# HITACHI

#### 日立分體式冷氣機安裝說明書



·安全上的注意事項·

RAS-DX18HNK + RAC-DX18HNK

# 經銷商請按照説明書詳細向顧客説明操作

#### 安裝工程必須準備的工具

安裝前請詳細閱讀正確的安裝方法。

● 標記是R410A專用工具) • ⊕ ⊖ 螺絲起 巻尺 ・ 刀子 ・ 鋸子 ・ 切管器 ・ 六角板 **並○ 4mm) ・ 電鑽 (ø65~ø80mm)** ◉ 泵結合器 ◉ 喇叭口擴管工具 ◉ 氣體驗漏檢知器 ● 歧管閥● 加注軟管

#### • 使用前請詳細閱讀「安全上的注意事項」,以正確的使用機體。 ● 在此所示的注意事項,記載著有關安全性上的重要內容,因此以下的注意事項需特別加以注

- ♠ 警告 ·······安裝錯誤時,可能會造成死亡或重傷的嚴重後果。 ⚠ 注意······安裝不恰當時,也可能造成嚴重後果。
- 安裝工作完了後,確認試運轉無異常時,請依使用説明書的使用方法,詳細地向顧客説明。

## · 請找經銷商或合資格技術人士進行安裝。自己安裝可能會造成成漏水、觸電及火災 安裝工程進行時,請依照安裝說明書指引進行安裝。安裝不良時,可能會造成漏水、觸電及火災。 安裝時,請確保機體安裝在穩固及能提供足夠支撐機體的地方。否則機體有機會有掉落的危險 <sup>,</sup>電氣工程時,請依電氣設備的規定及安裝說明書所示的方法來施工。務必使用專用電路。如電路容量不足或施工不完備,會引起短路或火災 室內和窒外機之間的接駁線需使用指定的電線接駁。接線端接駁到電線座後,請確保接線端完全接駁。插駁不良或沒有固定時,可能會造成過熱或著火 安裝工程中使用的零件均須採用合符標準,否則可能會造成機體掉落、異常震動、漏水、觸電及火災等。



▲ 警告

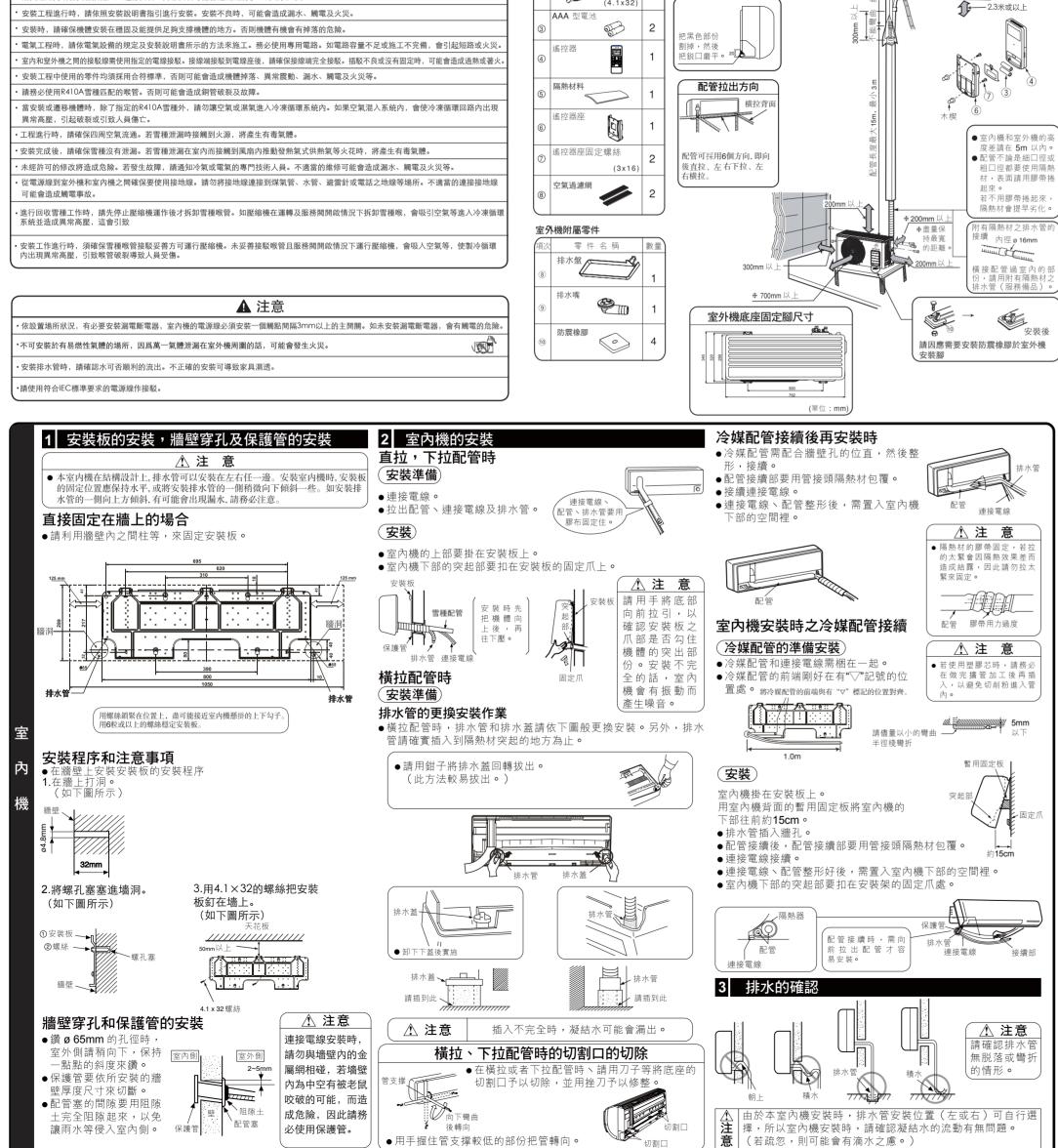
安裝位置的選擇: 良好的安裝位置應能為機體提供良好的通風、減少

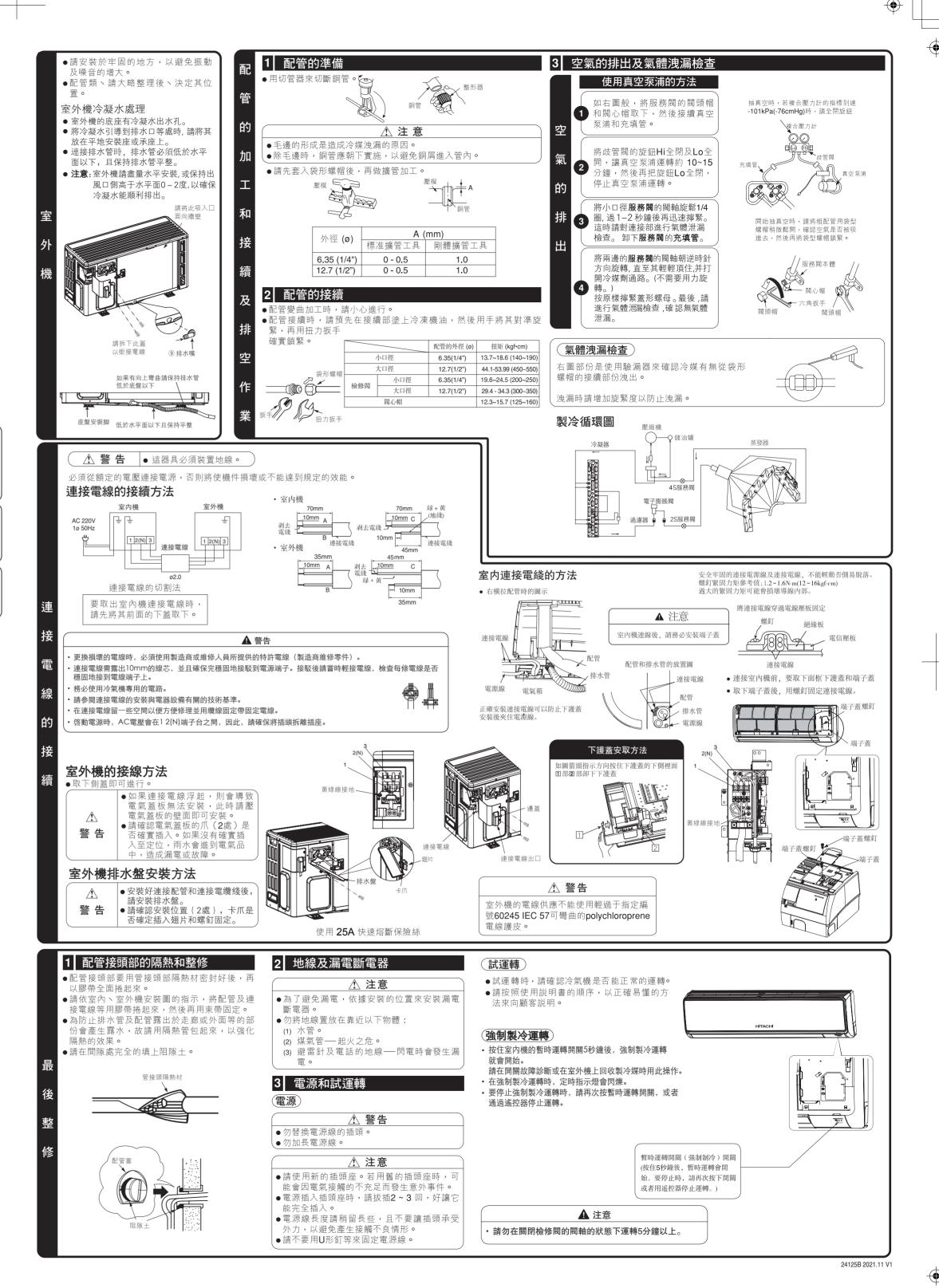
室外機要安裝在能非常耐重的場所,否則噪音和震動會增加。

安裝場所的選定(下列幾點注意事項,請先得到顧客的同意再安裝。)

本機體需安裝能提供足夠支撑、不會產生震動及穩固的地方。

附近不要有熱源,吹出口附近不可能有障礙物。







# HITACHI

HITACHI SPLIT-UNIT AIR CONDITIONER INSTALLATION MANUAL



**Indoor Unit Outdoor Unit** 

installation before starting installation work. The sales agent should inform customers regarding the correct operation of installation.

Carefully read through the procedures of prope

#### **Tools Needed For Installation Work**

( mark is tool exclusive use for R410A) • ⊕ ⊖ Screwdriv Measuring Tape • Knife • Saw • Pipe Cutter • Hexagonal Wrence Key (Φά 4mm) • Power Drill (ø65~ø80mm Vacuum Pump · Pliers or Wrench · Torque Wrench Detector 

Manifold Valve 

Charge Hose

# SAFETY PRECAUTION

RAS-DX18HNK + RAC-DX18HNK

Read the safety precautions carefully before operating the unit.

The contents of this section are vital to ensure safety. Please pay special attention to the following sign. ⚠ WARNING ...... Incorrect methods of installation may cause death or serious injury.

**↑** CAUTION ...... Improper installation may result in serious consequence.

Be sure that the unit operates in proper condition after installation. Explain to customer the proper way of operating the unit as described in the user's guide.

#### **A** WARNING

Please request your sales agent or qualified technician to install your unit. Water leakage, short circuit or fire may occur if you do the

Please observe the installation stated in the installation manual during the process of installation. Improper installation may cause water leakage, electric shock and fire.

Make sure that the units are mounted at locations which are able to provide full support to the weight of the units. If not, the units may

collapse and impose danger.

Observe the rules and regulations of the electrical installation and the methods described in the installation manual when dealing with the electrical work. Use cables which are approved official in your country. Be sure to use the specified circuit. A short circuit and

fire may occur due to the use of low quality wire or improper work.

Be sure to use the specified cables for connecting the indoor and outdoor units. Please ensure that the connections are tight after the conductors of the wire are inserted into the terminals to prevent the external force is being applied to the connection section of the terminal base. Improper insertion and loose contact may cause over-heating and fire.

stronger vibration may occur. Be sure to use the specified piping set for R410A. Otherwise, this may result in broken copper pipes or fault

When installing or transferring an air conditioner to another location, make sure that air other than the specified refrigerant (R410A) does not enter the refrigeration cycle. If other air should enter, the pressure level of the refrigeration cycle may increase abnormally which could result in a rupture and injury.

Be sure to ventilate fully if a refrigerant gas leak while at work. If the refrigerant gas comes into contact with fire, a poisonous gas may occur.

After completion of installation work, check to make sure that there is no refrigeration gas leakage. If the refrigerant gas leaks into the room, coming into contact with fire in the fan-driven heater, space heater, etc., a poisonous gas may occur.

technician or electrician. Improper repairs may result in water leakage, electric shock and fire, etc.

Be sure to connect the earth line from the power supply wire to the outdoor unit and between

the outdoor and indoor unit. Do not connect the earth line to the gas tube, water pipe, lighting rod or the earth line of the telephone unit. Improper earthing may cause electric shocks.

When finishing the refrigerant collection (pumping down), stop the compressor and then remove the coolant pipe

If you remove the refrigerant pipe while the compressor is operating and the service valve is released, air is sucked and a pressure in the freezing cycle system will build up steeply, causing an explosion or injury.

n installing the unit, be sure to install the refrigerant pipe before starting the compress If the refrigerant pipe is not installed and the compressor is operated with the service valve released, air is sucked and the pressure level of the refrigeration cycle may increase abnormally which could result in a rupture and injury.

#### **▲** CAUTION

A circuit breaker must be installed in the house distribution box for the direct connected power supply cables to the

Do not install the unit near a location where there is flammable gas. The outdoor unit may catch fire if flammable gas leaks around it.

Installation of Mounting Plate, Wall Penetration and Installation of Protection Pipe

**⚠** CAUITON

The drain hose can be installed from the lefe or right of the indoor unit. When installing

towards the side of drain hose. If it is tilted above the side of the drain hose, condense

Screw at the positions near the upper and lower hooks where the indoor

3. Fix the hanger on wall with

Wall Penetration and Installation of Protection Pipe

(As shown in figure below

**⚠** CAUITON

Be sure that the wire is not

in contact with any metal

in the wall. Please use the

protection pipe as wire

passing through the hollow

part of the wall so as to

prevent the possibility of

damaged by mouse.

the indoor unit, the mounting board must be fixed horizontally or slightly tilted down

Please use hidden beams in the wall to hold the mounting plate.

**Procedures of Installation and Precautions** 

Procedures to fix the mounting plate.

Drill holes on wall.

2.Push plug into the holes.

Drill a ø 65mm hole on wall

which is slightly tilted

Drill the wall at a small angle.

Cut the protection pipe

according to the wall

Empty gap in the sleeve of

protection pipe should be

to avoid dripping of rain

ompletely sealed with putty

thickness

An IEC approved power cord should be used.

Direct Mounting On The Wall

THE CHOICE OF MOUNTING SITE (Please note the following matters and obtain permission from customer before installation)

WARNING vise, noise and vibration will increase full support to the unit.

▲ CAUTION

Selecting the installation location: Suitable location that will reduce the impact from

The clearances of the unit from top, left, right and front are specified as  $\Leftrightarrow$  in figure

sure that the hot air blown out of the unit and noise do not disturb the neighbourhood

Place the outdoor unit and its connecting ord at least 1m away from the antenna or signal line of television, radio or telephone. This is to avoid noise interference.

Do not install the indoor unit in a place where small animals may build their nests. If small animal goes inside the unit and touches the electrical parts, failure of the unit.

oke or fire may be caused. Request your customer to keep the surrounding of

e not exposed to strong wind. Particularly on the rooftop of a building, strong wind

The air blown out of the unit should not point directly to animals or plants

ain and direct sun that may affect the unit performance

below. At least two sides must be clear for ventilation.

Figure showing the Installation

of Indoor and Outdoor Unit.

Besides, ventilation must be good and clear of obstruction

A CAUTION The clearance distances from top, right and left are specified as ⇔ in figure below.
 The location musteb convenient for water drainage and pipe connection

with the outdoor unit. Do not install at a location where there is flammable gas, steam, oil and

smoke. There is a risk of fire, explosion, deterioration of resin and/or damage. To avoid interference from noise, please place the unit and its remote controller at least 1m from the radio and television. To avoid any error in signal transmission from the remote controller, please put the controller far away from high-frequency machines and high-power wireless systems.

Lighting fixtures with electronic starters may shorten the reception distance and may

n interfere with the signal being received.

The installation height should be at least 2.3m or more from the floor.

Names of Indoor Components

Component's Name Of Mounting Plate The Length of Indoor Unit Screw for Mounting Plate Do not alter the power cord AAA Size Battery 85-3

seal any gap with Direction of Piping

Purifying Filter Names of Outdoor Components Component's Name 

**↑** CAUITON

Please pull the lower par

outwards to check if the

unit is hooked onto the

mounting plate. Improper

vibration and noise.

installation may cause

Heat insulating materials

Dado for remote co

2 Installation of the Indoor Unit

**VERTICALLY DOWNWARD PIPING** 

• Pull out the pipe, power cord and drain hose.

The upper part of the indoor unit is hanged

• The projection at the lower part of the indoor

Lift the body

of the unit

Change of Drain Hose and Installation Procedures

Please use pliers to pull out the drain cap.

Remove the cap for drain hose installati

of openings with a file.

(This is an easier way to remove the drain cap)

( Drain Hose

• Exchange the location of drain hose and drain cap during horizontal piping as shown

in figure below. Be sure to plug in the drain hose until the insulating material folds upon

Drain cap

⚠ CAUITON Condensed water may leak out if not inserted properly.

HORIZONTAL & DOWNWARD PIPING - MAKING OPENINGS

of pipe-support by hand.

Transform the piping while holding down the lower portion

• During horizontal or downward piping, use a knife to cut

openings as shown in figure. Then smoothen the edges

upwards and then force

unit is hooked onto the mounting plate.

Preparation

Installation

Connect power cord

on the mounting plate.

HORIZONTAL PIPING

Preparation

piping configuration may b six different directions direct rear piping, left or righ matter big or sma should all be insulat downward piping and left or right sideways piping. with insulation pipe ar then wrapped with plast tape. (The insulator w deteriorate if it is n wrapped with tape). ose for the indoor pipi After installation Dimension of Mounting Stand of the outdoor uni please install rubber under outdoor unit base foot as necessary.

indoor unit. In case of other installations a main switch with a contact gap or more than 3mm has to be installed Without a circuit breaker, the danger of electric shock exists.

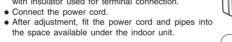
.. .

Please ensure smooth flow of water when installing the drain hose. Improper installing may wet your funiture.

# INSTALLATION OF COOLANT PIPES AFTER CONNECTION

The coolant pipes should be adjusted to fit into the hole on the wall and then ready for further connection.

The terminals of 2 connected pipes must be covered with insulator used for terminal connection. Connect the power cord.





Otherwise, this will damage heat insulation and causes water condensation. 

#### THE CONNECTION OF COOLANT PIPE DURING THE INSTALLATION OF INDOOR UNIT

## **Preparation To Install Coolant Pipes**

 Coolant pipes and power cord must be tied together. • The front part of the coolant pipes are at locations marked with "  $\nabla$  " symbol.

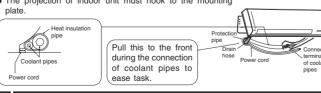
Match the end of the refrigerating pipes with the locations marked with "  $\nabla$  " symbol. 

**⚠** CAUITON • Please fix in the plastic core after flaring to avoid plastic chips entering the

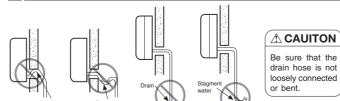
Installation Hang the indoor unit onto the mounting plate. Use the temporary stand at the back of the indoor unit to push its lower part 15cm

• Place the drain hose through the hole on the wall. • Insulate the connecting portion of coolant pipe with insulator. Connect the power cord. After adjustment, the power cord and coolant pipes are placed.

into the space available under the indoor unit. The projection of indoor unit must book to the mounting



Installation of Drain Hose



You are free to choose the side (left or right) for the installation of drain hose. Please ensure the smooth flow of condensed water of the indoor CAUTION unit during installation. (Carelessness may result in water leakage.)

# Detail of cutting the connecting cor-

To remove the connecting wires for the indoor unit, please remove the low cover panel in front of the unit.

Preparation of Pipe

Jagged edge will cause leakage

Before flaring, please put on the hexagon screw cap.

6.35 (1/4")

Pipe Connection

a torque wrench to

tighten the connection

12.7 (1/2")

Please be careful when bending the copper pipe.

entering the pipe.

Use a nine cutter to cut the copper pipe

**⚠** CAUTION

Point the side to be trimmed downwards during trimming to prevent copper chips from

Diameter (Ø) Imperial flaring tool Rigid flaring tool

Applied frozen grease to the connection points and then screw in manually. After that, use

Outer diameter

of p pe (ø)

Large diameter side 12.7(1/2") 29.4 - 34.3 (300~350)

Torque N•m (kgf cm)

12.3~15.7 (125~160)

6.35(1/4") 13.7~18.6 (140~190)

12.7(1/2") 44.1-53.99 (450~550)

6.35(1/4") 19.6~24.5 (200~250)

0 - 0.5

Small diameter side

Large diameter side

Valve | Small diameter side

0 - 0.5

# **↑ WARNING**

· If the supply cord is damaged, it must be replaced by a special cord (Maker's service parts) available from the manufacturer or its service agent.

Power supply shall be connected at the rated voltage, otherwise the unit will be broken or could not reach the specified capacity

Indoor unit

The naked part of the wire core should be 10mm fix it to the terminal tightly. Then try to pull the individual wire to check if the contact is tight. Improper insertion may burn the terminal.

Be sure to use only wire specified for the use of air-conditioner.

Please refer to the manual for wire connection, the wiring technique should meet the standard of the electrical Leave some space in the connecting cord for maintenance purpose and be sure to secure it with the cord band.

Secure the connecting cord along the coated part of the wire using the cord band. Do not exert pressure on the wire as this may cause overheating or fire.

There is a AC voltege of 220V between the 1 and 2(N) terminals. Therefore, before servicing, be sure to remove the plug from

# Wiring Of The Outdoor Unit

Please mount the outdoor unit on stable ground

prevent vibration and increase of noise level

Decide the location for piping after sorting out

CONDENSED WATER DISPOSAL OF OUTDOOR UNIT

When connecting the drain pipe, It must be below

the horizontal line and the drain pipe keep smooth

Caution: Install the outdoor unit horizontally or kee the air outlet side is higher than the

that condensate drains away.

If there are upward, must be below underside of bas

Base foot It must be below the horizontal line

Procedures of Wiring

and the drain pipe keep smooth.

**★ WARNING** • THIS APPLIANCE MUST BE EARTHED.

horizontal plane 0~2° and make sure

There is holes on the base of Outdoor unit for

In order to flow condensed water to the drain,

the different types of pipe available

nsed water to exhaust.

the unit is installed on a stand block.

move the side cover for wire connection

 You may not be able to close the side cover due to the connecting cord, under such situation, please press against the wait of side cover to fix it.

WARNING | • Be sure that the hooks (2 places) are plugged in. Otherwise, water leakage may occur and th causes short circuit or faults.

## Drain tray of the outdoor unit

 After install pipes and wire connection please be sure that install the Drain tray.

WARNING | • Be sure that install places (2 places). The claw (be sure that insert the pin) and screw.

ulation And Maintenance Of Pipe Connection

The connected terminals should be completed sealed with

Please tie the pipe and power line together with plastic tape

as shown in the figure of installation of both the indoor and

To enchance the heat insulation and to prevent water

condensation, please cover the outdoor part of the drain hose and pipe with insulation pipe.

heat insulator and then tied up with rubber strap.

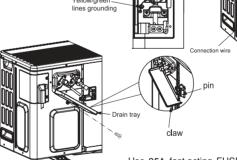
outdoor units. Then fix their position with holders.

Completely seal any gap with putty.

OF INSTAL

STAGE

FINAL



2 Earth Line And Circuit Breaker

**⚠** CAUTION

To avoid short circuit, it is necessary to install circuit breaker

(3) The earth line of lightning conductor and telephone -

**⚠ WARNING** 

**⚠** CAUTION

Please use a new socket. Accident may occur due to the use of old socket because of poor contact.

Please plug in and then remove the plug for 2 – 3 times

Keep additional length for the power cord and do not render

• Do not fix the power cord with U-shape nail

This is to ensure that the plug is completely plugged into

the plug under external force as this may cause poor

depending on the mounting location of the unit.

(2) Gas pipe — There is danger of catching fire.

short circuit may occur during lightning.

3 Power Source And Operation Test

• Do not alter the plug of power cord. . Do not make extension to the power cord

Do not place earth line near the following objects:

Water pipe

Power Source

Use 25A fast acting FUSE

**↑** CAUTION

Operation Test

as described in the user's manual.

leakage.

Please use gas leakage detector to check if leakage occurs at he connection of hexagon screw nut as shown on the right.

3 Removal Of Air From The Pipe And Gas Leakage Inspection

cedures of using Vacuum Pump for Air Removal

As shown in figure on the right, remove

and then connect them to the vacuum

Fully tighten the "Hi" shuttle of the sub-

division valve and completely unscrew

the "Lo" shuttle. Run the vacuum pump

for about 10-15 minutes, then completely

tighten the "Lo" shuttle and switch off

Loosen the spindle of the service valve with small diameter by 1 / 4 turn and tighten the

spindle immediately after 1 to 2 seconds.

Unscrew the spindle of both the service valve in anticlockwise direction to allow the flow of refrigerant (unscrew halfway).

lighten the cap of valve head

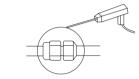
Remove the charging hose from the service

the cap of valve head and valve core

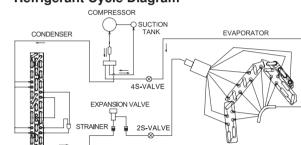
pump and sub-division valve.

the vacuum pump.

f gas leakage occurs, further tighten the connection to stop



## Refrigerant Cycle Diagram



## Wiring Of The Indoor Unit

Wiring for the horizontal piping from the right side.

replacement. Not to interfere with the drain hose, fold the cable at the drain hose side of the electric box as shown in the left figure, and pass the cable just over the electric Drain box and pull it out. Piping and drain hose layou Electric box Form the cable properly so that the low cover won't touch the cable in

**▲ WARNING** After wiring the indoor unit, make sure to reattach the terminal cover For wire connection of the Indoor unit, you need to

Connecting cord

Securely screw in the power cord and connecting cord so that it will

Tightening torque reference value:1.2 to 1.6 N·m (12 to 16 kgf·cm)

Vhen putting two connecting cords

Insulating plate

Cord band

Excessive tightening may damage the interior of the cord requiring

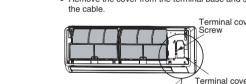
through the band.

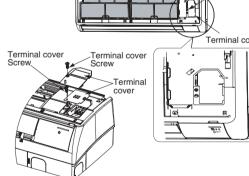
Screw

not get loose or disconnect.

remove the front cover, the low coverunder the body of the unit and terminal cover

 Remove the cover from the terminal base and screen the cable.





Outdoor supply cords shall not be lighter than polychloroprene sheathed flexible cord 60245 IEC 57.

# Force-cooling operation

 When the temporary switch of the indoor unit is pressed for • Please ensure that the air conditioner is in normal operating more than 5 seconds, the force-cooling operation starts. condition during the operation test.

Explain to your customer the proper operation procedures Use this mode when performing the failure diagnosis or

collecting refrigerant into the outdoor unit. • The Timer lamp flashes when force-cooling is in operation.

· Press the temporary switch again or use the remote controller to stop the force-cooling operation once this operation is completed.





Do not operate the unit for more than 5 minutes while the spindle of the service valve is closed.

> Temporary switch (Force-cooling operation starts when the switch is pressed for more than 5 seconds. Press the switch again and use the remote

controller to stop the operation.)





















