# **Ceiling Type SPLIT TYPE AIR CONDITIONER** INSTALLATION **INSTRUCTION SHEET** THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

# (PART NO. 9364488028-02)

For authorized service personnel only.

### IMPORTANT!

Please Read Before Starting This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

#### For safe installation and trouble-free operation, you must: Carefully read this instruction booklet before beginning

- Follow each installation or repair step exactly as shown
- Observe all local, state, and national electrical codes. · Pay close attention to all danger, warning, and caution notices given in this manual
- This symbol refers to a hazard or unsafe practice which WARNING: can result in severe personal injury or death.
- This symbol refers to a hazard or unsafe practice which CAUTION: can result in personal injury and the potential for product or property damage.
- Hazel alerting symbols

Electrica

### If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this • Check carefully for leaks before starting the test run. document.

### SPECIAL PRECAUTIONS

Safety/aler

When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM

- Do not supply power to the unit until all wiring and tubing are completed
- or reconnected and checked. • Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or
- Ground the unit following local electrical codes. Connect all wiring tightly. Loose wiring may cause overheating at con-
- nection points and a possible fire hazard.

### When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

**ACAUTION** 

**R410A** 

REFRIGERANT

Refer to Commonwealth, State, Territory and local legislatio regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

### When Installing

...In a Ceiling or Wall Make sure the ceiling/wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support

#### ...In a Room

Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls and floors.

In Moist or Uneven Locations Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration

#### ...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle

...In a Snowy Area (for Heat Pump-type Systems) Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

### When Connecting Refrigerant Tubing

Keep all tubing runs as short as possible

- Use the flare method for connecting tubing. · Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque
- wrench for a leak-free connection

#### Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion the refrigerant tubing for your particular model is specified as either "small" or "large" rather than as "liquid" or "gas"

- When Servicing
- Turn the power OFF at the main circuit breaker panel before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts. · Clean up the site after you finish, remembering to check that no metal
- scraps or bits of wiring have been left inside the unit being serviced. After installation, explain correct operation to the customer, using the operating manual.

### This air conditioner uses new refrigerant HFC (R410A).

The basic installation work procedures are the same as conventional refrigerant models lowever, pay careful attention to the following points:

- Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the
- conventional piping and flare nuts with the R410A piping and flare nuts. Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]
- ) Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.
- ) When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.
- ⑤ When moving, if the compressor stops during pump down, close the valve immediately.

### Special tools for R410A

Tool name	Contents of change			
	Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other			
Gauge manifold	refrigerants, the diameter of each port has been changed.			
	It is recommended the gauge with seals -0.1 to 5.3 MPa (-76 cmHg to 53 kgf/cm <sup>2</sup> ) for high pressure0.1 to			
	3.8 MPa (-76 cmHg to 38 kgf/cm <sup>2</sup> ) for low pressure.			
Charge hose To increase pressure resistance, the hose material and base size were changed.				
Vacuum pump A conventional vacuum pump can be used by installing a vacuum pump adapter.				
Gas leakage detector	Special gas leakage detector for HFC refrigerant R410A.			

#### Copper pipes

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

Thicknesses of Annealed Copper Pipes (R410A)				
Pipe outside diameter	Thickness			
6.35 mm (1/4 in.)	0.80 mm (0.0315 in.)			
9.52 mm (3/8 in.)	0.80 mm (0.0315 in.)			
12.70 mm (1/2 in.)	0.80 mm (0.0315 in.)			
15.88 mm (5/8 in.)	1.00 mm (0.0394 in.)			

### GENERAL

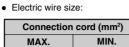
This INSTALLATION INSTRUCTION SHEET briefly outlines where and how to install the air conditioning system. Please read over the entire set of instructions for the indoor and outdoor units and make sure all accessory parts listed are with the system before beginning.

### CONNECTION PIPE REQUIREMENT

Diamete Liquid Gas 9.52 mm (3/8 in.) 15.88 mm (5/8 in.) Use pipe with water-resistant heat insulation

Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks. Use heat insulation with heat resistance above 248 °F. (Reverse cycle model only) In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat nsulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 15 mm (19/32 in.) or thicker and if the expected humidity exceeds 80%, use heat insulation that is 20 mm (3/4 in.) or thicker. If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 68 °F).

### ELECTRICAL REQUIREMENT



2.5 1.0

Decide the mounting position with the customer as follows:

• Install all electrical works in accordance to the standard. • Install the disconnect device with a contact gap of at least 3 mm (1/8") in all poles nearby the units. (Both indoor unit and outdoor unit) Install the circuit breaker nearby the units.

## SELECTING THE MOUNTING POSITION

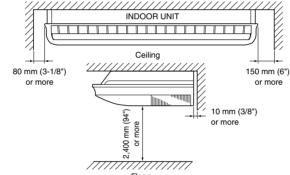
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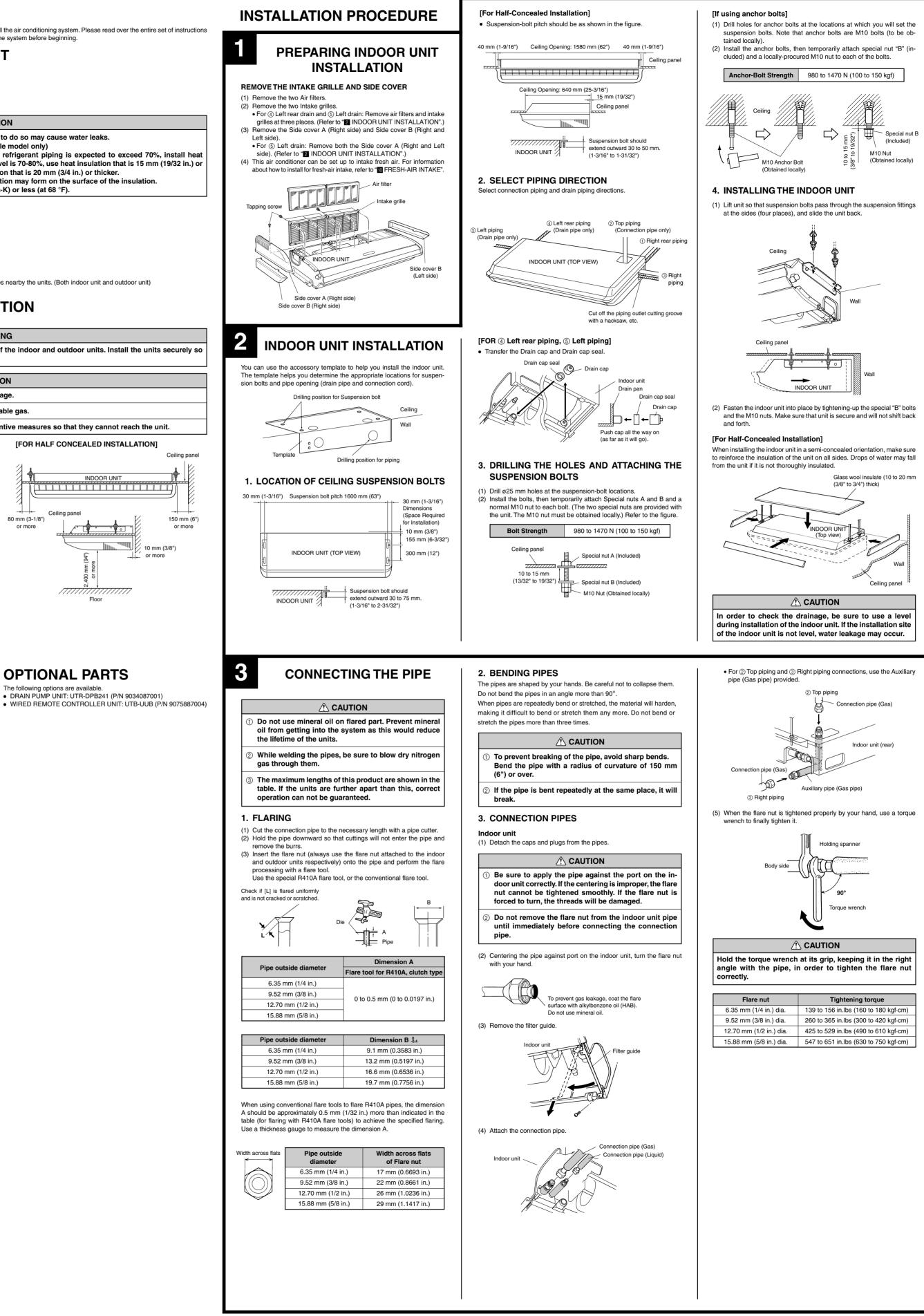
Select installation locations that can properly support the weight of the indoor and outdoor units. Install the units securely so that they do not topple or fall

- Do not install where there is the danger of combustible gas leakage
- Do not install the unit near heat source of heat, steam, or flammable gas
- ③ If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.

### INDOOR UNIT

- (1) Install the indoor unit level on a strong wall which is not subject to vibration (2) The inlet and outlet ports should not be obstructed : the air should be able to
- blow all over the room.
- (3) Do not install the unit where it will be exposed to direct sunlight. (4) Install the unit where connection to the outdoor unit is easy. Install the unit where the drain pipe can be easily installed Take servicing, etc., into consideration and leave the spaces shown in the
- figure. Also install the unit where the filter can be removed Ceiling





### INDOOD LINIT ACCESSORIES

Name and Shape	Q'ty	Application
Remote control unit	1	Use for air conditioner operation
Battery (penlight)	2	For remote control unit
Remote control unit holder	1	For mounting the remote control unit
Tapping screw (ø3 × 12)	2	For remote control unit holder installation
Drain hose insulation	1	Adhesive type $70 \times 230$
VT wire	1	For fixing the drain hose L 280 mm
Coupler heat insulator (large)	2	For indoor side pipe joint (Gas pipe)
Coupler heat insulator (small)	1	For indoor side pipe joint (Liquid pipe)
Nylon fastener	Large 4 Small 4	For fixing the coupler heat insulator
Special nut A (large flange)	4	For installing indoor unit
Special nut B (small flange)	4	For installing indoor unit
Installation template	1	For positioning the indoor unit
Auxiliary pipe assembly	1	For connecting the piping

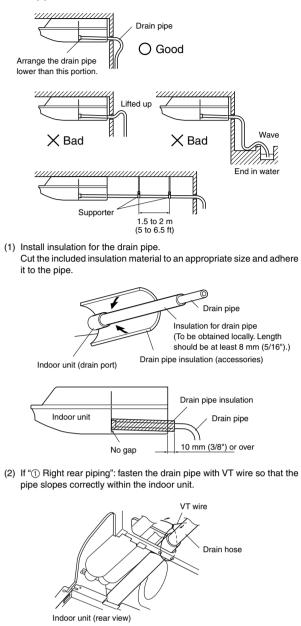
#### The following installation parts are furnished Use them as required.

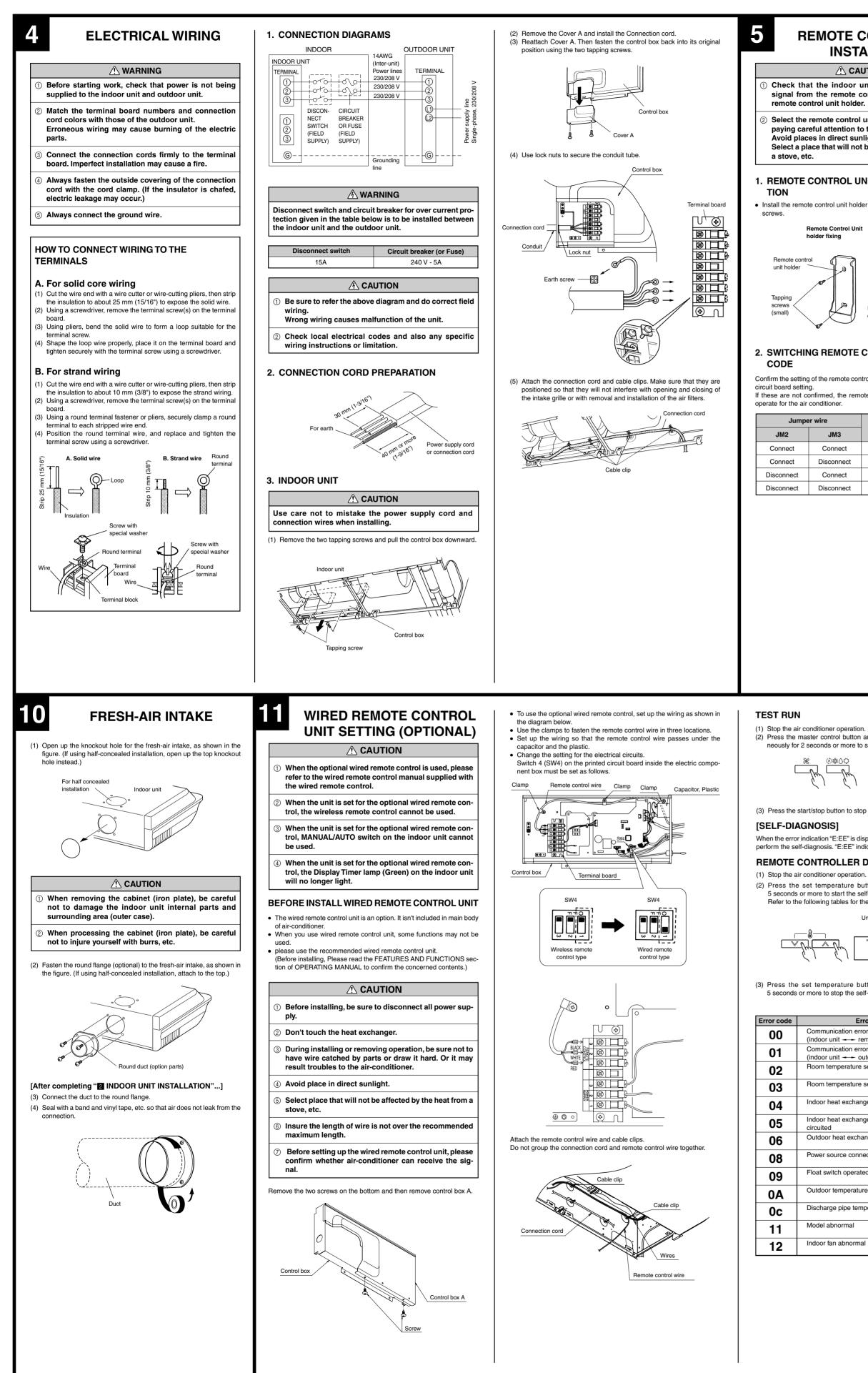
STANDARD PARTS



Install the drain pipe 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.

- Install the drain pipe with downward gradient (1/50 to 1/100) and so there are no rises or traps in the pipe. Use general hard polyvinyl chloride pipe (VP25) [outside diameter
- 38 mm (1-1/2")]. • During installation of the drain pipe, be careful to avoid applying pressure to the drain port of the indoor unit. When the pipe is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate (8 mm (5/16") or over thick) the indoor side of the drain pipe





		6 FINISHING	8 TEST RUNNING
ALLATION JTION nit correctly receives the ontrol unit, then install the	Indoor unit Printed circuit board	<ol> <li>Install the filter guide.</li> <li>Install the intake grilles.</li> <li>Install side covers A and B (if the unit is installed in a half-concealed orientation, only install side cover A).</li> <li>Install the air filters.</li> </ol>	<ul> <li>Perform test operation and check items 1 and 2 below.</li> <li>For the operation method, refer to the operating manual.</li> <li>The outdoor unit may not run, depending on the room temperature. In this case, the 'TEST RUN' signal is received during air conditioner operation (use a metallic object to short the two metal contacts under the battery compartment lid and send the 'TEST RUN' signal from the</li> </ul>
unit holder selection site by the following: light. be affected by the heat from		7 CUSTOMER GUIDANCE	Short the two metal contacts under the battery compartment lid.
AIT HOLDER INSTALLA-   ar to a wall or pillar with the tapping   Encode Control   Image: Imag	<text><text><image/><text><image/><text></text></text></text></text>	<ul> <li>Explain the following to the customer in accordance with the operating manual:</li> <li>(1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow adjustment, and other remote control unit operations.</li> <li>(2) Air filter removal and cleaning.</li> <li>(3) Give the operating manual and installation instruction sheet to the customer.</li> </ul>	<image/> <text><text><text><section-header><list-item><list-item><list-item><list-item><section-header><section-header></section-header></section-header></list-item></list-item></list-item></list-item></section-header></text></text></text>
A and the fan control button simulta- start the test run. ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓		<section-header><section-header><section-header><section-header><section-header><section-header><text><text></text></text></section-header></section-header></section-header></section-header></section-header></section-header>	



### **AN ERROR DISPLAY**

#### 1. INDOOR UNIT

Operation can be checked by lighting and flashing of the display section OPERATION, TIMER and VERTICAL SWING lamps. Perform judgment in accordance with the following.



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	SWING				

#### Test running

When the air conditioner is run by pressing the remote control unit test run button, the OPERATION, TIMER and VERTICAL SWING lamps flash slowly at the same time.

Error

The OPERATION, TIMER and VERTICAL SWING lamps operate as follows according to the error contents.

OPERATION lamp (RED)	TIMER lamp (GREEN)	SWING lamp (ORANGE)	Error contents
0	0	×	Indoor EEPROM abnormal
0	0	0	Outdoor EEPROM abnormal
(2 times) ●	0	×	Indoor room temperature sensor open
(2 times) ●	0	0	Indoor room temperature sensor shortcircuited
(3 times) $lacksquare$	0	×	Indoor heat exchanger temperature sensor open
(3 times) ●	0	0	Indoor heat exchanger temperature sensor shortcircuited
(4 times) 🗨	0	×	Float switch operated
(5 times) ●	0	×	Indoor signal abnormal
(5 times) 🔴	0	0	Outdoor signal abnormal
(6 times) 🗨	0	×	Indoor fan abnormal
0	(2 times) ●	×	Outdoor power source connection abnormal
0	(3 times) ●	×	Outdoor heat exchanger temperature sensor open
0	(3 times) ●	0	Outdoor heat exchanger temperature sensor shortcircuited
0	(4 times) 🔴	×	Outdoor temperature sensor open
0	(4 times)	0	Outdoor temperature sensor shortcircuited
0	(5 times) ●	×	Outdoor discharge pipe temperature sensor or compressor temperature sensor open
0	(5 times)	0	Outdoor discharge pipe temperature sensor or compressor temperature sensor shortcircuited
0	(6 times) 🔵	×	Outdoor high pressure abnormal
0	(7 times) ●	×	Outdoor discharge pipe temperature or compressor temperature sensor abnormal