

# INSTALLATION MANUAL

## Compact Cassette Type Indoor Unit

For authorized service personnel only.

<b>WARNING</b>	This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user.
<ul style="list-style-type: none"> <li>For the air conditioner to operate satisfactorily, install it as outlined in this installation manual.</li> <li>Connect the indoor unit and outdoor unit with the air conditioner piping and cords available from our standard parts. This installation manual describes the correct connections using the installation set available from our standard parts.</li> <li>Installation work must be performed in accordance with national wiring standards by authorized personnel only.</li> <li>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.</li> <li>Do not turn on the power until all installation work is complete.</li> </ul>	

<b>CAUTION</b>	This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property.
<ul style="list-style-type: none"> <li>Never use piping which has been used for previous installation. Only use parts that are delivered with the unit.</li> <li>If the humidity around refrigerant piping is high, condensation or water leak may occur. Therefore, be sure to carry out heat insulation process of gas and liquid piping.</li> <li>As for the insulating material, refer to the table below and use the material which provides enough heat insulating effect. (Reference) In case a heat insulating material which thermal conductivity is less than 0.045W / mk (at 20 °C) is used.</li> </ul>	
Humidity around piping (%)	Recommended thickness of heat insulating material (mm)
~ 70	10
70 ~ 80	15
80 ~	20

- 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 manual because it is used when the air conditioner is serviced or moved.

### STANDARD PARTS

INDOOR UNIT ACCESSORIES				GRILLE ACCESSORIES	
Name and Shape	Q'ty	Name and Shape	Q'ty	Name and Shape	Q'ty
Installation template	1	Remote controller	1	Battery	2
Coupler heat insulation	2	Remote controller holder	1	Tapping screw	3
Special nut (M10)	4 (large) 4 (small)			Blower cover insulation	2

### OPTIONAL PARTS

- EV KIT is necessary in "J SERIES". It can be purchased through the local dealer. (Make sure to use the right EV KIT as it differs depending on the indoor unit models.)
- Other optional controllers are also available. When purchasing, select in the catalog, etc. according to your purpose.

EV KIT (UTR-EV2)	Wired remote controller	Simple remote controller	Central remote controller
------------------	-------------------------	--------------------------	---------------------------

### 6. INSTALLING THE GRILLE

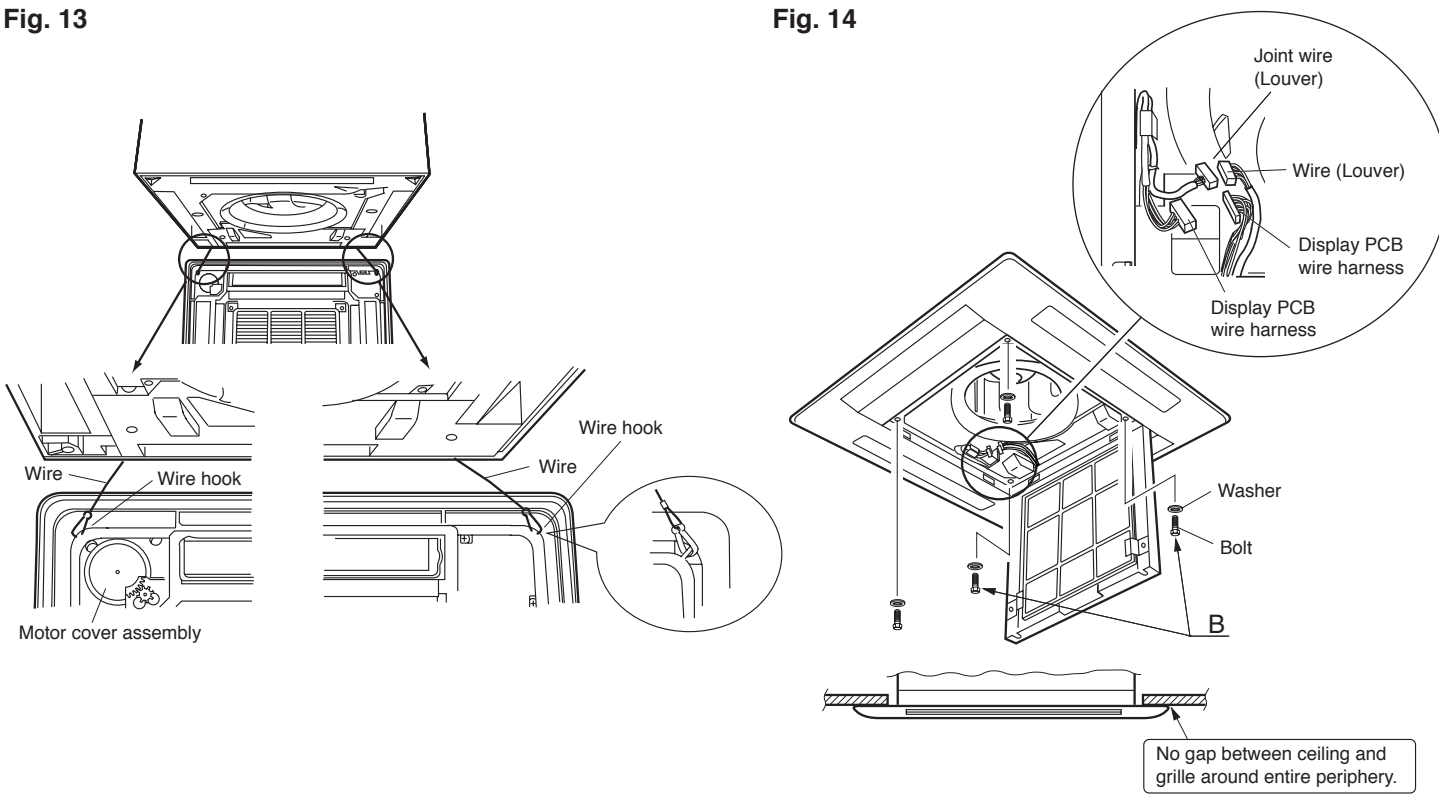
#### 6.1 INSTALLING BLOWER COVER INSULATION (IN CASE OF 2-WAY OR 3-WAY AIR FLOW)

Install the blower cover insulation only when the outlet direction is changed to 2 or 3 direction.  
Two blower cover insulations are packed with the grille assembly.  
Install the blower cover insulation at the diffuser position shown in Fig.12. At this time, use pipe side as the criteria.

<b>CAUTION</b>
<ul style="list-style-type: none"> <li>Do not install the blower cover insulation at the diffuser position on pipe side.</li> <li>Do not set the 2-way air flow as shown in the figure to the right. Setting in this manner will cause performance problems.</li> </ul>

#### 6.2 INSTALLING THE GRILLE ASSEMBLY TO BODY

Hang the grille assembly on the wires attached to the indoor unit as shown in Fig.13. Install the grille assembly to the body with the four bolts and washers as follows.  
(1) Lightly tighten the bolts shown in "B" of Fig.14. Hang the panel.  
(2) Tighten the other bolts.  
(3) Tighten all bolts securely.  
(4) Connect the connectors in accordance with Fig.14.



### SELECTING THE MOUNTING POSITION

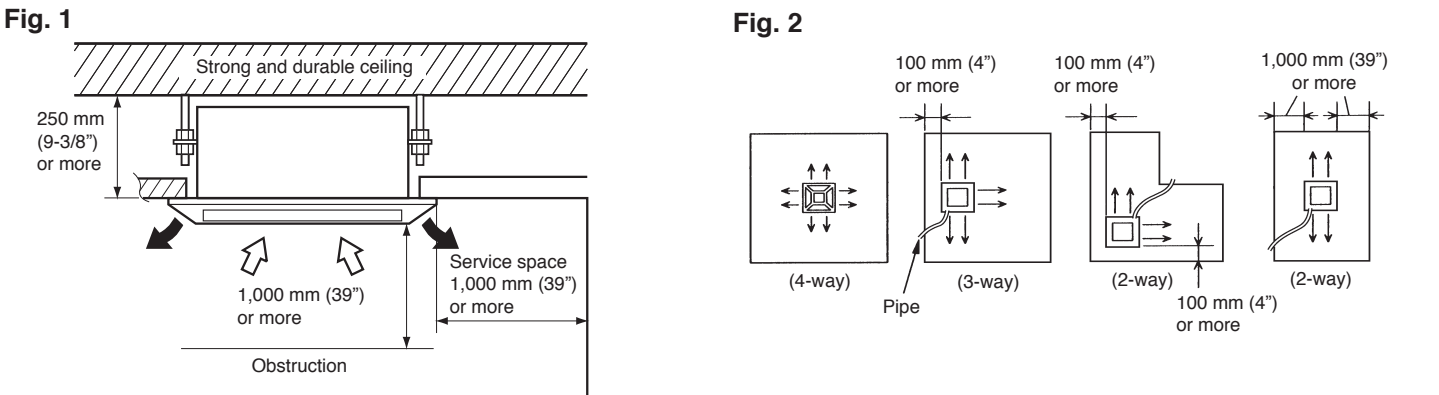
<b>WARNING</b>
<ul style="list-style-type: none"> <li>Install at a place that can withstand the weight of the indoor unit and install positively so that the unit will not topple or fall.</li> </ul>
<b>CAUTION</b>
<ul style="list-style-type: none"> <li>Do not install where there is the danger of combustible gas leakage.</li> <li>Do not install near heat sources and the location with high temperature.</li> </ul>

Decide the mounting position with the customer as follows:

- Install the indoor unit on a strong wall, floor, ceiling which is not subject to vibration.
- Leave the space specified in Fig. 1 so that the air from the blower will cover the entire room.
- Install the unit where the drain pipe can be easily installed.

Choice of installation:

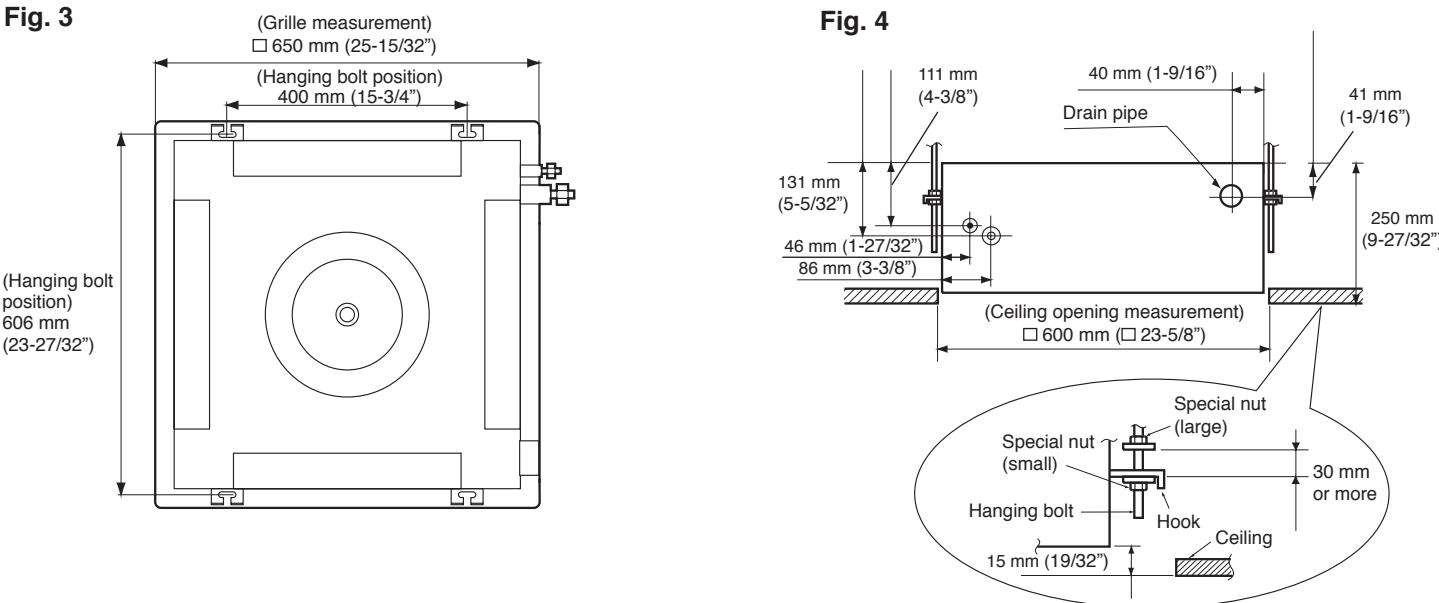
The blower direction can be set for 2-way or 3-way.  
When using 2-way or 3-way air flow, follow Fig.2 for the blower direction and space.  
The method for changing the blower direction is shown in the "INSTALLING THE GRILLE" section.



### INSTALLATION PROCEDURE

#### 1. INDOOR UNIT INSTALLATION

- Make the holes for installing in the ceiling. (Fig.4)
- Install the hanging bolts (M10), referring to the position in Fig.3.
- Install special nut (large), then special nut (small) onto the hanging bolt. (Fig.4)
- Raise the body and mount its hooks onto the hanging bolt between the special nuts.
- Turn the special nut (small) to adjust the height of the body.



<b>WARNING</b>
<ul style="list-style-type: none"> <li>Perform final tightening by tightening the double nut firmly. The product may fall if installed improperly.</li> <li>Using a level, or vinyl hose filled with water, for fine adjustment so that the body is level.</li> </ul>

### 2. REFRIGERANT PIPE

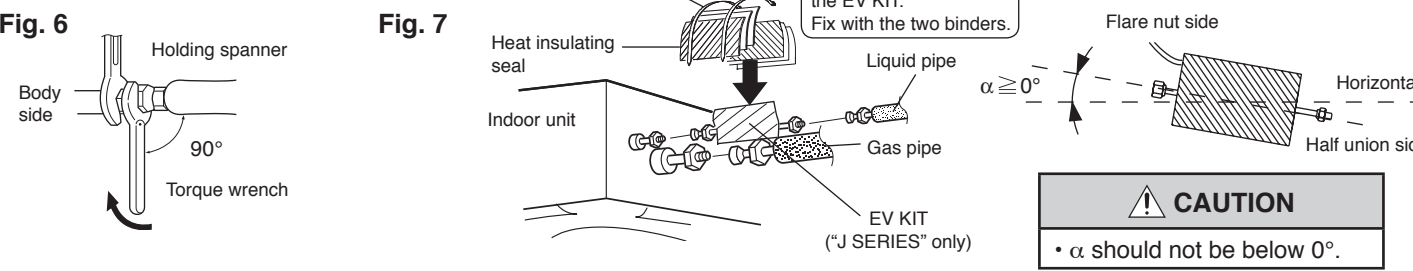
#### 2.1 FLARE PROCESSING

- Cut the connection pipe with pipe cutters so that the pipe is not deformed.
- Holding the pipe downwards so that cutting cannot enter the pipe and remove the burrs.
- Remove the flare nut from the indoor unit pipe and assemble as shown in Table 1 and insert the flare nut onto the pipe, and flare with a flaring tool.
- Check if the flared part "L2" (Fig.5) is spread uniformly and that there are no crack.

Pipe	L1	A			Tightening Torque
		Flare tool for R410A Clutch type	Flare tool for R22 Clutch type	Wing nut type	
φ 6.35 mm	17 mm	0 to 0.5 mm	1.0 to 1.5 mm	1.5 to 2.0 mm	14.0 to 18.0 N·m
φ 9.53 mm	22 mm	0 to 0.5 mm	1.0 to 1.5 mm	1.5 to 2.0 mm	33.0 to 42.0 N·m
φ 12.7 mm	26 mm	0 to 0.5 mm	1.0 to 1.5 mm	2.0 to 2.5 mm	50.0 to 62.0 N·m
φ 15.88 mm	29 mm	0 to 0.5 mm	1.0 to 1.5 mm	2.0 to 2.5 mm	63.0 to 77.0 N·m

#### 2.2 CONNECTION PIPES

When the flare nut is tightened properly by your hand, hold the body side coupling with a separate spanner, then tighten with a torque wrench. (Fig.6, Table 1)  
In case of "J SERIES", connect the EV KIT to the liquid pipe. (Fig.7)  
(Make sure to connect it in the right direction.)



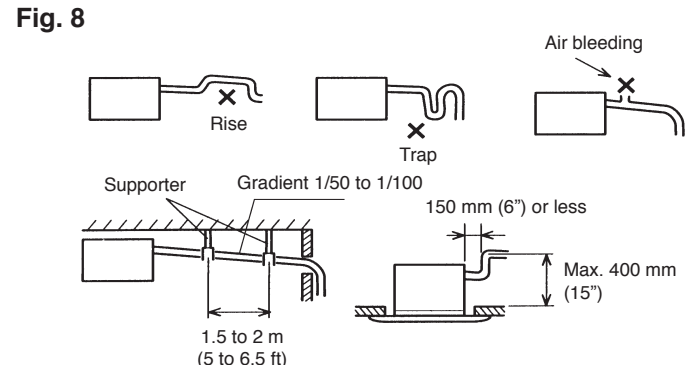
<b>CAUTION</b>
<ul style="list-style-type: none"> <li>Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tighten smoothly. If the flare nut is forced to turn, the threads will be damaged.</li> <li>Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.</li> <li>Hold the torque wrench at the grip, keeping it in the right angle with the pipes as shown in Fig.6, in order to tighten the flare nut correctly.</li> <li>When brazing the pipes, be sure to blow dry nitrogen gas through them. If the connection pipes are brazed without blow dry of nitrogen gas, it may cause malfunctions such as cooling error or damage to the parts (compressor, valves, etc.) inside the unit.</li> <li>In order to prevent water from leaking into the control box, make sure that the piping is well insulated.</li> <li>Do not leave any gap between the heat insulating seals (standard parts of EV KIT) and the EV KIT.</li> </ul>

### 3. INSTALLING DRAIN HOSE

<b>WARNING</b>
<ul style="list-style-type: none"> <li>Install the drain pipe in accordance with the instructions in this installation manual and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leakage.</li> </ul>

Use general hard polyvinyl chloride pipe (VP25) (outside diameter 32 mm (1-1/4")) and connect it with adhesive (polyvinyl chloride) so that there is no leakage.

- Always heat insulate the indoor side of the drain pipe.
- Do not perform a rise, trap and air bleeding.
- Provide a downward gradient (1/50 to 1/100).
- Provide supporters when long pipes are installed.
- When desiring a high drain pipe height, rise it up to 400 mm (15") or less from the ceiling within a range of 150 mm (6") from the body. A rise of height over this range will cause leakage.



### 8. CUSTOM CODE SETTING

When changing the custom code, follow the instruction below.  
Selecting the custom code prevents the indoor unit mix-up. (Fig. 22)  
(Up to 4 codes can be set)

#### CUSTOM CODE SETTING FOR INDOOR UNIT

Set the DIP - SW 5-1, 5-2, referring to the Table 3.

Table 3				
Custom code				
	A (Primary setting)	B	C	D
DIP SW 5 - 1	OFF	ON	OFF	ON
DIP SW 5 - 2	OFF	OFF	ON	ON

#### CUSTOM CODE SETTING FOR WIRELESS REMOTE CONTROLLER (Refer to Fig.19)

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Press until only the clock is displayed.	Press for more than 5 seconds to display the current custom code. (Initially set to R)	Change the custom code between R-b-c-d to match the code on the display to the air conditioner custom code.	Press again to return to the clock display. (The custom code will be changed.)

#### NOTES

- If no buttons are pressed within 30 seconds after the custom code is displayed, the system returns to the original clock display. In this case, start again from step 1.
- The remote controller resets to custom code A when the batteries in the remote controller are replaced. If you use a custom code other than custom code A, reset the custom code after replacing the batteries.  
If you do not know the air conditioner custom code setting, try each of the custom codes (R-b-c-d) until you find the code which operates the air conditioner.

### 9. TEST RUN

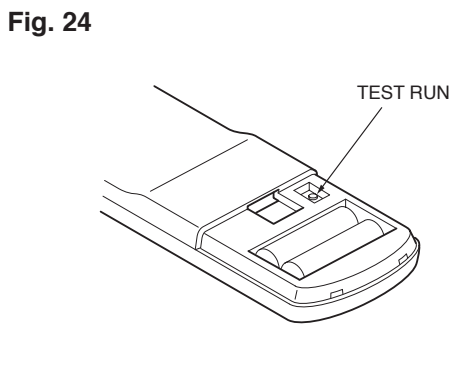
#### TEST RUN USING CIRCUIT BOARD (OUTDOOR UNIT)

Refer to the INSTALLATION MANUAL of the outdoor unit if the circuit board for the outdoor unit is used for the test run.

#### TEST RUN USING REMOTE CONTROLLER

- Short two metallic pins in the remote controller's test run frame while the indoor unit is running. (Fig.24)
- To stop the test run, push START/STOP button of the remote controller. (Fig.19)

When the air conditioner is being test run, the OPERATION and TIMER indicators flash slowly at the same time.



### 4. INSTALLING THE COUPLER HEAT INSULATION

After checking for gas leaks (refer to the INSTALLATION MANUAL of the outdoor unit), perform this section.  

- Insulate by the coupler heat insulation around the gas pipe and liquid pipe of indoor side.

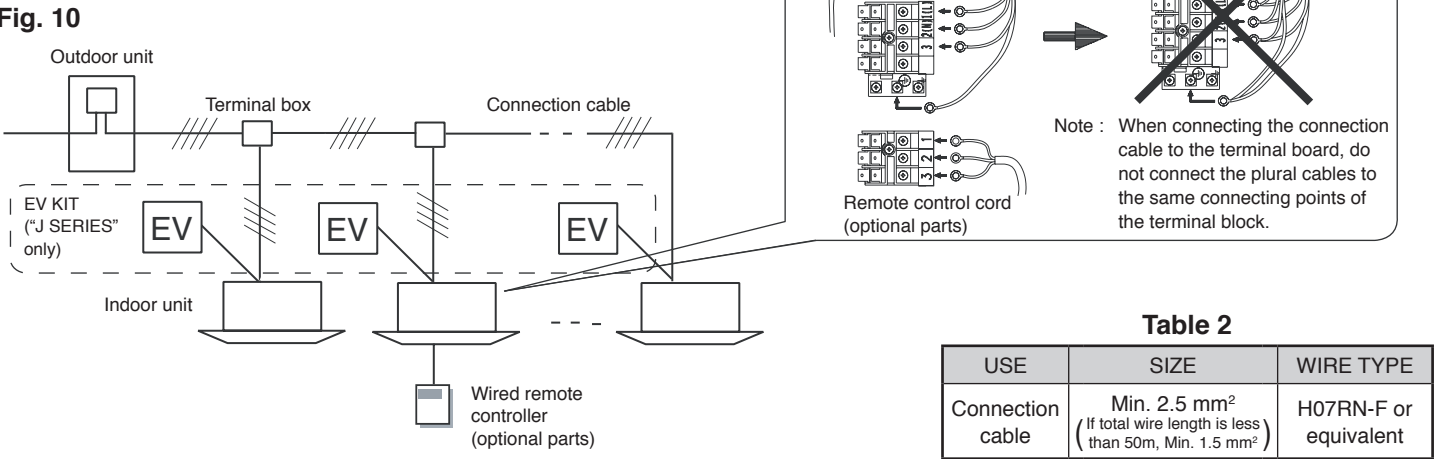
(In case of "J SERIES", insulate the EV KIT connecting part.)

<b>WARNING</b>
<ul style="list-style-type: none"> <li>Make sure that the pipe is covered completely by the insulation, not exposing to air. Inadequate heat insulation may cause condensation.</li> </ul>

### 5. WIRING

#### 5.1 WIRING METHOD

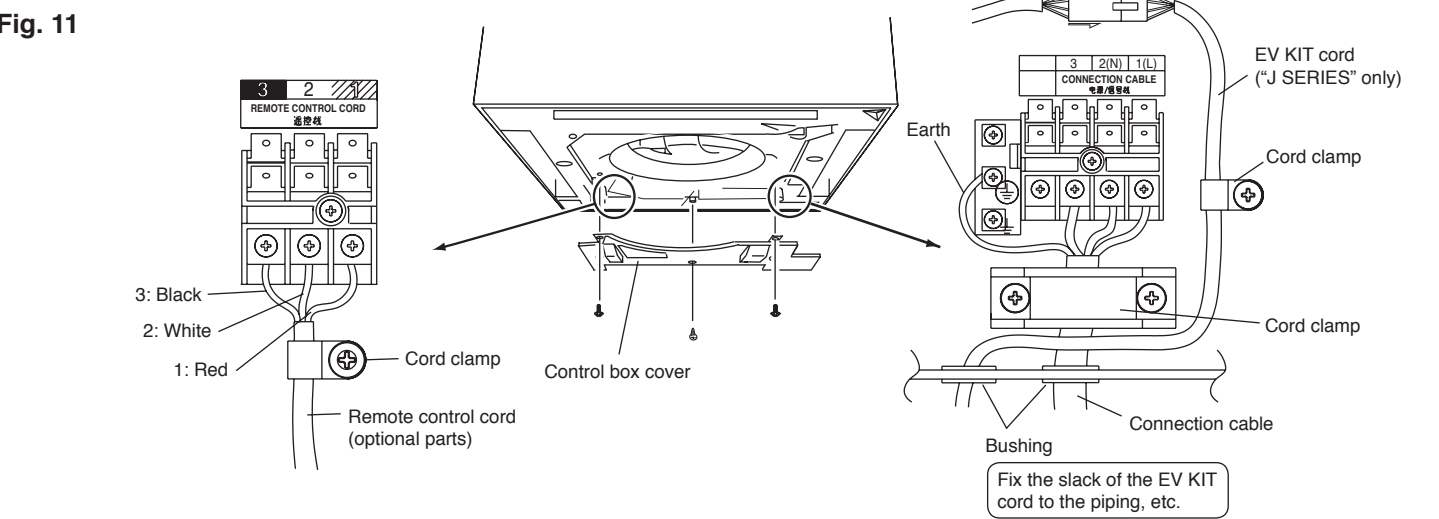
Wiring example for the indoor unit is shown in Fig.10.  
If the total length of the connection cable exceeds 100m, keep the length of the connection cable for the indoor units more than 5m.



#### 5.2 UNIT WIRING

<b>WARNING</b>
<ul style="list-style-type: none"> <li>Before starting work, check that power is not being supplied to the indoor unit.</li> <li>Connect the connection cable firmly to the terminal board. Imperfect installation may cause a fire.</li> <li>Always connect the ground wire.</li> <li>The terminal board numbers should be the same among the indoor units. Also, match the terminal board numbers of the indoor unit with those of the outdoor unit.</li> </ul>

- Remove the control box cover from the control box.
- Connect the connection cable. (In case of "J SERIES", connect the EV KIT cord.)



### CHECK ITEMS

Pay special attention to the check items below when installing the indoor unit(s).  
After installation is complete, be sure to check the following check items again.

CHECK ITEMS	If not performed correctly	CHECK BOX
Has the indoor unit been installed correctly?	Vibration, noise, indoor unit may drop	
Has there been a check for gas leaks (refrigerant pipes)?	No cooling	
Has heat insulation work been completed?	Water leakage	
Does water drain easily from the indoor units?	Water leakage	
Is the voltage of the power source the same as that indicated on the label on the indoor unit?	No operation, heat or burn damage	
Are the wires and pipes all connected completely?	No operation, heat or burn damage	
Is the indoor unit grounded?	Short circuit	
Is the connection cable the specified thickness?	No operation, heat or burn damage	
Are the inlets and outlets free of any obstacles?	No cooling	
After installation is completed, has the proper operation and handling been explained to the user?		

### ERROR DISPLAY

- Run the air conditioner in accordance with the OPERATING MANUAL.
- Operation can be checked by lighting and flashing of the OPERATION, TIMER and SWING indicators.
- Perform judgment in accordance with the following.

NORMAL DISPLAY	When the indoor unit is turned on	The OPERATION and TIMER indicators flash slowly alternately.
ERROR DISPLAY	TEST RUN	The OPERATION and TIMER indicators flash slowly at the same time.
		The OPERATION, TIMER and SWING indicators operate as follows (Table 5) according to the error contents.

Table 5			
Error display			
OPERATION indicator	TIMER indicator	SWING indicator	Error code
			No error
◇	◇		E:00
◇	◇	◇	E:02
●(2)	◇		E:04
●(2)	◇		E:09
●(3)	◇	●(1)	E:0b
●(3)	◇	●(2)	E:0A
●(4)	◇		E:11
●(5)	◇	●(1)	E:18
●(5)	◇	●(2)	E:03
●(5)	◇	●(4)	E:18
●(6)	◇		E:13
◇	●(3)	●(3)	E:32
◇	●(4)	●(1)	E:06
◇	●(4)	●(2)	E:07
◇	●(5)	●(1)	E:1F
◇	●(6)		E:21

Display Method  
 ◇ : 0.1 sec. ON / 0.1 sec. OFF flashing  
 ● : 0.5 sec. ON / 0.5 sec. OFF flashing  
 ( ) : Flashing times