

# Hisense

## Operation Installation & Maintenance Manual

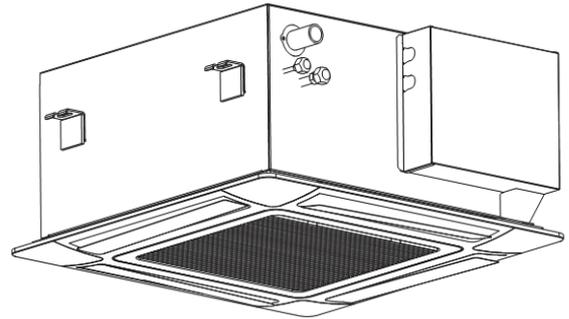
*INVERTER-DRIVEN  
MULTI-SPLIT AIR-  
CONDITIONER  
(HEAT PUMP)*

**- INDOOR UNIT -**

Type	Power Source	Model
Compact 4-Way Cassette Type	220-240V ~ /50HZ	AVC-05URCSAB AVC-07URCSAB AVC-09URCSAB AVC-12URCSAB AVC-14URCSAB AVC-17URCSAB
	220V ~ /60HZ	AVC-07UR2SAB AVC-09UR2SAB AVC-12UR2SAB AVC-14UR2SAB AVC-17UR2SAB

**IMPORTANT:**

*READ AND UNDERSTAND  
THIS MANUAL BEFORE  
USING THIS HEAT-PUMP  
AIR CONDITIONERS.  
KEEP THIS MANUAL FOR  
FUTURE REFERENCE.*



1080677

P00982Q

ORIGINAL INSTRUCTIONS





## Declaration of Conformity (Manufacturer's Declaration)



Hisense Corporation ,  
17, Donghai Xi Road, Qingdao 266071, P.R. China  
declares under its sole responsibility that the air conditioning models to  
which this declaration relates:

AVC-05URCSAB, AVC-07URCSAB, AVC-09URCSAB, AVC-12URCSAB,  
AVC-14URCSAB, AVC-17URCSAB,

are in conformity with the following standard(s) or other normative document(s), provided that these  
are used in accordance with our instructions:

EN 60335-1  
EN 60335-2-40  
EN 62233  
EN 55014-1  
EN 61000-3-2  
EN 61000-3-3  
EN 55014-2

following the provisions of:

2006/42/EC  
2014/30/EU  
2012/19/EU  
2011/65/EU

Directives, as amended.

Manufacturing number and manufacturing year: refer to model Nameplate.

Notes:

This declaration becomes invalid, if technical or operational modifications are introduced  
without the manufacturers consent.

Hisense Italia S.r.l. is authorised to Compile the Technical Construction File.  
Ad. : Via Montefeltro 6A, 20156 Milano.

**Hisense**

Name, Surname :

*Chen Lin*

Position/ Title :

Director

Date :

Aug. 15, 2016

## IMPORTANT NOTICE

- Hisense pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- Hisense cannot anticipate every possible circumstance that might involve a potential hazard.
- This heat pump air conditioner is designed for standard air conditioning only. Do not use this heat pump air conditioner for other purposes such as drying clothes, refrigerating foods or for any other cooling or heating process.
- The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available. British Standard, BS4434 or Japan Standard, KHKS0010.
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.

**▲ DANGER** : Immediate hazards which WILL result in severe personal injury or death.

**▲ WARNING** : Hazards or unsafe practices which COULD result in severe personal injury or death.

**▲ CAUTION** : Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

**NOTE** : Useful information for operation and/or maintenance.

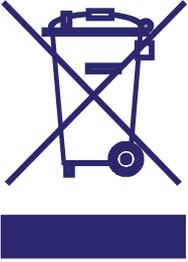
- It is assumed that this heat pump air conditioner will be operated and serviced by English speaking people. If this is not the case, the customer should add safety, caution and operating signs in the native language.
- If you have any questions, contact your distributor or dealer of Hisense .
- This manual gives a common description and information for this heat pump air conditioner which you operate as well as for other models.
- This heat pump air conditioner has been designed for the following temperatures. Operate the heat pump air conditioner within this range.

Temperature		(°C)	
		Maximum	Minimum
Cooling Operation	Indoor	32 DB/23 WB	21 DB/15 WB
	Outdoor	43 DB	-5 DB
Heating Operation	Indoor	27 DB	15 DB
	Outdoor	15 WB	- 20 WB

DB: Dry Bulb, WB: Wet Bulb

This manual should be considered as a permanent part of the air conditioning equipment and should remain with the air conditioning equipment.

## **IMPORTANT NOTICE**



### **Correct Disposal of this product**

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

## **CHECKING PRODUCT RECEIVED**

- Upon receiving this product, inspect it for any shipping damage. Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
- Check the model number, electrical characteristics (power supply, voltage and frequency) and accessories to determine if they are correct.

The standard utilization of the unit shall be explained in these instructions.

Therefore, the utilization of the unit other than those indicated in these instructions is not recommended.

Please contact your local agent, as the occasion arises.

Hisense's liability shall not cover defects arising from the alteration performed by a customer without Hisense's consent in a written form.



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# Section1 Operation Manual

## 1. Safety Summary

### DANGER

- Do not pour water into the indoor or outdoor unit. These products are equipped with electrical parts. If poured, it will cause a serious electrical shock.
- Do not touch or adjust safety devices inside the indoor or outdoor units. If these devices are touched or readjusted, it may cause a serious accident.
- Do not open the service cover or access the indoor or outdoor units without turning OFF the main power supply.

### WARNING

- Refrigerant leakage can cause difficulty with breathing due to insufficient air. If leakage occurs, turn OFF the main switch, put out fire at once and contact your service contractor.
- Do not use any sprays such as insecticide, lacquer, hair spray or other flammable gases within approximately one (1) meter from the system.
- If earth leakage breaker (ELB) or fuse is often activated, stop the system and contact your service contractor.

### CAUTION

- The appliance is not to be used by children or person with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised that they do not play with the appliance.
- The appliance should not be installed in the laundry.

### NOTE

- It is recommended that the room be ventilated every 3 to 4 hours.

## 2. System Description

A maximum total capacity of 130% and a minimum total capacity of 50% can be chosen by combination of the indoor units (Table 2.1).

The heat pump air conditioner is designed to offer cooling, heating, dry and fan operations. These operation modes are controlled by the remote control switch.

Table 2.1 Indoor Unit Type List

Indoor Unit Type	Nominal Capacity ( × 10 <sup>3</sup> Btu/h )									
	05	07	09	12	14	17				
Compact 4-Way Cassette Type	○	○	○	○	○	○				

○ : Available

### 3. Remote Control Switch

#### **CAUTION**

Press switches only with fingers. Do not press switches by any other item, as it may break switches.

Do not touch the CHECK switch. This switch is only for servicing. If touched, press the CHECK switch again to reset.

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- **Temperature Setting**

When the TEMP switch is pressed, temperature increases by 1 degree. The minimum setting indication is 17°C and the maximum setting indication is 30°C.

- **Set and Actual Temperature**

The set temperature is for the air temperature at the sensor (thermistor) of the indoor unit. The actual room temperature may be different

from the air temperature of the sensor due to the difference of the sensing location.

- **Touching Type Switches**

This control switch is of touching type. Slightly press the switch by finger. The operation can be checked by the display of the liquid crystal.

- **Multiple-Unit Control**

16 indoor units, as a maximum number, can be controlled by one remote control switch. Refer to the Installation Manual for Remote Control Switch.

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#### 4. Before Operation

### **CAUTION**

**Supply electrical power to the system for approximately 12 hours before start-up after long shutdown. Do not start the system immediately after power supply, it may cause a compressor failure, because the compressor is not heated well.**

**Make sure that the outdoor unit is not covered with snow or ice. If covered, remove it by using hot water (approximately 50°C).**

**If the water temperature is higher than 50°C, it will cause damage to plastic parts.**

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When the system is started after a shutdown longer than approximately 3 months, it is recommended that the system be checked by your service contractor.

Turn OFF the main switch when the system is stopped for a long period of time. If the main switch is not turned OFF, electricity is consumed, because the oil heater is always energized during compressor stopping.

#### 5. Operation Method

Regarding the instructions of Wired Remote Control Switch or Wireless Remote Control Switch, read the operation manual attached to the control switch.

## 6. Setting of Automatic Swing Louver

### 6.1 Common

When the SWING LOUVER switch is pressed, the swing louver starts its operation.

When “” is moving, it indicates the operation of the louver continuously. When the swinging operation of the louver is not required, press the SWING LOUVER switch again. The louver is stopped at an angle indicated by the direction of this mark “”.

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### NOTE

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1. There exists a time lag between the actual angle of the louver and the liquid crystal indication.
2. When the SWING LOUVER switch is pressed, the louver will not stop immediately. The louver will move one extra swing at the next.
3. During the cases in item (A), the louvers are fixed automatically.  
However, indication of the louvers is changed at setting before.  
(A) Discharge air angle is fixed at horizontal position during start-up of heating operation and defrosting operation and when thermostat is ON.  
When the outlet air temperature reaches higher than approximately 30°C, swinging of louvers is started.
4. During the defrosting operation, fan stops running.

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### CAUTION

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**Do not turn the air louver by hand. If moved, the louver mechanism will be damaged.**

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## 7. Filter Cleaning

### CAUTION

**Do not operate the system without the air filter to protect the indoor unit heat exchanger against being clogged.**

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Turn OFF the main power switch before taking out the filter. (The previous operation mode may appear.)

### 7.1 Taking Out the Filter

The indication, “FILTER” is shown on the display of the remote control switch after approximately 1,200 hour operation.

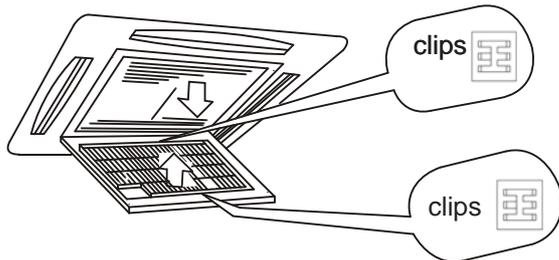
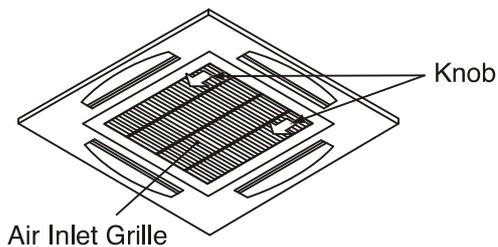
Take out the air filter according to the following steps.

#### Step 1

Open the air inlet grille after pushing the two knobs as shown by the arrow mark.

#### Step 2

Take out the air filter from the air inlet grille by supporting the air grille and lifting the air filter after detaching the filter from four clips .



## 7.2 Clean the Filter

Clean the air filter according to the following steps.

### Step 1

Use a vacuum cleaner or let water flow onto the air filter for removing the dirt from the air filter.

## CAUTION

Do not use hot water higher than approximately 40°C.

### Step 2

Dry the air filter in the shade after shaking off moisture.

## 7.3 Reset of Filter Indication

After cleaning the air filter, press the "RESET" button. The FILTER indication will disappear and the next filter cleaning time will be set.

## 8. Troubleshooting

## CAUTION

When overflow of drain water from the indoor unit occurs, stop the operation and contact your contractor.

When you smell or see white smoke coming from the unit, turn OFF the main power supply and contact your contractor.

### 8.1 If Trouble Still Remains ...

If the trouble still remains even after checking the following, contact your contractor and inform them of the following items.

- (1) Unit Model Name
- (2) Content of Trouble
- (3) Alarm Code No. on Liquid Crystal Display

### 8.2 No Operation

Check whether the SET TEMP is set at the correct temperature.

### 8.3 Not Cooling or Heating Well

- Check for obstruction of air flow of the outside or inside units.
- Check if too much heat source exists in the room.
- Check if the air filter is clogged with dust.
- Check to see if the doors or windows are opened or not.
- Check if the temperature condition is not within the operation range.

### 8.4 This is Not Abnormal

#### ● Smells from Indoor Unit

Smell adheres on indoor unit after a long period of time. Clean the air filter and panels or allow a good ventilation.

#### ● Sound from Deforming Parts

During system starting or stopping, an abrading sound might be heard. However, this is due to thermal deformation of plastic parts. It is not abnormal.

#### ● Steam from Outdoor Heat Exchanger

During defrosting operation, ice on the outdoor heat exchanger is melted, resulting in making steam.

#### ● Dew on Air Panel

When the cooling operation continues for a long period of time under high humidity conditions (higher than 27°C/80% R.H.), dew can form on the air panel.

#### ● Refrigerant Flow Sound

While the system is being started or stopped, sound from the refrigerant flow may be heard.

## NOTE

Except for a long period of shutdown, keep the main switch ON, since the oil heater is energized when the compressor is stopping.

# Section2 Installation & Maintenance Manual

## 1. Safety Summary

### **WARNING**

- Do not perform installation work, refrigerant piping work, drain piping and electrical wiring connection without referring to the installation manual.
- Check that the ground wire is securely connected.
- Connect a fuse of specified capacity.
- Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

### **CAUTION**

Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 3 meters from strong electromagnetic wave radiators such as medical equipment.

## 2. Structure

### 2.1 Indoor Unit & Refrigerant Cycle

Regarding the structural drawings and the refrigerant cycle diagrams, refer to Technical Catalogue II.

### 2.2 Necessary Tools and Instrument List for Installation

No.	Tool	No.	Tool
1	Handsaw	12	Charging Cylinder
2	Screwdriver	13	Gauge Manifold
3	Vacuum Pump	14	Cutter for Wires
4	Refrigerant Gas Hose	15	Gas Leak Detector
5	Megohmmeter	16	Leveller
6	Copper Pipe Bender	17	Clamper for Solderless Terminals
7	Manual Water Pump	18	Hoist (for Indoor Unit)
8	Pipe Cutter	19	Ammeter
9	Brazing Kit	20	Voltage Meter
10	Hexagon Wrench	21	Wrench
11	Spanner		

### NOTE

About vacuum pump, gas hose, charging cylinder, gauge manifold, please use suitable equipments for R410A respectively. Do not mix other refrigerant.

## 3. Transportation and Handling

### 3.1 Transportation

Transport the product as close to the installation location as practical before unpacking.

### **CAUTION**

Do not put any material on the product.

### 3.2 Handling of Indoor Unit

### **WARNING**

Do not put any foreign material into the indoor unit and check to ensure that none exists in the indoor unit before the installation and test run. Otherwise, a fire or failure, etc. may occur.

### **CAUTION**

Be careful not to damage on insulation materials of unit's surface when lifting.

\* To avoid damage to the resin covers, before lifting or moving the indoor unit, put a cloth on the resin covers.

## 4. Indoor Unit Installation

### **! DANGER**

Do not install the indoor unit in a flammable environment to avoid fire or an explosion.

### **! WARNING**

- Check to ensure that the ceiling slab is strong enough. If not strong enough, the indoor unit may fall down on you.
- Do not install the indoor unit outdoors. If installed outdoors, an electric hazard or electric leakage will occur.

It is recommended that indoor units be installed 2.5 meters from the floor level.

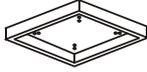
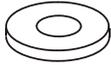
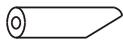
### 4.1 Factory-Supplied Accessories

Check to ensure that the following accessories are packed with the indoor unit.

#### **NOTE**

If any of these accessories are not packed with the unit, please contact your contractor.

Table 4.1 Factory-Supplied Accessories

Accessory		Q'ty	Purpose
Pattern Board (Carton Board)		1	For Adjusting Space of False Ceiling Opening and Position of the Unit
Washer (M10)		8	For Unit Installation
Drain Hose		1	For Drain Hose Connection
Hose Clamp		1	
Insulation (12ID)		1	For Refrigerant Piping Connection
Insulation (25ID)		1	
Cord Clamp		8	For Fixing Insulation of Piping

## 4.2 Initial Check

- Install the indoor unit with a proper clearance around it for operation and maintenance working space, as shown in Fig. 4.1.
- Provide a service access door near the unit piping connection area on the ceiling.
- Check to ensure that the ceiling has a sufficient strength to hang the indoor unit.
- Check the ceiling surface is flat for the air panel installation work.

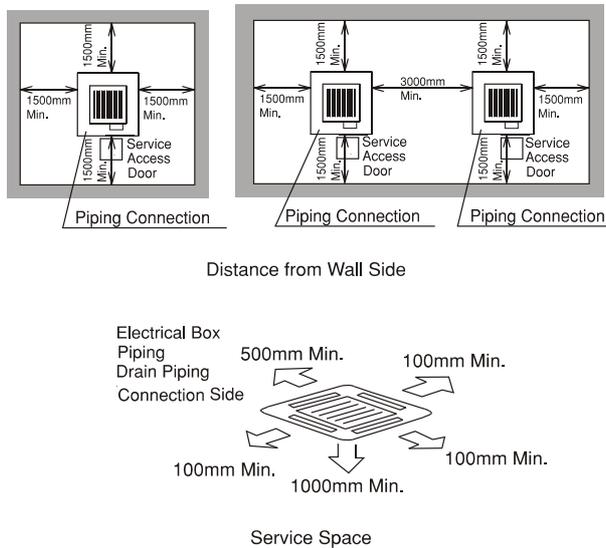


Fig. 4.1 Space around Indoor Unit

- Select the installation location as follows:
  - (A) Minimum Space
  - (B) Down Slope Pitch of Drain Piping:  
1/25~1/100

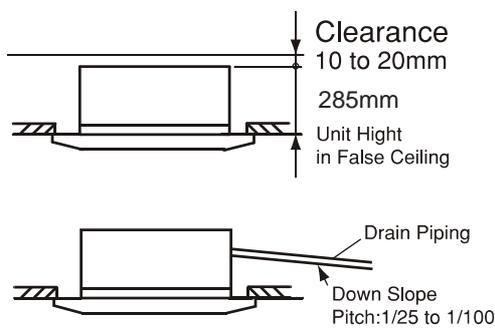


Fig. 4.2 Installation Location of Indoor Unit

- Consider the air distribution from the indoor unit to the space of the room, and select a suitable location so that uniform air temperature in the room can be obtained. It is recommended that the indoor unit be installed 2.5 meters from the floor level. If the unit is installed higher, it is also recommended that the Fan Motor Speed-up Setting so that uniform air distribution is available.
- Do not install flammable parts in the service space for the indoor unit.
- Avoid obstacles which may hamper the air intake or the air discharge flow.
- Do not install the indoor unit in a machinery shop or kitchen where vapor from oil or its mist flows to the indoor unit. The oil will deposit on the heat exchanger, thereby reducing the indoor unit performance, and may deform and in the worst case, break the plastic parts of the indoor unit.
- Pay attention to the following points when the indoor unit is installed in a hospital or other facilities where there are electronic waves from medical equipment, etc.

- (A) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.
  - (B) Install the indoor unit and components as far as practical or at least 3 meters from the electromagnetic wave radiator.
  - (C) Prepare a steel box and install the remote control switch in it. Prepare a steel conduit tube and wire the remote control cable in it. Then, connect the ground wire with the box and the tube.
  - (D) Install a noise filter when the power supply emits harmful noises.
- To avoid any corrosive action to the heat exchangers, do not install the indoor unit in an acid or alkaline environment. In an application where the indoor unit is to be utilized under such environmental conditions, it is recommended that the corrosion-proof type unit be used.

### **! WARNING**

**Check to ensure that the number of below is within 0.3kg/cm<sup>3</sup>. Otherwise it may cause danger situation if the refrigerant in the Outdoor Unit leaks into the room where this Indoor Unit is installed.**

$$\frac{\text{(Total Refrigerant Quantity per one Outdoor Unit)}}{\text{(Volume of the room where this Indoor Unit is installed.)}} \leq 0.3\text{kg/m}^3$$

**In detail, refer to the Installation Manual for outdoor unit.**

### 4.3 Installation

#### 4.3.1 Opening of False Ceiling and Suspension Bolts

- (1) Determine the final location and installation direction of the indoor unit paying careful attention to the space for the piping, wiring and maintenance.
- (2) Cut out the area for the indoor unit in the false ceiling and install suspension bolts, as shown in Fig. 4.3.

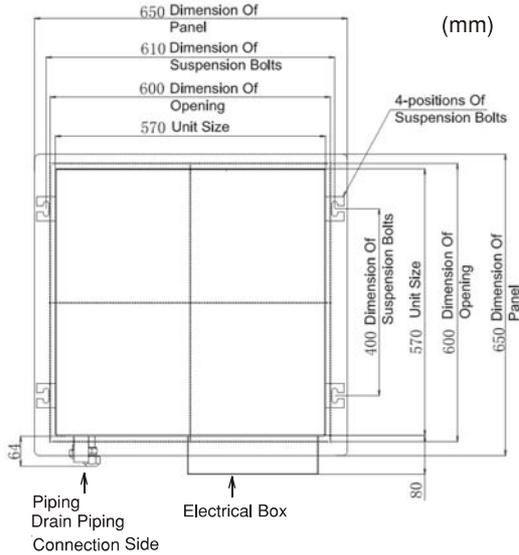
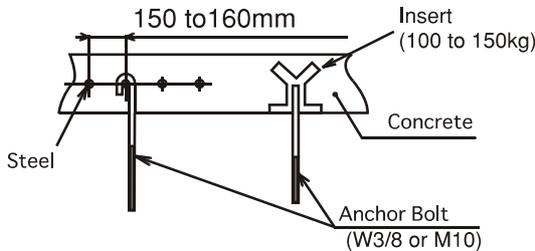


Fig. 4.3 Opening of False Ceiling and Suspension Bolts

- (3) Check to ensure that the ceiling is horizontally level, otherwise drainage can not flow.
- (4) Strengthen the opening parts of the false ceiling.
- (5) Mount suspension bolts, as shown in Fig. 4.4.

#### • For Concrete Slab



#### • For Steel Beam

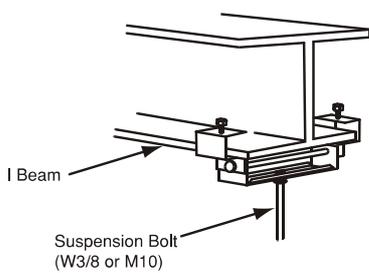


Fig. 4.4 Mounting the Suspension Bolts

#### 4.3.2 Mounting Position of the Indoor Unit

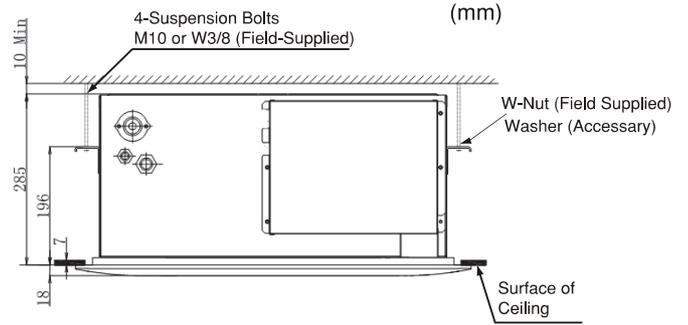


Fig. 4.5 Mounting Position

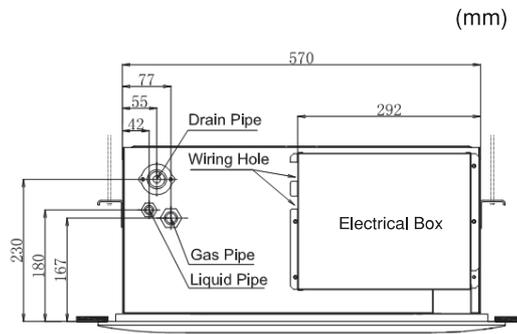


Fig. 4.6 Indoor Unit and Air Panel

#### 4.3.3 Mounting the Indoor Unit

- (1) Mount the nuts and washers to the suspension bolts.

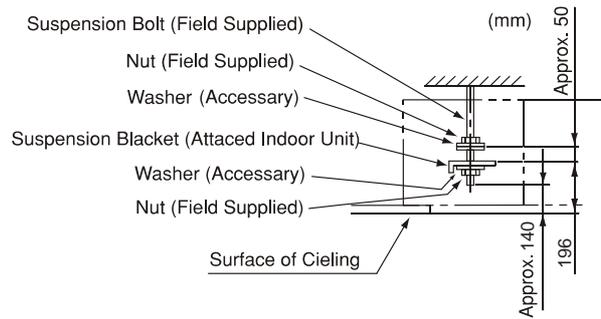


Fig. 4.7 Mounting Nuts and Washers

- (2) Lift the Indoor Unit by hoist, and do not put any force on the drain pan.

- (3) Secure the indoor unit using the nuts, washers.

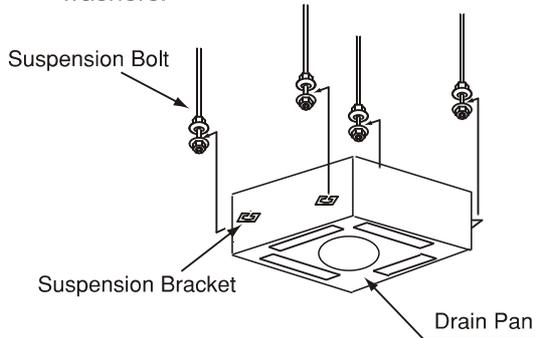


Fig. 4.8 Mounting the Indoor Unit

### NOTE

If a false ceiling has already been installed, complete all piping and wiring work inside the ceiling before hooking-up the indoor unit.

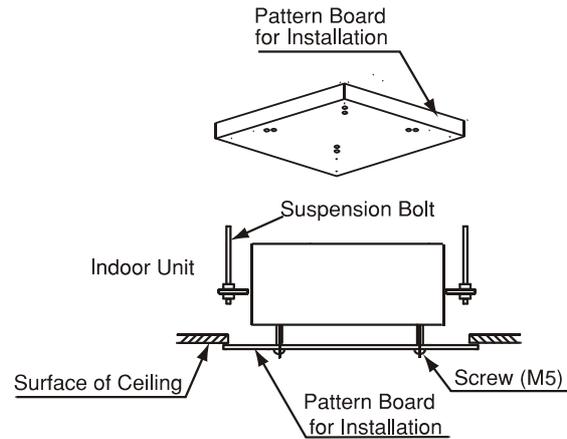
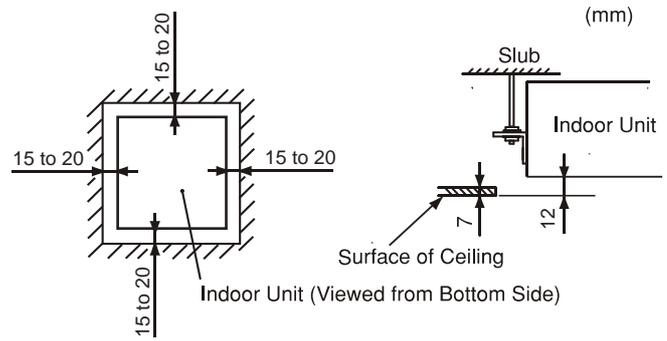
## CAUTION

- Check the level of the drain pan using a water level to avoid incorrect operation of the drain discharge mechanism in the indoor unit. The drain piping side of the indoor unit must be approximately 5mm lower than the other part.
- Tighten the nuts of the suspension brackets after the adjustment is completed. Apply LOCK-TIGHT paint\* to the bolts and nuts in order to prevent them from loosening. If not done, abnormal noises or sounds may occur and the indoor unit may fall down.

LOCK-TIGHT paint\*: Paint the lock bolts and nuts.

### 4.3.4 Use the Pattern Board

- (1) Pattern Board for installation is in the packing carton of indoor unit. Take it and do not fold it. Use it to decide an installation location and direction of the unit.
- (2) Press the Pattern Board tightly onto the surface of the roof, draw out the hole position for suspension bolts with a pencil.
- (3) Cut an opening on the ceiling board with assistance of the Pattern Board, make sure to follow the same direction of suspension bolts.



### Installation Details for Air Panel

- The details of installation work for air panel shall be according to the Installation Manual.
- Check to ensure that the connection of connectors between the indoor unit and the air panel.

#### (1) Removing Air Intake Grille from Air Panel

##### Step 1

Open the air intake grille to an angle of approximately 45° from the surface of the air panel as shown in Fig. 4.9.

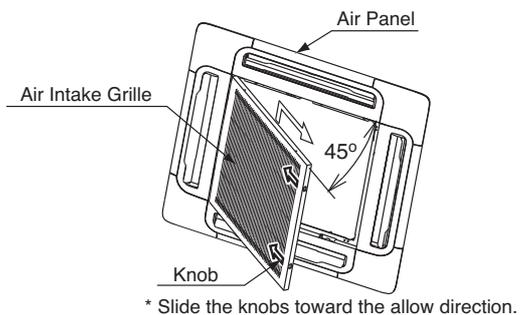


Fig. 4.9 Removing Method of Air Intake Grille

### NOTE

- \* Do not touch the air louver during installation work.
- \* Do not try to remove the grille while it is at an angle of 90° from the surface of the air panel.

##### Step 2

Lift the grille keeping it inclined.

##### Step 3

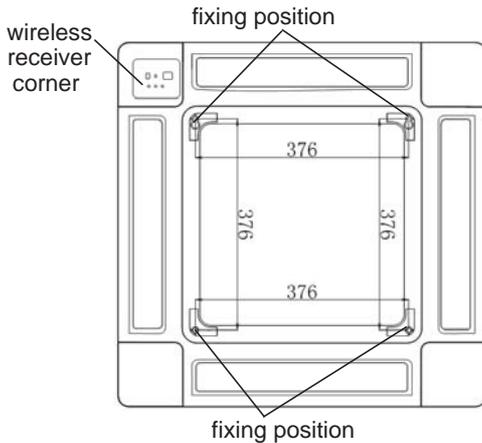
Draw the grille towards the open space after lifting.

## (2) Installing Air Panel

### Step 1

Four fixing positions will be seen after removing air intake grille from air panel.  
Set the corner of the electrical box of the indoor unit to the position of wireless receiver corner of the air panel.  
Otherwise wiring between indoor unit and air panel can not be connected.

< Air Panel >



### Step 2

Mount the air panel onto the air panel fixing position by using the factory-supplied fixing screws (M5 screws).

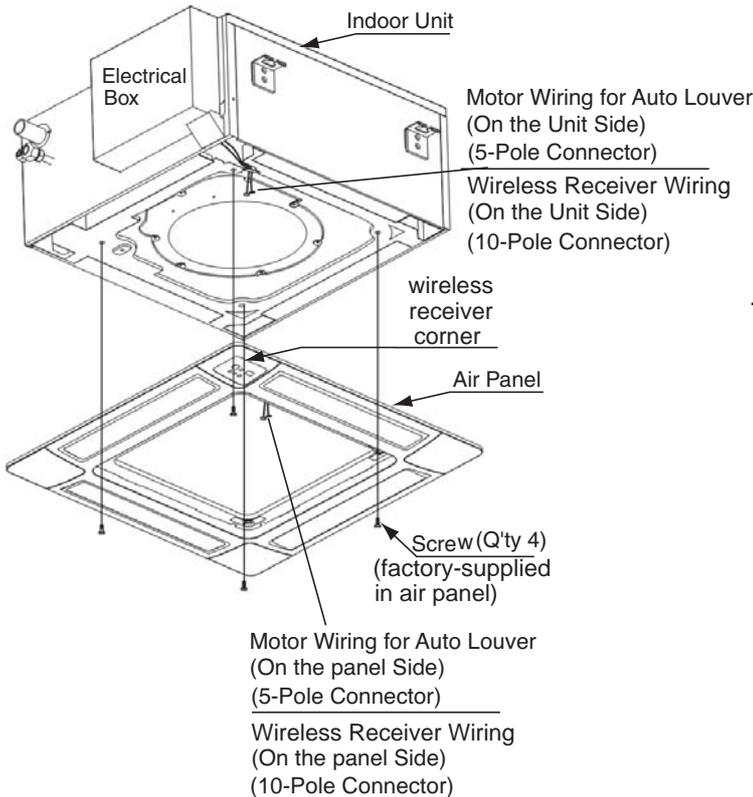


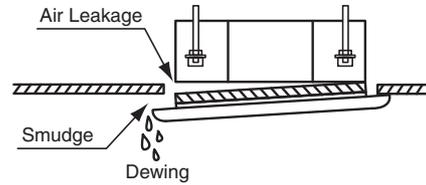
Fig.4.10 Installing Air Panel

### Step 3

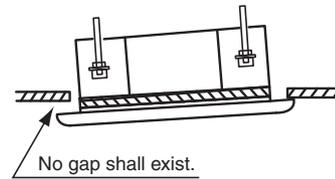
Check to ensure that there is no gap around the contacting surface between the indoor unit and the air panel. Any gap may cause air leakage or dewing.

## CAUTION

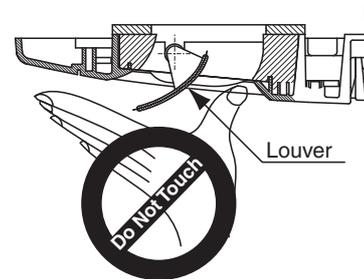
- If the screws are tightened insufficiently, it may cause of the failure.



- When there is still the gap even after tightening the screws firmly enough, readjust the height of the indoor unit.



- The indoor unit height is adjustable by adjusting the nut of suspension bolts for indoor unit .
- \* Significant height adjustment will cause of dewing from the drain pan and lead to the limit switch failure.
- Do not turn the air louver by hand. If moved, the louver mechanism would be damaged.



### Step 4

#### Wiring Connection for Air Panel

The Motor Wiring for Auto Louver and Wireless Receiver Wiring on the Panel Side and the Unit Side is shown in Fig.4.10. Connect them carefully.

Then attach the air intake grille. This panel is available to be installed from any 4 directions by rotating the air intake grille.

## CAUTION

Before electrical wiring work, turn OFF the power source. If the connectors are connected without turning OFF the power source, the auto-swing louver can not activate.

## NOTE

Wired Remote Control Switch and Wireless Remote Control Switch can not be used simultaneously .If Wired Remote Control Switch is connected ,Disconnect Wireless Receiver Wiring on the Panel Side and the Unit Side.

## **CAUTION**

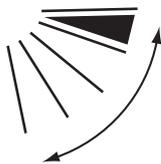
**Check the wiring connections securely after wiring work. If some problems are existing at the wiring connections, it may cause a fire.**

**Fix the cables near the wiring connections securely, if not, it may cause a fire. Protect the wires or etc. from rats or other animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.**

### (3) Test Run of Air Panel

- 1) After completing the installation of the air panel, perform the test run according to the "Installation & Maintenance Manual" attached with outdoor unit.
- 2) Check the swing louvers' operating conditions during the test run.  
The swing louvers are operated automatically. Never move the swing louver by hand.
  - \* Press the "SWING LOUVER" switch on the remote control switch.
  - \* Every time pressing the switch, the horizontal deflectors repeat swing and stop. The deflectors' positions are shown on the "SWING LOUVER" indicator on the remote control switch LCD.

(When Swinging)



The mark "▲" moves continuously.

(When in Fixed Position)



The mark "▲" indicates the position of louvers.

## **NOTE**

- 1) The adequate air flow direction may be different depending on the conditions such as:
  - Air Conditioner's Installation Position
  - Room Structure
  - Furniture LayoutIf satisfied cooling/heating condition is not obtained, adjust the air flow direction.
- 2) Perform the louver position setting with observing the "SWING LOUVER" Indicator on the remote control switch. (Louver position does not indicate the actual louver operating position.)
- 3) SWING LOUVER  
Even if the "SWING LOUVER" switch is pressed, the louvers may not stop immediately and move up to one swing at a maximum.
- 4) If cooling operation is performed under the condition with over 80% humidity, dew condensation may occur at the panel or the louvers.

## 5. Refrigerant Piping Work

### **⚠ DANGER**

Use refrigerant R410A in the refrigerant cycle. Do not charge oxygen, acetylene or other flammable and poisonous gases into the refrigerant cycle when performing a leakage test or an air-tight test. These types of gases are extremely dangerous and can cause an explosion. It is recommended that compressed air, nitrogen or refrigerant be used for these types of tests.

### 5.1 Piping Materials

- (1) Prepare locally-supplied copper pipes.
- (2) Select the piping size from the following table.

Model	mm (in.)	
	Gas Piping	Liquid Piping
05 ~ 17	φ12.7 (1/2)	φ6.35 (1/4)

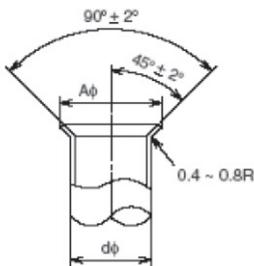
- (3) Select clean copper pipes. Make sure there is no dust and moisture inside. Blow the inside of the pipes with nitrogen or dry air, to remove any dust or foreign materials before connecting pipes.

### 5.2 Piping Connection

- (1) Position of piping connection is shown in Fig.4.3 and Fig.4.6.(Indoor Unit)

#### ※ Flaring Dimension

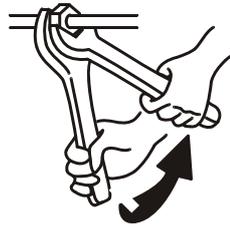
Perform the flaring work as shown below.



Diameter φd	A <sup>+0</sup> <sub>-0.4</sub>	
	R410A	R407C
6.35	9.1	9.0
9.53	13.2	13.0
12.7	16.6	16.2
15.88	19.7	19.4
19.05	(*)	23.3

(\*)It is impossible to perform the flaring work with 1/2H material. In this case, use an accessory pipe(with a flare).

- (2) When tightening the flare nut, use two spanners as shown in Fig. 5.2.



Pipe Size	Tightening Torque (N.m)
φ6.35mm	20
φ9.53mm	40
φ12.7mm	60
φ15.88mm	80
φ19.05mm	100

Fig. 5.2 Tightening Work of Flare Nut

- (3) After connecting the refrigerant piping, seal the refrigerant pipes by using the factory-supplied insulation material as shown in Fig 5.3.

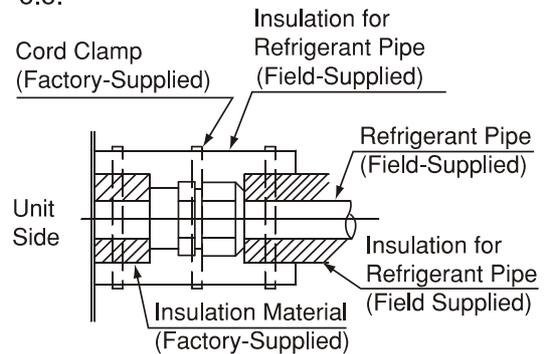
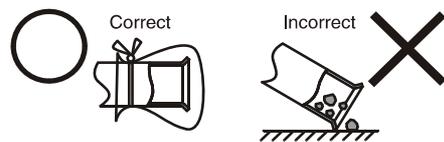


Fig. 5.3 Insulation on Pipes

### **⚠ CAUTION**

- Cap the end of the pipe when the pipe is to be inserted through a hole.
- Do not put pipes on the ground directly without a cap or vinyl tape at the end of the pipe.



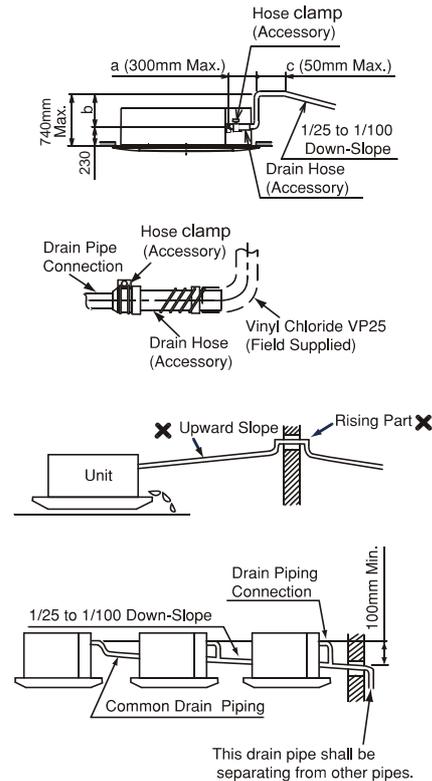
- (4) Evacuation and refrigerant charging procedures should be performed according to "Installation & Maintenance Manual" of the outdoor unit.

## 6. Drain Piping

### CAUTION

- Do not create an upper-slope or rise for the drain piping, since drain water can flow back to the indoor unit and leakage into the room will occur when the system operation is stopped.
- Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.
- When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The pipe size of the common drain pipe must be large enough according to the unit size and number of units.
- After performing drain piping work and electrical wiring, check to ensure that water flows smoothly.

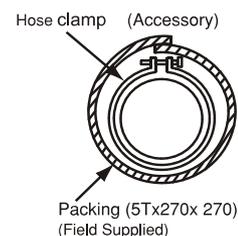
- (1) The position of the drain pipe connection is shown in Fig.4.3 and Fig.4.6.(Indoor Unit)
- (2) Prepare a polyvinyl chloride pipe with a 32mm outer diameter.
- (3) Fasten the tubing to the drain hose with the adhesive agent and the factory-supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.



- The total length of a+b+c shall be within 900mm.
- In case of lifting the drain pipe at the outlet part, perform the drain piping work as shown in the above figure.

Fig. 6.2 Drain Piping

- (4) Insulate the drain pipe after connecting the drain hose.



## 7. Electrical Wiring

### **! WARNING**

- Turn OFF the main power switch to the indoor unit and the outdoor unit before electrical wiring work or a periodical check is performed.
- Check to ensure that the indoor fan and the outdoor fan have stopped before electrical wiring work or a periodical check is performed.
- Protect the wires, drain pipe, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.
- Tighten screws according to the following torque.
  - M3.5: 1.2 N-m
  - M5: 2.0~2.4 N-m

### **! CAUTION**

- Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the product from any condensate water or insects.
- Tightly secure the wires with the cord clamp inside the indoor unit.
- Secure the cable of the remote control switch using the cord clamp inside the electrical box.

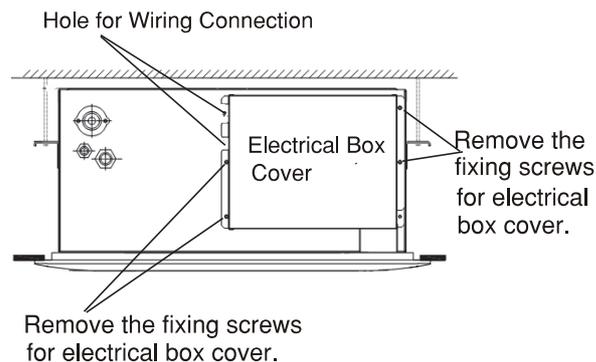
### 7.1 General Check

- (1) Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in "Technical Catalog I". Make sure that the components comply with National Electrical Code (NEC).
- (2) Check to ensure that the power supply voltage is within  $\pm 10\%$  of the rated voltage.
- (3) Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.
- (4) Check to ensure that the ground wire is connected.
- (5) Power Source Main Switch  
Install a multi-pole main switch with a space of 3.5mm or more between each phase.

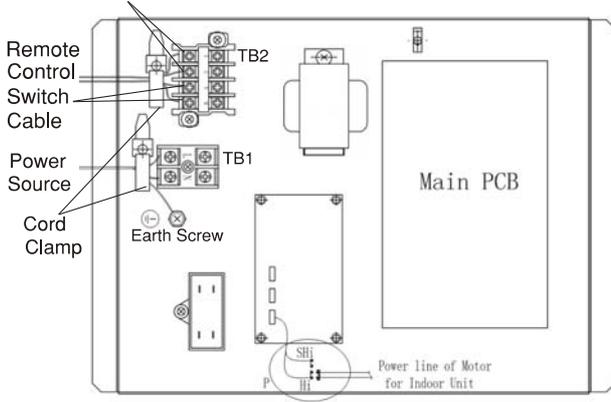
### 7.2 Electrical Wiring Connection

The electrical wiring connection for the indoor unit is shown in Fig. 7.2. The intermediate connection between the indoor unit and the air panel should be connected.

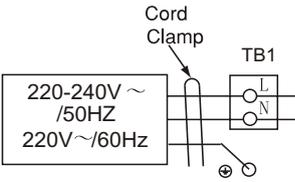
- (1) Connect the cable of an optional remote control switch or an optional extension cable to the terminals inside the electrical box through the connecting hole.
- (2) Connect the power supply and earth wires to the terminals in the electrical box.
- (3) Connect the wires between the indoor unit and the outdoor unit to the terminals in the electrical box.
- (4) Tightly clamp the wires using the cord clamp.



Transmission Wiring  
(between Indoor Unit  
and Outdoor Unit)



< Power Source >



< Transmission Wiring >

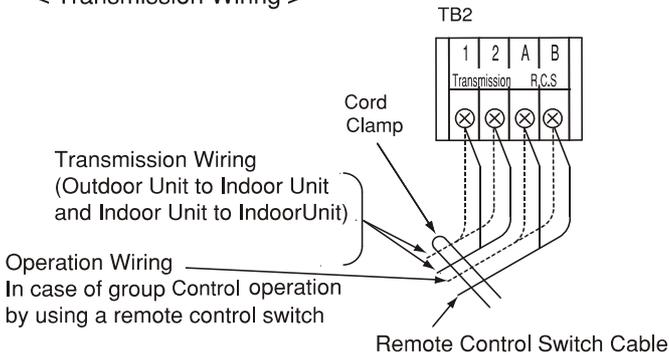
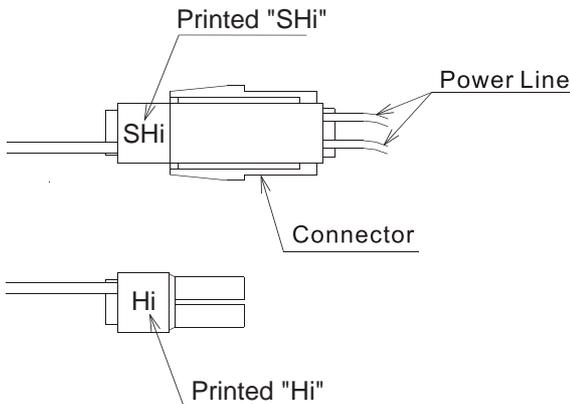


Fig. 7.2 Electrical Wiring Connection for Indoor Unit

### 7.3 Fan Motor Speed-up Setting(SHi)

To be adapted for high ceiling installation Speed-up Setting(SHi) is required. Before shipment normal fan speed (Hi) is connected. To shift to SHi setting Connect cable terminal of SHi to the power line of fan motor.

<SHi setting: Enlarged View of (P) in Fig.7.2 >



## NOTE

Noise level will increase 2-3db(A) by Speed-up Setting(SHi)

## 8. Test Run

Test run should be performed according to "Installation & Maintenance Manual" of the outdoor unit.

## ! WARNING

- Do not operate the system until all the check points have been cleared.
  - (A) Check to ensure that the electrical resistance is more than 1 megohm, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the electrical leakage is found and repaired.
  - (B) Check to ensure that the stop valves of the outdoor unit are fully opened, and then start the system.
  - (C) Check to ensure that the switch on the main power source has been ON for more than 12 hours, to warm the compressor oil by the crankcase heater.
- Pay attention to the following items while the system is running.
  - (A) Do not touch any of the parts by hand at the discharge gas side, since the compressor chamber and the pipes at the discharge side are heated higher than 90°C.
  - (B) DO NOT PUSH THE BUTTON OF THE MAGNETIC SWITCH(ES). It will cause a serious accident.

## 9. Safety and Control Device Setting

Indoor Unit

Model		05 ~ 17	
For Evaporator Fan Motor		130±5	
Thermostat	Cut-Out	°C	
	Cut-In	°C	83±15
For Control Circuit		5	
Fuse Capacity		A	
Freeze Protection		0	
Thermostat	Cut-Out	°C	
	Cut-In	°C	14
Thermostat Differential		°C	2

## 10. Common

### 10.1 Field Minimum Wire Sizes for Power Source

#### **WARNING**

- Use an ELB (Electric Leakage Breaker). If not used, it will cause an electric shock or a fire.
- Run through the cables using conduit tube, and Completely seal the end of conduit tube with sealing materials.

### Field Minimum Wire Sizes for Power Source

Model	Power Source	Maximum Current	Power Source Cable Size	Transmitting Cable Size
			EN60 335-1 *1	EN60 335-1 *1
05 ~ 12	220-240V ~ /50Hz	0.53A	2.5mm <sup>2</sup>	0.75mm <sup>2</sup>
14		0.59A		
17		0.75A		

#### NOTES:

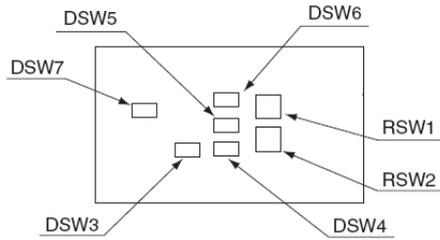
- 1) Follow local codes and regulations when selecting field wires.
- 2) The wire sizes marked with \*1 in the above table are selected at the maximum current of the unit according to the European Standard, EN60335-1. Use the wires which are not lighter than the ordinary polyvinyl chloride sheathed flexible cord (code designation H05VV-F).
- 3) Use a shielded cable for the transmitting circuit and connect it to ground.
- 4) In the case that power cables are connected in series, add each unit maximum current and select wires below.

According to EN 60335-1	
Current (A)	Wire Size (mm <sup>2</sup> )
$i \leq 3$	2.5
$3 < i \leq 6$	2.5
$6 < i \leq 10$	2.5
$10 < i \leq 16$	4
$16 < i \leq 25$	6
$25 < i \leq 32$	10
$32 < i \leq 50$	6
$50 < i \leq 63$	25

\*3: In the case that current exceeds 63A, do not connect cables in series.

## 10.2 Setting of Dip Switches

### (A) Position of Dip Switches



(B) The PCB in the indoor unit is equipped with 2 rotary switches and 6 dip switches. Before testing unit, set these dip switches according to the following instructions. Unless these dip switches are set in the field, the unit can not be operated.

#### (1) Unit No. Setting (RSW1&DSW6)

Setting is required. Set the unit No. of all indoor units respectively and serially by following setting position shown in the table below. Numbering must start from "1" for every outdoor unit.

Unit No. Setting

DSW6 (Tens Digit)	RSW1 (Units Digit)	Ex.) Set at No.16 Unit DSW6
	Setting Position Set by inserting Slotted screwdriver into the groove	
Before shipment. DSW6 and RSW1 are set to "0". Max.64 units are available to set when all the equipment to be connected are corresponding to Hi-NET. Max.16 units when the units corresponding/non-corresponding to Hi-NET are combined.		Set No.1 Pin ON 

#### (2) Unit Model Code Setting (DSW4)

No setting is required.  
Setting the model code of the indoor unit.



#### (3) Capacity Code Setting (DSW3)

No setting is required, due to setting before shipment. This switch is utilized for setting the capacity code which corresponds to the Horse Power of the indoor unit.

Capacity	05 . 07	09	12	14	17		
Setting Position							
Capacity							
Setting Position							

#### (4) Refrigerant Cycle No. Setting (RSW2&DSW5)

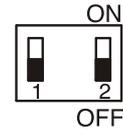
Setting is required. Setting positions before shipment are all OFF.

Refrigerant Cycle No. Setting

DSW5 (Tens Digit)	RSW2 (Units Digit)	Ex.) Set at No.5 Cycle DSW5
	Setting Position Set by inserting Slotted screwdriver into the groove	
Before shipment. DSW5 and RSW2 are set to "0". Max.64 cycles are available to set when all the equipment to be connected are corresponding to Hi-NET. Max.16 cycles when the units corresponding/non-corresponding to Hi-NET are combined.		Set All Pins OFF 

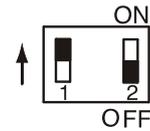
#### (5) DSW7

\* Factory Setting



\* No.1 Pin: Fuse Recover

When fuse is cut, turn No.1 Pin ON.



### NOTE

- The "■" mark indicates position of dip switches. Figures show setting before shipment.

### CAUTION

Before setting dip switches, firstly turn OFF power source and set the position of the dip switches. If the switches are set without turning OFF the power source, the switches can not function.



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