



# Floor Type Air-Conditioner

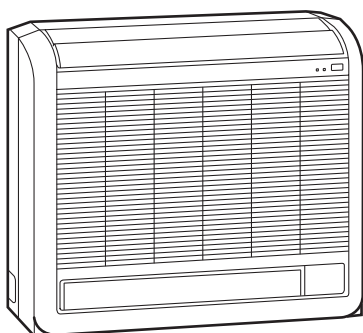
MFZ-KA25VA

MFZ-KA35VA

MFZ-KA50VA

## INSTALLATION MANUAL

- This manual only describes the installation of indoor unit.  
When installing the outdoor unit, refer to the installation manual of outdoor unit.



English

Deutsch

Français

Nederlands

Español

Italiano

Ελληνικά

Português

Dansk

Svenska

Türkçe

Русский

## CONTENTS

1. BEFORE INSTALLATION .....	2
2. INDOOR UNIT INSTALLATION .....	4
3. FLARING WORK AND PIPE CONNECTION.....	6
4. TEST RUN .....	7
5. PUMPING DOWN .....	7

**FOR INSTALLER**

## 1. BEFORE INSTALLATION

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

- Be sure to read "THE FOLLOWING SHOULD ALWAYS BE OBSERVED FOR SAFETY" before installing the air conditioner.
- Be sure to observe the warnings and cautions specified here as they include important items related to safety.
- After reading this manual, be sure to keep it together with the OPERATING INSTRUCTIONS for future reference.

#### ⚠ WARNING

(Could lead to death, serious injury, etc.)

- **Do not install the unit by yourself (user).**  
Incomplete installation could cause fire or electric shock, injury due to the unit falling, or leakage of water. Consult the dealer from whom you purchased the unit or a qualified installer.
- **Perform the installation securely referring to the installation manual.**  
Incomplete installation could cause fire or electric shock, injury due to the unit falling, or leakage of water.
- **Install the unit securely in a place which can bear the weight of the unit.**  
If the installation location cannot bear the weight of the unit, the unit could fall causing injury.
- **Perform electrical work according to the installation manual and be sure to use an exclusive circuit. Do not connect other electrical appliances to the 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.
- **Do not damage the wires by applying excessive pressure with parts or screws.**  
Damaged wires could cause fire.
- **Be sure to cut off the main power in case of setting up the indoor P.C. board or wiring works.**  
Failure to do so could cause electric shock.
- **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 securing could cause fire.
- **Do not install the unit in a place where inflammable gas may leak.**  
If gas leaks and accumulates in the area around the unit, it could cause an explosion.
- **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.
- **Be sure to use the parts 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.
- **When plugging the power supply plug into the outlet, make sure that there is no dust, clogging, or loose parts in both the outlet and the plug. Make sure that the power supply plug is pushed completely into the outlet.**  
If there is dust, clogging, or loose parts on the power supply plug or the outlet, it could cause electric shock or fire. If loose parts are found on the power supply plug, replace it.
- **Attach the electrical cover to the indoor unit and the service panel to the outdoor unit securely.**  
If the electrical cover of the indoor unit and/or the service panel of the outdoor unit are not attached securely, it could result in a fire or an electric shock due to dust, water, etc.
- **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.
- **Do not discharge the refrigerant into the atmosphere. If refrigerant leaks during installation, ventilate the room.**  
If refrigerant comes in contact with a fire, harmful gas could be generated.
- **Check that the refrigerant gas does not leak after installation has been completed.**  
If refrigerant gas leaks indoors, and comes into contact with the flame of a fan heater, space heater, stove, etc., harmful substances will be generated.
- **Use appropriate tools and piping materials for installation.**  
The pressure of R410A is 1.6 times more than R22. Not using appropriate tools or materials and incomplete installation could cause the pipes to burst or injury.
- **When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes.**  
If the refrigerant pipes are disconnected while the compressor is running and the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or injury.
- **When installing the unit, securely connect the refrigerant pipes before starting the compressor.**  
If the compressor is started before the refrigerant pipes are connected and when the stop valve is open, air could be drawn in and the pressure in the refrigeration cycle could become abnormally high. This could cause the pipes to burst or injury.
- **Fasten a flare nut with a torque wrench as specified in this manual.**  
If fastened too tight, a flare nut may break after a long period and cause refrigerant leakage.
- **The unit shall be installed in accordance with national wiring regulations.**
- **Earth the unit correctly.**  
Do not connect the earth to a gas pipe, water pipe, lightning rod or telephone earth. Defective earthing could cause electric shock.

#### ⚠ CAUTION

(Could lead to serious injury in particular environments when operated incorrectly.)

- **Install an earth leakage breaker depending on the installation place.**  
If an earth leakage breaker is not installed, it could cause electric shock.
- **Perform the drainage/piping work securely according to the installation manual.**  
If there is defect in the drainage/piping work, water could drop from the unit, soaking and damaging household goods.
- **Do not touch the air inlet or the aluminum fins of the outdoor unit.**  
This could cause injury.
- **Do not install the outdoor unit where small animals may live.**  
If small animals enter and touch the electric parts inside the unit, it could cause a malfunction, smoke emission, or fire. Also, advise user to keep the area around the unit clean.

### 1-2. SELECTING THE INSTALLATION LOCATION

#### INDOOR UNIT

- Where airflow is not blocked.
- Where cool air spreads over the entire room.
- 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.

#### REMOTE CONTROLLER

- Where it is easy to operate and easily visible.
- Where children cannot touch it.
- Select a position about 1.2 m above the floor and check that signals from the remote controller are surely received by the indoor unit from that position ('beep' or 'beep beep' receiving tone sounds). After that, attach remote controller holder (2) to a pillar or wall and install wireless remote controller (12).

#### Note:

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

### 1-3. REQUIRED TOOLS FOR INSTALLATION

Phillips screwdriver  
Level  
Scale  
Utility knife or scissors  
25, 35 class 65 mm/ 50 Class 75 mm hole saw  
Torque wrench  
Wrench (or spanner)

4 mm hexagonal wrench  
Flare tool for R410A  
Gauge manifold for R410A  
Vacuum pump for R410A  
Charge hose for R410A  
Pipe cutter with reamer

## 1-4. SPECIFICATIONS

Model	Power supply *1		Wire specifications *2	Pipe size (thickness *3, *4)		Pipe length and height difference *5, *6		
	Rated Voltage	Frequency		Gas	Liquid	Max. pipe length	Max. height difference	Insulation thickness *7, *8
MFZ-KA25/35VA	230 V	50 Hz	4-core 1.5 mm <sup>2</sup>	ø9.52 mm (0.8 mm)	ø6.35 mm (0.8 mm)	20 m	12 m	8 mm
MFZ-KA50VA				ø12.7 mm (1.0 mm)		30 m	15 m	

\*1 Connect to the power switch which has a gap of 3 mm or more when open to interrupt the source power phase. (When the power switch is shut off, it must interrupt all phases.)

\*2 Use wires in conformity with design 60245 IEC 57.

\*3 Never use pipes with thickness less than specified. The pressure resistance will be insufficient.

\*4 Use a copper pipe or a copper-alloy seamless pipe.

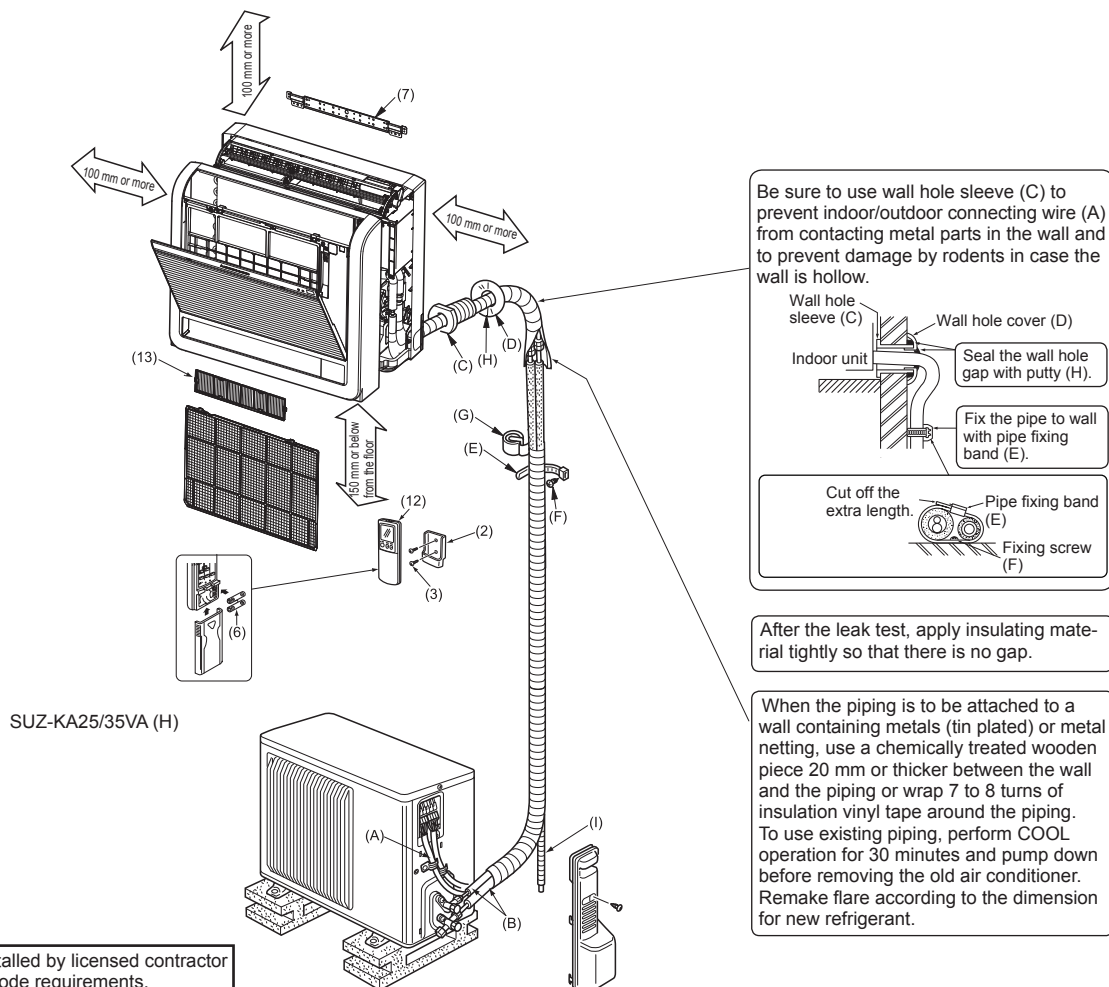
\*5 Be careful not to crush or bend the pipe during pipe bending.

\*6 Refrigerant pipe bending radius must be 100 mm or more.

\*7 Insulation material : Heat resisting foam plastic 0.045 specific gravity

\*8 Be sure to use the insulation of specified thickness. Excessive thickness may cause incorrect installation of the indoor unit and insufficient thickness may cause dew dripage.

## 1-5. INSTALLATION DIAGRAM



### ACCESSORIES

Check the following parts before installation.

(1)	Drain hose	1
(2)	Remote controller holder	1
(3)	Fixing screw for (2) 3.5 × 16 mm (Black)	2
(4)	Pipe cover	1
(5)	Band	2
(6)	Battery (AAA) for (12)	2
(7)	Indoor unit mounting bracket	1
(8)	Fixing screw for (7) 4 × 25 mm	5
(9)	Wood screw for indoor unit fixation	4
(10)	Washer of (9)	4
(11)	Felt tape (For left or left-rear piping)	1
(12)	Wireless remote controller	1
(13)	Air cleaning filter	1

### PARTS TO BE PROVIDED AT YOUR SITE

(A)	Indoor/outdoor unit connecting wire*	1
(B)	Extension pipe	1
(C)	Wall hole sleeve	1
(D)	Wall hole cover	1
(E)	Pipe fixing band	2 to 5
(F)	Fixing screw for (E) 4 × 20 mm	2 to 5
(G)	Piping tape	1
(H)	Putty	1
(I)	Drain hose (or soft PVC hose, 15 mm inner dia. or hard PVC pipe VP16)	1 or 2
(J)	Refrigerant oil	1

#### \* Note:

Place indoor/outdoor unit connecting wire (A) and power supply cord at least 1 m away from the TV antenna wire.

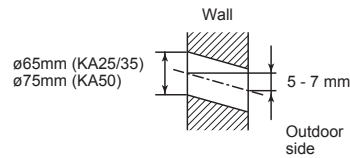
## 2. INDOOR UNIT INSTALLATION

### 2-1. FIXING OF INDOOR UNIT MOUNTING BRACKET

- Find a structural material (such as a stud) in the wall and fix bracket (7) horizontally with fixing screws (8).
- To prevent bracket (7) from vibrating, be sure to install the fixing screws in the holes indicated by [->] in the illustration. For added support, fixing screws may also be installed in other holes.

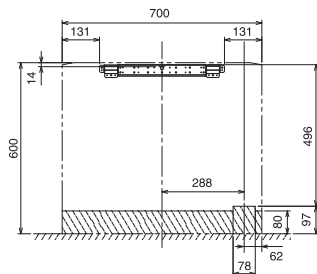
### 2-2. HOLE DRILLING

- Determine the wall hole position.
- Drill a dia. 65 mm hole (dia. 75 mm for KA50). The outdoor side should be 5 to 7 mm lower than the indoor side.
- Insert wall hole sleeve (C).

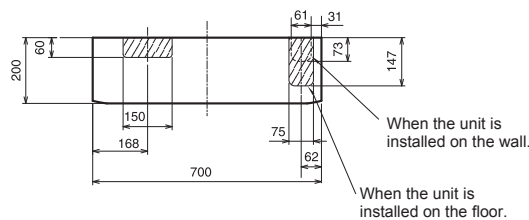


#### HOLE POSITIONS

**FOR REAR OR LEFT-REAR PIPING**  
(The following figure is a front view of the indoor unit installation location.)

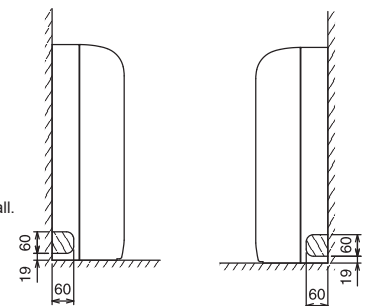


**FOR RIGHT DOWNWARD OR LEFT DOWNWARD PIPING**  
(The following figure is a view of the bottom of the indoor unit from above.)



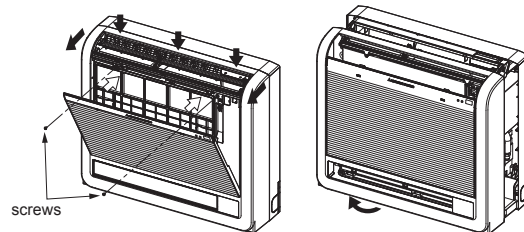
**FOR LEFT PIPING**

**FOR RIGHT PIPING**



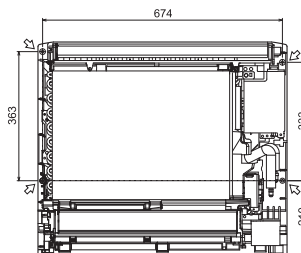
### 2-3. INDOOR UNIT PREPARATION

- Press the 2 positions indicated by the arrows ⇨ and open the front grille.
- Open the front grille and remove the two screws.
- Open the horizontal vane for the upper air outlet, push the top of the front panel in three locations, and then pull the top of the grille away from the indoor unit.
- Lift up the front grille to remove it.



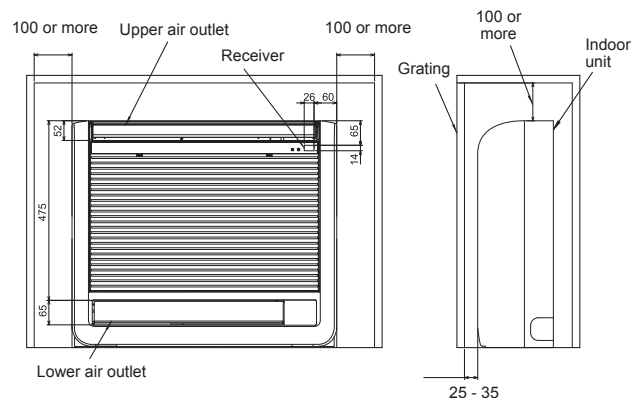
### 2-4. INDOOR UNIT INSTALLATION

- Hook the top of the indoor unit on the indoor unit mounting bracket (7).
- Use the included wood screws (9) and washer (10), and fasten the indoor unit at 2 locations(⇨) each at the top and the middle of the unit.



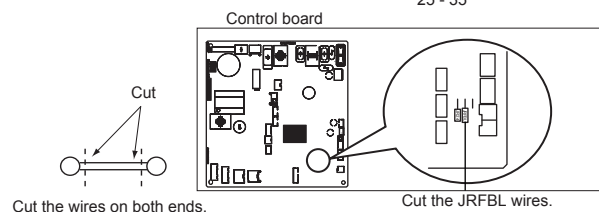
### 2-5. EMBEDDING THE INDOOR UNIT IN A WALL

- When installing a grating, use a grating with narrow upper and lower horizontal bars so that the airflow from the upper and lower air outlets does not contact the bars. If the horizontal bars will block the lower air outlet, use a stand, etc., to adjust the height of the indoor unit. If the upper or lower air outlet is blocked, the air conditioner will not be able to cool or warm the room well.
- Do not block the receiver with the grating. Otherwise, the grating will interfere with the remote controller signal and significantly reduce the distance and area (angle) from which the signals can be received.
- Use a grating with vertical bars, etc., that has at least 75% open area. If the grating has horizontal bars or if the open area is less than 75%, performance could be reduced.
- When the indoor unit is embedded in a wall (built-in), the time it takes for the room temperature to reach the set temperature will increase.



#### EMBEDDED INDOOR UNIT SETTING (MUST BE PERFORMED)

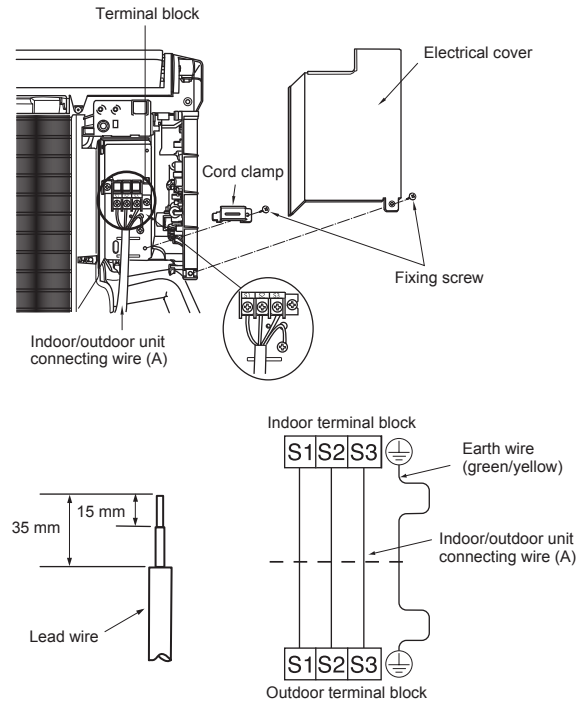
- When embedding the indoor unit in a wall, restrict the movement of the horizontal vane for the upper air outlet so that it only operates horizontally.
- If this setting is not performed, heat will build up in the wall and the room will not be cooled or warmed properly.
- Cut the wires on the left and right sides of JRFBL using a pair of nippers, etc., as shown below.



## 2-6. CONNECTING WIRES FOR INDOOR UNIT

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

- 1) Open the front grille.
- 2) Remove panel.
- 3) Remove electrical cover.
- 4) Remove cord clamp.
- 5) Pass indoor/outdoor unit connecting wire (A) from the back of the indoor unit and process the end of the wire.
- 6) Loosen terminal screw, and connect first the earth wire, then indoor/outdoor unit connecting wire (A) to the terminal block. Be careful not to make mis-wiring. Fix the wire to the terminal block securely so that no part of its core is appeared, and no external force is conveyed to the connecting section of the terminal block.
- 7) Firmly tighten the terminal screws to prevent them from loosening. After tightening, pull the wires lightly to confirm that they do not move.
- 8) Secure indoor/outdoor unit connecting wire (A) and the earth wire with the cord clamp. Never fail to hook the left claw of the cord clamp. Attach the cord clamp securely.

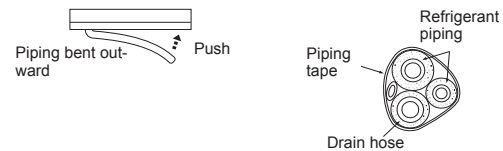


- Make earth wire a little longer than others. (More than 55 mm)
- For future servicing, give extra length to the connecting wires.

## 2-7. PIPE FORMING AND INSTALLATION

### Pipe Forming

- Route the drain hose diagonally below the connecting pipes.
- Make sure that the drain hose is not routed upward and that there are no waves in the hose.
- Do not pull the hose when applying the tape.
- Route the piping so that it does not project past the rear of the indoor unit. (Refer to the figure to the right.)



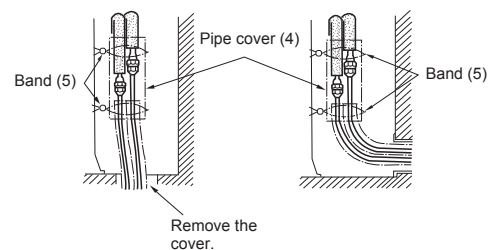
### Connecting Pipe Installation

- Install the connecting pipes so that the piping can move slightly to the front, back, left, and right.

- Be sure to insulate the connecting pipes and place them near the rear of the indoor unit so that they do not contact the front panel.
- Be careful not to crush the connecting pipes when bending them.

### RIGHT DOWNWARD PIPING

### OTHER PIPING



### FOR LEFT OR LEFT-REAR PIPING

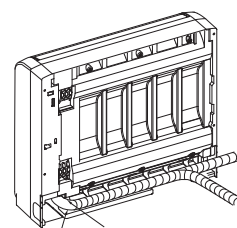
Bundle the connecting pipes and drain hose together, and then wrap them in felt tape (11).

Cut and use the lower side panels on the left and right sides of the indoor unit as shown below. Smooth the cut edges of the side panels so that they will not damage the insulation coating.

- For left or right piping
- Installing flush against a wall with molding



Cut the lower side panels to match the height of the molding.



Start wrapping the piping tape (G) around the pipes and hose 10 mm inside the indoor unit.

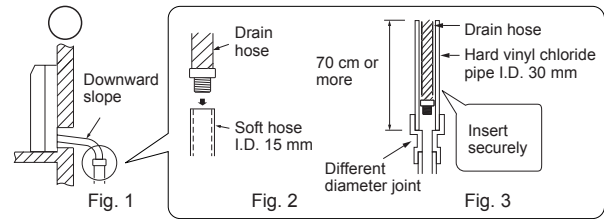
Fasten the end of the felt tape (11) with a bandage stopper.

Make sure that the drain hose is not routed upward.

Wrap the felt tape (11) tightly around the pipes and hose starting near where the pipes and hose are routed from the indoor unit. (The overlap width of the felt tape (11) should not be more than 1/2 of the tape width.)

## 2-8. DRAIN PIPING

- If the extension drain hose has to pass through a room, be sure to wrap it with commercially sold insulation.
- The drain hose should point downward for easy drain flow. (Fig. 1)
- If the drain hose provided with the indoor unit is too short, connect it with drain hose (1) that should be provided at your site. (Fig. 2)
- When connecting the drain hose to the hard vinyl chloride pipe, be sure to insert it securely into the pipe. (Fig. 3)
- When routing the drain piping, make sure that the drain hose (1) is routed as shown. (Fig. 4)
- Insert the drain hose all the way to the base of the drain pan. (Fig. 5) Make sure that the drain hose is securely caught on the projection in the hole in the drain pan.



Do not make drain piping as shown below.

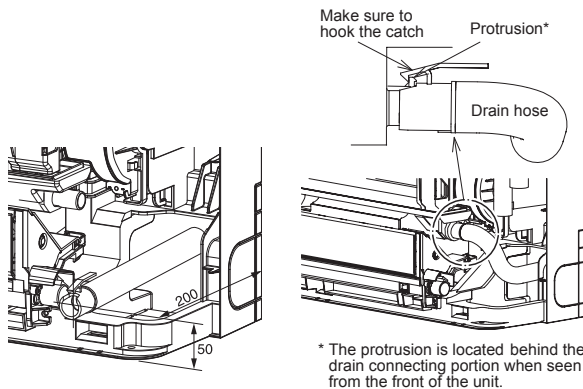
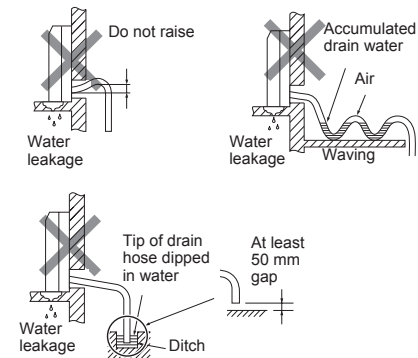


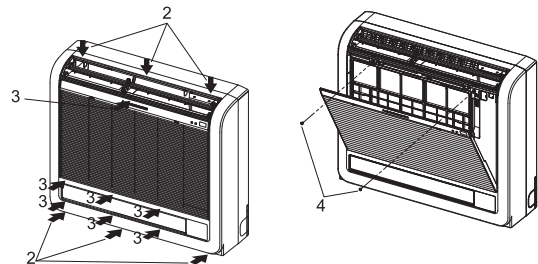
Fig. 4

Fig. 5



## 2-9. FRONT PANEL INSTALLATION

- 1) Open the horizontal vane for the upper air outlet.
- 2) Fit the front panel onto the indoor unit from the front, and then push the upper and lower areas that are marked with arrows.
- 3) Push the areas below the upper air outlet and the areas above and below the lower air outlet that are marked with arrows.
- 4) After installing the front panel, install the 2 screws below the upper air outlet.



## 3. FLARING WORK AND PIPE CONNECTION

### 3-1. FLARING WORK

- 1) Cut the copper pipe correctly with pipe cutter. (Fig. 1, 2)
- 2) Completely remove all burrs from the cut cross section of pipe. (Fig. 3)
  - Put the end of the copper pipe to downward direction as you remove burrs in order to avoid let burrs drop in the piping.
- 3) Remove flare nuts attached to indoor and outdoor units, then put them on pipe having completed burr removal. (Not possible to put them on after flaring work.)
- 4) Flaring work (Fig. 4, 5). Firmly hold copper pipe in the dimension shown in the table. Select A mm from the table according to the tool you use.
- 5) Check
  - Compare the flared work with Fig. 6.
  - If flare is noted to be defective, cut off the flared section and do flaring work again.

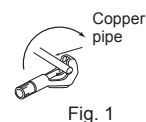


Fig. 1

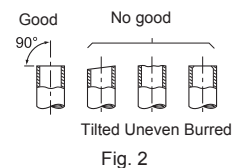


Fig. 2

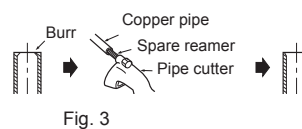


Fig. 3

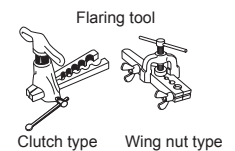


Fig. 4

Pipe diameter (mm)	Nut (mm)	A (mm)			Tightening torque	
		Clutch type tool for R410A	Clutch type tool for R22	Wing nut type tool for R22	N•m	kgf•cm
ø 6.35 (1/4")	17	0 to 0.5	1.0 to 1.5	1.5 to 2.0	13.7 to 17.7	140 to 180
ø 9.52 (3/8")	22			2.0 to 2.5	34.3 to 41.2	350 to 420
ø 12.7 (1/2")	26				49.0 to 56.4	500 to 575
ø 15.88 (5/8")	29				73.5 to 78.4	750 to 800

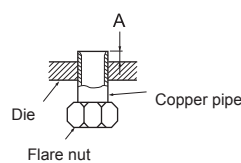


Fig. 5

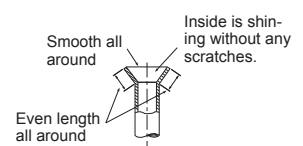


Fig. 6



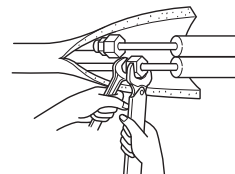
### 3-2. PIPE CONNECTION

- Fasten flare nut with a torque wrench as specified in the table.
- When fastened too tight, flare nut may brake after a long period and cause refrigerant leakage.

#### Indoor unit connection

Connect both liquid and gas pipings to indoor unit.

- Apply a thin coat of refrigeration oil (J) on the seat surface of pipe.
- For connection, first align the center, then tighten the first 3 to 4 turns of flare nut.
- Use tightening torque table below as a guideline for indoor unit side union joint section, and tighten using two wrenches. Excessive tightening damages the flare section.



#### Outdoor unit connection

Connect pipes to stop valve pipe joint of the outdoor unit in the same manner applied for indoor unit.

- For tightening, use a torque wrench or spanner and use the same tightening torque applied for indoor unit.

### 3-3. INSULATION AND TAPING

- 1) Cover piping joints with pipe cover.
- 2) For outdoor unit side, surely insulate every piping including valves.
- 3) Using piping tape (G), apply taping starting from the entry of outdoor unit.
  - Stop the end of piping tape (G) with tape (with adhesive agent attached).
  - When piping have to be arranged through above ceiling, closet or where the temperature and humidity are high, wind additional commercially sold insulation to prevent condensation.

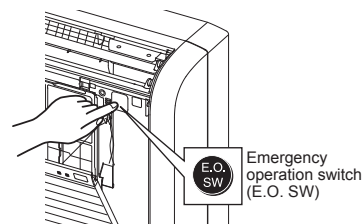
## 4. TEST RUN

### 4-1. TEST RUN

#### Make sure the following is done.

- The area around the damper is free of any objects, and the movement of the damper is not blocked.
- Panel is installed correctly.
- Indoor and outdoor units are installed correctly, and power is supplied.

- 1) Press the E.O. SW once for COOL, and twice for HEAT operation. Test run will be performed for 30 minutes. If the left lamp of the operation indicator blinks every 0.5 seconds, inspect the indoor/outdoor unit connecting wire (A) for mis-wiring. After the test run, emergency mode (set temperature 24°C) will start.
- 2) To stop operation, press the E.O. SW several times until all LED lamps turn off. Refer to operating instructions for details.



#### Checking the remote (infrared) signal reception

Press the ON/OFF button on the remote controller (12) and check that an electronic sound is heard from the indoor unit. Press the ON/OFF button again to turn the air conditioner off.

- Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

### 4-2. AUTO RESTART FUNCTION

This product is equipped with an auto restart function. When the power supply is stopped during operation, such as during blackouts, the function automatically starts operation in the previous setting once the power supply is resumed. (Refer to the operating instructions for details.)

#### Caution:

- After test run or remote signal reception check, turn off the unit with the E.O. SW or the remote controller before turning off the power supply. Not doing so will cause the unit to start operation automatically when power supply is resumed.

#### To the user

- After installing the unit, make sure to explain the user about auto restart function.
- If auto restart function is unnecessary, it can be deactivated. Consult the service representative to deactivate the function. Refer to the service manual for details.

### 4-3. EXPLANATION TO THE USER

- Using the OPERATING INSTRUCTIONS, explain to the user how to use the air conditioner (how to use the remote controller, how to remove the air filters, how to remove or put the remote controller in the remote controller holder, how to clean, precautions for operation, etc.)
- Recommend the user to read the OPERATING INSTRUCTIONS carefully.

## 5. PUMPING DOWN

When relocating or disposing of the air conditioner, pump down the system following the procedure below so that no refrigerant is released into the atmosphere.

- 1) Connect the gauge manifold valve to the service port of the stop valve on the gas pipe side of the outdoor unit.
- 2) Fully close the stop valve on the liquid pipe side of the outdoor unit.
- 3) Close the stop valve on the gas pipe side of the outdoor unit almost completely so that it can be easily closed fully when the pressure gauge shows 0 MPa [Gauge] (0 kgf/cm<sup>2</sup>).
- 4) Start the emergency COOL operation.

To start the emergency operation in COOL mode, disconnect the power supply plug and/or turn off the breaker. After 15 seconds, connect the power supply plug and/or turn on the breaker, and then press the E.O. SW once. (The emergency COOL operation can be performed continuously for up to 30 minutes.)
- 5) Fully close the stop valve on the gas pipe side of the outdoor unit when the pressure gauge shows 0.05 to 0 MPa [Gauge] (approx. 0.5 to 0 kgf/cm<sup>2</sup>).
- 6) Stop the emergency COOL operation.

Press the E.O. SW twice to stop the operation.

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

- Low Voltage Directive 73/23/EEC
- Electromagnetic Compatibility Directive 89/336/EEC