

# **MITSUBISHI ELECTRIC** **INSTALLATION MANUAL**

SPLIT-TYPE AIR CONDITIONERS  
 Models  
**MSZ-GA22/GA25/GA35VA Series**  
**MUZ-GA25/GA35VA (H)**  
 [FLARE CONNECTION TYPE]



When installing an MZX series outdoor unit, refer to the MZX type manual for outdoor unit set-up.

## **1. THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY**

- Please provide an exclusive circuit for the air conditioner and do not connect other electrical appliances to it.
- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the cautions specified here as they include important items related to safety.
- The indications and meanings are as follows.

### WARNING

Could lead to death, serious injury, etc.

### CAUTION

- Could lead to serious injury in particular environments when operated incorrectly.
- After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS in a handy place on the customer's site.

### WARNING

- **Do not install the unit by yourself (customer).**  
Incomplete installation could cause injury due to fire, electric shock, the unit falling or leakage of water. Consult the dealer from whom you purchased the unit or special installer.
- **Install the unit securely in a place which can bear the weight of the unit.**  
When installed in an insufficient strong place, the unit could fall causing injury.
- **Use the specified wires to connect the indoor and outdoor units securely and attach the wires firmly to the terminal block connecting sections so the stress of the wires is not applied to the sections.**  
Incomplete connecting and fixing could cause fire.
- **Do not use intermediate connection of the power cord or the extension cord and do not connect many devices to one AC outlet.**  
It could cause a fire or an electric shock due to defective contact, defective insulation, exceeding the permissible current, etc.

- **Check that the refrigerant gas does not leak after installation has completed.**  
If refrigerant gas leaks indoors, and comes into contact with the fire of a fan heater, space heater, stove, etc., harmful substances will be generated.
- **Perform the installation securely referring to the installation manual.**  
Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- **Perform electrical work according to the installation manual and be sure to use an exclusive circuit.**  
If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.

- **Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely.**  
If the electrical cover in the indoor unit or the service panel in the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- **Be sure to use the part provided or specified parts for the installation work.**  
The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.
- **Be sure to cut off the main power in case of setting up the indoor electronic control P.C. board or wiring works.**  
It could cause an electric shock.

- **The appliance shall be installed in accordance with national wiring regulations.**
- **When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R410A) enters the refrigerant circuit.**  
Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.

①

## **3. INSTALLATION DIAGRAM & ACCESSORIES**

### FLARED CONNECTIONS

- This unit has flared connections on both indoor and outdoor sides.
- Remove the outdoor units valve cover, then connect the pipe.
- Refrigerant pipes are used to connect the indoor and outdoor units.
- Be careful not to crush or bend the pipe in pipe bending.

Limits	
Pipe length	20 m max.
Height difference	12 m max.
No. of bends	10 max.

- Refrigerant adjustment ... If pipe length exceeds 7 m, additional refrigerant (R410A) charge is required.

(The outdoor unit is charged with refrigerant for pipe length up to 7 m.)

Pipe length	Up to 7 m	No additional charge is required.
Exceeding 7 m		Additional charge is required. (Refer to the table below.)

Refrigerant to be added 30 g/m × (refrigerant piping length (m) - 6)

### ACCESSORIES

Check the following parts before installation.

-Indoor unit-

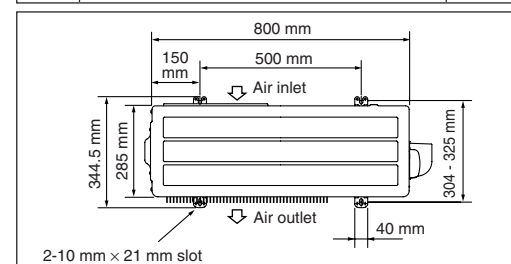
● Installation plate	1
● Installation plate fixing screw 4 × 25 mm	5
● Remote controller holder	1
● Fixing screw for ● 3.5 × 16 mm (Black)	2
● Battery (AAA) for remote controller	2
● Wireless remote controller	1
● Felt tape (Used for left or left-rear piping)	1

-Outdoor unit-

● Drain socket (VA type only)	1
● QUICK CLEAN KIT	1

### PART TO BE PROVIDED AT YOUR SITE

Optional extension pipe	
● Indoor/outdoor unit connecting wire (4-core 1.0 mm <sup>2</sup> )	1
● Extension pipe	1
● Wall hole sleeve	1
● Wall hole cover	1
● Pipe taping band (The quantity depends on the pipe length.)	2 to 5
● Fixing screw for ● 4 × 20 mm (The quantity depends on the pipe length.)	2 to 5
● Piping tape	1
● Putty	1
● Drain hose (or soft PVC hose, 15 mm inner dia. or hard PVC pipe VP16)	1 or 2
● Refrigeration oil	1
● Power supply cord (See the table in 5-1 INDOOR/OUTDOOR UNIT CONNECTING WIRE CONNECTION for the correct size.)	1



- Note: When operating the air conditioner in low outside temperature, be sure to follow the instructions described below.
- Never install the outdoor unit in a place where its air inlet/outlet side may be exposed directly to wind.
- To prevent exposure to wind, install the outdoor unit with its air inlet side facing the wall.
- To prevent exposure to wind, it is recommended to install a baffle board on the air outlet side of the outdoor unit.

### CAUTION

- **Earth the unit.**  
Do not connect the earth to a gas pipe, water pipe, lightning rod or telephone earth. Defective earthing could cause an electric shock.
- **Do not install the unit in a place where an inflammable gas leaks.**  
If gas leak and accumulate in the area surrounding the unit, it could cause an explosion.
- **Install an earth leakage breaker depending on the installation place (Where it is humid).**  
If an earth leakage breaker is not installed, it could cause an electric shock.
- **Perform the drainage/piping work securely according to the installation manual.**  
If there is a defect in the drainage/piping work, water could drop from the unit and household goods could be wet and damaged.
- **Fasten a flare nut with a torque wrench as specified in this manual.**  
When fastened too tight, a flare nut may broken after a long period and cause a leakage of refrigerant.

## **2. SELECTING THE INSTALLATION LOCATION**

### 2-1 INDOOR UNIT

- Where airflow is not blocked.
- Where cool air spreads over the entire room.
- Maximum refrigerant piping length between indoor unit and outdoor unit is 20 m and the difference of height of both units is 12 m.
- Rigid wall without vibration.
- Where it is not exposed to direct sunshine.
- Where easily drained.
- At a distance 1 m or more away from your TV and radio. Operation of the air conditioner may interfere with radio or TV reception in areas where reception is weak. An amplifier may be required for the affected device.
- In a place as far away as possible from fluorescent and incandescent lights (so the infrared remote control can operate the air conditioner normally).
- Where the air filter can be removed and replaced easily.

- **Check that the refrigerant gas does not leak after installation has completed.**

- If refrigerant gas leaks indoors, and comes into contact with the fire of a fan heater, space heater, stove, etc., harmful substances will be generated.
- **Perform the installation securely referring to the installation manual.**  
Incomplete installation could cause a personal injury due to fire, electric shock, the unit falling or leakage of water.
- **Perform electrical work according to the installation manual and be sure to use an exclusive circuit.**  
If the capacity of the power circuit is insufficient or there is incomplete electrical work, it could result in a fire or an electric shock.

- **Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely.**  
If the electrical cover in the indoor unit or the service panel in the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- **Be sure to use the part provided or specified parts for the installation work.**  
The use of defective parts could cause an injury or leakage of water due to a fire, an electric shock, the unit falling, etc.
- **Be sure to cut off the main power in case of setting up the indoor electronic control P.C. board or wiring works.**  
It could cause an electric shock.

- **The appliance shall be installed in accordance with national wiring regulations.**
- **When installing or relocating the unit, make sure that no substance other than the specified refrigerant (R410A) enters the refrigerant circuit.**  
Any presence of foreign substance such as air can cause abnormal pressure rise or an explosion.

In rooms where inverter type fluorescent lamps are used, the signal from the wireless remote controller may not be received.

### PIPING PREPARATION

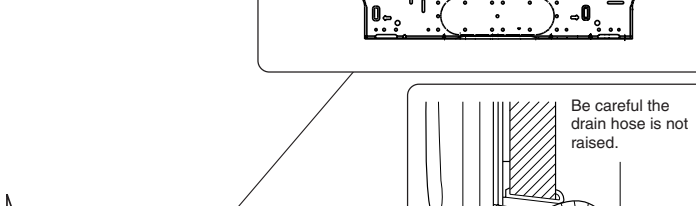
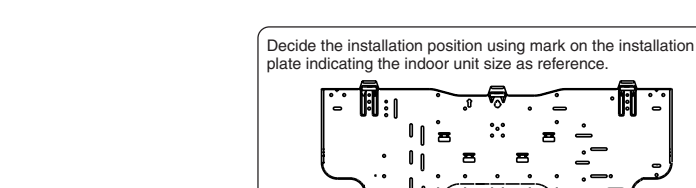
- ① Specifications  
Use the refrigerant pipes that meet the following specifications.
- ② Pipe

Pipe	Outside diameter	Insulation thickness	Insulation material
For liquid	6.35	8	Heat resisting foam plastic 0.045 specific gravity
For gas	9.52	8	

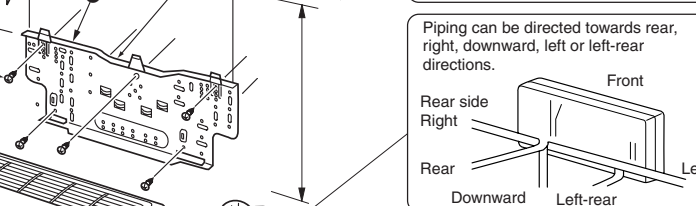
- Use a copper pipe or a copper-alloy seamless pipe with a thickness of 0.8 mm. Never use any pipe with a thickness less than 0.8 mm, as the pressure resistance is insufficient.
- ③ Ensure that the 2 refrigerant pipes are insulated to prevent condensation.
- ④ Refrigerant pipe bending radius must be 100 mm or more.

### CAUTION

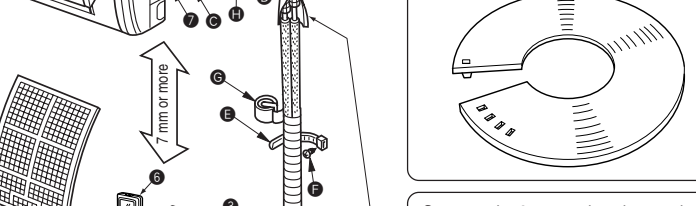
- Be sure to use the insulation of specified thickness. Excessive thickness may cause incorrect installation of the indoor unit and lack of thickness may cause dew dripage.



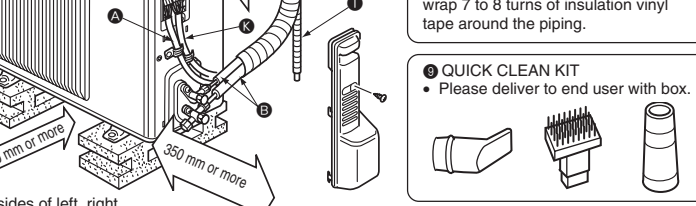
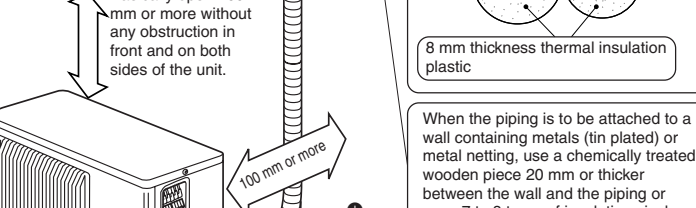
Piping can be directed towards rear, right, downward, left or left-rear directions.



Lock the catch.



Basically open 100 mm or more without any obstruction from front and on both sides of the unit.

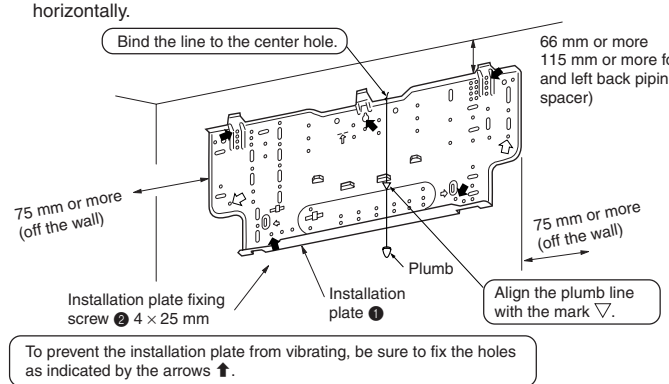


Units should be installed by licensed contractor according to local code requirement.

## **4. INDOOR UNIT INSTALLATION**

### 4-1 FIXING OF INSTALLATION PLATE

- Find a structural material (such as a stud) in the wall and fix installation plate horizontally.

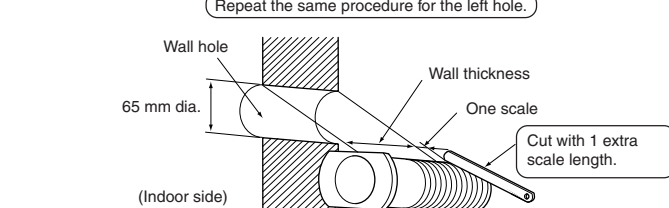
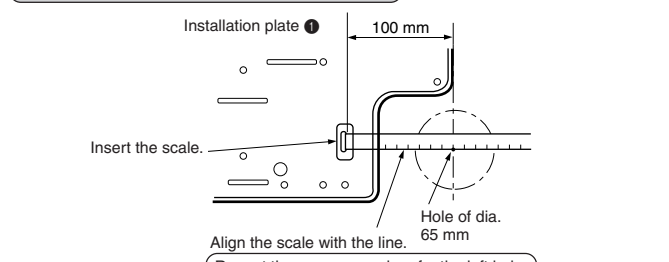


When bolts recessed in the concrete wall are to be utilized, secure the installation plate ● using 11 × 20 - 11 × 26 oval hole (450 mm pitch). If the recessed bolt is too long, change it for a shorter one available in the market.

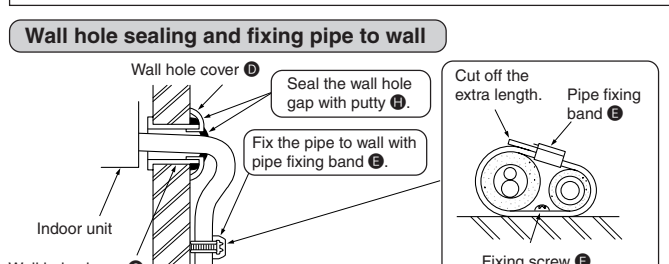
### 4-2 WALL HOLE DRILLING

- ① Determine the wall hole position.
- ② Drill a 65 mm hole so that outside can be lower than inside.
- ③ Insert the wall hole sleeve ●.

### Positioning of the holes on the wall



Be sure to use wall hole sleeve ● to prevent the outdoor connecting wires from contacting with metal part in the wall and to prevent damage by rat in case the wall is hollow.



### 4-3 POWER SUPPLY AND CONNECTING WIRE SPECIFICATIONS

- Use special room air conditioning circuit.

Indoor/outdoor unit connecting wire Specification	Cable 4-core 1.0 mm <sup>2</sup> in conformity with Design 245 IEC 57.
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### CAUTION

- Never cut the indoor and outdoor unit connecting wire and connect it to other wires. It may cause a fire.

Do not bundle the spare wire, but put it as shown below.

## **6. INDOOR/OUTDOOR UNIT CONNECTION FINISHING AND TEST RUN**

### INSTALLATION INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT

- This room air conditioner adopts an HFC refrigerant (R410A) which will never destroy the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.
- ① As R410A has a working pressure approx. 1.6 times as high as that of R22, some special tools and piping parts / materials are required. (Refer to the table below.)
- ② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
- ③ For refrigerant piping, use clean, pressure-proof parts / materials specifically designed for R410A.
- ④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

### 6-1 Tools dedicated for the air conditioner with R410A refrigerant

- The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.
- The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. (Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.)

R410A tools	Can R22 tools be used?	Description
Gauge manifold	No	R410A has high pressures beyond the measurement range of existing gauges. Put dimensions have been changed to prevent any other refrigerant from being charged into the unit.
Charge hose	No	Hose material and cap size have been changed to improve the pressure resistance.
Gas leak detector	No	Dedicated for HFC refrigerant.
Torque wrench	Yes	1/4 and 3/8
Flare tool	Yes	Clamp bar hole has been enlarged to reinforce the spring strength in the tool.
Flare gauge	New	Provided for flaring work to be used with R22 flare tool.
Vacuum pump adaptor	New	Provided to prevent the back flow of oil. This adaptor enables you to use existing vacuum pumps.
Electronic scale for refrigerant charging	New	It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization.

No. Not substitutable for R410A. Yes. Substitutable for R410A

Outside diameter	Flare tool for R410A	Conventional flare tool
clutch type	clutch type	clutch type
● 6.35 mm	0 to 0.5	1.0 to 1.5
● 9.52 mm	0 to 0.5	1.0 to 1.5

- Firmly hold copper pipe in a die in the dimension shown in the table above.

- Check

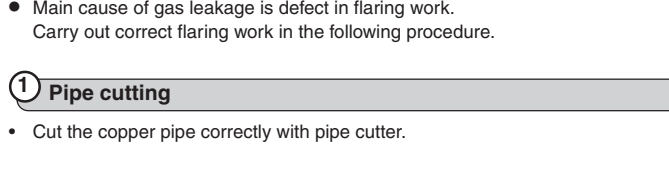
- Compare the flared work with figure below.
- If flare is noted to be defective, cut off the flared section and do flaring work again.

### 6-2 FLARING WORK

- Main cause of gas leakage is defect in flaring work.
- Carry out correct flaring work in the following procedure.

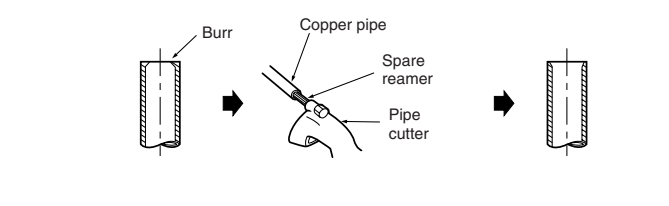
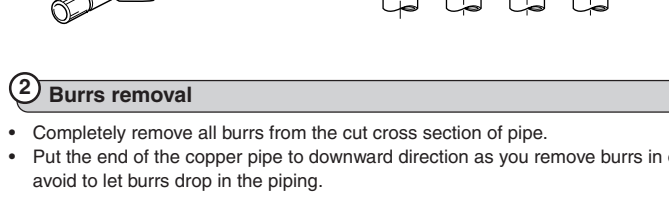
### 1 Pipe cutting

- Cut the copper pipe correctly with pipe cutter.



### 2 Burrs removal

- Completely remove all burrs from the cut cross section of pipe.
- Put the end of the copper pipe to downward direction as you remove burrs in order to avoid to let burrs drop in the piping.

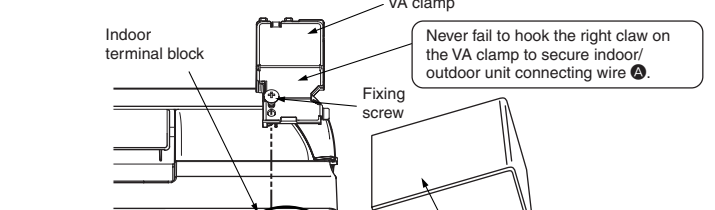


Units should be installed by licensed contractor according to local code requirement.

## **4-4 INDOOR AND OUTDOOR CONNECTING WIRE CONNECTION**

- You can connect indoor/outdoor lead wire without removing the front panel.

- ① Remove the corner box.
- ② Remove the VA clamp.
- ③ Process the end of the earth wire and connect the wire to the earth terminal of the electrical parts box.
- ④ Process the end of the indoor/outdoor unit connecting wire and fix the wire to the terminal block.
- ⑤ Secure the indoor/outdoor unit connecting wire and the earth wire with the VA clamp.
- ⑥ Reinstall the corner box.



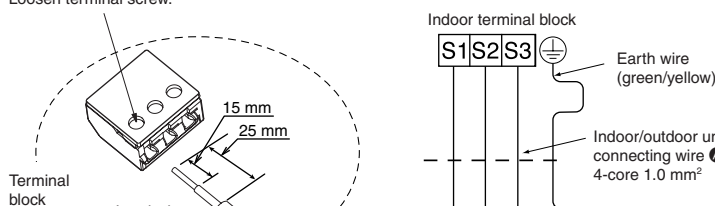
When bolts recessed in the concrete wall are to be utilized, secure the installation plate ● using 11 × 20 - 11 × 26 oval hole (450 mm pitch). If the recessed bolt is too long, change it for a shorter one available in the market.

### 4-5 AUTO RESTART FUNCTION

- ① If the main power has been cut, the operation settings remain.
- ② When three minutes have passed after power was restored, the unit will restart automatically according to the memory.

### 4-6 PIPE FORMING

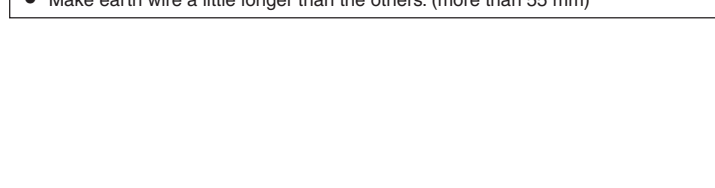
- Place the drain hose below the refrigerant piping.
- Make sure that the drain hose is not heated or snaked.
- Do not put the hose to apply the tape.
- When the drain hose passes the room, be sure to wrap insulation material (obtainable at a store) around it.
- Wrap the felt tape ● around the pipe and the drain hose, then put the pipe in the back space of the indoor unit.



### FOR REAR, RIGHT OR DOWNWARD PIPING

- Pipe arrangement  
Put the refrigerant piping and the drain hose together, then apply piping tape ● to them.

- Be careful not to make mis-wiring.
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.
- If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.
- If an earth is incorrectly connected, it may cause an electric shock.
- Make earth wire a little longer than the others. (more than 55 mm)



### 4-7 DRAIN PIPING

- Connect the indoor/outdoor unit connecting wire ● from the indoor unit correctly on the terminal block.
- Connect the power supply cord ●.
- For future servicing, give extra length to connecting wire.

Power supply cord specification	Cable 3-core 1.0 mm <sup>2</sup> in conformity with Design 245 IEC 57.
Indoor and Outdoor connecting wire specification	Cable 4-core 1.0 mm <sup>2</sup> in conformity with Design 245 IEC 57.

### CAUTION

- Be careful not to make mis-wiring.
- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.
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- If an earth is incorrectly connected, it may cause an electric shock.
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## **4-5 AUTO RESTART FUNCTION**

- These models are equipped with an auto restart function. If you do not want to use this function, please consult the service representative because the setting of the unit needs to be changed.
- When the indoor unit is controlled with the remote controller, the operation mode, the set temperature, and the fan speed are memorized by the indoor electronic control P.C. board. The auto restart function sets to work the moment the power has restored after power failure, then, the unit will restart automatically. If the unit is operated in "AUTO" mode before power failure, the operation mode (COOL, DRY or HEAT) is not stored in the memory. When the main power is turned on, the unit decides the operation mode by the initial room temperature at restart and starts operation again.

### Operation

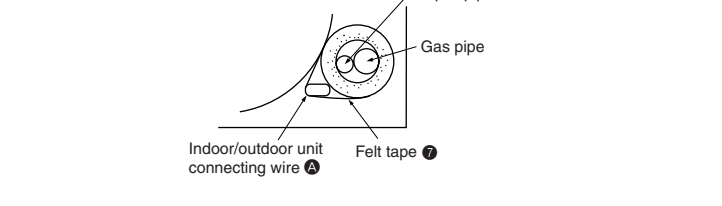
- ① If the main power has been cut, the operation settings remain.
- ② When three minutes have passed after power was restored, the unit will restart automatically according to the memory.

### Notes:

- The operation settings are memorized when 10 seconds have passed after the remote controller was operated.
- If the main power is turned off or a power failure occurs while AUTO START/STOP timer is active, the timer setting is cancelled. As these models are equipped with an auto restart function, the air conditioner starts operating with timer cancelled at the same time that power is restored.
- If the unit has been off with the remote controller before power failure, the auto restart function does not work as the power button of the remote controller is off.
- To prevent breaker off due to the rush of starting current, systematize other home appliances not to turn on at the same time.

### 4-6 PIPE FORMING

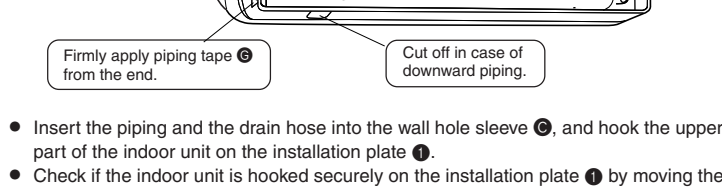
- Place the drain hose below the refrigerant piping.
- Make sure that the drain hose is not heated or snaked.
- Do not put the hose to apply the tape.
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- Wrap the felt tape ● around the pipe and the drain hose, then put the pipe in the back space of the indoor unit.



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- Firmly tighten the terminal screws to prevent them from loosening.
- After tightening, pull the wires lightly to confirm that they do not move.
- If the connecting wire is incorrectly connected to the terminal block, the unit does not operate normally.
- If an earth is incorrectly connected, it may cause an electric shock.
- Make earth wire a little longer than the others. (more than 55 mm)



## **FOR LEFT OR LEFT-REAR PIPING**