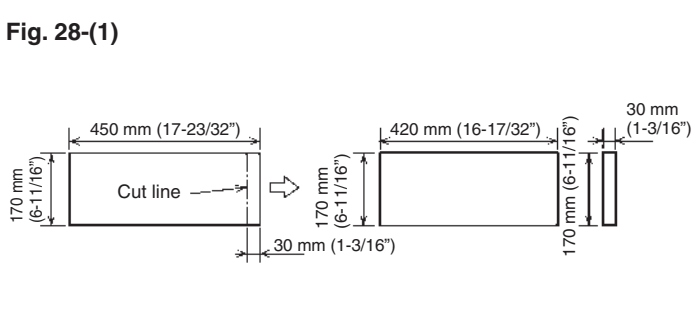
Error code	Error contents
00	Communication error (indoor unit → remote controller)
01	Communication error (indoor unit → outdoor unit)
02	Room temperature sensor open
03	Room temperature sensor short-circuited
04	Indoor heat exchanger temperature sensor open
05	Indoor heat exchanger temperature sensor short-circuited
06	Outdoor heat exchanger temperature sensor open
07	Outdoor heat exchanger temperature sensor short-circuited
08	Power source connection error
09	Floater operated
0A	Outdoor temperature sensor open
0b	Outdoor temperature sensor short-circuited
0c	Discharge pipe temperature sensor open
0d	Discharge pipe temperature sensor short-circuited
0E	Outdoor high pressure abnormal
0F	Discharge pipe temperature abnormal

7 ELECTRICAL WIRING



CAUTION
Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener. If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.

• Cut the drain hose insulation at a position approximately 30 mm from the end with cutters, etc. (Fig. 28-(1))
• Stick the large drain hose insulation at the drain hose installation side. (Fig. 28-(2))
• Stick the small drain hose insulation at the drain cap side. (Fig. 28-(3))



Use VW-1, 12 mm diameter, 0.5 to 1.0 mm thick, PVC tube as the insulation tube.

11 SPECIAL INSTALLATION METHODS

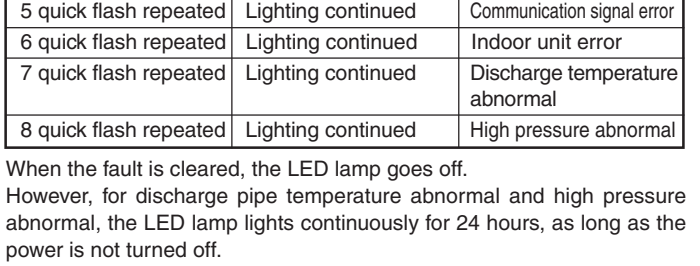
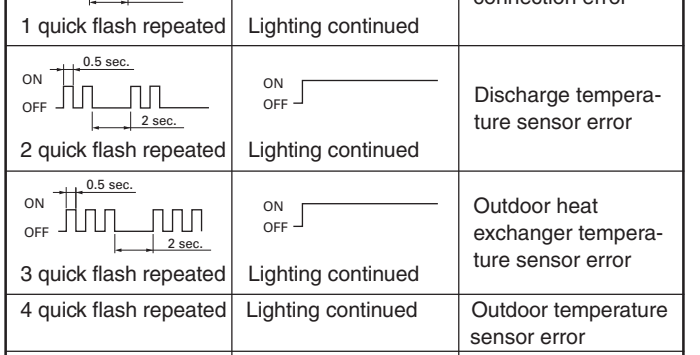
CAUTION
When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands.
Be sure to turn off the main power.

2. OUTDOOR UNIT LEDS

Heat & Cool model (reverse cycle) only
When a malfunction occurs in the outdoor unit, the LEDs on the circuit board light to indicate the error. Refer to the following table for the description of each error according to the LEDs.

Error display	LED1	LED2	Error contents
ON / OFF	ON / OFF	ON / OFF	Model abnormal or EEPROM abnormal
1 quick flash repeated	ON / OFF	ON / OFF	Power source connection error
2 quick flash repeated	ON / OFF	ON / OFF	Discharge temperature sensor error
3 quick flash repeated	ON / OFF	ON / OFF	Outdoor heat exchanger temperature sensor error
4 quick flash repeated	ON / OFF	ON / OFF	Outdoor temperature sensor error
5 quick flash repeated	ON / OFF	ON / OFF	Communication signal error
6 quick flash repeated	ON / OFF	ON / OFF	Indoor unit error
7 quick flash repeated	ON / OFF	ON / OFF	Discharge temperature abnormal
8 quick flash repeated	ON / OFF	ON / OFF	High pressure abnormal

When the fault is cleared, the LED lamp goes off. However, for discharge pipe temperature abnormal and high pressure abnormal, the LED lamp lights continuously for 24 hours, as long as the power is not turned off.



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

2. DUAL REMOTE CONTROLLERS (OPTIONAL)

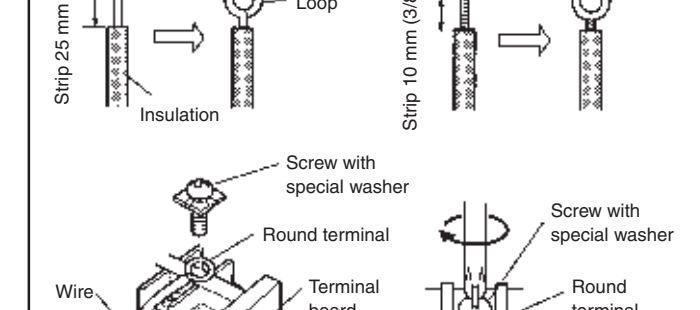
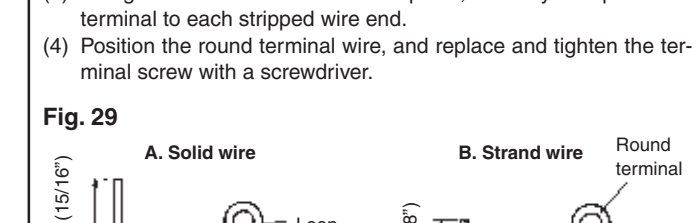
Two separate remote controllers can be used to operate the indoor units.
(1) Wiring method (indoor unit to remote controller)



1. INDOOR UNIT SIDE

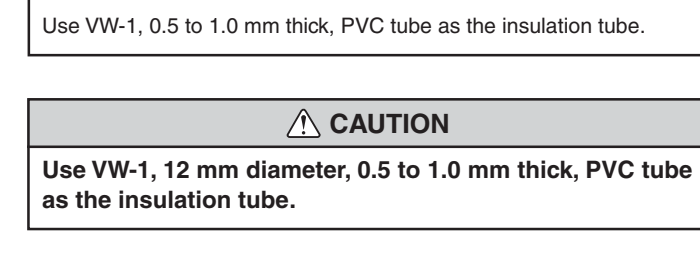
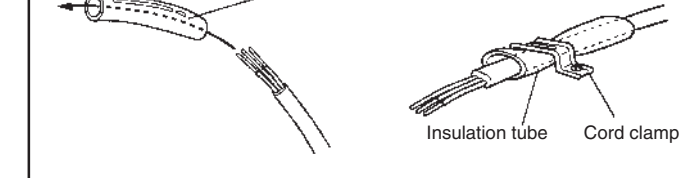
WARNING
Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.
Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
Connect the connection cords firmly to the terminal 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.

(1) Remove the control box metal-B from the control box metal assy.



2. OUTDOOR UNIT SIDE

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 and the power supply cord 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.



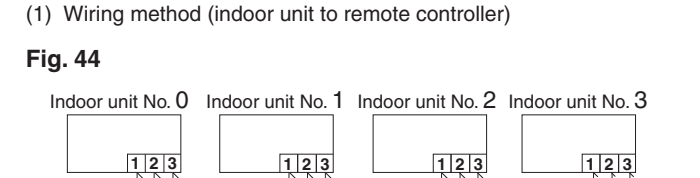
When routing the ground wires, leave slack as shown in the illustrations.

12 STATIC PRESSURE CHARACTERISTIC

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.

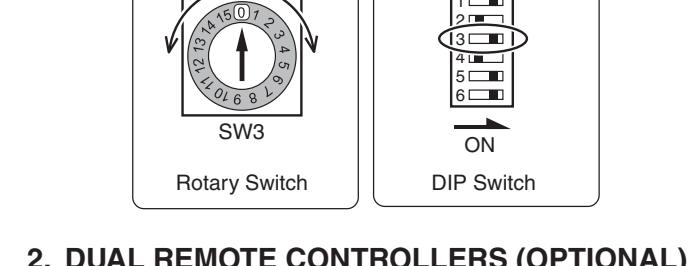
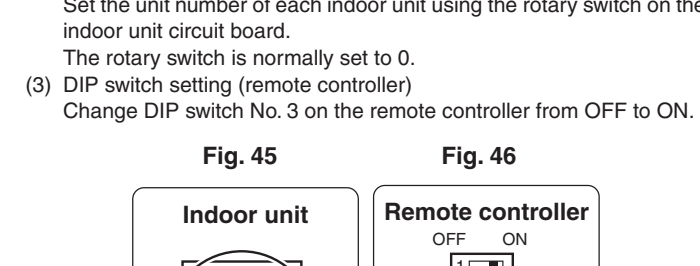
1. GROUP CONTROL SYSTEM

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.



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

2. DUAL REMOTE CONTROLLERS (OPTIONAL)

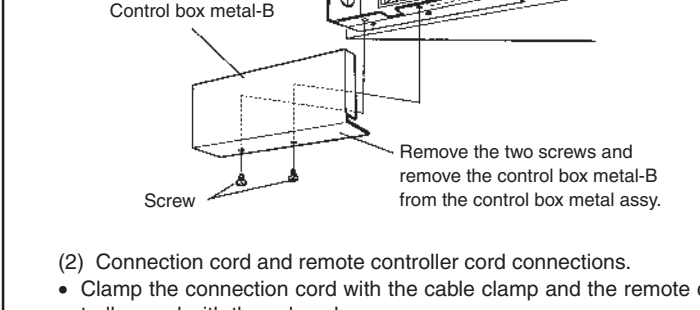
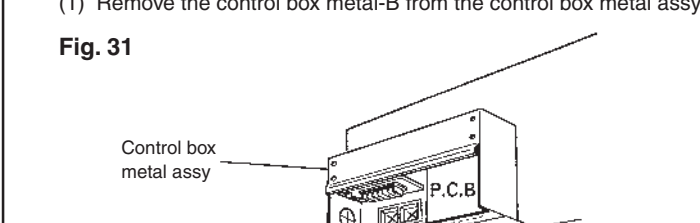
Two separate remote controllers can be used to operate the indoor units.
(1) Wiring method (indoor unit to remote controller)



1. INDOOR UNIT SIDE

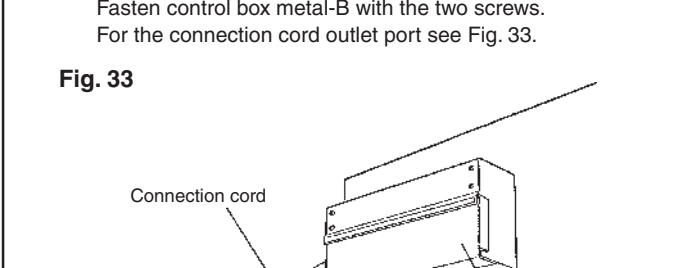
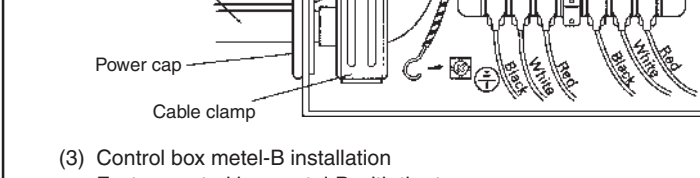
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Match the terminal board numbers and connection cord colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts.
Connect the connection cords firmly to the terminal board. Imperfect installation may cause a fire.
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.

(1) Remove the control box metal-B from the control box metal assy.



2. OUTDOOR UNIT SIDE

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 and the power supply cord 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.

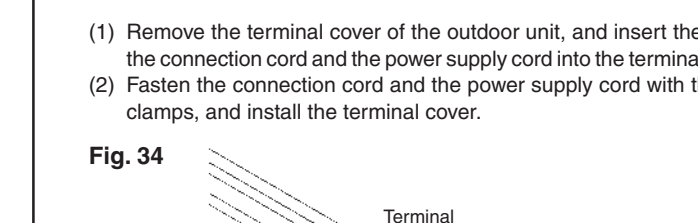


When routing the ground wires, leave slack as shown in the illustrations.

1. DUCT INSTALLATION PATTERN (■ CUT PATTERN)

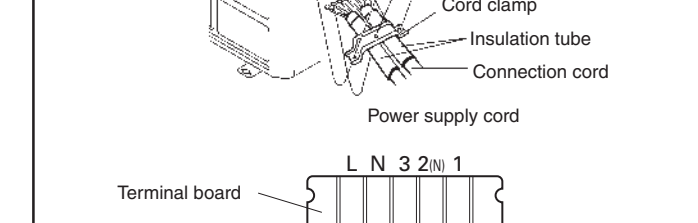
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(1) Wiring method (indoor unit to remote controller)



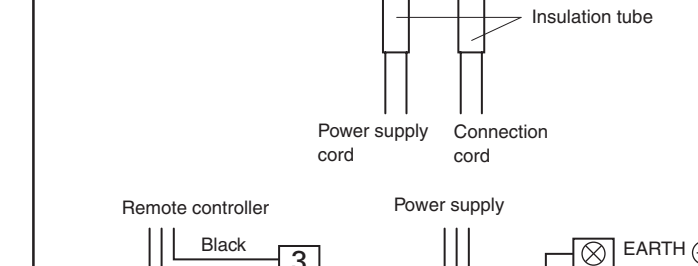
2. WHEN USING AS A SQUARE DUCT

(1) Cut the slit seam with a cutter.



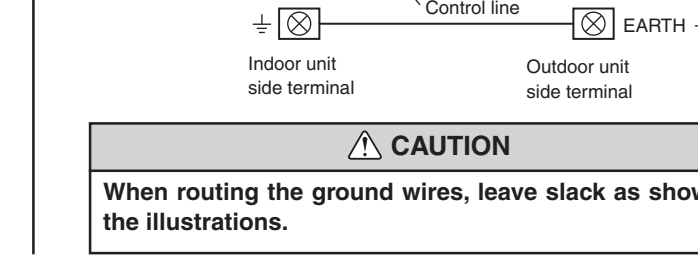
3. SPECIAL ITEMS

When connecting the square duct and round duct, use the optional square flange or round flange and flexible duct.



4. INTAKE PORT

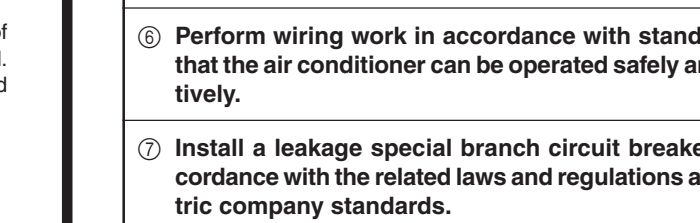
(1) The square flange (rear side) and panel (intake panel) are installed at the factory at the places shown in Fig. 57.



14 INTAKE PORT REAR COVER DIMENSIONS

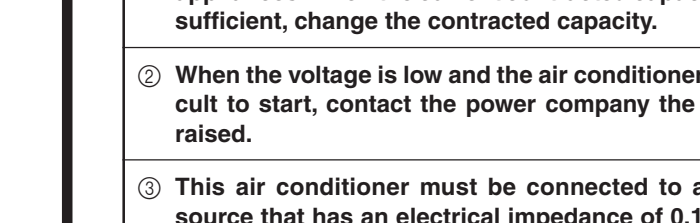
CAUTION
When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case).
When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.

(1) When taking in fresh air, cut a slit shaped cabinet in the left side of the outer case as shown in Fig. 58 with nippers.



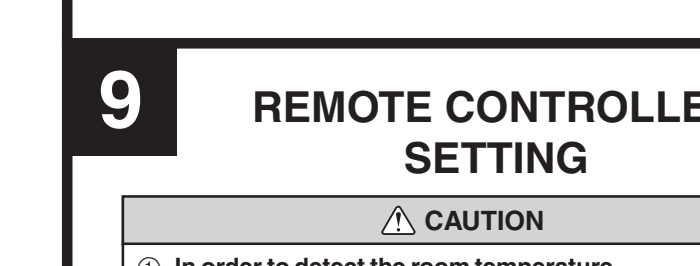
15 INTAKE PORT

(1) The square flange (rear side) and panel (intake panel) are installed at the factory at the places shown in Fig. 57.



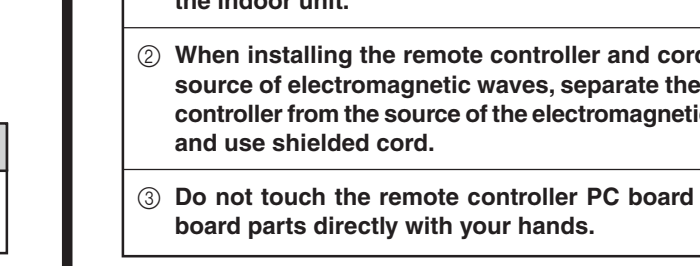
16 FRESH AIR INTAKE (Processing before use)

(1) When taking in fresh air, cut a slit shaped cabinet in the left side of the outer case as shown in Fig. 58 with nippers.



17 REMOTE CONTROLLER SETTING

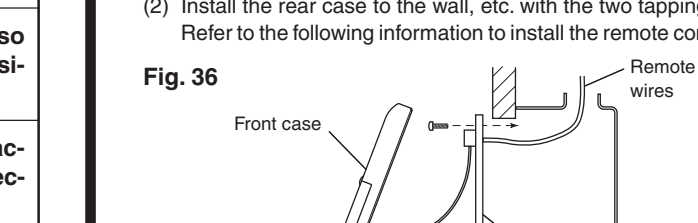
(1) In order to detect the room temperature correctly when using the temperature sensor of the remote controller, do not install the remote controller in a place where it will be exposed to direct sunlight or directly below the air outlet of the indoor unit.



2. DUAL REMOTE CONTROLLERS (OPTIONAL)

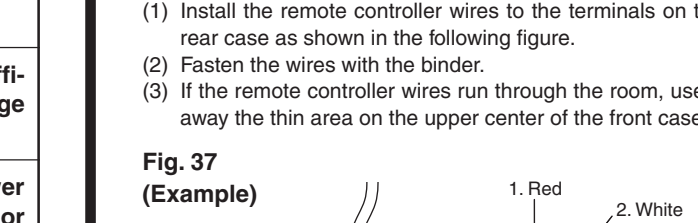
CAUTION
When setting the rotary switch and DIP switches, do not touch any other parts on the circuit board directly with your bare hands.
Be sure to turn off the main power.

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



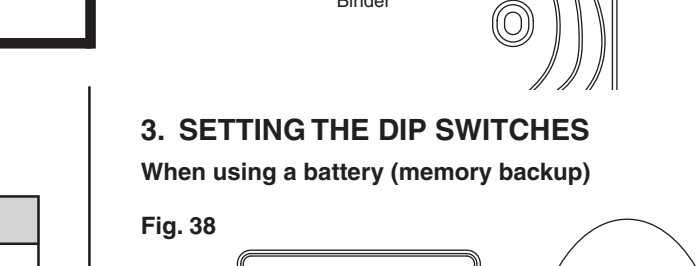
2. WHEN USING AS A SQUARE DUCT

(1) Cut the slit seam with a cutter.



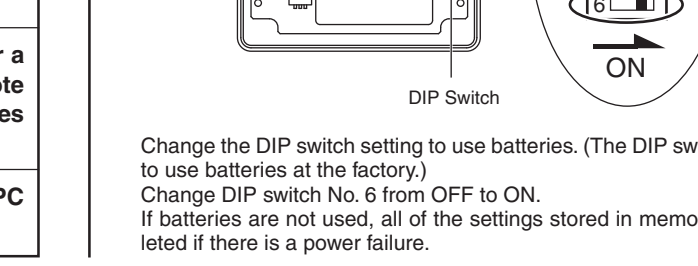
3. SPECIAL ITEMS

When connecting the square duct and round duct, use the optional square flange or round flange and flexible duct.



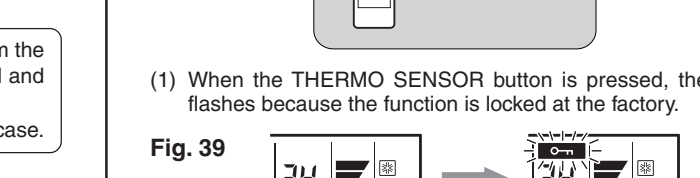
4. INTAKE PORT

(1) The square flange (rear side) and panel (intake panel) are installed at the factory at the places shown in Fig. 57.



4. SETTING THE ROOM TEMPERATURE DETECTION LOCATION

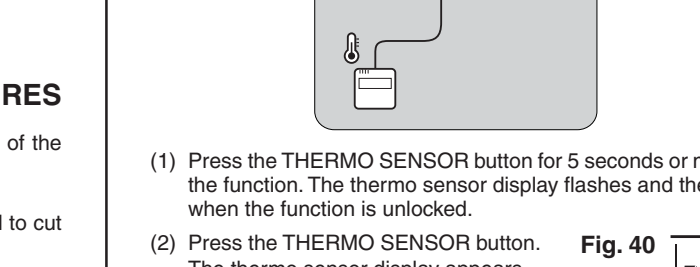
The detection location of the room temperature can be selected from the following three examples. Choose the detection location that is best for the installation location.
A. Indoor unit setting (factory setting)
The room temperature is detected by the indoor unit temperature sensor.



(1) 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.



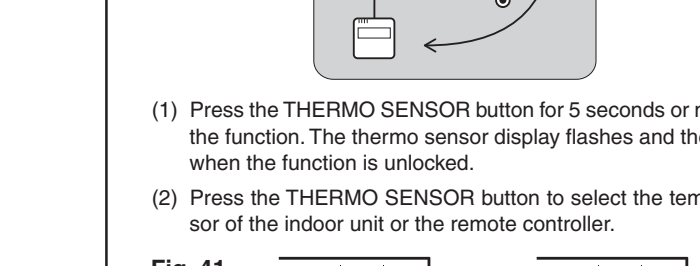
(1) Press the THERMO SENSOR button for 5 seconds or more to unlock the function. The thermo sensor display flashes and then disappears when the function is unlocked.

(2) Press the THERMO SENSOR button. The thermo sensor display appears.

(3) Press the THERMO SENSOR button again for 5 seconds or more to lock the function. The thermo sensor display flashes and then remains on when the function is locked.

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.



(1) 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.

(2) Press the THERMO SENSOR button to select the temperature sensor of the indoor unit or the remote controller.

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.